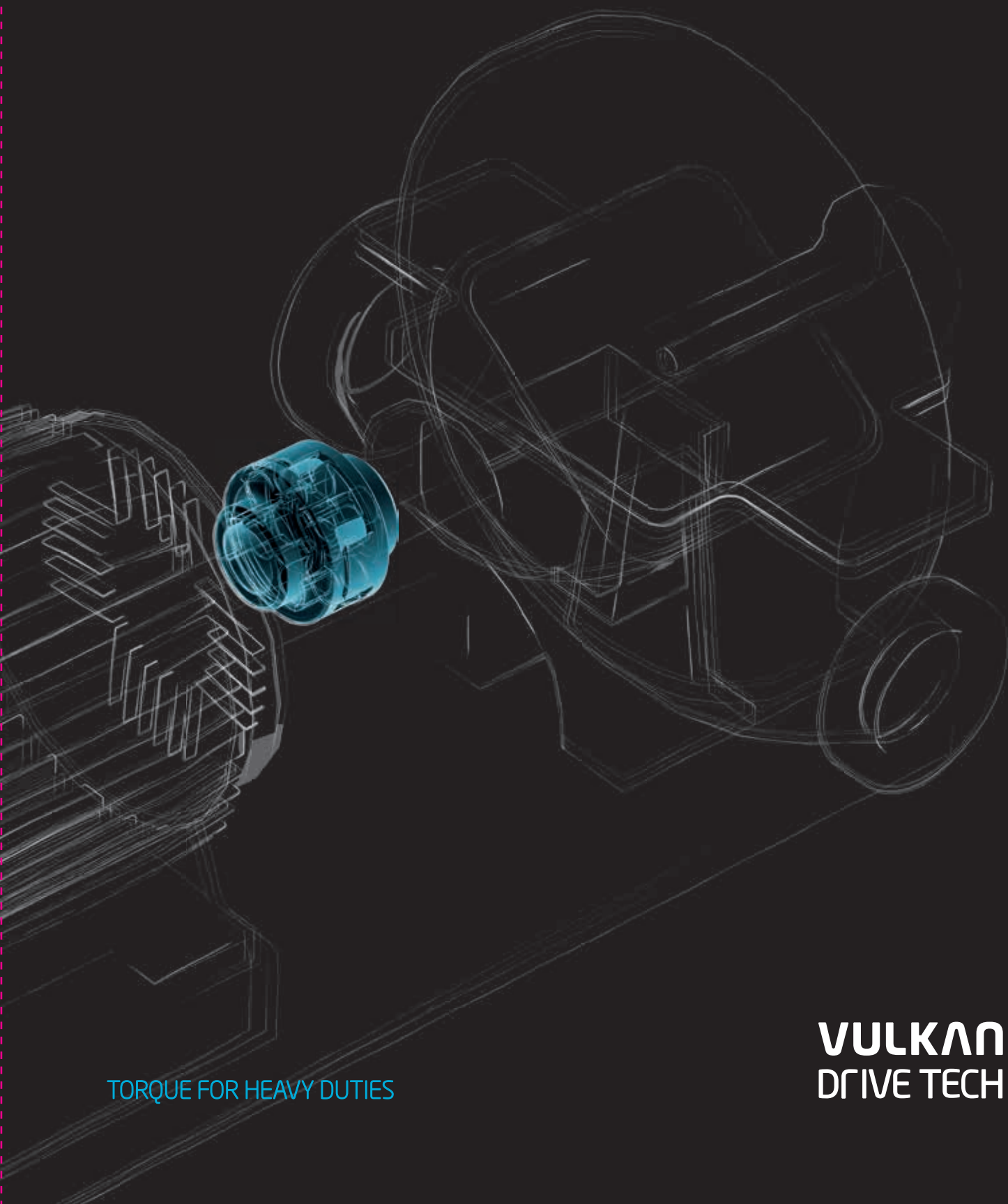


> DRIVE SOLUTIONS FOR PUMPS AND FANS



TORQUE FOR HEAVY DUTIES

VULKAN
DRIVE TECH



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> REQUIREMENTS

Both centrifugal and reciprocating pumps and axial and centrifugal fans are predominantly used in the Oil & Gas industry to either transport liquid, semi liquid or solid goods, or to control specific environment conditions such as exhaust, cooling or air ventilation.

Prime movers for these applications might be electric motors, diesel engines or turbines, with each one setting specific requirements in terms of power transmission components. Such requirements include **variable speed, torsional vibrations transmission, misalignment between the prime mover and the driven machinery, shock loads, extreme environmental conditions, heavy duty profile** etc.

Couplings with elastic elements working “in shear” or “in compression” and torsional rigid couplings are mainly used to fulfill such requirements. The compact design with limited weight and inertias are extra requirements demanded of such products range. Furthermore, depending on the application, compliance to different international standards, such as **ATEX or API**, might be requested.

> SOLUTIONS

To face all of these requirements, **VULKAN Drive Tech** developed an extensive product portfolio that is specific for pumps & fans applications. This includes torsional highly flexible couplings, torsional rigid couplings, as well as service and parking brakes. The portfolio focuses on the following **three major key aspects**:



Efficiency

To minimise service and machinery lay down costs, VULKAN Drive Tech has developed couplings with a minimum number of components that are subject to wear. It has also used special materials for its elastic elements that ensure the couplings will be free from any chemical contamination and avoid it becoming a potential source of damage. Consequently, VULKAN Drive Tech products do not require any special service or maintenance inspection, besides when a general machinery servicing is requested.



Tailor-made solutions

Due to the requirements of these applications, a custom project approach within the selection of suitable power transmission products is mandatory. Diesel engines as prime movers need couplings with rubber in shear properties in order to minimise torsional vibrations transmission. Electric motors demand couplings with rubber in compression features, while turbines require couplings that are suitable for high rotational speed. Furthermore, specific radial coupling disassembly design is necessary to guarantee the possibility of servicing the pump's impeller without having to move the connected machinery. These are major aspects that we consider in the VULKAN Drive Tech Design Department.

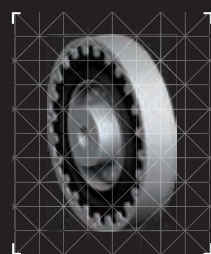


Design

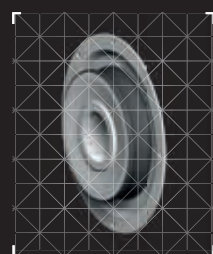
The modular design of the product's components allow VULKAN Drive Tech to provide huge variety of products versions while using minimum number of subcomponents, which in turn always guarantees the highest ratio between technical performances and the economic value of the product. Furthermore the continuous in-house testing allows VULKAN Drive Tech to continuously improve and optimise the technical performances of the products, according to latest state-of-the-art technologies.

SOLUTIONS

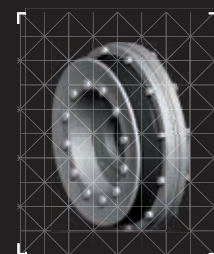
Product portfolio



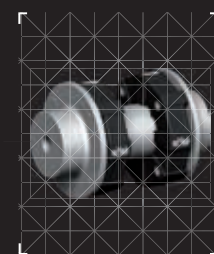
VULASTIK L PAGE 08



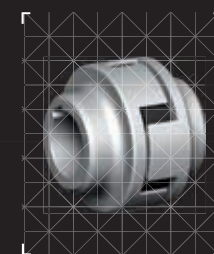
VULKARDAN E PAGE 10



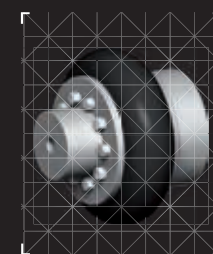
VULKARDAN L PAGE 12



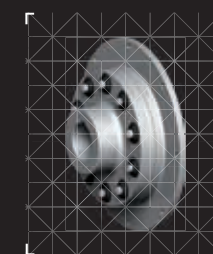
MEGIFLEX B PAGE 14



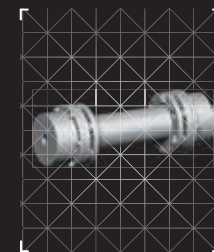
FLEXOMAX GSN PAGE 16



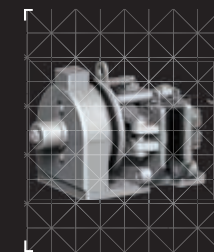
SPEFLEX N PAGE 18



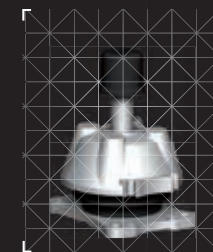
PINOFLEX NP PAGE 20



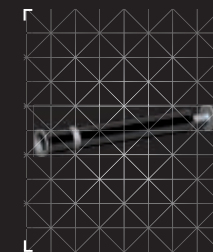
DISCFLEX PAGE 22



**ELECTROMAGNETIC
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T SERIES PAGE 26

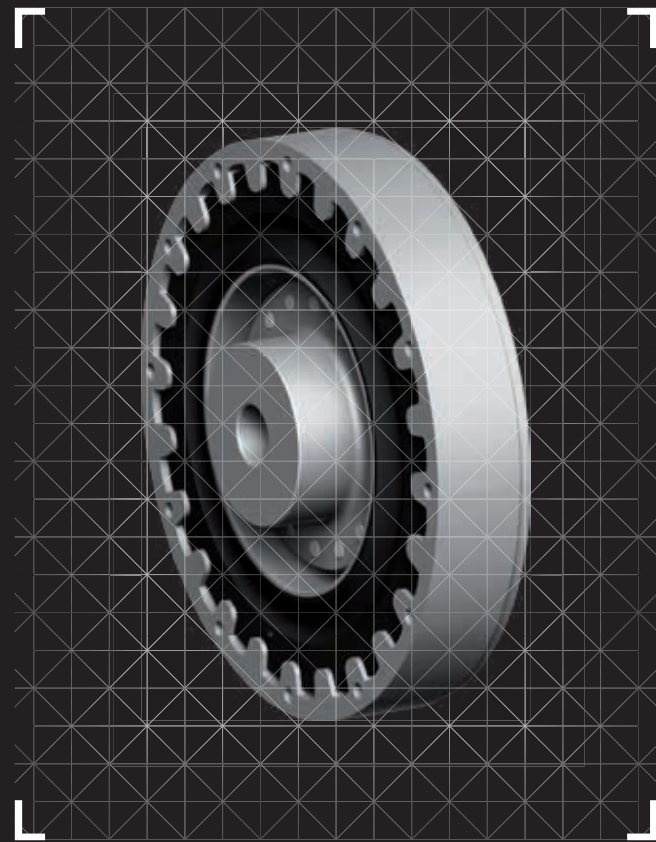


**COMPOSITE
SHAFT** PAGE 28



VULASTIK L

Nominal Torque Range: 0.50 – 40.00 kNm



VULASTIK L

The VULASTIK L coupling is suitable when the prime mover is a diesel engine. The plug-in design of the coupling into the external tooth flange allows the VULASTIK to be particularly indicated to the machinery with large axial shaft displacement. The modular design also permits the use of a single or double row elastic element to double the torque transmission capacity.

FEATURES

HIGHLY FLEXIBLE COUPLINGS > VULASTIK L

The main parts of the VULASTIK L coupling are the hub and flanged casing, in between which the disc-shaped element is arranged. This disc element is connected by vulcanisation at its inner radius, while the outer radius is connected to the flanged casing by a plug-in toothing, which provides the axial plug-in feature and compensation of shaft displacements.

The VULASTIK L is a highly torsional flexible coupling that compensates axial, angular and radial misalignments of the connected machinery. The permissible angular coupling displacement is 0.5°. The VULASTIK L elements are made from heat-resistant rubber for an operating permissible ambient temperatures range of -45°C to +90°C. Alternative elements in silicone are available for operating ambient temperatures ranging from -45°C to +120°C.

VULASTIK L is available in seven versions and features more than 70 sizes with different torsional stiffness characteristics that better suit the torsional vibrations behaviour of the machinery. VULKAN Drive Tech also provides full Torsional Vibration Calculation to predict the performances of the coupling and a natural frequencies spectrum in relation to the specific project for which the coupling is to be installed.

PRODUCT KEY FACTS



Efficiency

- > The toothing profile of the elastic element allows high axial misalignment displacement capacity.
- > Different elastic material such as rubber and silicone, allow the coupling to properly resist environmental high temperatures.



Tailor-made solutions

- > The low torsional stiffness allows to reduce the torsional vibrations transmission and ensures long life of the connected machinery.
- > Possibility to radial remove the element without moving the adjacent machinery.



Design

- > Plug in design to minimize the length of the coupling.
- > Designed to fit into bell-housing configurations.



VULKARDAN E

Nominal Torque Range: 0.2 – 25.00 kNm



VULKARDAN E BELL-HOUSING

The VULKARDAN E coupling is a highly-flexible rubber coupling with a linear stiffness characteristic.

FEATURES

HIGHLY FLEXIBLE COUPLINGS > VULKARDAN E BELL-HOUSING, VULKARDAN E FREESTANDING

Torsional highly flexible coupling suitable for either close coupled applications and freestanding machinery rigidly fixed or installed on resilient mounts. It is available for connection to SAE J620 flywheel to spline or shaft with keyway, or alternatively for shaft to shaft connection. Four rubber qualities are available in order to tune the coupling to the various system requirements. A silicone version of VULKARDAN E coupling has been designed to fulfill applications requiring high operating temperature and progressive torsional stiffness of the element. The freestanding design is also equipped with a steel membrane package, so to guarantee a higher axial misalignment capacity, with minimum reaction force generation.

PRODUCT KEY FACTS



Efficiency

- > Rubber coupling with a linear stiffness characteristic.
- > Operating ambient temperature range from -45°C up to 120°C.
- > Compensate high axial misalignments.



Tailor-made solutions

- > Suitable for either close coupled applications and free standing machinery installed on resilient mounts.
- > J620 SAE 6 ½" – 24" connection.
- > Spline and keyway shaft connection.



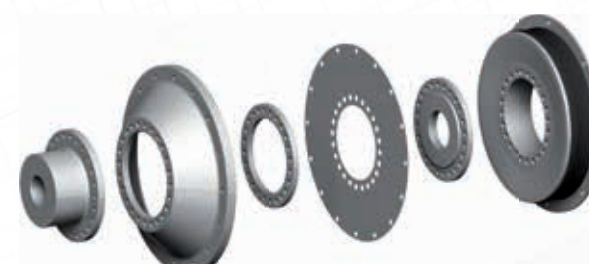
Design

- > Silicone version for high operating temperature and progressive torsional stiffness.
- > Radial disassembly of the element.
- > Low reaction forces generation.

More products of this series:

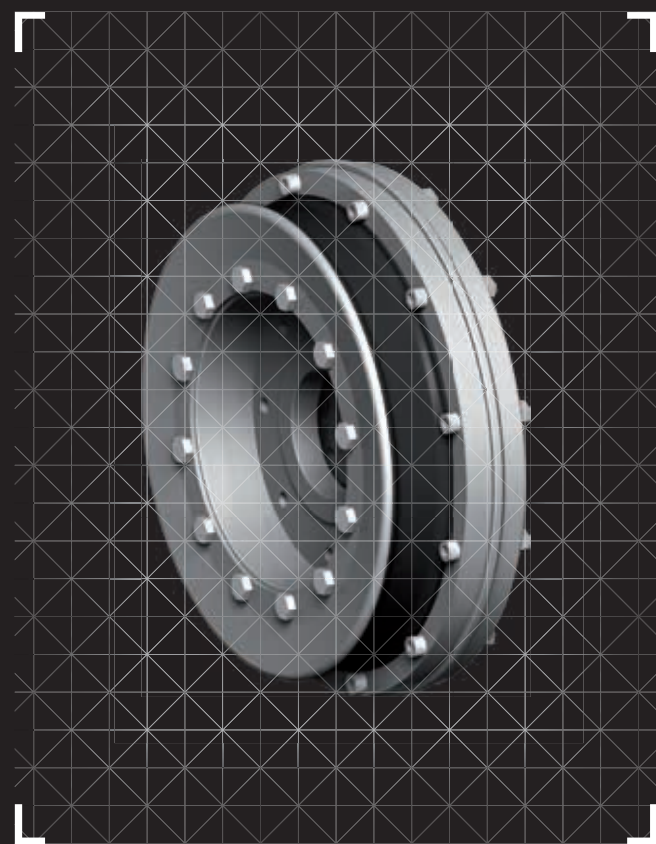


VULKARDAN E
FREESTANDING



VULKARDAN L&P

Nominal Torque Range: 0.2 – 16.00 kNm



VULKARDAN L

With a diesel engine as a prime mover, a highly flexible coupling is required for shifting resonances and damping of torsional vibrations.

FEATURES

HIGHLY FLEXIBLE COUPLINGS > VULKARDAN L, VULKARDAN P

When the driven machine is not in line with the prime mover or when long distances have to be bridged, cardan shafts are used. With a diesel engine as the prime mover, a highly flexible coupling will be required for shifting resonances and damping of torsional vibration. This coupling protects the cardan shaft and the driven machinery from inadmissible vibratory loads. The highly flexible VULKARDAN L&P couplings have been specifically developed for application in conjunction with cardan shafts. The main components of the VULKARDAN L&P coupling are the highly flexible element and the inner and outer couplings parts supported against each other. The elements have a high torsional flexibility and good damping properties. On to the support additional damping is achieved.

VULKARDAN L is suitable for all those applications requiring linear torsional stiffness characteristics, while VULKARDAN P coupling is characterized by progressive torsional stiffness feature. Each VULKARDAN L&P size could be also equipped with different DIN (or other standard) flanges connection in order to accommodate several different cardan shafts type.

VULKAN Drive Tech also provides full Torsional Vibration Calculation to predict the performances of the coupling and natural frequencies spectrum in relation to the specific project for which the coupling has to be installed.

PRODUCT KEY FACTS



Efficiency

- > Self supporting radial bearing to reduce reaction forces generated by the cardan shaft.
- > Self lubricating maintenance free material used for the bearing system.
- > High degree of radial and angular misalignment capacity.



Tailor-made solutions

- > J620 SAE 8" – 21" connection.
- > Different flange sizes to accommodate several cardan shafts type.
- > Different built-in length possibilities.



Design

- > Compact design to reduce load on the crankshaft.
- > Linear or progressive torsional stiffness possibility.
- > Low torsional stiffness for optimum isolation of the connected machinery.

More products of this series:



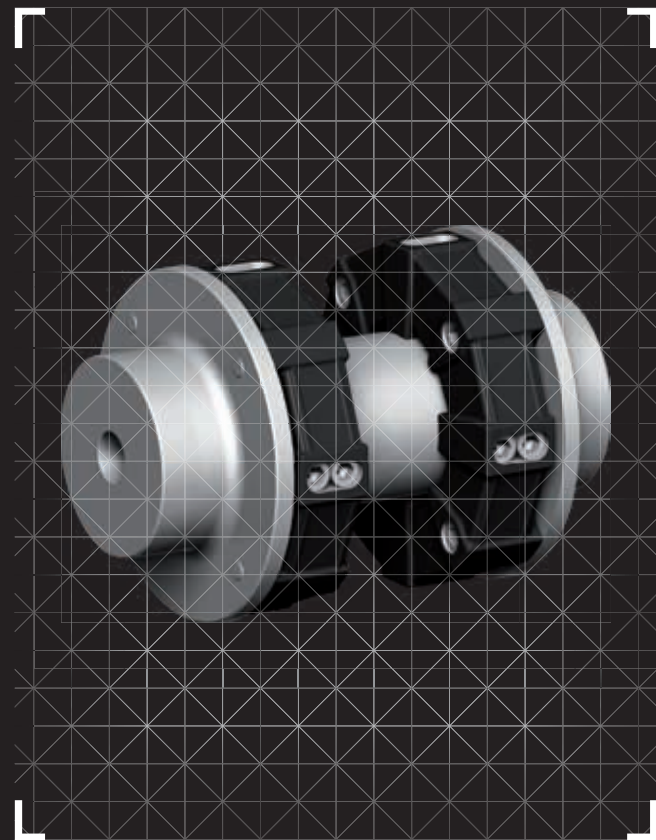
VULKARDAN P





MEGIFLEX B

Nominal Torque Range: 0.01 – 4.00 kNm



MEGIFLEX B

The MEGIFLEX B is a highly torsional flexible coupling that is suitable for small machinery driven by diesel engines. It is a highly versatile product and thanks to its modular and essential design it can be customised on demand. The robust elastic element guarantees an excellent multi-directional misalignment compensation capacity.

FEATURES

HIGHLY FLEXIBLE COUPLINGS > MEGIFLEX B

The MEGIFLEX B elastic element is designed for bolt connection to either driving or driven machinery, without any direct vulcanisation. This feature enables extreme and versatile customisation possibilities for this coupling.

Shaft to shaft, shaft to hub and hub to hub connections are available, as well as the possibility of single row or cardan design of the elastic elements. The coupling is shock absorbing and thanks to the high rubber volume has good electrical isolation and noise attenuation properties. With its two stiffnesses per size, an effective tuning of the installation's torsional vibration behaviour can be achieved.

MEGIFLEX B is available in eight different versions and features more than 30 sizes.

PRODUCT KEY FACTS



Efficiency

- > Low number of components.
- > Electrical isolation and noise attenuation properties.
- > High misalignment and shock absorbing capacity.



Tailor-made solutions

- > Shaft to shaft and shaft to flange connection possibility.
- > Different built-in length possibilities.
- > Plug-in design available.



Design

- > Modular design of the components.
- > Single and cardanic version available.
- > Two stiffness type per size available for better tuning.



FLEXOMAX

Nominal Torque Range: 0.003 – 644.00 kNm



FLEXOMAX GSN

FLEXOMAX is a family of torsional flexible couplings that are used for pumps and fans driven by electric motors. It is characterised by the claw design and the shaft to shaft connection type.

FEATURES

FLEXIBLE COUPLINGS > FLEXOMAX G, FLEXOMAX GBN, FLEXOMAX GSN

The three different designs available are FLEXOMAX G, FLEXOMAX GSN and FLEXOMAX GBN; each of which is developed to fulfill specific requirements in terms of nominal torque transmission, shock loads absorption, axial, radial and angular misalignments capacity. The elastic element of the three designs differs as regards material and geometry and this means that it complies with even the most demanding application requirements. FLEXOMAX is available in more than 30 different versions and 50 different sizes. This ensures it will fit the requirements of almost any application.

The FLEXOMAX coupling is suitable for reverse rotation and is typical of electric motor drives. The claws and elastic element design mean that FLEXOMAX is a low-maintenance product as it does not require any special type of servicing or maintenance. The wearing of the elastic element is minimised by the material used, which is NBR for FLEXOMAX G and polyurethane for FLEXOMAX GSN and GBN. FLEXOMAX is suitable for compensating axial, radial and angular misalignments due to thermal growth and dynamic misalignments of the machinery.

The modular design of the couplings allows the creation of specific versions to fit almost any kind of machinery, such as, for example, FLEXOMAX GH, with intermediate spool to enable the removal of the pump's impeller without the need to move the machinery. Other examples are the FLEXOMAX GGTB, GSND-TB and GBND-TB, which are provided with an integrated brake disc in order to properly accommodate the installation of a service or parking brake as well. The radial removal of the elastic element is a common feature of all FLEXOMAX G, GSN and GBN designs, so as to enable the most straightforward replacement of the element with minimum costs.

FLEXOMAX G: Nominal Torque Range: 0.02 to 48.60 kNm and shaft accommodation up to \varnothing 250 mm

FLEXOMAX GSN: Nominal Torque Range: 0.003 to 20.00 kNm and shaft accommodation up to \varnothing 250 mm

FLEXOMAX GBN: Nominal Torque Range: 3.6 to 64.44 kNm and shaft accommodation up to \varnothing 600 mm

PRODUCT KEY FACTS



- > Allows to compensate axial, radial and angular misalignments.
- > Limited maintenance required.
- > Protect the drivetrain from shockloads.



- > Modular design with high customisation degree possibilities.
- > Radial removability of the coupling without moving the connected machinery.
- > Possibility to integrate braking discs or pulleys within the coupling.



- > Available in different designs G-GSN-GBN to satisfy the most restricted applications' requirements.
- > Reverse functionality.
- > Compact design.

More products of this series:



FLEXOMAX G

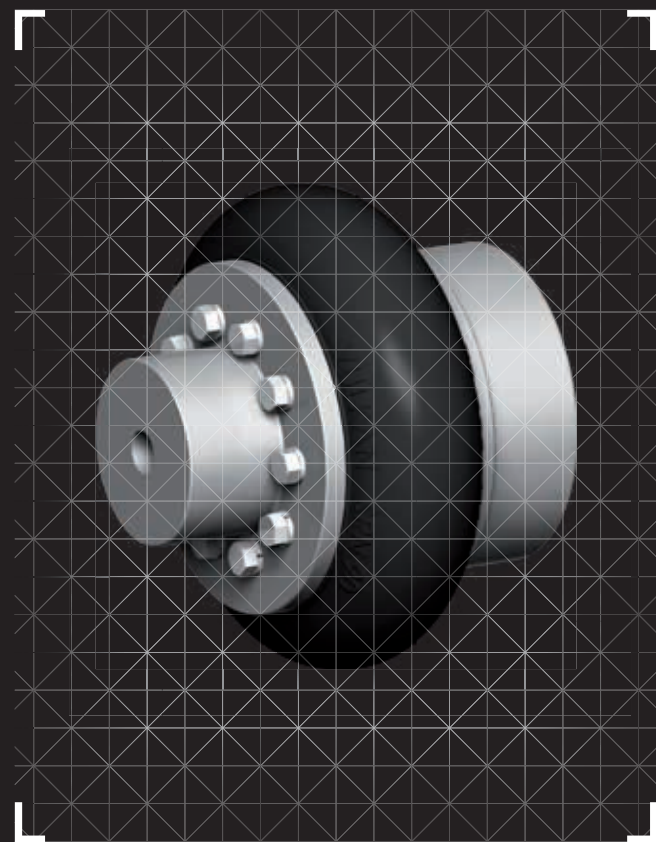


FLEXOMAX GBN



SPEFLEX

Nominal Torque Range: 0.04 – 2.50 kNm



SPEFLEX

The SPEFLEX coupling is particularly suitable for diesel and electric motor prime mover machinery which has difficult alignment characteristics that are compromised by vibrations or thermal expansion, high operating profiles, reversals and high static torque. Thanks to the high misalignment capacity of the elastic element, it is not necessary to achieve the perfect alignment of the connected shafts, which in turn reduces alignment costs and timing.

FEATURES

FLEXIBLE COUPLINGS > SPEFLEX

The SPEFLEX coupling consist of a rubber elastic element that is vulcanized to two flanges for easy bolts connection to prime mover and driven machinery. It combines high torsional flexibility with easy installation, guaranteeing high axial and angular misalignments within minimum reaction forces generation. It also protect the drivetrain from shock loads coming from the connected machinery. The elastic element is made of natural rubber and it's reinforced with syntetich fibers, which increase the strength of the element and make it particularly suitable for reversal operations. Furthermore, its design allows for radial replacement without moving the connected machinery. It is particularly suitable for all those applications having difficult alignment characteristics, compromised by vibrations or thermal expansion, high operating hours, reversal and high static torque. Thanks to the alignment capabilities of the elastic element, it is not nececeassry to achieve perfect alignment of the connected shafts thereby reducing alignment time and cost. SPEFLEX is available in six sizes and features several versions, with torque transmission capacity up to 5,000 Nm and shaft accommodation up to 125 mm diameter.

PRODUCT KEY FACTS



Efficiency

- > High axial and angular misalignment capacity.
- > Reverse functionality and high static torque support.
- > Shock absorption and vibration attenuation.



Tailor-made solutions

- > Suitable for applications with difficult alignment characteristics.
- > Shaft to shaft or shaft to flange connection possibilities.
- > Shaft accommodation up to 125 mm.



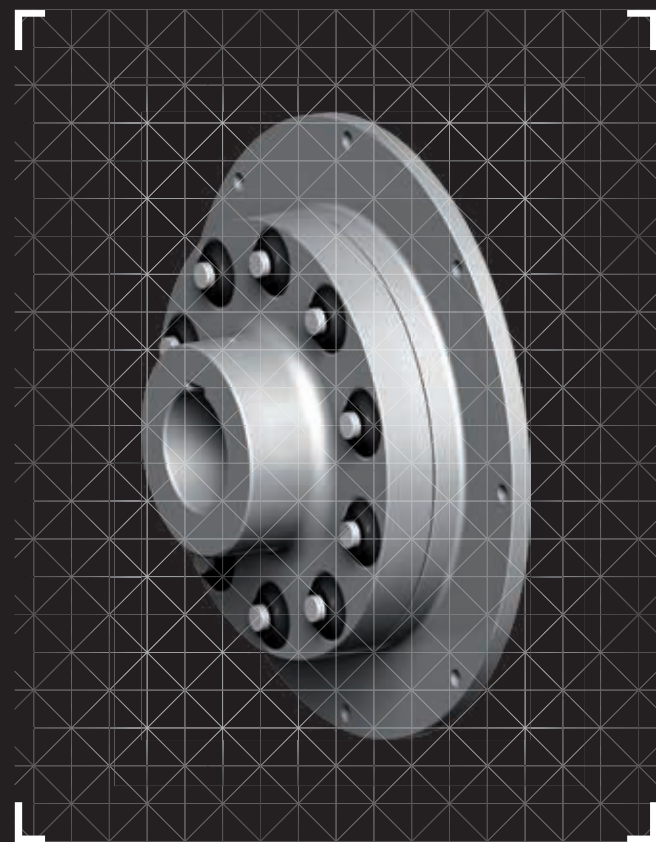
Design

- > Synthetic fabric reinforced element for long lasting.
- > Radial replacement of the elastic element.
- > Reduced number of components for easy installation and maintenance.



PINOFLEX

Nominal Torque Range: 1.30 – 8.70 kNm



PINOFLEX

The PINOFLEX is a pin coupling with a modular design. By changing the number of pins and the application force diameter, it is possible to design several sizes with different torque transmission capacity. The PINOFLEX is available for either shaft to shaft connection with electric motors or with shaft to J620 flywheel connection with a small diesel engine.

FEATURES

FLEXIBLE COUPLINGS > PINOFLEX

The PINOFLEX is composed of one hub (or flange) where the elastic pins are fixed and another hub where specific seats accommodate the elastic pins. The torque transmission is made through the elastic pins, which guarantees torsional vibration isolation and axial, radial and angular misalignment capacity. The stiffness of the pins has also been designed to compensate shock loads. The PINOFLEX design is very compact and particularly suitable for all machinery that requires short installation length. Furthermore, it is possible to remove the single pins without disassembling the coupling from the connected machinery.

It is a low-maintenance product that comes in three different versions and seven sizes with torque transmission capacity of up to 8.70 Nm and shafts accommodation up to \varnothing 130 mm and flywheel SAE 18" J620.

PRODUCT KEY FACTS



Efficiency

- > Plug-in design with minimum built-in length of the coupling.
- > Possibility to remove the elastic elements without disconnecting the machinery.
- > High shock loads damping capacity.



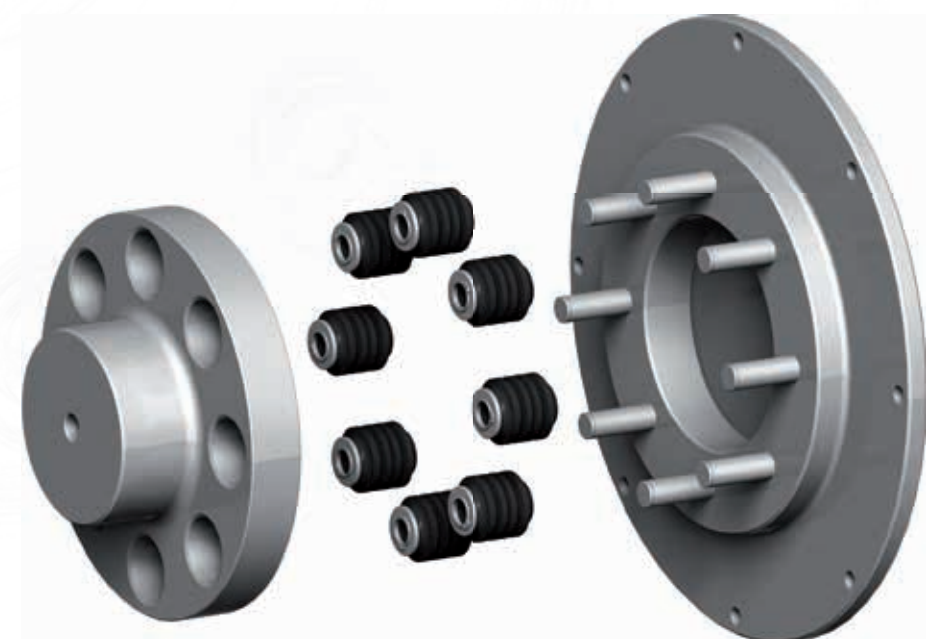
Tailor-made solutions

- > Shaft to shaft, or shaft to flange connection design available on demand.
- > Shaft to flywheel J620 SAE 8-14 inches available on demand.
- > Extra short installation design available on demand.



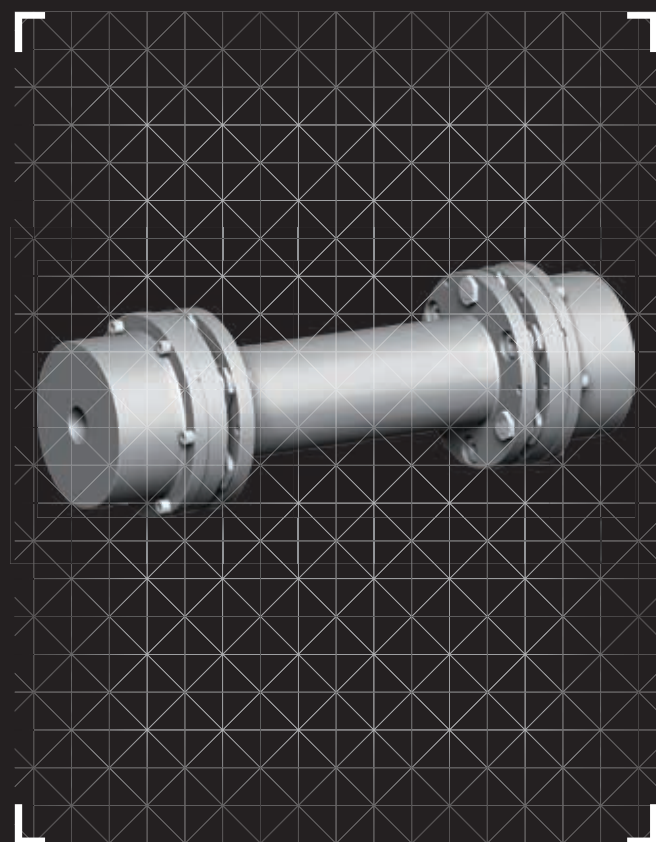
Design

- > Low number of components.
- > Modular design of the elastic elements.
- > Easy installation.



DISCFLEX

Nominal Torque Range: 0.12 – 13.00 kNm



DISCFLEX

The DISCFLEX coupling is suitable for those applications where a turbine is used as the prime mover. High rotational speed and torque transmission capacity within limited dimensions and weight are the major advantages of this product, together with the complete maintenance-free feature that is guaranteed by its materials.

FEATURES

RIGID COUPLINGS > DISCFLEX

DISCFLEX is also suitable when machinery is subjected to reversals and synchronous torque transmission requirements. It is a valid alternative to torsional flexible couplings in cases where environments are harsh on elastomers. Furthermore, DISCFLEX can withstand operating temperatures ranging from -40°C to 280°C. Finally, the DISCFLEX coupling complies with the API 610 Standard.

The DISCFLEX coupling is characterised by high torsional stiffness without backlash, high rotational speed capacity, high power transmission within limited dimensions and weight, and low axial and radial reaction forces. Furthermore, it is suitable for extreme and hostile environments. The flexible elements of the coupling are composed with stainless steel AISI 301 membranes packages, which are engineered by state-of-the-art FEM Analysis to guarantee the highest rate of misalignment capacity and torque transmission within the smallest dimensions and minimum reaction forces. Its modular design allows a wide range of customisations, which include and are not limited to the use of GFRP spools to guarantee the electrical isolation of the coupling itself. When the DISCFLEX is subjected to a nominal rotational speed over 3,800 rpm then the balancing of the coupling is according to API 671 and AGMA 9000.

The DISCFLEX coupling is available in nine versions and features 11 sizes with different spool length to properly fit the requirements of any application as regards DBSE.

PRODUCT KEY FACTS



Efficiency

- > Suitable for high speed shaft applications up to 25,000 rpm.
- > Synchronous torque transmission without backlash.
- > High torque transmission capacity, within limited dimensions and inertias.



Tailor-made solutions

- > Intermediate spool available in different length to cover any DBSE requirement.
- > Custom balancing of the parts according to international standards requirements.
- > Windage protection rings and shearing rings available on demand.



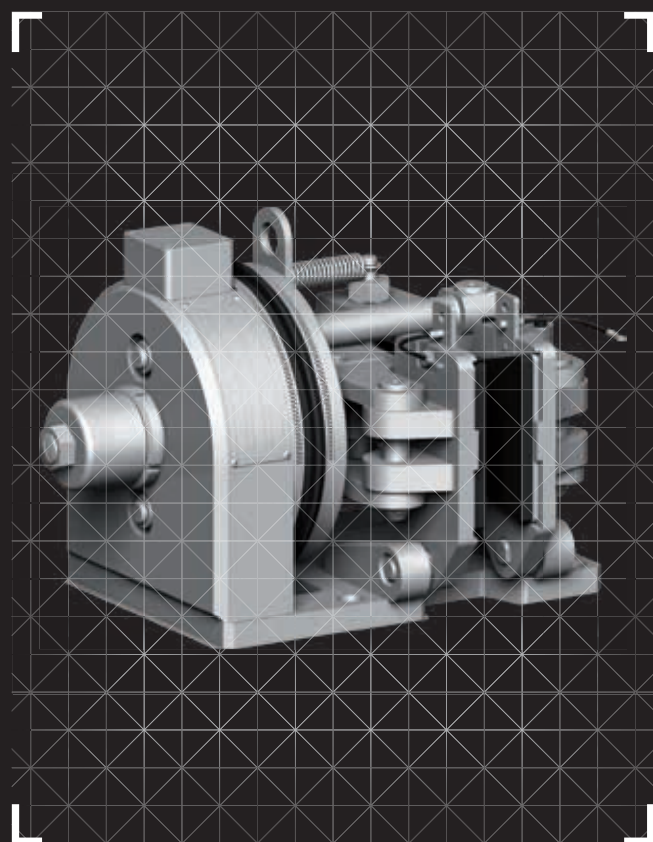
Design

- > Compliant to API 610 standard.
- > Stainless steel membrane packages optimize lifetime of the coupling and minimize service operation.
- > Suitable to operate within temperature range of -40° to +280°C.



ELECTROMAGNETIC BRAKES

Nominal Torque Range: 0.01 – 25.00 kNm



ELECTROMAGNETIC DISC BRAKE

Large fans machinery might require service and parking brakes due to the high inertias of the machinery components. VULKAN Drive Tech has a wide range of failsafe ELECTROMAGNETIC BRAKES used for this scope, which are specifically designed to comply with service, parking or emergency working profiles.

FEATURES

BRAKES > ELECTROMAGNETIC DISC BRAKES, ELECTROMAGNETIC DRUM BRAKES

Each brake model can be equipped with a variety of accessories to comply with the most demanding applications that require reliable product performances within the most extreme operating conditions. The VULKAN Drive Tech power supply portfolio completes the brakes product range that we are able to offer.

VULKAN Drive Tech ELECTROMAGNETIC BRAKES are failsafe brakes that are available in either disc or drum configuration (AISE 11 Standard). They have been designed to ensure a minimum operating reaction time of 0.2 seconds and to support repetitive braking operations up to 700 cycles per hour. Laboratory tests have shown that VULKAN Drive Tech brakes are maintenance-free for up to 4,000,000 cycles.

VULKAN Drive Tech offers the following main customisation possibilities: automatic lining wear compensation system, brakes position sensors, pads worn out sensors, automatic or manual brake release mechanism, organic and sintered pads that are asbestos-free. Furthermore, the complete range of solid and self-ventilated discs with integrated flexible couplings are also available and these complete the scope of supply.

Each brake is equipped with a power supply unit to operate it; as regards the calipers, the power supply units can also be equipped with different electric/electronic circuits to better suit the specific requirements of the applications.

PRODUCT KEY FACTS



Efficiency

- > Failsafe brake.
- > 0.2 seconds reaction time.
- > Maintenance free up to 4,000,000 cycles.



Tailor-made solutions

- > Left and right installation versions.
- > Brake and pads status monitoring available.
- > Braking torque tuning capacity.



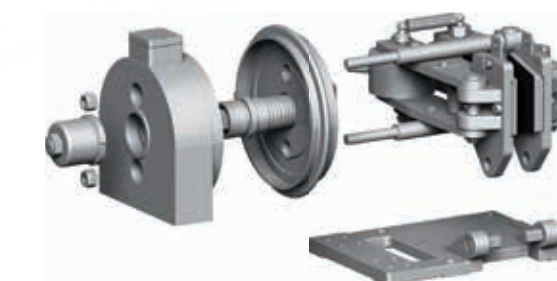
Design

- > Available in either disc or drum configuration.
- > Shunt or series coil available.
- > Automatic lining wear compensation system.

More products of this series:

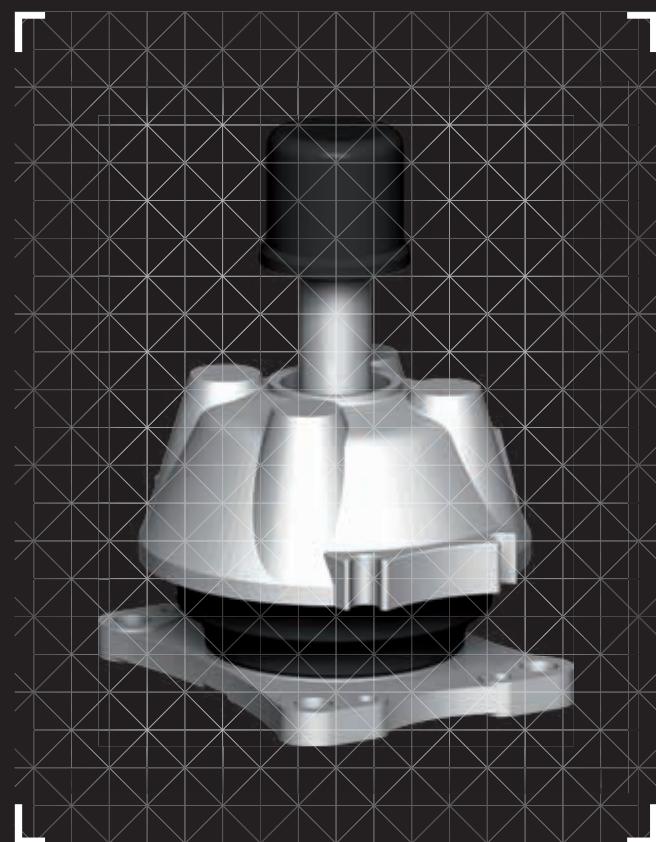


ELECTROMAGNETIC DRUM BRAKE



T SERIES

Nominal Load: 0.05 – 175.00 kN



T SERIES

VULKAN Drive Tech Resilient Mounts are available in both elastomeric or metal versions, in order to better suit the most demanding applications in terms of structural borne noise isolation.

FEATURES

RESILIENT MOUNTS > T SERIES, VD SERIES

With the help of the special rubber mix that uses an optimal combination of pull and push modes, the elastic mounts of VULKAN Drive Tech provide the ideal damping for vibrations for all conceivable machines and drive components: power take-off systems, generator units, compressors or even exhaust gas pipes. The conical and highly elastic mounts of the T SERIES have been developed especially for excellent vibration insulation and ease of installation.



Efficiency

- > High structural borne noise isolation within limited dynamic displacements.
- > Internal adjustable stud to prevent shock loads to the elastic element and to guarantee the mechanical fixing of the machinery to its foundation.
- > Elastic element protected by environmental contamination.



Tailor-made solutions

- > Elastic element available in different stiffness to better suit the vibration isolation requirements of the application.
- > Height adjustment device available on demand.
- > Preload setting of the mount to minimize creeping at installation.



Design

- > Linear stiffness characteristic to ensure best structural borne noise isolation.
- > Conical shape of the rubber element for better stability of the suspended machinery.
- > Elastic elements in different stiffness and with different number of vulcanised steel cones, in order tune the mount's stiffness to the specific needing of the application.

More resilient mounts are available:



VD SERIES



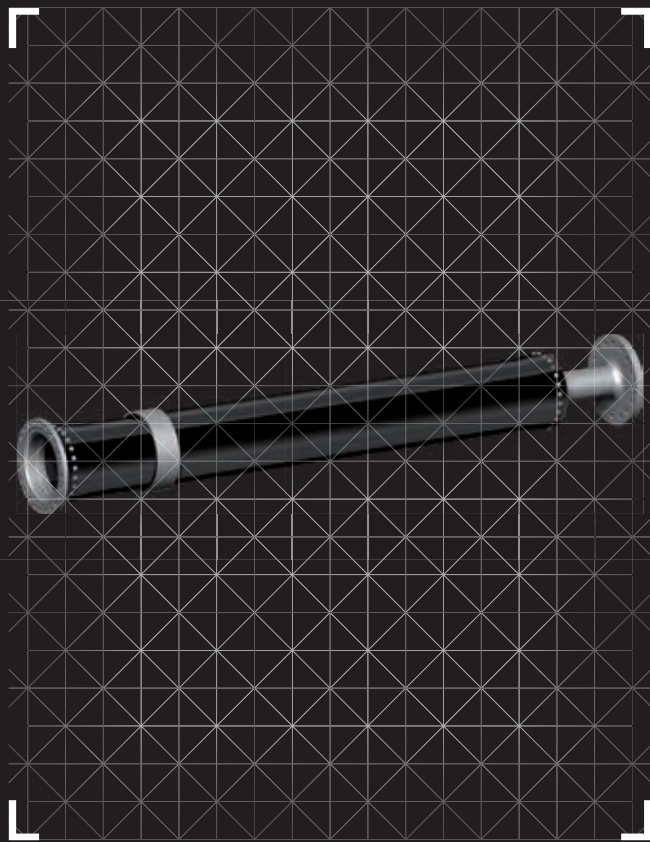
VDM SERIES



CV 2000 SERIES

COMPOSITE SHAFT

Nominal Torque Range: 5.00 – 800.00 kNm



COMPOSITE SHAFT

VULKAN Drive Tech COMPOSITE SHAFTS are developed for all of those applications where long distances between high speed machinery need to be bridged while minimizing weight impact, or when electrical isolation of the drivetrain is required.

FEATURES

DRIVELINE COMPONENTS > COMPOSITE SHAFT

COMPOSITE SHAFTS could then be coupled with the Disc Membrane package in order to also create a complete flexible coupling. Thanks to the customized project origin of this product, VULKAN Drive Tech is able to collect the requirements of the customer in order to proper develop a tailor made solution.

The VULKAN Drive Tech COMPOSITE SHAFT System (CS-System) consists of a VULKAN Drive Tech Composite shaft with steel adapters, steel intermediate shafts, bearings, bulkhead seals and - as an option - misalignment couplings like VULKAN Drive Tech DISCFLEX, METAFLEX, METADISC or steel membrane couplings. VULKAN Drive Tech CS-Systems can also be combined with all types of VULKAN Drive Tech highly flexible torsional couplings or other driveline components. They are available in a filament wound carbon or glass fiber structure in a torque range from 5 to 800 kNm and diameters from 170 to 670 mm and different length configurations.

COMPOSITE Shafts with higher torque capacity can be supplied upon request. Depending on speed resp. critical speed, long spans between bearing supports can be bridged. The CS-System can be supplied in high torsional (T) or high bending stiffness (B) layout of CFRP (Carbon Fiber Reinforced Plastics) or GFRP (Glass Fiber Reinforced Plastic). Each single custom shafting can be tested within our facility test lab, which can operate up to a maximum of 5,000 kNm torque testing.

PRODUCT KEY FACTS



Efficiency

- > Light-weight and high strength of the shaft.
- > Electrical isolation of the drivetrain.
- > High torque transmission within limited dimensions.



Tailor-made solutions

- > Complete engineering & project development.
- > System solution integration: composite shafting with integrated flexible couplings.
- > CFRP or GFRP solutions available.



Design

- > Available in either high torsional stiffness or high bending stiffness design.
- > Optimized connections between shaft and metal parts.
- > In-house testing 1:1 up to 5,000 kNm nominal torque.



> NOTES



PRODUCT RANGE

For Pumps and Fans



5 **VULASTIK L**
PAGE 08



6 **VULKARDAN E**
PAGE 10



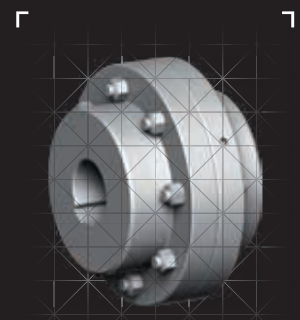
7 **VULKARDAN L**
PAGE 12



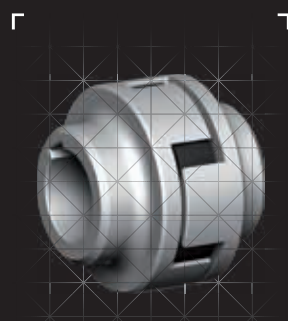
8 **VULKARDAN P**
PAGE 12



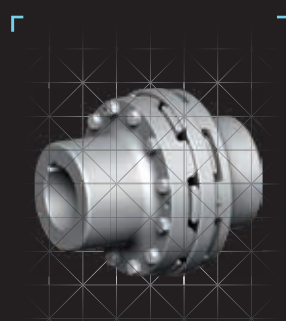
10 **MEGIFLEX B**
PAGE 14



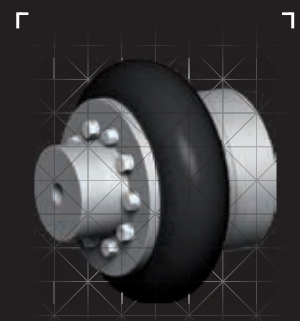
11 **FLEXOMAX G**
PAGE 16



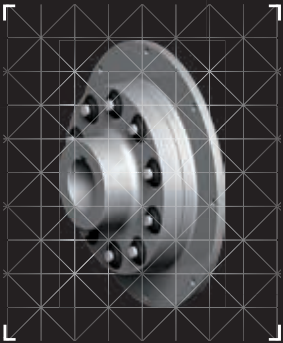
12 **FLEXOMAX GSN**
PAGE 16



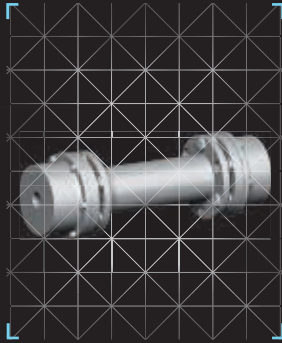
13 **FLEXOMAX GBN**
PAGE 16



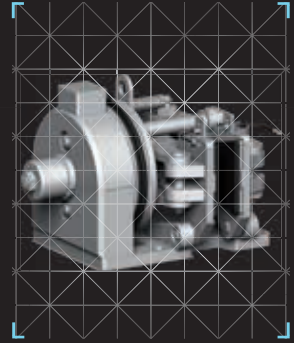
14 **SPEFLEX**
PAGE 18



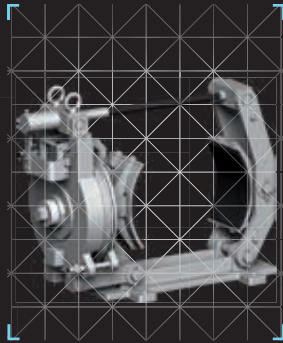
15 **PINOFLEX**
PAGE 20



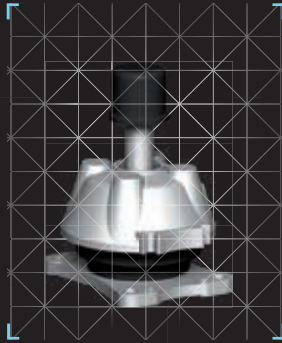
17 **DISCFLEX**
PAGE 22



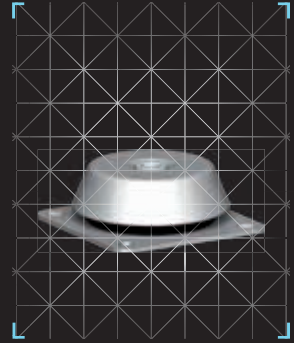
18 **ELECTROMAGNETIC
DISC BRAKE**
PAGE 24



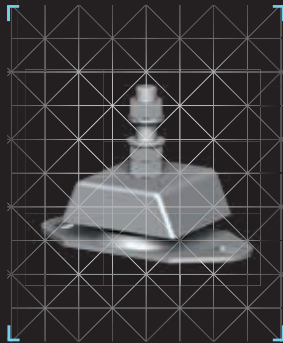
19 **ELECTROMAGNETIC
DRUM BRAKE**
PAGE 24



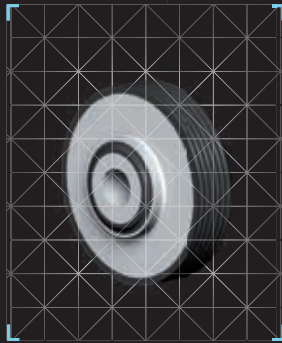
27 **T SERIES**
PAGE 26



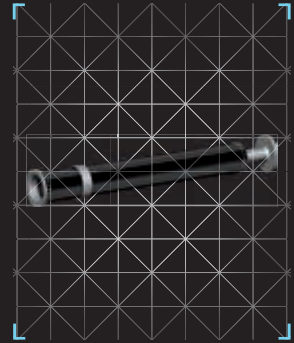
28 **VD SERIES**
PAGE 26



29 **VDM SERIES**
PAGE 26



30 **CV 2000 SERIES**
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31 **COMPOSITE
SHAFT**
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