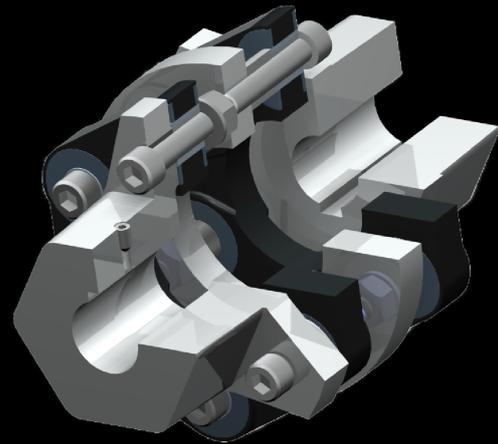


Mönninghoff

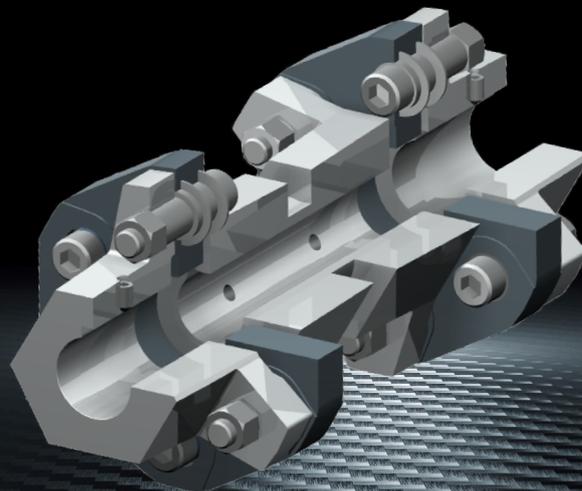
HexaFlex - torsionally flexible shaft coupling



Type 313



Type 323



Type 333

HexaFlex - torsionally flexible shaft coupling

Characteristics and features

- connects drive shaft and driven shaft like a universal cardan joint
- compensating axial, radial and angular misalignments
- single cardanic or doublecardanic
- damps torque shocks and harmful torque oscillations
- backlash-free
- wear-free
- transmitted torque: 100 – 4200 Nm
- especially suitable for reversing operation
- radial mounting possible
- two symmetric hubs are connected by a flexible joint disc element
- hub material can be steel or aluminium
- easy-to-assemble solution
(joint disc can be assembled or disassembled without axial movement)
- forcelocking and wear-free connection of hub and joint disc by high-tensile screws
- ATEX-version available Ex II 2GD c IIC T5 (90 °C) X (- 40 °C ≤ Ta ≤ +60 °C)



Mönninghoff power transmission represents an infinite variant diversity that is applied by all areas of modern mechanical engineering.

Our technologies are mostly designed to operate under extreme conditions. We offer high precision products for medical robotics, fail-proof security for aerospace technology or synchronization solutions for the packaging or printing industry.

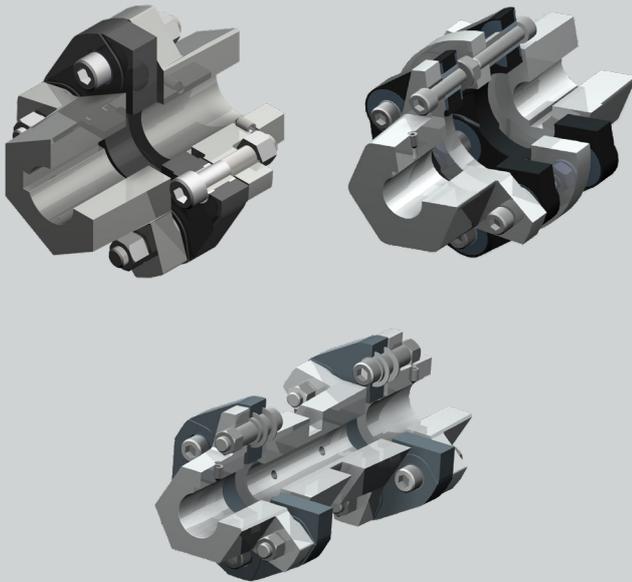
We thus address customers who have the highest standards for their own machines or systems. To them, we can offer highly complex, application-specific solutions.



HexaFlex - torsionally flexible shaft coupling

Match code

Mönninghoff shaft couplings are indicated by the following match code:



313 . A . B . C

323 . A . B . C

333 . A . B . C

A coupling size

B hub material

C options of mounting and integrating

Other individual characteristics:

- nominal torque
- bore size with keyway
- spacer length

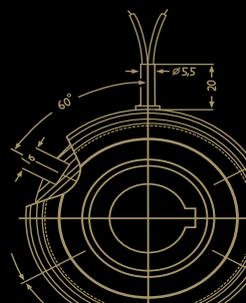
According to these characteristics, we design individual solutions concerning transmitted torque, engaging behavior or rotation speed.

Our engineers can assist with finding an application-specific coupling at any time. Together, we can develop individual and innovative solutions for extreme operating conditions.

Ordering example

Mönninghoff HexaFlex shaft coupling
Type 313.60.2.1

nominal torque	800 Nm
bore size d	35 mm H7, keyway acc. to DIN 6885/1
bore size d ₁	60 mm H7, keyway acc. to DIN 6885/1



HexaFlex - torsionally flexible shaft coupling

Coupling size

When dimensioning a Mönninghoff HexaFlex coupling, several technical preconditions should be considered:

- to select the correct size, the torque to be transmitted has to be taken into account

$$T_K = 9550 \cdot \frac{P}{n} \cdot K_B \cdot K_A \cdot K_T \text{ [Nm]}$$

- general information on operating, starting and temperature factors can be found at the end of this datasheet
- the nominal torque T_{KN} of the coupling should be equal to or be greater than the calculated torque T_K of this equation

Hub material

Mönninghoff HexaFlex shaft couplings are available in different hub materials:

- hub material 1 steel (only size 98)
- hub material 2 aluminium (sizes 32 – 70)

T_K = torque

T_{KN} = nominal torque

P = power of motor [kW]

n = max. coupling speed [min^{-1}]

K_B = operating factor

K_A = starting factor

K_T = temperature factor



HexaFlex - torsionally flexible shaft coupling

Options of mounting and integration

The HexaFlex shaft couplings allow different options of mounting, depending on the demands of the application:

Type 313

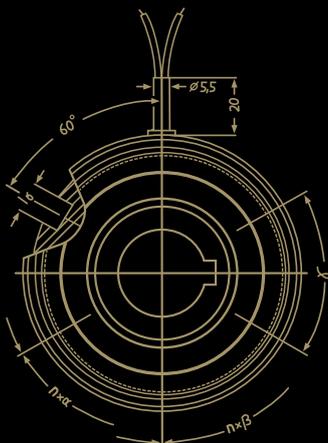
- option 0:
hub with keyway / joint disc / flange
- option 1:
hub with keyway / joint disc / hub with keyway

Type 323

- option 2:
hub with keyway / joint disc / joint disc / hub with keyway

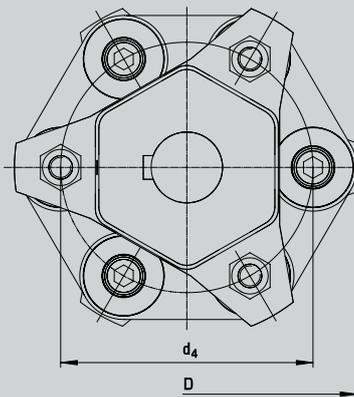
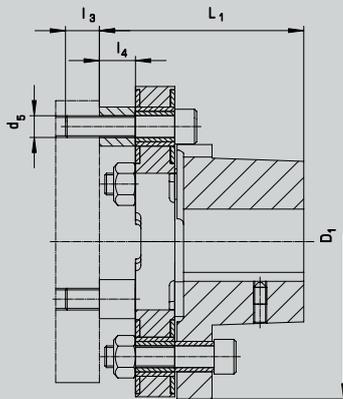
Type 333

- option 0:
hub with keyway / joint disc / spacer / joint disc / flange
- option 1:
hub with keyway / joint disc / spacer / joint disc / hub with keyway



HexaFlex - torsionally flexible shaft coupling - Type 313

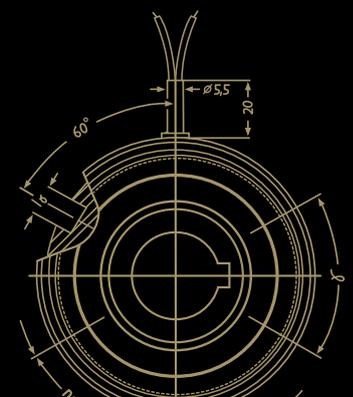
Coupling size



Typ 313, option 0

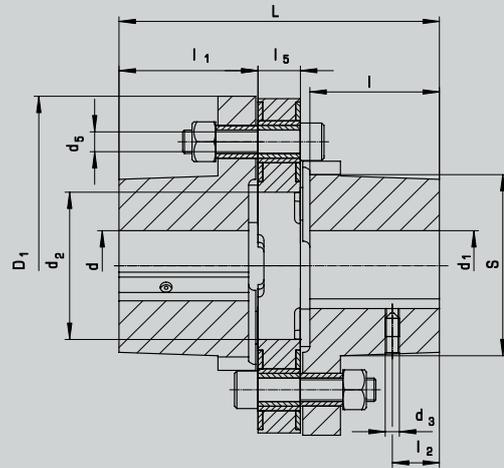
Technical data

Size		32	38	48	60	70	98
torque	T_{KN} [Nm]	100	200	350	800	1100	2250
	$T_{K\ max}$	200	270	400	930	1100	2500
oscillating torque (backlash-free)	T_{KO} [Nm]	200	270	400	600	700	1500
max. torque	n [min ⁻¹]	7100	6400	5200	4500	3800	2700
inertia	[10 ⁻³ kg m ²]	0,9	1,8	3,2	8,9	17,9	109
weight	[kg]	0,8	1,2	1,9	3,3	4,8	22,5
wind-up at T_{KN}	[°]	2,5	1,5	1,5	2,5	1,5	1,5
max. angular misalignment	[°]	3	3	2	2	2	3
tightening torque	[Nm]	49	60	69	150	150	300
bore d d ₁ H7 keyway acc. to DIN 6885/1	min.	14	19	22	24	30	40
	max.	32	38	48	60	70	95
dimensions	D [mm]	99	125	143	162	196	262
	D ₁	100	118	145	170	200	250
	d ₄	75	85	106	120	140	200
	d ₅	M10	M10	M10	M16	M16	M24
	L ₁	76	88	93,5	137	155,5	198
	l ₃	12,5	15,5	15,5	22	19	27
l ₄	16,5	16,5	16,5	23	23	36	

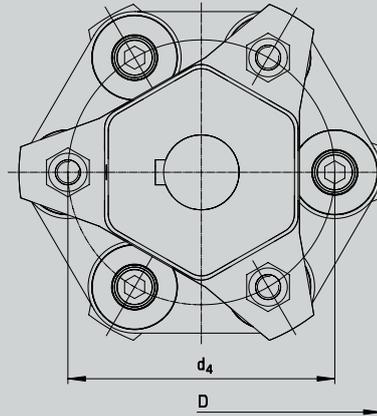


HexaFlex - torsionally flexible shaft coupling - Type 313

Coupling size



Type 313, option 1



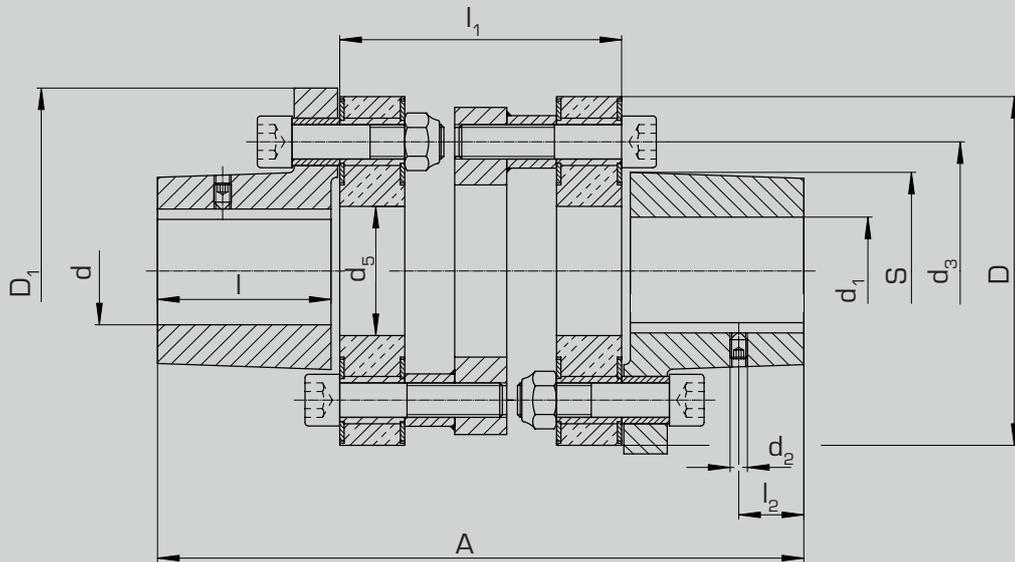
Technical data

Size		32	38	48	60	70	98
torque	T_{KN} [Nm]	100	200	350	800	1200	2250
	$T_{K, max.}$	200	400	640	1250	1800	4500
oscillating torque (backlash-free)	T_{KO} [Nm]	200	270	400	600	700	1500
max. torque	n [min ⁻¹]	7100	6400	5200	4500	3800	2700
inertia	[10 ⁻³ kg m ²]	1,1	2,1	4,1	11,1	22,7	191
weight	[kg]	1,1	1,7	2,7	4,7	7,1	42,5
wind-up at T_{KN}	[°]	2,5	1,5	1,5	2,5	1,5	1,5
max. angular misalignment	[°]	3	3	2	2	2	3
tightening torque	[Nm]	49	60	69	150	150	300
bore d d ₂ H7 keyway acc. to DIN 6885/1	min.	14	19	22	24	30	40
	max.	32	38	48	60	70	95
dimensions	D [mm]	101	120	143	162	195	244
	D ₁	100	118	145	170	200	250
	d ₂	39	39	63	65	70	112
	d ₃	M5	M6	M6	M8	M8	M8
	d ₄	75	85	106	120	140	200
	d ₅	M10	M10	M10	M16	M16	M24
	L	103	125	136	198	232	286
	l	40	50	55	80	95	120
	l ₁	43,5	53,5	59	84	95,5	125
	l ₂	11	20	20	30	40	50
l ₅	16	18	18	30	33	36	
S ₅ -kt		51	60	74	86	100	150



HexaFlex - torsionally flexible shaft coupling - Type 323

Coupling size



Type 323, option 2

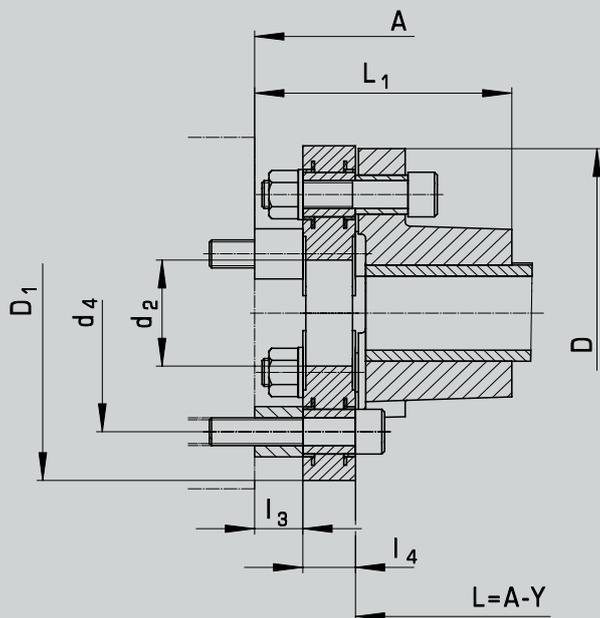
Technical data

Size		32	38	48	60	70	98
torque	$T_{K\text{ Nenn}}$	100	200	350	800	1200	2250
max. speed	n [min ⁻¹]	3000	3000	2250	2000	1800	1200
inertia	[10 ⁻³ kg m ²]	3,2	6,1	10,6	26,9	53	296
weight	[kg]	3,5	4,5	7,5	13	18	50
wind up $T_{K\text{ Nenn}}$		5	3	3	5	3	3
max. diffraction angle	[°]	3	3	2	2	2	3
tightening torque screws	[Nm]	49	60	69	150	150	300
bore d , H7 keyway acc. to DIN 6885/1	min. [mm]	14	19	22	24	30	40
	max. [mm]	32	38	48	60	70	95
dimensions	D [mm]	101	120	143	162	195	244
	D ₁	100	118	145	170	200	250
	d ₂	M5	M6	M6	M8	M8	M8
	d ₃	75	85	106	120	140	200
	d ₅	39	39	63	65	70	112
	DIN 912	M10	M10	M10	M16	M16	M24
	A	165	192	202	298	329	426
	l	40	50	55	80	95	120
	l ₁	78	85	84	130	130	176
	l ₂	11	20	20	30	40	50
	S 6 - kt	51	60	74	86	100	150



HexaFlex - torsionally flexible shaft coupling - Type 333

Coupling size



Type 333, option of mounting O

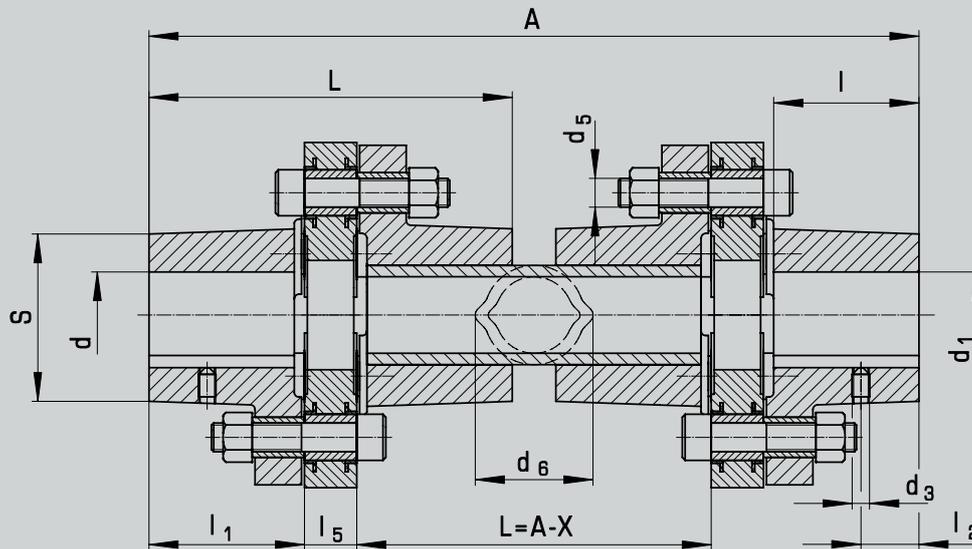
Technical data option O

Size		32	38	48	60	70
torque	$T_{K\text{ Nenn}}$	100	200	350	800	1200
inertia without pipe	type 2.1	2,2	4,2	8,2	22,2	45,4
	type 2.0	2,0	3,9	7,3	20,0	40,6
inertia with pipe	[10 ⁻³ kg m ²]	0,76	0,76	2,7	2,7	2,7
weight	[kg]	2,2	3,4	5,4	9,4	14,2
weight 1m pipe		3,2	3,2	4,5	4,5	4,5
wind up $T_{K\text{ Nenn}}$	[°]	5	3	3	5	3
radial misalignment / 100 mm pipe	[mm]	5,2	5,2	3,4	3,4	3,4
tightening torque screws	[Nm]	49	60	69	150	150
bore d, d, H7 keyway acc. to DIN 6885/1	min.	14	19	22	24	30
	max.	32	38	48	60	70
	D [mm]	101	120	143	162	195
	D ₁	100	118	145	170	200
	d ₂	39	39	63	65	70
	d ₄	75	85	106	120	140
	d ₅	42	42	58	58	58
	L	103	125	136	198	232
	L ₁	76	88	93,5	137	155,5
	l	40	50	55	80	95
	l ₁	43,5	53,5	59	84	95,5
	l ₂	11	20	20	30	40
	l ₃	12,5	15,5	15,5	22	19
	l ₄	16,5	16,5	16,5	23	23
	S 6 - kt	51	60	74	86	100
	X	119	143	154	228	265
	Y	92	106	111,5	167	188,5



HexaFlex - torsionally flexible shaft coupling - Type 333

Coupling size



Type 333,
option of mounting 1

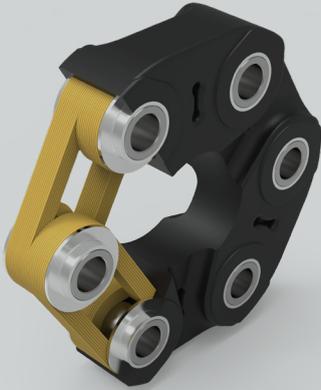


Technical data option 1

Size		32	38	48	60	70
torque	$T_{K\text{Nenn}}$	100	200	350	800	1200
inertia without pipe	type 2.1	2,2	4,2	8,2	22,2	45,4
	type 2.0	2,0	3,9	7,3	20,0	40,6
inertia with pipe	$[10^{-3} \text{ kg m}^2]$	0,76	0,76	2,7	2,7	2,7
weight		2,2	3,4	5,4	9,4	14,2
weight 1m pipe	$[\text{kg}]$	3,2	3,2	4,5	4,5	4,5
wind up $T_{K\text{Nenn}}$	$[\text{°}]$	5	3	3	5	3
radial misalignment / 100 mm pipe	$[\text{mm}]$	5,2	5,2	3,4	3,4	3,4
tightening torque screws	$[\text{Nm}]$	49	60	69	150	150
bore d, d ₁ H7 keyway acc. to DIN 6885/1	min.	14	19	22	24	30
	max.	32	38	48	60	70
dimensions	D	101	120	143	162	195
	D ₁	100	118	145	170	200
	d ₂	39	39	63	65	70
	d ₃	M5	M6	M6	M8	M8
	d ₄	75	85	106	120	140
	d ₅	M10	M10	M10	M16	M16
	d ₆	42	42	58	58	58
	L	103	125	136	198	232
	L ₁	76	88	93,5	137	155,5
	l	40	50	55	80	95
	l ₁	43,5	53,5	59	84	95,5
	l ₂	11	20	20	30	40
	l ₃	12,5	15,5	15,5	22	19
	l ₄	16,5	16,5	16,5	23	23
	l ₅	16	18	18	30	33
S _{E-kt}		51	60	74	86	100
X		119	143	154	228	265
Y		92	106	111,5	167	188,5

HexaFlex - torsionally flexible shaft coupling - Type 313

Joint disc



- the flexible joint disc allows the compensation of axial, radial and angular misalignment
- it dampens torque shocks and harmful torque oscillations
- the torque is transmitted via the textile loops
- they are made out of technical textile and are strengthened by steel bushes at the joints
- this arrangement of the flexible element is coated with NR / SBR

Joint disc characteristics

Resistant against	
water	+
steam	+
oils and greases	-
alcohols	+
ketones	+
ester	-
acid diluted	0
acid concentrated	-
lye diluted	+
lye concentrated	0
salt solution brine	+

- + suitable
- 0 moderately suited
- unsuitable

General characteristics

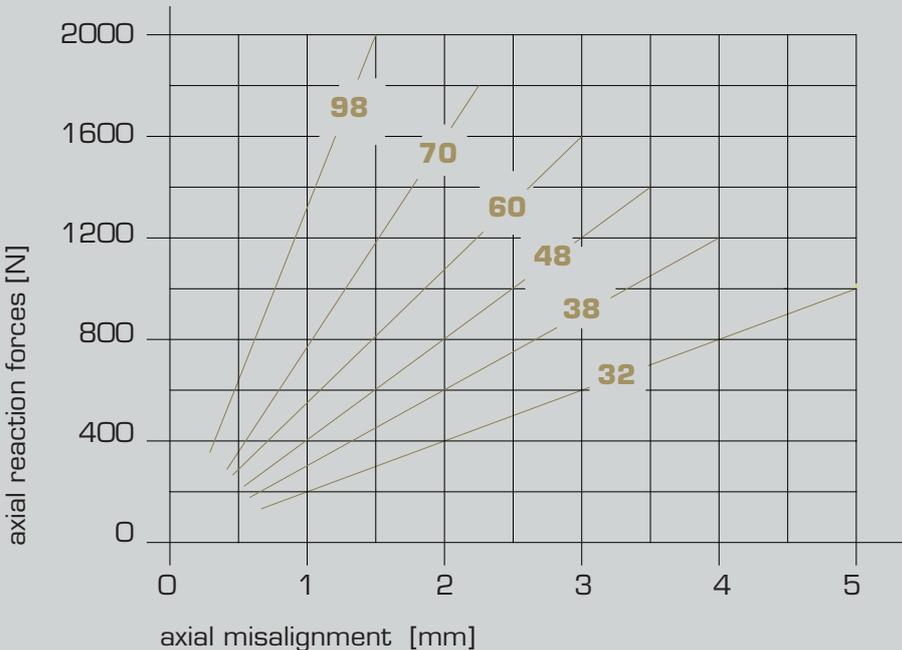
- temperature stability of -30 to +80 °C (short-term also up to 100 °C)
- wear and tearing strength resistance
- good resistance to heat and creep
- shock resistant
- high power density
- special design allows electrical insulation



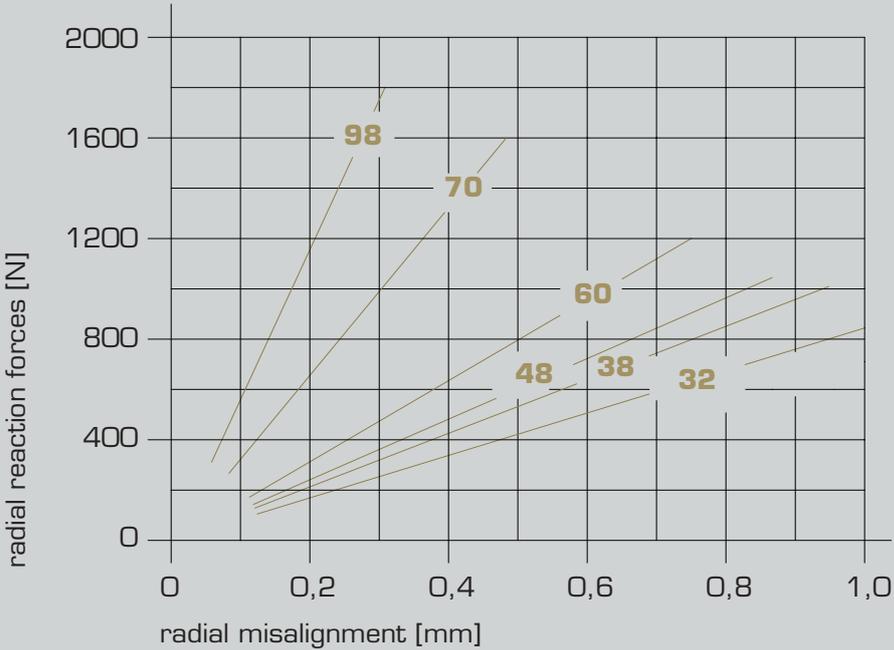
HexaFlex - torsionally flexible shaft coupling

Misalignment

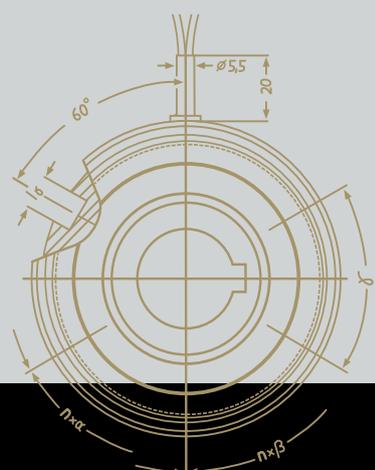
- axial or radial misalignment of the shaft causes axial forces to act on the bearings of the shaft according to the diagram below
- the values displayed are mean values and can vary up to 30%
- the end points of the graphs indicate the maximum permissible misalignments



reaction forces at axial misalignment

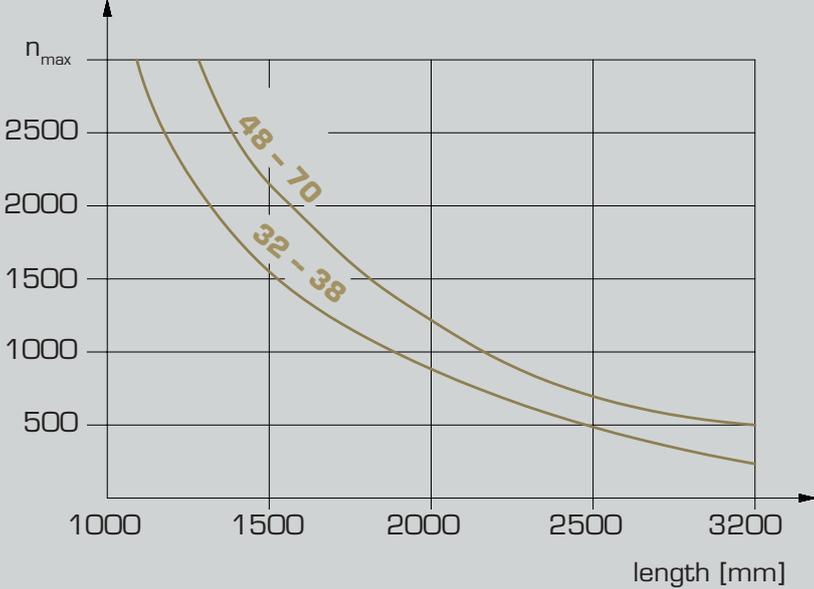


reaction forces at radial misalignment

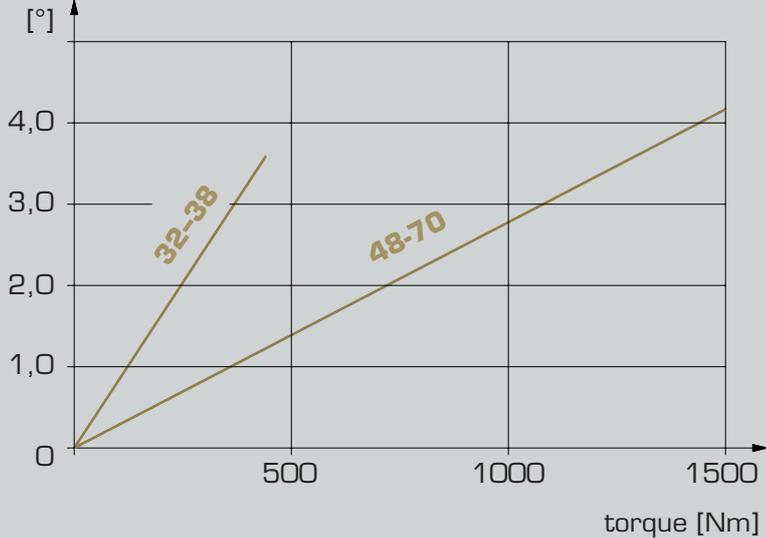


HexaFlex - torsionally flexible shaft coupling - Type 333

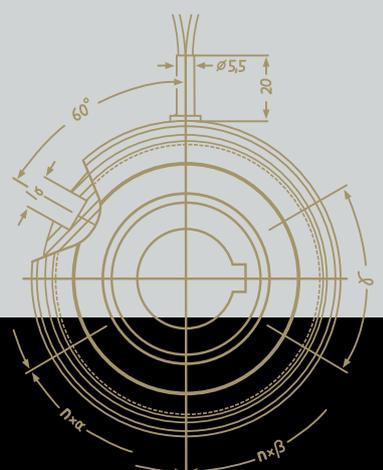
Joint disc



selection of max length „L“ as factor of speed „n“



wind up per m pipe



HexaFlex - torsionally flexible shaft coupling

Operating factor

	operating hours per day	operating factor K_B		
		electric motor transmission line	multi-cylinder internal combustion engine hydraulic / air motor	1-2 cylinder internal combustion engine
Light smooth loads small generators, centrifugal pumps, centrifugal compressors, conveyors	4	0,8	1,0	1,25
	8	1,0	1,25	1,5
	24	1,25	1,5	1,75
Loads without heavy shock, few reversals screw conveyors, mixers, woodworking machines, machine tools	4	1,0	1,25	1,5
	8	1,25	1,5	1,75
	24	1,5	1,75	2,0
Uneven loads, heavy shock, few reversals reciprocating pumps and compressors, textile machines, large mixers, centrifuges	4	1,25	1,5	1,75
	8	1,5	1,75	2,0
	24	1,75	2,0	2,25
Severe operating conditions, frequent reversals reciprocating compressors without fly wheels, mills, rolling mills	4	1,5	1,75	2,0
	8	1,75	2,0	2,25
	24	2,0	2,25	2,5

For coupling size 98: $K_B \cdot 1,2$

Starting factor

starts / hour	up to 30	up to 60	up to 120	up to 180
starting factor K_A	1,0	1,2	1,5	2,0

Temperature factor

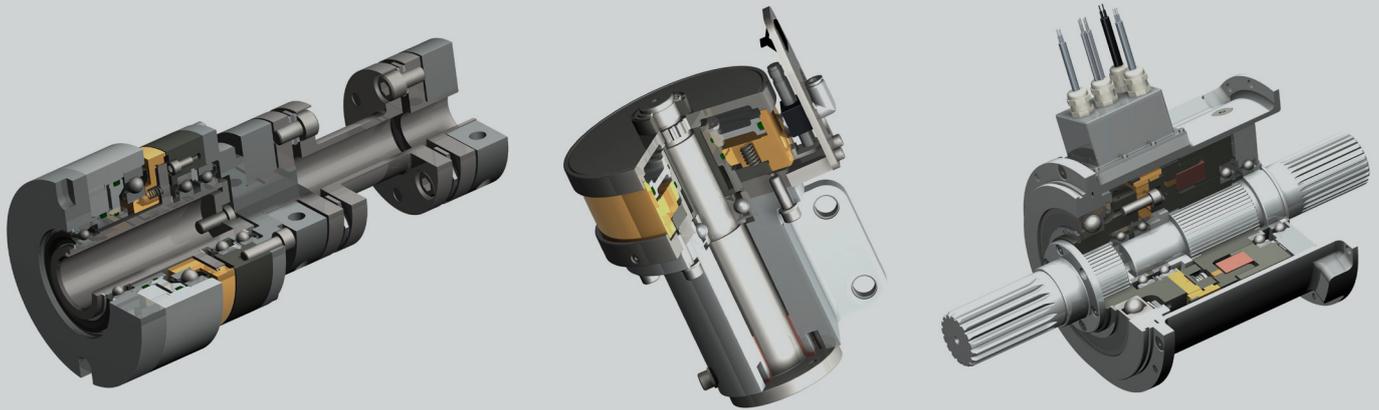
atmospheric temp. in °C	-40 to -10	-10 to +40	+40 to +60	+60 to +80
temperature factor K_T	1,25	1,0	1,25	1,4



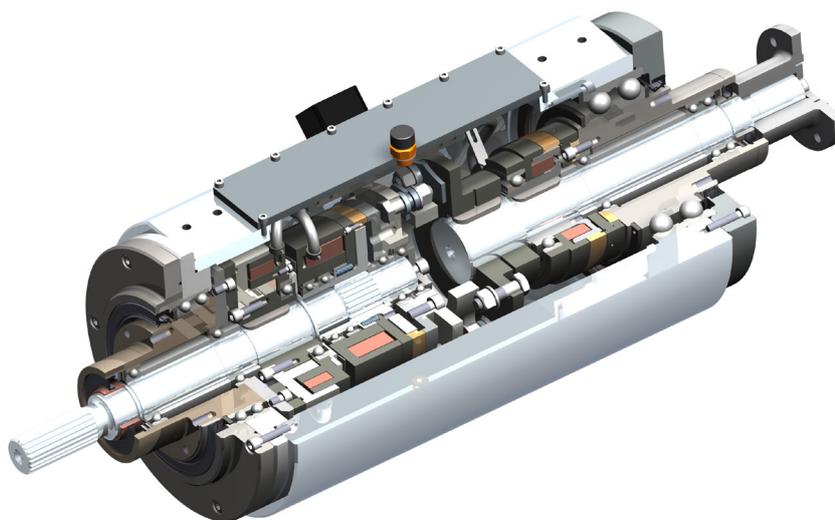
System solutions

You need more?

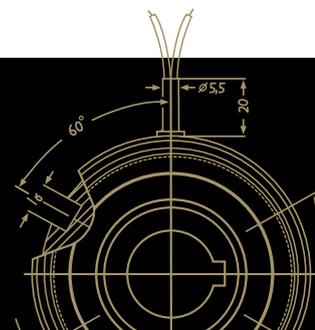
Mönninghoff couplings can be combined with a variety of many other power transmission elements. Such complex high-tech systems can solve any application-specific tasks and can fulfill any customer-specific wishes.



In many cases, a combination of different drive elements is needed to solve the applications particular problems and difficulties. Being not just supplier but technological partner to our customers, our extensive engineering is part of extraordinary and challenging power transmission projects.



**Our product is the know-how,
with hardware as an added bonus.**



Driven by excellence

Why Mönninghoff

- intensive dialog with our customers engineers
- decades of experience and competence
- deep understanding for all areas of mechanical engineering
- highly modern and flexible machine park
- enthusiasm for quality
- flexibility, inventiveness and communication skills of our employees
- commitment to Germany and Bochum as industrial location

How to reach us

Sales

sales@moeninghoff.de
+49 2327 3033-250



Helps you find a customer-specific power transmission solution for extraordinary circumstances.

Order Management

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For the competent processing and smooth handling of your orders and delivery dates.

Service

service@moeninghoff.de
+49 2327 3033-333



Feels committed to protect and preserve the high value of your machine and to secure its availability.

