Metal Bellows Coupling

Accessories for torque sensors
Model ranges 864X3, 8645, 8651, 8661

Model 8690

Code:	8661 EN
Delivery:	1 - 2 weeks
Warranty:	24 months

- **Measuring ranges 0 ... ± 0,05 Nm to 0 ... ± 200 Nm**
- **Compact; easiest mounting for space restricted installation**
- **Backlash-free and torsionally rigid**
- **Wear and maintenance free**
- **Exact transmision of angular motion and torque**
- **Low restoring forces**
- **Suitable for dynamic applications**

Application

Constructive and assembly related misalignments arise in nearly all torque applications. They can be compensated with precision couplings. For this purpose metal bellows couplings model 8690 are particularly suited.

The metal bellows couplings cover torque ranges from 0.01 to 200 Nm (larger ranges on request). They enable torque applications backlash free and maintenance free in continuous operation.

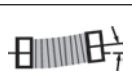
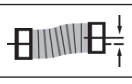
The compact and robust design of the couplings allows use in the following application fields:

- ► Test setups in precision mechanics
- ► Test benches in micromechanics
- ► Engine test benches
- ► Quality assurance
- ► General engineering
- ► Torque test bench

Description

The metal bellows coupling 8690 consists of two components: highly elastic yet torsionally rigid stainless steel metal bellows and a differently designed hubs (for details: see table on the reverse side).

Misalignment compensation is the second essential function of couplings beside torque transmission. Generally you distinguish three types of misalignment.

	Axial misalignment This is a change of length along the longitudinal axis from drive shaft to drive shaft.
	Angular misalignment This misalignment is the result of mechanically influenced offsets of both shafts.
	Lateral misalignment This is a parallel misalignment of both shafts.

Misalignments disturb measurement and should be largely compensated. Metal bellows couplings should be used whenever a rotational movement has to be transferred exactly.

For an ideal universal shaft misalignment compensation we recommend torsionally rigid metal bellows couplings. They provide exceptionally high torsional stiffness during torque load and low restoring forces.

8690 EN

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Technical Data

			V0	V1	V2	V3		V4		
Model 8690-			**4500**	**5002**	**5002**	**5010**	**5030**	**5060**	**5150**	**5200**
Nominal torque*	[Nm]		0.5	2	2	10	30	60	150	200
Overload protection			briefly 150 % of nominal torque							
Overall length	[mm]	A^{-1}	23	40	40	50	69	83	95	105
Outer diameter	[mm]	B	15	25	25	40	55	66	81	90
Fitting length of hub	[mm]	C	6.5	13	13	16	27	31	36	41
Standard bore H7	[mm]	D1	5	6	8	15	15	26		
Special bore H7	[mm]	**D2**	**3-9**	**3-9**	**3-9**	**10-20**	**10-30**	**20-35**	**26-42**	**26-45**
Screws ISO 4029 / 4762		E	M3	M3	M3	M4	M6	M8	M10	M12
Tightening torque	[Nm]	E3	1.3	2.3	2.3	4.5	15	40	70	120
Distance between centers	[mm]	F	not applicable	8	8	15	19	23	27	31
Distance	[mm]	G	2	4	4	5	7.5	9.5	11	12.5
Moment of inertia	[gcm²]	J	1.2	27	27	160	0.12	0.32	1.9	3.2
Weight	[g]		6	38	38	120	0,26	0,48	1,85	2,65
Torsional stiffness	[Nm/rad]	Cr	210	1300	1300	9050	39	76	175	191
Axial	[±mm]	max. value	0.5	0.6	0.6	1	1	1.5	2	2
Lateral	[±mm]		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.25
Angular	[±mm]		1.5	1.5	1.5	1.5	1	1	1	1
Maximum speed**	[min^{-1}]		20,000	20,000	20,000	20,000	10,000	10,000	10,000	10,000
Material***			hub: aluminium; bellows: steel						steel	

*further ranges on request, **higher speeds with balanced couplings on request, *** fully aluminium on request

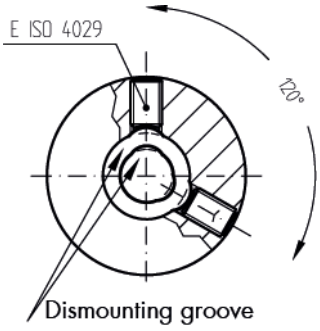
Assembly instructions

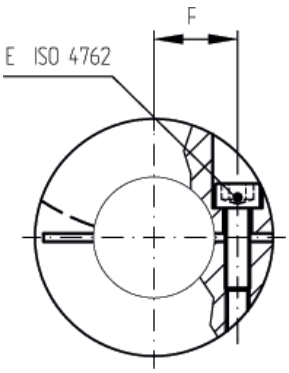
The couplings have two different attachment systems.

The smaller coupling has two radial set screws (ISO 4029). The screws are forming an angle of 120°. Both screws are screwed directly on the shaft. An integrated dismounting groove helps with dismounting.

With the larger coupling models a clamping screw makes the connection between coupling and shaft.

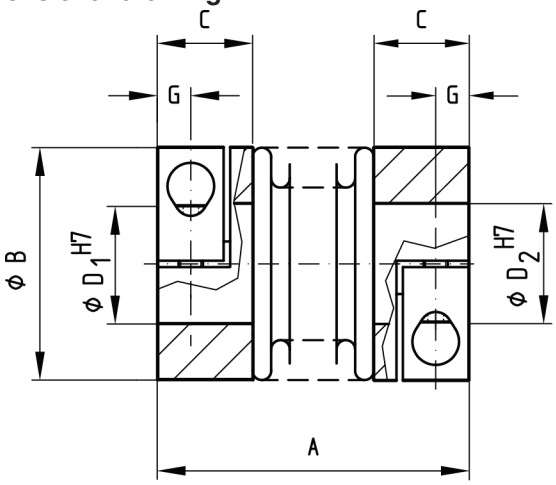
Mounting is very easy: Only one radially arranged clamping screw (ISO 4762) needs to be tightened to fasten the coupling.





First install the coupling on the 'Test Side' of the sensor, second the coupling on the 'Drive Side' of the sensor.
If you order the appropriate special bore D2, you will receive a coupling with finished bores. Drive shaft and output shaft must be clean and free from burrs. Choose a clearance fit for the fit of the hub. We recommend to choose it similar to our sensor shaft as g6. The shaft surface should have an average roughness in accordance with Rz 6.3 (DIN).

Dimensional drawing



Order Code

Metal bellows coupling Model **8690-XXXX** □ □

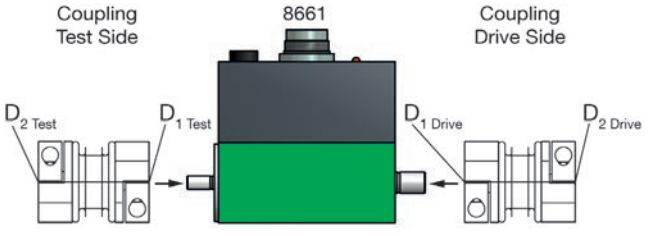
Standard bore diameter [mm]

Diameter 5 mm	0
Diameter 6 mm	1
Diameter 8 mm	2
Diameter 15 mm	3
Diameter 26 mm	4

Special bore diameter [mm]

Select diameter from the appropriate range in the table, specify two digits in mm — [mm]

Installation Example



For the disassembly of the couplings a hexagon socket wrench (Allen key) is usually sufficient.

Ordering example

Metal bellows coupling, nominal torque 10 Nm,
D1 = 15 mm, D2 = 14 mm **8690-5010-V314**

Metal bellows coupling **8690** - **5010** - **V3** **14**

- Model
- Nominal torque
- Diameter standard bore D1
- Diameter special bore D2

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