



# DongGuan TaiJi Speed Reducer Clutch Co.,Ltd

Add:NO.13,Lichang Road,Songmusan Village,Dalang,Dongguan,Guangdong,China  
Tel:+86-769-82887525 FAX:+86-769-8570 4468

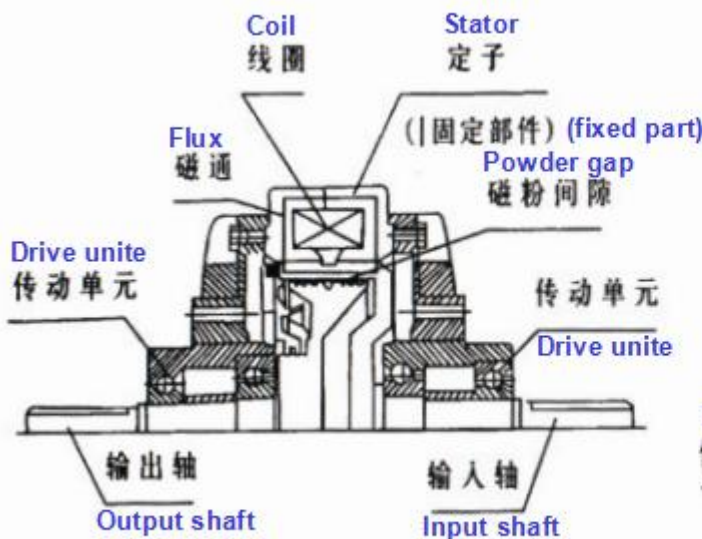
## Magnetic Powder Clutch / Brake Introduction

### 一、Precautions:

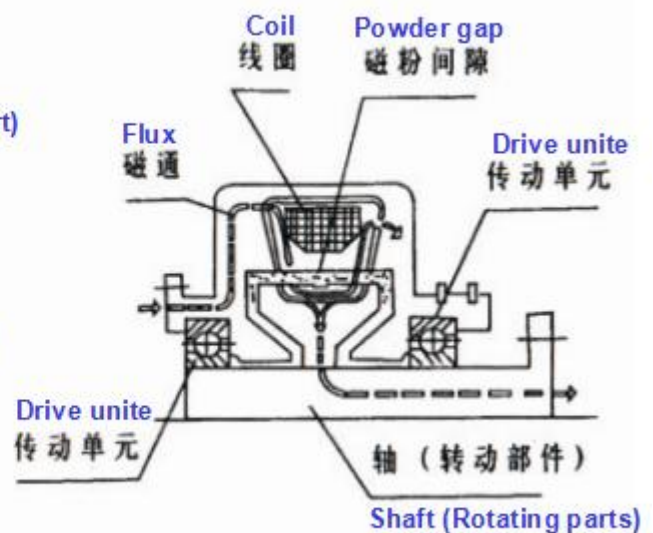
- 1: Be careful on transport and installation, please do not let the magnetic powder clutch / brake to suffer strong shock, vibration and unreasonable impact force .
- 2: The input shaft and output shaft of magnetic powder clutch /brake can not be stucked with a hard object, and can not be allowed body upright placed .
- 3: Before installing,due to vibration of packaging & transportation ,the inside powder might slid aside, it might cause its rotation is not flexible or turn difficultly, then, you can use a wooden stick or glue stick gently tapping its body cover so that magnetic powder will get dispersed. But please do not be strong impacted and shaken .
- 4: Please do not put magnetic powder clutch / brake on a wet place for a long time.

### 二、The structure principle of the clutch brake:

- 1: TJ-POC, TJ-POD magnetic powder clutch / brake structure as shown, the drive unit is mounted on the shaft, and the stator install and produce magnetic coil, which through the gap between drum and rotor.
- 2: There are magnetic powders between gap of rotor & drum, which will transmit torque through the shaft.
- 3: When the two conductors are coupled DC voltage, current through the coil, the magnetic flux is generated as shown in this case, then magnetic powders of gap between drum and rotor will follow magnetic flux to generate magnetizing phenomenon, and to communicate through the torque coupling force is almost proportional to the current. When the current is cut off, the magnetic flux disappears, magnetic powder will be in state of nature, then the conveying torque will disappear.



TJ-POC /TJ-POD Schematic Diagram



TJ-POC-B /TJ-POD B Schematic Diagram

### 三、Safety Tips

Although we have tried to do the best in terms of quality, but it also might cause the machine out of control because of magnetic powder clutch / brake failure . Therefore , please pay high attention on the safety problem when using.

- 1, When the product is not installed properly, it may cause personal injury or serious injury.
- 2, When the product is not installed properly, it may cause electric shock, or the performance of minor damage.



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3, When the product is not installed properly, it may cause mechanical damage or decreased performance.

### 四、 Precautions before installation

- 1.The exposed rotating parts of magnetic powder clutch / brake will be possible to hit and hurt human body.Please install a protective cover with ventilation to avoid accidents, it is recommended to use a safety device when protective cover is opened, the rotating part of magnetic powder clutch /brake will be able to immediately stop.
- 2.When magnetic powder clutch/brake is working and sliding,the rotating internal components will be likely to be ignited by a little spark, so please do not use it in grease and explosive atmosphere, and do not use it near cloth,cotton or other flammable materials .Also,please consider about sliding efficiency reduced issue after separating .
- 3.Please do not install the equipment in dusty, hot, humid, cold, wind and rain place, and do not directly installed in a place where is with vibration or shock . Otherwise , it might cause equipment damaged, failure or performance deterioration.
- 4.When equipment is rotating,please do not do maintenance or touch job, otherwise it might cause an electric shock or injury. When installing, removing or debugging, please cut off the power , and make sure that the moving parts have stopped.
- 5.The bolts should be tighten well when assembly, preferably with a higher progression bolts,in avoid of wounding because of bolt fractured. When locking bolts, it is better to use glue, spring washer or other prescribed tools to lock it well.In addition, because rotating between rotating parts and fixing parts of magnetic powder clutch/brake is relative rotating. Fastening assembly must be strong, to ensure safe operation of the machine.
- 6.The interconnection lines and machine should be reliable and properly insulated. The wires specification to connect to the load must be set to meet the capacity requirements. If the capacity of wire is not enough, the insulating layer on the wire will be melt and promoting insulation action,in this case, it might cause leakage, short circuit or fire.

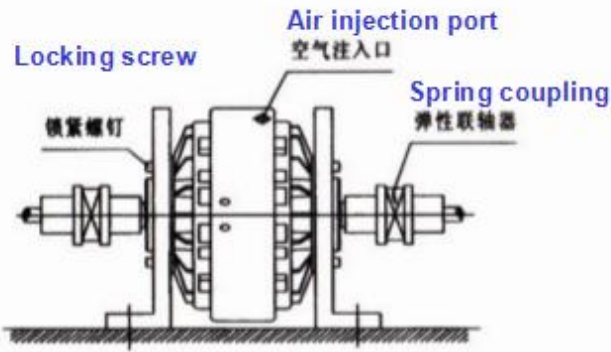
### 五、 Installation Requirements

- 1.TJ-POD, TJ-POC, TJ-POD-A, TJ-POD-B, TJ-POC-A, TJ-POC-B series magnetic powder clutch /brake can take advantage of the base or bracket to mount,we recommend shaft-trend flexible coupling to connect,if the belt must be used when connecting,we suggest using brackets or others to isolate with clutch/brake,so that can avoid radial force on input and output shaft end.
- 2.TJ-POC, TJ-POD is extended shaft model,if using a belt connects to the load axis shaft,it needs to maintain concentricity and perpendicularity, and the belt needs to be in corresponding connection within the allowable range.
- 3.TJ-POD-A, TJ-POD-B, TJ-POC-A, TJ-POC-B series is naturally cooled hollow shaft magnetic powder clutch,they belong to bearing supporting type, outlet side of the stopper role is only to prevent the coil turn, can not withstand the radial force of gravity and magnetic clutch.
- 4.TJ-POD-A, TJ-POD-B, TJ-POC-A, TJ-POC-B, is a hollow shaft, the load shaft inserted into the machine, the machine between the hollow shaft and the load should be kept at least 0.05 mm concentricity.
- 5.In order to avoid magnetic damp, clutch/brake should be installed away from the fuel tanks, water tanks.when the machine in the normal work and in high-speed operation,it will produce some heat, but air moisture does not affect machine performance.
- 6.When using forced air cooling, equipment should be properly configured duct, and needs to avoid the generation of air compressor with water, otherwise it will burn the coil or cause a short circuit.
- 7.The clutch installation should pay attention on difference between the input and output shaft , the machine marks on the input and output shafts are marked with the label, the machine is equipped with a heat sink at one end is output shaft.

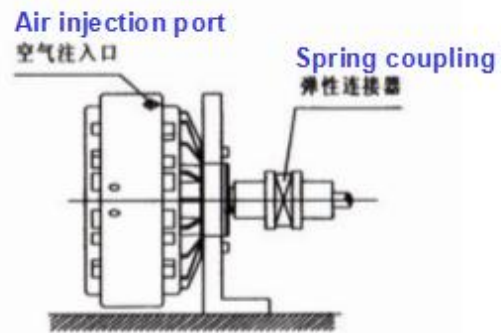


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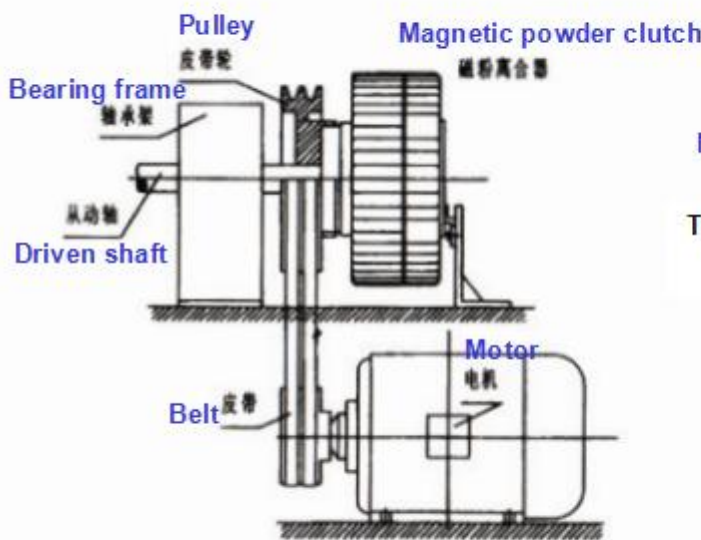
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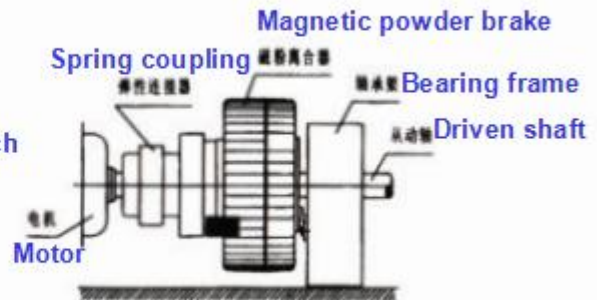
TJ-POC Installation Diagram(With mounting base)



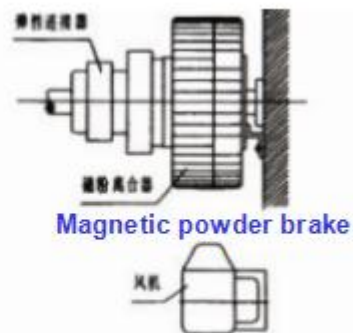
TJ-POD Installation Diagram(With mounting base)



TJ-POC-A Installation Diagram



TJ-POD-A Installation Diagram



TJ-POD-A Installation Diagram

## 六、Commissioning Operation

Because of oscillation during transportation and installation, magnetic powder scattered in the gap of various locations, in order to collect magnetic powder in the gap, the following must be done before the normal operation of the test run operation.

1. In the case of no current, turn the drive unit at 100 rev/min rotational speed for 2-3 minutes, then energization to add 1/4-1/2 rated current. Interval is energized by turning on 5 seconds and off for 10 seconds, repeat the above steps over 10 times.
2. If the test operation is not sufficient, the output torque may fluctuate unstably. If test-run is sufficient, the magnetic can be very efficiently produce a stable torque corresponding to the excitation current.



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- 3.After the commissioning is complete, let's begin normal operation, and permissible ambient temperature range is: 0-40 °C.
- 4.If the machine is operating within the sliding coefficient range, even though the machine surface temperature may rise to about 100 °C, it is normal phenomenon and you can use normally.
- 5.Please do not directly touch the surface of the machine so that avoiding being burned, if you want to measure the temperature, please ensure the machine has stopped first, then measure it with a thermometer.
- 6.After commissioning, the clutch/brake torque should be stable, no noise, flexible rotation, if not, you should check the quality of installation.

### 七、 Torque debugging

- 1.Please use in the rated torque range, if exceeding the rated torque, not only the machine performance will be deterioration, also may break or cause other damage.
- 2.Clutch/Brake torque almost has a linear relationship(proportional) with excitation current, so when you adjust current, the torque will be easy to change.
- 3.In normal operation, when consideration of the state of completion of production, it is better to set an appropriate (DC-24V) value.

### 八、 Operation precautions

- 1.The normal operation of the clutch/brake, especially the newly installed clutch/brake should be noted that the surface temperature does not exceed 80 °C, water-cooled clutch/brakes should not exceed 90 °C, forced air cooled clutch/brakes should not exceed 60 °C.
- 2.For water, air cooling clutch/brakes' operation,water and wind can not be stopped, if they can not guarantee uninterrupted water supply,clients should install protection devices.
- 3.Magnetic powder's life varies depending on its use condition,when the torque drops to below 70% of rated torque, it is possible that powder has been aging, and it's necessary to replace magnetic powder. If it is difficult to confirm torque when machine operates,then the method is to add the current to meet the using & operating, when the current reaches the rated value,torque still can not be met, then magnetic powder must be replaced.
- 4.After the replacement of magnetic powder, before the formal operation, clutch/brake should also be commissioning operations

### 九、 Routine maintenance

- 1.When the magnetic powder damps,the expected effect may not show up at once,and be careful not to let water or oily material into the clutch/brake interior, especially in the vicinity from the gear box, because it maybe will go through the shaft into the interior, therefore, we recommend using non-viscous oil.
- 2.Please check all mounting bolts if there are loose phenomenon,because bolts must be tightened.
- 3.When the magnetic clutch/brake reach the period of use,please please replace the product.
- 4.Please do not use metal to percuss bottom of the mounting shaft when installing chain or flexible couplings at the end shaft of powder clutch/brake .
- 5.When replacing magnetic powder, if clients can not replace by yourselves, please ask for our suggestions or return for repair.



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## 十、 Common malfunction and Maintenance

Malfunction	Reason	Maintenance
There are current, no torque or torque low	1.Commissioning inadequate 2.Magnetic powder damp 3.Magnetic powder aging	1.Further commissioning 2.Replacing Magnetic powder 3.Replacing Magnetic powder
Without power and with torque Rotation is not flexible	1.Bearing damage 2.Magnetic powder deterioration 3.Assembly problem	1.Check the bearing 2.Replacing Magnetic powder 3.Check the assembly problem
Surface temperature is too high	1.Clutch/brake capacity is too low 2.Inadequate air-cooled	1.Select the bigger model of clutch/brake 2.Increased wind flow

Note:For other manufacturers' repair, demolition, change and other causes of failure, we will be not responsible for any liability

## 十一、 Main technical parameters of TJ-POC magnetic powder clutch /TJ-POD series magnetic powder brake

Model	Rated Torque (N.m)	Max Voltage (V)	Max Current (A)	Allowable slip power (w)	Allowable rotational speed (r/min)	Weight of powder (g)	Weight (kg)
0.5kg	5	24	0.35	170	1800	7	0.67
0.6kg	6	24	0.65	200	1800	10	2
1.2kg	12	24	0.94	250	1800	20	5.2
2.5kg	25	24	1.24	380	1800	33	9
5kg	50	24	2.15	700	1800	60	14.5
10kg	100	24	2.4	1100	1800	140	34
20kg	200	24	2.7	1900	1800	225	53
40kg	400	24	3.5	2800	1800	370	100
5AN	50	24	1.71	700	1800	70	10