



# cord reinforced flexible coupling

with Tenpu fiber



**SGFlex-3F**

The SGFlex-3F coupling system incorporates industry proven SGFlex flexible discs with solid steel flanges or flywheel combinations to provide an integrated solution.

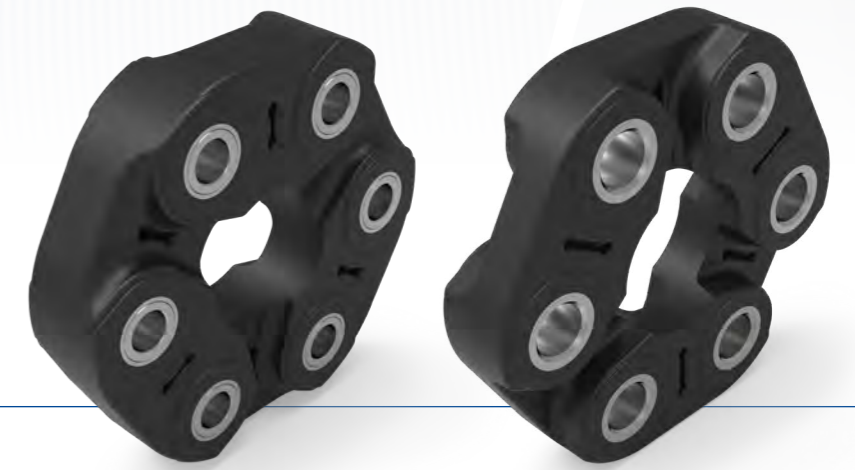
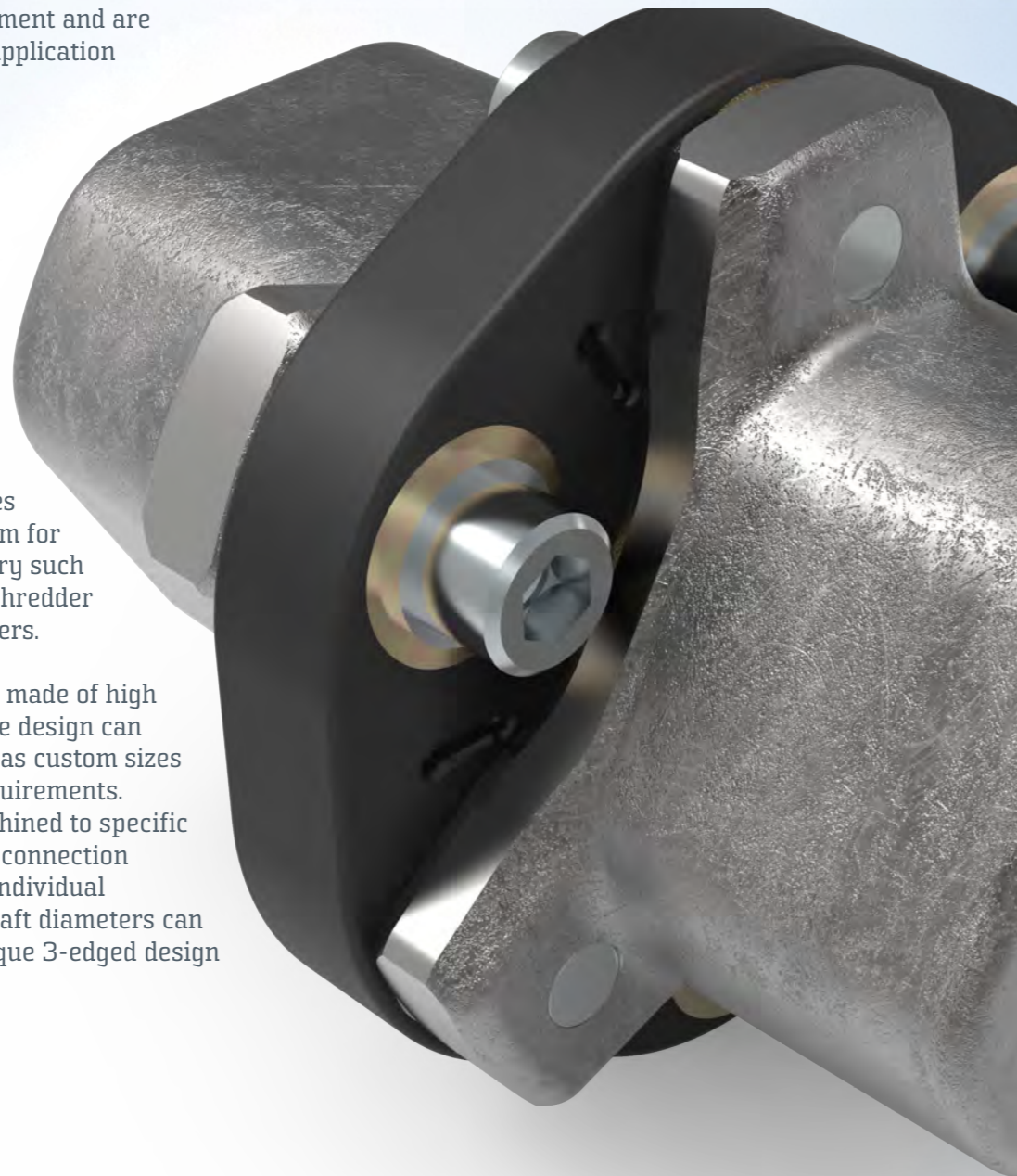
SGFlex couplings are highly durable, reinforced and made of high-quality elastomer with strong cord reinforcement >Tenpu fiber< for safe and effective torque transfer for any applications.

SGFlex-3F couplings compensate axial, radial and angular misalignment and are able to operate in extreme application conditions. They provide effective dampening for torque peaks and shock loads.

Some common applications include Pump systems, Hydraulic drives and Conveyor drivelines.

The high power density ratio and outstanding durability and performance of the SGFlex coupling makes it the perfect coupling system for all kinds of special machinery such as wood cutting machines, shredder applications and rock crushers.

The forged steel flanges are made of high quality steel and its versatile design can support all common as well as custom sizes of shaft/hub connection requirements. The flange hubs can be machined to specific keyway/slot or multi spline connection requirement depending on individual requirements. Very large shaft diameters can be connected due to the unique 3-edged design of the flanges.



The flanges are protected against corrosion by electroplated coating which ensures outstanding storing characteristics and protects the steel parts against aggressive media and environmental impacts. Applications in corn harvesting machines, inside biogas fermenters and in the salty area of the marine industry prove the excellent resistance against unfriendly environment.

SGFlex-3F flanges and flex discs are built together by a simple screw connection, using high quality bolts (grade 10.9) and high quality washers (300 HV hardness). The screw connection is easy to install, as the bolts are bolted directly into the flange material. Due to this, the SGFlex coupling can be replaced without disassembling the metal parts, just by loosen the bolts and replacing the flexible disc in radial direction.

In order to choose the right coupling size for your application, calculate the nominal torque  $T_N$  of your system.

$$T_N = \frac{9550 \times P \text{ [kW]}}{n \text{ [rpm]}}$$

$$T_{KN} \geq T_N$$

$T_N$	Nominal torque of the system in Nm
$T_{KN}$	Max permissible nominal torque of flexible coupling
P	Power in kW
n	Speed in rpm

Further take following points into account:

- » Due to the constructive composition of SGF flexible couplings, normally it is not necessary to correct  $T_N$  for machine types or thermal influences.
- » In addition to considering static loads when selecting a flexible coupling, we always recommend a calculation of the vibratory behaviour of the drive train to avoid undesired resonance phenomena.
- » Under unfavourable conditions, running the drive train in resonance mode can lead to destruction of individual components within minutes and should be avoided on principle.
- » The data needed for the calculation is given in the technical datasheet according to the SGFlex coupling and explained in the technical data explanation SGF-TL-001 (available upon request).
- » At high load frequencies, take heed that the maximum permissible power loss of the individual flexible coupling is not exceeded.
- » If an SGF coupling is used as a replacement solution in an existing system, bearings loads may increase due to altered rigidities.

## THE SGF TENSION-FORCE-PRINCIPLE



**Torque is transmitted almost exclusively via the vulcanised-in cord inlays (Tenpu fiber) by the unique SGF tension-force-principle.**

The cord inlays serve to damp torque peaks and to absorb start-up impacts. The rubber takes on a supporting and protective function for the cord packets and serves to isolate noises due to the interruption of the structure-borne noise path.

YouTube



You can find videos to our application solutions on our **Youtube Channel**

### Properties

- » Compensation of radial, axial and angular misalignment
- » Damping of torque peaks in the drivetrain
- » Electrically insulating upon request

### Benefits

- » High power density due to unique power transmission via Tenpu® technology
- » Resistant to shock loads

### Common Applications

- » For connecting combustion engines and generators, including any related drive equipment in power plants and power stations or connecting combustion engines and generators in combined heating and power plants and power stations
- » As a flexible coupling in drivetrains such as vibrating screens and test benches
- » Movement compensation and vibration absorption between engines and hydraulic pumps in forklifts, cement trucks or other similar equipment
- » As a flexible connecting element in mixers, pumps and agricultural machinery
- » For connecting the transmission and drive shaft in road, rail, mining, military or marine (ship) applications



# Robust. Flexible. Unique.

**SGFlex-3F couplings are torsional flexible, non-shiftable couplings. They are used to compensate radial, axial or angular displacements of rotating components (e.g. shafts), to dampen vibrations in the drive train and to minimise torque peaks.**

The SGFlex-3F offers 3 types of couplings each 6 standardized sizes with a torque range from 200Nm – 3.200Nm.

e.g. **SGFlex-3FD-096**

↑            ↑  
 Type      Size

All forged 3-arm flanges come with a pilot hole to adjust the bore to the specific needs. The max. possible bore diameter for key connection acc. to DIN6885-1 or ASME B17.1 is given in the tables on the next pages. Bore processing and special designs are available upon request.

SGFlex-3F coupling and flanges will be delivered un-assembled but shipped with the required attaching hardware (bolts and washers) in the kit.

For the assembly of SGFlex-3F couplings refer to our "SGF-TL-002" instruction document. For coupling size 220 please pay attention to the rotational direction when installing.

*This coupling is designed to connect two devices with shafts, for example an electric motor with a hydraulic pump. The flanges can be machined to fit on almost any shaft design. The coupling is easy to install, either fully assembled or separately in the mounting space. For maintenance, the flexible coupling can be replaced without moving neither the devices or the flanges.*

*The flex coupling assembly SGFlex-3FD provides the installation versatility and operational reliability and is the complete solution for your application.*

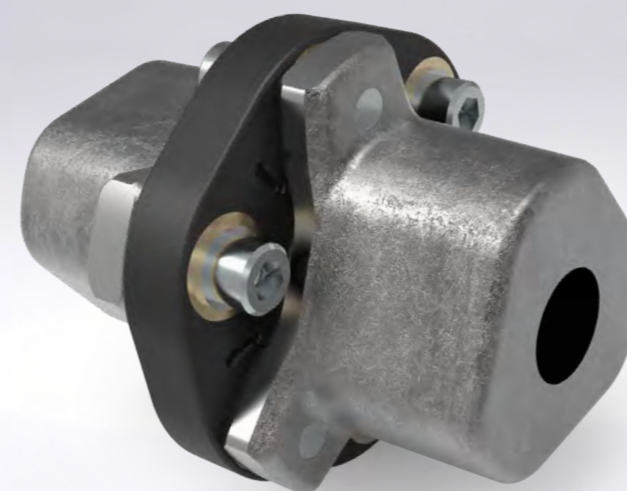
*This coupling is designed to connect an existing structure with a device with shaft for example a pulley with an electric generator. The existing structure has to be adjusted to fit to the connection of the flexible coupling, however it allows the reduction of parts and subsequent costs.*

*The flex coupling assembly SGFlex-3FS is a smart solution for applications with a suitable existing structure combined with the advantages of the SGFlex-3FD.*

*This coupling is designed to connect an engine flywheel with a device with shaft, for example a gear box or an electric generator. The flanges for the flywheel connection are standardized acc. to SAE 620J. The flanges for the shaft connection can be machined to fit to the specific needs.*

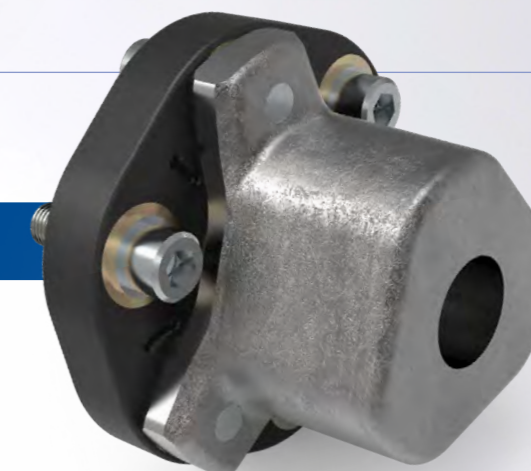
*The flex coupling assembly SGFlex-3FF brings together the advantage of a finished flange for the flywheel connection and the flexibility to assemble it on any kind of shaft.*

## SGFlex-3F



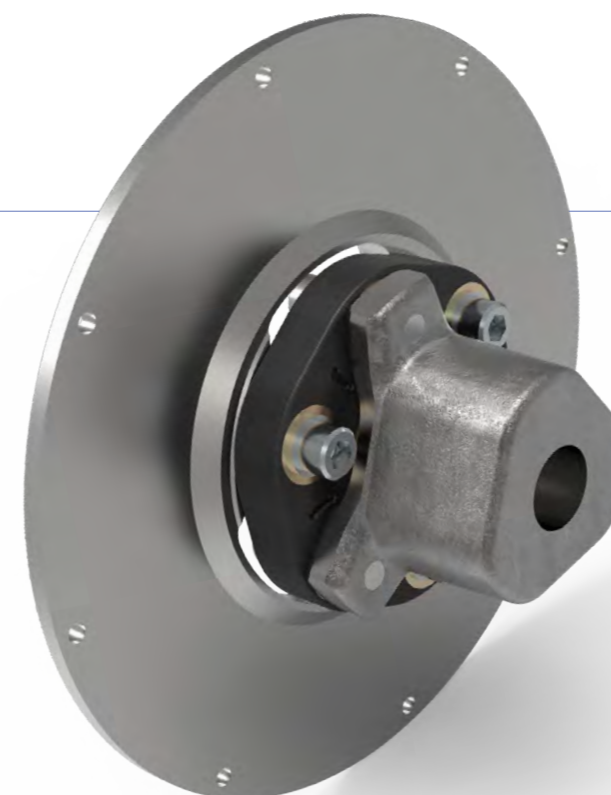
**SGFlex-3FD**

*for shaft – shaft connection*



**SGFlex-3FS**

*for shaft – one side*



**SGFlex-3FF**

*for shaft – flywheel connection*

# APPLICATIONS

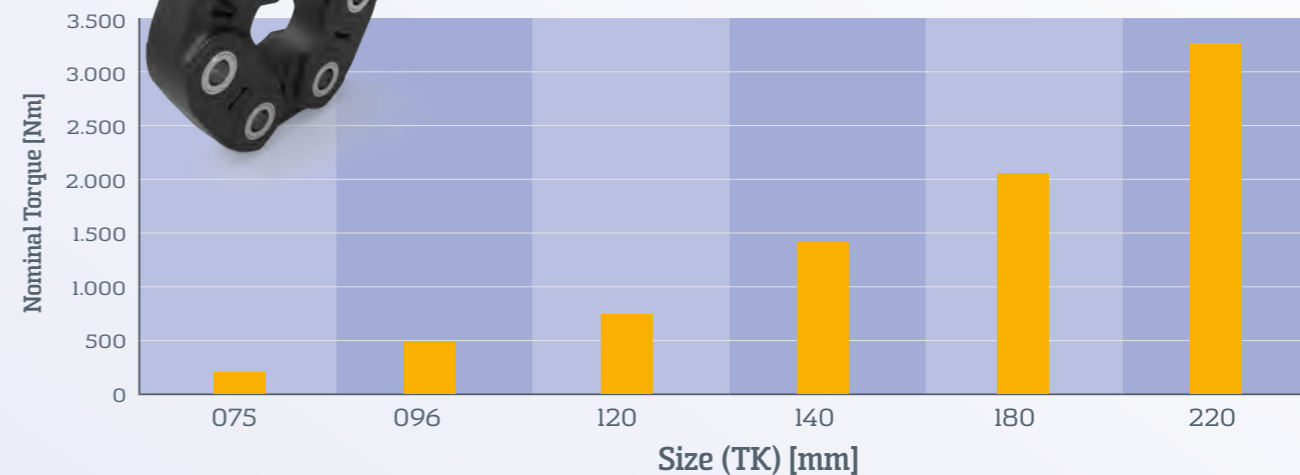


- 1 Railway vehicles:**  
fully or partly suspended drive-trains, hydraulic systems, auxiliary power generation
- 2 Rotating equipment:**  
conveyor belts, pumps, compressors, augers, mixers, test-benches
- 3 Agriculture machinery:**  
harvesters, corn and grain headers, PTOs, disc mowers, cable winches
- 4 Marine application:**  
propulsion, auxiliary power generation
- 5 Construction machinery:**  
excavators, dumpers, concrete pumps, forklifts, concrete pumps,
- 6 Mining:**  
vibrating screens, hydraulic systems, conveyor belts
- 7 Fan and Blower Systems:**  
fans, blowers
- 8 Power generation:**  
Gen-Sets, emergency power generators, CHPs (combined heat and power units)

## NOMINAL TORQUE OF FLEXIBLE COUPLINGS



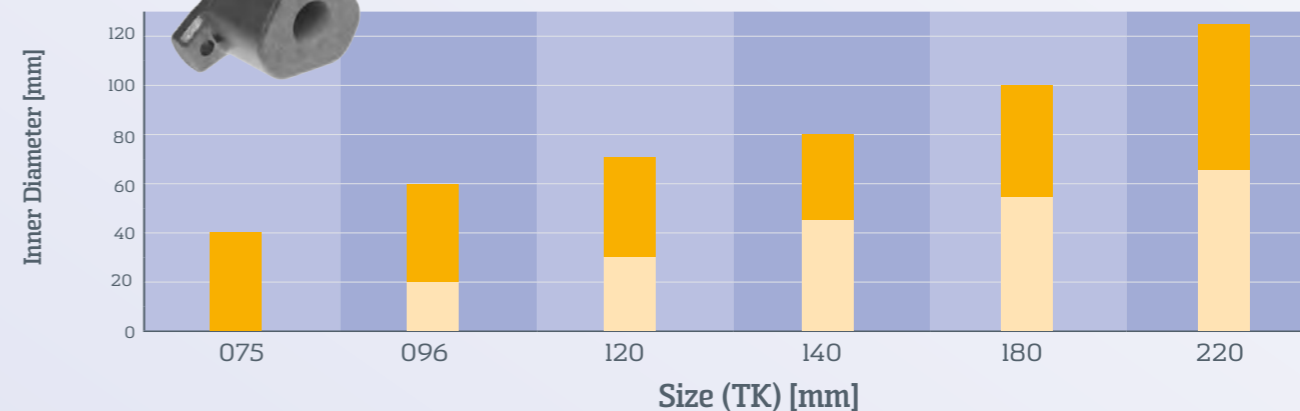
The flexible disc specifies the capability of the flexible coupling assembly SGFlex-3F. The nominal torque helps to choose the size of the flex coupling assembly.



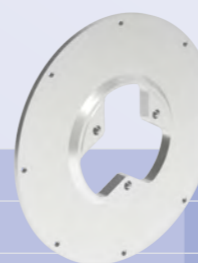
## POSSIBLE INNER DIAMETER OF FLANGES



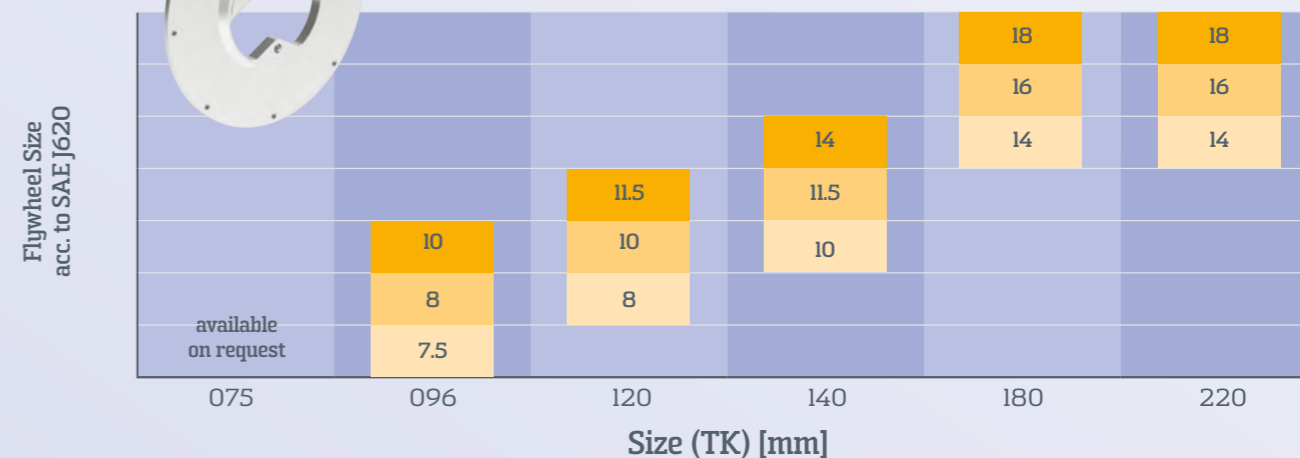
SGFlex-3F flanges come with pilot hole and can be machined to fit to the specific needs. This graph gives you an overview of the possible inner diameter for key connection to help selecting the right size.



## FLYWHEEL SIZE FOR SGFlex-3FF



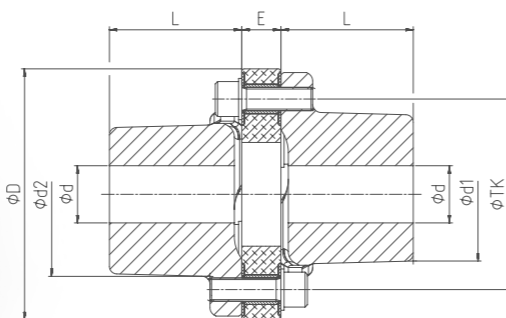
For each coupling size of SGFlex-3FF, there are 3 flanges available to connect to standardized flywheels acc. to SAE J620. Also this flanges are protected against corrosion by electroplated coating. Other flange sizes are available upon request.



# TECHNICAL DATA

## SGFlex-3FD

Designed to connect two shafts

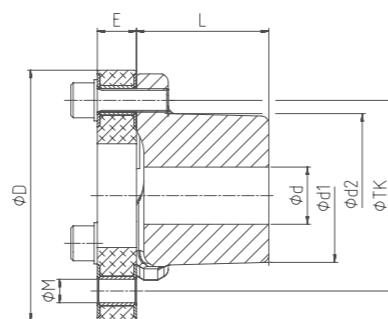


Size (TK)	Torque		D	E	L	d		d1	d2	Weight	Used flexible coupling	Bolt	Tightening Torque	Order number	
	T <sub>KN</sub> *	T <sub>KNMax1</sub>				Pilot	Max**							Description	Part number
075	210	420	101	24	60	-	42 1 1/8"	50	66	3.1	SGFlex-075.02	M10x40	60	SGFlex-3FD-075	GK-10510
096	420	840	132	30	71	19	60 2 3/16"	70	97	6.9	SGFlex-096.02	M12x50	130	SGFlex-3FD-096	GK-10317
120	740	1480	162	30	90	29	70 2 3/4"	82	109	11.7	SGFlex-120.05	M16x55	165	SGFlex-3FD-120	GK-10319
140	1400	2800	195	33	105	44	80 3 1/8"	97	129	18.0	SGFlex-140.04	M16x55	165	SGFlex-3FD-140	GK-10322
180	2040	4080	237	37	125	54	102 4"	126	158	33.7	SGFlex-180.02	M22x70	290	SGFlex-3FD-180	GK-10324
220***	3240 / 1730	6480 / 3460	281	37	155	64	130 5"	150	193	57.9	SGFlex-220.02	M24x70	335	SGFlex-3FD-220	GK-10326

\* Nominal Torque, for further information on technical data see SGF-TL-001, \*\* maximum diameter for key way connection, \*\*\* pay attention to rotational direction acc. to SGF-TL-002

## SGFlex-3FS

Designed to connect a shaft with an existing structure



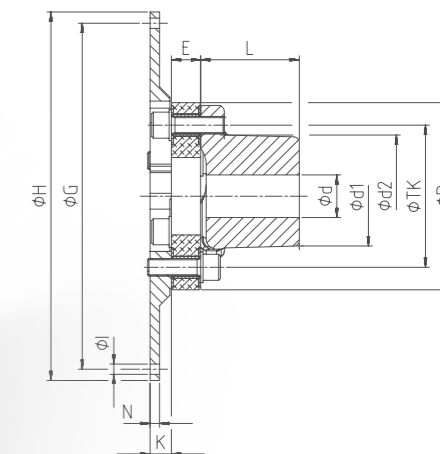
Size (TK)	Torque		D	E	L	d		d1	d2	M	Weight	Used flexible coupling	Bolt	Tightening Torque	Order number	
	T <sub>KN</sub> *	T <sub>KNMax1</sub>				Pilot	Max**								Description	Part number
075	210	420	101	24	60	-	42 1 1/8"	50	66	10.15	1.9	SGFlex-075.02	M10x40	60	SGFlex-3FS-075	GK-10511
096	420	840	132	30	71	19	60 2 3/16"	70	97	12.15	3.9	SGFlex-096.02	M12x50	130	SGFlex-3FS-096	GK-10318
120	740	1480	162	30	90	29	70 2 3/4"	82	109	16.15	6.7	SGFlex-120.05	M16x55	165	SGFlex-3FS-120	GK-10320
140	1400	2800	195	33	105	44	80 3 1/8"	97	129	16.15	10.2	SGFlex-140.04	M16x55	165	SGFlex-3FS-140	GK-10323
180	2040	4080	237	37	125	54	102 4"	126	158	22.15	19.0	SGFlex-180.02	M22x70	290	SGFlex-3FS-180	GK-10325
220***	3240 / 1730	6480 / 3460	281	37	155	64	130 5"	150	193	24.15	31.6	SGFlex-220.02	M24x70	335	SGFlex-3FS-220	GK-10327

\* Nominal Torque, for further information on technical data see SGF-TL-001, \*\* maximum diameter for key way connection, \*\*\* pay attention to rotational direction acc. to SGF-TL-002

# TECHNICAL DATA

## SGFlex-3FF

Designed to connect a flywheel with a shaft



Size (TK)	Torque		D	E	L	K	d		d1	d2	Weight	Used flexible coupling	Bolt	Tightening Torque	Flywheel	Order number	
	T <sub>KN</sub> *	T <sub>KNMax1</sub>					Pilot	Max**								Size	Description
075	210	420	available on request										SGFlex-3FF-075				
096	420	840	132	30	71	15	19	60 2 5/16"	70	97	6.4	SGFlex-096.02	M12x50	130	SAE 7.5	SGFlex-3FF-096	GK-10328
											6.9				SAE 8	GK-10330	
											8.4				SAE 10	GK-10329	
120	740	1480	162	30	90	20	29	70 2 3/4"	82	109	10.0	SGFlex-120.05	M16x55	165	SAE 8	SGFlex-3FF-120	GK-10331
											11.5				SAE 10	GK-10332	
											14.9				SAE 11.5	GK-10333	
140	1400	2800	195	33	105	20	44	80 3 1/8"	97	129	14.9	SGFlex-140.04	M16x55	165	SAE 10	SGFlex-3FF-140	GK-10334
											17.8				SAE 11.5	GK-10335	
											24.8				SAE 14	GK-10336	
180	2040	4080	237	37	125	27	54	102 4"	126	158	33.5	SGFlex-180.02	M22x70	290	SAE 14	SGFlex-3FF-180	GK-10337
											37.2				SAE 16	GK-10338	
											41.5				SAE 18	GK-10339	
220***	3240 / 1730	6480 / 3460	281	37	155	29	64	130 5"	150	193	45.6	SGFlex-220.02	M24x70	335	SAE 14	SGFlex-3FF-220	GK-10340
											49.2				SAE 16	GK-10341	
											53.5				SAE 18	GK-10342	

\* Nominal Torque, for further information on technical data see SGF-TL-001, \*\* maximum diameter for key connection, \*\*\* pay attention to rotational direction acc. to SGF-TL-002

Bolts for flywheel connection are not included!

### Flywheel Connection acc. to SAE J620

Size of Flywheel	H	G	I	N	Number of holes
	[mm]	[mm]	[mm]	[mm]	
SAE 7.5	241.3	222.25	9	8	8
SAE 8	263.52	244.48	11	8	6
SAE 10	314.32	295.28	11	8	8
SAE 11.5	352.42	333.38	11	12	8
SAE 14	466.72	438.15	13	12	8
SAE 16	517.52	488.95	13	12	8
SAE 18	571.5	542.92	18	12	6

# TECHNICAL DATA FLEXIBLE COUPLINGS

## Performance

Size (TK)	flexible coupling	part number	T <sub>KN</sub>	T <sub>KW</sub>	T <sub>KMax1</sub>	T <sub>KMax2</sub>	Max. Speed n <sub>max</sub>
[mm]			[Nm]	[Nm]	[Nm]	[Nm]	[rpm]
075	SGFlex-075.02	GA000-024	210	105	420	1050	7200
096	SGFlex-096.02	GA000-029	420	210	840	2100	6700
120	SGFlex-120.05	GA000-015	740	370	1480	3700	5800
140	SGFlex-140.04	GA000-019-Z1	1400	560	2800	7000	5100
180	SGFlex-180.02	GA000-027	2040	1020	4080	10200	4200
220	SGFlex-220.02*	GA000-003	3240 / 1730	1620	6480 / 3460	16200 / 8600	3500

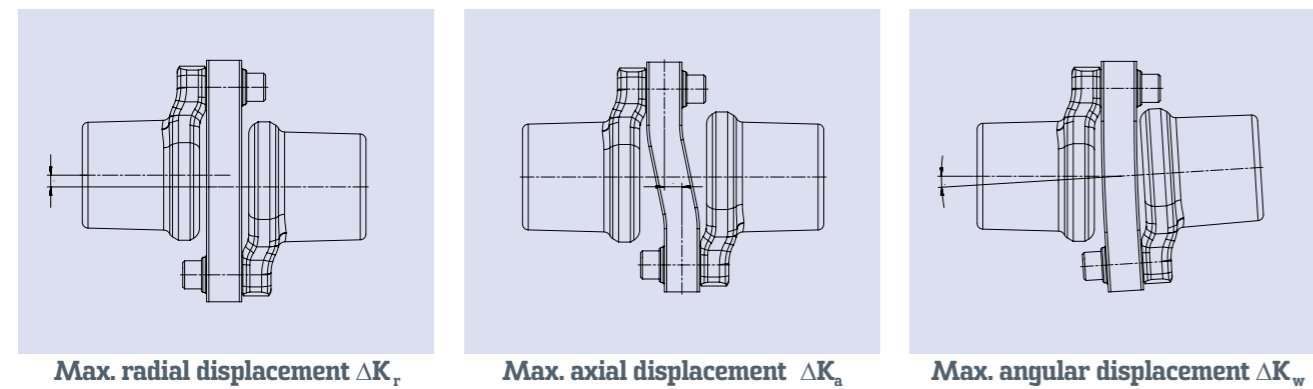
For explanation of technical data see SGF-TL-001

\*pay attention to rotational direction acc. to SGF-TL-002

For further information a technical data sheet for each flexible coupling is available upon request.

## Displacements

Displacements between the drive and output shaft can be compensated by SGF-3F flexible couplings, as described in the following. The specified maximum values apply, however, only to the specific aspect as rated for endurance strength. If different axial displacements occur simultaneously up to the maximum value, reduced durability is to be expected.



Size (TK)	flexible coupling	$\Delta K_r$	$\Delta K_a$	$\Delta K_w$
[mm]		[mm]	[mm]	[°]
075	SGFlex-075.02	0.3	0.6	1
096	SGFlex-096.02	0.7	0.8	1
120	SGFlex-120.05	0.7	1.0	1
140	SGFlex-140.04	0.6	1.2	1
180	SGFlex-180.02	1.0	1.5	1
220	SGFlex-220.02*	1.4	1.9	1

\*pay attention to rotational direction acc. to SGF-TL-002

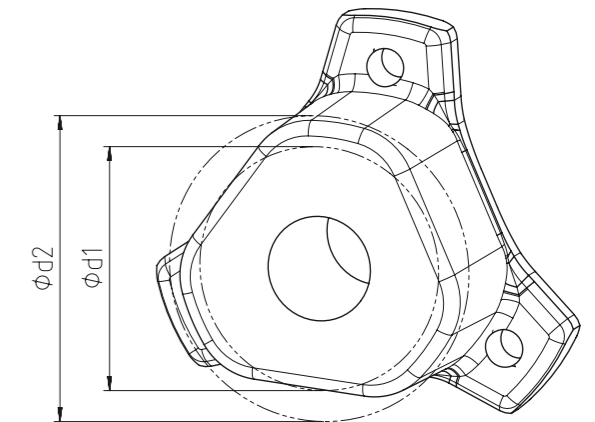
# SGF FLANGES

### Ød1

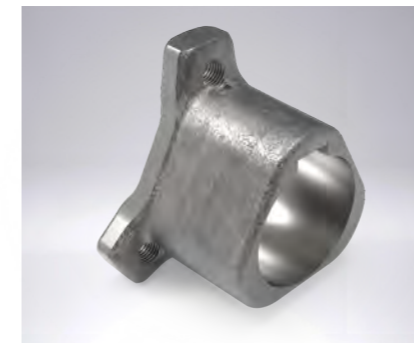
» maximum diameter (e.g. for calculation of the 3-edge part of the flange inner clamping sets of the max diameter for shrink discs)

### Ød2

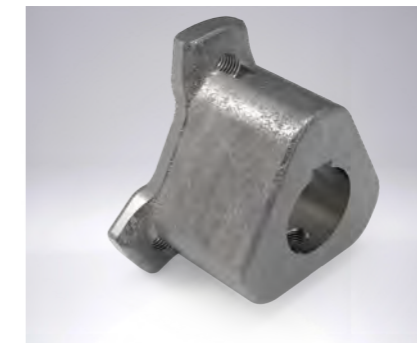
» maximum rotational diameter of the 3-edge part of the flange



## Examples of machined flanges



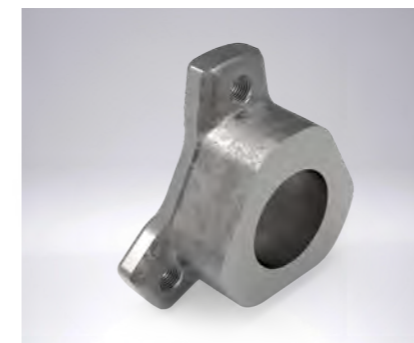
Key connection for bigger shafts thru unique 3-edge design



Key connection with threads for fixing bolts



Frictional connection thru a clamping set



Frictional connection thru a taper bore



Frictional connection thru shrink disc



Spline connection with fastening function

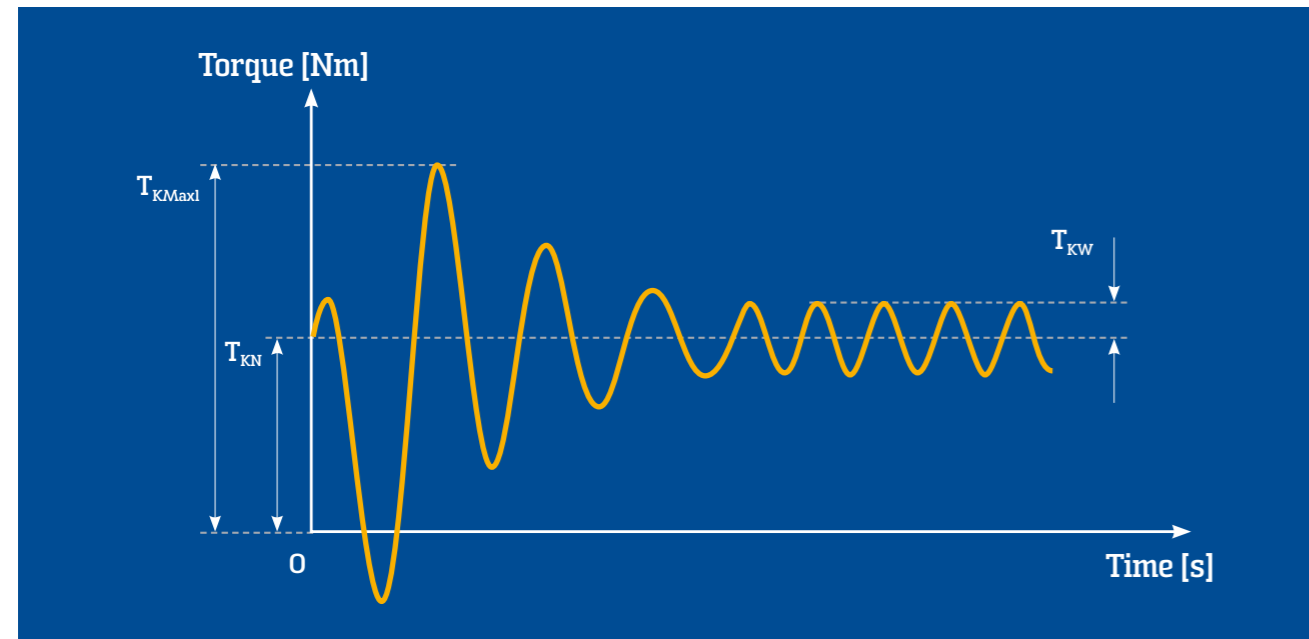
## Additional Information

3D models of SGFlex-3F are available online:  
<http://sgf.partcommunity.com>

Further applicable documents:

- » SGF-TL-001 Explanation of technical data
- » SGF-TL-002 Operating and assembly instructions flexible couplings and flex coupling assemblies
- » Technical data sheets of flexible couplings

## Description Technical Data



### Nominal torque $T_{KN}$

$T_{KN}$  is the nominal torque of the flexible coupling. This torque can be permanently transferred in full by the flexible coupling.

### Maximum torque $T_{KMax1}$

Torques at values of  $T_{KMax1}$  occur regularly in the normal operation of a machine or plant and can be transferred by the flexible coupling without damage as long as the load develops for a short time only and with a frequency not greater than 50,000 load cycles.

Torque peaks at the value of  $T_{KMax1}$  typically occur when starting or stopping, shifting, accelerating or braking.

### Maximum torque $T_{KMax2}$

Torques at a value of  $T_{KMax2}$  do not occur in normal operation of a machine or plant, but can still be transferred by the flexible coupling without destroying it. Massive damage to the flexible coupling as well as damage to the screw connections may result, so that only emergency operation of the flexible coupling may be possible following the application of the  $T_{KMax2}$  load.

Torques at a value of  $T_{KMax2}$  seldom occur, e.g. in cases of damage to the machine, emergency shut-down or abuse. Following the occurrence of torques at a value of  $T_{KMax2}$  we generally recommend replacing the flexible coupling as well as screw connection parts.

### Permissible continuously oscillating torque $T_{KW}$

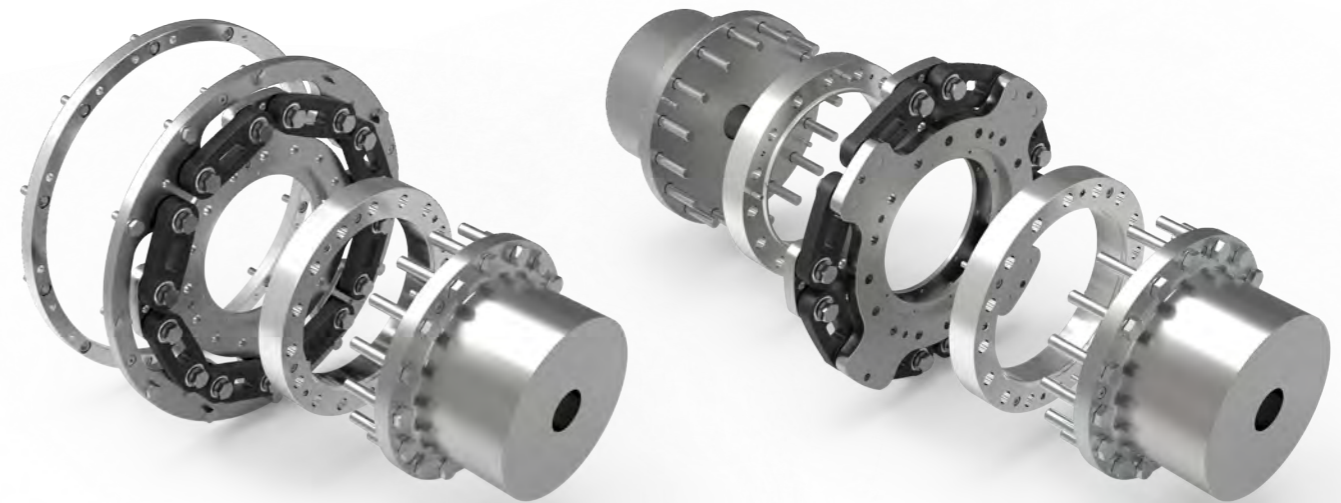
The permissible continuously oscillating torque  $T_{KW}$  is the maximum permissible torque superimposed on the nominal torque. The specification of  $T_{KW}$  is given as vibratory amplitude (peak value).

### Maximum permissible speed $n_{max}$

The maximum permissible speed  $n_{max}$  can be completely utilized continuously. The specified rpm value applies irrespective of the operating temperature as long as the indicated limit values for the operating temperature are complied with. Refer to the operating and assembly instructions SGF-TL-002 (flexible couplings and flex coupling assemblies) for the operating temperature limits.

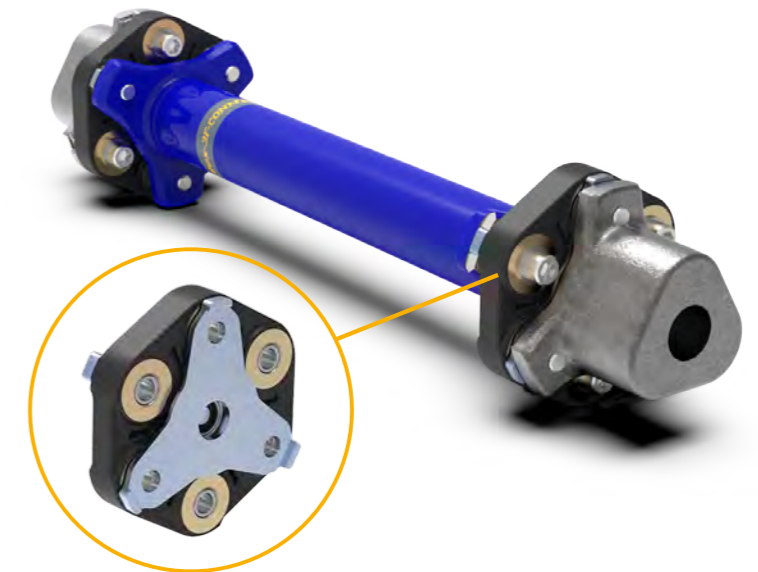
## TENBEX-ECO

A MODULAR LINK COUPLING  
nominal torque up to 40.000 Nm



## SGFlex-3FD-CONNECT

WITH PATENTED CENTERING SYSTEM  
nominal torque up to 3.200 Nm



#### Technical changes & technical data

We reserve the right to make technical changes in the course of further development.

The technical data in the tables as well as on the drawings and datasheets only serve to describe the product and are not to be understood as a guaranteed characteristic in legal terms. All illustrations are only provided as examples.

#### Disclaimer

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SGF accepts no liability for the currency, substantial correctness or completeness of the information contained in this document, except when the errors have occurred due to intent or gross negligence. This concerns possible damages of a pecuniary or non-pecuniary nature suffered by third parties caused by the use of the products we offer.

Installation and commissioning of flexible couplings may be performed solely by qualified personnel. We expressly point out that this document can only provide support and that the customer has responsibility for the configuration and operational safety of the total system.

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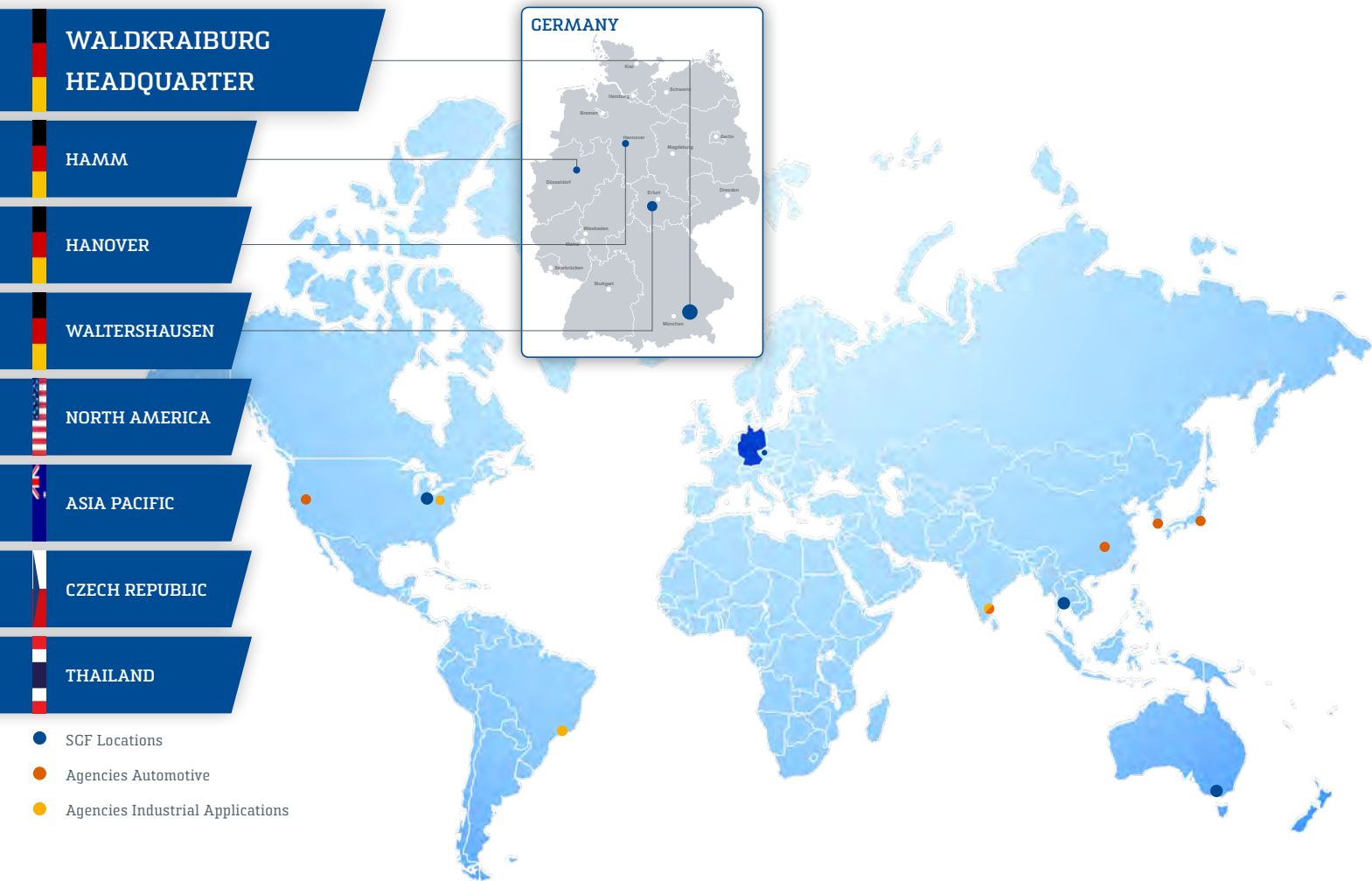
#### Contact

For additional information about the product range and special designs or services (vibratory behaviour of a total system calculations for screw connections, etc.), please contact:

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