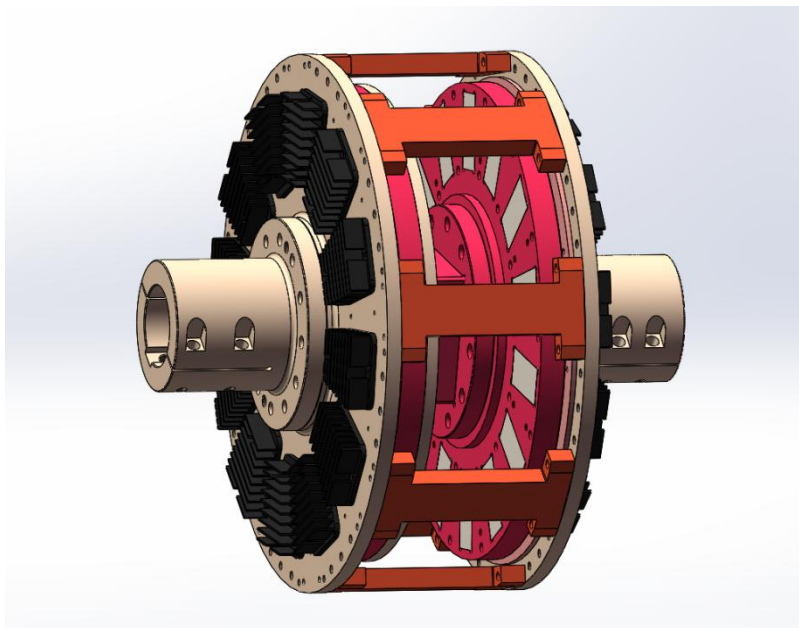


Limited moment type permanent magnet coupler Operating Instructions



Notes

- The Certificate of Conformity and the packing list are attached on the last page of the Instructions
- Please read through the “Operating Instructions” before use
- The Instructions shall be delivered to actual operators and must be properly kept

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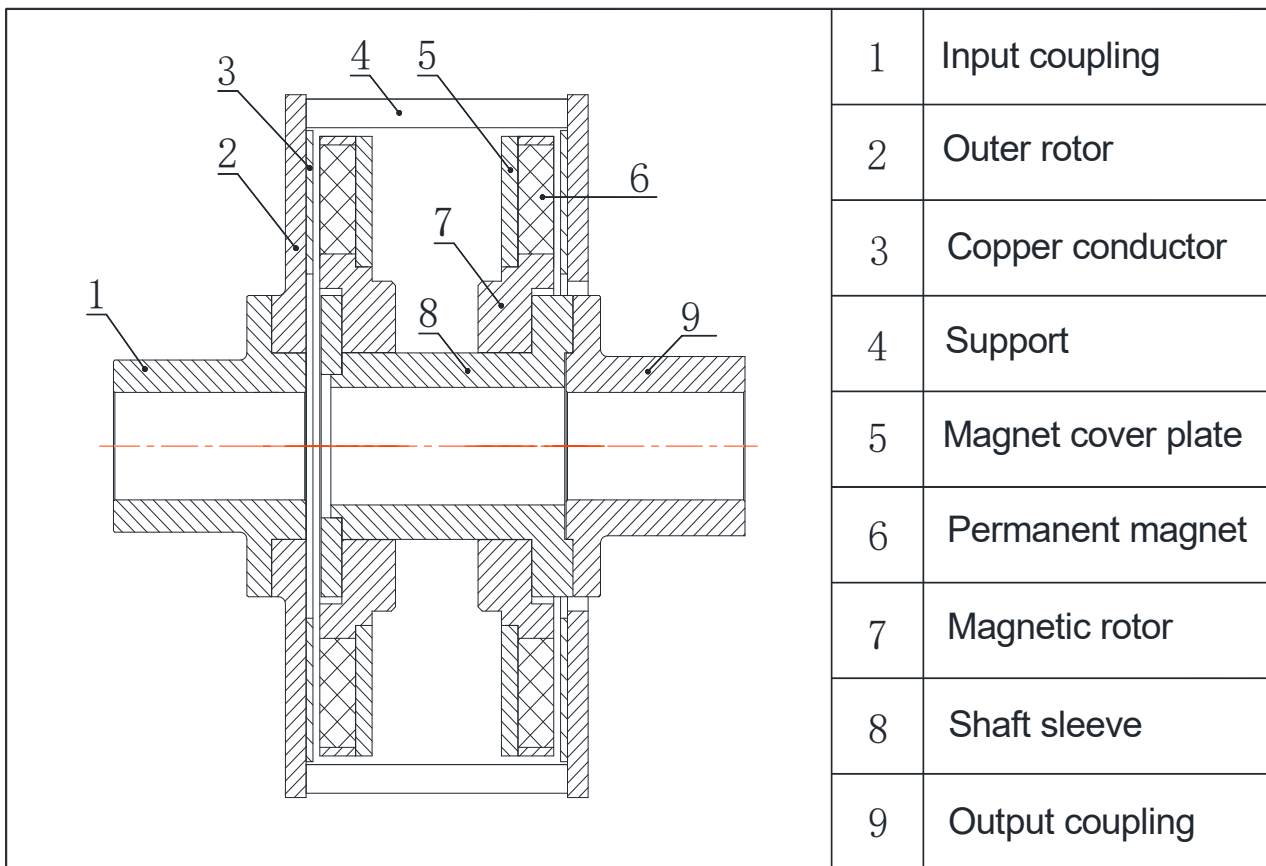
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1. Basic structure



2. Working principles and product advantages

(1) Working principles

A limited moment type permanent magnet coupler consists of two parts: permanent magnet rotor and conductor rotor. There is a variable air gap between the permanent magnet rotor and the conductor rotor. When the active machine drives the conductor rotor to rotate and makes circular motion cutting the magnetic lines relative to the permanent magnet installed on the driven end, the conductor rotor at the active end generates an eddy current induced magnetic field, which interacts with the magnetic field of the permanent magnet at the driven end, thereby realizing non-contact torque transmission between the driving end and the driven end. When the working machine is under rated load conditions, the air gap between the permanent magnet rotor and the conductor rotor is the minimum, and the output torque on the loading shaft changes, which can change the size of the air gap. When the working machine is overloaded or stuck, the air gap between the permanent

magnet rotor and the conductor rotor increases rapidly until the maximum air gap is reached, and the rotation speed of the permanent magnet rotor at the working machine side decreases or reaches zero, thereby realizing the overload protection of the motor. When the overloading or jamming condition is removed, the positions of the permanent magnet rotor and the conductor rotor are restored to the original minimum air gap through the restoration mechanism, and the machine returns to normal working conditions.

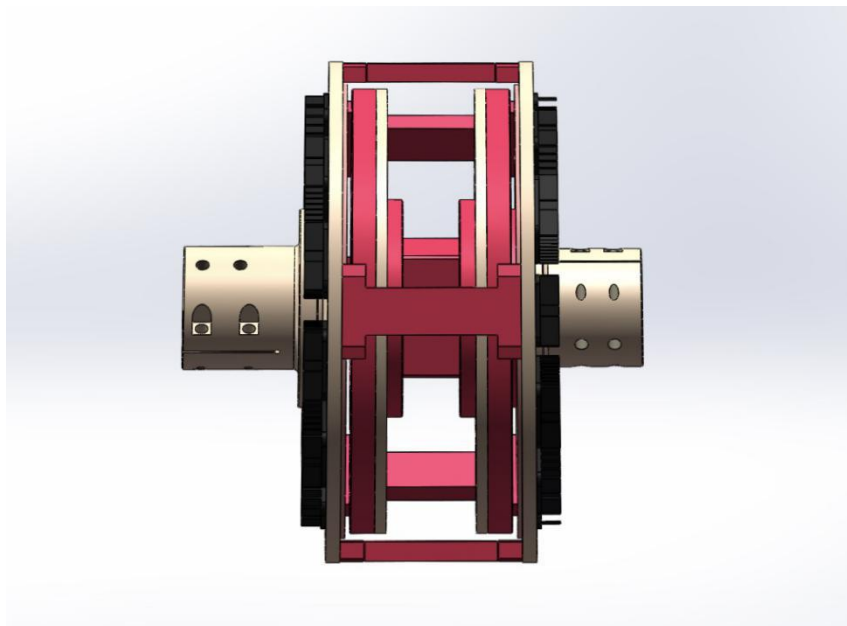
This technology realizes non-mechanical connection between the driving motor and the driven load side.

The principle of magnetic induction is generated by the relative movement between the permanent magnet and the conductor. That is to say, the output rotation speed of the limited moment type permanent magnet coupling is always lower than the input rotation speed, and the speed difference is known as slip. Generally, when the motor rotates at a full speed, the slip ratio is between 1% and 4%. The air gap in the initial position is 5mm. After the motor starts, the copper rotor connected to the motor reaches the rated speed of the motor quickly. The relative speed difference between the copper rotor and the permanent magnet rotor is the largest at this time. At the moment of initial startup, the magnetic induction force generated by the speed difference will push the air gap between the two to 8mm, so that the motor can reach its rated speed under a light load. As the load speed gradually increases, the relative speed difference between the permanent magnet component and the conductive component is reduced to a minimum. The magnetic induction force also pulls the air gap between the two to return gradually to the air gap in the initial position, the transmitted torque increases gradually, finally making the load reach the rated speed.

When the load is suddenly overloaded or stuck, the rotation speed of the permanent magnet rotor connected to the load drops to zero quickly, while the copper rotor connected to the motor continues to rotate at the speed of the motor. The magnetic induction force generated by the relative speed difference between the two can quickly enlarge the gap between the two to 35mm (the maximum distance of the gap), thereby eliminating the torque transmission between the motor and the load, finally protecting the motor, the transmission components and the load.

(2) Product advantages

1. Have the functions of soft start of the hydraulic coupler, overload protection and vibration isolation.
2. Automatically recover after the cause of overload is eliminated during operation.
3. Allow larger installation deviation, which simplifies the installation and debugging process.
4. Reliable performance, convenient maintenance and installation, low maintenance cost and long service life.
5. No harmonics generated, and the power factor of the grid not affected.
6. No need for power supply, transmission oil filling or bearing, which reduces the failure points.
7. Ambient temperature of can reach -45°C .



3. Installation procedure

(1) General couple types

I: Install the input coupling and output coupling of the permanent magnet coupler on the motor shaft and reducer shaft respectively, and then tighten the fastening screws.

II: Lift the coupler body part with a soft sling, install the body onto the output coupling (reducer end), and then tighten all bolts evenly.

III: Lift the motor, connect the input coupling installed at the motor end properly with the coupler body, and tighten all bolts evenly.

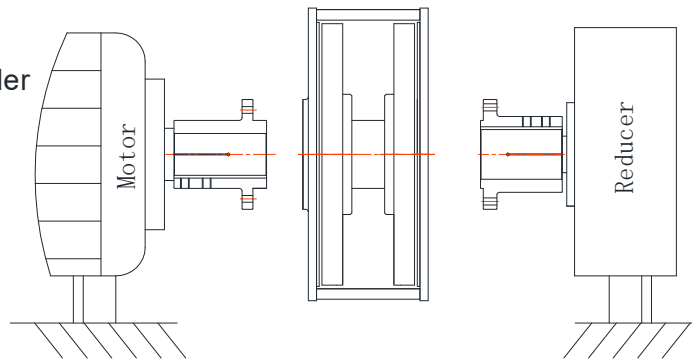
IV: Adjust the air gap between the permanent magnet of the permanent magnet coupler and the magnetizer by adjusting the foot screw of the motor, generally 5mm, so that the axial and radial gaps between the permanent magnet and the magnetizer are visually equal; do not use the jackscrews on both sides of the body to adjust the air gap, because this is equivalent to lifting the weight of the entire motor, which may damage the magnetic rotor body (the jackscrews on the outer rotors on both sides are reserved for disassembling the whole machine, which will be detailed below).

V: Manual turning to check whether there is friction between the permanent magnet and the magnetizer, and whether the correction is appropriate, etc., and finally tighten the foot screws of the motor completely.

COX permanent magnet coupler

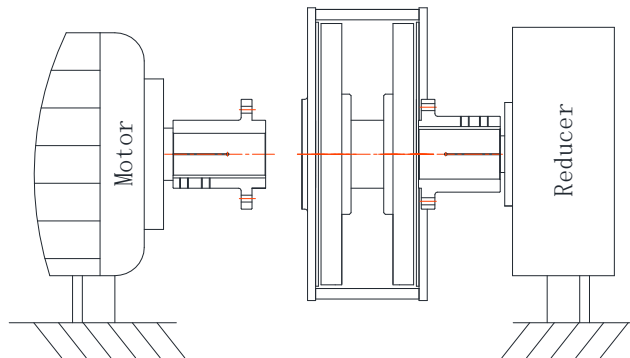
Installation Step 1

Install the couplings at both ends onto the motor shaft and the reducer shaft



Installation Step 2

Lift the body with a soft sling and install it onto the output coupling (reducer shaft)

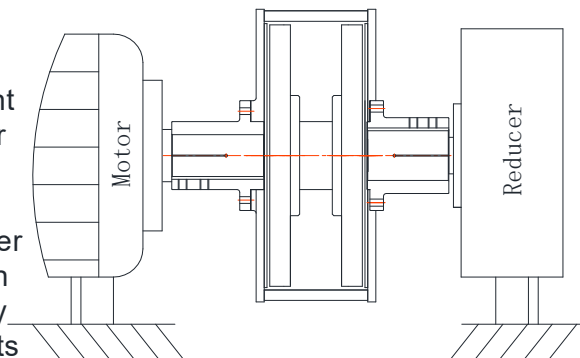


Installation Step 3

Lift the motor, connect the input coupling installed properly at the motor end with the coupler body and fasten them

Installation Step 4

Adjust the air gap between the permanent magnet of the permanent magnet coupler and the magnetizer by adjusting the foot screw of the motor, generally 5mm. Manually turn the outer rotor of the coupler to check whether there is friction between the outer rotor and the inner rotor, and try to keep equal gaps between any two parts

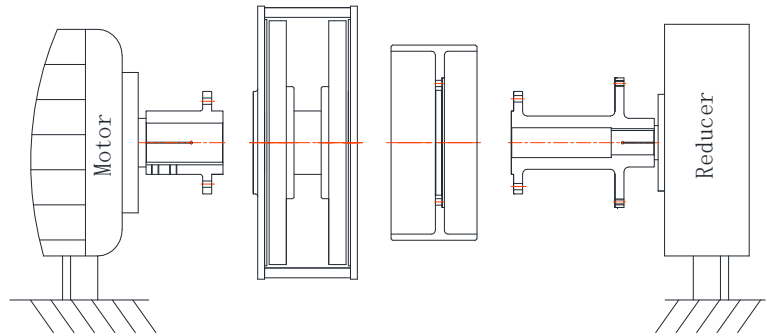


(2) Brake wheel coupling types

COXZ brake type permanent magnet coupler

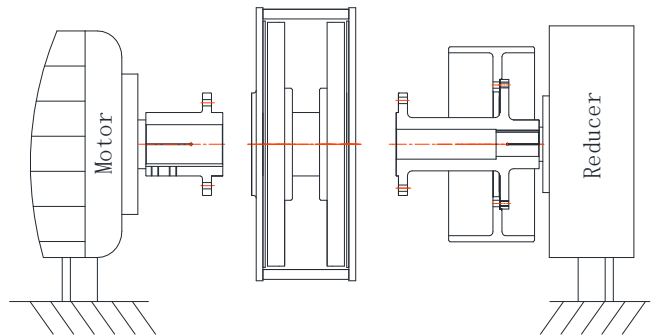
Installation Step 1

Separate the hub from the hub flange firstly, and install the couplings at both ends onto the motor shaft and the reducer shaft



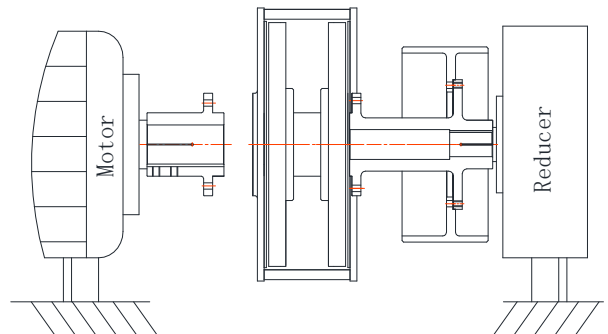
Installation Step 2

Install the hub onto the coupling (output end)



Installation Step 3

Lift the body with a soft sling and install it onto the output coupling (reducer shaft)

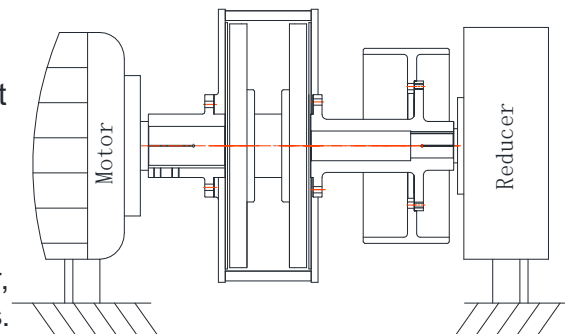


Installation Step 4

Lift the motor, connect the input coupling installed properly at the motor end with the coupler body and fasten them

Installation Step 5

Adjust the air gap between the permanent magnet of the permanent magnet coupler and the magnetizer by adjusting the foot screw of the motor, generally 5mm. Manually turn the outer rotor of the coupler to check whether there is friction between the outer rotor and the inner rotor, and try to keep equal gaps between any two parts.



4. Disassembly method of the whole machine

Preparation before disassembly

Tools required: 8 jackscrews, wrench and slings

Note: To get close to the permanent magnet coupler, it is better not to bring with your mobile phones, watches, and other items that are easily disturbed by magnetic fields, and not to keep your fingers in the air gap.

Procedure of disassembly:

Step 1: After the equipment is shut down, confirm that the air gap between the permanent magnet and the magnetizer is at the minimum of about 5mm.

Step 2: Use 6 or 8 jackscrews to screw into the outer rotor disks on both sides with a hexagonal screwdriver, 3 or 4 jacks on one side, rotate the jackscrews until they just hit the magnetic rotor disks, and fix the air gap distance between the permanent magnet and the magnetic rotor disks. Do not push too hard.

Step 3: Hang the entire permanent magnet coupler with a sling to confirm that the sling has been loaded.

Step 4: Loosen the coupling screws on the motor side and the load side one by one, and slowly loosen the screws one by one.

Step 5: Then move the motor away.

Step 6: Prepare to place rubber pads for disassembly parts on the floor to avoid direct contact between the permanent magnet and the iron objects possibly existent on the floor.

5. Safety warning

(1) The permanent magnet coupler may become hot during operation, so heat-resistant gloves shall be worn when contacting it just after it stops operation.

(2) The permanent magnets may cause cardiac pacemakers and electronic medical devices to malfunction or reset to factory settings. Personnel with these medical devices must keep a safe distance of more than 2m from the permanent magnet coupler.

(3) To prevent pinching between the magnetic rotor and the outer rotor, do not put your hands in these areas. Magnets can strongly attract iron metal, and are difficult to separate with iron. Remember to keep ferromagnetic tools and measuring tools away from magnets.

(4) Magnetic storage media (floppy disks, U disks, credit cards, etc.) may lose data or even be damaged when exposure to a magnetic field. Mobile phones, meters, CD players, etc. may be affected when exposure to a magnetic field.

6. Checking and troubleshooting

(1) The magnetizer and the permanent magnet of the limited moment type permanent magnet coupler shall be fastened to the motor shaft and reducer shaft (or equipment shaft) respectively without looseness.

(2) Upon discovery that the permanent magnet and the magnetizer are attracted together during operation, stop the machine immediately, adjust the air gap between the magnetizer and the permanent magnet, and check the tightening screws that reinforce the connecting shaft sleeves at both ends of the permanent magnet coupler.

(3) Check the appearance for abnormal vibration and noise on a daily basis.

(4) Check whether the bolts of each part are loose, and whether the motor shaft and reducer shaft (or equipment shaft) have axial movement, etc. semiannually.

(5) Check the air gap value with a feeler gauge annually to keep it consistent with the air gap value set in the original installation.

7. Product packing list and Certificate of Conformity

Certificate of Conformity

R8.2-3-3

Model COX

Product code _____

Ex-factory date _____

Inspected by _____

Product packing list

Model COX

Quantity of products 1

Total quantity of accessories _____

Accessory name _____

Packing date _____

Packed by _____

Shanghai Jiaohua Hydraulic Machinery Co.Ltd.