

Shenyang Precision Work Huazhiyi Machinery Co.,Ltd
No.77-37, 13th Road, Shenyang Economic and Technological Development Zone
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Manual of colloid mill

JM series colloid mill is a new type of wet ultrafine granule processing equipment developed by our factory with the latest technology introduced from abroad.

Products are widely used in:

★ food industry: aloe vera, pollen broken wall, pineapple, sesame, fruit tea, ice cream, moon cake stuffing, cream, jam, fruit juice, soybean, bean paste, bean paste, peanut milk, protein milk, milk system.

Products, malted milk, essence, various beverages, emulsified chicken bone mud, emulsified pig skin and other animal skin, etc.

Chemical industry : paint, pigment, dye, lubricating oil, grease, diesel oil, petroleum catalyst, emulsified asphalt, adhesive, detergent, plastics, explosives, fiberglass, leather, milk.

★ labor use : toothpaste, detergent, shampoo, shoe polish, advanced cosmetics, bath essence, soap, balsam, etc.

★ pharmaceutical industry : syrup, nutrient solution, Chinese patent medicine, paste, biological products, cod liver oil, pollen, royal jelly, vaccine, various ointment, various oral liquid, injection, static drop Liquid, trypsin preparation, emulsion, animal medicine, etc.

★ Construction industry : various coatings. Including interior and exterior wall coating, anticorrosive and waterproof coating, cold porcelain coating, colorful coating, ceramic glaze, etc.

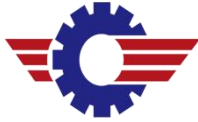
★ Other industries : plastics industry, textile industry, papermaking industry, bio-chemical industry, environmental protection and energy saving, coal flotation agent, nanomaterials, large and medium-sized universities, research institutes, etc.

Working principle and characteristics of colloid mill

Working principle - colloid mill is driven by a motor through a belt drive to rotate the tooth (or rotor) with a matching fixed tooth (or stator) for high-speed rotation, the material being processed through itself

The weight or external pressure (which can be generated by the pump) is pressurized to produce a downward spiral impact force, which is subjected to strong shear, friction, and high through the gap between the fixed and rotating teeth (the gap is adjustable).

The physical action such as frequency vibration enables the material to be effectively emulsified, dispersed and pulverized to achieve the effect of superfine pulverization and emulsification of the material. Main features - Compared to pressure homogenizers, colloid mills are first



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A centrifugal device, which has the advantages of simple structure, convenient maintenance and equipment, and is suitable for materials with higher viscosity and larger particles. Its main drawback is also determined by its structure.

of. First, because of the centrifugal motion, the flow rate is not constant, which corresponds to a large change in the flow rate of the same viscous material. For example, the same equipment is dealing with viscous lacquers.

When the material and the thin emulsion fluid are used, the flow rate can differ by more than 10 times. Secondly, due to the high-speed friction between the rotating stator and the material, it is easy to generate a large amount of heat and denature the material to be treated;

The surface is more prone to wear, and after wear, the refining effect is significantly reduced.

JM type colloid mill consists of grinding head part, base rotating part and electric motor.

All parts in contact with the material are made of high-quality stainless steel.

According to the nature of the materials to be processed, grinding teeth shape is different, but the material are made of stainless steel tools.

Motor according to the needs of colloid mill special design, and the motor flange end cover

JM colloid mills operate smoothly with slight vibration, which can be placed on the flat ground or on the cement base according to the requirements of production and use, as shown in the following table.

Precautions for operation and use

1. Connect the feeding hopper or feeding pipe, and the discharging port, or the discharging circulation pipe.

Connect the cooling pipe and drain pipe.

2. Install the electric starter, with ammeter and indicator light.

After connecting to the power supply, the motor should be turned on and started up, and the direction from the feeding port should be clockwise.

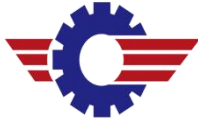
(note: idling shall not exceed 5 A second)

3. Adjust the clearance of the grinding disc, unscrew the two handles

(counterclockwise), then turn the adjusting ring clockwise, and put one hand into the square mouth of the base to turn the motor blades, and feel a little friction when turning the adjusting ring.

Preparation before starting the colloid mill

After the machine is installed and the power cord is connected, the operator should follow the following instructions:



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1. Whether the fastening bolts are tightened(the tightening rotor bolts are cleft-handed bolts).
2. Rotate the two fixing rods counterclockwise at the same time(release the locked fixing rod).
3. Rotate the adjusting ring counterclockwise by not less than 90° (the stator and rotor clearance should be increased)
4. Rotate the rotor with a special wrench and check whether the rotor is stuck. If found, do not allow to start.
5. Inching switch. Operator must check the rotation direction of the rotor, which should be the same as the direction of the arrow on the device (clockwise when viewed from the top).

Note: incorrect steering may cause the rotor fastening bolts to loosen or fall off, and in serious cases may damage the machine. Check if there is noise or vibration when operating.

6. Connect the inlet and outlet water tube as shown on the cooling water label on the device. The cooling water pipe can use plastic tubes.

Note: incorrect connection of the inlet and outlet pipes will reduce the cooling effect.

Production operation of the colloid mill

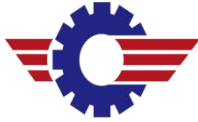
1. Connect the cooling water. The cooling water pressure is about 0.15Mpa, and the water temperature is $\leq 25^{\circ}$ C. Cooling water can be recycled after filtering.

Note: the small hole below the main body seat is an overflow hole. It is strictly forbidden to connect the cooling water or block it.

2. Turn on the motor. It is strictly prohibited to put in materials or other solvents before the equipment starts.
3. Adjust the machining clearance of the stator and rotor.
 - a. Rotate the two fixing levers counterclockwise at the same time(release the locked fixing lever).
 - b. Moving the fixed rod drives the adjustment ring to rotate and adjust the stator and rotor clearance. Turn the adjustment ring clockwise.

The gap between the stator and the rotor becomes smaller, and the granularity of the material becomes finer; When the adjusting ring rotates counterclockwise. The gap between the stator and rotor becomes large, and the granularity of the material becomes larger. The fixed ring is marked with a scale, and each time a small grid is adjusted, the fluctuation of the rotor clearance is 0.005mm. According to the fineness and output requirements of the processed materials, the best stator and rotor clearance is selected.

Note: the 0 bit is set when the device is shipped from the factory.



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The clearance of the stator and rotor should be determined through tests according to the nature and fineness requirements of the processed materials. Clearance adjustment should be performed while the machine is running. Turn both fixing levers (locked fixing levers) clockwise at the same time.

Note: according to the production batch, you can use the limit screw to limit the rotation of the adjustment ring to reach the limit.

Determine the purpose of the rotor clearance. According to the use situation, the fineness of the processed materials should be checked regularly, and the stator and rotor clearance should be adjusted in time.

After replacing the stator and rotor, reset the 0 position and adjust the clearance.

4. Add materials for production and grinding.

Note:

- I. The equipment cannot process dry solid materials, only wet processing.
- II. The feed size should be less than 1mm. Materials should be cleared of debris before entering the equipment, iron and hard objects such as crushed stone particles enter the equipment to prevent damage to the machine.
- III. Depending on the nature of the material and the fineness of processing, one or more grindings can be performed.

5. Colloid mill cleaning

Rotate the adjustment ring counterclockwise by not less than 90° (adjust the stator - rotor clearance). Add water to clean the machine.

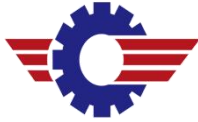
Note: equipment cleaning should be performed while the machine is running.

Stop immediately

Then reverse the adjustment ring a little more than the alignment number, generally meet the requirements of processing material fineness, as far as possible to make the gap a little larger.

such

1. The service life of the grinding plate can be longer.
2. Then turn the handle clockwise to tighten the adjusting ring, so that the clearance of the grinding disc is fixed.
3. Thoroughly disinfect and clean the body.
4. Connect the cooling water and start working, first add the material to the hopper and then start the machine.

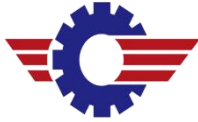


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5. processing materials are not allowed to have quartz, broken glass hard material mixed with the base, otherwise into the grinding will damage the dynamic and static grinding.
6. pay attention to the motor load, if found overload to reduce feeding.
7. colloidal mill is a high-precision machinery, grinding disc clearance is very small, high speed of rotation, operators should strictly abide by the post, according to the rules of operation, found fault in a timely shutdown, troubleshooting and then start.
8. after the use of colloidal mill, should be thoroughly cleaned not to make the material residual machine, so as not to cause leakage mechanical seal bonding.

Defend

1. The machine is a high-precision machine with fast running speed and linear speed up to 20 m/s. The clearance of surface grinding disc is very small
Error is 0.5 mm or less.
2. Repair the machine, in the disassembly, back to adjust the process, never allowed to use hammer directly hit, the use of wood hammer.
Or pad the wooden block gently knock, so as not to damage the parts.
There are both moving and static grinding plates
Remove special tools.
- 3.the machine seal, static seal and dynamic seal, dynamic seal with mechanical seal and combination seal, static seal with o-ring, the fastener choose copper pad seal, screw seal choose ptfе
Vinyl tape.
Mechanical seal made of cemented carbide should be replaced if found broken.
Scratches should be ground, ground can be done on a flat plate, or flat glass.
Grind silica with ≤ 200 # carbonization
Paste grinding.
4. The machine should be maintained regularly according to the situation of processed materials.
If the normal work of processing materials have not changed can be postponed use.
5. Please refer to the motor operation manual for motor maintenance and operation.

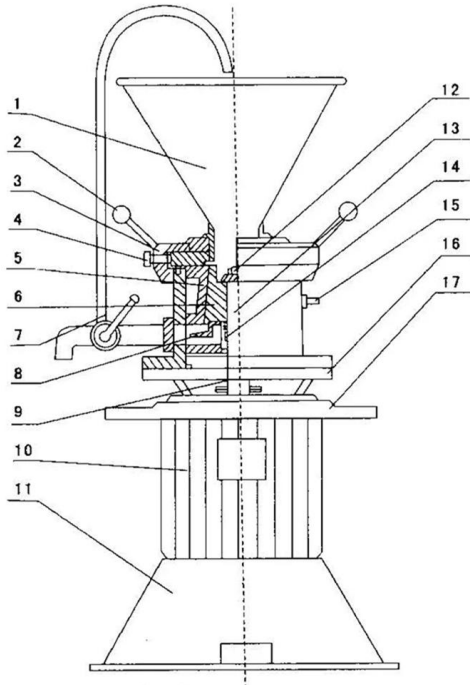


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- 1、料斗 Hopper
- 2、手柄 Handle
- 3、间隙调节盘 Gap adjustment plate
- 4、固定螺丝 Retaining screw
- 5、静磨片 Fixed grinding stone
- 6、动磨片 Rotating grinding stone
- 7、循环管 Circulating pipe
- 8、出料叶片 Discharge blade
- 9、溢水孔 Overflow hole
- 10、电机 Motor
- 11、机座 Base
- 12、推进器 Thruster
- 13、电机轴 Motor shaft
- 14、密封套 Seal gland
- 15、冷却水接头 Cooling water inlet
- 16、法兰 Flange
- 17、挡水盘 Waterproof plate