

# 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.**

<b>Order code</b>	<b>Couplings</b>	8.0000 . 1 X 02 . XX XX
	Type	<div style="display: flex; justify-content: space-around; align-items: center;"> <span style="border: 1px solid black; padding: 2px;">a</span> <span style="border: 1px solid black; padding: 2px;">b</span> <span style="border: 1px solid black; padding: 2px;">c</span> </div>
<p><b>a</b> <i>Type of coupling</i></p> <p>1 = Bellows-type ø 19 mm [0.75"]                  2 = Bellows-type ø 15 mm [0.59"]                  3 = Spring washer type, ø 30 mm [1.18"], one-part                  4 = Spring washer type, ø 30 mm [1.18"], three part, plug-in                  5 = Bellows-type ø 25 mm [0.98"]</p>		
<p><b>b</b> <i>Bore diameter d1</i> (see technical data)</p> <p>Note:                  for the bore diameter                  d1 = 3/8" please enter Code A1                  d1 = 1/4" please enter Code A2</p>		
<p><b>c</b> <i>Bore diameter d2</i> (see technical data)</p>		
<p>Example a) : d1 = 10 mm [0.39"] and d2 = 12 mm [0.47"]                  Order No. = 8.0000.1X01.1012</p> <p>Example b) : d1 = 3/8" and d2 = 10 mm [0.39"]                  Order No. = 8.0000.1X01.A110</p>		

Technical data			8.0000.1102.XXXX	8.0000.1202.XXXX	8.0000.1302.XXXX	8.0000.1402.XXXX	8.0000.1502.XXXX
Type							
Max. speed	min <sup>-1</sup>		10000	10000	12000	12000	10000
Max. torque	Ncm		120	40	80	60	200
Max. radial 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 <sup>2</sup>		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, anodised	Al, anodised	Al, anodised	Al, anodised	Al, anodised
	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	

## 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

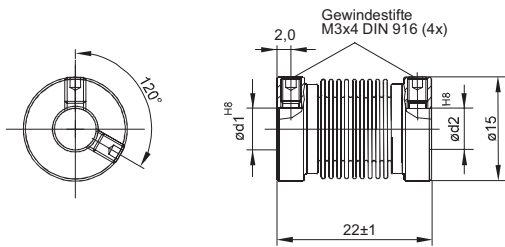
#### Metal bellows-type couplings (.1102, .1202 and .1502)

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

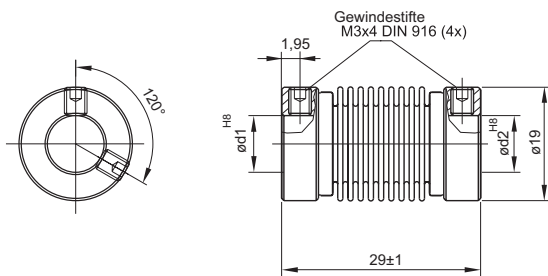
#### Dimensions

Dimensions in mm

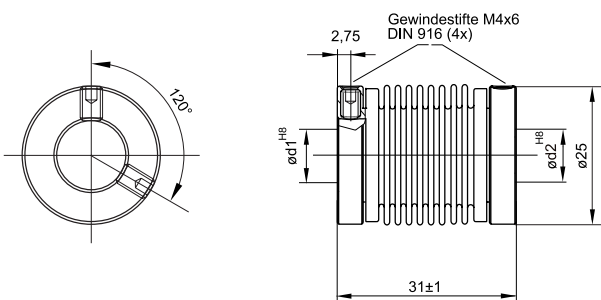
Bellows-type coupling  $\varnothing 15$  [0.59]  
(8.0000.1202.XXXX)



Bellows-type coupling  $\varnothing 19$  [0.75]  
(8.0000.1102.XXXX)



Bellows-type coupling  $\varnothing 25$  [0.98]  
(8.0000.1502.XXXX)



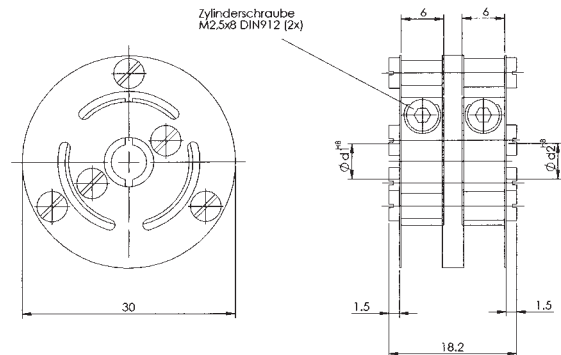
#### Installation instructions

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.

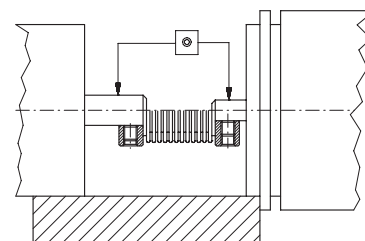
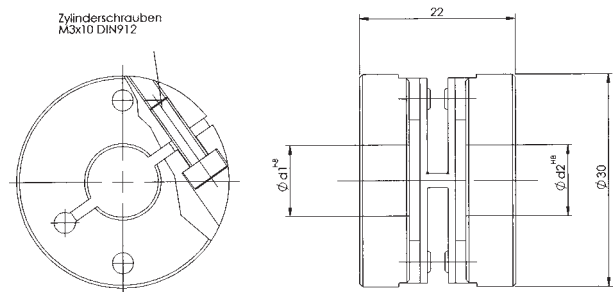
#### Spring washer-type couplings (.1302 and .1402)

Spring washer-type couplings are used mainly in those cases where high speeds and smaller angular displacements are involved. For applications where electrical insulation between rotary encoder and drive is required, the electrically insulating spring washer-type coupling should be used.

Spring washer-type coupling, one-part  
(8.0000.1302.XXXX)



Spring washer-type coupling, three part, plug-in  
(8.0000.1402.XXXX)



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