

Torsion Proof Multi-Disk Coupling

for Torque Measurement Flange KiTorq Rotor Type 4550...

Type 2305A...

Torsion proof multi-disk coupling for efficient, space-saving connection of the KiTorq Rotor Type 4550... into the shaft assembly.

- High torsion resistance
- Absolutely free of wear and maintenance
- Non-sensitive to alternating loads
- Low moment of inertia due to high performance density
- Completely backlash-free up to the nominal torque
- High misalignment compensation capability at low restoring forces

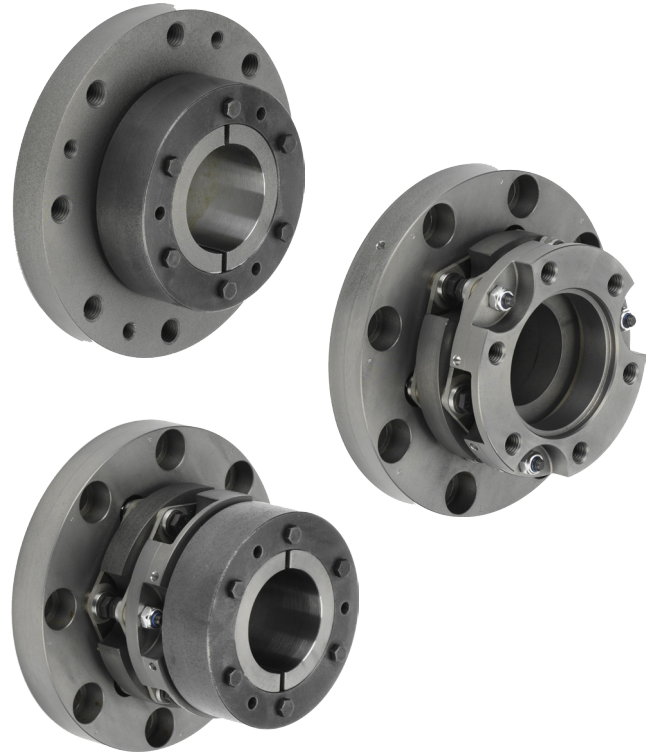
Description

The steel multi-disk coupling Type 2305A... is especially designed for use with the torque measuring unit (rotor) KiTorq Rotor Type 4550... . The coupling can be screwed directly onto the measuring unit. For additional connection of the shaft assembly, there is a choice of tension ring hub or a standard flange.

Application

The multi-disk coupling is used to compensate for axial, radial, and angle misalignment when incorporating the measuring flange into the shaft assembly. Compensation of these misalignments is always needed to avoid measurement error and damage to the sensor.

Different variants eliminate most problems integrating the measuring flange into nearly any application.



General Technical Data

Type 2305A...			10...	16...	40...	64...	300...	500...
For KiTorq Rotor Type 4550...	N·m		100...	200...	500...	1K...	2K.../3K...	5K...
Nominal torque	T_{KN}	N·m	100	300	650	1 100	3 500	5 800
Peak transient torque	T_{Kmax}	N·m	150	450	975	1 650	5 250	8 700
Torsion resistance (per assembly)	C_T	$10^3 \cdot \text{N·m/rad}$	60	90	320	1 350	3 480	11 900
Torsion resistance overall	C_{Tges}	$10^3 \cdot \text{N·m/rad}$	30	45	160	675	1 740	5 950

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Coupling Type 2305A... with Tension Ring Hub (Variant S)

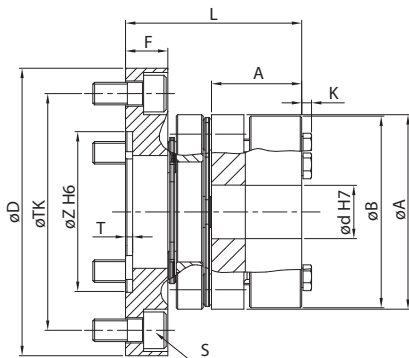
- For adapting a specimen with straight shaft end to the KiTorq Rotor Type 4550... on the measurement side
- For high speed applications with low axial misalignment



Type 2305A...			10...	16...	40...	64...	300...	500...
For Measuring Flange Typ 4550...	N·m		100...	200...	500...	1K...	2K.../3K...	5K...
ø Hole diameter (min. ... max.)	mm		19 ... 38	25 ... 45	40 ... 60	45 ... 70	50 ... 85	60 ... 100
Permitted axial offset	ΔK_a	mm	0,3	0,3	0,4	0,4	0,4	0,5
Permitted radial offset	ΔK_r	mm	0,07	0,07	0,08	0,1	0,08	0,1
Perm. angle offset (1 package)	ΔK_w	°	0,3	0,2	0,2	0,2	0,2	0,2
Max. speed	n_{max}	1/min	22 000	22 000	20 000	18 000	13 000	10 000
Balance quality	G		2,5 / 3 000					
Moment of inertia ³⁾	J	kgm ² ·10 ⁻³	1	2,5	12,2	24	99,3	218,3
Mass ³⁾	m	kg	1	1,95	5,6	8,3	19,8	32,9
Clamping screw torque	N·m		8,5	8,5	8,5	10	35	56

³⁾ Moment of inertia and mass relate to hubs with maximum hole size.

Dimensions



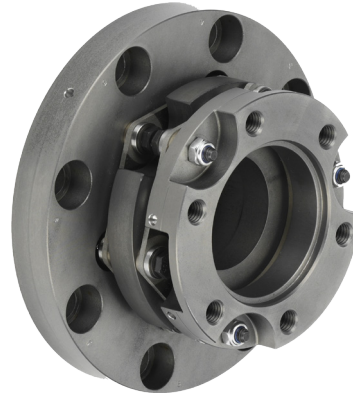
Type 2305A...			10...	16...	40...	64...	300...	500...
For Sensor Type 4550...			100...	200...	500...	1K...	2K.../3K...	5K...
øA	mm		69	77	104	123	167	198
øB	mm		68	-	100	115	164	-
ød H7 ⁴⁾	mm		19 ... 38	25 ... 45	40 ... 60	45 ... 70	50 ... 85	60 ... 100
øD	mm		102	108	135	155	210	240
øTK	mm		84	84	101,5	101,5	130	155,5
øZ H6	mm		57	57	75	75	90	110
A	mm		32	40	50	55	75	95
F	mm		15	30	31	33,5	35,5	37,5
K	mm		3,5	3,5	3,5	4	5,3	6,4
L	mm		62,3	91,2	107,2	122,5	154,9	184,5
S			6xM8	6xM8	8xM10	8xM10	8xM12	8xM14
T	mm		2,5	2,5	2,5	2,5	3	3,5

⁴⁾ Shaft tolerance g6

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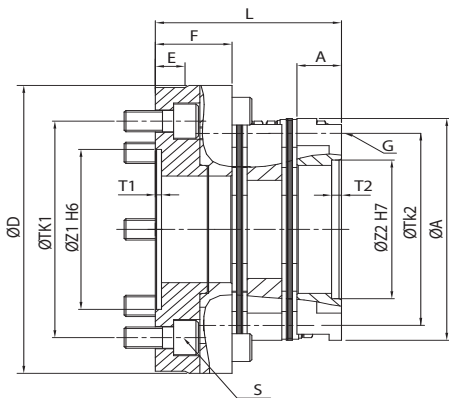
Coupling Type 2305A... with Flange (Variant F)

- For adapting a specimen with flange connection to the Ki-Torq Rotor Type 4550... on the measurement side
- For high speed applications with low axial misalignment



Type 2305A...			10...	16...	40...	64...	300...	500...
For Measuring Flange Type 4550...	N·m		100...	200...	500...	1K...	2K.../3K...	5K...
Permitted axial offset	ΔK_a	mm	0,3	0,3	0,4	0,4	0,4	0,5
Permitted radial offset	ΔK_r	mm	0,07	0,07	0,08	0,1	0,08	0,1
Perm. angle offset (1 package)	ΔK_w	°	0,3	0,2	0,2	0,2	0,2	0,2
Max. speed	n_{max}	1/min	22 000	22 000	20 000	18 000	13 000	10 000
Balance quality	G		2,5 / 3 000					
Moment of inertia	J	kgm ² ·10 ⁻³	0,75	2,16	11,94	23,5	80,7	168,5
Mass	m	kg	0,65	1,58	5,1	7,4	14,8	23,6
Clamping screw torque	N·m		10	42	71	83	200	300

Dimensions

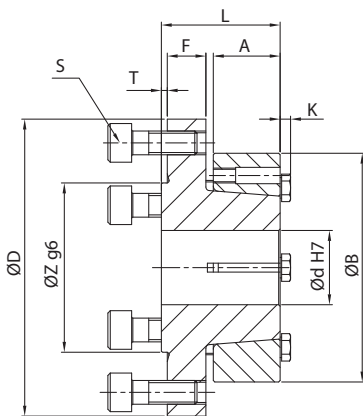
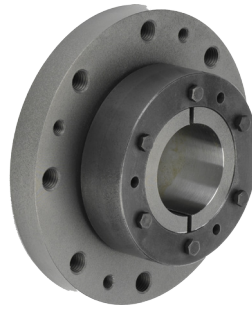


Type 2305A...			10...	16...	40...	64...	300...	500...
For Messkörper Type 4550...			100...	200...	500...	1K...	2K.../3K...	5K...
$\varnothing A$	mm		69	77	104	123	178	210
$\varnothing D$	mm		102	108	135	155	210	240
$\varnothing TK1$	mm		84	84	101,5	101,5	130	155,5
$\varnothing TK2$	mm		55	62	86	103	150	175
E	mm		-	-	12	-	-	-
$\varnothing Z1 H6$	mm		57	57	75	75	90	110
$\varnothing Z2 H7$	mm		35	45	65	75	100	120
A	mm		11	15	18	20	27	36
F	mm		15	30	31	33,5	35,5	37,5
G			8xM6	6xM8	6xM10	6xM10	8xM16	8xM16
L	mm		41,3	66,2	75,2	87,5	106,9	125,5
S			6xM8	6xM8	8xM10	8xM10	8xM12	8xM14
T1	mm		2,5	2,5	2,5	2,5	3	3,5
T2	mm		3	4	4	5	6	6

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**Adapter Flange Type 2305A... with Tension Ring Hub
(Variant A)**

- For rigid drive-side adaptation of the KiTorq Rotor Type 4550... to a drive or loading machine

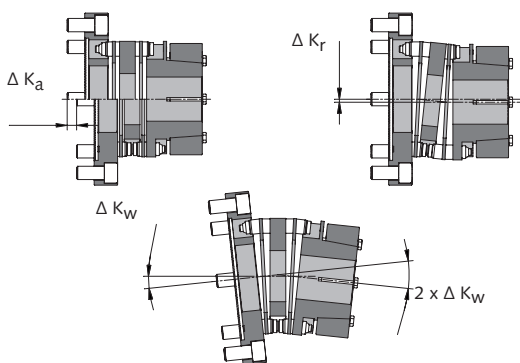


Type 2305A...	10...	16...	40...	64...	300...	500...
For Sensor Type 4550...	100...	200...	500...	1K...	2K.../3K...	5K...
øB mm	68	77	100	120	156	180
ød H7 ⁴⁾ mm	19 ... 38	25 ... 45	40 ... 60	45 ... 70	50 ... 85	60 ... 100
øD mm	99	100	135	120	180	190
øZ g6 mm	57	57	75	75	90	110
A mm	18,5	22,5	29	36	43	51
F mm	11,5	13	18,5	16	21	21
K mm	3,5	3,5	3,5	4	5,3	6,4
L mm	32	40	53	60,5	72	79
S	6x M8x20	6x M8x22	8x M10x30	8x M10x30	8x M12x35	8x M14x40
T mm	2	2	2,5	2,5	3	3
J ³⁾ kgm ² ·10 ⁻³	0,69	2	6,9	11,9	39,7	78,9
m ³⁾ kg	0,6	1,4	3	4	8,8	13,1
Clamping screw torque N-m	6	5,8	8,5	34	35	56

³⁾ Moment of inertia (J) and mass (m) relative to hubs with maximum hole size.

⁴⁾ Shaft tolerance g6

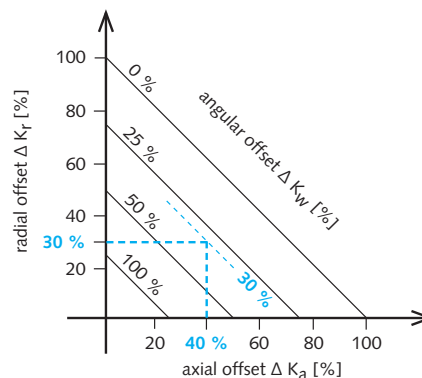
Permissible Shaft Displacements



The multi-disc coupling uses a two disc assembly to compensate for angular, axial, and radial shaft offsets. If multiple offsets occur simultaneously, they influence one another. The permissible values for displacement are therefore depending on each other. The sum of the actual displacements – in percent of the maximum values – may not exceed 100 %.

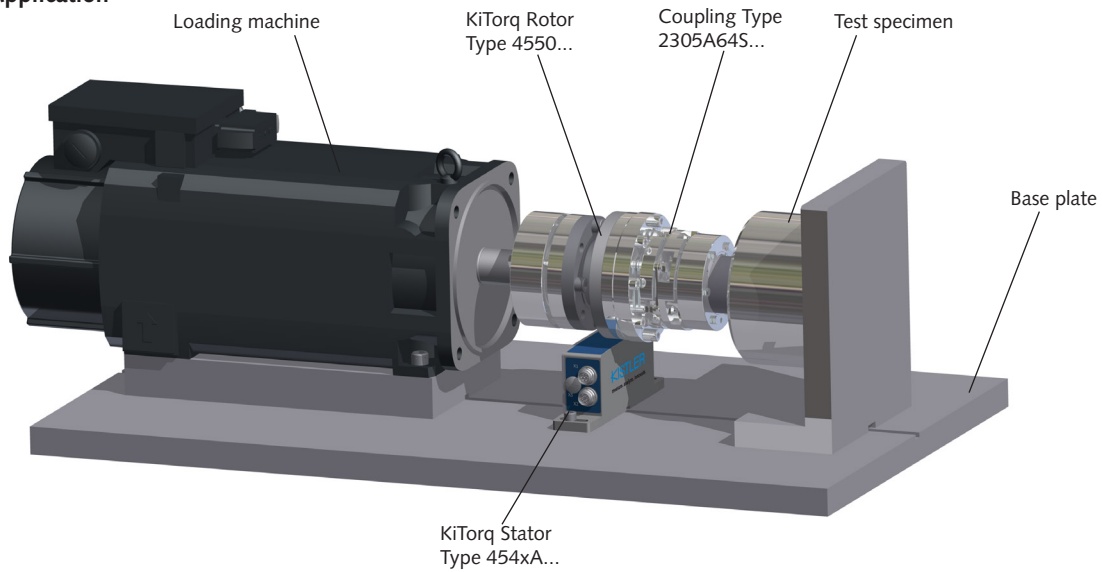
Example Calculation for Type 2300A40...

- **Axial offset** occurring: $\Delta K_a = 0,44$ mm (e.g. corresponds to **40 %** of permissible maximum value $\Delta K_a = 1,1$ mm)
- **Angular offset** occurring: $\Delta K_w = 0,21^\circ$ (e.g. corresponds to **30 %** of maximum value $\Delta K_w = 0,7^\circ$)
- Yields a **permissible radial offset** (see diagram below):
 $\Delta K_r = 30\%$ of maximum value $\Delta K_r = 0,25$ mm
 $\Rightarrow \Delta K_r = 0,08$ mm

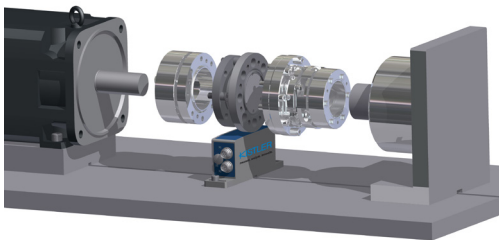


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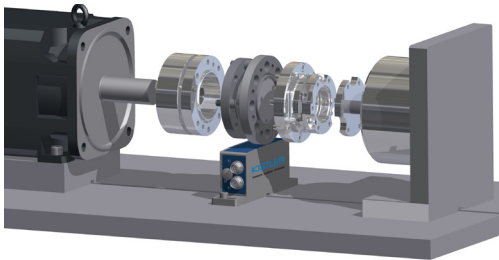
Example of Application



Possible Adaptations



Adapter Flange + Coupling Type 2305A... Variant S: Tension Ring Hub



Adapter Flange + Coupling Type 2300A... Variant F: Flange

Ordering Key

Type 2305A

Coupling Size

For KiTorq Rotor Type 4550A 100 N·m	10
For KiTorq Rotor Type 4550A 200 N·m	16
For KiTorq Rotor Type 4550A 500 N·m	40
For KiTorq Rotor Type 4550A 1K N·m	64
For KiTorq Rotor Type 4550A 2K/3K N·m	300
For KiTorq Rotor Type 4550A 5K N·m	500

Variant

Coupling with tension ring hub	S
Coupling with flange	F
Adapter flange with tension ring hub	A

Feather Key Slot

Without feather key slot	P0
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Hole diameter \varnothing H7 in mm	xxx ¹⁾
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¹⁾ Only option S and A

Observe min. and max. diameters (see dimensions table).

Included Accessories

- All necessary bolts für KiTorq Rotor Type 4550... are included

Ordering Example:

Type 2305A64SP0054

Torsion proof multi-disk coupling Type **2305A**, size **64**, variant **S**: tension ring hub, feather key slot **P0**: without feather key slot.

Hole diameter \varnothing dH7 = 54 mm: **054**.