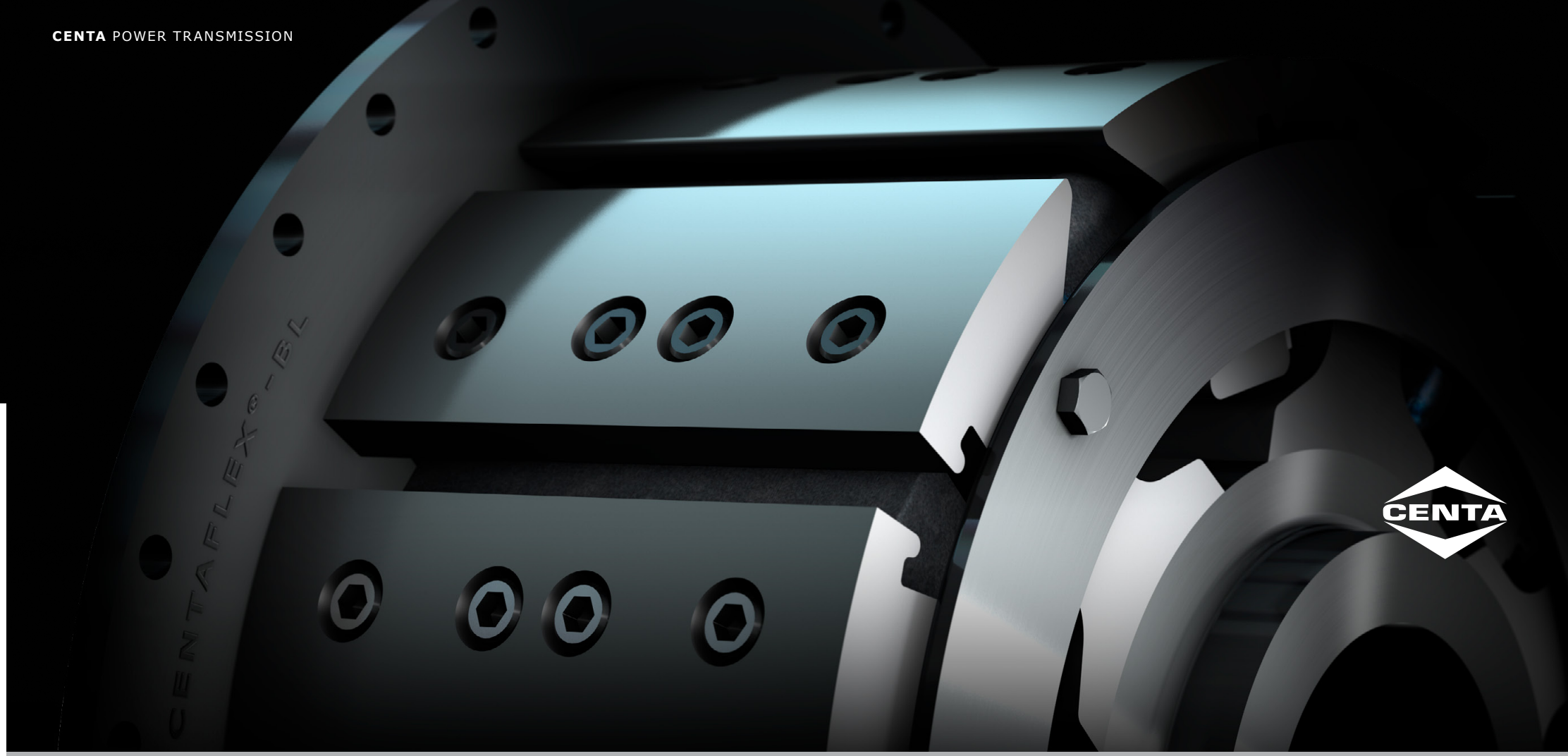

CENTAFLEX-BL

ENGLISH

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CENTAFLEX-BL

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CENTAFLEX-BL
AT A GLANCE

A low maintenance robust claw type roller coupling for harsh impact loaded applications in electrical and heavy industrial applications.

Steady and reliable transmission of the torque at a relatively small outer diameter. Easy and fast maintenance due to high modularity and standardization of the components as well as absolute system stability are features of this uniquely compact coupling for both rotation directions. And, the design is also impressive considering its dimensions and cost.

The features of CENTAFLEX-BL ensure damping of impacts and overload as well as torsional vibrations and compensate for misalignments due to operation. Currently, the series covers torques ranging from 70 to 176 kNm.

Features

compact dimensions

maximum ease of assembly

inexpensive

Areas of application

compressor drives, gensets, crushers and mills, conveyance, roller plants, building technology and heavy industrial operation

Torque range

70 to 176 kNm

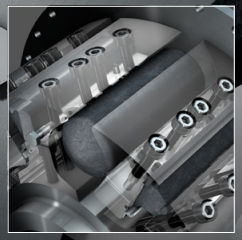
higher torques up to 600 kNm are in development

For absolute system stability.

LEADING BY INNOVATION

TORSIONAL FLEXIBILITY

CENTAFLEX-BL rubber rollers are available in different degrees of Shorehardness. This enables the torsional flexibility of the couplings to be adapted with utmost variability to the specific application. The coupling dampens impacts and torsional vibrations reliably and is a good choice even for torsionally demanding applications.

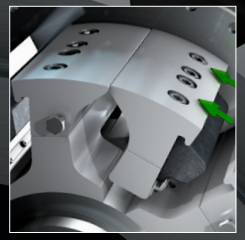


MODULARITY

Modularity and standardization of the compact components allow for adequate design for any application. For efficient and customized solutions. Standards for Shaft-Shaft and Flange-Shaft as well as specific customized design types for heavy industrial applications according customer specifications are advantageous due to the low variety of components.

KINEMATICS

Unique to the market is the implementation of a specific compression of the rubber parts. The result of this development is an optimized rolling without remarkable wear of the rollers.



FAIL-SAFE DEVICE

All design types of this series are fail-safe. In case of damage to the rubber parts, the fail-safe device prevents disconnection of any coupled units. Their positive interlocking will not be disrupted.

ASSEMBLY

Special feature of the CENTAFLEX-BL is the possibility of circumferential radial assembly. Seperation of the upper and lower claws ensure radial ease of assemly and disassembly of the roller parts. Compact composition make handling of parts comfortable upon maintenance.

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-BL

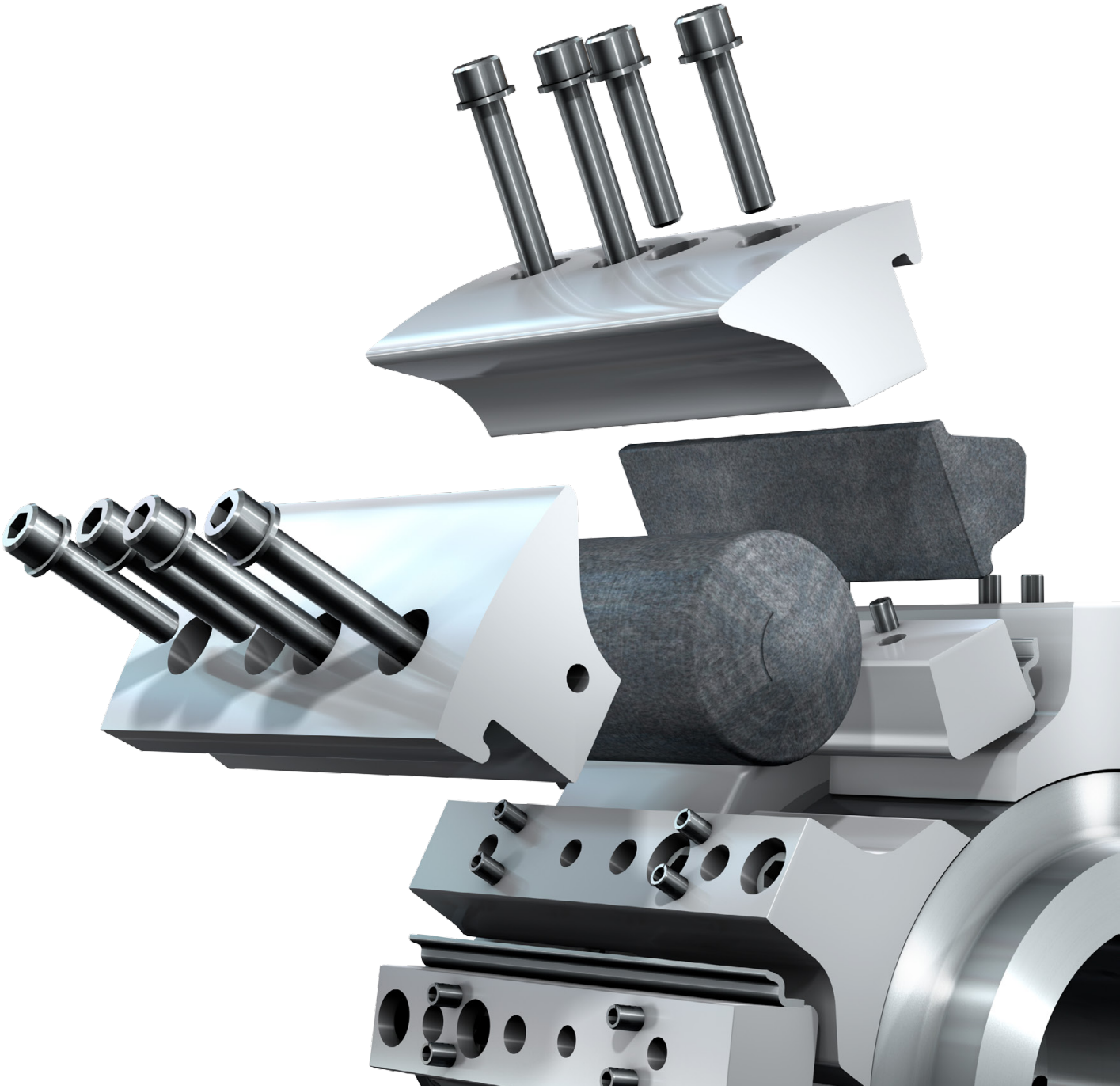
COMPONENTS

CENTAFLEX-BL
COMPONENTS

RUBBER ELEMENTS

The CENTAFLEX-BL rubber elements are made of high quality natural rubber.

The coupling comprises a cylindrical rubber roll in main load direction as well as a rubber stopper for reverse direction. Result is a radial gain of space and a characteristic torsional stiffness curve with fix rotational direction. The optimized osculation of the rubber roll results in negligible wear, optimum load bearing capacity and thus high reliability and low maintenance effort.



CENTAFLEX-BL
COMPONENTS

HUBS

We offer all standard connections, such as evolute splines, flange connections, clamping sets, keyway connections and oil press fits. The connecting bores are free configurable even for customer specific connections.

FLANGES

The flange can be optimized to the requirements of standard power units. Outer bore and bolt pattern as well as the thickness of the plate are variable in the flange-shaft design of the coupling.

CLAWS

A progressive characteristic curve is the result of the special contour of the claw geometry. The claws consist of an inner forged claw and an outer one made of lightweight aluminium. Both halves are bolted radially and frictionally engaged to the hub. This is advantagous for an unlimited radial assembly and a resulting low maintenance effort. Driven and driving sides of the coupling are absolutely identical and standardized.

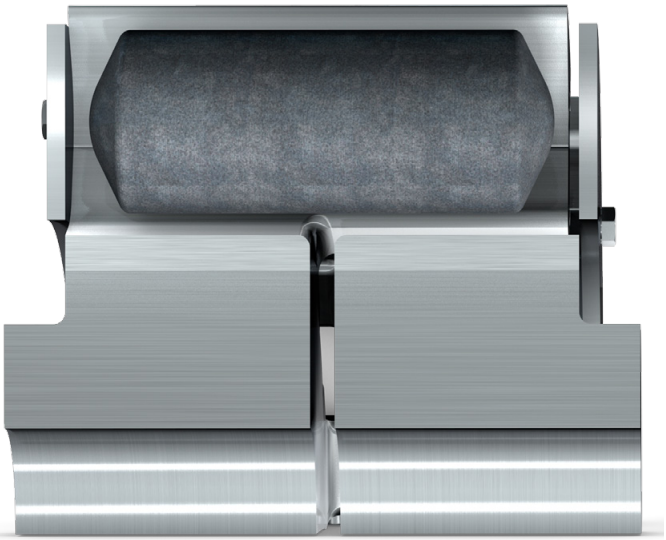
CENTAFLEX-BL

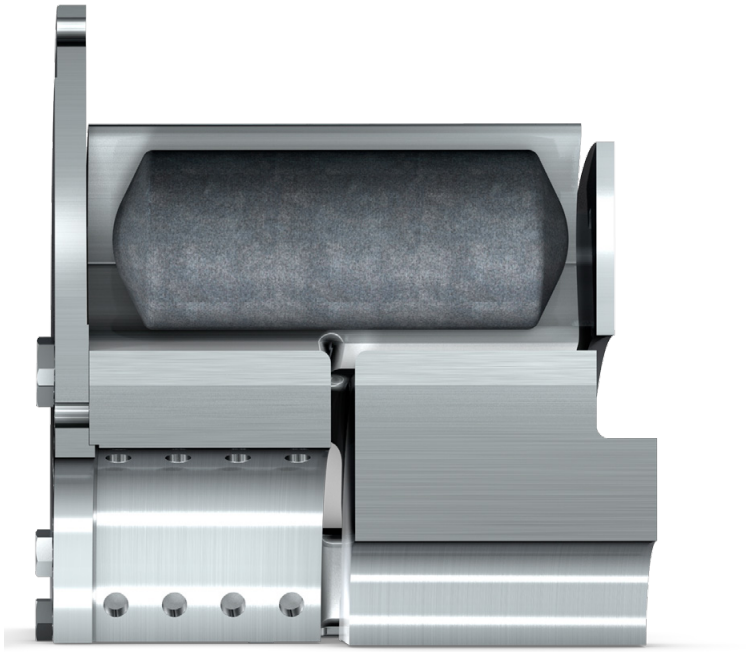
DESIGN TYPES

CENTAFLEX-BL
DESIGN TYPES

Four initial sizes of the two design types shaft-shaft and flange-shaft are available. Modularity and variation in size and quantity of the components make both designs absolutely customizable to customer and application specifications.

Special designs e.g. as driveshaft, as spacer coupling or for the connection to cardan shafts with radial bearings are possible according to customer specifications.





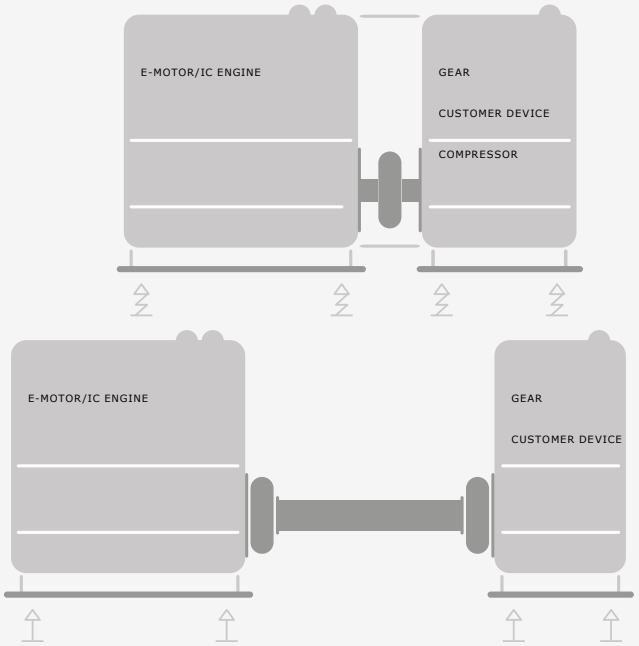
CENTAFLEX-BL

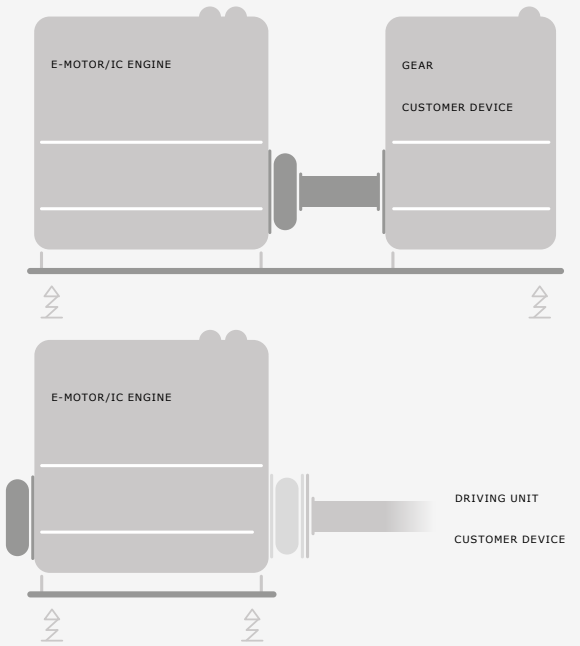
APPLICATIONS

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

CENTAFLEX-BL
APPLICATIONS

INDUSTRY APPLICATIONS





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CENTAFLEX-BL

TECHNICAL DATA

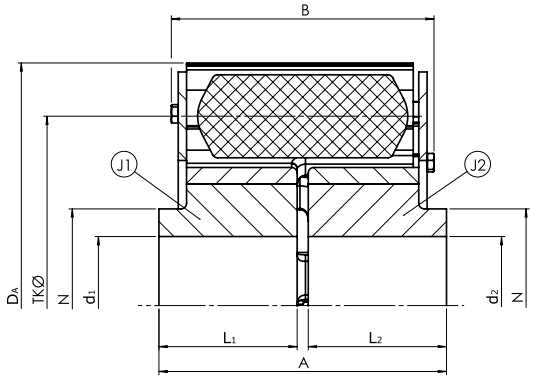
Explanation of the table headers → page APP-1

CENTAFLEX-BL

TECHNICAL DATA **SIZES 155–158**

1	2	3	4	5	6*	7				8	9	10	11**	12	13	14	15
Size	Rubber quality	Nominal torque	Maximum torque	Continuous vibratory torque	Permissible power loss	Dynamic torsional stiffness				Relative damping	Speed	Permissible axial displacement	Axial stiffness	Permissible radial displacement	Radial stiffness	Permissible angular displacement	Angular stiffness
	[Shore A]	T_{KN} [kNm]	T_{Kmax} [kNm]	T_{KW} [kNm]	P_{KV} [W]	C_{Tdyn} [kNm/rad]				Ψ	n_{max} [min^{-1}]	ΔK_a [mm]	C_a [kN/mm]	ΔK_r [mm]	C_r [kN/mm]	ΔK_W [°]	C_W [kNm/°]
						25%	50%	75%	100%								
155	60	70	210	17,5	560	1500	2380	3750	5500	0,95	1000	±5	2,1	±3,5	13,6	±0,5	4,0
156	60	100	300	25	672	1800	2860	4500	6600	0,95	900	±5	2,6	±3,5	16,3	±0,5	5,8
157	60	136	408	34	784	2100	3337	5250	7700	0,95	800	±5	2,9	±3,5	18,6	±0,5	8,2
158	60	176	528	44	896	2400	3813	6000	8800	0,95	750	±5	3,4	±3,5	21,2	±0,5	11,2

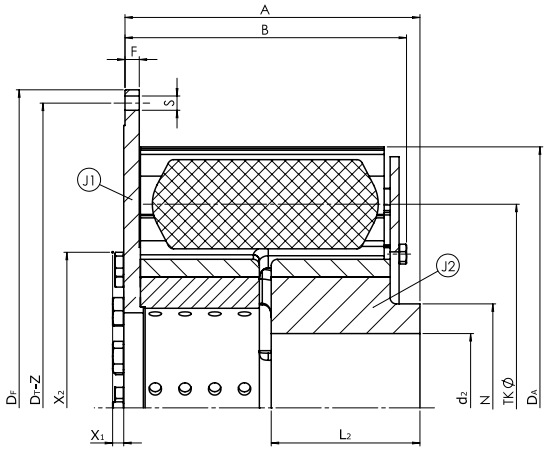
CENTAFLEX-BL
SHAFT-SHAFT



DIMENSIONS **↓ SIZES 155–158**

Size	Nominal torque T_{KN} [kNm]	Dimensions A	B	D_A	$d_1 - d_2$ max.	$L_1 - L_2$	N	TK Ø	Mass moments of inertia and masses J_1 [kgm²]	J_2 [kgm²]	m_1 [kg]	m_2 [kg]
155	70	420	475	764	180	200	330	575	22,0	21,0	365,0	353,0
156	100	520	475	880	250	250	350	685	41,1	39,0	508,0	491,0
157	136	620	475	1000	330	300	470	800	73,0	70,1	699,0	681,0
158	176	720	475	1110	420	350	580	905	120,2	115,7	914,0	894,0

CENTAFLEX-BL
FLANGE-SHAFT



DIMENSIONS **↓ SIZES 155–158**

Size	Nominal torque T_{KN} [kNm]	Dimensions A	B	D_A	D_F min.	D_T min.	d_1 max.	F	L_2	N	S*	TK Ø	X_1	X_2	Z*	Mass moments of inertia and masses J_1 [kgm²]	J_2	m_1 [kg]	m_2
155	70	446	474	764	865	815	180	20	200	330	-	575	20	440	-	27,6	21,0	395,0	353,0
156	100	496	474	880	980	930	250	20	250	350	-	685	20	540	-	51,6	39,0	524,0	491,0
157	136	546	474	1000	1100	1050	330	20	300	470	-	800	20	660	-	90,5	70,1	640,0	681,0
158	176	596	474	1110	1210	1160	420	20	350	580	-	905	20	770	-	128,3	115,7	695,0	894,0

* according customer specifications

CENTAFLEX-BL
EXPLANATION OF THE TECHNICAL DATA

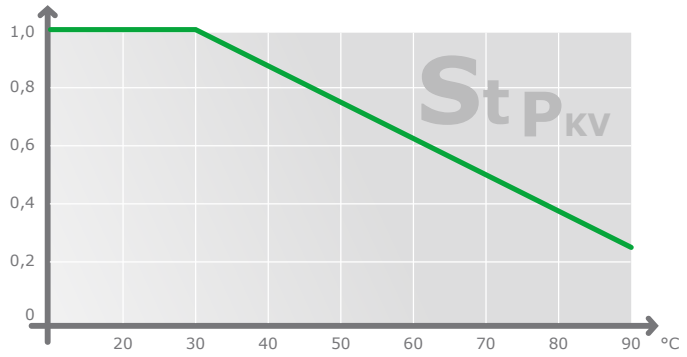
This appendix shows all explanations of the technical data for all CENTA products.

the green marked explanations are relevant for this catalog:

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

CENTAFLEX-BL

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 S_{tPKV} has to be taken into consideration in the calculation.

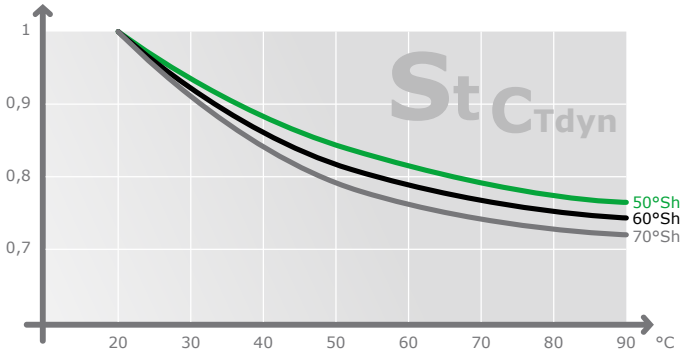
The coupling can momentarily withstand an increase of the permissible power loss for a short period under certain operation modes (e.g. misfiring).

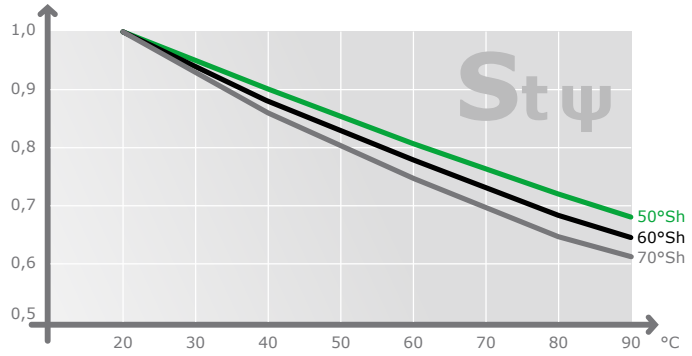
P_{KV30} [kW]

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-BL

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}]

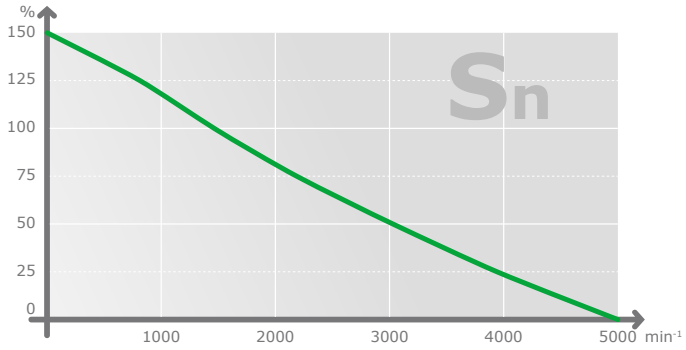
n_{max}	The maximum speed of the coupling element, which may occur occasionally and for a short period (e.g. overspeed). The characteristics of mounted parts may require a reduction of the maximum speed (e.g. outer diameter or material of brake discs).
n_d	The maximum permissible speed of highly flexible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

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.

CENTAFLEX-BL

Rev. CF-BL-EN-01-15

1. This catalog supersedes previous editions.

   This catalog shows the extent of our CENTAX®-SEC 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. Copyright to this technical dokument is held by CENTA Antriebe Kirschey GmbH.

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.

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