HexaFlex – torsionally flexible shaft coupling Type 313

Lenze
SELECTION

Drive elements are our world.

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HexaFlex – torsionally flexible shaft coupling Type 313

Characteristics and features

- connects drive shaft and driven shaft like a universal cardan joint
- compensating axial, radial and angular misalignments
- 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 symetric 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)
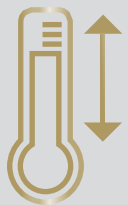
Mönninghoff power transmission represents an infinite variant diversity that is applied by all areas of modern mechanical engineering.

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 soultions 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.
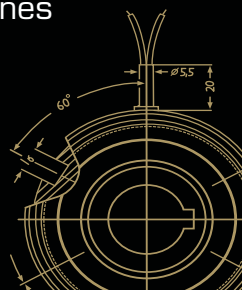
Match code

Mönninghoff shaft couplings are indicated by the following match code:
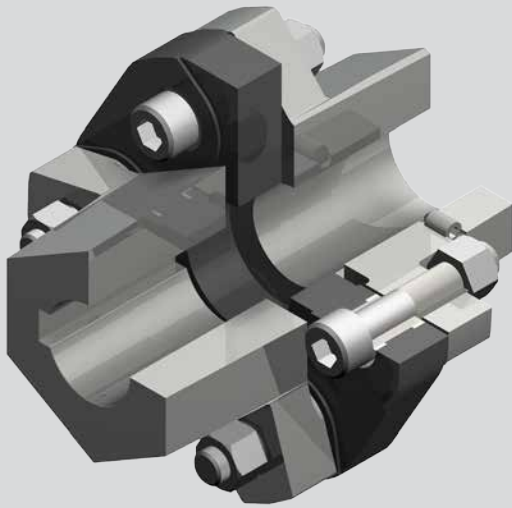
313 . A . B . C

A coupling size
B hub material
C options of mounting and integrating

Other individual characteristics:

- nominal torque
- bore size with keyway

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
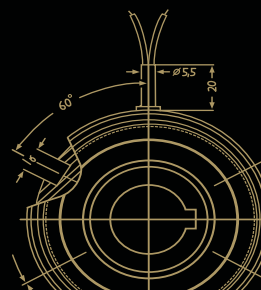
Coupling size

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

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

- 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

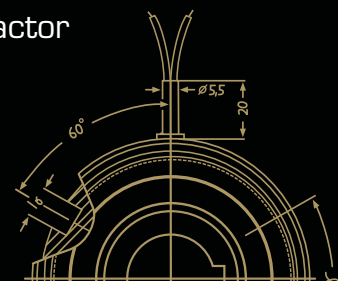|			
T_K	= torque	K_B	= operating factor
T_{KN}	= nominal torque	K_A	= starting factor
P	= power of motor [kW]	K_T	= temperature factor
n	= max. coupling speed [min^{-1}]		

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Coupling size
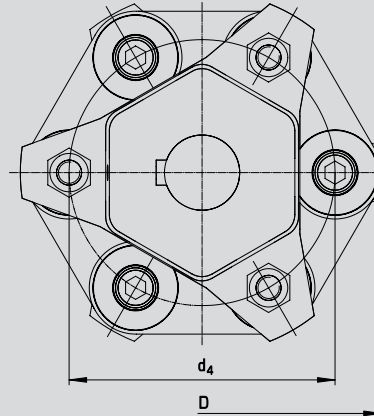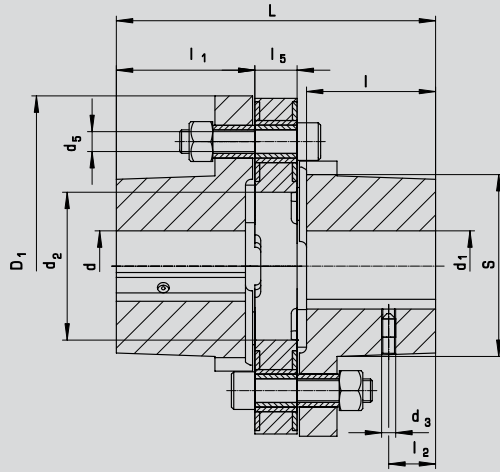
Type 313, option 1

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_{K0}	[Nm]	200	270	400	600	700	1500
max. torque		n [min⁻¹]	7100	6400	5200	4500	3800	2700
inertia		[10^{-3} kg m²]	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 d₁ 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_6-kt		51	60	74	86	100	150

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## 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)

Options of mounting and integration

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

- option 0   hub with keyway / joint disc / flange
- option 1   hub with keyway / joint disc / hub with keyway   (see previous page)
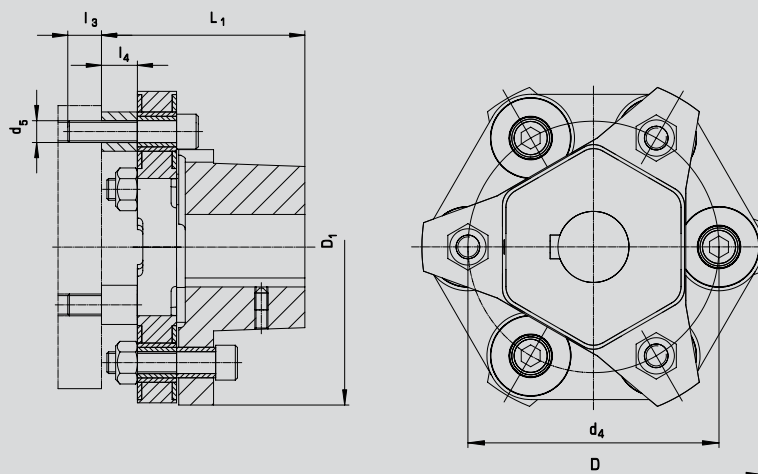
Type 313, option 0

Technical data option 0

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
oscilliating 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 m²]	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
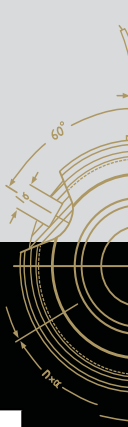
Joint disc
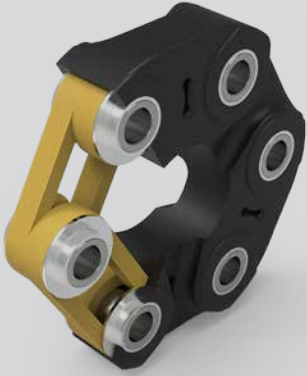
- the flexible joint disc allows the compensation of axial, radial and angular misalignment
- it dampens torque shocks and harmful torque oscillations
- the reyon textile loops are strengthened by steel bushes at the joints
- this arrangement of the flexible element is coated with styrene-butadiene rubber (SBR)

Joint disc characteristics

Resistant against

|	
water	+
steam	o
hydraulic oils	-
mineral greases and oils	+
vegetable and animal greases and oils	+
ozone	o
aliphatic hydrocarbons	+
aromatic hydrocarbons	o
halide hydrocarbons	-
alcohols	+
ketones	-
ester	-
acid diluted	o
acid concentrated	-
lye diluted	o
lye cöncentrated	-
salt solution brine	+

General characteristics

- shore of 80°
- temperature stability of -30 to +100 °C (short-term also up to 140 °C)
- high wear and tearing resistance
- very resistant to ageing

+ suitable
o moderately suited
- unsuitable

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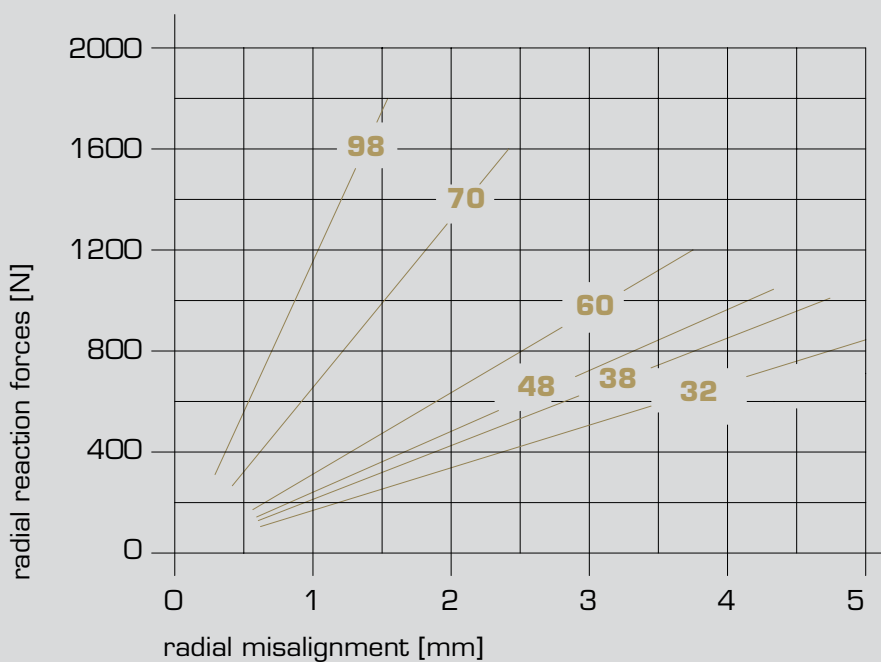## HexaFlex – torsionally flexible shaft coupling Type 313
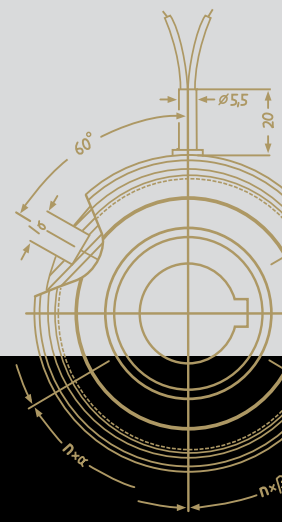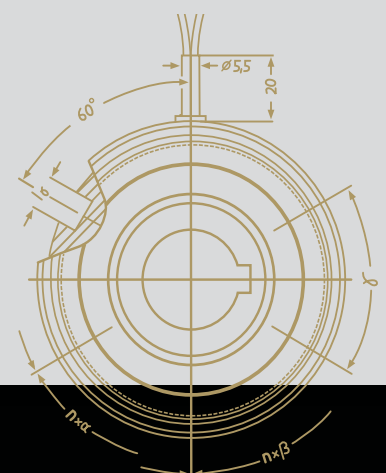
Misalignment

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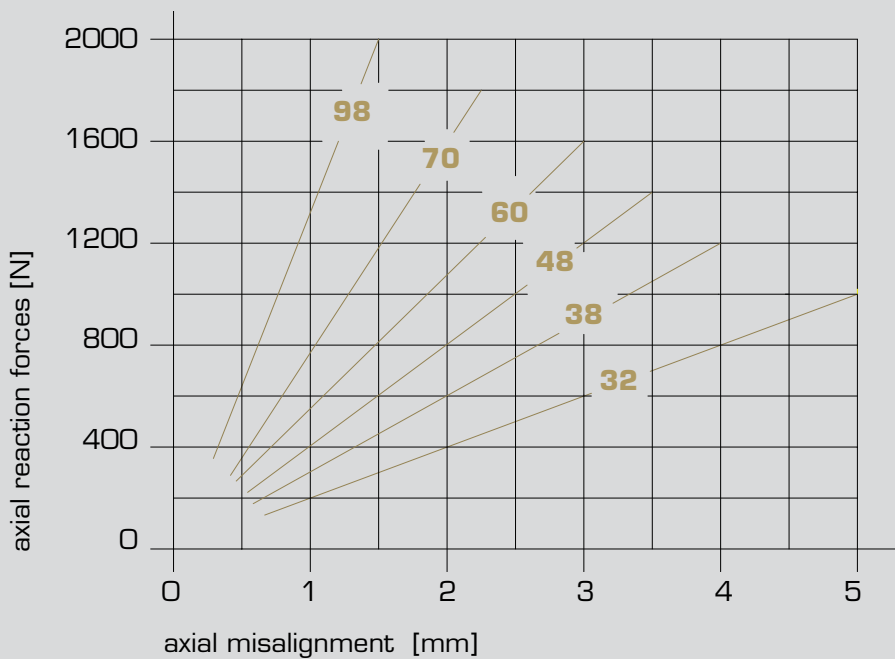
reaction forces at axial misalignment

reaction forces at radial misalignment

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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	4	0,8	1,0	1,25
small generators, centrifugal pumps, centrifugal compressors, conveyors	8	1,0	1,25	1,5
	24	1,25	1,5	1,75
Loads without heavy shock, few reversals	4	1,0	1,25	1,5
screw conveyors, mixers, woodworking machines, machine tools	8	1,25	1,5	1,75
	24	1,5	1,75	2,0
Uneven loads, heavy shock, few reversals	4	1,25	1,5	1,75
reciprocating pumps and compressors, textile machines, large mixers, centrifuges	8	1,5	1,75	2,0
	24	1,75	2,0	2,25
Severe operating conditions, frequent reversals	4	1,5	1,75	2,0
reciprocating compressors without fly wheels, mills, rolling mills	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

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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.
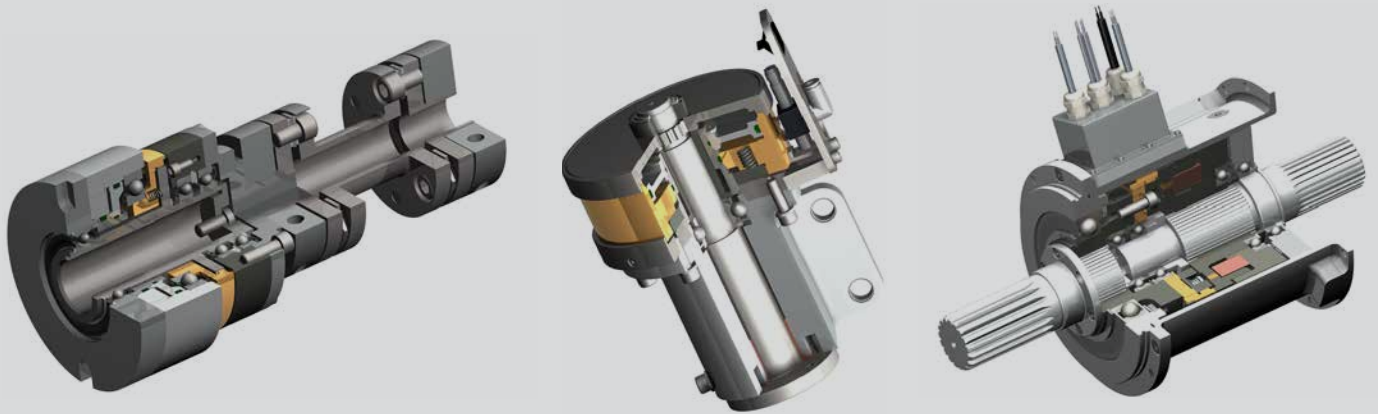
In many cases, a combination of different drive elements is needed to solve the applications particular problems and difficulties. Being not just supplier but technological partner to our customers, our extensive engineering is part of extraordinary and challenging power transmission projects.
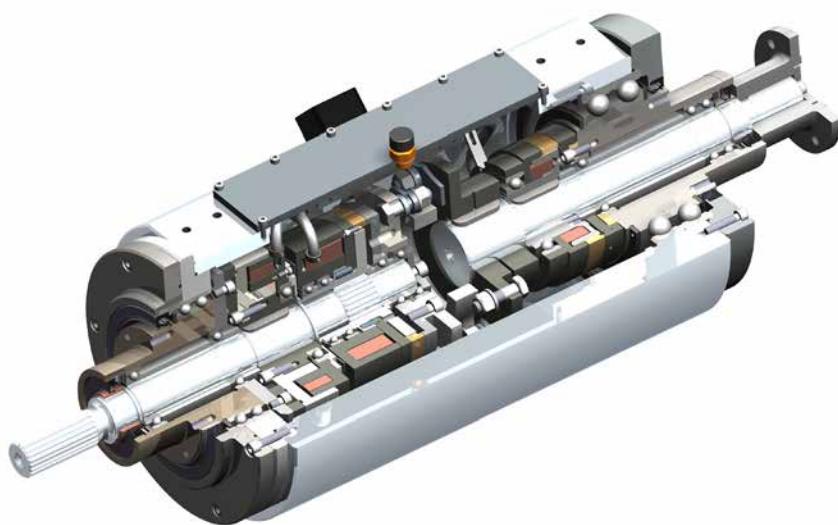
**Our product is the know-how,
with hardware as an added bonus.**

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