



ChenYang Magnetic Bearings and Magnetic Couplings

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A magnetic bearing consists of two concentric ring shaped permanent magnets (rotor and stator). The rotor is made to suspend over the stator without direct contact each other by using special magnetism. The advantage of the bearing is apparently no mechanical friction between rotor and stator. Therefore, magnetic bearings are widely used in industries, for instance, the aerospace technology, ultra high speed rotation machine and inductive (mechanical) energy meter.



The rotating part of inductive (mechanical) energy meter needs a bearing. Traditionally, this bearing is made of jewel. Initially, the mechanical friction of new jewel bearing is very small. As a result, the start electrical current is also very small. But the fatal shortage of jewel bearing is that it cannot resist abrasion. After 2-3 years of working, the friction retardation of the bearing makes the energy meter lose the measuring accuracy of electricity. In order to overcome the weakness of jewel bearing, scientists thought of using magnetic bearing to replace it. The practice has proved the magnetic bearing can extend the life of energy meter to 20-30 years without influencing its measurement accuracy.

The magnetic bearing can be divided into two categories as per the arrangement of magnets in the bearing. The first is Magnetic Thrust Bearing (MTB), the second Magnetic Suspension Bearing (MSB). MTB is installed under the rotating part of energy meter. The stator of MTB pushes the rotor which is connected with the shaft of rotating disk in the air. However, MSB is installed over the rotating part of energy meter. The stator of MSB attracts the rotor which is connected with the shaft of rotating disk in the air. Axially there is no mechanical friction between the stator and rotor for either MSB or MTB. The starting performance of MSB is better than MTB. But there is much more magnetic material needed for MSB than for MTB. The MSB is practically less adopted in order to reduce cost. Therefore, the widely used type is MTB.

According to whether the stator and rotor are paired and encapsulated before delivery, magnetic bearings can be further divided into three types: encapsulated type, open type (no pairing and encapsulation before delivery) and detachable type. Whether the bearing is paired and encapsulated or not is not the decisive factor of its performance. The encapsulated bearings may have a little difficulty when installation. The detachable bearings have the advantage of the other two types.

Magnetic coupling consists of two magnets, a drive magnet that is attached to the motor shaft and a driven magnet that is completely sealed within the pump head and is connected to the driving gear. The driven magnet is a wetted component and is totally encapsulated. The two magnets couple automatically such that the drive magnet turns the driven magnet and gears without physical contact.



Decoupling occurs when the pump load exceeds the coupling torque between the two magnets. This feature can act as a safety device to prevent damage to the pump and motor as well as associated piping. The magnets can be recoupled by bringing the motor to a complete stop, then eliminating the cause of the decoupling and restarting. For Products information please contact us per email.

Products List of Magnetic Bearings



Outline	Type	Model	Weight of Rotor (g)	Air Gap (mm)	Connection with Frame
	Encapsulated	CY-TE1	21-49	1±0.2	Ø8 / without screw thread
	Encapsulated	CY-TE2	21-68	1±0.2	Ø10 / without screw thread
	Encapsulated	CY-TE3	21-49	1±0.2	M8 / with screw thread
	Detachable	CY-TD1	22-27	1±0.2	Ø8 / M8x0.5
	Open	CY-TO1	20-65	1±0.2	M8x0.5 / Ø8

Outline	Type	Model	Weight of Rotor (g)	Air Gap (mm)	Connection with Frame
	Open	CY-TO2	21-30	1±0.2	M8 / with screw thread
	Open	CY-TO3	21-30	1±0.2	M7 / with screw thread
	Open	CY-TO4	21-30	1±0.2	M7 / with screw thread
	Open	CY-TO5	21-30	1±0.2	M7 / with screw thread