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**ÜV Überlastschutz u. Verbindungssysteme GmbH**

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**Technical Information- ÜV Metal bellows couplings**

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**1.0 Description**

ÜV couplings are torsionally rigid couplings which can be used for compensating for shaft misalignment in drives. At this type of couplings, the ratio of inertia and power is particularly favorable. Usually these couplings are mounted frictionally to the shafts of the drive, so that a permanent highly dynamic loadable connection with no backlash is guaranteed.

The fit on shafts and couplings should be determined so that a motion allows seat (between running and sliding), a quick and easy installation. A light film of oil makes this installation.

**Example of the fit: Shaft diameter 20h7 / 20H7 coupling hole**

In highly dynamic drive trains (small shaft diameter - large torque transmission), we recommend our types with cone clamping elements. The radial clamping hub allows an easier mounting in many cases. The movement between the shaft and the cone system or clamping hub should be at maximum 0.05 mm.

Many of our types can be supplied with keyways or with plastic inserts to the potential free production.



## 2.0 Calculations

### Moment - while accelerating the motor

$$M_o = \frac{F_1 * J_{Mot} * n * V}{9,55 * T_A * \eta}$$

$$F_1 = \frac{J_M + J_{Masch}}{J_{Mot}}$$

### Moment - while accelerating the coupling

$$M_k = M_b * \frac{J_{Masch} * V}{J_{Masch} + J_{Mot}}$$

### Moment - while cutting

$$M_s = \frac{F_A * S * L}{\eta * 628}$$

In many cases the user can use the Moment of the motor.

$$Md = \frac{9550 * P}{n}$$

F <sub>1</sub>	=	Inertia factor
J <sub>Mot</sub>	=	Moment of inertia - motor (kg m <sup>2</sup> )
J <sub>Mach</sub>	=	Moment of inertia - machine (kg m <sup>2</sup> )
n	=	RPM difference (min <sup>-1</sup> )
T <sub>A</sub>	=	Start time in seconds
η	=	Degree of efficiency
F <sub>A</sub>	=	Cutting force (axial vector in N)
S	=	Spindle pitch (cm)
L	=	Withstanding ratio (app. 3 in Nm)
P	=	Power (kW)
V	=	Safety factor

### Interpretation

In order to achieve the maximum life-span of the coupling, the following criteria must be observed:

1. The maximum load must not be higher than the nominal moment of the coupling itself.
2. The shaft misalignment must be adapted to the compensation possibilities of the coupling.
3. The assembly must be carried out properly.

## 3.0 Assembly

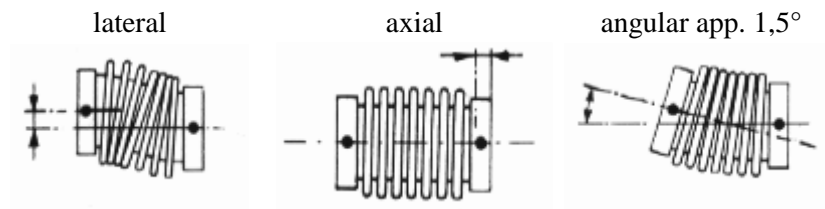
### 3.1 Important points for Assembly and Disassembly

<ol style="list-style-type: none"> <li>1. Align the shafts</li> <li>2. Clean shaft and bores (a thin film of oil is recommended)</li> <li>3. Connect both shafts using the coupling (TYPE 550/560)</li> <li>4. Tighten bolts in diagonally (TYPE 550)</li> </ol>	Disassembly TYPE 550 <ol style="list-style-type: none"> <li>1. Loosen retaining screws.</li> <li>2. Force taper off against bellows holder (3 threads per taper bushing provided)</li> </ol>								
	<u>shaft misalignment (TYPE 550/560/570/580)</u> <table border="0"> <tr> <td><b>Allowed</b></td> <td><b>lateral</b></td> <td><b>axial</b></td> </tr> <tr> <td>Assembly:</td> <td>0,8 mm</td> <td>2mm</td> </tr> <tr> <td>Operational:</td> <td>0,2 mm</td> <td>0,5mm</td> </tr> </table>	<b>Allowed</b>	<b>lateral</b>	<b>axial</b>	Assembly:	0,8 mm	2mm	Operational:	0,2 mm
<b>Allowed</b>	<b>lateral</b>	<b>axial</b>							
Assembly:	0,8 mm	2mm							
Operational:	0,2 mm	0,5mm							

### 3.2 Tighten torque of bolts:

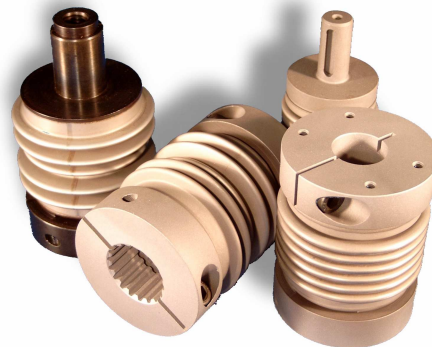
Size	Tighten torque in Nm
M 2,5	1
M 3	1,5
M 4	3,5
M 5	7
M 6	12
M 8	25
M 10	50
M 12	85
M 14	135
M 16	220
M 20	430

### Shaft misalignment



### 4.0 Special couplings

You didn't find a coupling for your use in our catalogue? No problem- just call us. Longer or wider couplings are always possible. Also we offer holes or thread circles in our products.



### 5.0 Ordering details

For example: **TYPE 560 – 66.1**    **Ø 24H7**    **Ø 18H7**    **D1 with DIN 6885**

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}
}
}
}

Coupling-type
Size
D1
D2
Special



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