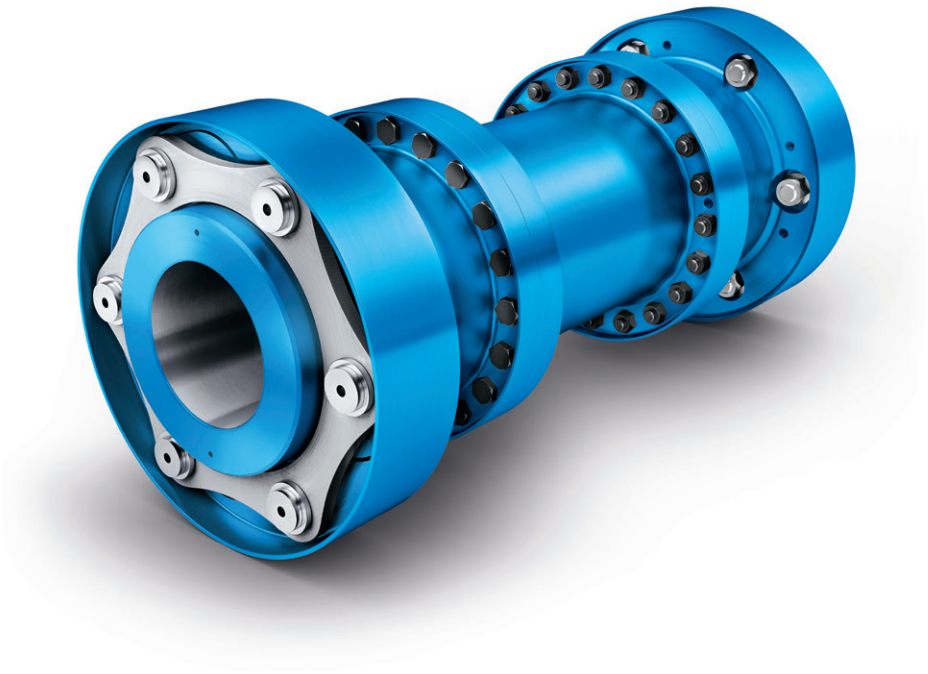
FLENDER COUPLINGS
CATALOG **FLE 10.5**
EDITION 2024.1 EN



HIGH PERFORMANCE COUPLINGS

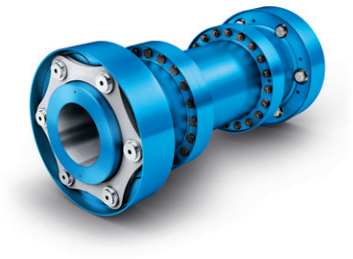
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HIGH PERFORMANCE COUPLINGS ARPEX



Introduction

High Performance Couplings

Appendix

Catalog FLE 10.5 Edition 2024.1 EN

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001 (Certified Registration No. 01 100 000708). The certificate is recognized by all IQNet countries.

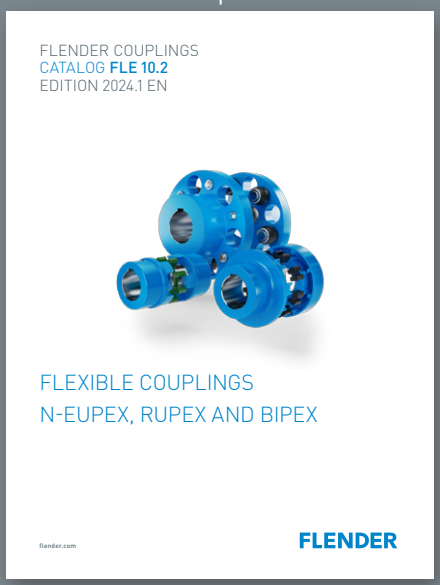
FLE 10 CATALOG GROUP



Product catalog FLE 10.1
FLEX-C10001-00-7600
Torsionally Rigid Couplings



Product catalog FLE 10.3
FLEX-C10003-00-7600
Highly Flexible Couplings



Product catalog FLE 10.2
FLEX-C10001-00-7600
Flexible Couplings



Product catalog FLE 10.4
FLEX-C10004-00-7600
Fluid Couplings

For further coupling catalogs, see page A/6



Product catalog FLE 10.5
FLEX-C10120-00-7600
High Performance Couplings



Product catalog FLE 10.7
FLEX-C10122-00-7600
Safety couplings



Product catalog FLE 10.6
FLEX-C10121-00-7600
Backlash-free couplings



Product catalog FLE 10.8
FLEX-C10152-7600
Clamping elements

INTRODUCTION

The mechanical drive train comprises individual units such as motor, gear unit and driven machine. The coupling connects these component assemblies.
As well as the transmission of rotary motion and torque, other requirements may be made of the coupling.

- Compensation for shaft misalignment with low restorative forces
- Control of characteristic angular vibration frequency and damping
- Interruption or limitation of torque
- Noise insulation, electrical insulation

Couplings are frequently chosen after the machines to be connected have already been selected. Thanks to a large number of different coupling assembly options, specified marginal conditions for clearance and connection geometry can be met from the standard range. The coupling also performs secondary functions, e.g. providing a brake disk or brake drum for operating or blocking brakes, devices to record speed or the attachment of sprockets or pulleys.

Couplings are divided into two main groups, couplings and clutches.

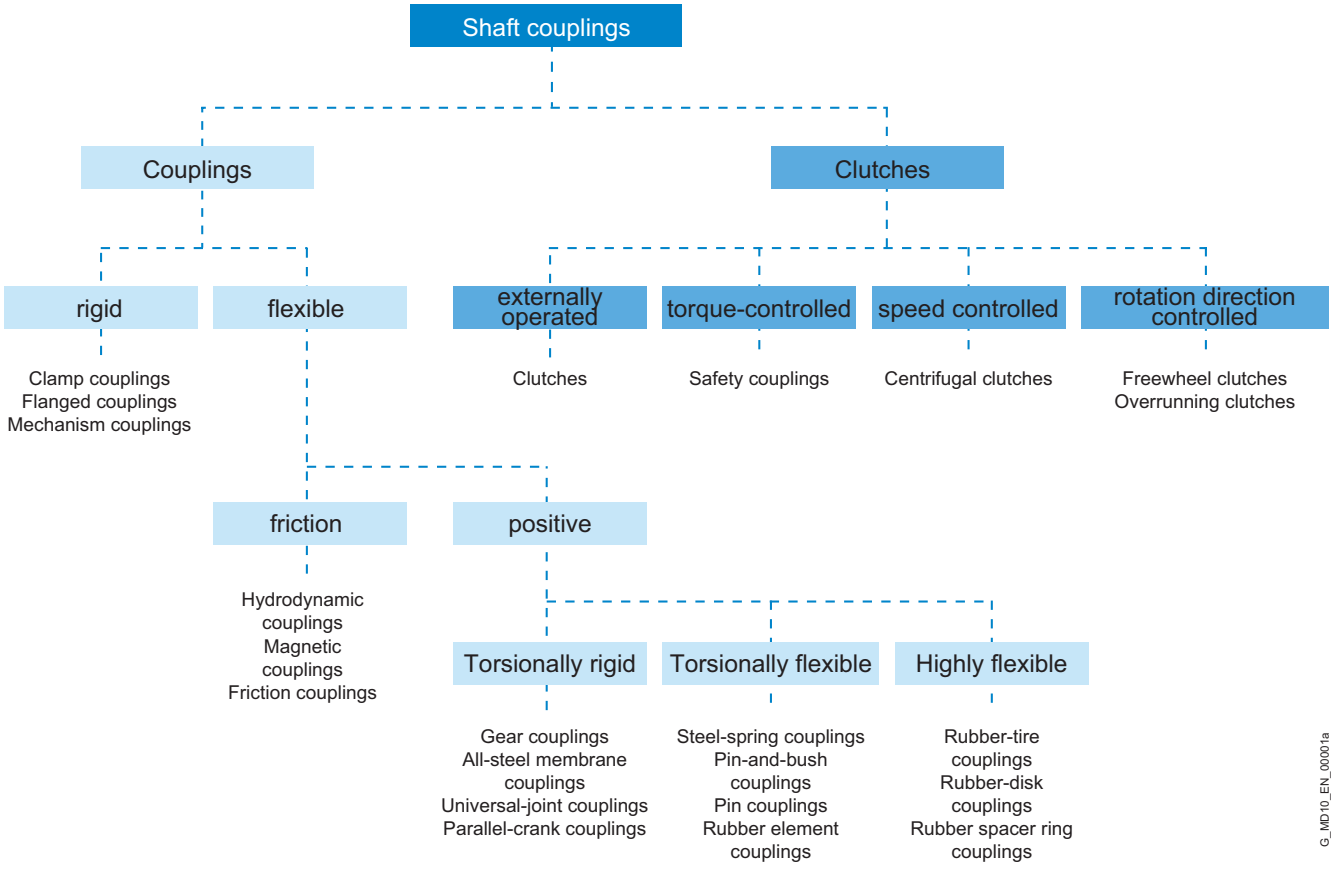
Clutches interrupt or limited the transmissible torque. The engaging and disengaging forces on externally operated clutches are introduced via a mechanically, electrically, hydraulically or pneumatically operating mechanism. Overload, centrifugal or freewheel clutches draw their engaging energy from the transmitted output.

Rigid couplings, designed as clamp, flanged or mechanism couplings, connect machines which must not undergo any shaft misalignment. Hydrodynamic couplings, often also called fluid or Föttinger couplings, are used as starting couplings in drives with high mass moments of inertia of the driven machine. In drive technology very often flexible, positive couplings, which may be designed to be torsionally rigid, torsionally flexible or highly flexible, are used.

Torsionally rigid couplings are designed to be rigid in a peripheral direction and flexible in radial and axial directions. The angle of rotation and torque are conducted through the coupling without a phase shift.

Torsionally flexible couplings have resilient elements usually manufactured from elastomer materials. Using an elastomer material with a suitable ShoreA hardness provides the most advantageous torsional stiffness and damping for the application. Shaft misalignment causes the resilient elements to deform.

Highly flexible couplings have large-volume (elastomer) resilient elements of low stiffness. The angle of rotation and torque are conducted through the coupling with a considerable phase shift.


Shaft couplings
Couplings
Clutches
rigid
flexible
externally operated
torque-controlled
speed controlled
rotation direction controlled
Clamp couplings
Flanged couplings
Mechanism couplings
Clutches
Safety couplings
Centrifugal clutches
Freewheel clutches
Overrunning clutches
friction
positive
Hydrodynamic couplings
Magnetic couplings
Friction couplings
Torsionally rigid
Torsionally flexible
Highly flexible
Gear couplings
All-steel membrane couplings
Universal-joint couplings
Parallel-crank couplings
Steel-spring couplings
Pin-and-bush couplings
Pin couplings
Rubber element couplings
Rubber-tire couplings
Rubber-disk couplings
Rubber spacer ring couplings
G_MD10_EN_0001a

OUR COUPLING GROUPS AT A GLANCE

N-EUPEX, RUPEX and BIPEX

Flexible Couplings

Flexible Flender couplings have a wide range of possible applications. A broad standard modular system as well as specially designed application-specific couplings are available.



N-EUPEX
cam couplings
Rated torque:
12 Nm ... 93,500 Nm



RUPEX
pin-and-bush couplings
Rated torque:
120 Nm ... 1,690,000 Nm



BIPEX
cam couplings
Rated torque:
21 Nm ... 5,100 Nm

ELPEX, ELPEX-B and ELPEX-S

Highly Flexible Couplings

ELPEX® couplings are free of circumferential back-lash. Their damping capacity and low torsional stiff-ness make them especially well-suited for coupling machines with strongly non-uniform torque characteristics or large shaft misalignment.



ELPEX
elastic ring couplings
Rated torque:
1,600 Nm ... 90,000 Nm



ELPEX-B
elastic tire couplings
Rated torque:
57 Nm ... 19,000 Nm



ELPEX-S
rubber disk couplings
Rated torque:
200 Nm ... 63,000 Nm

ZAPEX gear couplings and ARPEX all-steel couplings

Torsionally rigid couplings

For transmission of high torques, we offer both ARPEX all-steel couplings and ZAPEX gear couplings in a range of versions. Their purposes of application vary according to specific requirements with respect to shaft misalignment, temperature and torque.



ZAPEX
gear couplings
Rated torque:
1,020 Nm ... 7,200,000 Nm



ARPEX
high Performance Couplings
Rated torque:
1,100 Nm ... 936,000 Nm



N-ARPEX and ARPEX
all-steel couplings
Rated torque:
92 Nm ... 2,000,000 Nm

BIPEX-S and SIPEX

Backlash-free couplings

The vibration-damping, electrically insulating plug-in BIPEX-S elastomer couplings and SIPEX metal bellows couplings with very high torsional stiffness deliver especially isogonal torque transmission.



BIPEX-S and SIPEX
Rated torque:
0.1 Nm ... 5,000 Nm

FLUDEX

Hydrodynamic couplings

The FLUDEX hydrodynamic fluid coupling works according to the Föttinger principle. It functions entirely free of wear.



FLUDEX
fluid Couplings
Power:
1.2 kW ... 2,500 kW

Application-specific couplings

Couplings for rail vehicles must meet high demands. Due to their high degree of standardization and wide variety, they can be used in the most diverse vehicle types.



Railway coupling
Rated torque:
1,000 Nm ... 9,500 Nm

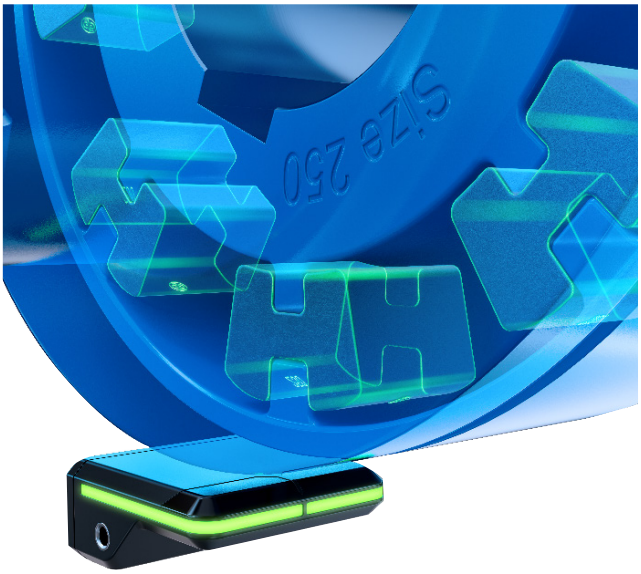
Each wind turbine coupling is designed to optimally meet the requirements of the respective wind turbine. The coupling connects the fast-running gear shaft with the generator shaft and is available for wind turbines with a capacity of up to 12 MW.



Wind turbine couplings
Rated torque:
10,000 Nm ... 60,000 Nm

AIQ DETECT

for wear detection on the N-EUPEX and RUPEX



The AIQ Detect uses several Hall sensors to determine the wear on the flexible Flender couplings of the N-EUPEX and RUPEX via sensor magnets installed on the coupling side. The progressive wear of the elastomer components of the RUPEX and N-EUPEX results in a torsion angle between the coupling halves. This angle of rotation and the resulting time difference between the coupling halves make it possible to detect the degree of wear of the RUPEX and N-EUPEX flexible couplings. The speed of the coupling is also determined.

This information can be evaluated in the customer's control system via analogue and digital outputs that can be configured by the customer. The AIQ Detect also enables the wear status to be output via the built-in LED light strip on the sensor (green = the wear status is OK, yellow = the elastomer components must be replaced, red = the drivetrain must be stopped). This information can also be analyzed and displayed via a Bluetooth interface with a mobile device using the AIQ app.

Benefits:

- Continuous wear monitoring
- Coupling status at a glance
- Prevents system failures = maximum operational reliability
- Supports service and maintenance personnel
- Waste reduction (replacement of elastomers only if necessary)
- No annual testing of elastomers necessary
- Flexible and easy to use

Functions:

- Detects wear on elastomers
- Speed measurement
- Remaining life forecast
- Coupling failure detection
- Configurable output signals
- Firmware upgrades via AIQ app

Coupling	Types	Size	Article No.
N-EUPEX	A, B, B with clamping elements, H	80 – 140	F2E01528467
		160 – 280	F2E01528468
		315 – 710	F2E01528469
RUPEX	RWN, RWS	105 – 1120	F2E01528472
		1250 – 2000	F2E01528473

Notes

- The AIQ Detect is used for continuous wear monitoring of Flender N-EUPEX and RUPEX couplings and can be ordered as an accessory to the coupling
- Make sure that the Flender coupling has the 'AIQ Detect-ready' status (see ordering example)

Ordering example

- N-EUPEX coupling A, size 110 with the status "AIQ Detect-ready" (Article No. addition A99)
- AIQ Detect for wear monitoring of N-EUPEX coupling A, size 110

Article No. N-EUPEX: **2LC0170-4AB99-0AA0-Z L0M+M0P+A99**

Article No. AIQ Detect: **F2E01528467 (according to the table)**

TECHNICAL INFORMATION AND COUPLING SELECTION

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Coupling load at maximum and overload conditions E/21
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Checking permitted shaft misalignment E/22
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Coupling behavior under overload conditions E/22
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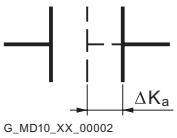
TECHNICAL INFORMATION

Shaft misalignment

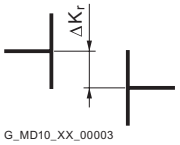
Shaft misalignment is the result of displacement during assembly and operation and, where machines constructed with two radial bearings each are rigidly coupled, will cause high loads being placed on the bearings. Elastic deformation of base frame, foundation and machine housing will lead to shaft misalignment which cannot be prevented, even by precise alignment.

Furthermore, because individual components of the drive train heat up differently during operation, heat expansion of the machine housings causes shaft misalignment. Poorly aligned drives are often the cause of seal, rolling bearing or coupling failure. Alignment should be carried out by specialist personnel in accordance with operating instructions.

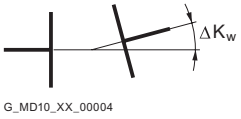
Depending on the direction of the effective shaft misalignment a distinction is made between:



Axial misalignment



Radial misalignment



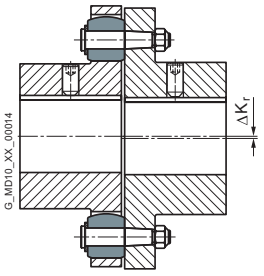
Angular misalignment

Couplings can be categorized into one of the following groups:

Single-joint couplings

Couplings with flexible elements mainly made of elastomer materials. Shaft misalignment results in deformation of the elastomer elements. The elastomer elements can absorb shaft misalignment as deformations in an axial, radial and angular direction. The degree of permissible misalignment depends on the coupling size, the speed and the type of elastomer element.
Single-joint couplings do not require an adapter and are therefore short versions.

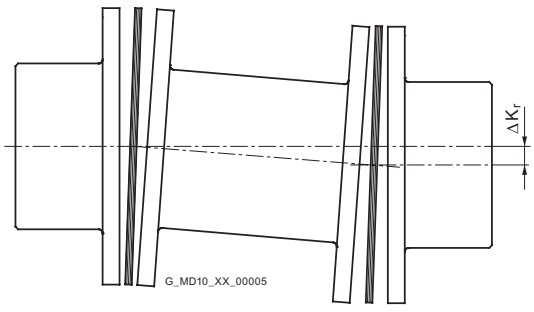
Example:
In the case of a RUPEX RWN 198 coupling with an outer diameter of 198 mm and a speed of 1500 rpm, the permitted radial misalignment is Δ_{Kr} = 0.3 mm.



Two-joint couplings

Two-joint couplings are always designed with an adapter. The two joint levels are able to absorb axial and angular misalignment. Radial misalignment occurs via the gap between the two joint levels and the angular displacement of the joint levels. The permitted angular misalignment per joint level is frequently about 0.5°. The permitted shaft misalignment of the coupling can be adjusted via the length of the adapter. If there are more than two joint levels, it is not possible to define the position of the coupling parts relative to the axis of rotation. (The less frequently used parallel-crank couplings are an exception).

Example:
N-ARPEX ARN-6 NEN 217-6 with a shaft distance of 140 mm with a permitted radial misalignment of ΔK_r = 2.2 mm (angle per joint level 1.0°).



Balancing

Balance quality levels
The so-called quality level G to DIN ISO 21940 indicates a range of permitted residual imbalance from zero up to an upper limit. Applications can be grouped on the basis of similarity analysis. For many applications a coupling balance quality of G 16 is sufficient. On drives susceptible to vibration the balance quality should be G 6.3. Only in special cases is a better balance quality required.

Balancing standard in accordance with DIN ISO 21940-32
Besides the required balance quality, it is necessary to set standards which define how the mass of the parallel key is to be taken into consideration when balancing. In the past, motor rotors have frequently been balanced in accordance with the full parallel key standard. The "appropriate" balance condition of the coupling hub was described as "balancing with open keyway" or "balancing after keyseating". Today it is usual for the motor rotor, as well as the gear unit and driven machine shaft, to be balanced in accordance with the half parallel key standard.

Full parallel key standard

The parallel key is inserted in the shaft keyway, then balancing is carried out. The coupling hub must be balanced without parallel key after keyseating.

Marking of shaft and hub with "F" (for "full").

Half parallel key standard

The balancing standard normally applied today. Before balancing, a half parallel key is inserted in the shaft and another in the coupling hub. Alternatively, balancing can be carried out before cutting the keyway.

The balanced parts must be marked with an "H". This marking can be dispensed with if it is absolutely clear which parallel key standard has been applied.

No parallel key standard

Balancing of shaft and coupling hub after keyseating, but without parallel key. Not used in practice. Marking of shaft and hub with "N" (for "no").
The length of the parallel key is determined by the shaft keyway. Coupling hubs may be designed considerably shorter than the shaft.

To prevent imbalance forces caused by projecting parallel key factors when balancing in accordance with the half parallel key standard in the case of applications with high balancing quality requirements, grooved spacer rings can be fitted or stepped parallel keys used.

Flender Balancing Standard

The balancing quality level, together with the operating speed, results in the maximum permissible eccentricity of the center of gravity of the coupling or the coupling subassembly. In the Flender article number the balancing quality can be preset with the help of the order code. Additionally, also the balance quality level to DIN ISO 21940 can be preset together with the operating speed belonging to it, which then be taken as priority.

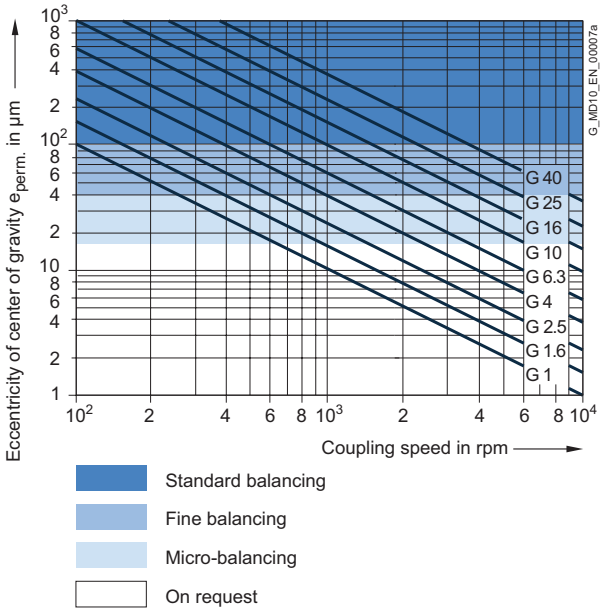
$$e_{perm} = 9550 \cdot \frac{G}{n}$$

$$e_{coupl} \leqslant e_{perm}$$

Permitted eccentricity of center of gravity	e_{perm}	in µm
Eccentricity of center of gravity of coupling	e_{coupl}	in µm
Balancing quality level	G	in mm/s
Coupling speed	n	in rpm

Eccentricity of center of gravity of coupling e_{coupl}	Flender balancing quality	Order code
maximum 100 µm	standard balancing	without specification
maximum 40 µm	fine balancing	W02
maximum 16 µm	micro-balancing	W03
better than 16 µm	special balancing	on request

TECHNICAL INFORMATION



Example:
Coupling speed = 1450 rpm
required balancing quality level G 6.3

$$e_{perm} = 9550 \cdot \frac{G}{n} = 9550 \cdot \frac{6.3}{1450}\ \mu m$$

Thus, the required eccentricity of center of gravity is 41.5 µm. The fine balancing with a maximum eccentricity of center of gravity of 40 mm fulfills this requirement; therefore, the order code W02 has to be specified when ordering.

For many applications the following balancing quality recommendation applies:

Coupling	standard balancing $v = DA \cdot n/19100$	fine balancing
short version with LG ⩽ 3 × DA	v ⩽ 30 m/s	v > 30 m/s
long version with LG > 3 × DA	v ⩽ 15 m/s	v > 15 m/s

Peripheral speed	v	in mm/s
Coupling outer diameter	DA	in mm
Coupling speed	n	in rpm
Coupling length	LG	in mm

The following standards on balancing must be observed:

- couplings are balanced in subassemblies.
- hub parts without finished bore are unbalanced.
- the number of balancing levels (one- or two-level balancing) is specified by Flender.
- without special specification balancing is done in accordance with the half-parallel-key standard. Balancing in accordance with the full-parallel-key standard must be specified in the order number.
- For FLUDEX couplings special balancing standards specified in Section 13 apply.
- ARPEX couplings in standard balancing quality are unbalanced. Thanks to steel components machined all over and precisely guided adapters the balancing quality of standard balancing is nearly always adhered to.

Shaft-hub connections

The bore and the shaft-hub connection of the coupling are determined by the design of the machine shaft. In the case of IEC standard motors, the shaft diameters and parallel key connections are specified in accordance with DIN EN 50347. For diesel motors, the flywheel connections are frequently specified in accordance with SAE J620d or DIN 6288. Besides the very widely used connection of shaft and hub with parallel keys to DIN 6885 and cylindrically bored hubs, couplings with Taper clamping bushes, clamping sets, shrink-fit connections and splines to DIN 5480 are common.

The form stability of the shaft/hub connection can only be demonstrated when shaft dimensions and details of the connection are available. The coupling torques specified in the tables of power ratings of the coupling series do not apply to the shaft-hub connection unrestrictedly.

In the case of the shaft-hub connection with parallel key, the coupling hub must be axially secured, e.g. with a set screw or end washer. The parallel key must be secured against axial displacement in the machine shaft.

All Flender couplings with a finished bore and parallel keyway are designed with a set screw. Exceptions are some couplings of the FLUDEX series, in which end washers are used. During assembly, Taper clamping bushes are frictionally connected to the machine shaft.

TECHNICAL INFORMATION

Standards

Machines

2006/42/EG	EC Machinery Directive
2014/34/EU	ATEX Directive – Manufacturer
1999/92/EG	ATEX Directive – Operator – and ATEX Guideline to Directive 1999/92/EC
DIN EN 80079-36	Non-electrical equipment for use in potentially explosive atmospheres
DIN EN 1127	Explosive atmospheres, explosion prevention and protection
DIN EN 50347	General-purpose three-phase induction motors having standard dimensions and outputs

Couplings

DIN 740	Flexible shaft couplings Part 1 and Part 2
VDI Guideline 2240	Shaft couplings - Systematic subdivision according to their properties VDI Technical Group Engineering Design 1971
API 610	Centrifugal Pumps for Petroleum, Chemical and Gas Industry Services
API 671	Special Purpose Couplings for Petroleum, Chemical and Gas Industry Services
ISO 10441	Petroleum, petrochemical and natural gas industries – Flexible couplings for mechanical power transmission-special-purpose applications
ISO 13709	Centrifugal pumps for petroleum, petrochemical and natural gas industries

Balancing

DIN ISO 21940	Requirements for the balancing quality of rigid rotors
DIN ISO 21940-32	Mechanical vibrations; standard governing the type of parallel key during balancing of shafts and composite parts

Shaft-hub connections

DIN 6885	Driver connections without taper action – parallel keys – keyways
SAE J620d	Flywheels for industrial engines ...
DIN 6288	Reciprocating internal combustion engines Dimensions and requirements for flywheels and flexible couplings
ASME B17.1	Keys and keyseats
DIN EN 50347	General-purpose three-phase induction motors with standard dimensions and output data
BS 46-1:1958	Keys and keyways and taper pins Specification

Key to symbols

Name	Symbols	Unit	Explanation
Torsional stiffness, dynamic	C_{Tdyn}	Nm/rad	For calculating torsional vibration
Excitation frequency	f_{err}	Hz	Excitation frequency of motor or driven machine
Moment of inertia	J	kgm^2	Moment of inertia of coupling sides 1 and 2
Axial misalignment	ΔK_a	mm	Axial misalignment of the coupling halves
Radial misalignment	ΔK_r	mm	Radial misalignment of the coupling halves
Angular misalignment	ΔK_w	°	Angular misalignment of the coupling halves
Service factor	FB		Factor expressing the real coupling load as a ratio of the nominal coupling load
Frequency factor	FF		Factor expressing the frequency dependence of the fatigue torque load
Temperature factor	FT		Factor taking into account the reduction in strength of flexible rubber materials at a higher temperature
Weight	m	kg	Weight of the coupling
Rated speed	n_N	rpm	Coupling speed
Maximum coupling speed	n_{Kmax}	rpm	Maximum permissible coupling speed
Rated power	P_N	kW	Rated output on the coupling, usually the output of the driven machine
Rated torque	T_N	Nm	Rated torque as nominal load on the coupling
Fatigue torque	T_W	Nm	Amplitude of the dynamic coupling load
Maximum torque	T_{max}	Nm	More frequently occurring maximum load, e.g. during starting
Overload torque	T_{OL}	Nm	Very infrequently occurring maximum load, e.g. during short circuit or blocking conditions
Rated coupling torque	T_{KN}	Nm	Torque which can be transmitted as static torque by the coupling over the period of use.
Maximum coupling torque	T_{Kmax}	Nm	Torque which can be frequently transmitted (up to 25 times an hour) as maximum torque by the coupling.
Coupling overload torque	T_{KOL}	Nm	Torque which can very infrequently be transmitted as maximum torque by the coupling.
Fatigue coupling torque	T_{KW}	Nm	Torque amplitude which can be transmitted by the coupling as dynamic torque at a frequency of 10 Hz over the period of use.
Resonance factor	V_R		Factor specifying the torque increase at resonance
Temperature	T_a	°C	Ambient temperature of the coupling in operation
Damping coefficient	Ψ	psi	Damping parameter

SELECTION OF THE COUPLING SERIES

The coupling series is frequently determined by the driven machine and the design of the drive train. Common selection criteria are listed below and assigned to coupling properties, which are used to select the coupling series. Additionally, the price of the coupling and availability are important criteria for determining the coupling series to be used.

The FLUDEX series operates positively and transmits the torque with the aid of a flowing oil or water filling.

FLUDEX couplings are used to reduce starting and/or overload torques. During starting, the motor may, for example, run up within a very short time; because of the FLUDEX coupling, the drive train with the driven machine may accelerate after a delay and without increased torque load.

The FLUDEX coupling cannot compensate for shaft misalignment and is therefore designed in combination with a displacement coupling, a cardan shaft or a belt drive. The displacement coupling may be selected in accordance with the criteria described below.

Selection criteria	Torque range Rated coupling torque T_{KN}	Speed range Peripheral speed $v_{max} = DA \cdot n_{max}/19100$	Torsional stiffness torsionally rigid	 torsionally flexible	 Highly flexible	Operating temperature range
ZAPEX	1020 ... 7200000 Nm	60 m/s	■	–	–	-20 ... +80 °C
N-ARPEX	350 ... 2000000 Nm	110 m/s	■	–	–	-50 ... +280 °C
N-EUPEX	12 ... 93500 Nm	36 m/s	–	■	–	-50 ... +100 °C
N-EUPEX DS	19 ... 21200 Nm	36 m/s	–	■	–	-30 ... +80 °C
RUPEX	120 ... 1690000 Nm	60 m/s	–	■	–	-50 ... +100 °C
BIPEX	21 ... 5100 Nm	40 m/s	–	■	–	-50 ... +100 °C
ELPEX-B	57 ... 19000 Nm	45 m/s	–	–	■	-50 ... +70 °C
ELPEX-S	200 ... 63000 Nm	66 m/s	–	–	■	-40 ... +120 °C
ELPEX	1600 ... 90000 Nm	60 m/s	–	–	■	-40 ... +80 °C

Typical coupling solutions for different example applications

The specified application factors are recommendations; regulations, rules and practical experience take priority as assessment criteria.
No application factor need be taken into account with FLUDEX couplings.

In the case of highly flexible couplings of the ELPEX, ELPEX-S and ELPEX-B series, deviating application factors are stated in the product descriptions.
FLUDEX couplings are mostly mounted on the high-speed gear shaft.

Example applications	Application factor FB
Electric motor without gear unit	
Centrifugal pumps	1.0
Piston pumps	1.5
Vacuum pumps	1.5
Fans with T_N less than 75 Nm	1.5
Fans with T_N from 75 to 750 Nm	1.75
Fans with T_N larger than 750 Nm	1.75
Blowers	1.5
Frequency converters / generators	1.25
Reciprocating compressors	1.75
Screw-type compressors	1.5
Internal-combustion engine without gear unit	
Generators	1.75
Pumps	1.5
Fans	1.75
Hydraulic pumps, excavators, construction machines	1.5
Compressors / screw-type compressors	1.5
Agricultural machinery	1.75
Other	
Turbine gear units	1.5
Hydraulic motor - gear unit	1.25
Electric motor with gear unit	
Chemical industry	
Extruders	1.5
Pumps - centrifugal pumps	1.0
Pumps - piston pumps	1.75
Pumps - plunger pumps	1.5
Reciprocating compressors	1.75
Calenders	1.5
Kneaders	1.75
Cooling drums	1.25
Mixers	1.25
Stirrers	1.25
Toasters	1.25
Drying drums	1.25
Centrifuges	1.25
Crushers	1.5
Power generation and conversion	
Compressed air, reciprocating compressors	1.75
Compressed air, screw-type compressors	1.25
Air - Blowers	1.5
Air - Cooling tower fans	1.5
Air - Turbine blowers	1.5
Generators, converters	1.25
Welding generators	1.25
Metal production, iron and steel works	
Plate tilters	1.5
Ingot pushers	1.75
Slabbing mill	1.75
Coiling machines	1.5
Roller straightening machines	1.5
Roller tables	1.75
Shears	1.75
Rollers	1.75
Metal working machines	
Plate bending machines	1.5
Plate straightening machines	1.5
Hammers	1.75
Planing machines	1.75
Presses, forging presses	1.75
Shears	1.5
Grinding machines	1.25
Punches	1.5
Machine tools: Main drives	1.5
Machine tools: Auxiliary drives	1.25
Food industry	
Filling machines	1.25
Kneading machines	1.5
Mashers	1.5
Sugar cane production	1.5
Production machines	
Construction machines, hydraulic pumps	1.25
Construction machines, traversing gears	1.5
Construction machines, suction pumps	1.5
Construction machines, concrete mixers	1.5
Printing machines	1.25
Woodworking - barking drums	1.5
Woodworking - planing machines	1.5
Woodworking - reciprocating saws	1.5
Grinding machines	1.5
Textile machines - winders	1.5
Textile machines - printing machines	1.5
Textile machines - tanning vats	1.5
Textile machines - shredders	1.5
Textile machines - looms	1.5
Packaging machines	1.5
Brick molding machines	1.75
Transport and logistics	
Passenger transport - elevators	1.5
Passenger transport - escalators	1.5
Conveyor systems - bucket elevators	1.5
Conveyor systems - hauling winches	1.5
Conveyor systems - belt conveyors	1.5
Conveyor systems - endless-chain conveyors	1.5
Conveyor systems - circular conveyors	1.5
Conveyor systems - screw conveyors	1.5
Conveyor systems - inclined hoists	1.5
Crane traversing gear	1.5
Hoisting gear	1.5
Crane lifting gear	2.0
Crane traveling gear	1.5
Crane slewing gear	1.5
Crane fly jib hoists	1.5
Cable railways	1.5
Drag lifts	1.5
Winches	1.5
Cellulose and paper	
Paper-making machines, all	1.5
Pulper drives	1.5
Cement industry	
Crushers	1.75
Rotary furnaces	1.5
Hammer mills	1.75
Ball mills	1.75
Pug mills	1.75
Mixers	1.5
Pipe mills	1.5
Beater mills	1.75
Separators	1.5
Roller presses	1.75

SELECTION OF THE COUPLING SIZE

The torque load of the coupling must be determined from the output of the driven machine and the coupling speed.

Rated coupling load $T_N = 9550 \times P_N / n_N$
(T_N in Nm; P_N in kW; n_N in rpm)

The rated coupling load obtained in this way must be multiplied by factors and compared with the rated coupling torque. An ideal but expensive method is to measure the torque characteristic on the coupling. For this, Flender offers special adapters fitted with torque measuring devices.

The rated coupling torque T_{KN} is the torque which can be transmitted by the coupling over an appropriate period of use if the load is applied to the coupling purely statically at room temperature.

Application factors are to express the deviation of the real coupling load from the "ideal" load condition.

Coupling load in continuous operation

The operating principles of the driving and driven machines are divided into categories and the application factor FB derived from these in accordance with DIN 3990-1.

Application factor for N-EUPEX, N-EUPEX-DS, RUPEX, BIPEX, ELPEX-B, N-ARPEX, ARPEX, ZAPEX and FLUDEX

Application factor FB				
	Torque characteristic of the driven machine			
Torque characteristic of the driving machine	uniform	uniform with moderate shock loads	non uniform	very rough
uniform	1.0	1.25	1.5	1.75
uniform with moderate shock loads	1.25	1.5	1.75	2.0
non uniform	1.5	1.75	2.0	2.5

Examples of torque characteristic of driving machines:

- uniform: Electric motors with soft starting, steam turbines
- uniform with moderate shock loads: Electric motors without soft starting, hydraulic motors, gas and water turbines
- non uniform: Internal-combustion engines

Examples of torque characteristic in driven machines:

- uniform: Generators, centrifugal pumps for light fluids
- uniform with moderate shock loads: Centrifugal pumps for viscous fluids, elevators, machine tool drives, centrifuges, extruders, blowers, crane drives
- non uniform: Excavators, kneaders, conveyor systems, presses, mills
- very rough: Crushers, excavators, shredders, iron/smelting machinery

Temperature factor FT

Coupling	Elastomer material	Low temperature °C	Temperature T_a on the coupling under -30 °C	-30 °C up to 50 °C	up to 60 °C	up to 70 °C	up to 80 °C	up to 90 °C	up to 100 °C	up to 110 °C	up to 120 °C
N-EUPEX	NBR	-30	–	1.0	1.0	1.0	1.0	–	–	–	–
N-EUPEX	NR	-50	1.1 [1]	1.0	–	–	–	–	–	–	–
N-EUPEX	HNBR	-10	–	1.0	1.0	1.0	1.0	1.25	1.25	–	–
N-EUPEX	TPU	-50	1.0	1.0	1.05	1.10	1.15	–	–	–	–
N-EUPEX DS	NBR	-30	–	1.0	1.0	1.0	1.0	–	–	–	–
RUPEX	NBR	-30	–	1.0	1.0	1.0	1.0	–	–	–	–
RUPEX	NR	-50	1.1	1.0	–	–	–	–	–	–	–
RUPEX	HNBR	-10	–	1.0	1.0	1.0	1.0	1.25	1.25	–	–
BIPEX	TPU	-50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.5
ELPEX	NR	-40	1.1	1.0	1.25	1.40	1.60	–	–	–	–
ELPEX-B	NR	-50	1.1	1.0	–	–	–	–	–	–	–
ELPEX-B	CR	-15	–	1.0	1.0	1.0	–	–	–	–	–
ELPEX-S SN, NN, WN	NR	-40	1.1	1.0	1.25	1.40	1.60	–	–	–	–
ELPEX-S NX	VMQ	-40	1.1	1.0	1.0	1.0	1.0	1.1	1.25	1.4	1.6

NR = natural rubber, natural-synthetic rubber mixture
NBR = nitril-butadiene-rubber (Perbunan)
HNBR = hydrated acrylonitrile butadiene rubber
CR = chloroprene rubber (FRAS fire-resistant and anti-static)
VMQ = silicone
TPU = polyurethane

[1] The N-EUPEX coupling is not suitable for shock loads when used at low temperatures.

Coupling size $T_{KN} \geq T_N \cdot FB \cdot FT$

In the case of ARPEX and ZAPEX coupling types, no temperature factor (FT = 1.0) need be taken into account.

Coupling load at maximum and overload conditions

The maximum torque is the highest load acting on the coupling in normal operation.
Maximum torques at a frequency of up to 25 times an hour are permitted and must be lower than the maximum coupling torque. Examples of maximum torque conditions are: Starting operations, stopping operations or usual operating conditions with maximum load.

$T_{Kmax} \geq T_{Max} \cdot FT$

Overload torques are maximum loads which occur only in combination with special, infrequent operating conditions. Examples of overload torque conditions are: Motor short circuit, emergency stop or blocking because of component breakage. Overload torques at a frequency of once a month are permitted and must be lower than the maximum overload torque of the coupling. The overload condition may last only a short while, i.e. fractions of a second.

$T_{KOL} \geq T_{OL} \cdot FT$

Coupling load due to dynamic torque load

Applying the frequency factor FF, the dynamic torque load must be lower than the coupling fatigue torque.

Dynamic torque load

$T_{KW} \geq T_W \cdot FF$

Frequency of the dynamic torque load
$f_{err} \leq 10$ Hz frequency factor FF = 1.0

Frequency of the dynamic torque load
$f_{err} > 10$ Hz frequency factor $FF = \sqrt{(f_{err}/10\ Hz)}$

For the ZAPEX and ARPEX series, the frequency factor is always FF = 1.0.

SELECTION OF THE COUPLING SIZE

Checking the maximum speed

For all load situations $n_{Kmax} \geqslant n_{max}$

Checking permitted shaft misalignment

For all load situations, the actual shaft misalignment must be less than the permitted shaft misalignment.

Checking bore diameter, mounting geometry and coupling design

The check must be made on the basis of the dimension tables. The maximum bore diameter applies to parallel keyways to DIN 6885. For other keyway geometries, the maximum bore diameter can be reduced.

On request, couplings with adapted geometry can be provided.

Coupling behavior under overload conditions

The ZAPEX, N-ARPEX, ARPEX, N-EUPEX, RUPEX and BIPEX coupling series can withstand overloads until the breakage of metal parts. These coupling series are designated as fail-safe.
The N-EUPEX DS, ELPEX-B, ELPEX-S and ELPEX coupling series throw overload. The elastomer element of these couplings is irreparably damaged without damage to metal parts when subjected to excessive overload.

These coupling series are designated as non-fail-safe. These types that fail can be fitted with a so-called fail-safe device. This additional component enables emergency operation, even after the rubber element of the coupling has been irreparably damaged.

Checking shaft-hub connection

The torques specified in the tables of power ratings data of the coupling series do not necessarily apply to the shaft-hub connection. Depending on the shaft-hub connection, proof of form stability is required. Flender recommends obtaining proof of form strength by using calculation methods in accordance with the current state of the art.

Shaft-hub connection	Suggestion for calculation method
Keyway connection to DIN 6885-1	DIN 6892
Shrink fit	DIN 7190
Spline to DIN 5480	
Bolted flange connection	VDI 2230
Flange connection with close-fitting bolts	

Fitting recommendations for the shaft-hub connection are given in the **Appendix**.

The coupling hub is frequently fitted flush with the shaft end face. If the shaft projects, the risk of collision with other coupling parts must be checked. If the shaft is set back, in addition to the load-bearing capacity of the shaft-hub connection, the correct positioning of the hub must be ensured as well. If the bearing hub length is insufficient, restorative forces may cause tilting movements and so wear to and impairment of the axial retention. Also, the position of the set screw to be positioned on sufficient shaft or parallel key material must be noted.

Checking low temperature and chemically aggressive environment

The minimum permitted coupling temperature is specified in the Temperature factor FT table. In the case of chemically aggressive environments, please consult the manufacturer.

FEATURES OF THE STANDARD TYPE

Couplings	Features of the standard type
All coupling series except ARPEX clamping hubs and FLUDEX with keyway to ASME B17.1	Bore tolerance H7
N-ARPEX and ARPEX clamping hubs	Bore tolerance G6 (suitable for shaft tolerance h6)
FLUDEX couplings with keyway to ASME B17.1	Hollow shafts: bore tolerance K7
	other parts: bore tolerance M7
All coupling series with bore diameter - imperial	Parallel keyway to ASME B17.1
Bore diameter metric in the case of ZAPEX, N-ARPEX and ARPEX coupling series as well as coupling hubs with applied brake disks or brake drums of the N-EUPEX and RUPEX series	Parallel keyway to DIN 6885-1 keyway width P9
Bore diameter metric in the case of the N-EUPEX, RUPEX, BIPEX, ELPEX-S, ELPEX-B, ELPEX, FLUDEX coupling series	Parallel keyway to DIN 6885-1 keyway width JS9
All coupling series except FLUDEX	Axial locking by means of set screw
FLUDEX coupling series	Axial lock by means of set screw or end washer
All coupling series	Balancing in accordance with half parallel key standard
ZAPEX, N-ARPEX, ARPEX, N-EUPEX, RUPEX, BIPEX, ELPEX-S, ELPEX-B and ELPEX coupling series	Balancing quality G16
FLUDEX coupling series	Balancing quality G6.3
SIPEX and BIPEX-S coupling series	Balancing quality G6.3 for 3600 rpm
All series	Unpainted
All series	Preservation with cleaning emulsion
FLUDEX couplings	Fuse 140 °C

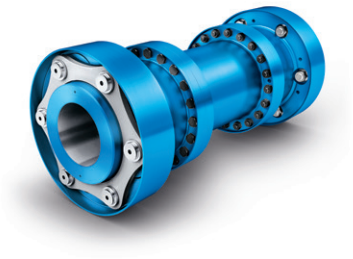
Configurator

The article number can be obtained with the help of the Configurator. The coupling can be selected in a product configurator and specified using selection menus.

The Configurator is available under **flender.com**.

The coupling can be selected via "Technical selection" (technical selection) or via "Direct selection" (via article no.).

HIGH PERFORMANCE COUPLINGS ARPEX



General	**1/2**
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Series ART – High Performance Couplings 1/10

Types XVX and XVF	**1/10**
Types BVB and BVF	**1/14**
Types MHM and MH	**1/18**
Type H	**1/22**

GENERAL

ARPEX high performance couplings from the ART series transmit torque by means of the Flender conical bolting connection and a hexagonal, octagonal or decagonal plate pack and in a special edition with MHM and H design as a 12-bolt design. They are suitable for torques ranging to 936000 Nm with a maximum permissible angular misalignment of between 0.12° and 0.35°. The high-quality materials and compact design of the couplings make them light in weight, but capable of high peripheral speeds and torques.

Main areas of application, particularly in the oil and gas industries, the petrochemical industry and in the maritime field:

- Generator drives
- Gas and steam turbines
- Turbo compressors
- Boiler feed pumps
- Marine drives
- Test stands

Characteristics of the ARPEX ART high performance couplings:

- No lubrication necessary
- Backlash-free torque transmission thanks to plate packs with positive-locking Flender conical bolting connection
- Design in accordance with API 671/ISO 10441
- Easy to install with factory-assembled half couplings
- Compact, weight-optimized design
- Low restoring forces
- High balancing quality
- Couplings can be designed for potentially explosive environments in accordance with the ATEX directive, as amended

ARPEX coupling optionally suitable for operation in potentially explosive environments.
Complies with the current ATEX Directive for:

CE II 2G Ex h IIC T6 ... T2 Gb X

II 2D Ex h IIIC T85 °C ... 250 °C Db X

I M2 Ex h Mb X

Benefits

ARPEX high performance couplings have been specially designed for use in high-speed applications. Created by designers with decades of experience using state-of-the-art development and manufacturing tools, ARPEX high performance couplings offer a dependable high-end solution for torsionally rigid torque transmission even with shaft misalignment.

ARPEX high performance couplings can withstand temperatures between -40 °C and +280 °C in operation. On request they can also be specially equipped for use in other temperature ranges.

Application



Petrochemistry / Oil and Gas:
Pumps, Centrifugal Compressors,
Turbo Compressors, Reciprocating Compressors



Energy: Turbine Generator Drives,
Gas/Steam Turbines, Boiler Feed Pumps



Marine:
Pumps,
Compressors

GENERAL

Design and configurations

ARPEX turbo couplings are available in 4 designs. The series are differentiated according to the number of plate pack bolting connections used, i.e. they feature either a hexagonal, an octagonal or a decagonal plate pack. Special editions with 12 bolting connections are available on request for the MHM and H versions.

The version with six connecting elements allows the largest radial and axial shaft misalignment thanks to the high flexibility of the hexagonal plate pack design. This version is thus especially suitable for applications involving a large degree of thermal expansion.

The version with octagonal plate pack combines high torque capacity with high flexibility and thus offers a perfect solution for most high-speed applications.

The 10-bolt version offers high torque capacity at a low shaft displacement of 0.16°. As a result, this design is well suited for applications with high impact torques and low displacement requirements.

The 12-bolt special edition is available for the MHM and H versions on request. In contrast to the 10-bolt version, this special edition provides an increased torque capacity at a reduced shaft displacement of 0.12°. This design is also well suited for applications with high impact torques and low displacement requirements.

The types are differentiated according to the following features:

The compact, "reduced moment" XVX type minimizes the bending moment stress on the connecting shafts.

Type BVB is a lower-cost version of type XVX and is suitable for applications with lower requirements of the moment stresses on the connecting shafts. Type MHM is designed for use with larger shaft diameters.

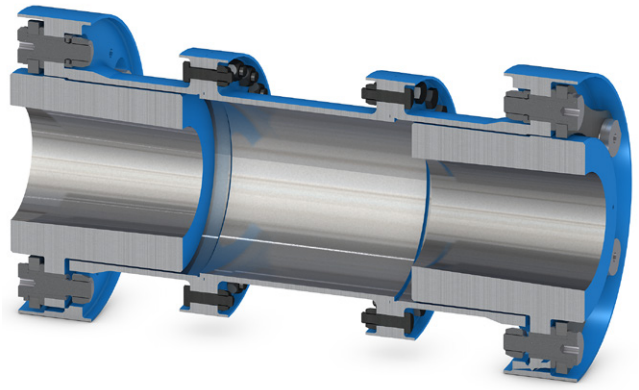
All versions can also be supplied with flange connections to meet the customer's specifications.

The materials used to manufacture the high performance couplings have been carefully selected and the coupling geometry has been optimized using state-of-the-art FEA-based analysis.

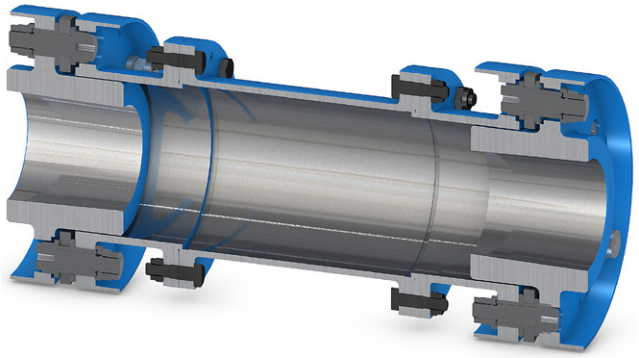
All hubs, flanges, sleeves and plate pack bolting connections are made of high-grade tempered steel. The highly flexible plates are made from stainless steel spring steel and generate very low restoring forces at the bearings. The Flender conical plate pack bolting connection permits positive-locked torque transmission. The intermediate spacers can be dismounted radially without moving the coupled machines.

The couplings meet the requirements of API 671/ISO 10441.

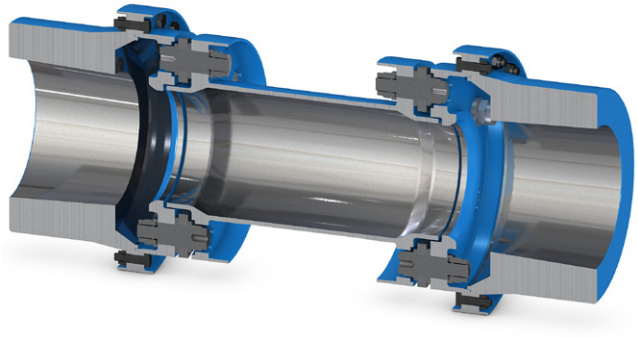
High performance coupling designs



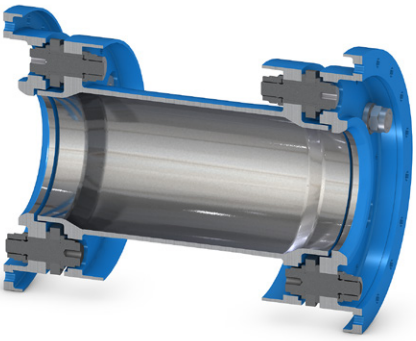
Series ART, type XVX



Series ART, type BVB



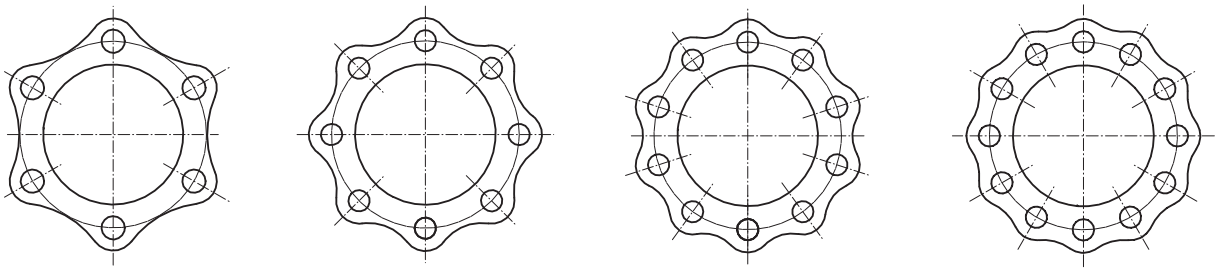
Series ART, type MHM



Series ART, type H

GENERAL

Plates



Series ART-6 | Series ART-8 | Series ART-10 | Series ART-12 (Special edition)

Plate shapes

The operating principle of ARPEX high performance couplings is based on the flexibility of the plate packs. The plate packs combine high flexibility with high torque capacity. This means that torque is reliably transmitted even when shaft misalignments cannot be avoided.

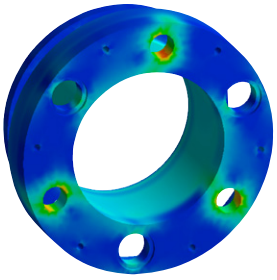
The plates are made of hard-rolled spring steel which is stainless and has an extremely high tensile strength.

The use of very thin individual plates means that the restoring forces induced by shaft misalignment are comparatively low. This has a positive impact on the bearing service life of the coupled machines.

The scalloped design of the plates ensures even distribution of stress in the plates and also reduces the weight and the moment of inertia of the plates.

The plates are designed for unlimited service life with a high degree of operational safety.

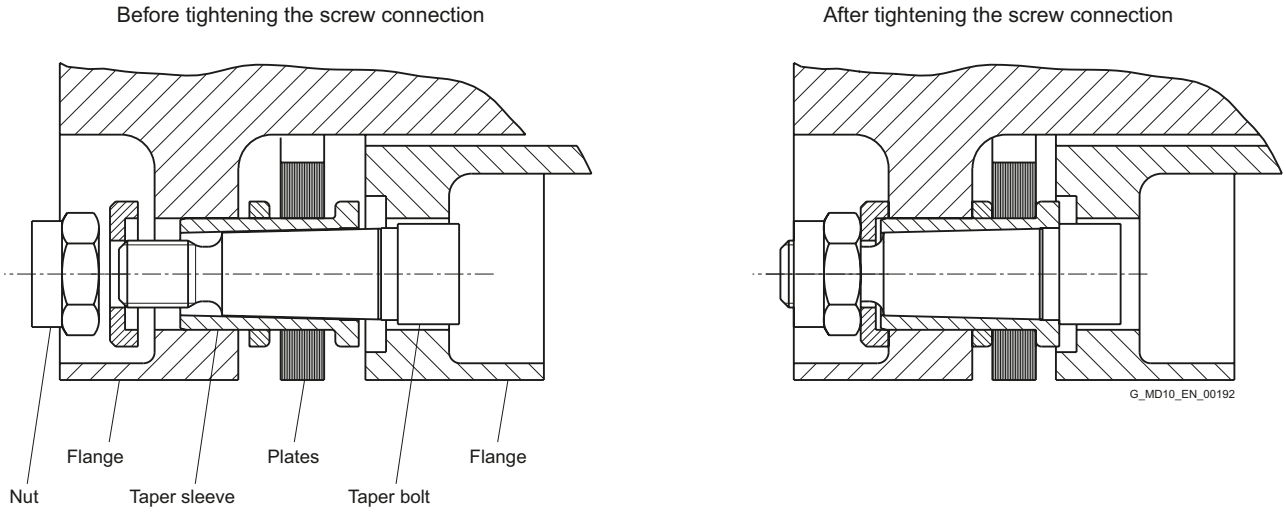
FEA – development of ARPEX high performance couplings



Stress distribution according to the Finite Element Analysis (FEA)

The weight, stiffness and stress distribution of all components of the ARPEX high performance couplings are optimized by FEA analysis. Extensive series of tests have been carried out in order to verify these FEA results and to assess the service life of the components with respect to fatigue life and fatigue limit.

Flender conical bolting connection



Design conical bolting connection

Advantages of the Flender conical bolting connection

- Positive-locked torque transmission
  The main advantage of the conical bolting connection over the use of close-fitting bolts is the creation of a real positive lock inside the plate pack bolting connection. The positive lock is provided by expansion of the conical connection.
- Functioning principle
  The taper bolt is pulled into the taper sleeve when the nut is tightened, causing the sleeve to expand. As a result, a positive backlash-free connection is reliably created between the taper bolt and the sleeve as well as between the sleeve, the flange and the plates.
  This contrasts with typical plate pack bolting connections which use close-fitting bolts to transmit torque by friction.
- Light weight
  While providing the same torque capacity, the conical bolting connection is lighter and has a lower moment of inertia than a close-fitting bolt connection.
- Centering
  The centering accuracy attained by the use of the conical bolting connection is exceptionally high, thus also ensuring high balancing quality.
- Material
  All components of the bolting connection are made of highgrade tempered steel.

GENERAL

Key to symbols

Name	Symbols	Unit	Explanation
Rated coupling torque	T_{KN}	Nm	Torque which can be transmitted as static torque by the coupling over the period of use.
Maximum permissible torque	T_{peak}	Nm	Maximum permissible torque for 10^3 load changes
Maximum coupling speed	$n_{K\,max}$	rpm	Maximum permissible coupling speed
Position of center of gravity	CG	mm	Position of center of gravity for the half coupling
Weight	m	kg	Weight of the coupling
Moment of inertia	J	kgm^2	Moments of inertia in relation to the coupling speed
Torsional stiffness	C_T	Nm/rad	Drehfedersteife der Kupplung
Maximum axial misalignment	$\Delta K_{a\,max}$	mm	Permissible axial misalignment (for the entire coupling)
Maximum axial force	$F_{a\,max}$	N	Maximum axial force (for the entire coupling)
Maximum angular misalignment	$\Delta K_{w\,max}$	°	Permissible angular misalignment

The permissible radial misalignment can be calculated using the following equation:
$K_r = \tan K_w \cdot LR$ with K_r and LR in mm, K_w in °

Technical Information

Balancing

It is basically possible to balance the couplings according to any of the methods described in API 671/ISO 10441, in accordance with DIN ISO 21940 Part 11 or in compliance with similar standards/regulations.

The following options are provided by API 671:

- Component balance (individual balancing of all components) with the possibility of exchanging identical parts
- Assembly check balance to verify the balance of individual components, balance can be corrected only by repeating the component balance; individual components can be assembled in any position
- Assembly check balance with balance correction of the complete coupling; none of the individual components can be exchanged

Transport and assembly aid

The plate packs are immobilized by means of shipping screws for the purpose of balancing, transportation and assembly. These screws protect the plates against damage during transportation or assembly.

It is absolutely essential to remove the shipping screws before the coupling is commissioned.

Axial pretensioning

If it is known in advance that the shaft distance has changed, e.g. as a result of thermal expansion, it is possible to axially pretension the plate packs so that the coupling remains in a neutral position during operation.

Shim packs

The couplings for tapered hub bores are supplied with shim packs. These allow the shaft distance to be corrected by +/- the thickness of one pack.

Shaft-hub connection

ARPEX high performance couplings are normally designed with tapered bores for hydraulic oil assembly or disassembly. Flange versions are also available.

Detailed information must be supplied to ensure accurate design of the hub bores or flanges.

Safety precautions

The purchaser must take measures to prevent any accidental contact with rotating parts.

Assembly and removal of the couplings

All types of ARPEX high performance couplings are designed such that there is no need to move the couplings and coupled machines axially during assembly/removal of the couplings.

Assembly and commissioning

ARPEX high performance couplings must be assembled and commissioned in accordance with Operating Instructions BA 8706, a copy of which is enclosed with every shipped coupling unit.

As-supplied condition

ARPEX high performance couplings are shipped as complete coupling units with preassembled plate packs.

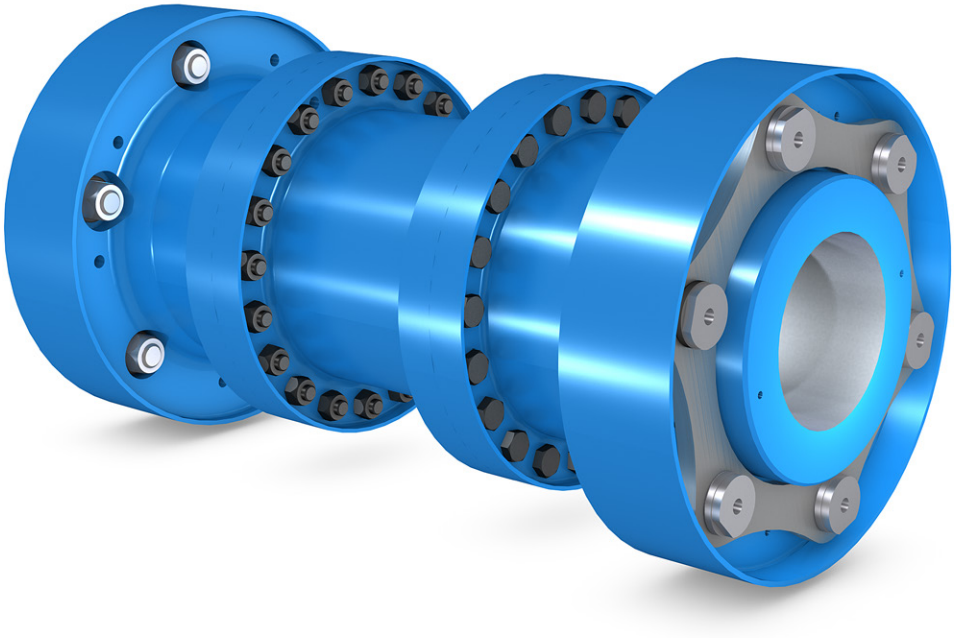
Type XVX is shipped with preassembled "X" subassemblies.
Type BVB is shipped with preassembled "B" subassemblies.
Type MHM is shipped with preassembled "H" subassembly.
Type H is shipped with preassembled "H" subassembly.

These coupling components must not be disassembled without prior consultation with Flender GmbH.

Technical changes

Dimensions and technical data might change as a result of future product developments.

TYPES XVX AND XVF



- The coupling components are arranged in such a way as to minimize the moment stresses on the connecting shafts; ideally suited for turbine compressor drives with exacting requirements with respect to the position of the center of gravity and the weight of the half coupling
- The "X" subassemblies are preassembled at the factory. The spacer "V", which can be separately mounted or removed, can be installed radially in such a way that there is no need to move the driving or the driven machine. As a result, the coupled machines can be separated quickly.
- The spacer length of the coupling is variable. It is also possible to adjust the torsional spring stiffness to suit individual applications.
- Low-windage design

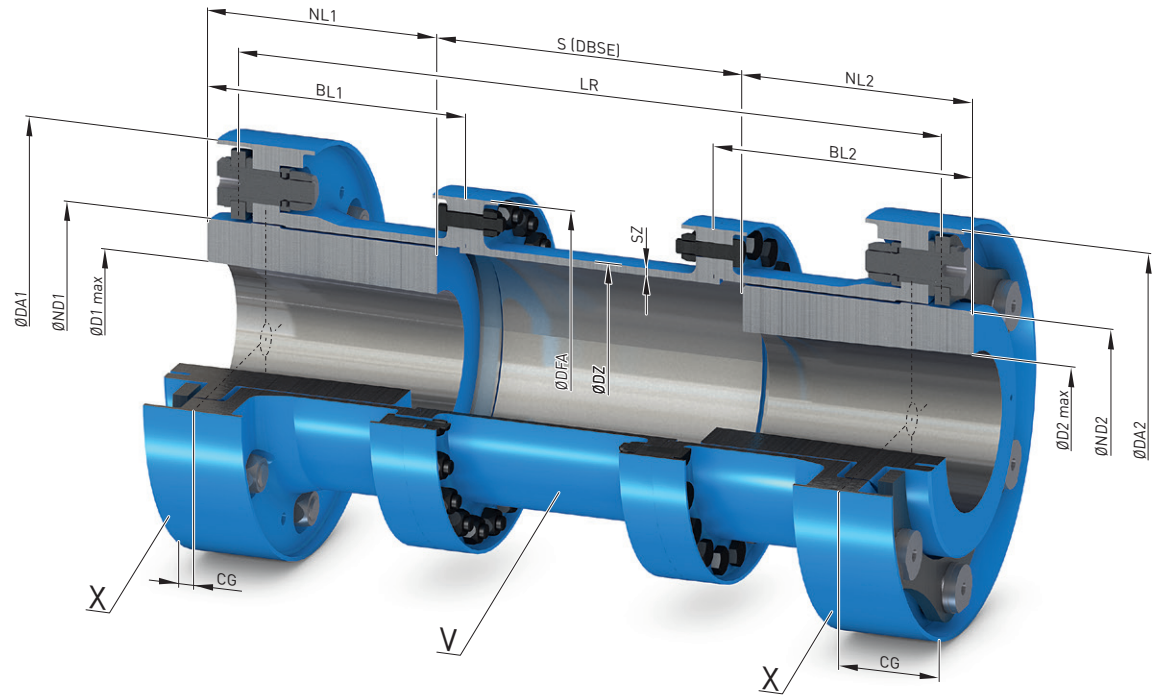
Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	n_{Kmax} rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt design										
118-6	**1200**	2860	32300	13,0	7,2	0,012	0,07	976	2,2	0,35
146-6	**2600**	6190	26100	15,0	11,7	0,029	0,126	1266	2,4	
170-6	**4500**	10700	22400	19,5	16,5	0,056	0,205	1844	3	
201-6	**7400**	17600	19000	23,0	25,1	0,12	0,359	2511	3,6	
233-6	**11600**	27600	16300	26,5	39,8	0,266	0,578	3212	4,2	
255-6	**16200**	38600	14900	30,5	51,3	0,408	0,846	3975	4,6	
286-6	**23000**	54800	13300	35,5	69,5	0,69	1,25	4889	5,4	
311-6	**30100**	71700	12200	37,5	88,9	1,05	1,72	5890	5,8	
337-6	**38200**	91000	11300	41,0	111	1,53	2,26	7052	6,4	
363-6	**45900**	109300	10500	42,5	136	2,17	2,85	7534	6,6	
400-6	**63200**	150500	9500	46,0	172	3,24	3,95	9000	7	
431-6	**86200**	205300	8800	49,0	223	4,9	5,34	11719	7,6	
489-6	**126100**	300400	7800	57,0	320	9,2	8,43	16305	8,8	
544-6	**182200**	434000	7000	61,5	446	15,9	12,4	20324	9,6	
605-6	**248400**	591700	6300	70,0	599	26,5	17,6	25115	11	
651-6	**304800**	726000	5800	76,5	725	36,9	22,2	28379	11,8	
Versions with 8-bolt design										
170-8	**6400**	15200	22400	19,5	16,9	0,058	0,252	2113	1,8	0,25
201-8	**10700**	25500	19000	23,0	26,9	0,128	0,532	2772	2,2	
233-8	**16400**	39100	16300	26,0	42,6	0,28	0,893	3334	2,6	
255-8	**22700**	54100	14900	30,0	54,6	0,428	1,27	3987	2,8	
286-8	**32400**	77200	13300	35,0	73,5	0,73	1,88	5769	3,4	
311-8	**42700**	101700	12200	37,0	93,1	1,09	2,57	6638	3,6	
337-8	**54200**	129100	11300	40,5	117	1,6	3,45	8012	4	
363-8	**65100**	155100	10500	42,0	143	2,26	4,31	8760	4,2	
400-8	**90300**	215100	9500	45,5	180	3,38	5,86	10269	4,4	
431-8	**123000**	293000	8800	48,5	234	5,2	7,98	13462	4,8	
489-8	**180200**	429200	7800	56,5	333	9,6	12,5	18577	5,6	
544-8	**259500**	618100	7000	60,5	468	16,6	18,6	23673	6,2	
605-8	**354600**	844700	6300	69,5	625	27,4	26,4	28208	7	
651-8	**434200**	1034300	5800	75,5	758	38,4	33,4	32668	7,6	

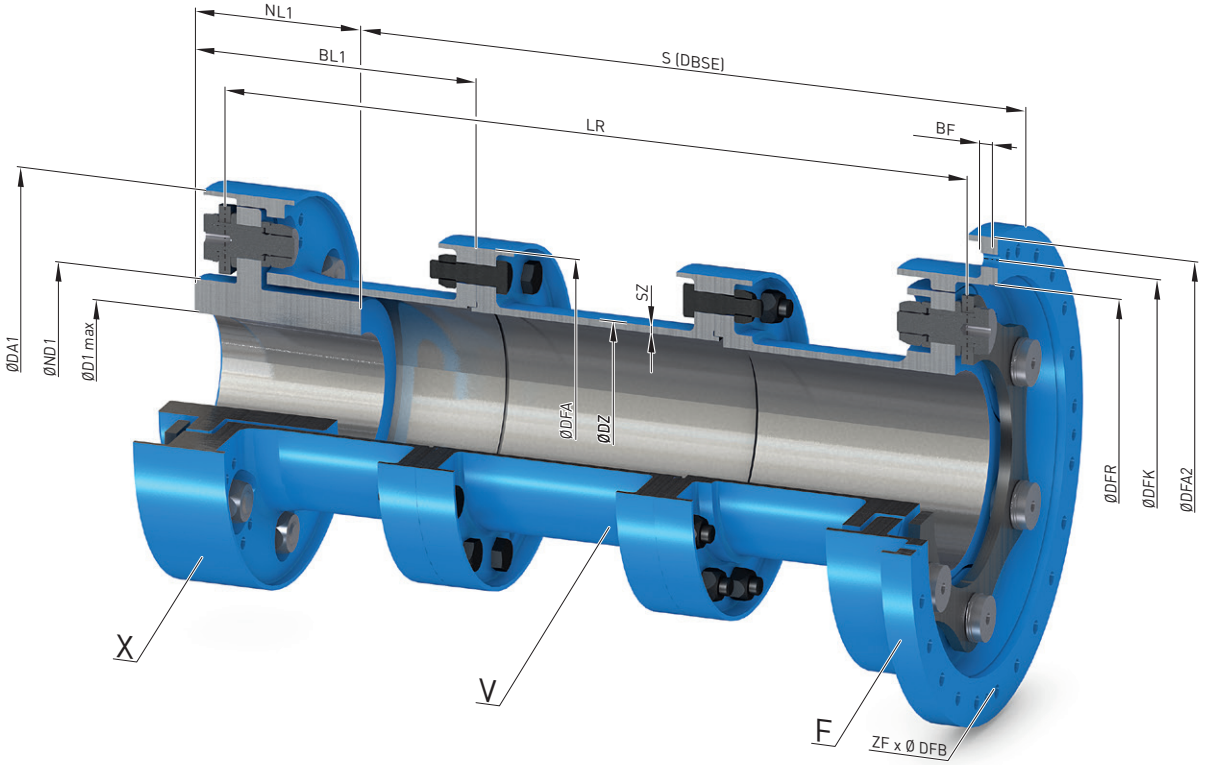
[1] The following specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[2] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[3] The maximum angular misalignment $\Delta K_{w\,max}$ and the maximum axial misalignment $\Delta K_{a\,max}$ must not occur simultaneously at 100 %.

TYPES XVX AND XVF





Size	Rated torque	Maximum speed [1]	Dimensions in mm															
	T_{KN}	n_{Kmax}	DA1/ DA2	D1/D2	ND1/ ND2	NL1/ NL2	BL1/ BL2	LR [2]	DZ	SZ	DFA	S_{min}	DFK [3]	DFA2 [3]	DFR [3]	DFB [3]	ZF [3]	BF [3]
	Nm	rpm		max.													Qty.	
Versions with 6-bolt design																		
118-6	**1200**	32300	118	**45**	63	45	76	525,2	68	3	109	116	140	160	119	6	6	7,5
146-6	**2600**	26100	146	**55**	77	55	92	544,2	82	3	131	135	168	188	147	6	8	7,5
170-6	**4500**	22400	170	**65**	92	65	109	558,2	97	3	148	155	192	213	171	6	12	7,5
201-6	**7400**	19000	201	**80**	114	80	133	586,2	118	3	171	174	221	246	202	9	10	9
233-6	**11600**	16300	233	**95**	133	95	153	612,2	137	3	207	197	254	279	234	9	12	9
255-6	**16200**	14900	255	**105**	148	105	170	626,2	156	5	221	212	277	302	256	9	16	9
286-6	**23000**	13300	286	**120**	168	120	182	651,2	171	4	244	212	310	336	288	9	20	9
311-6	**30100**	12200	311	**130**	183	130	197	670,2	187	4,5	266	235	339	371	312	11	16	13
337-6	**38200**	11300	337	**140**	198	140	212	686,2	202	5	283	244	366	398	338	11	18	13
363-6	**45900**	10500	363	**150**	210	150	227	705,2	214	5,5	306	263	395	429	364	13	16	14
400-6	**63200**	9500	400	**160**	224	160	242	719,2	230	6,5	323	278	434	469	401	13	18	14
431-6	**86200**	8800	431	**170**	240	170	258	734,2	247	7,5	349	301	470	511	432	15	16	15,5
489-6	**126100**	7800	489	**200**	280	200	302	788,2	287	8,5	394	344	530	572	490	15	20	15,5
544-6	**182200**	7000	544	**220**	308	220	331	824,2	316	9,5	444	391	589	635	545	17	20	18
605-6	**248400**	6300	605	**250**	350	250	376	878,2	358	11	492	422	652	698	606	17	24	18
651-6	**304800**	5800	651	**270**	378	270	406	913,2	388	12	522	447	699	745	652	17	28	18
Versions with 8-bolt design																		
170-8	**6400**	22400	170	**65**	92	65	109	558,2	98	3	148	155	192	213	171	6	18	7,5
201-8	**10700**	19000	201	**80**	114	80	133	586,2	122	4	172	174	221	246	202	9	16	9
233-8	**16400**	16300	233	**95**	133	95	153	612,2	141	4,5	207	197	254	279	234	9	18	9
255-8	**22700**	14900	255	**105**	148	105	170	626,2	156	5	221	212	277	302	256	9	24	9
286-8	**32400**	13300	286	**120**	168	120	182	651,2	176	5,5	244	212	310	336	288	9	30	9
311-8	**42700**	12200	311	**130**	183	130	197	670,2	193	6	266	235	339	371	312	11	24	13
337-8	**54200**	11300	337	**140**	198	140	212	686,2	208	7	283	244	366	398	338	11	24	13
363-8	**65100**	10500	363	**150**	210	150	227	705,2	221	7,5	306	263	395	429	364	13	20	14
400-8	**90300**	9500	400	**160**	224	160	242	719,2	236	8,5	323	278	434	469	401	13	24	14
431-8	**123000**	8800	431	**170**	240	170	258	734,2	255	10	349	301	470	511	432	15	24	15,5
489-8	**180200**	7800	489	**200**	280	200	302	788,2	296	11	394	344	530	572	490	15	28	15,5
544-8	**259500**	7000	544	**220**	308	220	331	824,2	327	13	444	391	589	635	545	17	28	18
605-8	**354600**	6300	605	**250**	350	250	376	878,2	371	15	492	422	652	698	606	17	32	18
651-8	**434200**	5800	651	**270**	378	270	406	913,2	400	16	522	447	699	745	652	17	40	18

Notes

- The specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.
- The hub bore and hub length are standard dimensions. Please contact your Flender representative for information about special applications.

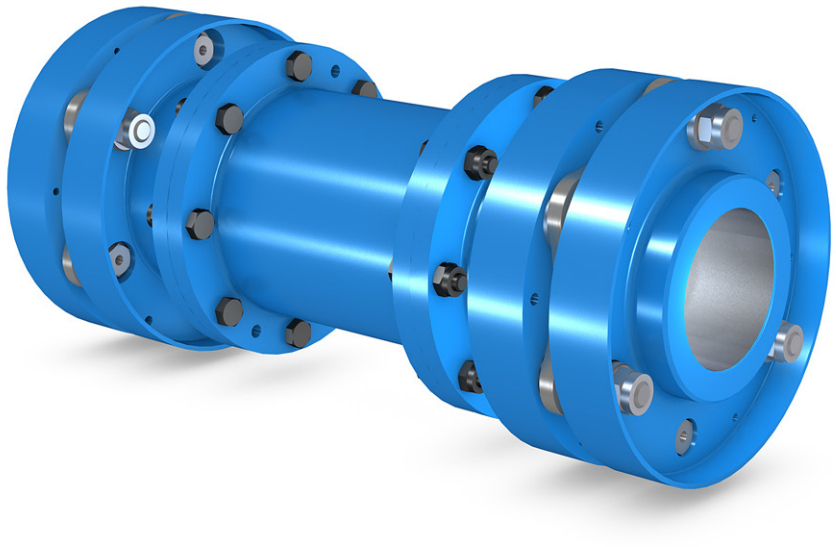
[1] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[2] The LR dimension refers to a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[3] The XVX version is optionally available with a flange connection as the XVF version. Dimensions valid for the XVF version flange connection.

Please contact your Flender contact partner or visit **flender.com** to find the product number and configure other order options.

TYPES BVB AND BVF



- The coupling components are arranged in such a way as to reduce the moment stresses on the connecting shafts; ideally suited for turbine compressor drives with average requirements with respect to the position of the center of gravity and the weight of the half coupling
- The "B" subassemblies are preassembled at the factory. The spacer "V", which can be separately mounted or removed, can be installed radially in such a way that there is no need to move the driving or the driven machine. As a result, the coupled machines can be separated quickly.
- The spacer length of the coupling is variable. It is also possible to adjust the torsional spring stiffness to suit individual applications.
- Low-windage design

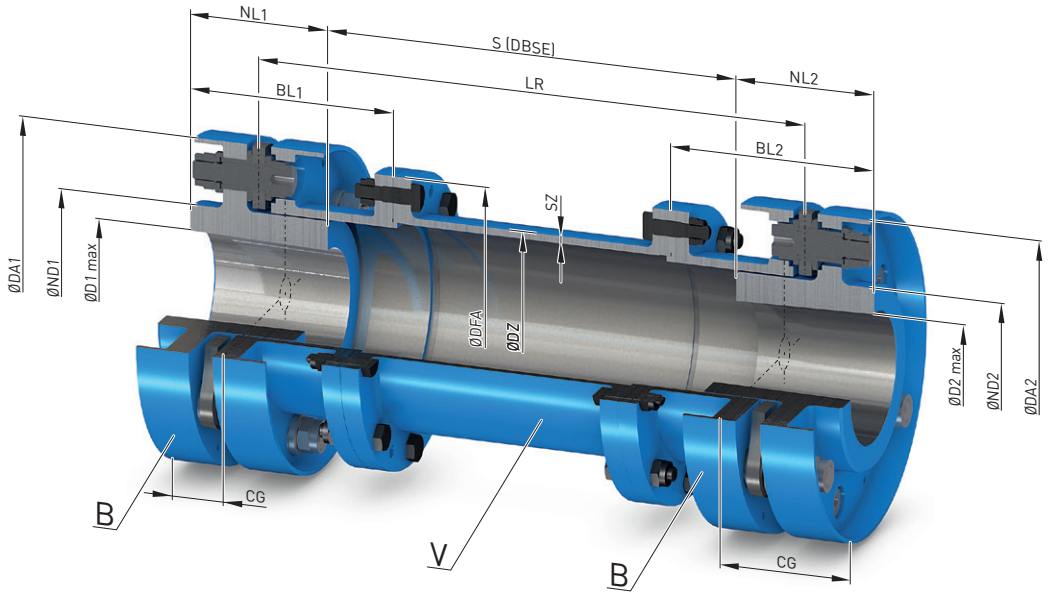
Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	n_{Kmax} rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt design										
95-6	**1000**	2380	40200	21,5	4,9	0,006	0,048	957	1,6	
121-6	**2300**	5480	31600	25,5	8,4	0,016	0,11	1533	2	
144-6	**4000**	9530	26500	30,0	13,7	0,036	0,201	2030	2,4	
173-6	**6700**	16000	22100	35,5	21	0,081	0,378	2880	3	
202-6	**10600**	25200	18900	38,5	30,4	0,155	0,623	4174	3,8	
220-6	**14700**	35000	17400	45,5	42,7	0,269	0,896	4752	4	
249-6	**21000**	50000	15300	51,5	57,5	0,47	1,34	5882	4,6	
268-6	**27000**	64300	14300	55,0	72,8	0,69	1,79	7267	5	
296-6	**35000**	83400	12900	60,5	93	1,07	2,43	8811	5,6	0,35
318-6	**42000**	100000	12000	64,0	114	1,51	3,02	9521	5,8	
347-6	**57000**	135800	11000	68,5	146	2,3	4,56	10767	6	
388-6	**82000**	195300	9800	78,0	204	4,02	6,72	14535	7	
435-6	**119000**	283500	8800	87,5	286	7,16	10,2	20333	8	
498-6	**177000**	421600	7700	98,5	413	13,6	15,8	27263	9,2	
542-6	**234000**	557400	7000	108,5	549	21,5	21,1	31840	10	
592-6	**292000**	695500	6500	116,0	678	31,4	26,8	36493	11	
Versions with 8-bolt design										
144-8	**5700**	13600	26500	30,0	14	0,037	0,248	2863	1,6	
173-8	**9600**	22900	22100	35,5	21,5	0,083	0,472	3217	1,8	
202-8	**15000**	35700	18900	38,5	31,1	0,159	0,792	4917	2,4	
220-8	**20500**	48800	17400	45,5	43,6	0,277	1,16	5521	2,6	
249-8	**29500**	70300	15300	52,0	58,7	0,482	1,77	6845	3	
268-8	**38300**	91200	14300	55,5	74	0,706	2,38	8171	3,2	
296-8	**49700**	118400	12900	60,5	94,6	1,09	3,28	9837	3,6	
318-8	**59500**	141700	12000	64,0	117	1,56	4,09	10930	3,8	0,25
347-8	**81500**	194100	11000	69,0	149	2,36	5,83	11820	3,8	
388-8	**117000**	278700	9800	78,5	208	4,12	8,73	15923	4,4	
435-8	**170000**	404900	8800	88,0	290	7,3	13,4	21643	5	
498-8	**252000**	600300	7700	99,0	420	13,9	20,8	29124	5,8	
542-8	**334000**	795600	7000	109,0	559	22	28,3	35525	6,4	
592-8	**416000**	990900	6500	116,5	690	32,2	36,3	42806	7,2	
Versions with 10-bolt design										
220-10	**26800**	63800	17400	45,5	44,5	0,284	1,31	5351	1,6	
249-10	**38300**	91200	15300	52,0	59,7	0,493	2,02	7173	2	
268-10	**49400**	117700	14300	55,5	75,3	0,721	2,73	7522	2	
296-10	**64000**	152400	12900	60,5	96,1	1,12	3,77	9856	2,4	
318-10	**76500**	182200	12000	64,5	120	1,6	4,71	9946	2,4	
347-10	**105100**	250300	11000	69,0	152	2,42	6,78	10976	2,4	0,16
388-10	**151800**	361600	9800	79,0	212	4,23	10,2	14454	2,8	
435-10	**219600**	523100	8800	88,0	295	7,46	15,2	19324	3,2	
498-10	**324800**	773700	7700	99,0	427	14,2	24,7	26834	3,8	
542-10	**430000**	1024300	7000	109,5	569	22,5	33,8	29918	4	
592-10	**535000**	1274400	6500	116,5	702	32,9	43,5	37536	4,6	

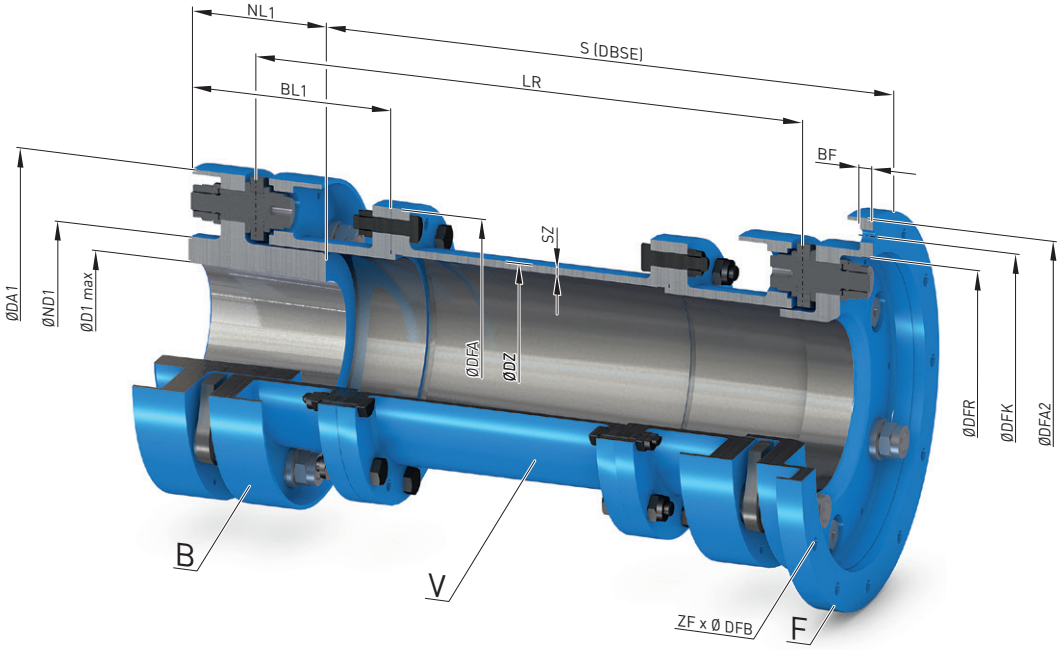
[1] The following specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[2] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[3] The maximum angular misalignment $\Delta K_{w\,max}$ and the maximum axial misalignment $\Delta K_{a\,max}$ must not occur simultaneously at 100 %.

TYPES BVB AND BVF





Size	Rated torque	Maximum speed [1]	Dimensions in mm															
	T_{KN}	n_{Kmax}	DA1/ DA2	D1/D2	ND1/ ND2	NL1/ NL2	BL1/ BL2	LR [2]	DZ	SZ	DFA1	S_{min}	DFK [3]	DFA2 [3]	DFR [3]	DFB [3]	ZF [3]	BF [3]
	Nm	rpm		max.													Qty.	
Versions with 6-bolt design																		
95-6	**1000**	40200	95	**35**	49	35	78	481,2	61	2,5	94	131	112	132	92	6	6	7,5
121-6	**2300**	31600	121	**45**	63	45	87	492,2	79	3	112	129	138	158	116	6	6	7,5
144-6	**4000**	26500	144	**55**	77	55	105	502,2	90	4	133	155	161	182	140	6	8	7,5
173-6	**6700**	22100	173	**70**	98	70	118	520,2	112	4	155	151	194	220	167	9	8	9
202-6	**10600**	18900	202	**80**	112	80	125	534,2	127	5	170	145	223	249	194	9	10	9
220-6	**14700**	17400	220	**90**	126	95	143	550,2	145	5	200	168	241	266	212	9	12	9
249-6	**21000**	15300	249	**105**	147	105	164	555,2	165	5,5	220	190	270	295	240	9	16	9
268-6	**27000**	14300	268	**110**	154	115	179	568,2	182	6	238	208	295	328	258	11	10	13
296-6	**35000**	12900	296	**120**	168	125	190	576,2	200	6,5	256	210	323	355	285	11	12	13
318-6	**42000**	12000	318	**130**	182	135	200	589,2	210	7	278	220	347	382	306	13	10	14
347-6	**57000**	11000	347	**140**	196	145	215	599,2	235	8	303	230	376	410	334	13	12	14
388-6	**82000**	9800	388	**160**	224	165	240	618,2	260	9,5	335	260	422	462	373	15	12	15,5
435-6	**119000**	8800	435	**180**	252	185	277	636,2	295	10,5	370	294	469	510	418	15	16	15,5
498-6	**177000**	7700	498	**210**	294	215	312	674,2	335	12	415	304	535	580	478	17	16	18
542-6	**234000**	7000	542	**230**	322	240	337	704,2	370	13,5	464	324	579	625	518	17	18	18
592-6	**292000**	6500	592	**250**	350	260	357	729,2	400	14	494	324	630	680	568	17	20	18
Versions with 8-bolt design																		
144-8	**5700**	26500	144	**55**	77	55	105	502,2	90	4	133	155	161	182	140	6	10	7,5
173-8	**9600**	22100	173	**70**	98	70	118	520,2	112	4	155	151	194	220	167	9	10	9
202-8	**15000**	18900	202	**80**	112	80	125	534,2	127	5	170	145	223	249	194	9	12	9
220-8	**20500**	17400	220	**90**	126	95	143	550,2	145	5	200	168	241	266	212	9	16	9
249-8	**29500**	15300	249	**105**	147	105	164	555,2	165	5,5	220	190	270	295	240	9	20	9
268-8	**38300**	14300	268	**110**	154	115	179	568,2	182	6	238	208	295	328	258	11	16	13
296-8	**49700**	12900	296	**120**	168	125	190	576,2	200	6,5	256	210	323	355	285	11	16	13
318-8	**59500**	12000	318	**130**	182	135	200	589,2	210	7	278	220	347	382	306	13	16	14
347-8	**81500**	11000	347	**140**	196	145	215	599,2	235	8	303	230	376	410	334	13	16	14
388-8	**117000**	9800	388	**160**	224	165	240	618,2	260	9,5	335	260	422	462	373	15	16	15,5
435-8	**170000**	8800	435	**180**	252	185	277	636,2	295	10,5	370	294	469	510	418	15	24	15,5
498-8	**252000**	7700	498	**210**	294	215	312	674,2	335	12	415	304	535	580	478	17	20	18
542-8	**334000**	7000	542	**230**	322	240	337	704,2	370	13,5	464	324	579	625	518	17	24	18
592-8	**416000**	6500	592	**250**	350	260	357	729,2	400	14	494	324	630	680	568	17	30	18
Versions with 10-bolt design																		
220-10	**26800**	17400	220	**90**	126	95	143	550,2	145	5	200	168	241	266	212	9	20	9
249-10	**38300**	15300	249	**105**	147	105	164	555,2	165	5,5	220	190	270	295	240	9	24	9
268-10	**49400**	14300	268	**110**	154	115	179	568,2	182	6	238	208	295	328	258	11	20	13
296-10	**64000**	12900	296	**120**	168	125	190	576,2	200	6,5	256	210	323	355	285	11	24	13
318-10	**76500**	12000	318	**130**	182	135	200	589,2	210	7	278	220	347	382	306	13	20	14
347-10	**105100**	11000	347	**140**	196	145	215	599,2	235	8	303	230	376	410	334	13	20	14
388-10	**151800**	9800	388	**160**	224	165	240	618,2	260	9,5	335	260	422	462	373	15	20	15,5
435-10	**219600**	8800	435	**180**	252	185	277	636,2	295	10,5	370	294	469	510	418	15	30	15,5
498-10	**324800**	7700	498	**210**	294	215	312	674,2	335	12	415	304	535	580	478	17	30	18
542-10	**430000**	7000	542	**230**	322	240	337	704,2	370	13,5	464	324	579	625	518	17	32	18
592-10	**535000**	6500	592	**250**	350	260	357	729,2	400	14	494	324	630	680	568	17	36	18

Notes

- The specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.
- The hub bore and hub length are standard dimensions. Please contact your Flender representative for information about special applications.

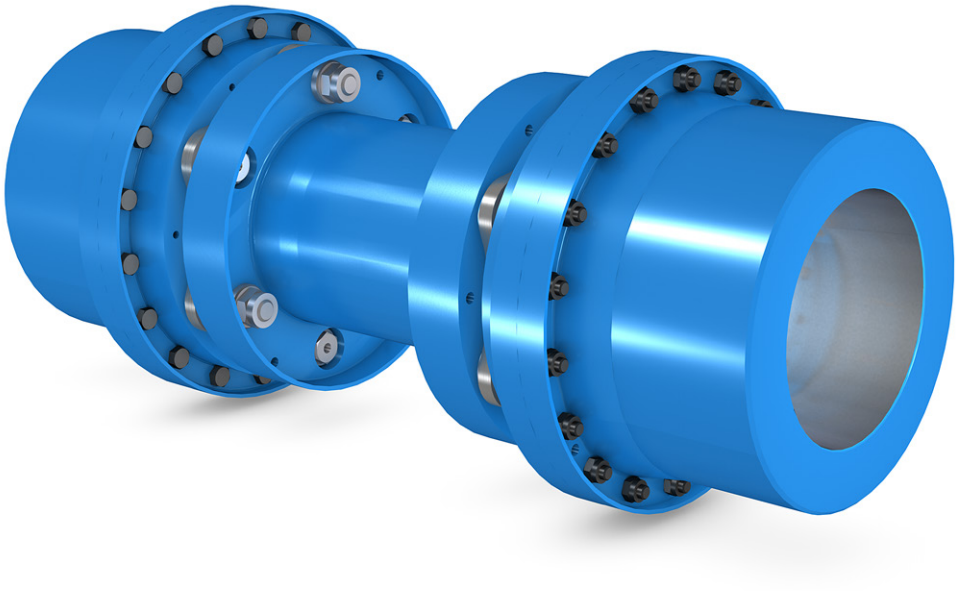
[1] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[2] The LR dimension refers to a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[3] The BVB version is optionally available with a flange connection as the BVF version. Dimensions valid for the BVF version flange connection.

Please contact your Flender contact partner or visit **flender.com** to find the product number and configure other order options.

TYPES MHM AND MH



- The hubs "M" of this coupling design have a larger bore capacity than the BVB type. The MHM type variant is thus used for applications involving large shaft diameters such as electric motors or generator drives
- The factory-mounted subassembly "H" can be installed or removed radially in such a way that there is no need to move the driving or the driven machine. As a result, the coupled machines can be separated quickly for maintenance purposes.
- The flanges of the subassembly can also be adapted to the flange shafts of large gas and steam turbines.
- The spacer length of the coupling is variable. It is also possible to adjust the torsional spring stiffness to suit individual applications.
- Low-windage design

Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	$n_{K\,max}$ rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt disks										
95-6	**1100**	2620	30300	66,0	8,1	0,013	0,050	+1804 / -909	+2,4 / -1,6	
121-6	**2530**	6030	25100	80,0	13,8	0,033	0,105	+2306 / -1179	+3 / -2	
144-6	**4400**	10500	21700	92,0	22,8	0,080	0,186	+3210 / -1621	+3,6 / -2,4	
173-6	**7370**	17600	17900	109,5	39,1	0,205	0,396	+4716 / -2317	+4,5 / -3	
202-6	**11700**	27900	15800	119,0	57,0	0,401	0,616	+6750 / -3261	+5,7 / -3,8	0,35
220-6	**16200**	38600	14700	135,5	77,2	0,651	0,927	+7798 / -3739	+6 / -4	
249-6	**23100**	55000	13300	154,5	106	1,10	1,49	+9615 / -4639	+6,9 / -4,6	
268-6	**29700**	70700	12000	164,0	137	1,73	1,95	+11779 / -5647	+7,5 / -5	
296-6	**38500**	91700	11000	177,5	180	2,75	2,71	+14300 / -6857	+8,4 / -5,6	

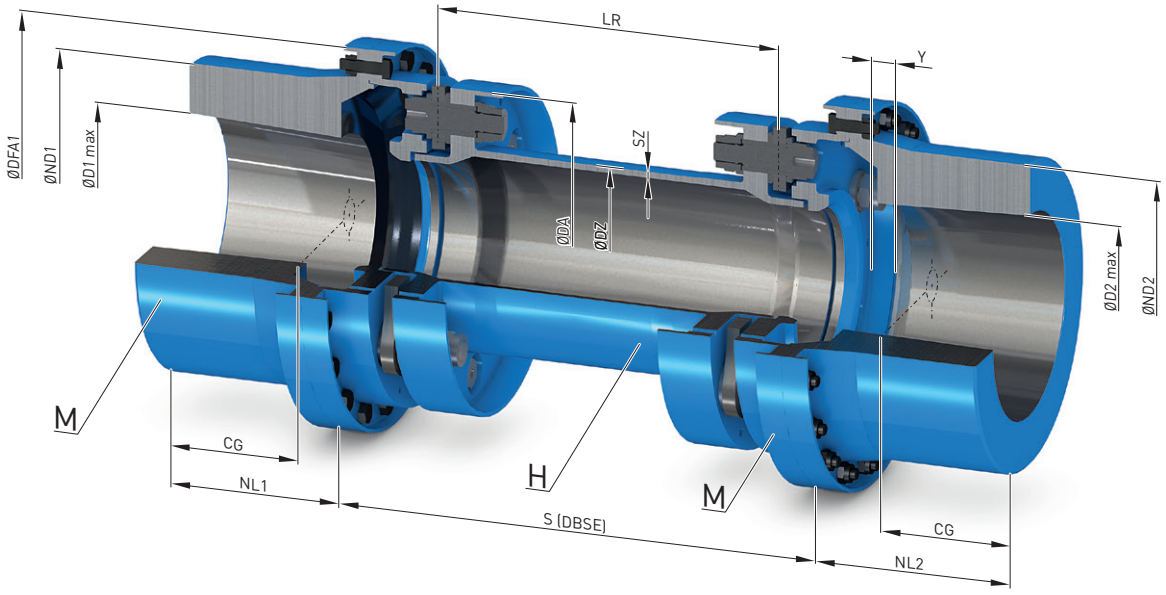
Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	n_{Kmax} rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt design										
318-6	**46200**	110000	10200	190,5	222	3,94	3,42	+15497 / -7443	+8,7 / -5,8	
347-6	**62700**	149400	9500	207,0	277	5,66	4,84	+17498 / -8339	+9 / -6	
388-6	**90200**	214900	8500	235,5	400	10,4	7,47	+24106 / -11363	+10,5 / -7	
435-6	**130900**	311800	7700	257,5	557	18,4	11,6	+32592 / -15347	+12 / -8	0,35
498-6	**194700**	463800	6700	294,5	824	35,3	17,8	+43504 / -20390	+13,8 / -9,2	
542-6	**257400**	613100	6200	320,0	1055	53,5	22,9	+51220 / -24053	+15 / -10	
592-6	**321200**	765100	5700	345,0	1332	79,2	29,3	+59289 / -27837	+16,5 / -11	
Versions with 8-bolt design										
144-8	**6300**	15000	21700	93,5	23,4	0,082	0,245	+4700 / -2344	+2,4 / -1,6	
173-8	**10600**	25200	17900	111,5	40,5	0,211	0,569	+5384 / -2662	+2,7 / -1,8	
202-8	**16500**	39300	15800	121,5	59,1	0,411	0,941	+8196 / -3916	+3,6 / -2,4	
220-8	**22600**	53800	14700	138,0	79,6	0,667	1,38	+9752 / -4468	+3,9 / -2,6	
249-8	**32500**	77400	13300	157,0	109	1,13	2,17	+11967 / -5517	+4,5 / -3	
268-8	**42100**	100300	12000	167,0	141	1,77	2,91	+13986 / -6451	+4,8 / -3,2	
296-8	**54700**	130300	11000	180,5	184	2,8	4,06	+17000 / -7807	+5,4 / -3,6	
318-8	**65500**	156000	10200	193,5	228	4,03	5,23	+19198 / -8719	+5,7 / -3,8	0,25
347-8	**89700**	213700	9500	210,0	284	5,78	7,36	+20489 / -9313	+5,7 / -3,8	
388-8	**128700**	306600	8500	238,0	407	10,6	11,2	+27778 / -12613	+6,6 / -4,4	
435-8	**187000**	445400	7700	260,5	566	18,6	17,6	+37058 / -16962	+7,5 / -5	
498-8	**277200**	660300	6700	297,5	838	35,8	26,9	+50602 / -23027	+8,7 / -5,8	
542-8	**367400**	875100	6200	323,5	1075	54,3	35	+61602 / -27914	+9,6 / -6,4	
592-8	**457600**	1090000	5700	349,0	1356	80,5	45,2	+75266 / -33888	+10,8 / -7,2	
Versions with 10-bolt design										
220-10	**29500**	70300	14700	140,5	82	0,682	1,74	+9148 / -4307	+2,4 / -1,6	
249-10	**42100**	100300	13300	160,0	112	1,16	2,79	+12888 / -5851	+3 / -2	
268-10	**54300**	129300	12000	169,5	145	1,8	3,75	+12807 / -5926	+3 / -2	
296-10	**70400**	167700	11000	183,5	189	2,86	5,19	+17539 / -7839	+3,6 / -2,4	
318-10	**84200**	200600	10200	196,5	233	4,1	6,66	+17704 / -7949	+3,6 / -2,4	
347-10	**115600**	275400	9500	213,5	291	5,9	9,32	+19176 / -8573	+3,6 / -2,4	0,16
388-10	**167000**	397800	8500	241,0	416	10,7	14,3	+25816 / -11451	+4,2 / -2,8	
435-10	**241600**	575500	7700	263,5	577	19	22,2	+34009 / -15098	+4,8 / -3,2	
498-10	**357300**	851100	6700	301,5	854	36,4	34	+48750 / -21219	+5,7 / -3,8	
542-10	**473000**	1126700	6200	327,5	1095	55,1	44,3	+53180 / -23439	+6 / -4	
592-10	**588500**	1401800	5700	353,0	1379	81,6	57	+68147 / -29640	+6,9 / -4,6	
Versions with 12-bolt design (special edition)										
388-12	**198000**	471200	8500					+25439/-12094	+2,7/-1,8	
435-12	**291500**	693700	7700					+28994/-13613	+3/-2	
498-12	**434000**	1032000	6700					+40600/-18265	+3,6/-2,4	
542-12	**574000**	1366000	6200					+45883/-20553	+3,9/-2,6	
592-12	**715000**	1701000	5700			on request		+66390/-28038	+4,8/-3,2	0,12
635-12	**779000**	1854000	5300					+73874/-30500	+5,7/-3,8	
685-12	**854000**	2032000	4950					+98178/-38882	+7,2/-4,8	
740-12	**936000**	2227000	4600					+118993/-46061	+8,7/-5,8	

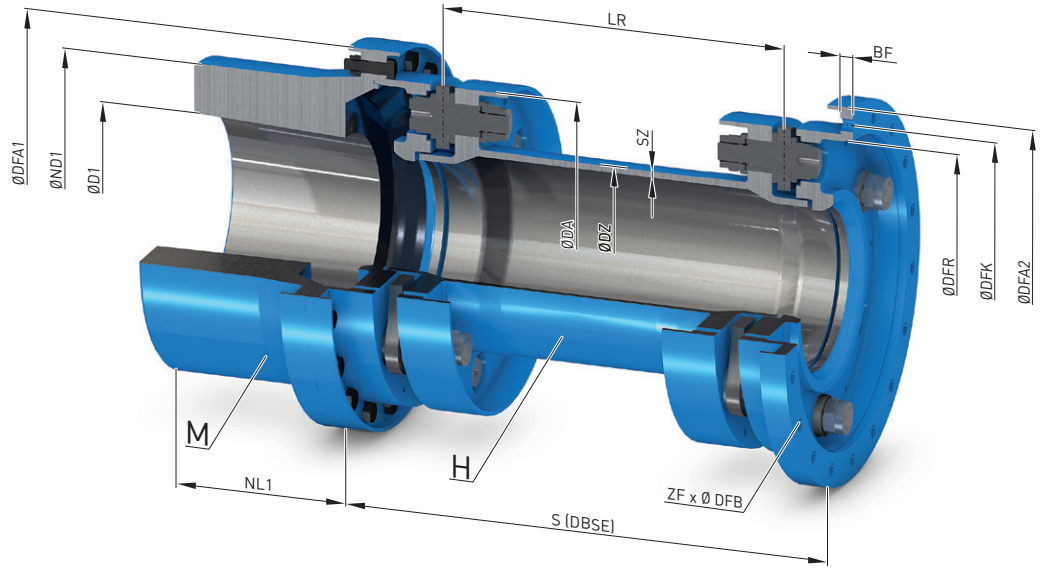
[1] The following specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[2] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[3] The maximum angular misalignment $\Delta K_{w\,max}$ and the maximum axial misalignment $\Delta K_{a\,max}$ must not occur simultaneously at 100 %.

TYPES MHM AND MH





Size	Rated torque T_{KN} Nm	Maximum speed[1] n_{Kmax} rpm	Dimensions in mm DA	D1/D2 max.	ND1/ ND2	NL1/ NL2	LR [2]	Y	DZ	SZ	S_{min}	DFK [3]	DFA1/ DFA2 [3]	DFR [3]	DFB [3]	ZF [3] Qty.	BF [3]
Versions with 6-bolt design																	
95-6	**1100**	30300	95	**60**	84	70	411,2	10	56	3	122	112	132	92	6	6	7,5
121-6	**2530**	25100	121	**75**	105	90	402,2	13	71	3	140	138	158	116	6	10	7,5
144-6	**4400**	21700	144	**95**	133	110	392,2	13	85	3	168	161	182	140	6	16	7,5
173-6	**7370**	17900	173	**115**	161	135	380,2	15	107	3,5	193	187	213	167	9	12	9
202-6	**11700**	15800	202	**135**	189	150	374,2	15	121	3,5	206	216	242	194	9	16	9
220-6	**16200**	14700	220	**150**	210	175	360,2	20	136	4	237	234	259	212	9	18	9

Size	Rated torque	Maximum speed[1]	Dimensions in mm														
	T_{KN}	n_{Kmax}	DA	D1/D2	ND1/ ND2	NL1/ NL2	LR [2]	Y	DZ	SZ	S_{min}	DFK [3]	DFA1/ DFA2 [3]	DFR [3]	DFB [3]	ZF [3]	BF [3]
	Nm	rpm		max.												Qty.	
Versions with 6-bolt design																	
249-6	**23100**	13300	249	**165**	231	200	345,2	25	159	4,5	273	263	288	240	9	24	9
268-6	**29700**	12000	268	**180**	252	210	338,2	25	167	5	295	286	319	258	11	18	13
296-6	**38500**	11000	296	**200**	280	230	326,2	25	182	5,5	318	314	346	285	11	20	13
318-6	**46200**	10200	318	**215**	301	250	319,2	25	196	5,5	335	338	373	306	13	16	14
347-6	**62700**	9500	347	**230**	322	270	309,2	25	212	6,5	360	367	401	334	13	20	14
388-6	**90200**	8500	388	**260**	364	310	288,2	30	242	7	405	411	451	373	15	18	15,5
435-6	**130900**	7700	435	**295**	413	340	273	35	273	8,5	464	458	499	418	15	24	15,5
498-6	**194700**	6700	498	**335**	469	390	308	40	318	10	521	523	568	478	17	24	18
542-6	**257400**	6200	542	**365**	511	425	333	45	347	10,5	566	567	613	518	17	28	18
592-6	**321200**	5700	592	**395**	553	460	353	50	379	11	601	617	667	568	17	30	18
Versions with 8-bolt design																	
144-8	**6300**	21700	144	**95**	133	110	392,2	13	86	3,5	168	161	182	140	6	20	7,5
173-8	**10600**	17900	173	**115**	161	135	380,2	15	109	4,5	193	187	213	167	9	16	9
202-8	**16500**	15800	202	**135**	189	150	374,2	15	124	5	206	216	242	194	9	20	9
220-8	**22600**	14700	220	**150**	210	175	360,2	20	139	5,5	237	234	259	212	9	24	9
249-8	**32500**	13300	249	**165**	231	200	345,2	25	161	6	273	263	288	240	9	32	9
268-8	**42100**	12000	268	**180**	252	210	338,2	25	170	7	295	286	319	258	11	24	13
296-8	**54700**	11000	296	**200**	280	230	326,2	25	186	7,5	318	314	346	285	11	28	13
318-8	**65500**	10200	318	**215**	301	250	319,2	25	200	8	335	338	373	306	13	24	14
347-8	**89700**	9500	347	**230**	322	270	309,2	25	217	9,5	360	367	401	334	13	28	14
388-8	**128700**	8500	388	**260**	364	310	288,2	30	246	10	405	411	451	373	15	28	15,5
435-8	**187000**	7700	435	**295**	413	340	273	35	278	11,5	464	458	499	418	15	32	15,5
498-8	**277200**	6700	498	**335**	469	390	308	40	322	14	521	523	568	478	17	32	18
542-8	**367400**	6200	542	**365**	511	425	333	45	352	15	566	567	613	518	17	40	18
592-8	**457600**	5700	592	**395**	553	460	353	50	384	16	601	617	667	568	17	44	18
Versions with 10-bolt design																	
220-10	**29500**	14700	220	**150**	210	175	360,2	20	139	7	237	234	259	212	9	32	9
249-10	**42100**	13300	249	**165**	231	200	345,2	25	161	8	273	263	288	240	9	40	9
268-10	**54300**	12000	268	**180**	252	210	338,2	25	170	9,5	295	286	319	258	11	30	13
296-10	**70400**	11000	296	**200**	280	230	326,2	25	185	10	318	314	346	285	11	36	13
318-10	**84200**	10200	318	**215**	301	250	319,2	25	200	10,5	335	338	373	306	13	28	14
347-10	**115600**	9500	347	**230**	322	270	309,2	25	216	12,5	360	367	401	334	13	36	14
388-10	**167000**	8500	388	**260**	364	310	288,2	30	246	14	405	411	451	373	15	32	15,5
435-10	**241600**	7700	435	**295**	413	340	273	35	278	15,5	464	458	499	418	15	44	15,5
498-10	**357300**	6700	498	**335**	469	390	308	40	321	18,5	521	523	568	478	17	40	18
542-10	**473000**	6200	542	**365**	511	425	333	45	352	20,5	566	567	613	518	17	48	18
592-10	**588500**	5700	592	**395**	553	460	353	50	383	21	601	617	667	568	17	52	18
Versions with 12-bolt design (special edition)																	
388-12	**198000**	8500	388	**260**	364	310	288,2	30	246	18,0	405	411	451	373	15	40	15,5
435-12	**291500**	7700	435	**295**	413	340	273,0	35	278	20,0	464	458	499	418	15	50	15,5
498-12	**434000**	6700	498	**335**	469	390	308,0	40	321	24,0	521	523	568	478	17	48	18,0
542-12	**574000**	6200	542	**365**	511	425	333,0	45	352	27,0	566	567	613	518	17	54	18,0
592-12	**715000**	5700	592	**395**	553	460	353,0	50	383	28,5	601	617	667	568	17	60	18,0
635-12	**779000**	5300	635	**440**	616	510	353,0	50	427	23,5	601	666	720	611	21	48	22,0
685-12	**854000**	4950	685	**480**	672	555	353,0	50	477	20,0	601	716	770	661	21	48	22,0
740-12	**936000**	4600	740	**510**	714	590	353,0	50	532	17,5	601	771	825	716	21	48	22,0

Notes

- The specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.
- The hub bore and hub length are standard dimensions. Please contact your Flender representative for information about special applications.

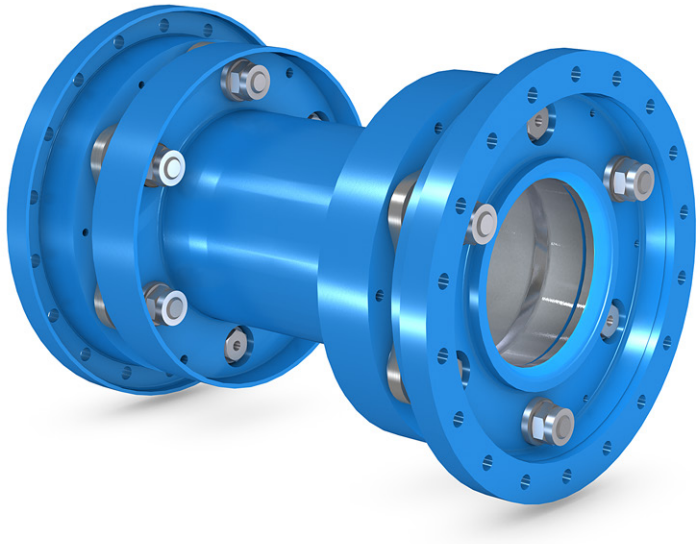
[1] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[2] The LR dimension refers to a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[3] The MHM version is optionally available with a flange connection as the MH version. Dimensions valid for the MH version flange connection.

Please contact your Flender contact partner or visit **flender.com** to find the product number and configure other order options.

TYPE H



- Version H has a flange connection on both sides and is screwed to the flanged shafts of the machines to be connected using fitting screws in the standard versions.
- The factory-mounted subassembly "H" can be installed or removed radially in such a way that there is no need to move the driving or the driven machine. As a result, the coupled machines can be separated quickly for maintenance purposes.
- The flanges of the subassembly can also be adapted to the flange shafts of large gas and steam turbines.
- The spacer length of the coupling is variable. It is also possible to adjust the torsional spring stiffness to suit individual applications.
- Low-windage design

Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	$n_{K\,max}$ rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt design										
95-6	**1100**	2620	30300	17,5	4,2	0,006	0,052	+1804 / -909	+2,4 / -1,6	0,35
121-6	**2530**	6030	25100	21,0	6,6	0,016	0,109	+2306 / -1179	+3 / -2	
144-6	**4400**	10500	21700	25,0	9,6	0,032	0,192	+3210 / -1621	+3,6 / -2,4	
173-6	**7370**	17600	17900	29,0	15,5	0,080	0,413	+4716 / -2317	+4,5 / -3	
202-6	**11700**	27900	15800	31,0	21,9	0,150	0,641	+6750 / -3261	+5,7 / -3,8	
220-6	**16200**	38600	14700	37,5	27,8	0,225	0,971	+7798 / -3739	+6 / -4	
249-6	**23100**	55000	13300	43,5	37,5	0,392	1,58	+9615 / -4639	+6,9 / -4,6	
268-6	**29700**	70700	12000	44,5	49,8	0,624	2,06	+11779 / -5647	+7,5 / -5	
296-6	**38500**	91700	11000	49,5	63,8	0,955	2,87	+14300 / -6857	+8,4 / -5,6	
318-6	**46200**	110000	10200	51,5	76,1	1,34	3,62	+15497 / -7443	+8,7 / -5,8	

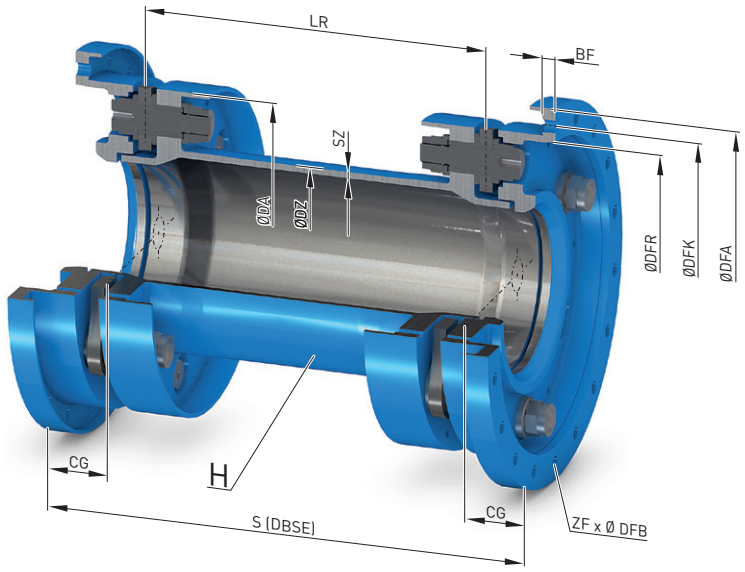
Size	Power ratings			Coupling data [1]						
	Rated torque	Maximum permissible torque for 10^3 load changes	Maximum speed [2]	Position of center of gravity	Weight	Mass moment of inertia	Torsional stiffness	Maximum axial force	Maximum permitted shaft misalignment [3]	
	T_{KN} Nm	T_{peak} Nm	n_{Kmax} rpm	CG mm	m kg	J kgm²	C_T MNm/rad	$F_{a\,max}$ N	$\pm\Delta K_{a\,max}$ mm	$\pm\Delta K_{w\,max}$ °
Versions with 6-bolt design										
347-6	**62700**	149400	9500	56,5	97,1	1,99	5,18	+17498 / -8339	+9 / -6	0,35
388-6	**90200**	214900	8500	64,0	137	3,57	8,04	+24106 / -11363	+10,5 / -7	
435-6	**130900**	311800	7700	72,5	191	6,21	12,5	+32592 / -15347	+12 / -8	
498-6	**194700**	463800	6700	81,0	279	12,0	19,2	+43504 / -20390	+13,8 / -9,2	
542-6	**257400**	613100	6200	89,5	356	18,0	24,8	+51220 / -24053	+15 / -10	
592-6	**321200**	765100	5700	95,5	446	26,7	31,8	+59289 / -27837	+16,5 / -11	
Versions with 8-bolt design										
144-8	**6300**	15000	21700	25,5	10,3	0,034	0,257	+4700 / -2344	+2,4 / -1,6	0,25
173-8	**10600**	25200	17900	29,5	17,0	0,086	0,606	+5384 / -2662	+2,7 / -1,8	
202-8	**16500**	39300	15800	32,0	24,0	0,160	1,00	+8196 / -3916	+3,6 / -2,4	
220-8	**22600**	53800	14700	38,0	30,3	0,241	1,48	+9752 / -4468	+3,9 / -2,6	
249-8	**32500**	77400	13300	44,0	40,4	0,418	2,37	+11967 / -5517	+4,5 / -3	
268-8	**42100**	100300	12000	45,0	53,7	0,663	3,17	+13986 / -6451	+4,8 / -3,2	
296-8	**54700**	130300	11000	50,0	68,3	1,02	4,42	+17000 / -7807	+5,4 / -3,6	
318-8	**65500**	156000	10200	52,0	82,2	1,43	5,72	+19198 / -8719	+5,7 / -3,8	
347-8	**89700**	213700	9500	57,0	104	2,11	8,18	+20489 / -9313	+5,7 / -3,8	
388-8	**128700**	306600	8500	64,0	145	3,76	12,6	+27778 / -12613	+6,6 / -4,4	
435-8	**187000**	445400	7700	73,5	200	6,52	19,8	+37058 / -16962	+7,5 / -5	
498-8	**277200**	660300	6700	81,5	294	12,5	30,5	+50602 / -23027	+8,7 / -5,8	
542-8	**367400**	875100	6200	90,0	376	19,0	39,7	+61602 / -27914	+9,6 / -6,4	
592-8	**457600**	1090000	5700	96,5	471	28,1	51,3	+75266 / -33888	+10,8 / -7,2	
Versions with 10-bolt design										
220-10	**29500**	70300	14700	38,5	32,8	0,257	1,90	+9148 / -4307	+2,4 / -1,6	0,16
249-10	**42100**	100300	13300	44,5	43,9	0,446	3,12	+12888 / -5851	+3 / -2	
268-10	**54300**	129300	12000	45,5	58,2	0,706	4,19	+12807 / -5926	+3 / -2	
296-10	**70400**	167700	11000	50,5	73,7	1,08	5,80	+17539 / -7839	+3,6 / -2,4	
318-10	**84200**	200600	10200	53,0	87,6	1,51	7,47	+17704 / -7949	+3,6 / -2,4	
347-10	**115600**	275400	9500	57,5	112	2,24	10,7	+19176 / -8573	+3,6 / -2,4	
388-10	**167000**	397800	8500	65,0	154	3,95	16,6	+25816 / -11451	+4,2 / -2,8	
435-10	**241600**	575500	7700	73,5	212	6,87	25,8	+34009 / -15098	+4,8 / -3,2	
498-10	**357300**	851100	6700	82,5	310	13,1	39,9	+48750 / -21219	+5,7 / -3,8	
542-10	**473000**	1126700	6200	91,5	397	19,9	52,1	+53180 / -23439	+6 / -4	
592-10	**588500**	1401800	5700	97,5	494	29,3	67,1	+68147 / -29640	+6,9 / -4,6	
Versions with 12-bolt design (special edition)										
388-12	**198000**	471200	8500	on request				+25439/-12094	+2,7/-1,8	0,12
435-12	**291500**	693700	7700					+28994/-13613	+3/-2	
498-12	**434000**	1032000	6700					+40600/-18265	+3,6/-2,4	
542-12	**574000**	1366000	6200					+45883/-20553	+3,9/-2,6	
592-12	**715000**	1701000	5700					+66390/-28038	+4,8/-3,2	
635-12	**779000**	1854000	5300					+73874/-30500	+5,7/-3,8	
685-12	**854000**	2032000	4950					+98178/-38882	+7,2/-4,8	
740-12	**936000**	2227000	4600					+118993/-46061	+8,7/-5,8	

[1] The following specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

[2] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[3] The maximum angular misalignment $\Delta K_{w\,max}$ and the maximum axial misalignment $\Delta K_{a\,max}$ must not occur simultaneously at 100 %.

TYPE H



Size	Rated torque T_{KN} Nm	Maximum speed [1] n_{Kmax} rpm	Dimensions in mm DA	LR [2]	DZ	SZ	S_{min}	DFK	DFA	DFR	DFB	ZF Qty.	BF
Versions with 6-bolt design													
95-6	**1100**	30300	95	411,2	56	3	122	112	132	92	6	6	7,5
121-6	**2530**	25100	121	402,2	71	3	140	138	158	116	6	10	7,5
144-6	**4400**	21700	144	392,2	85	3	168	161	182	140	6	16	7,5
173-6	**7370**	17900	173	380,2	107	3,5	193	187	213	167	9	12	9
202-6	**11700**	15800	202	374,2	121	3,5	206	216	242	194	9	16	9
220-6	**16200**	14700	220	360,2	136	4	237	234	259	212	9	18	9
249-6	**23100**	13300	249	345,2	159	4,5	273	263	288	240	9	24	9
268-6	**29700**	12000	268	338,2	167	5	295	286	319	258	11	18	13
296-6	**38500**	11000	296	326,2	182	5,5	318	314	346	285	11	20	13
318-6	**46200**	10200	318	319,2	196	5,5	335	338	373	306	13	16	14
347-6	**62700**	9500	347	309,2	212	6,5	360	367	401	334	13	20	14

Size	Rated torque T_{KN} Nm	Maximum speed [1] n_{Kmax} rpm	Dimensions in mm DA	LR [2]	DZ	SZ	S_{min}	DFK	DFA	DFR	DFB	ZF Qty.	BF
Versions with 6-bolt design													
388-6	**90200**	8500	388	288,2	242	7	405	411	451	373	15	18	15,5
435-6	**130900**	7700	435	273,0	273	8,5	464	458	499	418	15	24	15,5
498-6	**194700**	6700	498	308,0	318	10	521	523	568	478	17	24	18
542-6	**257400**	6200	542	333,0	347	10,5	566	567	613	518	17	28	18
592-6	**321200**	5700	592	353,0	379	11	601	617	667	568	17	30	18
Versions with 8-bolt design													
144-8	**6300**	21700	144	392,2	86	3,5	168	161	182	140	6	20	7,5
173-8	**10600**	17900	173	380,2	109	4,5	193	187	213	167	9	16	9
202-8	**16500**	15800	202	374,2	124	5	206	216	242	194	9	20	9
220-8	**22600**	14700	220	360,2	139	5,5	237	234	259	212	9	24	9
249-8	**32500**	13300	249	345,2	161	6	273	263	288	240	9	32	9
268-8	**42100**	12000	268	338,2	170	7	295	286	319	258	11	24	13
296-8	**54700**	11000	296	326,2	186	7,5	318	314	346	285	11	28	13
318-8	**65500**	10200	318	319,2	200	8	335	338	373	306	13	24	14
347-8	**89700**	9500	347	309,2	217	9,5	360	367	401	334	13	28	14
388-8	**128700**	8500	388	288,2	246	10	405	411	451	373	15	28	15,5
435-8	**187000**	7700	435	273,0	278	11,5	464	458	499	418	15	32	15,5
498-8	**277200**	6700	498	308,0	322	14	521	523	568	478	17	32	18
542-8	**367400**	6200	542	333,0	352	15	566	567	613	518	17	40	18
592-8	**457600**	5700	592	353,0	384	16	601	617	667	568	17	44	18
Versions with 10-bolt design													
220-10	**29500**	14700	220	360,2	139	7	237	234	259	212	9	32	9
249-10	**42100**	13300	249	345,2	161	8	273	263	288	240	9	40	9
268-10	**54300**	12000	268	338,2	170	9,5	295	286	319	258	11	30	13
296-10	**70400**	11000	296	326,2	185	10	318	314	346	285	11	36	13
318-10	**84200**	10200	318	319,2	200	10,5	335	338	373	306	13	28	14
347-10	**115600**	9500	347	309,2	216	12,5	360	367	401	334	13	36	14
388-10	**167000**	8500	388	288,2	246	14	405	411	451	373	15	32	15,5
435-10	**241600**	7700	435	273,0	278	15,5	464	458	499	418	15	44	15,5
498-10	**357300**	6700	498	308,0	321	18,5	521	523	568	478	17	40	18
542-10	**473000**	6200	542	333,0	352	20,5	566	567	613	518	17	48	18
592-10	**588500**	5700	592	353,0	383	21	601	617	667	568	17	52	18
Versions with 12-bolt design (special edition)													
388-12	**198000**	8500	388	288,2	246	18,0	405	411	451	373	15	40	15,5
435-12	**291500**	7700	435	273,0	278	20,0	464	458	499	418	15	50	15,5
498-12	**434000**	6700	498	308,0	321	24,0	521	523	568	478	17	48	18,0
542-12	**574000**	6200	542	333,0	352	27,0	566	567	613	518	17	54	18,0
592-12	**715000**	5700	592	353,0	383	28,5	601	617	667	568	17	60	18,0
635-12	**779000**	5300	635	353,0	427	23,5	601	666	720	611	21	48	22,0
685-12	**854000**	4950	685	353,0	477	20,0	601	716	770	661	21	48	22,0
740-12	**936000**	4600	740	353,0	532	17,5	601	771	825	716	21	48	22,0

Notes

- The specifications relating to weight, mass inertia and torsional spring stiffness refer to a coupling of standard dimensions with maximum hub bores and a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.
- The hub bore and hub length are standard dimensions. Please contact your Flender representative for information about special applications.

[1] The maximum speeds n_{max} might be lower in the case of spacers with a DBSE dimension in excess of 457.2 mm (18").

[2] The LR dimension refers to a DBSE dimension of 457.2 mm or the dimension S_{min} if S_{min} > 457.2 mm.

Please contact your Flender contact partner or visit **flender.com** to find the product number and configure other order options.

APPENDIX

Fits	**A/2**
Fitting recommendations	A/2
Deviation table to DIN ISO 286	A/2
Cylindrical shaft ends, extract from DIN 748 Part 1 (long)	A/3
Central holes according to DIN 332 Part 2	A/3
Parallel key connections to DIN 6885-1	**A/4**
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Flender Services	**A/16**

FITS

Fitting recommendations

For many applications, the fit assignment m6/H7 is especially suitable.

Description	Application	Shaft tolerance	Bore tolerance
Facile sliding fit	For steel or aluminum hubs	g6	H7
	Preferred for SIPEX and BIPEX-S coupling series	h7	H7
		k6	F7
		m6	F7
Sliding fit with parallel key connection not suitable for reversing operation	For steel and cast hubs	j6	H7
		h6	J7
Press fit with parallel key connection not suitable for reversing operation	For steel and cast hubs	h6	K7
		k6	H7
Interference fit with parallel key connection suitable for reversing operation	For steel and cast hubs	m6	H7
		n6	H7
		h6	M7
	Only for steel hubs	h6	P7
	Preferred for ZAPEX and ARPEX coupling series	k6	M7
		m6	K7
		n6	J7
		p6	H7
		s6	F7
Shrink fit connection without parallel key	Only for steel hubs	u6	H6
	The permitted hub tension must be urgently checked.	v6	H6
		x6	H6

Deviation table to DIN ISO 286 for above-mentioned fits for bore diameters from 10 mm to 250 mm

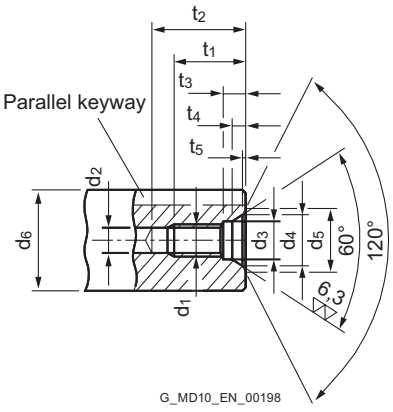
Bore diameter		Deviations in µm											
		Bore						Shaft					
above	up to	F7	H7	J7	K7	M7	P7	h6	j6	k6	m6	n6	p6
10	18	+34	+18	+10	+6	0	-11	0	+8	+12	+18	+23	+29
		+16	0	-8	-12	-18	-29	-11	-3	+1	+7	+12	+18
18	30	+41	+21	+12	+6	0	-14	0	+9	+15	+21	+28	+35
		+20	0	-9	-15	-21	-35	-13	-4	+2	+8	+15	+22
30	50	+50	+25	+14	+7	0	-17	0	+11	+18	+25	+33	+42
		+25	0	-11	-18	-25	-42	-16	-5	+2	+9	+17	+26
50	80	+60	+30	+18	+9	0	-21	0	+12	+21	+30	+39	+51
		+30	0	-12	-21	-30	-51	-19	-7	+2	+11	+20	+32
80	120	+71	+35	+22	+10	0	-24	0	+13	+25	+35	+45	+59
		+36	0	-13	-25	-35	-59	-22	-9	+3	+13	+23	+37
120	180	+83	+40	+26	+12	0	-28	0	+14	+28	+40	+52	+68
		+43	0	-14	-28	-40	-68	-25	-11	+3	+15	+27	+43
180	250	+96	+46	+30	+13	0	-33	0	+16	+33	+46	+60	+79
		+50	0	-16	-33	-46	-79	-29	-13	+4	+17	+31	+50

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Cylindrical shaft ends, extract from DIN 748 Part 1 (long)

	Diameter in mm																				
	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70	75	80	85	90	95	100
ISO tolerance zone	k6												m6									
End length in mm	50	60		80				110						140				170				210

Central holes according to DIN 332 Part 2



Form DS (with thread) DIN 332/2

Recommended diameter ranges d_6 [1]		DS form dimensions									
above	up to	d_1	d_2 [2]	d_3	d_4	d_5	t_1 +2	t_2 min.	t_3 +1	t_4 approx.	t_5 approx.
7	**10**	M3	2.5	3.2	5.3	5.8	9	12	2.6	1.8	0.2
10	**13**	M4	3.3	4.3	6.7	7.4	10	14	3.2	2.1	0.3
13	**16**	M5	4.2	5.3	8.1	8.8	12.5	17	4	2.4	0.3
16	**21**	M6	5	6.4	9.6	10.5	16	21	5	2.8	0.4
21	**24**	M8	6.8	8.4	12.2	13.2	19	25	6	3.3	0.4
24	**30**	M10	8.5	10.5	14.9	16.3	22	30	7.5	3.8	0.6
30	**38**	M12	10.2	13	18.1	19.8	28	37	9.5	4.4	0.7
38	**50**	M16	14	17	23	25.3	36	45	12	5.2	1.0
50	**85**	M20	17.5	21	28.4	31.3	42	53	15	6.4	1.3
85	**130**	M24	21	25	34.2	38	50	63	18	8	1.6
130	**225**	M30 [3]	26.5	31	40.2	44.6	60	77	22	8	1.9
225	**320**	M36 [3]	32	37	49.7	55	74	93	22	11	2.3
320	**500**	M42 [3]	37.5	43	60.3	66.6	84	105	26	15	2.7

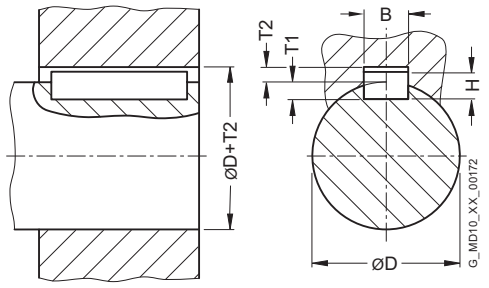
[1] Diameter refers to the finished workpiece

[2] Tap hole drill diameter according to DIN 336 Part 1

[3] Dimensions not acc. to DIN 332 Part 2

A

PARALLEL KEY CONNECTIONS TO DIN 6885-1



For moderate operating conditions, the hub keyway tolerance JS9 is recommended.

In harsh operating conditions or during reversing operation, the keyway width tolerance P9 must be preferred.

With two parallel keyways, the keyway width tolerance JS9 should be specified in order to simplify the assembly.

The shaft keyway width has to be specified with the tolerance N9.

Diameter		Keyway width	Parallel key height	Shaft keyway depth	Hub keyway depth	Deviation for shaft and hub keyway depth	Deviation table for keyway width B	
above D mm	up to mm	B mm	H mm	T1 mm	T2 mm	mm	JS9 µm	P9 µm
	10	3	3	1.8	1.4	+0.1	+12.5	-6
							-12.5	-31
10	12	4	4	2.5	1.8	+0.1	+15	-12
							-15	-42
12	17	5	5	3	2.3	+0.1	+15	-12
							-15	-42
17	22	6	6	3.5	2.8	+0.1	+15	-12
							-15	-42
22	30	8	7	4	3.3	+0.2	+18	-15
							-18	-51
30	38	10	8	5	3.3	+0.2	+18	-15
							-18	-51
38	44	12	8	5	3.3	+0.2	+21.5	-18
							-21.5	-61
44	50	14	9	5.5	3.8	+0.2	+21.5	-18
							-21.5	-61
50	58	16	10	6	4.3	+0.2	+21.5	-18
							-21.5	-61
58	65	18	11	7	4.4	+0.2	+21.5	-18
							-21.5	-61
65	75	20	12	7.5	4.9	+0.2	+26	-22
							-26	-74
75	85	22	14	9	5.4	+0.2	+26	-22
							-26	-74
85	95	25	14	9	5.4	+0.2	+26	-22
							-26	-74

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Diameter above D mm	Diameter up to mm	Keyway width B mm	Parallel key height H mm	Shaft keyway depth T1 mm	Hub keyway depth T2 mm	Deviation for shaft and hub keyway depth mm	Deviation table for keyway width B JS9 µm	Deviation table for keyway width B P9 µm
95	110	28	16	10	6.4	+0.2	+26	-22
							-26	-74
110	130	32	18	11	7.4	+0.2	+31	-26
							-31	-88
130	150	36	20	12	8.4	+0.3	+31	-26
							-31	-88
150	170	40	22	13	9.4	+0.3	+31	-26
							-31	-88
170	200	45	25	15	10.4	+0.3	+31	-26
							-31	-88
200	230	50	28	17	11.4	+0.3	+31	-26
							-31	-88
230	260	56	32	20	12.4	+0.3	+37	-32
							-37	-106
260	290	63	32	20	12.4	+0.3	+37	-32
							-37	-106
290	330	70	36	22	14.4	+0.3	+37	-32
							-37	-106
330	380	80	40	25	15.4	+0.3	+37	-32
							-37	-106
380	440	90	45	28	17.4	+0.3	+43.5	-37
							-43.5	-124
440	500	100	50	31	19.4	+0.3	+43.5	-37
							-43.5	-124

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RELATED CATALOGS

Torsionally Rigid Couplings

FLE 10.1
FLEX-C10001-00-7600



Flexible Couplings

FLE 10.2
FLEX-C10002-00-7600



Highly Flexible Couplings

FLE 10.3
FLEX-C10003-00-7600



Fluid Couplings

FLE 10.4
FLEX-C10004-00-7600



ARPEX
High Performance Couplings

FLE 10.5
FLEX-C10120-00-7600



SIPEX und BIPEX-S
Backlash-free couplings

FLE 10.6
FLEX-C10121-00-7600



ARPEX
Safety couplings

FLE 10.7
FLEX-C10122-00-7600



FASTEX
Clamping elements

FLE 10.8
FLEX-C10152-00-7600

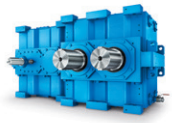


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FLENDER SIP
Standard Industrial Planetary Gear Units
MD 31.1
PDMD-C10154-00



FLENDER CHG
Helical Gear Units
MD 20.10
PDMD-C10155-00



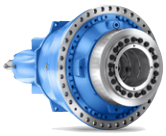
Gear units
Fast Track
MD 20.12
PDMD-C10156-00



Bucket Elevator Drives
MD 20.2
PDMD-C10157-00



PLANUREX 3
Planetary Gear Units
FLE 20.3
FLEX-C10052-00-7600



Paper Machine Drives
MD 20.5
PDMD-C10159-00



Conveyor Belt Drives
MD 20.6
PDMD-C10160-00



Marine Reduction Gearboxes
MD 20.7
PDMD-C10161-00



DUORED 2
Helical Gear Units, Load-sharing
MD 20.8
PDMD-C10162-00



Pinion Drive for Tube Mills
MD 20.9
PDMD-C10163-00



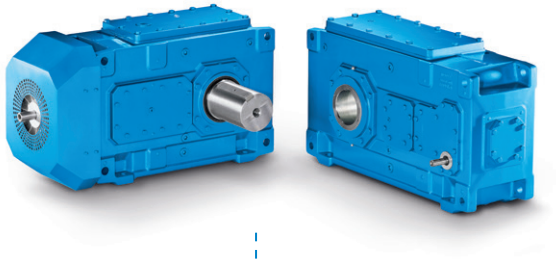
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THE RIGHT GEAR UNIT SOLUTION FOR ANY REQUIREMENT

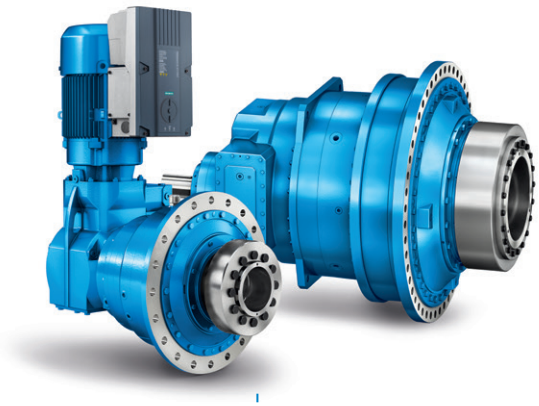
We provide helical and planetary gear units made up of standard modules or as a complete application solution.

Helical and planetary gear units from Flender are modern drive solutions that satisfy the most varying and extreme demands, day after day and year after year. For decades, plant operators have been achieving high system reliability and low lifecycle costs in every conceivable industry with our helical gear units.



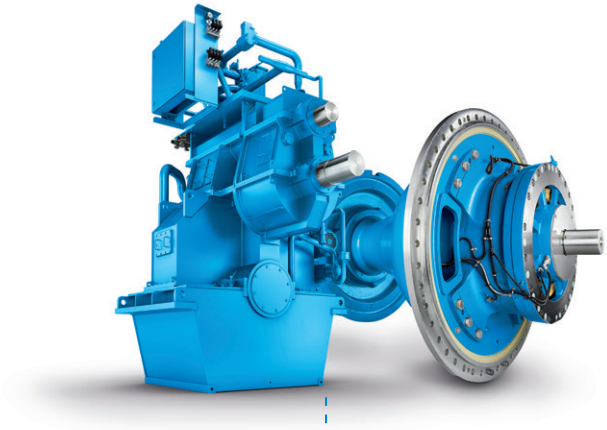
Helical and bevel helical gear units

Flender helical and bevel helical gear units are by far the most comprehensive range of industrial gear units in the world.
It ranges from a multi-faceted universal gear unit portfolio and application-specific gear units to customer-specific solutions.
Rated torque: 3,300 Nm ... 1,400,000 Nm



Planetary Gear Units

With Flender planetary gear units, we provide a range of durable, reliable and finely graduated gear unit solutions. The series wins customers over due to its highly integrated planetary geared motor and maximum conformity with all international motor standards.
It also brings quality and performance in a good ratio of lifecycle costs to price.
Rated torque: 10,000 Nm ... 5,450,000 Nm



Application-specific gear units

With application-specific gear units, Flender provides by far the most application solutions and thus covers nearly every drive-related need from hundreds of applications in industry and the acquisition of raw materials.
Rated torque: up to 10,000,000 Nm



Customer-specific designs

Our experts are available at any time for special requirements during the development of new products. From designing and simulating complex drive solutions to implementing them, we work together with you to resolve multi-layered tasks.



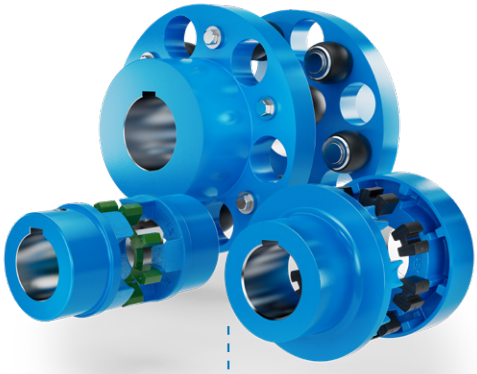
THE PERFECT COUPLING FOR THE PERFECT GEAR UNIT

We provide elastic, highly elastic, rigid and hydrodynamic solutions.

Regardless of which demands are made on the coupling: Low or high performance, demanding operating conditions or high ambient temperatures, dusty or hazardous environments – we have the right portfolio. Our comprehensive range of couplings offers a large number of sizes and designs with a torque range from 0.5 to 10,000,000 Nm.

In over 90 years of development, conception and production, our product portfolio has grown to its current level of diversity. Nearly every matured coupling solution is available as a standard item in our modular system. This saves our customers time and money.

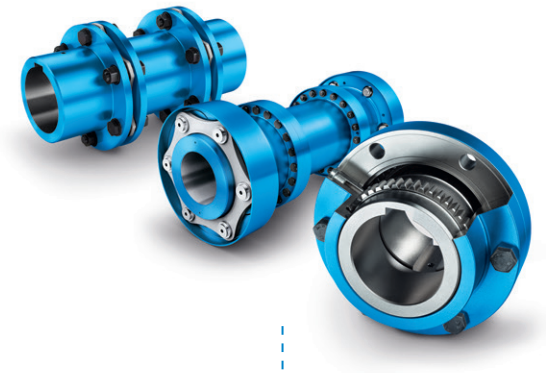
We are a powerful and flexible player in every market in the world – just like our customers. The production of our coupling components aims for maximum quality. As a trio, the setup, material and design result in optimal coupling solutions – rugged, dependable, largely low-maintenance and, above all, available at any time, anywhere. We provide high quality, first class delivery performance, and comprehensive service.



Flexible couplings

Our elastic couplings are pluggable and easy to install. The elastomer element equalizes the shaft offset and absorbs impacts from the motor or driven machine.

Nominal output torque: 12 Nm ... 1,690,000 Nm



Torsionally rigid couplings

Our compact steel couplings provide extremely precise transmission of high torques, especially in harsh operating conditions and extreme temperatures.

Nominal output torque: 92 Nm ... 7,200,000 Nm



Hydrodynamic couplings

Soft start, overload protection, torsional vibration damping – FLUDEX® fluid couplings allow the torque-limited approach and have very little slippage at rated load.

Power: 1.2 kW ... 2,500 kW

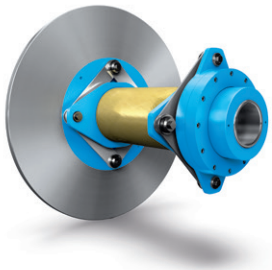


Highly-flexible couplings

Highly flexible couplings are well-suited for connecting machines that operate asymmetrically. They are preferred for use in systems that are periodically operated.

Nominal output torque: 24 Nm ... 90,000 Nm





Application-specific couplings

Flender offers a variety of application-specific couplings for rail vehicles and use in wind energy generation.



Backlash-free couplings

Our couplings act as a modular interface between the motor and the work machine to ensure reliable, backlash-free power transmission in servodrives and positioning drives.

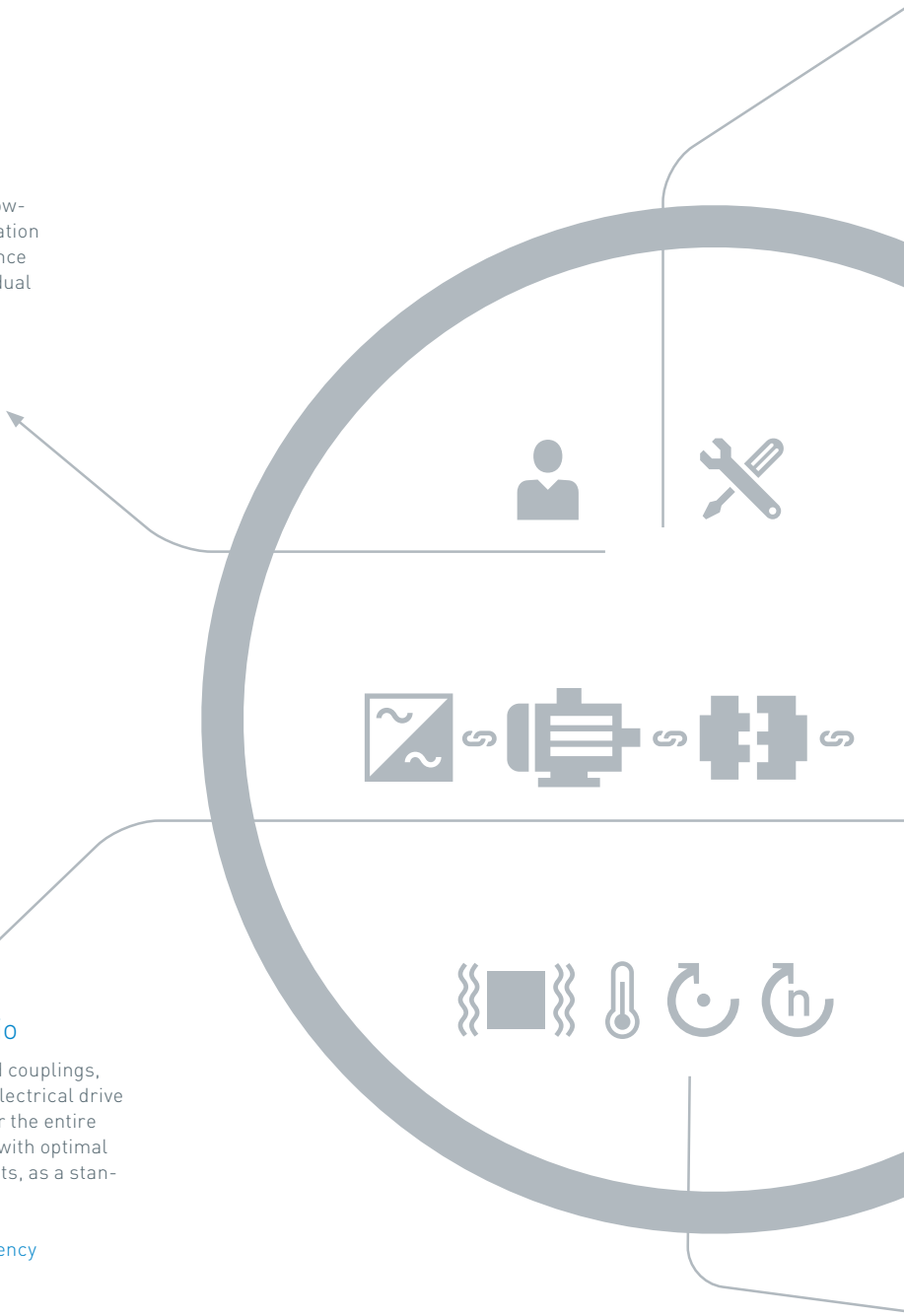
Nominal output torque: 0.1 Nm ... 5,000 Nm

Flender's system competence turns first-class components into systems with tangible added value. Drive systems from Flender ensure maximum productivity, energy efficiency and reliability in any automation environment.

Consultation

Our customers use our interdisciplinary know-how, our application competence, our innovation strength and, last but not least, our experience to find the right drive system for their individual requirements.

Reduced engineering time, lower costs



Integrated drive portfolio

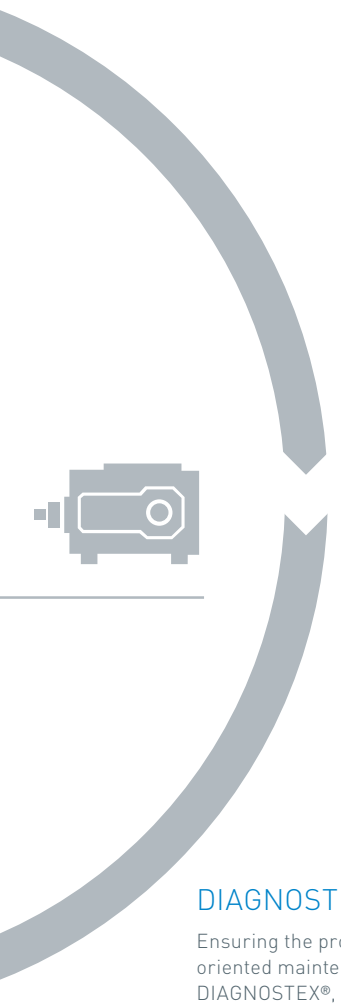
We not only provide gear units and couplings, but also have the competence in electrical drive technology that enables us to offer the entire drive train – perfectly integrated, with optimal interaction between all components, as a standard or individual solution.

Fewer interface risks, more efficiency

Flender service

From diagnostics and support, replacement part and repair services, all the way to maintenance and retrofit services – the Flender service portfolio creates individual solutions, fully and completely tailored to the needs of our customers. In this way, a gear unit remains an original Flender gear unit.

Increased system availability, reduced lifecycle costs



DIAGNOSTEX

Ensuring the process stability requires status-oriented maintenance of the drive train. With DIAGNOSTEX®, sensors measure deviations of our gear units from the target status. These can be analyzed and evaluated in terms of maximized system availability.

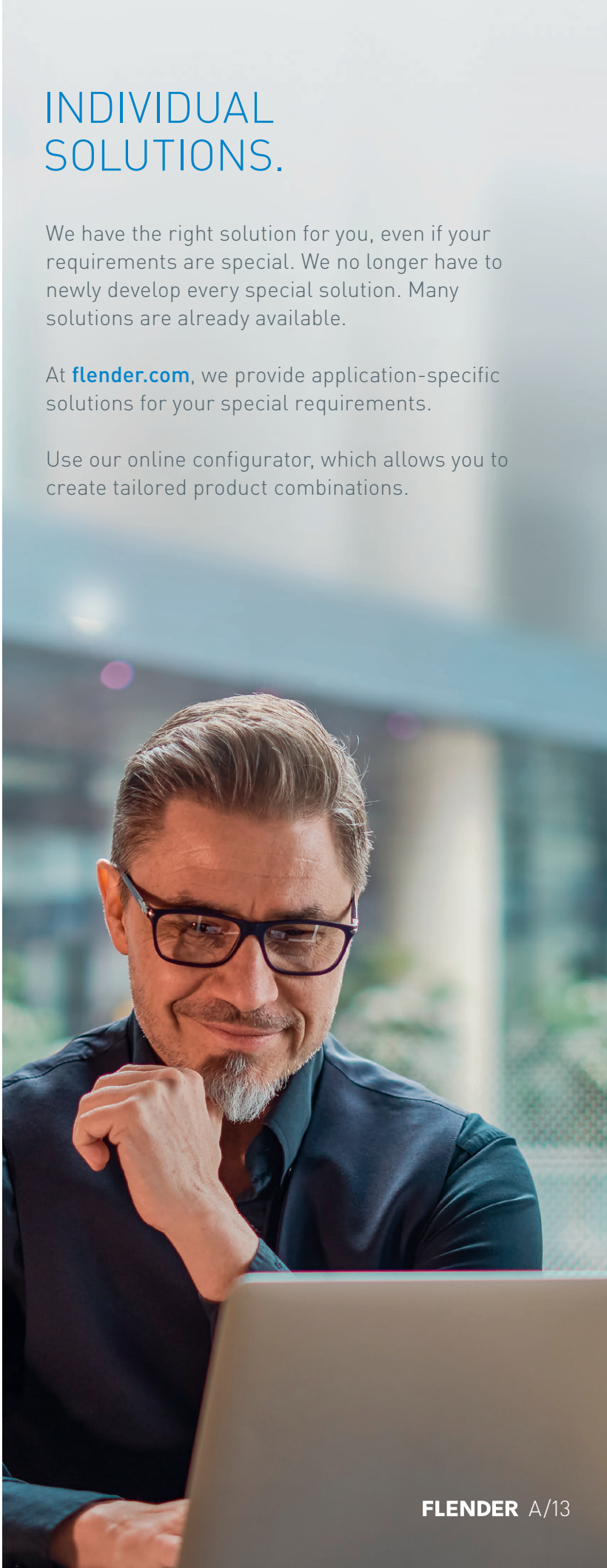
Industrie 4.0, reduced costs

INDIVIDUAL SOLUTIONS.

We have the right solution for you, even if your requirements are special. We no longer have to newly develop every special solution. Many solutions are already available.

At **flender.com**, we provide application-specific solutions for your special requirements.

Use our online configurator, which allows you to create tailored product combinations.



GREAT EXPERTISE IN YOUR INDUSTRY TOO.

Each industry has its own conditions. Every application has its own specific requirements. We are looking forward to meeting your challenges.

We probably already have the right solution at hand. Here are a few examples:



Minerals and mining

Requirement:
Perfectly coordinated drive system



Cement

Requirement:
Low maintenance effort and cost, sealing due to dirt in surroundings



Plastics and rubber

Requirement:
Absorption of high axial forces, suitability for explosion protection



Environmental and recycling

Requirement:
Highest possible reliability, rugged design



Pulp and paper

Requirement:
Suitability for centrally located lubrication



Industrial cranes

Requirement:
Quick availability, version with double drive shaft



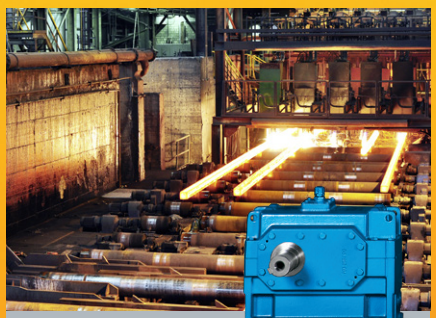
Chemicals

Requirement:
Absorption of forces from the manufacturing process



Power generation

Requirement:
Effective cooling, speed adjustment for motor to fan



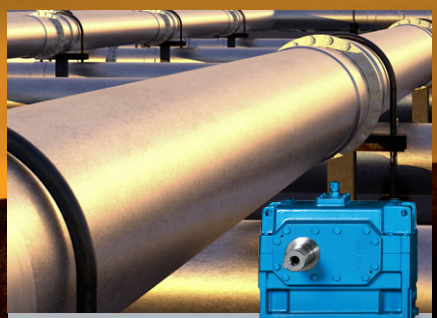
Metals

Requirement:
Harsh working conditions, high peak loads



Harbor cranes

Requirement:
Specific axle clearance, frequent start-up



Oil and gas

Requirement:
Flexible adaptation to speed requirements



Water and wastewater

Requirement:
Absorption of external forces, oil-retaining pipe required



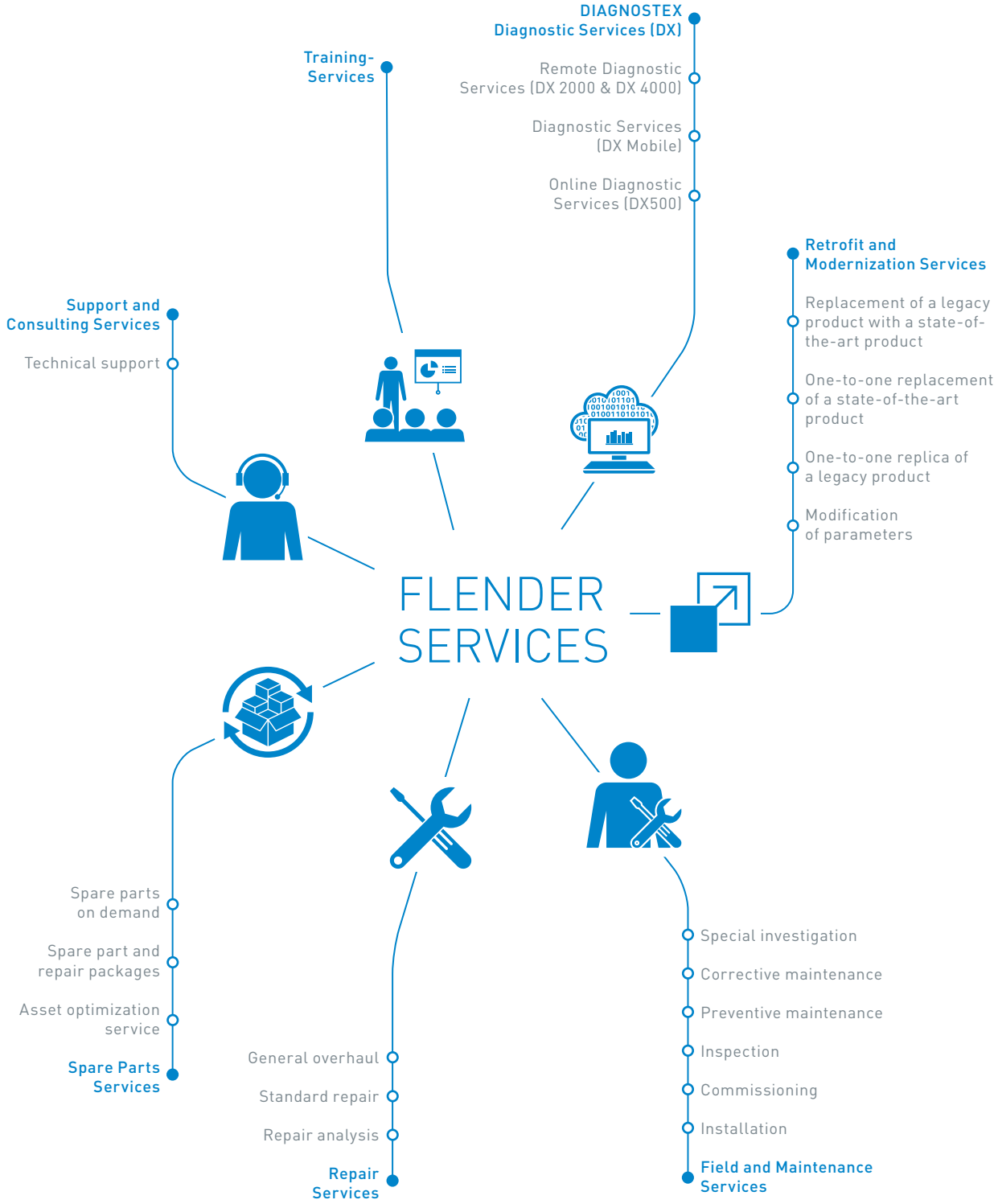
AN ORIGINAL FOR THE LONG TERM WITH ORIGINAL FLENDER SERVICES

Ever increasing requirements make it more and more important for industrial plants to work with maximum productivity and efficiency. Flender Services give companies a decisive advantage over the competition in industry, the acquisition of raw materials and energy production. In view of the high cost pressure, increasing energy prices and stricter and stricter environmental stipulations, our services are becoming a decisive factor to success over the competition.

Enjoy the support of our service experts, from planning, development and operation to the modernization of your plant and benefit from our experience and in-depth know-how of your application – in more than 100 countries, seven days a week, 24 hours a day.

Reduce standstills, minimize downtimes due to failure, and increase the productivity, flexibility and cost efficiency of your plant.

OUR OFFER FOR GEAR UNITS AND COUPLINGS AT A GLANCE.



FLENDER

FLENDER COUPLINGS
CATALOG **FLE 10.5**
EDITION 2024.1 EN



WE **MOVE** the WORLD

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Germany

Article no.: FLEX-C10120-00-7600

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The information given in this product catalog includes descriptions and performance features that in specific applications do not always apply in the form described or may change through further-development of the products. The desired performance features are binding only if they are expressly agreed on conclusion of contract. Subject to availability for delivery and to technical changes.