

Couplings

Technical Information

Note:

The zero backlash flexible metal bellows or elastomer couplings are especially well suited for use with high-precision drives of low to moderate torque. They are the ideal solution for a precise, true alignment connection of two shaft hubs.

They can compensate for axial, radial and angular misalignment of the two shaft ends within specified limits. Due to the low restoring forces, no significant stress is placed on the bearings. A non-positive shaft-hub connection guarantees reliable, zero backlash torque transmission even without an additional keyway. Low moments of inertia and exact balancing guarantee outstanding dynamic performance, even at high speeds.

The couplings are wear and maintenance-free when the catalogue information and technical data are observed.

The possible applications range from demanding drive systems in general mechanical engineering through applications in metrology and control technology to spindle and axle drives in machine tools. Additional typical applications are found in textile, packaging and wood-working machinery as well as industrial robots and multi-spindle drilling heads.

Comparison	Metal bellows couplings	Elastomer couplings
Major functional features	<ul style="list-style-type: none"> - Very high torsional resistance, permitting exact transfer of the angle of rotation - Low moment of inertia - All-metal construction - Minimal restoring forces and thus easy on bearings 	<ul style="list-style-type: none"> - Push-on (blind assembly possible) - Vibration damping - Zero backlash due to pretensioning of the coupling spider in the claw - Suitable for highest speeds
Connection or compensating elements	- metal bellows of stainless steel	- Polyurethane elastomer spider
Hub design	- Easy to assemble, non-positive, zero backlash clamping hub (welded stainless steel)	<ul style="list-style-type: none"> - Easy to assemble clamping hub - Stainless steel
Temperature range	up to max. 200 °C	- 30 °C to +90 °C
Revolutions	Couplings are pre-balanced. Additional balancing is recommended for speeds above approx. 5000 rpm.	- Suitable for highest speeds up to 20000 rpm.

Selection:

Estimate calculation:

$$M_N \geq 1,5 \cdot M_{max.} \text{ (Nm)}$$

M_N = Rated torque of coupling

$M_{max.}$ = Maximum torque of motor

For an exact selection, the actual torques must be calculated from the cutting or acceleration forces. An increased load of up to 1.5 times the rated torque is possible in exceptional situations, e.g. a collision.

Shaft offset:

Axial and angular misalignment are generally not a problem and are easy to check. However, attention should be paid to radial misalignment, i.e., the lateral parallel displacement of the axes of rotation.

This error must not exceed the value specified in the table. If several types of misalignment occur simultaneously, they should all be of the maximum value but must be approximated.

