

Accessories

Connection of motor and encoder	Couplings	Bellows and spring washer couplings
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Bellows couplings provide cost-effective connection of the motor and encoder. They are also able to correct any angular errors between the drive and encoder.

Spring washer couplings are used with high speeds.

Order code Couplings		8.0000	.	1	XXX	.	XX	XX
		Type			a		b	c
a Type of coupling								
102 = Bellows-type ø 19 mm [0.75"]								
202 = Bellows-type ø 15 mm [0.59"]								
301 = Spring washer type, ø 30 mm [1.18"], one-part								
401 = Spring washer type, ø 30 mm [1.18"], three part, plug-in								
502 = Bellows-type ø 25 mm [0.98"]								
b Bore diameter d1								
06 = 6 mm								
08 = 8 mm								
10 = 10 mm								
12 = 12 mm								
14 = 14 mm								
15 = 15 mm								
A1 = 3/8"								
A2 = 1/4"								
c Bore diameter d2								
04 = 4 mm								
06 = 6 mm								
08 = 8 mm								
10 = 10 mm								
12 = 12 mm								
A1 = 3/8"								
Example: d1 = 10 mm und d2 = 12 mm								
Order no. = 8.0000.1X0X.1012								
Stock types								
8.0000.1102.1010								
For possible combinations of d1/d2, see technical data								

Technical data		8.0000.1102.XXXX	8.0000.1202.XXXX	8.0000.1301.XXXX	8.0000.1401.XXXX	8.0000.1502.XXXX
Type		10000	10000	12000	12000	10000
Maximum speed	min ⁻¹	10000	10000	12000	12000	10000
Maximum torque	Ncm	120	40	80	60	200
Maximum displacement	radial mm	± 0.3	± 0.25	± 0.4	± 0.3	± 0.35
	axial mm	± 0.5	± 0.45	± 0.4	± 0.4	± 0.54
	angular -	± 4°	± 4°	± 3°	± 2.5°	± 4°
Torsion spring stiffness	Nm/rad	150	85	150	30	183
Radial spring stiffness	N/mm	10	20	6	40	17.8
Moment of inertia	gcm ²	9.5	2.1	19	35	20
Max. tightening torque	Ncm	150	70	80	80	120
Working temperature		-30°C ... +120°C [-22°F ... +248°F]	-30°C ... +120°C [-22°F ... +248°F]	-30°C ... +120°C [-22°F ... +248°F]	-10°C ... +80°C [+14°F ... +176°F]	-30°C ... +120°C [-22°F ... +248°F]
Weight approx.		16 g [0.56 oz]	6.5 g [0.23 oz]	16 g [0.56 oz]	30 g [1.06 oz]	24 g [0.85 oz]
Material	flange	Al, anodized	Al, anodized	Al, anodized	Al, anodized	Al, anodized
	bellow or spring washer/casing	stainless steel	stainless steel	stainless steel	PA 6.6 gf.	stainless steel
Diameter d/d1 from ... to	mm [inch]	3 ... 12 [0.12 ... 0.47]	3 ... 9 [0.12 ... 0.35]	3 ... 8 [0.12 ... 0.32]	4 ... 16 [0.16 ... 0.47]	3 ... 16 [0.12 ... 0.63]
Standard bore diameter	(d1 / d2) mm [inch]	12 / 12 [0.47 ... 0.47]	08 / 06 [0.32 ... 0.24]	06 / 06 [0.24 ... 0.24]	12 / 12 [0.47 ... 0.47]	15 / 12 [0.59 ... 0.47]
		12 / 10 [0.47 ... 0.39]	06 / 06 [0.24 ... 0.24]		12 / 10 [0.47 ... 0.39]	14 / 12 [0.55 ... 0.47]
		10 / 10 [0.39 ... 0.39]	06 / 04 [0.24 ... 0.16]		10 / 10 [0.39 ... 0.39]	14 / 10 [0.55 ... 0.39]
		10 / 08 [0.39 ... 0.32]	04 / 04 [0.16 ... 0.16]		10 / 06 [0.39 ... 0.24]	10 / 10 [0.39 ... 0.39]
		10 / 06 [0.39 ... 0.24]			06 / 06 [0.24 ... 0.24]	06 / 06 [0.24 ... 0.24]
		08 / 08 [0.32 ... 0.32]			1/4" / 10	
		06 / 06 [0.24 ... 0.24]			1/4" / 06	
					3/8" / 3/8"	

Description and applications

Manufacturing and installation tolerances as well as the effects of temperature cause alignment errors between shafts in drive engineering which can sometimes lead to extreme overload on the bearings. This may result in increased wear of the bearings and may lead to premature failure of the encoder. By using couplings, these alignment errors can be compensated, thereby reducing the load on the bearings to a minimum. A distinction should be made between three different kinds of alignment error: radial, angular and axial displacement.

Whilst with torsion-free but flexible shaft couplings, axial shaft displacements produce only static forces in the coupling, radial and angular displacements produce alternating stresses, restoring forces and moments which may have an impact on adjoining components (shaft bearings).

Depending on the type of coupling, particular attention should be paid to radial shaft displacement which should be kept to a minimum.

Accessories

Connection of motor and encoder

Couplings

Bellows and spring washer couplings

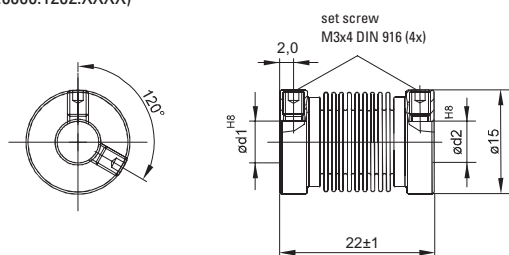
Metal bellows-type couplings (.1102, .1202 und .1502)

Metal bellows-type couplings are recommended as an inexpensive type of coupling. They are also suitable for compensating larger angle displacements.

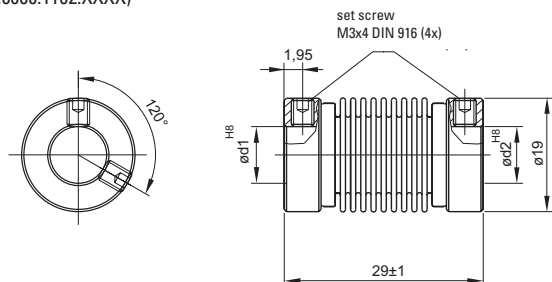
Dimensions

Dimensions in mm

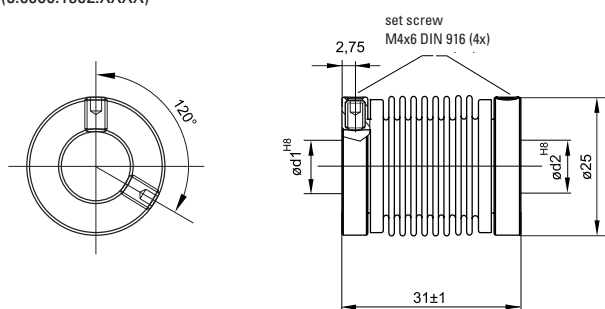
Bellows-type coupling ø 15 [0.59]
(8.0000.1202.XXXX)



Bellows-type coupling ø 19 [0.75]
(8.0000.1102.XXXX)



Bellows-type coupling ø 25 [0.98]
 (8.0000.1502.XXXX)



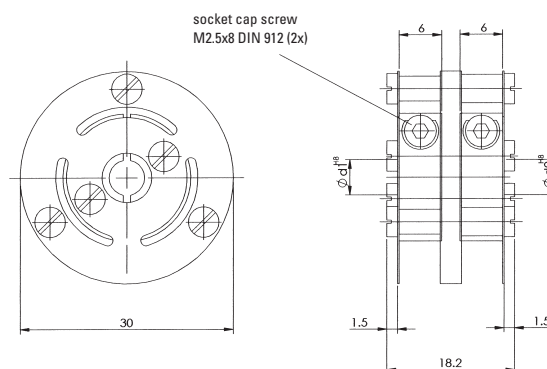
Installation instructions

1. Check shaft for displacement; see technical data for details.
2. Align and adjust coupling on shafts.
3. Tighten locking screws carefully. Avoid overtightening.
4. During installation protect the coupling from damage and from overbending.

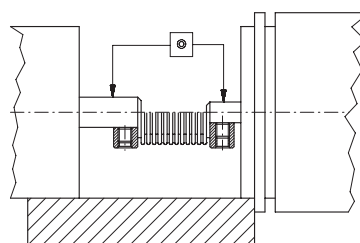
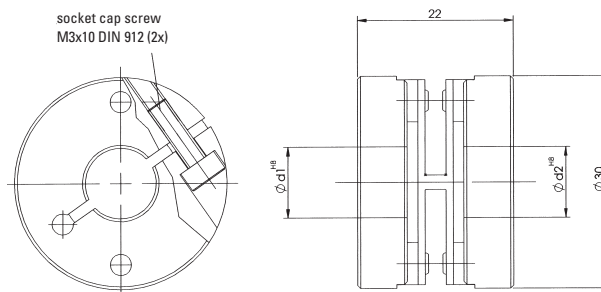
Spring washer-type couplings (.1301 und .1401)

Spring washer couplings are used primarily where high speeds and minimal axial errors occur. For applications requiring potential separation between the encoder and the drive, use the electrically isolating spring washer coupling.

Spring washer-type coupling, one-part
(8.0000.1301.XXXX)



Spring washer-type coupling, three part, plug-in
(8.0000.1401.XXXX)



Accessories

Connection of motor and encoder	Couplings	Bellows couplings (FS)
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Bellows couplings provide cost-effective connection of the motor and encoder. They are also able to correct any angular errors between the drive and encoder.

These bellows couplings (FS) are used for safe connection of applications and Sendix SIL encoders.

The safety-oriented bellows coupling has, in addition to the metallic bellows, internal claws that ensure the driving of the encoder in case of breakage of the bellows connection.

Order code		8.0000						. 1		5		FS		. XX		XX	
Couplings		Type						a						b		c	
a Type of coupling								b Bore diameter d1						c Bore diameter d2		Example:	
5 = bellows coupling ø 25 mm [0.98"]								10 = 10 mm						10 = 10 mm		d1 = 10 mm and d2 = 12 mm	
								12 = 12 mm						12 = 12 mm		order no. = 8.0000.15FS.1012	

Accessory	Order no.
Screw retention	Loctite 243, 5 ml
	8.0000.4G05.0000

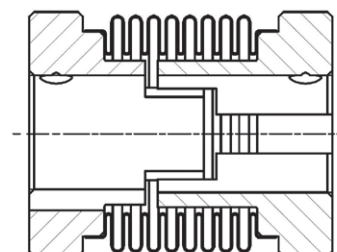
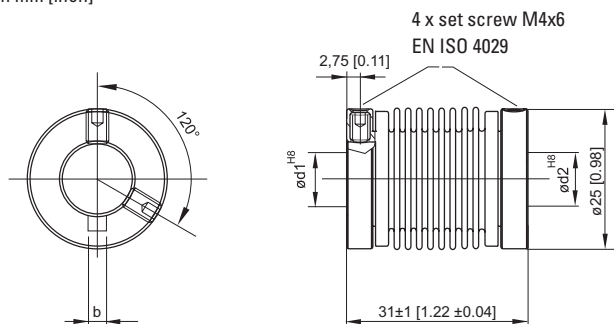
Technical data

Mechanical characteristics	
Max. speed	10000 min ⁻¹
Max. torque	200 Ncm
Max. shaft offset	radial ± 0.3 mm axial ± 0.45 mm angular ± 3°
Torsion spring stiffness	183 Nm/rad
Radial spring stiffness	17.8 N/mm
Moment of inertia	9.1 gcm ²
Headless set screw tightening torque	min. 80 Ncm max. 100 Ncm

Working temperature range	-30°C ... +120°C [-22 ... +248°F]
Weight approx.	54 g
Material	flange stainless steel 1.4104 bellows stainless steel 1.4571
Standard bore diameter	(d1 / d2) 10 / 10 mm [0.39 / 0.39"] 10 / 12 mm [0.39 / 0.47"] 12 / 12 mm [0.47 / 0.47"]
Insertion depth	min. 6 mm [0.24"] max. 11 mm [0.43"]

Dimensions

Dimensions in mm [inch]



Nut DIN 6885

nut width b	d1 / d2
3 [0.12]	10 [0.39]
4 [0.16]	12 [0.47]

Accessories

Connection of motor and encoder

Flexible shaft coupling

Double loop coupling



The safe, uncomplicated and economical solution, if drive shafts with angular, radial and/or axial displacement are to be friction-locked together.

Order no. size 1

Bore diameter both sides 6 mm [0.24"]

8.0000.1J01.0606

Order no. size 2

Bore diameter both sides 10 mm [0.39"]

8.0000.1K01.1010

Bore diameter 11 mm [0.43"] and 12 mm [0.47"] with keyway

8.0000.1L01.1112

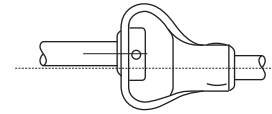
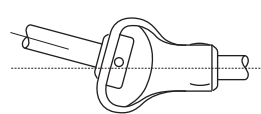
Technical data

	Size 1	Size 2
Max. speed	3000 min ⁻¹	3000 min ⁻¹
Max. torque	0.5 Nm	2.0 Nm
Max. offset of shafts	radial ± 2 mm axial ± 2 mm angular ± 10°	± 3 mm ± 4 mm ± 12°
Torsion spring stiffness	13 Nm/rad	28 Nm/rad
Radial spring stiffness	13 N/mm	7 N/mm
Moment of inertia	41 gcm ²	106 gcm ²
Max. clamping torque	100 Ncm	100 Ncm
Weight, approx.	33 g [1.16 oz]	85 g [3.35 oz]
Temperature range	-30°C ... + 80°C [-22°F ... +176°F]	
Material	flange steel galvanized connecting element Polyurethane	

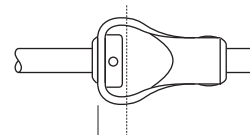
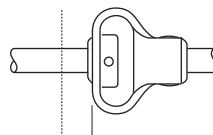
Functional principle

Compensation of an angular misalignment

Compensation of a radial misalignment



Compensation of a axial misalignment

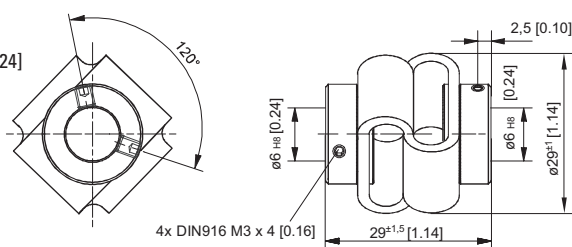


Dimensions

Dimensions in mm

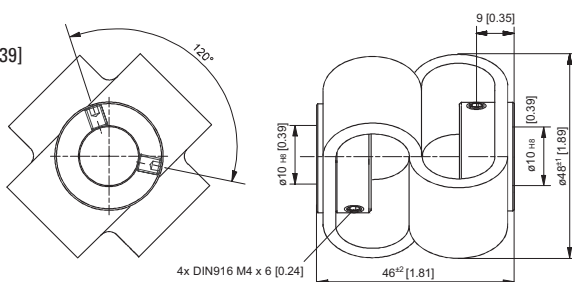
Size 1

6 / 6
[0.24 / 0.24]



Size 2

10 / 10
[0.39 / 0.39]



Size 2

11 / 12 [0.43 / 0.47]
with keyway

