(1) There are five ways to fix coupling onto shaft as below. Please select coupling as your demand.

(2) Set screw or clamping screw (hexagonal countersink screw) shall be secured by screw driver or torque wrench. Securing torque refer to product specifications.

Set screw fixing

This fixing in low cost is the most traditional.
Front of screw contacting with shaft directly may cause damage or difficult disassembly.

Clamping fixing

Use sink screw securing to narrow the slit for clamping shaft tightly. Clamped fix and easy disassembly won't cause damage of shaft.

Separation fixing

Use separated bushings to fix and disassemble without moving your equipment.

Key way fixing

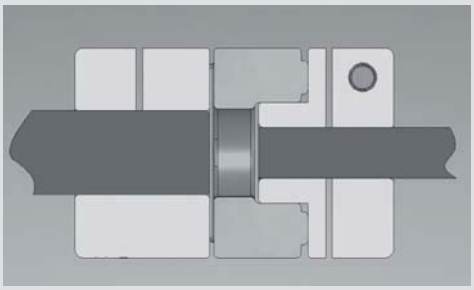
This type is also traditonal, like set screw fixing, suits for transmission in higher torque. Prevent from parallel movement, it's usually used with set screw fixing and clamp fixing together.

Zero Backlash type

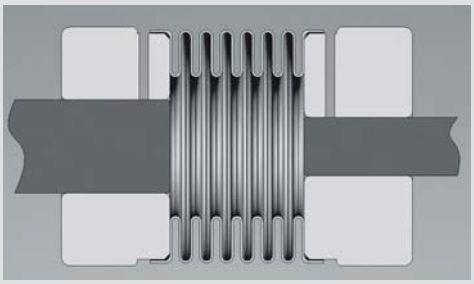
Zero backlash type coupling is designed to be equipped high precision clamping nut as one unit, performs high friction moment and reliable movement which is suitable for spindle transmission of the machine.

To maintain installation completeness of all kinds of couplings, it's recommended to install as follow charts to avoid direct contact of two shafts and to have a regular run.

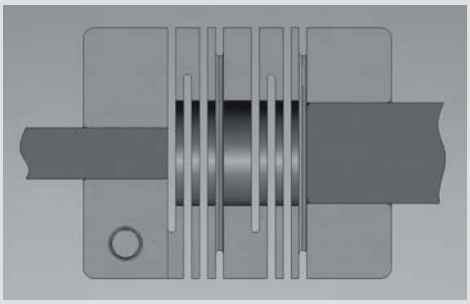
Oldham type



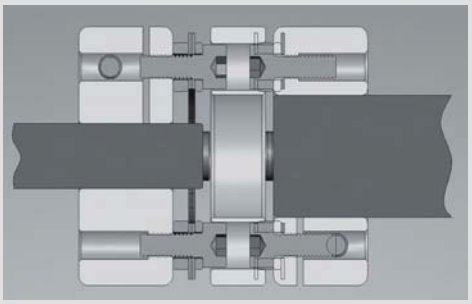
Bellows type



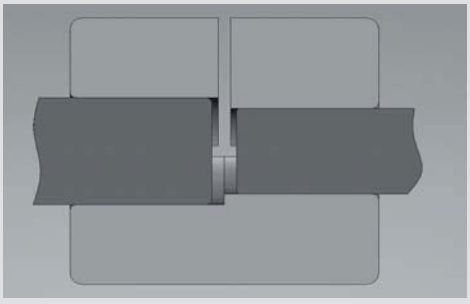
Spiral beam type



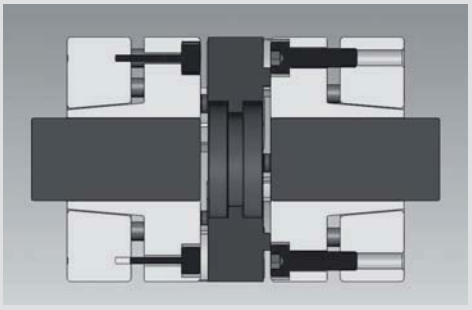
Metal Disk type



Rigidity coupling



Zero Backlash type



Coupling - Deviation adjustment

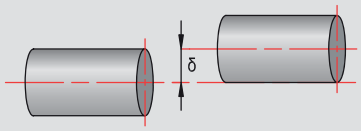
(1) Flexible coupling transmits torque and rotation angle, and absorb deviation from shaft installation. It may cause vibration or shortening life hours of coupling, while deviation is over allowed range. Thus, make sure and take perfect adjustment for deviaiton.

(2) There are three deviation for shaft, as parallel deviation, angular deviation and axial deviation. Please adjust deviation lower than allowed range listed in the product spec offered by our catalog.

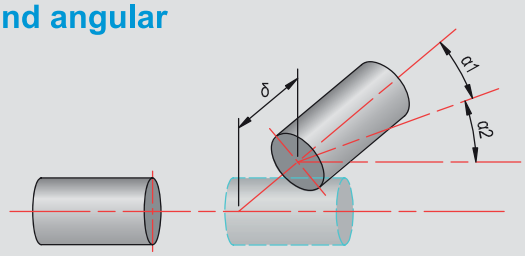
(3) The max. allowable deviation listed in our catalog is in case of only one deviation existing. While two or more deviation existing at same time, allowable range shall be lower than 1/2 x max. deviation listed in the spec of catalog.

(4) Deviaiton happened not only on equipment installation, but caused by vibration in running progress, heated expansion, bearing abrasion. Thus, it's recommended to adjust axial deviation lower than 1/3 x Max. range.

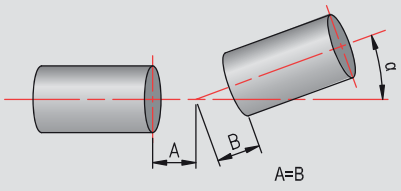
Parallel deviation



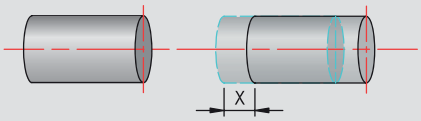
Complex deviation in parallel and angular



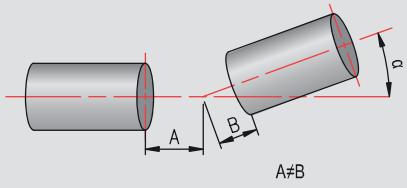
Symmetry angular deviation



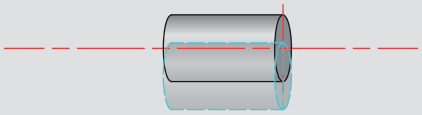
Axial deviation



Asymmetry angular deviation



Run out



Torque

In physics, torque is defined as "force in vertical" x "distance to rotating center", metric unit (N·m), divided by acceleration of gravity 9.8m/ sec^2, unit could be converted to famillar (kg-m). Imperial uint lb-ft, in case of conversion to metric unit, just take lb-ft divided by 7.22. Torque we called is not force unit, but a kind of the moment of force, which means capacity of energy transforming, We could see the connection from normal unit used in calculating torque (Kgm), and generally judging from words: Kgm stands for the capacity of rising an object weighed 1 kg in 1 meter movement. This is a kind of the moment of force, so inappropriate to call it force. Motor producing force per time unit is decided by RPM and torque of motor, and REC out shown in motor, (W) shown in Japan, (HP) power output shown in USA and Europe.
(1HP=746w=0.746kw)

Coupling - Allowed torque

Transmitted torque occurs in allowed speed range rotating continuously.

Max. torque in driven side

Max. torque in driven side being hitted in the moment, ex: torque produced while breaking.

Allowable angular (deflection)

The deflection between two shafts while connecting two shafts.

Allowable axial deviaiton displacement

Displacement caused in axial while connecting two shafts.

Inertial torque

It's not easy to change running status of object with big mass (whether from static to running or running to static); equally, rotating inertial or inertial torque is to show keeping object in running status, bigger inertia torque makes tough rotation.

Static torsional stiffness

Required (N·m) to rotate 1 radian.

Motor

Induction motor

(1) More than triple torque occurs in case of running momently.
(2) Shaft axis center of the motor has ±1.5mm movement back and forth while running, and it's not recommended to use spiral beam type.
(3) DC motor could be used in working environment with dust.

Stepping motor

(1) Without triple torque in case of running momently, but max. rated torque of motor occurs.
(2) Larger torque in low speed than servo motor in same level.
(3) Higher RPM, smaller torque in motor.
(4) Motor have temperature rise in case of running continuously. (to improve by using disk type coupling)
※Force output in stepping motor is smaller than servo motor.

Servo motor

(1) More than triple torque occurs in case of running momently.
(2) Under rated RPM range, cause rated torque.
(3) Same torque produce in low speed and high speed
(4) Temperature rise is small in case of running continuously.

Encoder

(1) Built-in in servo motor, has tiny driven torque.
(2) Or connected to stepping motor. (optional)