RINGSPANN®
Power Transmission

Beam Couplings

Single Beam Couplings • Double Beam Couplings • Cross-Slotted Couplings

Edition 2025/2026

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Issue 04/2025 – Technical details subject to change without notice

RINGSPANN Beam Couplings are machined from a single piece and made from homogeneous materials. Their basic form consists of a cylindrical body, into which a helix slot (beam) is cut. This beam shape gives rise to a precise flex zone, resulting in an elasticity that can be precisely calculated.

The «advantage of a single-piece product» is that it integrates several functions and individual parts into one single, space-saving unit. Beam Couplings have no additional moving parts and are therefore wear-free. This also results in high dynamic stability and vibration-free, smooth running bearing loads, even where there is a large misalignment between shafts.

With the standard couplings, you can choose clamping hubs or set screws to attach the connecting shafts.

You can also freely select the connections you require depending on your specific application. Any material can be used, as long as it is suitable for machining.

RINGSPANN Beam Couplings are used in a wide range of applications. Typical areas of application for Beam Couplings are:

- Encoders
- Tachogenerators
- Spindle drives
- General mechanical engineering
- Apparatus engineering
- Servomotors
- Positioning systems
- Step motors

RBC ... EWS-ALU

RBC ... EWS-STE

RBC ... EWC-ALU

RBC ... EWC-STE

RBC ... DWC-ALU

RBC ... DWC-STE

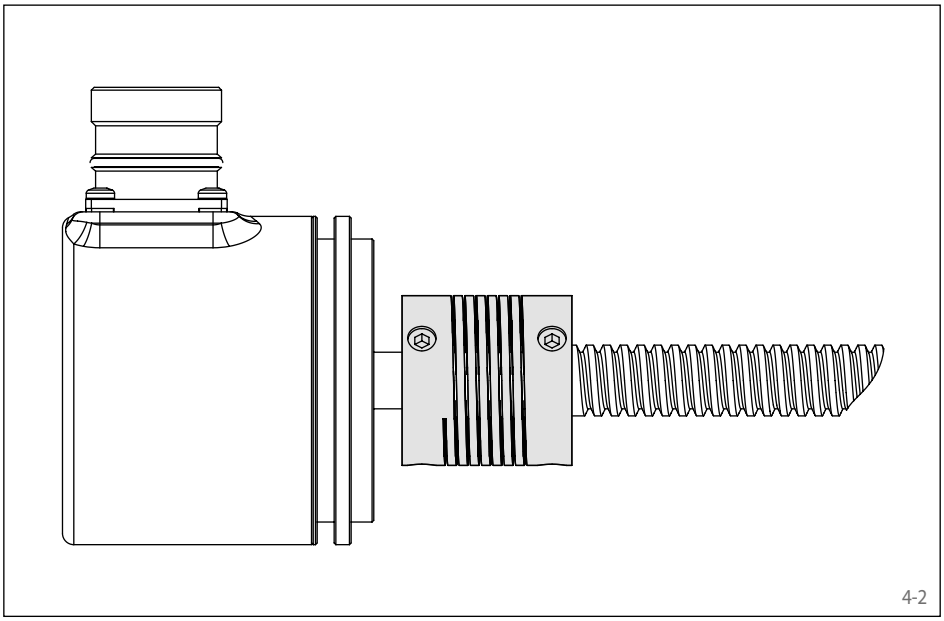
RBC ... FKC-ALU

Single Beam Couplings RBC … EWS-ALU

with set screw
made of aluminium

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- For light applications
- Made of aluminium 7075-T6, material no. 3.4365
- Optimum compensation of shaft misalignments
- Typical applications: Encoders, tachogenerators, spindle drives



Application example

The Beam Coupling RBC … EWS made of aluminium provides a lightweight and corrosion-resistant connection between rotary encoders, tachogenerators or spindle drives and machine shafts. The low weight and high corrosion resistance of the coupling ensure precise and reliable operation, even under demanding conditions.

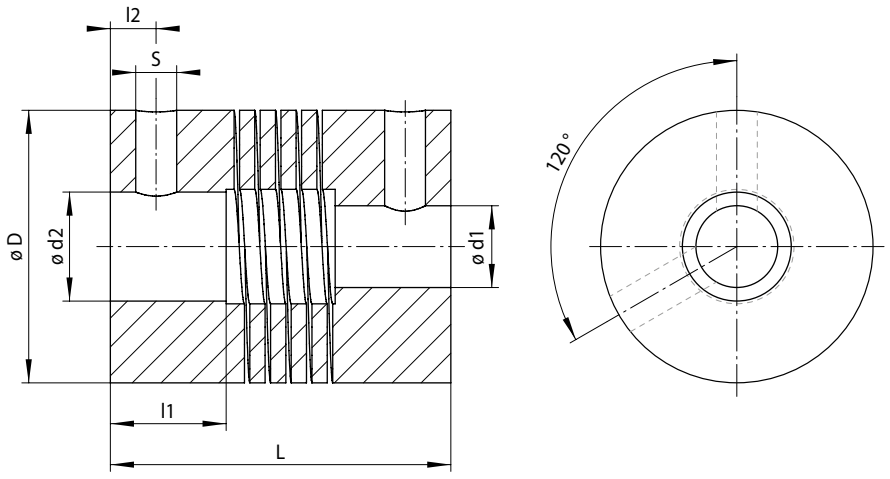
Order example	Code
Coupling design	RBC
Coupling size	0030
Type	EWS
Material: • Aluminium	ALU
Bore diameter d1 = 11 mm	011.00
Bore diameter d2 = 10 mm	010.00

RBC 0030 EWS-ALU-011.00-010.00

Single Beam Couplings RBC … EWS-ALU

RINGSPANN®

with set screw
made of aluminium



5-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Radial spring stiffness N/mm	Stiffness Axial spring stiffness N/mm	Moment of interia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0015	3 / 3	0,71	0,36	0,18	10 000	11,2	169	44	0,23	1,0	± 0,25	± 0,25	5
	4 / 3	0,66	0,33	0,17		8,0	131	29					
	4 / 4	0,66	0,33	0,17		8,0	131	29					
	5 / 3	0,59	0,3	0,15		5,7	102	20					
	5 / 4	0,59	0,3	0,15		5,7	102	20					
	5 / 5	0,59	0,3	0,15		5,7	102	20					
0020	4 / 4	1,3	0,7	0,4	10 000	21,2	179	29	0,78	1,0	± 0,25	± 0,25	5
	5 / 4	1,2	0,6	0,3		16,4	149	21					
	5 / 5	1,2	0,6	0,3		16,4	149	21					
	6 / 4	1,1	0,6	0,3		12,7	124	15					
	6 / 5	1,1	0,6	0,3		12,7	124	15					
	6 / 6	1,1	0,6	0,3		12,7	124	15					
0025	6 / 6	2,9	1,5	0,8	10 000	38,2	236	34	2,31	2,1	± 0,25	± 0,25	5
	8 / 6	2,6	1,3	0,7		26,0	175	21					
	8 / 8	2,6	1,3	0,7		26,0	175	21					
	10 / 6	2,2	1,1	0,6		16,4	126	14					
	10 / 8	2,2	1,1	0,6		16,4	126	14					
	10 / 10	2,2	1,1	0,6		16,4	126	14					
0030	10 / 10	4,6	2,3	1,2	10 000	44,1	192	25	5,50	4,7	± 0,25	± 0,25	5
	11 / 10	4,3	2,2	1,1		35,8	169	21					
	11 / 11	4,3	2,2	1,1		35,8	169	21					
	12 / 10	4,0	2,0	1,0		30,2	147	18					
	12 / 11	4,0	2,0	1,0		30,2	147	18					
	12 / 12	4,0	2,0	1,0		30,2	147	18					
0040	12 / 12	12,0	6,0	3,0	10 000	127,3	340	44	29,40	7,7	± 0,25	± 0,25	5
	14 / 14	11,0	5,5	2,8		97,1	280	33					
	16 / 16	9,7	4,9	2,5		73,5	227	25					
0050	14 / 14	19,0	9,5	4,8	10 000	229,2	375	34	85,90	7,7	± 0,25	± 0,25	5
	16 / 16	18,0	9,0	4,5		184,9	322	27					
	19 / 19	16,0	8,0	4,0		133,3	254	19					
	20 / 20	15,0	7,5	3,8		117,0	234	17					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	Weight[1] g
0015	15	20	4,8	2,5	M3	8
0020	20	20	4,8	2,5	M3	15
0025	25	24	5,9	3,0	M4	28
0030	30	30	6,8	3,5	M5	47
0040	40	50	17,0	6,7	M6	135
0050	50	54	17,0	7,5	M6	255

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

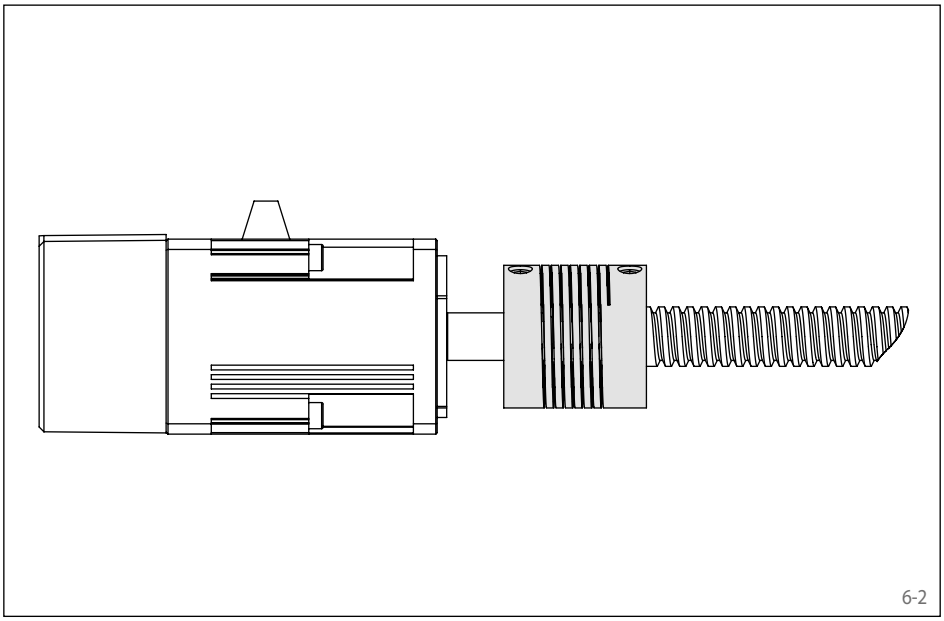
Single Beam Couplings RBC … EWS-STE

with set screw
made of steel, stainless


6-1

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- For medium torques
- Made of stainless steel 17-4PH, Material no. 1.4542
- Optimum compensation of shaft misalignments
- Typical applications: Encoders, tachogenerators, spindle drives


6-2

Application example

The steel Beam Coupling RBC … EWS is also ideal for spindle drives. Due to its higher strength and load capacity, it is particularly suitable for more power-intensive applications where the Beam Couplings RBC … EWS made of aluminium reach their limits.

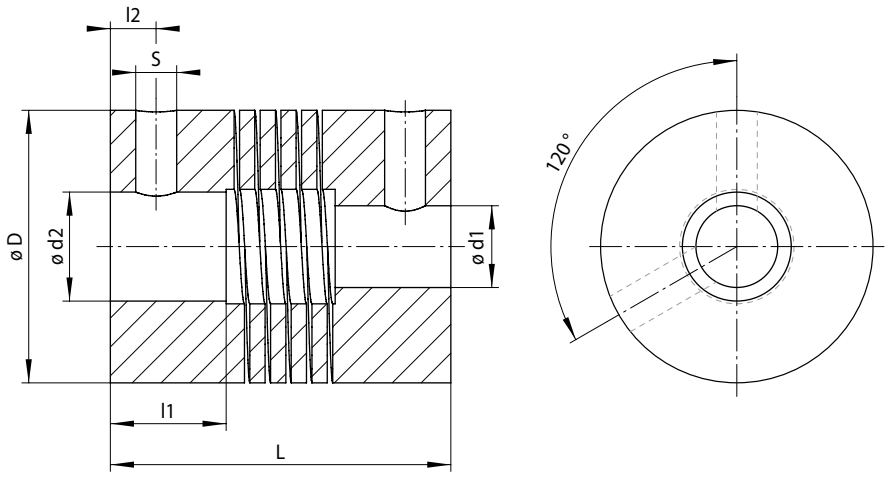
Order example	Code
Coupling design	RBC
Coupling size	0030
Type	EWS
Material: • Steel, stainless	STE
Bore diameter d1 = 12 mm	012.00
Bore diameter d2 = 10 mm	010.00

RBC 0030 EWS-STE-012.00-010.00

Single Beam Couplings RBC … EWS-STE

RINGSPANN®

with set screw
made of steel, stainless



7-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Radial spring stiffness N/mm	Stiffness Axial spring stiffness N/mm	Moment of inertia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0015	4 / 4	1,3	0,65	0,33	10 000	22,0	368	81	0,67	1,0	± 0,25	± 0,25	5
	5 / 4	1,2	0,6	0,3		15,5	285	55					
	5 / 5	1,2	0,6	0,3		15,5	285	55					
0020	5 / 5	2,5	1,3	0,7	10 000	44,1	418	58	2,13	1,0	± 0,25	± 0,25	5
	6 / 5	2,3	1,2	0,6		35,8	346	42					
	6 / 6	2,3	1,2	0,6		35,8	346	42					
0025	6 / 6	5,7	2,9	1,5	10 000	101,0	662	95	6,45	2,1	± 0,25	± 0,25	5
	8 / 6	5,1	2,6	1,3		69,9	490	58					
	8 / 8	5,1	2,6	1,3		69,9	490	58					
	10 / 6	4,3	2,2	1,1		44,1	354	38					
	10 / 8	4,3	2,2	1,1		44,1	354	38					
	10 / 10	4,3	2,2	1,1		44,1	354	38					
0030	10 / 10	8,9	4,5	2,3	10 000	119,4	538	71	16,2	4,7	± 0,25	± 0,25	5
	12 / 10	7,7	3,9	2,0		81,9	412	49					
	12 / 12	7,7	3,9	2,0		81,9	412	49					
0040	12 / 12	23,0	11,5	5,8	10 000	358,2	952	124	81,8	7,7	± 0,25	± 0,25	5
	14 / 14	21,0	10,5	5,3		272,9	783	93					
	16 / 16	19,0	9,5	4,8		204,7	636	71					
0050	14 / 14	37,0	18,5	9,3	10 000	622,9	1 050	96	239,3	7,7	± 0,25	± 0,25	5
	16 / 16	35,0	17,5	8,8		521,0	902	75					
	19 / 19	31,0	15,5	7,8		358,2	711	54					
	20 / 20	30,0	15,0	7,5		318,4	655	48					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	Weight[1] g
0015	15	20	4,8	2,5	M3	23
0020	20	20	4,8	2,5	M3	41
0025	25	24	5,9	3,0	M4	78
0030	30	30	6,8	3,5	M5	132
0040	40	50	17,0	6,7	M6	375
0050	50	54	17,0	7,5	M6	710

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

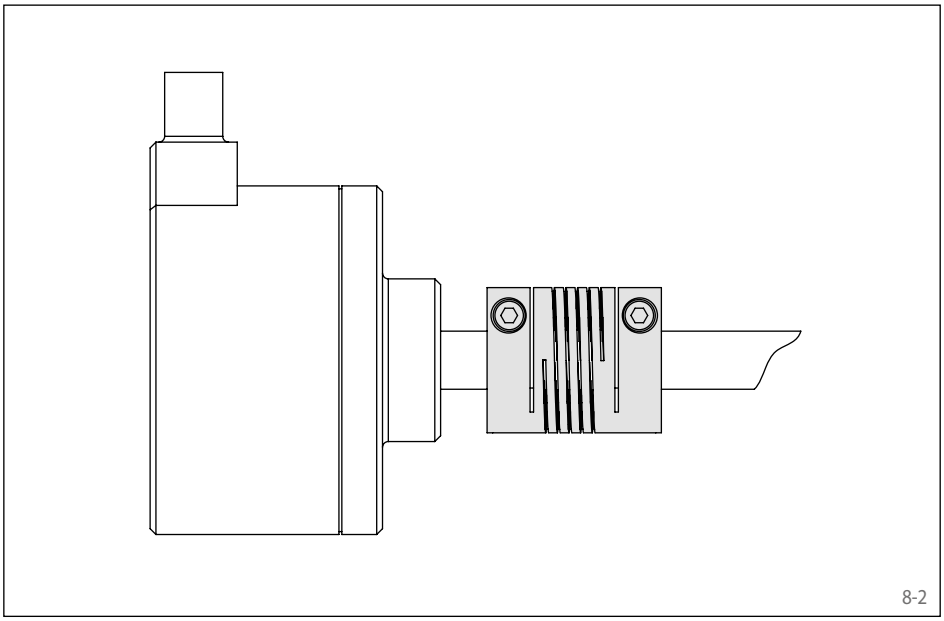
Single Beam Couplings RBC … EWC-ALU

with clamp
made of aluminium


8-1

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- For light applications
- Made of aluminium 7075-T6, material no. 3.4365
- Optimum compensation of shaft misalignments
- Typical applications: Encoders, tachogenerators, spindle drives


8-2

Application example

The Beam Coupling RBC … EWC made of aluminium is ideal for applications with rotary encoders, as it enables precise torque transmission and reliably compensates for misalignment. Thanks to its low weight and corrosion resistance, it is particularly suitable for compact and sensitive systems. In encoder applications, it ensures precise signal transmission and minimises mechanical distortion, thereby increasing the accuracy and reliability of the measured values.

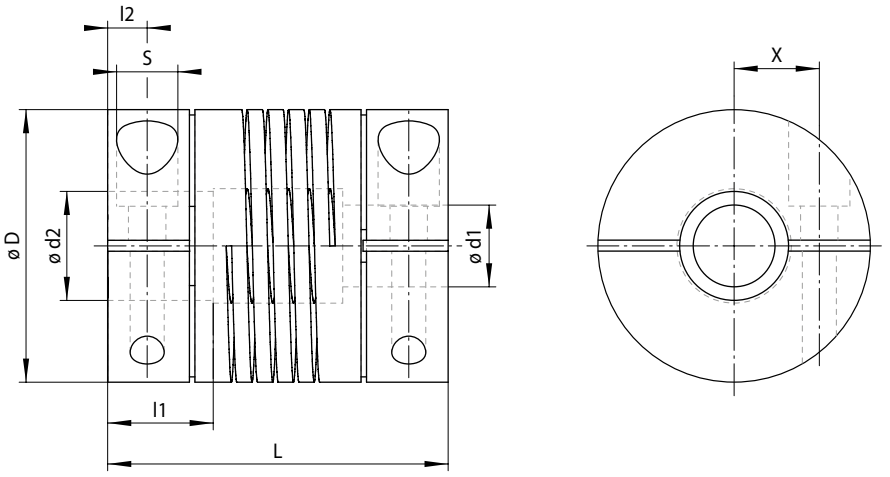
Order example	Code
Coupling design	RBC
Coupling size	0030
Type	EWC
Material: • Aluminium	ALU
Bore diameter d1 = 12 mm	012.00
Bore diameter d2 = 10 mm	010.00

RBC 0030 EWC-ALU-012.00-010.00

Single Beam Couplings RBC … EWC-ALU

RINGSPANN®

with clamp
made of aluminium



9-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Radial spring stiffness N/mm	Stiffness Axial spring stiffness N/mm	Moment of inertia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0015	3 / 3	0,71	0,36	0,18	10 000	11,2	169	44	0,26	0,5	± 0,25	± 0,25	5
	4 / 3	0,66	0,33	0,17		8,0	131	29					
	4 / 4	0,66	0,33	0,17		8,0	131	29					
	5 / 3	0,59	0,3	0,15		5,7	102	20					
	5 / 4	0,59	0,3	0,15		5,7	102	20					
	5 / 5	0,59	0,3	0,15		5,7	102	20					
0020	4 / 4	1,3	0,7	0,4	10 000	21,2	179	29	1,09	2,0	± 0,25	± 0,25	5
	5 / 4	1,2	0,6	0,3		16,4	149	21					
	5 / 5	1,2	0,6	0,3		16,4	149	21					
	6 / 4	1,1	0,6	0,3		12,7	124	15					
	6 / 5	1,1	0,6	0,3		12,7	124	15					
	6 / 6	1,1	0,6	0,3		12,7	124	15					
0025	6 / 6	2,9	1,5	0,8	10 000	38,2	236	34	2,89	2,0	± 0,25	± 0,25	5
	8 / 6	2,6	1,3	0,7		26,0	175	21					
	8 / 8	2,6	1,3	0,7		26,0	175	21					
	10 / 6	2,2	1,1	0,6		16,4	126	14					
	10 / 8	2,2	1,1	0,6		16,4	126	14					
	10 / 10	2,2	1,1	0,6		16,4	126	14					
0030	8 / 8	4,9	2,5	1,3	10 000	52,1	219	31	7,02	4,7	± 0,25	± 0,25	5
	10 / 8	4,6	2,3	1,2		44,1	192	25					
	10 / 10	4,6	2,3	1,2		44,1	192	25					
	12 / 8	4,0	2,0	1,0		30,2	147	18					
	12 / 10	4,0	2,0	1,0		30,2	147	18					
	12 / 12	4,0	2,0	1,0		30,2	147	18					
0040	12 / 12	12,0	6,0	3,0	10 000	127,3	340	44	31,60	9,5	± 0,25	± 0,25	5
	14 / 14	11,0	5,5	2,8		97,1	280	33					
	16 / 16	9,7	4,9	2,5		73,5	227	25					
0050	14 / 14	19,0	9,5	4,8	10 000	229,2	375	34	77,50	16,0	± 0,25	± 0,25	5
	16 / 16	18,0	9,0	4,5		184,9	322	27					
	19 / 19	16,0	8,0	4,0		133,3	254	19					
	20 / 20	15,0	7,5	3,8		117,0	234	17					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	X mm	Weight[1] g
0015	15	22	6,0	2,5	M2	4,3	9
0020	20	28	8,6	3,7	M3	5,5	21
0025	25	30	8,6	3,7	M3	7,7	35
0030	30	38	11,0	5,0	M4	8,8	60
0040	40	50	15,5	5,8	M5	12,5	145
0050	50	54	15,5	6,7	M6	16,3	230

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

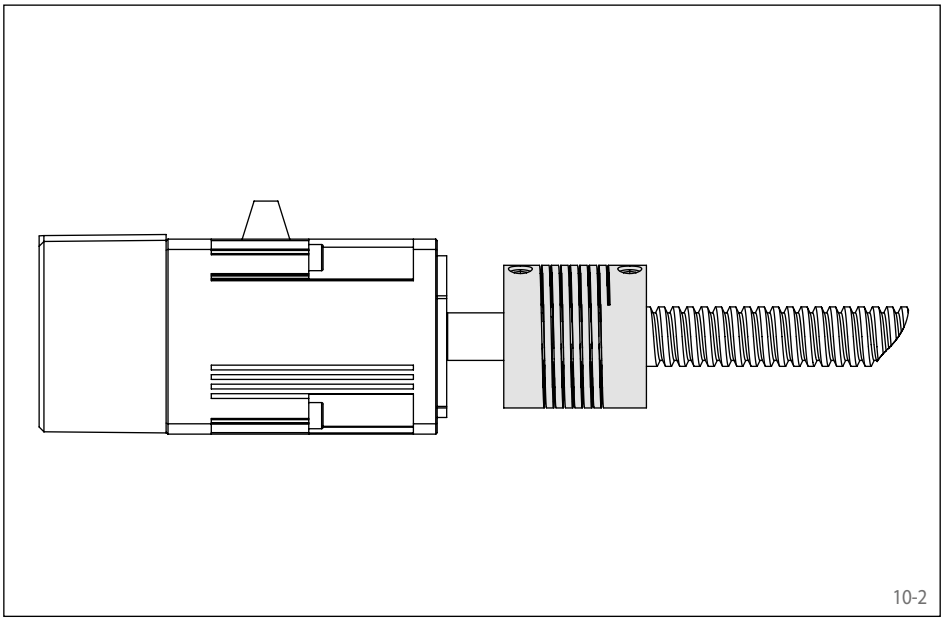
Single Beam Couplings RBC … EWC-STE

with clamp
made of steel, stainless


10-1

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- For medium torques
- Made of stainless steel 17-4PH, Material no. 1.4542
- Optimum compensation of shaft misalignments
- Typical applications: Encoders, tachogenerators, spindle drives


10-2

Application example

The steel Beam Coupling RBC … EWC is also ideal for applications with encoders. Due to its higher strength and load capacity, it is particularly suitable for more power-intensive applications where the Beam Couplings RBC … EWC made of aluminium reach their limits.

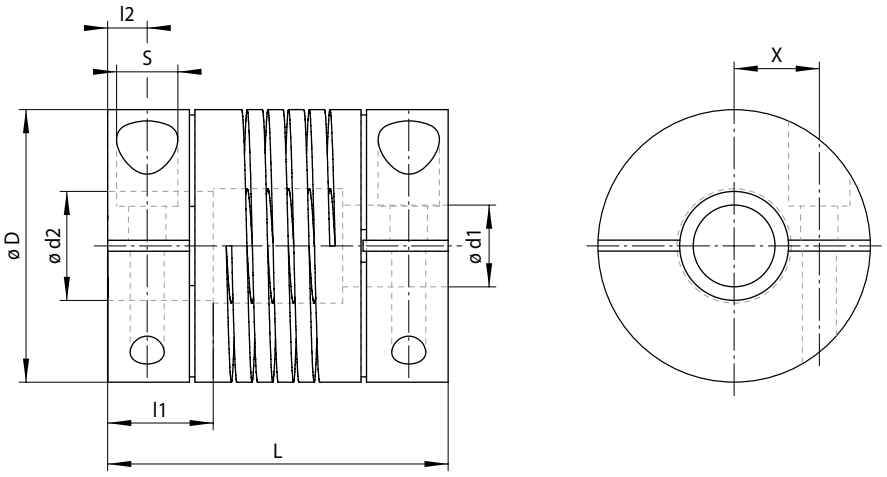
Order example	Code
Coupling design	RBC
Coupling size	0030
Type	EWC
Material: • Steel, stainless	STE
Bore diameter d1 = 11 mm	011.00
Bore diameter d2 = 10 mm	010.00

RBC 0030 EWC-STE-011.00-010.00

Single Beam Couplings RBC … EWC-STE

RINGSPANN®

with clamp
made of steel, stainless



11-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Radial spring stiffness N/mm	Stiffness Axial spring stiffness N/mm	Moment of inertia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0015	3 / 3	1,4	0,7	0,35	10 000	30,2	473	124	0,73	0,5	± 0,25	± 0,25	5
	4 / 4	1,3	0,65	0,33		22,0	368	81					
	5 / 5	1,2	0,6	0,3		15,5	285	55					
0020	5 / 5	2,5	1,3	0,7	10 000	44,1	418	58	3,02	2,0	± 0,25	± 0,25	5
	6 / 5	2,3	1,2	0,6		35,8	346	42					
	6 / 6	2,3	1,2	0,6		35,8	346	42					
0025	6 / 6	5,7	2,9	1,5	10 000	101,0	662	95	8,02	2,0	± 0,25	± 0,25	5
	8 / 6	5,1	2,6	1,3		69,9	490	58					
	8 / 8	5,1	2,6	1,3		69,9	490	58					
	10 / 6	4,3	2,2	1,1		44,1	354	38					
	10 / 8	4,3	2,2	1,1		44,1	354	38					
	10 / 10	4,3	2,2	1,1		44,1	354	38					
0030	10 / 10	8,9	4,5	2,3	10 000	119,4	538	71	20,5	4,7	± 0,25	± 0,25	5
	11 / 10	8,3	4,2	2,1		98,8	473	58					
	11 / 11	8,3	4,2	2,1		98,8	473	58					
	12 / 10	7,7	3,9	2,0		81,9	412	49					
	12 / 11	7,7	3,9	2,0		81,9	412	49					
	12 / 12	7,7	3,9	2,0		81,9	412	49					
0040	12 / 12	23,0	11,5	5,8	10 000	358,2	952	124	81,8	9,5	± 0,25	± 0,25	5
	14 / 14	21,0	10,5	5,3		272,9	783	93					
	16 / 16	19,0	9,5	4,8		204,7	636	71					
0050	14 / 14	37,0	18,5	9,3	10 000	622,9	1 050	96	239,3	16,0	± 0,25	± 0,25	5
	16 / 16	35,0	17,5	8,8		521,0	902	75					
	19 / 19	31,0	15,5	7,8		358,2	711	54					
	20 / 20	30,0	15,0	7,5		318,4	655	48					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	X mm	Weight[1] g
0015	15	22	6,0	2,5	M2	4,3	25
0020	20	28	8,6	3,7	M3	5,5	58
0025	25	30	8,6	3,7	M3	7,7	97
0030	30	38	11,0	5,0	M4	8,8	167
0040	40	50	15,5	5,8	M5	12,5	375
0050	50	54	15,5	6,7	M6	16,3	710

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

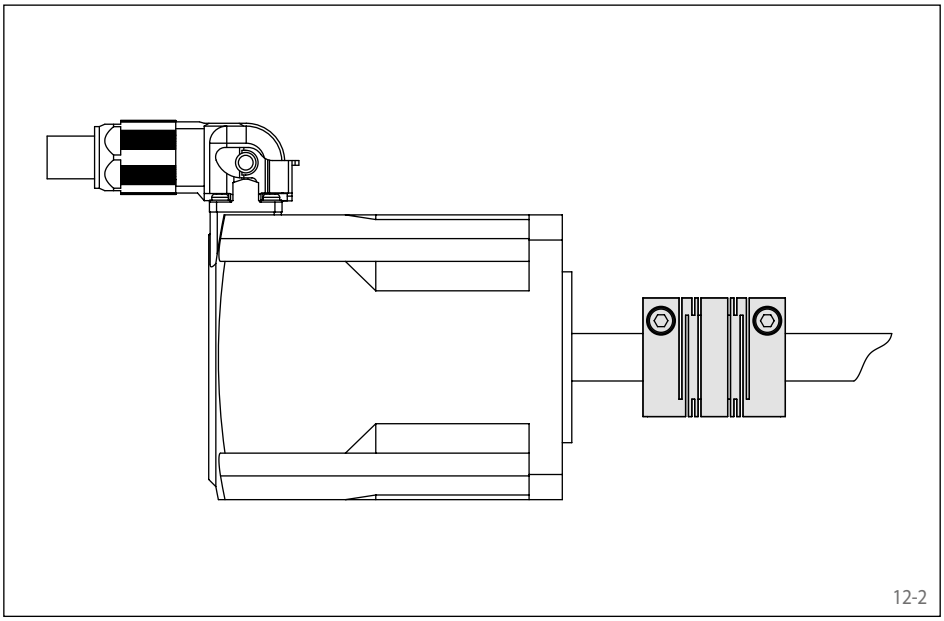
Double Beam Couplings RBC … DWC-ALU

with clamp
made of aluminium


12-1

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- High radial misalignment
- For smaller torques
- Made of aluminium 7075-T6, material no. 3.4365
- Optimum compensation of shaft misalignments
- Typical applications: General mechanical engineering, apparatus engineering, spindle drives


12-2

Application example

The Beam Coupling RBC … DWC is characterised by its double slotting, which makes it more flexible and allows it to compensate for greater radial misalignment. With its low weight and excellent damping properties, the aluminium Beam Coupling is particularly suitable for dynamic systems such as servo drives or stepper motors, where precise and low-vibration movements are required.

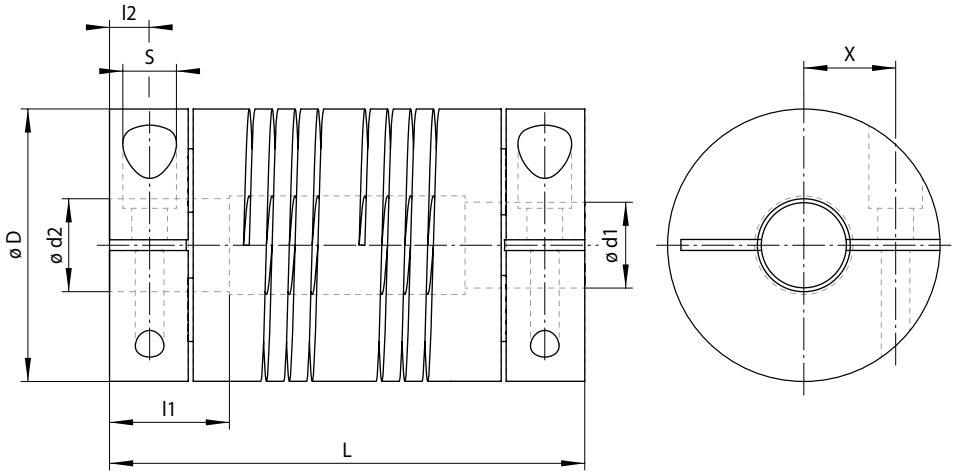
Order example	Code
Coupling design	RBC
Coupling size	0100
Type	DWC
Material: • Aluminium	ALU
Bore diameter d1 = 10 mm	010.00
Bore diameter d2 = 8 mm	008.00

RBC 0100 DWC-ALU-010.00-008.00

Double Beam Couplings RBC … DWC-ALU

RINGSPANN®

with clamp
made of aluminium



13-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Axial spring stiffness N/mm	Moment of inertia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0100	6 / 6	3,2	1,6	0,8	3 600	25	20	4,52	2,0	± 0,25	± 0,75	5
	8 / 6	2,7	1,4	0,7		17	13					
	8 / 8	2,7	1,4	0,7		17	13					
	10 / 6	2,3	1,2	0,6		11	8					
	10 / 8	2,3	1,2	0,6		11	8					
	10 / 10	2,3	1,2	0,6		11	8					
0125	8 / 8	6,4	3,2	1,6	3 600	50	23	15,2	4,7	± 0,25	± 0,75	5
	10 / 8	5,5	2,8	1,4		34	16					
	10 / 10	5,5	2,8	1,4		34	16					
	12 / 8	4,1	2,1	1,1		24	11					
	12 / 10	4,1	2,1	1,1		24	11					
	12 / 12	4,1	2,1	1,1		24	11					
0150	10 / 10	12,0	6,0	3,0	3 600	91	38	34,1	4,7	± 0,25	± 0,75	5
	12 / 10	10,3	5,2	2,6		69	28					
	12 / 12	10,3	5,2	2,6		69	28					
0200	10 / 10	25,8	12,9	6,5	3 600	230	38	125,3	16,0	± 0,25	± 0,75	5
	12 / 12	23,0	11,5	5,8		191	29					
	14 / 14	21,3	10,7	5,4		157	22					
	16 / 16	19,6	9,8	4,9		128	17					
0225	10 / 10	37,1	18,6	9,3	3 600	418	81	231,8	16,0	± 0,25	± 0,75	5
	12 / 12	36,2	18,1	9,1		356	61					
	14 / 14	34,6	17,3	8,7		301	47					
	15 / 15	34,4	17,2	8,6		281	42					
	16 / 16	32,8	16,4	8,2		258	37					
	18 / 18	29,4	14,7	7,4		211	30					
	19 / 19	28,7	14,4	7,2		203	27					
	20 / 20	28,7	14,4	7,2		178	25					
	22 / 22	26,0	13,0	6,5		144	21					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	X mm	Weight[1] g
0100	25,4	44,5	9,4	3,8	M3	7,9	54
0125	31,8	60,2	13,0	5,6	M4	9,7	113
0150	38,1	66,5	16,8	5,6	M4	13,0	180
0200	50,8	76,2	18,9	6,6	M6	16,7	374
0225	57,2	88,9	21,8	10,2	M6	20,0	550

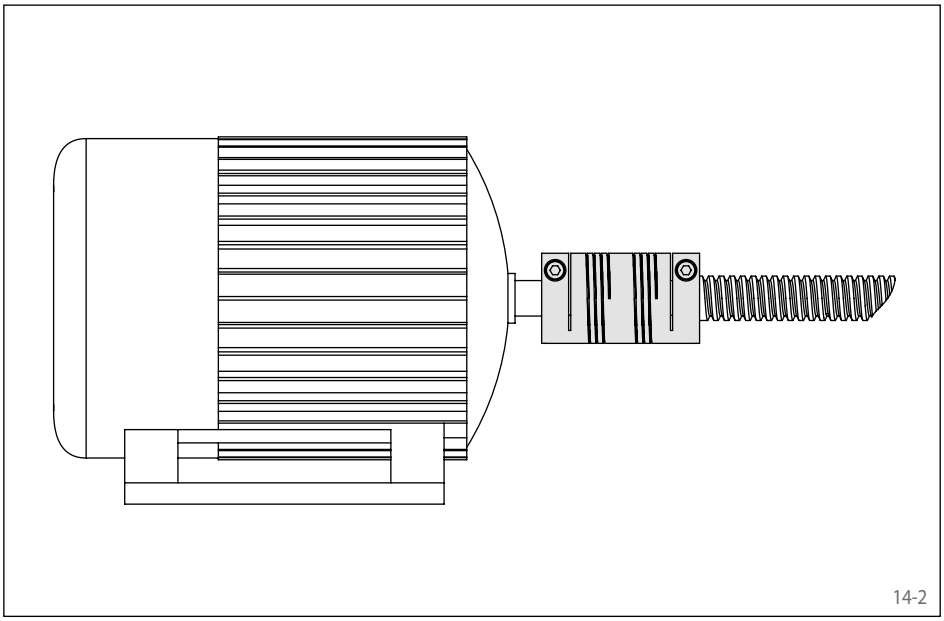
[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

Double Beam Couplings RBC … DWC-STE

with clamp
made of steel, stainless

Features

- Small coupling for universal use
- Backlash-free angle-synchronous transmission of rotary movements
- High radial misalignment
- For medium torques
- Made of stainless steel 17-4PH, Material no. 1.4542
- Optimum compensation of shaft misalignments
- Typical applications: General mechanical engineering, apparatus engineering, spindle drives



Application example

The Beam Coupling RBC … DWC made of steel offers the possibility of transmitting higher torques thanks to its high strength. It is ideal for more power-intensive applications such as spindle drives, where stability and load capacity are the focus, while at the same time effectively compensating for misalignment.

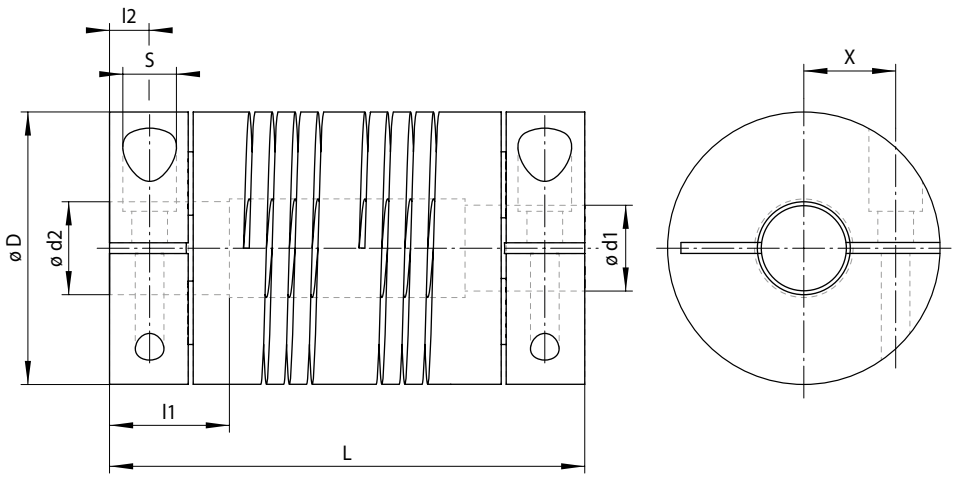
Order example	Code
Coupling design	RBC
Coupling size	0100
Type	DWC
Material: • Steel, stainless	STE
Bore diameter d1 = 10 mm	010.00
Bore diameter d2 = 8 mm	008.00

RBC 0100 DWC-STE-010.00-008.00

Double Beam Couplings RBC … DWC-STE

RINGSPANN®

with clamp
made of steel, stainless



15-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque short-term Nm	Torque one-sided Nm	Torque reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Stiffness Axial spring stiffness N/mm	Moment of inertia[1] x10^{-6} kgm^2	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Permissible shaft misalignment Radial mm	Permissible shaft misalignment Angular °
0100	6 / 6	6,8	3,4	1,7	3 600	70	56	12,6	2,0	± 0,25	± 0,75	5
	8 / 6	5,9	3,0	1,5		47	36					
	8 / 8	5,9	3,0	1,5		47	36					
	10 / 6	5,0	2,5	1,3		30	22					
	10 / 8	5,0	2,5	1,3		30	22					
	10 / 10	5,0	2,5	1,3		30	22					
0125	8 / 8	14,2	7,1	3,6	3 600	130	64	42,3	4,7	± 0,25	± 0,75	5
	12 / 8	9,6	4,8	2,4		66	31					
	12 / 12	9,6	4,8	2,4		66	31					
	15 / 8	7,3	3,7	1,8		29	17					
	15 / 12	7,3	3,7	1,8		29	17					
	15 / 15	7,3	3,7	1,8		29	17					
0150	12 / 12	23,5	11,8	5,9	3 600	190	78	96,1	4,7	± 0,25	± 0,75	5
	14 / 12	20,7	10,4	5,2		143	60					
	14 / 14	20,7	10,4	5,2		143	60					
	16 / 12	17,5	8,8	4,4		105	46					
	16 / 14	17,5	8,8	4,4		105	46					
	16 / 16	17,5	8,8	4,4		105	46					
0200	10 / 10	54,2	27,1	13,6	3 600	637	106	349,8	16,0	± 0,25	± 0,75	5
	12 / 12	52,4	26,2	13,1		530	81					
	14 / 14	48,8	24,4	12,2		434	62					
	16 / 16	44,2	22,1	11,1		356	48					
	18 / 18	40,5	20,3	10,2		286	40					
	19 / 19	38,6	19,3	9,7		258	36					
0225	10 / 10	83,3	41,7	20,9	3 600	1 180	227	646,6	16,0	± 0,25	± 0,75	5
	12 / 12	83,3	41,7	20,9		1 000	171					
	14 / 14	81,4	40,7	20,4		848	132					
	15 / 15	78,2	39,1	19,6		758	118					
	16 / 16	78,2	39,1	19,6		708	104					
	18 / 18	69,0	34,5	17,3		595	84					
	19 / 19	64,2	32,1	16,1		547	76					
	20 / 20	62,1	31,1	15,6		494	70					
	22 / 22	59,2	29,6	14,8		328	59					
	25 / 25	51,5	25,8	12,9		295	45					

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	X mm	Weight[1] g
0100	25,4	44,5	9,4	3,8	M3	7,9	150
0125	31,8	60,2	13,0	5,6	M4	9,7	315
0150	38,1	66,5	16,8	5,6	M4	13,0	507
0200	50,8	76,2	18,9	6,6	M6	16,7	1 044
0225	57,2	88,9	21,8	10,2	M6	20,0	1 534

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

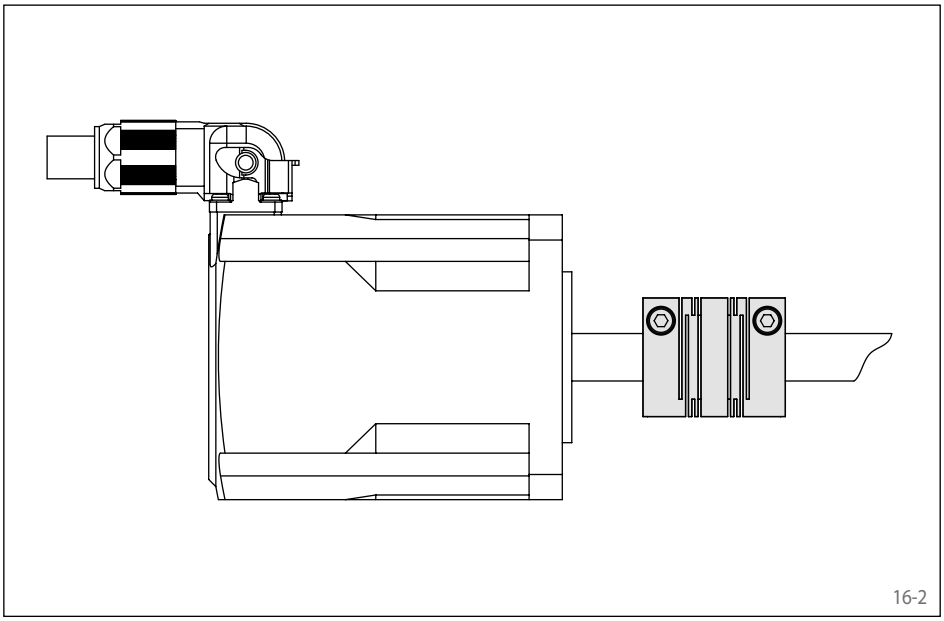
Cross-Slotted Couplings RBC … FKC-ALU

with clamp
made of aluminium

16-1

Features

- Backlash-free, torsionally rigid Cross-Slotted Coupling
- For backlash-free drives with fast start/stop cycles
- For medium torques
- Made of aluminium 7075-T6, material no. 3.4365
- Typical applications: Servomotors, positioning systems, step motors



16-2

Application example

The RBC … FKC is the ideal solution for compensating all types of misalignment. The unique slotted structure is the optimum solution for non-aligned shafts or highly resonant installation situations. The one-piece production enables high speeds and adaptation to customised lengths.

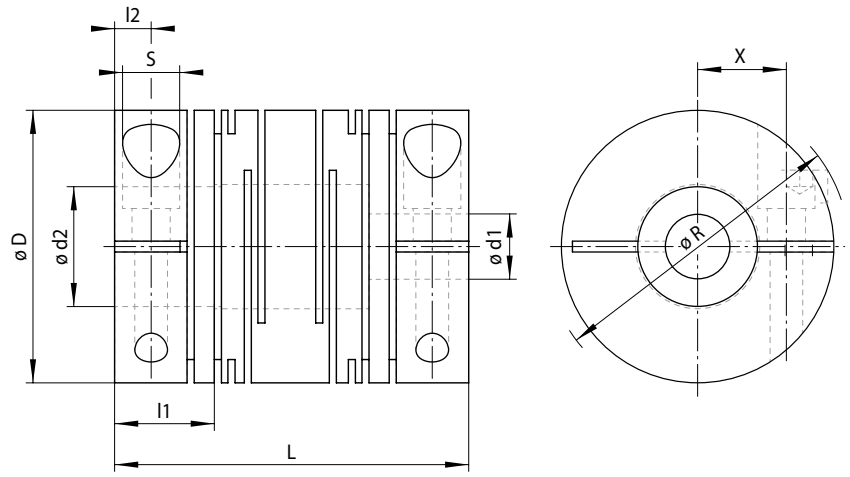
Order example	Code
Coupling design	RBC
Coupling size	0025
Type	FKC
Material: • Aluminium	ALU
Bore diameter d1 = 10 mm	010.00
Bore diameter d2 = 8 mm	008.00

RBC 0025 FKC-ALU-010.00-008.00

Cross-Slotted Couplings RBC … FKC-ALU

RINGSPANN®

with clamp
made of aluminium



17-1

Coupling size	Standard bore combinations d1 / d2 mm	Torque constantly reversing Nm	Max. speed min^{-1}	Stiffness Torsional stiffness Ct Nm/rad	Moment of inertia[1] $x10^{-6}$ kgm²	Screw tightening torque Nm	Permissible shaft misalignment Axial mm	Radial mm	Angular °
0015	3 / 3	0,3	10 000	51	0,27	1,1	± 0,25	± 0,1	3
	5 / 3								
	5 / 5								
0020	4 / 4	0,5	10 000	125	1,04	2,0	± 0,25	± 0,1	3
	6 / 4								
	6 / 6								
0025	6 / 6	1,0	10 000	261	2,73	2,0	± 0,25	± 0,15	3
	8 / 6								
	8 / 8								
	10 / 6								
	10 / 8								
	10 / 10								
0030	10 / 10	2,0	10 000	441	7,36	4,7	± 0,25	± 0,15	3
	12 / 10								
	12 / 12								
0040	10 / 10	5,0	10 000	868	37,6	9,5	± 0,25	± 0,20	3
	12 / 12								
	14 / 14								
	16 / 16								
0050	12/12	10,0	10 000	1 976	101,0	16,0	± 0,25	± 0,20	3
	14 / 14								
	15 / 15								
	16 / 16								
	18 / 18								
	19 / 19								
	20 / 20								
	22 / 22								

[1] Values based on the smallest bore diameter • Bore tolerance: 0/+ 0.05 mm; Shaft tolerance (recommended): - 0.005/- 0.013 mm

Coupling size	D mm	L mm	l1 mm	l2 mm	S mm	R mm	X mm	Weight[1] g
0015	15	24	6,3	3,0	M2,5	17,5	5,0	9
0020	20	28	7,9	3,8	M3	-	5,4	20
0025	25	30	8,0	3,8	M3	-	7,7	33
0030	30	38	10,3	5,0	M4	-	9,1	60
0040	40	60	15,7	5,8	M5	-	12,5	177
0050	50	65	17,0	6,7	M6	-	16,3	306

[1] Values based on the smallest bore diameter • Other sizes and designs with special bores (including inch dimensions) on request

Shaft misalignments

The RINGSPANN couplings are suitable for a highly diverse range of applications. Precise transmission of the rotational movement with high angle accuracy is a typical feature of the «single-piece coupling». As a flexible shaft connection, the coupling is able to correctly compensate different shaft misalignments simultaneously, such as angular, radial, axial and skewed (three-dimensional) misalignments.

Angular misalignment

Angular misalignment is relatively common. In the case of the Beam Coupling, it is compensated for by the fact that the inner edges close while the outer edges expand. If there is sufficient space between the helix groove, misalignments of 20° or greater are possible.

18-1

Radial misalignment

The compensation of radial misalignment places high technical demands on a coupling. If the misalignments in a coupling system cannot be compensated, the resulting lateral forces damage the bearing points. The beam principle offers the ideal solution. The maximum permissible values in the standard catalogue range are ± 0.8 mm. Customer-specific applications allow for even greater values.

18-2

Skewed misalignment (three-dimensional)

In this case, the drive shafts do not share a common plane. The Beam Coupling can even compensate for this three-dimensional misalignment. However, this requires a relatively long beam.

18-3

Optimised torque capacity

Factors such as dynamic load, vibrations, impacts, and additional offsets all have an influence on the transferable torque. The permissible coupling torque is calculated based on the technical material data. Once all operating conditions are known and if these do not deviate from the catalogue specifications, the Beam Coupling is suitable for an almost infinite service life in terms of torque transfer.

Low bearing load

When compensating for shaft misalignments, couplings generate restoring forces that also act on the connected shafts and their bearings. The possible damages depend on the load direction and speed. This applies in particular to radial misalignments.

The design of RINGSPANN Beam Couplings ensures constantly low restoring forces at all points across the entire speed range and thus protects the connected components.

Optimum speed behaviour

Due to their design and precise manufacturing, RINGSPANN Beam Couplings guarantee a uniform speed transmission across a wide speed range without significant vibrations or imbalances.

Configurable torsional stiffness

The torsional stiffness of the standard couplings can be found in the table values. For customer-specific applications, this can be adapted as required, taking into account the technical specifications. A certain torsional flexibility nonetheless remains in all shaft connections.

Speeds

Thanks to low mass moments of inertia, Beam Couplings can be used over an extensive range of speeds, as well as in reverse operation and for a very high number of cycles.

Our standard Beam Couplings are designed for maximum speeds of up to 10 000 min^{-1}. For specific applications, speeds of 50 000 min^{-1} have already been successfully achieved.

Please contact our technology department for information on suitable applications.

Constant speed

Since the Beam Coupling is machined from a single piece, the minimal manufacturing tolerances enable high-precision work at a constant angular velocity at both the drive and output ends. Regardless of the misalignment, the angle synchronisation of the connected shafts remains constant at all times. The integrity of the «one-piece design» ensures there is backlash-free and no imbalance.

Axial compensation

Axial play may be a desirable feature in some systems, or can be a result of the different tolerances of the individual components during assembly, or due to temperature changes, distortion, etc.

The permissible axial offset of the standard couplings is listed in the table values. The axial pressure generated by the torque is reduced to a negligible minimum. For customer-specific configurations, the required axial offset can be calculated and the coupling machined accordingly.

Vibration damping

The screw-shaped, flexible coupling profile helps to considerably reduce unwanted torsional vibrations of a rotating system. The Beam Couplings are smooth running and do not generate any of their own vibrations.

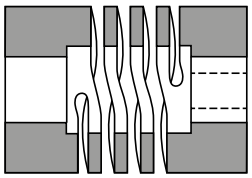
Bore types

There are basically two basic forms:

Couplings with a continuous internal bore

Recessed coupling

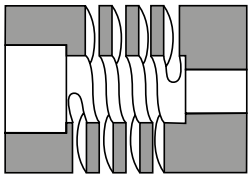
- Internal diameter is greater than the shaft diameter
- The shaft ends should not touch each other, otherwise misalignments can no longer be adequately compensated for



20-1

Offset alignment

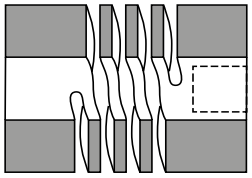
- Internal diameter is smaller than the larger shaft diameter, but larger than the smaller shaft diameter
- The shaft ends should not touch each other, otherwise misalignments can no longer be adequately compensated for



20-2

Limited shaft length

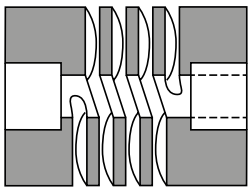
- Internal diameter and both shaft diameters are the same size
- The shaft ends must not protrude into the slotted area of the coupling, otherwise misalignments can no longer be adequately compensated for
- Coupling can be installed or removed by sliding onto a shaft



20-3

Offset shaft diameter

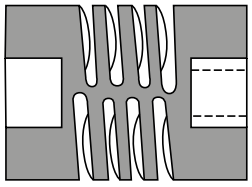
- Internal diameter is smaller than the shaft diameter.
- Shafts cannot touch
- The advantage is high torsional stiffness with small couplings



20-4

Blind bores or non-continuous bore

Compared to the other designs, this design transmits a higher torque and higher torsional stiffness with a smaller external diameter and shorter length. However, the coupling is still axially rigid and can only be used to compensate for angular misalignment.



20-5

Fastening

In addition to the two standard types of fastening (set screws and clamps), other common or customized types of connection can be supplied:

- Set screw or clamp at different ends
- Pins, bolts, pegs
- Key
- Flange
- Threaded pin, threaded bore
- Conical bore
- Single or double flattened bore
- Spline toothing

The attachment friction generated at the clamp connection is sufficient to transmit the required torque. No additional key is required. On request and for special applications, however, a clamp connection with a key can be supplied.

As mentioned at the beginning, the versatile application possibilities of a precision shaft coupling are not limited to the catalogue series.

Customer-specific solutions are our speciality. Beam Couplings have even been used for very smallest of couplings, such as those used in microdevices implanted in the human body. This is where the advantage of the free selection of materials for RINGSPANN Beam Couplings comes to the fore.

Customer benefit

The function integration (e.g. coupling/pinion) can increase the service life and safety of the component. At the same time, the overall costs (component costs, assembly, procurement) are also optimised.

Advantages

Reduction in overall costs

- Fewer components for one function
- Shorter assembly times
- Minimised procurement work

Increased safety

- Only one component – clear interfaces
- A point of contact for several functions
- Increased system safety and quality standard

The storage and administration costs are optimised

- Fewer components in the warehouse
- Reduction in orders and suppliers

Reduced development workload

- We can compile design proposals on request, free of charge
- Use of our calculation software

Industry: Food industry

Application: Corrosion-resistant coupling with an integrated pinion for an adjustment unit

21-1

Design parameters

As described in the technical principles, the Beam Coupling can also be machined according to your specific requirements. The following parameters influence the properties of the coupling and can be taken into account for the application:

- Beam design
- Beam length
- Number of beams (multistart)
- Bore diameter
- Different coil cross-sections
- Material

Coil thickness

By changing the beam pitch, the altered thickness of the coil influences the torque, torsional stiffness, and the axial motion.

22-1

Beam length

If the beam length is changed, the torque remains constant, while all other characteristics may vary depending on the configuration.

22-2

Number of beam starts

Depending on the design requirements, Beam Couplings can also be created

- with a single beam (standard version)
- with a double beam (start offset by 180°)
- with a triple beam (start offset by 120°)

When a so called multistart beam is used, the torque, torsional stiffness, and concentricity are increased. While misalignment capabilities are reduced compared to singlestart beams.

22-3

Bore diameter

Different bore diameters with the same beam configuration and the same external diameter can result in changes to the torque, torsional stiffness, and spring action.

22-4

Material

The Beam Couplings are machined in series production from aluminium alloys (3.4365) with an anodised surface, or from corrosion-resistant chromium nickel steel (1.4542). For specific applications, the customer can also select their own material, such as plastic or titanium. The only prerequisite is that the material has to be suitable for machining.

Questionnaires
for customized Beam Couplings

RINGSPANN®

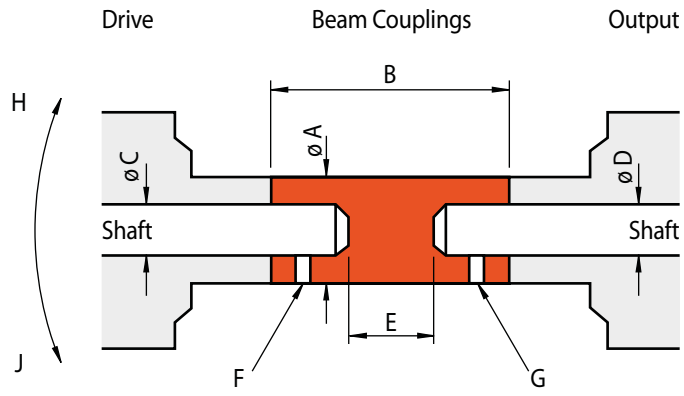
Please photocopy or use the technical query from our website (www.ringspann.com)!

Company: ..... Phone: .....

Name: ..... E-Mail: .....

Date: .....

1. Coupling and shaft dimensions



Permissible outside diameter	A	_____	[mm]
Permissible total length	B	_____	[mm]
Shaft diameter (drive)	C	_____	[mm]
❑ Bore tolerance (normal)		+ 0.05 0.00 mm	
❑ Bore tolerance (precise)		+ 0.015 0.00 mm	
Shaft diameter (output)	D	_____	[mm]
❑ Bore tolerance (normal)		+ 0.05 0.00 mm	
❑ Bore tolerance (precise)		+ 0.015 0.00 mm	
Shaft distance	E	_____	[mm]

2. Description of drive/output

Drive:

_____

_____

Output:

_____

_____

Direction of rotation ❑ H ❑ J

❑ continuous ❑ reversing operation

Stop/Start _____ [x/sec.]

Revolutions _____ [min^{-1}] ❑ by hand

3. Fastening

		Drive side F	Output side G
Integrated clamps		❑	❑
2 locking screws 120°		❑	❑
2 locking screws 90°		❑	❑
1 locking screw		❑	❑
Cylindrical pins	_____ [mm]	❑	❑
Dowel pins	_____ [mm]	❑	❑
Key groove	_____ [mm]	❑	❑
Other	_____ [mm]	❑	❑

4. Operating data

Torque — Nominal torque _____ [Nm]

Max. torque _____ [Nm]

Misalignment (see p. 20/21) ❑ Angular misalignment _____ [°]

❑ Radial misalignment _____ [mm]

❑ Axial comp./Extension _____ [mm]

❑ No overlap (drawing enclosed)

Torsional stiffness ❑ < ❑ = ❑ > _____ [Nm/rad]

Moment of inertia ❑ < ❑ = ❑ > _____ [kg/cm^2]

Weight ❑ < ❑ = ❑ > _____ [g]

Operating conditions ❑ Temperature _____ [°C]

❑ Corrosion ❑ Dirt

5. Appendices

❑ Specifications ❑ Data sheet ❑ Sketch/drawing

Examples of various customized Beam Couplings

Industry

Aerospace

Application

Beam Coupling with square shaft and gear wheel. Fuel pump control for small aircraft.

24-1

Industry

Food & Packaging

Application

Coupling set with spline toothing for high axial compensation and easy plug-in assembly.

24-2

Industry

Pulp and Paper

Application

Beam Coupling with integrated external and internal thread. Used in clamping clutches for radial and axial compensation to the pressure roller.

24-3

Industry

Medical

Application

Beam Coupling with half-shell on one side and integrated output shaft. Used in foot pedal actuation to control the speed of a surgical instrument.

24-4

Customized Precision Springs

The shape of a Beam Coupling, or the actual beam, is basically the same as a spring. Due to this fact, it is possible to manufacture not only couplings but also customized springs with high precision.

25-1

Europe

Germany
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