CENTA POWER TRANSMISSION

CENTA

CENTAFLEX-T

HIGHLY COMPACT DRIVING WEDGE TYPE COUPLING

ENGLISH

Is this PDF up to date?
click here for an update check!

CF-T-02-16

CENTAFLEX-T

Is this PDF up to date?
click here for an update check!

CENTAFLEX-T
AT A GLANCE

Torsionally stiff wedge type coupling for high torques in confined spaces.

Based on a bridge bearing principle allowing a high power density and good misalignment properties. Torsionally stiff design, however, highly flexible in axial and angular directions ensuring reliable compensation of misalignments. Proves superior when compared to standard wedge type solutions by an extremely compact design and high performance density achieved by optimising its geometry and benefitial omission of the hubstar.

Also available as homokinetic drive shaft. Easy and safe integration into the drive train.

Features

High flexiblity in design
extremely compact build
High torsional and radial stiffness
Cardanically flexible and resiliant axially
low maintenance

Areas of Application

Torque range

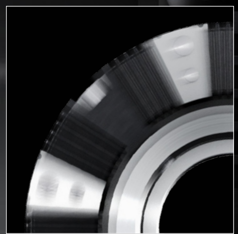
1.2 to 24 kNm

Temperature range

– 40° up to + 90°C (temporary)

For efficient torque transmission and long lifespans at a maximum design flexibility.

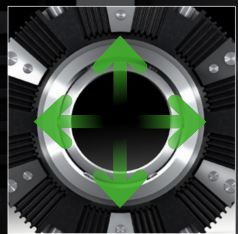
CENTAFLEX-T
SYSTEM



TORSIONAL STIFFNESS

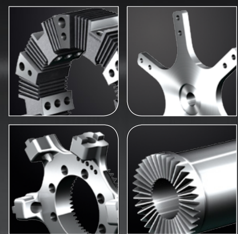
The CENTAFLEX-T convinces with kinematics unique to the market and offers very high torsional stiffness and power density.

Ensuring a reliable compensation of misalignments and smooth operation in confined spaces..



MISALIGNMENT

The CENTAFLEX-T coupling is a wedge type coupling for compensation of misalignments in drivelines, where high torque capacity is required, f.e. when used as a flexible gear box output coupling in rail cars.



MODULARITY

The coupling programme of CENTA is available as a broad standard series. Its modular concept allows any intermediate sizes and multifaceted special designs.

Ensuring fast and efficient deriving of customized solutions.

MOUNTING

By dispensing special tools and enabling axial as well as radial installation of the couplings, CENTA has reduced mounting work and the number of parts to a minimum.

Ensuring fast and time-saving mounting of the coupling without need for hubstars or toothing.

QUALITY

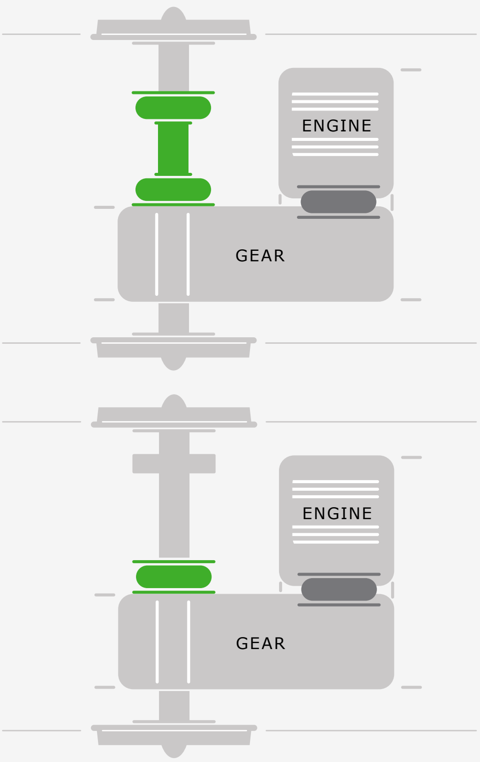
When the going gets tough, quality is priceless. With an exemplary Quality Management, CENTA ensures products that withstand the roughest assignments. CENTA's coupling systems are more than the sum of their parts. CENTA entertains the vision of intelligent products that meet the highest requirements in terms of design and quality.

CENTAFLEX-T

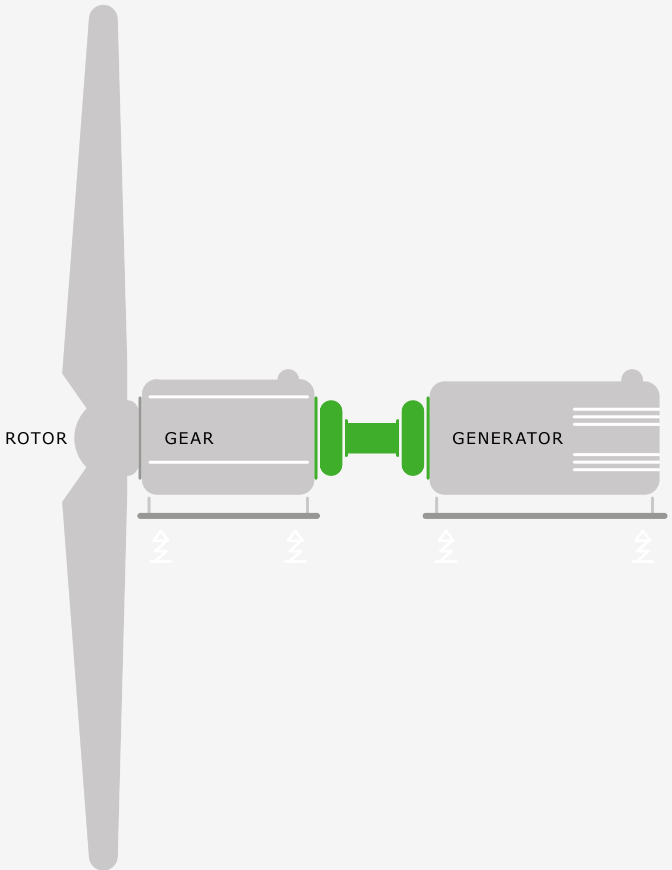
APPLICATIONS

CENTAFLEX-T
APPLICATIONS

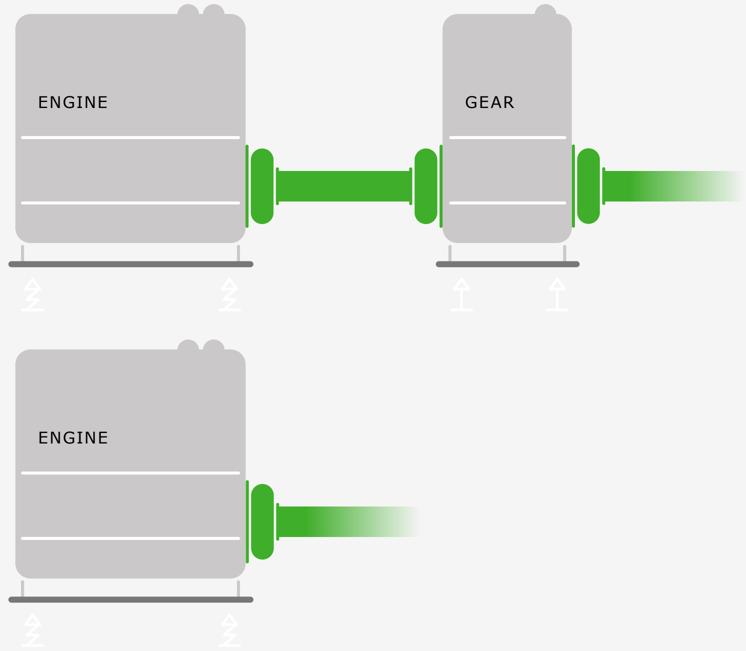
RAIL APPLICATIONS



WIND APPLICATIONS



INDUSTRY APPLICATIONS



Which product for your purpose?
We will gladly assist → www.centa.info/contact

CENTAFLEX-T

TECHNICAL DATA

Questions on product selection?
We will gladly assist → www.centa.info/contact

CENTAFLEX-T

TECHNICAL DATA | **↓ SIZES 360-550**

1	2	3	4	5	7	8	9	10	11	12	13	14	15
Size	Rubber quality [Shore A]	Nominal torque T_{KN} [kNm]	Maximum torque T_{Kmax} [kNm]	Continuous vibratory torque T_{KW} [kNm]	Dynamic torsional stiffness C_{Tdyn} [kNm/rad]	Relative damping Ψ	Speed n_{max} [min^{-1}]	Permissible axial displacement ΔK_a [mm]	Axial stiffness C_a [kN/mm]	Permissible radial displacement ΔK_r [mm]	Radial stiffness C_r [kN/mm]	Permissible angular displacement ΔK_W [°]	Angular stiffness C_W [kNm/°]
360S	70	5,5	16,5	2,2	400	0,82	2100	±4	0,90*	±1	9*	±1,5	0,180*
	80	6,5	19,5	2,6	564	0,73			1,47*		15*		0,295*
360	70	7,5	30	3	2050	1,05	2100	±4	2,10	±1	21	±1,6	0,60
460	70	17	68	6,8	3600	1,05	1650	±6	2,60	±1	36	±1,5	1,00
550	70	24	96	9,6	4010,3	1,08	1500	±5	2,30	±1	27	±1,3	1,32
	80	30	120	12	7700,0	1,06			3,50		35		3,10

* preliminary values.

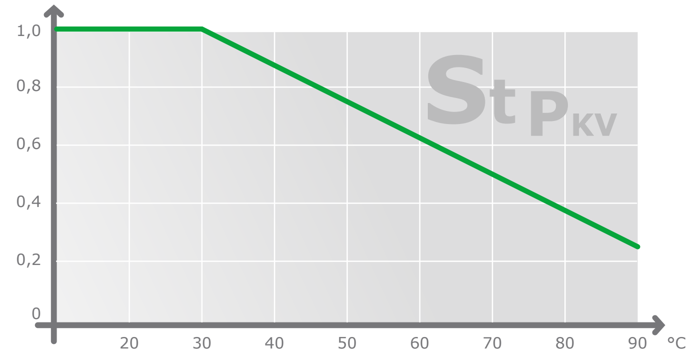
EXPLANATION OF THE TECHNICAL DATA

This appendix shows all explanations of the technical data for all CENTA products.

the green marked explanations are relevant for this catalog:

Are these technical explanations up to date?
click here for an update check!

CENTAFLEX-T



EXPLANATION OF THE TECHNICAL DATA

1 — Size

This spontaneously selected figure designates the size of the coupling.

2 — Rubber quality Shore A

This figure indicates the nominal shore hardness of the elastic element.

The nominal value and the effective value may deviate within given tolerance ranges.

3 — Nominal torque T_{KN} [kNm]

Average torque which can be transmitted continuously over the entire speed range.

4 — Maximum torque [kNm]

T_{Kmax}	This is the torque that may occur occasionally and for a short period up to 1.000 times and may not lead to a substantial temperature rise in the rubber element.

In addition the following maximum torques may occur:

$\Delta T_{Kmax} = 1{,}8 \times T_{KN}$	Peak torque range (peak to peak) between maximum and minimum torque, e.g. switching operation.
$T_{Kmax1} = 1{,}5 \times T_{KN}$	Temporary peak torque (e.g. passing through resonances). ΔT_{Kmax} or T_{Kmax1} may occur 50.000 times alternating or 100.000 times swelling.
$T_{Kmax2} = 4{,}5 \times T_{KN}$	Transient torque rating for very rare, extraordinary conditions (e.g. short circuits).

5 — Continuous vibratory torque T_{KW} [kNm]

Amplitude of the continuously permissible periodic torque fluctuation with a basic load up to the value T_{KN}.

The frequency of the amplitude has no influence on the permissible continuous vibratory torque. Its main influence on the coupling temperature is taken into consideration in the calculation of the power loss.

Operating torque T_{Bmax} [kNm]

The maximum operating torque results of T_{KN} and T_{KW}.

6 — Permissible Power Loss P_{KV} [kW]

Damping of vibrations and displacement results in power loss within the rubber element.

The permissible power loss is the maximum heat (converted damping work into heat), which the rubber element can dissipate continuously to the environment (i.e. without time limit) without the maximum permissible temperature being exceeded.

The given permissible power loss refers to an ambient temperature of 30° C.

If the coupling is to be operated at a higher ambient temperature, the temperature factor St_{PKV} has to be taken into consideration in the calculation.

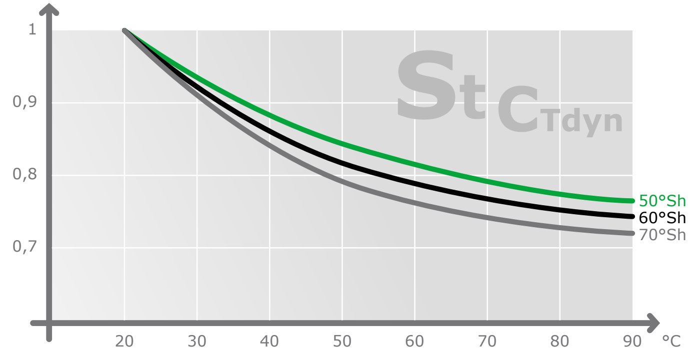
The coupling can momentarily withstand an increase of the permissible power loss for a short period under certain operation modes (e.g. misfiring).

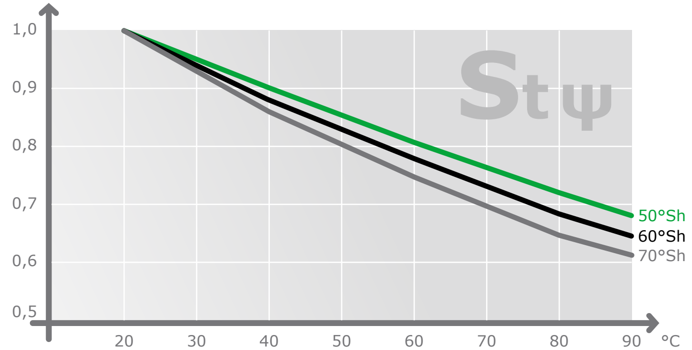
P_{KV30} [kW]

For a maximum period of 30 minutes the double power loss P_{KV30} is permissible. CENTA keeps record of exact parameters for further operation modes.

CENTAFLEX-T

EXPLANATION OF THE TECHNICAL DATA





7

Dynamic torsional stiffness

C_{Tdyn} [kNm/rad]

The dynamic torsional stiffness is the relation of the torque to the torsional angle under dynamic loading.

The torsional stiffness may be linear or progressive depending on the coupling design and material.

The value given for couplings with linear torsional stiffness considers following terms:

- Pre-load: 50% of T_{KN}
- Amplitude of vibratory torque: 25% of T_{KN}
- Ambient temperature: 20°C
- Frequency: 10 Hz

For couplings with progressive torsional stiffness only the pre-load value changes as stated.

The tolerance of the torsional stiffness is ±15% if not stated otherwise.

The following influences need to be considered if the torsional stiffness is required for other operating modes:

- Temperature
  Higher temperature reduces the dynamic torsional stiffness.
  Temperature factor $S_{t\,C_{Tdyn}}$ has to be taken into consideration in the calculation.
- Frequency of vibration
  Higher frequencies increase the torsional stiffness.
  By experience the dynamic torsional stiffness is 30% higher than the static stiffness. CENTA keeps record of exact parameters.
- Amplitude of vibratory torque
  Higher amplitudes reduce the torsional stiffness, therefore small amplitudes result in higher dynamic stiffness. CENTA keeps record of exact parameters.

8

Relative damping

ψ

The relative damping is the relationship of the damping work to the elastic deformation during a cycle of vibration.

The larger this value [ψ], the lower is the increase of the continuous vibratory torque within or close to resonance.

The tolerance of the relative damping is ±20%, if not otherwise stated.

The relative damping is reduced at higher temperatures.

Temperature factor $S_{t\psi}$ has to be taken into consideration in the calculation.

The vibration amplitude and frequency only have marginal effect on the relative damping.

9

Speed

[min^{-1}]

n_{max}	The maximum speed of the coupling element, which may occur occasionally and for a short period (e.g. overspeed). The characteristics of mounted parts may require a reduction of the maximum speed (e.g. outer diameter or material of brake discs).
n_d	The maximum permissible speed of highly flexible coupling elements is normally 90% thereof.

10

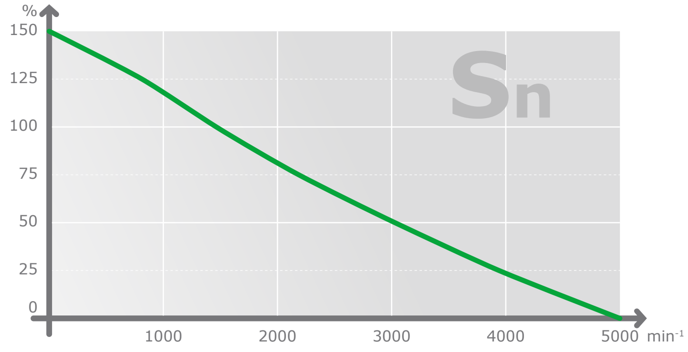
Permissible axial displacement

[mm]

ΔK_a	The continuous permissible axial displacement of the coupling. This is the sum of displacement by assembly as well as static and dynamic displacements during operation.
$\Delta K_{a\,max}$	The maximum axial displacement of the coupling, which may occur occasionally for a short period (e.g. extreme load). The concurrent occurrence of different kinds of displacements is handled in technical documents (displacement diagrams, data sheets, assembly instructions).

CENTAFLEX-T

EXPLANATION OF THE TECHNICAL DATA



11	
Axial stiffness [kN/mm]	
C_a	The axial stiffness determines the axial reaction force on the input and output sides upon axial displacement.
$C_{a\ dyn}$	By experience the dynamic stiffness is higher than the static one. The factor depends on the coupling series.

12	
Permissible radial displacement [mm]	
ΔK_r	The continuous permissible radial displacement of the coupling. This is the sum of displacement by assembly as well as static and dynamic displacements during operation. The continuous permissible radial displacement depends on the operation speed and may require adjustment (see diagrams S_n of the coupling series).
$\Delta K_{r\ max}$	The maximum radial displacement of the coupling, which may occur occasionally and for a short period without consideration of the operation speed (e.g. extreme overload). The concurrent occurrence of different kinds of displacements is handled in technical documents (displacement diagrams, data sheets, assembly instructions).

13	
Radial stiffness [kN/mm]	
C_r	The radial stiffness determines the radial reaction force on the input and output sides upon radial displacement.
C_{rdyn}	By experience the dynamic stiffness is higher than the static one. The factor depends on the coupling series.

14	
Permissible angular displacement [∢°]	
ΔK_w	The continuous permissible angular displacement of the coupling. This is the sum of displacement by assembly as well as static and dynamic displacements during operation. The continuous permissible angular displacement depends on the operation speed and may require adjustment (see diagrams S_n of the coupling series).
$\Delta K_{w\ max}$	The maximum angular displacement of the coupling, which may occur occasionally and for a short period without consideration of the operation speed (e.g. extreme overload). The concurrent occurrence of different kinds of displacements is handled in technical documents (displacement diagrams, data sheets, assembly instructions).

15	
Angular stiffness [kNm/°]	
C_w	The angular stiffness determines the restoring bending moment on the input and output sides upon angular displacement.
C_{wdyn}	By experience the dynamic stiffness is higher than the static one. The factor depends on the coupling series.

1. This catalog supersedes previous editions.

   This catalog shows the extent of our coupling range at the time of printing. This program is still being extended with further sizes and series. Any changes due to technological progress are reserved.

   We reserve the right to amend any dimensions or detail specified or illustrated in this publication without notice and without incurring any obligation to provide such modification to such couplings previously delivered. Please ask for an application drawing and current data before making a detailed coupling selection.

2. We would like to draw your attention to the need of preventing accidents or injury. No safety guards are included in our supply.

3. TRADEMARKS

   CENTA, the CENTA logo, Centacone, CENTADISC, CENTAFIT, Centaflex, CENTALINK, Centalock, Centaloc, Centamax, Centastart, CENTAX and HYFLEX are registered trademarks of CENTA Antriebe Kirschey GmbH in Germany and other countries.

   Other product and company names mentioned herein may be trademarks of their respective companies.

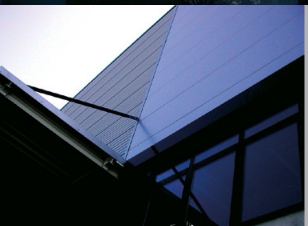
4. Torsional responsibility

   The responsibility for ensuring the torsional vibration compatibility of the complete drive train, rests with the final assembler. As a component supplier CENTA is not responsible for such calculations, and cannot accept any liability for gear noise/-damage or coupling damage caused by torsional vibrations.

   CENTA recommends that a torsional vibration analysis (TVA) is carried out on the complete drive train prior to start up of the machinery. In general torsional vibration analysis can be undertaken by engine manufacturers, consultants or classicfication societies. CENTA can assist with such calculations using broad experience in coupling applications and torsional vibration analysis.
5.

6. The dimensions on the flywheel side of the couplings are based on the specifications given by the purchaser. The responsibility for ensuring dimensional compatibility rests with the assembler of the drive train. CENTA cannot accept liability for interference between the coupling and the flywheel or gearbox or for damage caused by such interference.

7. All technical data in this catalog are according to the metric SI system. All dimensions are in mm. All hub dimensions (N, N_1 and N_2) may vary, depending on the required finished bore. All dimensions for masses (m), inertias (J) and centres of gravity (S) refer to the maximum bore diameter.




CENTA is the leading producer of flexible couplings for rail, industrial, marine and power generating applications. Worldwide.

HEAD OFFICE

CENTA Antriebe
Kirschey GmbH

Bergische Strasse 7
42781 Haan/Germany

+49-2129-912-0 Phone
+49-2129-2790 Fax

info@centa.de
www.centa.info

WWW.CENTA.INFO/CONTACT