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CENTAX[®]-SEC

Super Elastic Coupling system

SERIES N



Diesel engines, which are mounted separately from the marine gear, can be placed on rather soft flexible mounts, because then these mounts must not bear the axial thrust of the propeller. These soft mounts provide optimum isolation of the vibrations of the diesel engine from the hull.

In this case, the flexible couplings must be able to dampen the torsional vibrations and to absorb the unavoidable, substantial misalignments, mainly radial misalignment, between the engine and the gear.

This is an economical combination of a torsional and radial flexible CENTAX rubber element with an axial and angular flexible steel membrane.

In order to achieve good torsional behaviour, the secondary inertia of the coupling has purposely been made large enough, so that the main order of the torsional vibration is usually shifted well below idling speed of the diesel engine. Therefore no gear chatter should occur. If in single cases more inertia should be required, the OD of the output flange and thereby its inertia can easily be increased.

Important features and advantages of the CENTAX-N-series:

- High compensation of misalignment in radial, axial and angular direction with low reaction forces.
- High torsional flexibility with linear characteristics. Various shore hardnesses result in different torsional stiffness for optimum tuning of the torsionals and for damping of vibration and noise.

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.

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

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For these applications CENTA has developed special, purposely designed flexible couplings:

CENTAX-N for the torque range up to 18 kNm.

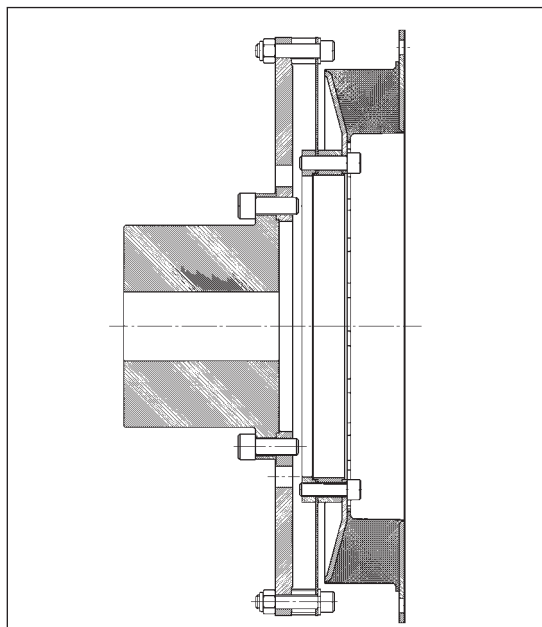
Specially for high speed diesel engines with SAE-flywheels in the power range up to about 2000 kW, the CENTAX-series CX-N are a technically and commercially advantageous solution.

- High allowable energy loss by intensive inner and outer ventilation.
- Economical design and well proven parts produced in series, low weight and favourable connecting dimensions.
- Free of maintenance and wear, long life expectancy, easy assembly and disassembly with radial removal of elements in-situ.
- Engine connection dimensions acc. SAE, special flanges are possible. The driven hubs made of high grade steel with connections for the various gear input shafts are available on short delivery.
- Torque range from 1.1 up to 18 kNm at the moment. For higher torques up to 500 kNm we recommend the larger sizes of the CENTAX-SEC series.

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 gearbox noise/damage or coupling damage caused by torsional vibrations. CENTA recommend that a torsional vibration analysis is carried out on the complete drive train prior to start up the machinery. Generally, torsional vibration analysis can be undertaken by engine manufacturers, consultants or classification societies. CENTA can assist with such calculations using our broad experience in coupling applications and torsional vibrations.

CENTAX-SEC series CX-N



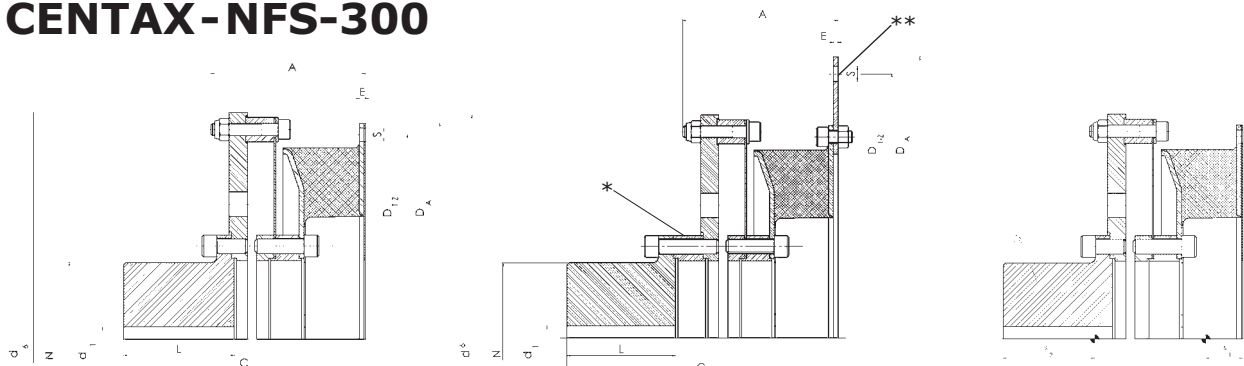
TECHNICAL DATA

CENTAX size	Shore-hardness	Nominal torque	Max. torque	Continuous vibr. torque at 10 Hz	Dyn. torsional stiffness	Specific torsional stiffness	Allowable energy loss 30°C	Relative damping	Allowable axial shaft displacement	Axial stiffness	Allowable radial shaft displacement	Radial stiffness 50°C	Allowable angular displacement	Flange size SAE J620	Max. speed*
	Shore A	T _{KN} [kNm]	T _{Kmax} [kNm]	T _{KW} [kNm]	C _{Tdyn} [kNm/rad]	C _{Tdyn} /T _{KN}	P _{KV} [KW]	ψ	ΔK _a [mm]	C _{ka} [kN/mm]	ΔK _r [mm]	C _{r,rdyn} [kN/mm]	ΔKr [°]		n _{max} [min ⁻¹]
35	45	1,10	3,30	0,28	4,80	4,36	0,20	1,00	±5	0,18	3,00	0,36	0,5	11,5/290	3600
	50	1,20	3,60	0,30	5,80	4,83	0,21	1,05							
	60	1,40	4,20	0,35	7,20	5,14	0,23	1,10							
45	45	1,60	4,80	0,40	7,10	4,44	0,23	1,00	±5	0,20	3,00	0,41	0,5	11,5/290	3600
	50	1,80	5,40	0,45	8,50	4,72	0,24	1,05							
	60	2,20	6,60	0,55	10,60	4,82	0,26	1,10							
51	45	2,10	6,30	0,53	9,70	4,62	0,26	1,00	±5	0,30	3,00	0,47	0,5	11,5/290	3600
	50	2,50	7,50	0,63	11,30	4,52	0,27	1,05							
	60	3,00	9,00	0,75	14,10	4,70	0,29	1,10							
52	45	2,25	6,75	0,56	10,20	4,53	0,27	1,00	±5	0,22	3,00	0,37	0,5	14/355	3600
	50	2,80	8,40	0,70	12,00	4,29	0,28	1,05							
	60	3,00	9,00	0,75	15,00	5,00	0,29	1,10							
56	45	2,90	8,70	0,73	13,00	4,48	0,30	1,00	±5	0,28	3,00	0,42	0,5	14/355	3600
	50	3,50	10,50	0,88	15,40	4,40	0,31	1,05							
	60	4,00	12,00	1,00	19,30	4,83	0,33	1,10							
64	45	4,40	13,20	1,10	36,50	8,30	0,35	1,15	±5	0,28	2,00	0,59	0,5	14/355	3600
	50	5,50	16,50	1,38	21,20	3,85	0,36	1,05							
	60	6,00	18,00	1,50	26,30	4,38	0,38	1,10							
67	45	6,50	19,50	1,63	56,00	8,62	0,40	1,15	±5	0,47	3,00	1,30	0,5	14/355	2900
	50	6,00	18,00	1,50	25,50	4,27	0,36	1,05							
	60	6,60	19,80	1,65	31,00	7,70	0,38	1,10							
66	45	7,20	21,60	1,80	65,00	8,47	0,40	1,15	±5	0,53	1,00	2,80	0,5	18/460	2900
	50	7,50	22,50	1,88	47,00	6,27	0,46	1,05							
	60	8,25	24,75	2,06	59,00	7,15	0,48	1,10							
69	45	9,00	27,00	2,25	105,00	11,67	0,50	1,15	±5	0,69	1,20	2,50	0,5	18/460	2900
	50	11,00	33,00	2,75	68,00	6,18	0,54	1,05							
	60	12,00	36,00	3,00	85,00	7,10	0,57	1,10							
71	45	13,00	39,00	3,25	155,00	11,92	0,60	1,15	±5	0,53	1,20	3,00	0,5	18/460	2900
	50	11,50	34,50	2,88	68,00	5,91	0,54	1,05							
	60	12,50	37,50	3,13	85,00	6,80	0,57	1,10							
72	45	13,00	39,00	3,25	155,00	11,92	0,60	1,15	±5	0,84	1,20	3,00	0,5	21/530	2900
	50	15,00	45,00	3,75	94,50	6,30	0,61	1,05							
	60	16,50	49,50	4,13	118,00	7,15	0,64	1,10							
75	45	18,00	54,00	4,50	212,00	11,78	0,67	1,15	±6	1,00	1,50	3,80	0,5	21/530	2750
	50	20,00	60,00	5,00	135,00	6,75	0,68	1,05							
	60	22,00	66,00	5,50	169,00	7,15	0,71	1,10							
75	45	25,00	75,00	6,25	305,00	12,20	0,75	1,15	±6	1,12	1,70	4,30	0,5	24/610	2300
	50	20,00	60,00	5,00	135,00	6,75	0,68	1,05							
	60	22,00	66,00	5,50	169,00	7,15	0,71	1,10							

* 0.85 · n_{max} continuous allowable

For further explanation of the technical data please refer to the general section of the CENTAX-SEC catalog

CENTAX - NFS-300



Dimensions

* this spacer for radial exchange only for sizes 35, 45 and 51
 **this adapter only for sizes 35, 45-SAE14, and other sizes as special version with larger SAE or non standard flanges.

masses
mass moments of inertia

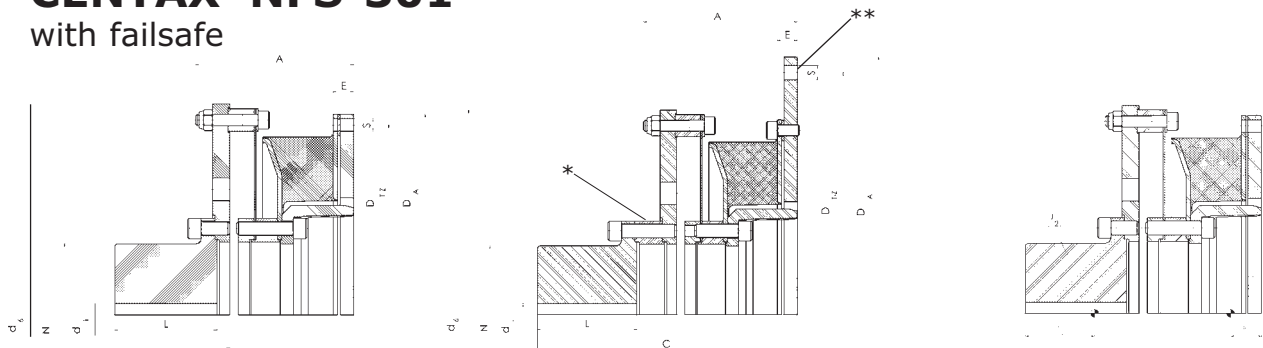
CENTAX size	Nominal torque T_{KN} [KNm]	A	C	d ₁		d ₆	E	L	N	Flange Dimension				
				min. - max.						SAE J620	D _A js7	D _T	Z	S
35-SAE11,5	1,1 - 1,4	124	230	20 - 85	380	4	100	125	11,5/290	352,4	333,4	8x45°	11	
45-SAE11,5	1,6 - 2,2	126	232	20 - 85	400	5	100	125	11,5/290	352,4	333,4	8x45°	11	
45-SAE14	1,6 - 2,2	129	210	20 - 85	400	4	100	125	14/355	466,7	438,2	8x45°	13	
51-SAE11,5	2,1 - 3,0	126	232	20 - 85	400	5	100	125	11,5/290	352,4	333,4	8x45°	11	
52-SAE14	2,25 - 3,0	155,5	256	45 - 115	460	5	125	160	14/355	466,7	438,2	16x22,5°	12,5	
56-SAE14	2,9 - 4,0	155,5	256	45 - 115	460	5	125	160	14/355	466,7	438,2	16x22,5°	12,5	
64-SAE14	5,5 - 6,5	163,5	280	50 - 118	500 550*	6	140	165	14/355	466,7	438,2	16x22,5°	12,5	
67-SAE18	6,0 - 7,2	162,5	279	50 - 118	550	5	140	165	18/460	571,5	542,9	12x30°	17	
66-SAE18	7,5 - 9,0	153,5	285	65 - 118	600	6	155	185	18/460	571,5	542,9	12x30°	17	
69-SAE18	11,0 - 13,0	162,0	298	65 - 150	588	7	160	210	18/460	571,5	542,9	6x60°	17	
71-SAE21	11,5 - 13,0	161,0	297	65 - 150	588	6	160	210	21/530	673,1	641,4	24x15°	17	
72-SAE21	15,0 - 18,0	173,5	327	80 - 150	673	7	180	235	21/530	673,1	641,4	24x15°	17	
75-SAE24	20,0 - 25,0	206	375	65 - 170	722	10	200	235	24/610	733,4	692,2	24x15°	19	

* In some cases (e.g. on 10 cyl. engines) the torsional analysis may require the higher inertia of the larger dia d₆.

CENTAX size	flange type SAE J620	mass moments of inertia [kgm ²]		m ₁	mass [kg] m ₂	ges.	distance to centre of gravity [mm]	
		J ₁	J ₂				S ₁	S ₂
35	SAE11,5/290	0,072	0,377	3,6	31,4	35,0	9,3	109,0
45	SAE11,5/290	0,056	0,456	2,6	33,7	36,3	7,9	112,0
45	SAE14/355	0,16	0,45	5,8	31,4	37,2	6,0	96,0
51	SAE11,5/290	0,071	0,45	3,9	34,5	38,4	9,5	113,4
52	SAE14/355	0,16	1,04	4,9	54,9	59,8	7,4	115,4
56	SAE14/355	0,17	1,04	5,2	55,2	60,4	8,4	115,9
64	SAE14/355	0,24	1,47 / *1,92	7,2	67,2 / *74,2	74,4 / *81,4	9,9	133 /*135,3
67	SAE18/460	0,46	1,92	10,3	74,3	84,6	7,3	140
66	SAE18/460	0,47	2,91	9,1	91,0	100,1	7,8	144,5
69	SAE18/460	0,57	3,48	9,7	108,9	118,6	11,1	141,7
71	SAE21/530	0,97	3,49	13,6	109,0	122,6	7,6	146,2
72	SAE21/530	1,14	6,07	15,2	148,0	163,2	10,9	162,1
75	SAE24/610	2,22	9,59	25,5	198,6	224,1	13,0	189,6

CENTAX-NFS-301

with failsafe



Dimensions

* this spacer for radial exchange only for sizes 35, 45 and 51
**this adapter only for sizes 35, 45-SAE14, and other sizes as special version with larger SAE or non standard flanges.

masses
mass moments of inertia

CENTAX size	Nominal torque T_{KN} [kNm]	A	C	d ₁		d _g	E	L	N	Flange Dimension				
				min. - max.						SAE J620	D _A js7	D _T	Z	S
35-SAE11,5	1,1 - 1,4	134	240	20 - 85	380	18	100	125	11,5/290	352,4	333,4	8x45°	11	
45-SAE11,5	1,6 - 2,2	139	245	20 - 85	400	18	100	125	11,5/290	352,4	333,4	8x45°	11	
45-SAE14	1,6 - 2,2	139	220	20 - 85	400	18	100	125	14/355	466,7	438,2	8x45°	13	
51-SAE11,5	2,1 - 3,0	139	235	20 - 85	400	18	100	125	11,5/290	352,4	333,4	8x45°	11	
52-SAE14	2,25 - 3,0	171,5	272	45 - 115	460	21	125	160	14/355	466,7	438,2	16x22,5°	12,5	
56-SAE14	2,9 - 4,0	171,5	272	45 - 115	460	21	125	160	14/355	466,7	438,2	16x22,5°	12,5	
64-SAE14	5,5 - 6,5	179,5	296	50 - 118	500 550*	22	140	165	14/355	466,7	438,2	16x22,5°	12,5	
67-SAE18	6,0 - 7,2	179,5	296	50 - 118	550	22	140	165	18/460	571,7	542,9	12x30°	17	
66-SAE18	7,5 - 8,7	169,5	301	65 - 118	600	22	155	185	18/460	571,5	542,9	12x30°	17	
69-SAE18	11,0 - 12,5	179,0	315	65 - 150	588	24	160	210	18/460	571,5	542,9	6x60°	17	
71-SAE21	11,5 - 13,0	179,0	315	65 - 150	588	24	160	210	21/530	673,1	641,4	24x15°	17	
72-SAE21	15,0 - 17,5	190,5	344	80 - 150	673	24	180	235	21/530	673,1	641,4	24x15°	17	
75-SAE24	20,0 - 25,0	226,0	395	65 - 170	722	30	200	235	24/610	733,4	692,2	24x15°	19	

* In some cases (e.g. on 10 cyl. engines) the torsional analysis may require the higher inertia of the larger dia d_g.

CENTAX size	flange type SAE J620	mass moments of inertia [kgm ²]		m ₁	mass [kg] m ₂	ges.	distance to centre of gravity [mm]	
		J ₁	J ₂				S ₁	S ₂
35	SAE11,5/290	0,162	0,389	8,1	32,7	40,8	10,3	113,2
45	SAE11,5/290	0,165	0,492	7,4	36,5	43,9	11,0	119,0
45	SAE14/355	0,470	0,464	14,6	33,9	48,5	10,0	102,0
51	SAE11,5/290	0,196	0,464	9,9	36,1	46,0	12,3	117,0
52	SAE14/355	0,61	1,10	16,7	58,7	75,4	12,0	122,3
56	SAE14/355	0,62	1,11	17,0	59,1	76,1	12,5	122,7
64	SAE14/355	0,74	1,53 /*1,97	20,7	73,5 /*78,6	94,2 /*99,3	14,2	139,2 /*141,1
67	SAE18/460	1,59	1,97	33,2	78,6	111,8	12,7	141,1
66	SAE18/460	1,50	3,00	27,1	96,5	123,6	13,0	148,7
69	SAE18/460	1,50	3,67	24,7	115,9	140,6	12,5	149,9
71	SAE21/530	3,06	3,72	40,1	116,5	156,6	14,4	153,6
72	SAE21/530	3,08	5,87	38,6	162,4	201,0	15,6	168,9
75	SAE24/610	5,85	9,81	65,0	203,8	268,8	19,0	194,6

Questionnaire for ship drives

Company:		project:	
customer:		quantity:	
		delivery time:	
Application	Propulsion System	Installation between	
<input type="checkbox"/> ship <input type="checkbox"/> main drive <input type="checkbox"/> auxiliary drive <input type="checkbox"/> others _____	<input type="checkbox"/> waterjet <input type="checkbox"/> propeller _____ <input type="checkbox"/> others _____	<input type="checkbox"/> engine / gearbox <input type="checkbox"/> gearbox / propellershaft <input type="checkbox"/> engine / jet <input type="checkbox"/> others _____	
Duty: <input type="checkbox"/> pleasure <input type="checkbox"/> interm. <input type="checkbox"/> cont.		kind of ship:	
Engine	Driven unit	Power take off	
type _____ power _____ speed _____ flywheel _____ flywheel housing _____ rotation seen on flywheel <input type="checkbox"/> cw <input type="checkbox"/> ccw <input type="checkbox"/> single <input type="checkbox"/> twin <input type="checkbox"/> flexible mounted	type _____ _____ ratio _____ inertia _____ <input type="checkbox"/> flexible mounted <input type="checkbox"/> flanged to the engine	<input type="checkbox"/> PTO <input type="checkbox"/> FPTO driven unit _____ _____ power _____ _____ speed _____ _____	
Misalignment (if not flanged)			
continuous		transient	
radial			classification: <input type="checkbox"/> yes <input type="checkbox"/> no
axial			society:
angular			fail-safe-device: <input type="checkbox"/> yes <input type="checkbox"/> no
Sketch / remarks:			

CENTA - the complete range of advanced flexible couplings and shafts for all kinds of boat drives.

CENTA Couplings for flange mounted gears



CENTAMAX-S
linear disc type coupling
T = 0,25 - 40 kNm



CENTAFLEX-DS
progressive dual stage coupling
T = 0,25 - 2 kNm



CENTAFLEX-R
progressive roller coupling
T = 0,25 - 15 kNm

Free standing gears - close coupled



CENTAMAX-B
for slight misalignment
T = 0,25 - 20 kNm



CENTAX-N
for reasonable misalignment
T = 1,1 - 25 kNm



CENTAX-L
for substantial misalignment
T = 2 - 90 kNm

CENTA Couplings for remote mounted gears, V-drives, stern-drives and water jets



CENTAX-V
intermediate coupling for u/j
T = 0,2 - 50 kNm



CENTA-FH flange housing
with flexible coupling for u/j
T = 1 - 20 kNm



CENTAFLEX-A-G/A-GZ/A-GS
torsional soft flexible shaft for angle up to 2° per element
T = 0,1 - 14 kNm

CENTA also delivers all kinds of flexible couplings and lightweight shafts - with or without propeller thrust - to be installed between gear and propeller or waterjet

CENTA Couplings for large free standing gears



CENTAX - L - G - M - DP
For larger boats and ships CENTA has the complete range of advanced flexible couplings and shafts up to 600 kNm



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CENTA Denmark



CENTA Headquarters Germany



CENTA Netherland



CENTA Norway



CENTA Italy



CENTA Great Britain



CENTA Singapore



CENTA USA

CENTA the international service

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