Reich
Kupplungen

D2C
Designed to Customer

REIBO
Torsionally flexible pin-type coupling

Your drive is our strength. Your strength is our drive.

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D2C – Designed to Customer

The principle of Designed to Customer describes the recipe for success of REICH-KUPPLUNGEN: Utilizing our product knowledge, our customers are supplied with couplings which are developed and tailor-made to their specific requirements. The designs are mainly based on modular components to provide effective and efficient customer solutions. The unique form of close cooperation with our partners includes consultation, design, calculation, manufacture and integration into existing environments. Adapting our manufacturing to customer-specific production and utilizing global logistics concepts provides better after sales service - worldwide. This customer-oriented concept applies to both standard products and production in small batch sizes.

The company policy of REICH-KUPPLUNGEN embraces, first and foremost, principles such as customer satisfaction, flexibility, quality, prompt delivery and adaptability to the requirements of our customers.

REICH-KUPPLUNGEN supplies not only a coupling, but a solution: Designed to Customer.

General technical description

REIBO couplings are torsionally flexible pin-type couplings which compensate for radial, axial and angular shaft displacements. REIBO couplings are designed for positive (fail safe) torque transmission and for absorbing vibrations and torque surges.

The two coupling hubs are of identical design. Due to the alternate arrangement of the locating bores for the pin and buffer element, a maximum number of pins and buffers can be accommodated. Restoring forces generated by angular or radial displacement are minimized by the sperically formed buffers. Axial float is achieved through movement between the pin and the buffer element.

The REIBO coupling series comprises 18 sizes for a torque range from 350 to 350 000 Nm. Couplings for higher torques are available on request.

Salient features of the REIBO couplings

- Compensation of axial, radial and angular misalignments
- Shock load and vibration absorbing capability
- Fail safe operation
- Ease of assembly and ease of alignment
- Plug-in mounting facility
- No maintenance required
- Available in different types or as special designs

Technical details

The torques specified for T_{KN} or T_{Kmax} correspond to the definition for
„Flexible shaft couplings DIN 740 Part 2"

Coupling size	Technical details for the standard element version				Maximum permissible shaft displacement [3] up to the specified speed			
	Nominal torque	Maximum torque	Relative [1] damping	Maximum [2] torque	radial	axial	angular	at
	T_{KN} Nm	T_{Kmax} Nm	Ψ -	n_{max} rpm	ΔK_r mm	ΔK_a mm	ΔK_w mm	n rpm
RB 120	350	800	1.2	5700	0.2	1.0	0.3	1000
RB 140	600	1380	1.2	4900	0.2	1.0	0.4	1000
RB 160	900	2070	1.2	4200	0.2	1.0	0.4	1000
RB 180	1300	3000	1.2	3800	0.2	1.3	0.5	1000
RB 200	1800	4150	1.2	3400	0.3	1.3	0.5	1000
RB 225	2600	6000	1.2	3000	0.3	1.3	0.6	1000
RB 250	4600	10600	1.2	2700	0.3	1.7	0.7	1000
RB 300	6500	15000	1.2	2200	0.3	1.7	0.8	1000
RB 350	10500	24000	1.2	2000	0.4	2.0	0.9	500
RB 400	14500	33400	1.2	1700	0.4	2.0	1.1	500
RB 450	21000	48300	1.2	1500	0.5	2.3	1.2	500
RB 500	28000	64400	1.2	1400	0.5	2.3	1.4	500
RB 550	36000	83000	1.2	1200	0.6	2.3	1.5	500
RB 630	75000	172500	1.2	1100	0.6	2.3	1.7	500
RB 680	95000	218500	1.2	1000	0.7	2.3	1.8	500
RB 800	146000	336000	1.2	800	0.8	2.3	2.2	300
RB 900	200000	360000	1.2	700	0.9	2.3	2.4	300
RB 1100	350000	800000	1.2	600	1.1	2.3	3.0	300

[1] Dynamic torsional stiffness on request.
[2] Max. speeds refer to standard couplings of grey cast iron.
    Higher speeds can be obtained in conjunction with other materials.
[3] For the recommended alignment tolerances see page 5.

Selection of the proper coupling size

The coupling size should be adequately dimensioned to ensure that the permissible coupling load is not exceeded in any operating condition encountered. For drives which are not subject to periodically recurring fatigue torques under reversed stresses, the coupling design may be selected based on the driving torque with reference to the corresponding service factors.

1. Calculate the driving torque T_{AN}
   Given a driving powe P_{AN} and a coupling speed n_{AN}, the driving torque is calculated as follows

$$T_{AN} \text{ [Nm]} = 9550 \frac{P_{AN} \text{ [kW]}}{n_{AN} \text{ [rpm]}}$$

2. The nominal torque capacity T_{KN} of the coupling shall be at least equal to the max. drive torque T_{AN} while taking the service factors into account

$$T_{KN} \geq T_{AN} \cdot S_m \cdot S_t \cdot S_z$$

3. The maximum torque capacity T_{Kmax} of the coupling shall be at least equal to the highest torque T_{max} encountered in operation while taking the temperature factor S_t into account

$$T_{Kmax} \geq T_{max} \cdot S_t$$

Service factors

Load classification factor S_m

Prime mover	Load classification of the driven machine		
	U	M	H
Electric motors, turbines, hydraulic motors	1.25	1.6	2.0
Combustion engines ≥ 4 cylinders Cyclic variation ≥ 1:100	1.5	2.0	2.5

U = uniform
M = medium
H = heavy shock load

Temperature factor S_t

Ambient temperature	-25 °C +30 °C	+40 °C	+60 °C	+80 °C	> +80 °C
S_t	1.0	1.1	1.3	1.6	on request

Service factor S_z

starting frequency per hour or daily period of operation	30 < 3 h	60 < 10 h	120 < 24 h	> 120 -
S_z	1.0	1.25	1.5	on request

Calculation example

A coupling is required between an electric motor (P = 160 kW at n = 980 rpm) and a gearbox of a belt conveyor drive.

Uniform load	= U	: S_m = 1.25
Ambient temperature	40 °C	: S_t = 1.1
Starting frequency	30/h	: S_z = 1.0

$$T_{AN} = 9550 \, \frac{160 \text{ kW}}{980 \text{ rpm}} = 1559 \text{ Nm}$$

$$T_{KN} \geq T_{AN} \quad \bullet \; S_m \; \bullet \; S_t \; \bullet \; S_z$$
$$T_{KN} \geq 1559 \text{ Nm} \; \bullet \; 1{,}25 \; \bullet \; 1{,}1 \; \bullet \; 1{,}0 = 2144 \text{ Nm}$$

Selected coupling: RB 225 W at T_{KN} = 2600 Nm

Shaft displacement and alignment tolerances

radial displacement   axial displacement   peripheral (angular) displacement
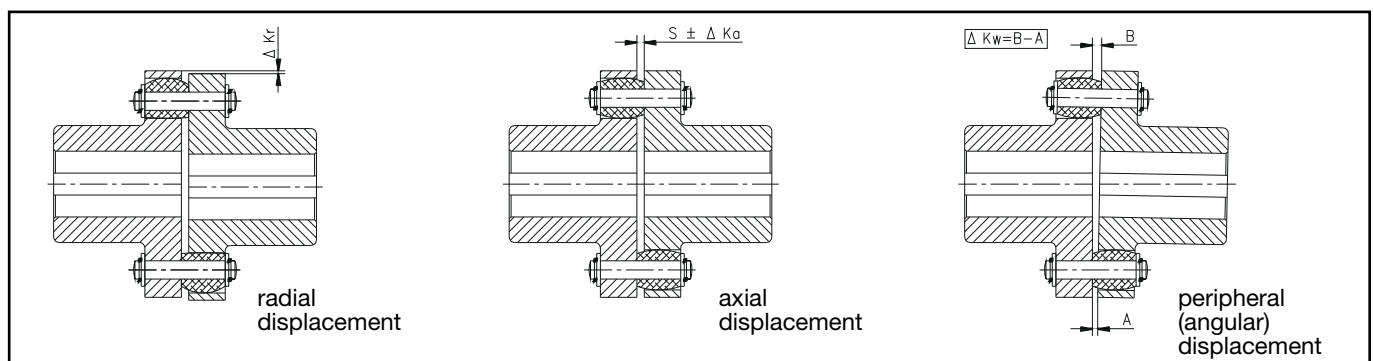
The Δ K values specified for the maximum permissible shaft displacement (table page 4) are reference values only. The compensating capability of the coupling depends on the rotational speed and the coupling load. The displacement values must be reduced at higher speeds as shown by way of example in the table.

As precise alignment of the coupling extends the service life of the flexible elements, the Δ K values should not be fully utilised to their maximum during alignment. Maximum shaft displacement must not occur in all directions at the same time.

Dimension table of REIBO shaft couplings

Standard design RB...W
pin with retaining ringg

Design RB...WE
pin with nut
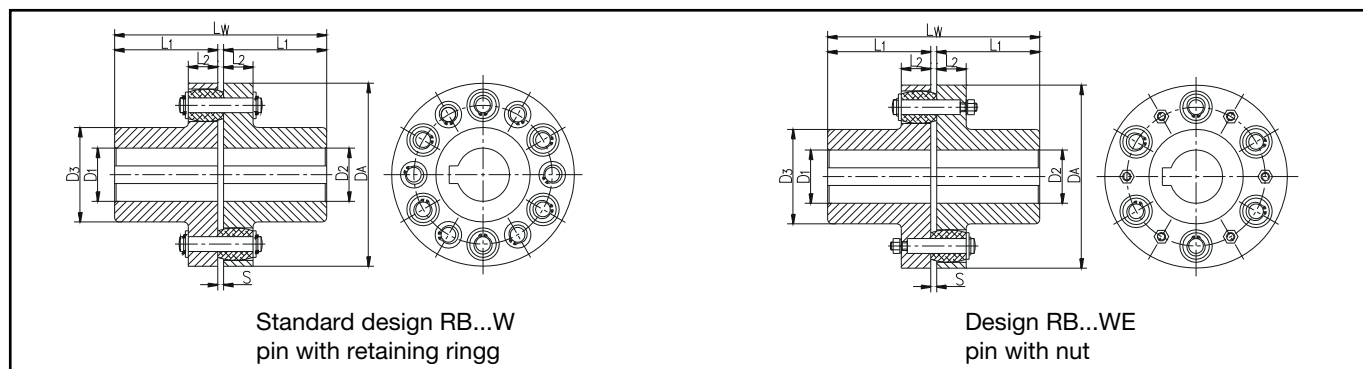
| Coupling size	D_1 / D_2		D_A	D_3	L_w	L_1	L_2	S	Number of pins	Moment of inertia J	Weight m
	prebored mm	max. mm	mm	mm	mm	mm	mm	mm	–	kgm²	kg
RB 120	-	45	120	71	143	70	20	3	10	0.007	4.3
RB 140	-	55	140	85	163	80	20	3	14	0.014	6.7
RB 160	-	60	160	102	183	90	20	3	16	0.026	10
RB 180	-	65	180	103	204	100	25	4	12	0.043	12.5
RB 200	-	75	200	118	234	115	25	4	14	0.073	18
RB 225	40	90	225	145	264	130	25	4	16	0.14	26.3
RB 250	45	95	250	147	305	150	38	5	14	0.25	37.7
RB 300	50	110	300	182	365	180	38	5	16	0.59	64.2
RB 350	60	120	350	200	406	200	60	6	12	1.41	105.4
RB 400	70	140	400	232	446	220	60	6	14	2.54	147.4
RB 450	75	160	445	253	487	240	72	7	12	4.61	209.1
RB 500	75	180	495	288	527	260	72	7	14	7.3	265.8
RB 550	80	210	545	322	567	280	72	7	16	11.1	342.2
RB 630	130	250	625	375	567	280	90	7	14	22.3	500
RB 680	150	270	680	405	567	280	90	7	16	29.7	550
RB 800	180	280	795	420	607	300	90	7	20	55	780
RB 900	200	300	900	448	607	300	90	7	22	87	970
RB 1100	280	350	1100	550	807	400	100	7	28	227	1800

Design RB...WBT
with brake drum

Design RB...WBS
with brake disc
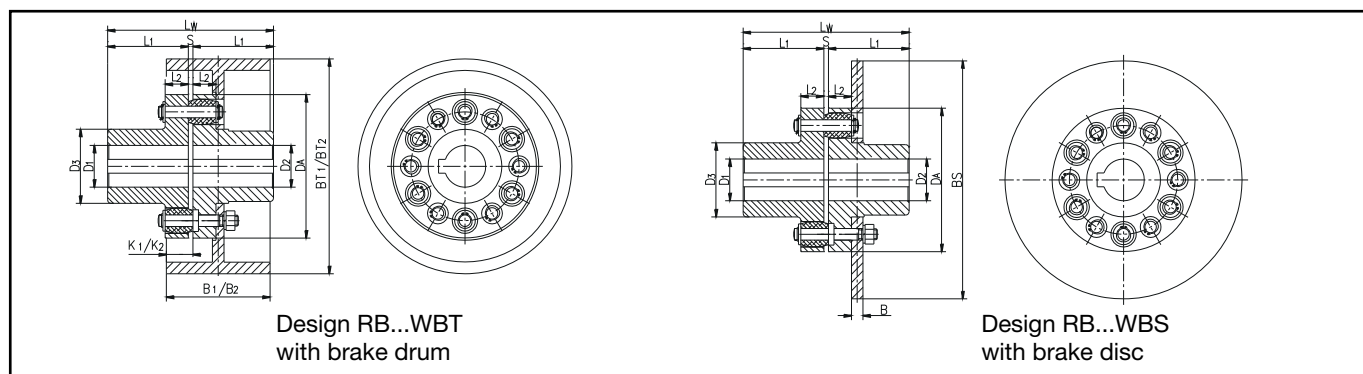
Couplung size	BT₁ mm	B₁ mm	K₁ mm	BT₂ mm	B₂ mm	K₂ mm	BS mm	B mm
RB 140	-	-	11	200	75	13.5		
RB 160	200	75	13.5	250	95	20.5		
RB 180	250	95	15.5	315	118	27		
RB 200	250	95	15.5	315	118	27	on demand	
RB 225	315	118	27	400	150	43		
RB 250	315	118	14	400	150	29		
RB 300	400	150	29	500	190	47		
RB 350	400	150	7	500	190	25		
RB 400	500	190	25	630	236	46		
RB 450	500	190	13	630	236	34		
RB 500	630	236	34	710	265	45.5		

IEC standard motors - assignment

REIBO couplings of GG
for IEC three-phase motors
with cage rotor to DIN 42673/1
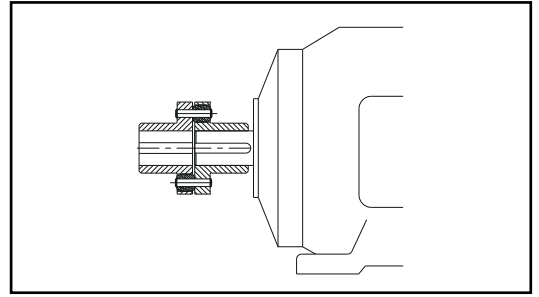
Motor size	Motor power at ~3000 rpm		Coupling size RB	Motor power at ~1500 rpm		Coupling size RB	Motor power at ~1000 rpm		Coupling size RB	Motor power at ~750 rpm		Coupling size RB	Cyl. shaft end D x L [mm]	
	Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		3000 rpm	≤ 1500 rpm
160 M	11	35	120	11	70	120	7.5	72	120	4	51	120	42 x 110	
	15	48	120							5.5	70	120		
160 L	18.5	59	120	15	96	120	11	105	120	7.5	96	120		
180 M	22	70	140	18.5	118	140	-	-	-	-	-	-	48 x 110	
180 L	-	-	-	22	140	140	15	143	140	11	140	140		
200 L	30	96	140	30	191	140	18.5	177	140	15	191	140	55 x 110	
	37	118	140				22	210	140			140		
225 S	-	-	-	37	236	160	-	-	-	18.5	236	160	55 x 110	60 x 140
225 M	45	143	160	45	287	160	30	287	160	22	280	160		
250 M	55	175	160	55	350	180	37	353	180	30	382	180	60 x 140	65 x 140
280 S	75	239	180	75	478	200	45	430	200	37	471	200	65 x 140	75 x 140
280 M	90	287	180	90	573	200	55	525	200	45	573	200		
315 S	110	350	180	110	700	225	75	716	225	55	700	225	65 x 140	80 x 170
315 M	132	420	180	132	840	225	90	860	225	75	955	225		
315 L	160	509	180	160	1019	225	110	1051	225	90	1146	225		
	200	637	180	200	1273	225	132	1261	225	110	1401	225		
355 L	250	796	200	250	1592	250	160	1528	250	132	1681	250	75 x 140	95 x 170
	315	1003	200	315	2006	250	200	1910	250	160	2037	250		
							200	2388	250	200	2547	250		
400 L	355	1130	225	355	2260	300	315	3008	300	250	3183	300	80 x 170	100 x 200
	400	1273	225	400	2547	300								

The assignment considers the maximum boring capability of the coupling hubs and offers adequate safety for normal load cases; service factor $S_{total} = 1,7$. Operating conditions at uniform to medium load, 60 starts per hour and ambient temperatures up to approx. 40 °C are thus included therein. Other load cases require a layout according to „Selection of the proper coupling size" (see page 4). Hubs of GGG or St yield smaller coupling sizes in places due to the larger boring capability.

Technical note

The technical data applies only to the complete coupling or the corresponding coupling elements. It is the customer's/ user's responsibility to ensure there are no inadmissible loads acting on all the components. Especially existing connections, like bolt connections, have to be checked regarding the transmittable torque, if necessary other measures, e.g. additional reinforcement by pins, may be required. It is the customer's/user's responsibility to make sure the dimensioning of the shaft and keyed or other connection, e.g. shrinking or clamping connection, is correct.

REICH-KUPPLUNGEN have an extensive programme of couplings and coupling systems to cover nearly every drive configuration. Furthermore customized solutions can be developed and be manufactured also in small series or as prototypes. Calculation programmes are available for coupling selection and sizing. - Please challenge us!

Safety precautions

It is the customer's and user's responsibility to observe the national and international safety rules and laws. Proper safety devices must be provided for the coupling to prevent accidental contact.

Check all bolted connections for the correct tightening torque and fit after a short running period preferably after a test run.

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