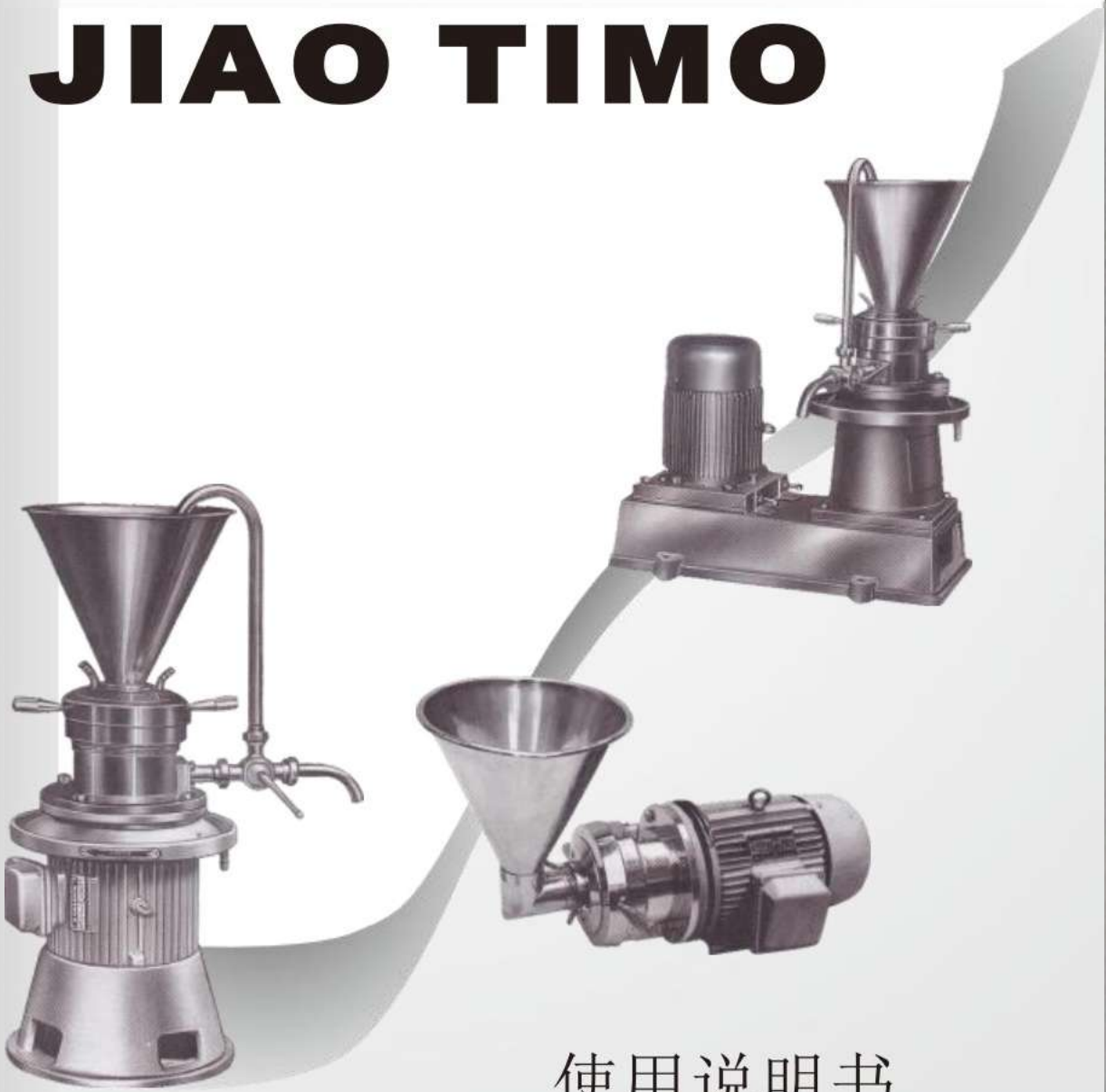
JM series

Colloid Mill

JIAO TIMO



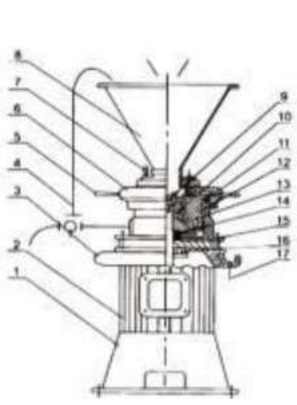
使用说明书

Summary

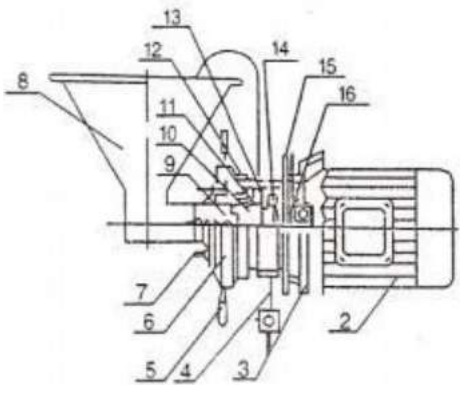
The JM Series Colloid Mill is a cutting-edge wet-process equipment for ultrafine particle processing. Featuring simple operation, smooth performance, low noise, easy maintenance, and corrosion resistance, it demonstrates broad applicability across multiple industries. This versatile machine excels in homogenizing, emulsifying, and grinding various emulsions. Its applications include food production (jam, juice, soy milk, dairy products, beverages, peanuts), pharmaceuticals (syrups, nutritional solutions, traditional Chinese medicines, ointments), daily chemicals (toothpaste, cosmetics, detergents, shower gels), industrial chemicals (pigments, dyes, coatings, lubricants, petroleum catalysts, emulsified asphalt), as well as industries such as flotation and explosive emulsification.

Structure

The JM-type colloid mill offers multiple configurations including vertical, horizontal, and split models. Its core components consist of three parts: grinding head, base transmission system, and electric motor. All material-contacting parts are crafted from premium stainless steel. The rotating and stationary grinding plates serve as key components, featuring tooth patterns tailored to specific materials' properties while maintaining stainless steel construction. The motor is specially designed for colloid mill applications, with a water-proof gasket installed on its flange end cover to prevent leakage. The structural details are illustrated in the diagram.

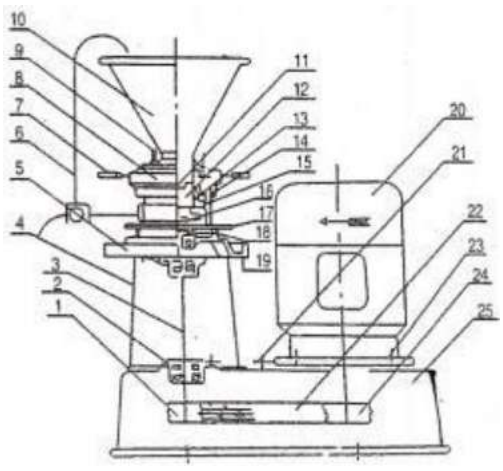


stand type



lie type

1	lampstand	10	Motion pictures
2	any power-generating or power-driven machine	11	Silk-moistening sheet
3	end cap	12	Set the grinding table to a quiet position
4	circulating tube	13	0 molding ring
5	hand shank	14	contact seal
6	Regulating the loop	15	monoblock
7	connect	16	Combination sealing
8	bunker	17	Drainage pipe joint
9	A rotary knife		



fission

1	driven pulley	10	A bushel	19	Drainage pipe joint
2	X-axis support	11	Spin the knife	20	electric motor
3	principal axis	12	Motion pictures	21	Mediation screws
4	Machine seat	13	Silk-moistening sheet	22	cone belt
5	The end covers	14	Set the grinding table to a quiet position	23	motor base
6	circulating tube	15	0 molding ring	24	Active pulley
7	hand shank	16	contact seal	25	lampstand
8	The adjustment ring	17	monoblock		
9	connect	18	Combination sealing		

Operational Principle

The fundamental working principle of colloid mills involves three key mechanisms: shearing, grinding, and high-speed agitation. The crushing process relies on the relative motion between two toothed surfaces—one rotating at high speed while the other remains stationary. This configuration subjects materials passing between the teeth to intense shear and friction forces. Simultaneously, through complex forces including high-frequency vibrations and rapid vortex action, the material achieves effective dispersion, emulsification, pulverization, and homogenization.

Precautions for Operation

1. Connect the feed hopper or feed pipe to the discharge port or discharge circulation pipe. Do not seal the discharge port to allow discharge or circulation. Connect the cooling water pipe and drain pipe.

2. Install the power starter, and equip it with an ammeter and indicator light. After connecting the power supply, start the machine to determine the direction of the motor. The direction should be clockwise from the feed port.

3. Adjust the grinding plate clearance: First loosen both handles counterclockwise, then rotate the adjustment ring clockwise. Insert one hand into the base square opening and rotate the motor blades (with pulley). Stop immediately when slight friction is felt during adjustment. Reverse the adjustment ring slightly until the grinding plate clearance exceeds the target number, ensuring optimal fineness of processed material

Under the required conditions, try to make the grinding plate gap slightly larger. This can make the service life of the grinding plate longer. Then turn the handle clockwise to lock the adjustment ring and fix the grinding plate gap.

4. Thorough disinfection and cleaning of the interior of the body.

5. Connect the cooling water, start the colloid mill and put the material into the mill immediately after it runs normally. The empty machine should not be turned over for more than 15 seconds.

6. The processing material is not allowed to be mixed with quartz, broken glass, metal chips and other hard materials, otherwise it will damage the moving and static grinding plates.

7. Pay attention to the load of the motor, if the overload is found, reduce the feed.

8. Colloid mill is a kind of high precision machinery, the gap between the grinding plate is very small, and the rotating speed is high. Operators should strictly guard their posts, operate according to the rules, stop the machine in time when faults are found, and use it again after troubleshooting.

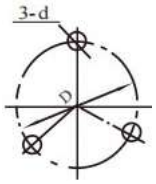
9. After using the colloid mill, it should be thoroughly cleaned to avoid material residue in the machine, so as not to cause leakage caused by mechanical seal bonding.

Install

JM all kinds of colloid mills have stable rotation and slight vibration, which can be placed on a flat ground or cement foundation according to the needs of production and use, as shown in the following table:

model	D	d
JML-50	230	09
JML-65	270	a 11
JML-80	320	Q 12
JML-100 JML-120	360	Q 15
JML-140	400	a 15

vertical

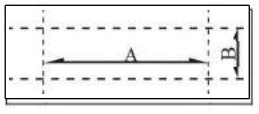


model	A	B	d
JMF-50	310	275	Q 10
JMF--65	310	275	Q 10
JMF--80	410	360	012
JMF-100 JMF-120	510	410	Q 15
JMF-140	510	410	D 15
JMF=180	600	480	D 15
JMF-200	600	480	015

fraction

model	A	B
JMW-65	140	125
JMW-80	160	140
JMW-100 JMW-120	216	140
JMW-140	254	210

horizontal type



Maintenance

1. This machine is a high precision machine with high speed of rotation and linear speed up to 20 meters/second. The gap between the grinding plate is very small. After maintenance, the coaxiality between the inner surface of the shell and the main shaft must be calibrated with a percentage gauge to make the error less than or equal to 0.05mm.

2. When repairing the machine, in the process of disassembly, reassembly and adjustment, it is not allowed to use a hammer directly, a wooden hammer should be used. Or a wooden block should be placed to gently knock, so as not to damage the parts. Both moving and static grinding plates have special tools for disassembly.

3. This equipment features dual sealing systems: static and dynamic. The dynamic seals utilize mechanical seals and composite sealing components, while the static seals employ O-rings. Fasteners are secured using copper gaskets, with threaded connections sealed by PTFE raw tape. Mechanical seals are constructed from steel-reinforced hard alloy materials. Any cracks should be replaced immediately, and surface scratches must be ground down using ≥200-grit silicon carbide grinding paste on either flat plates or glass substrates.

4. This machine should be maintained regularly according to the processing conditions of special materials. If the work is normal and no change has occurred in the processed materials, the use can be postponed.

5. For the maintenance and use of the motor, please refer to the motor instruction manual.

6. Most of the spare parts are international standard parts, which can be purchased all over the country. Please refer to the packing list for details of the spare parts.

JM

model		JML-50 JMLB-50	JML-65 JMLB-65	JML-80 JMLB-80	JML-100 JMLB-100	JML-120 JMLB-120	JML-140 JMLB-140	JMF-50 JMFB-50	JMF-65 JMFB-65	JMF-80 JMFB-80
Emulsification fineness μm		≥2	≥2	≥2	≥2	≥2	≥2	≥2	≥2	≥2
Mediation range mm		1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01
output t/h		0.01-0.2	0.2-0.75	0.3-1	0.5-2	0.7-3	1-4	0.01-0.2	0.2-0.75	0.3-1
electricity	power kw	1.1	2.2	3	5.5	7.5	11	1.1	2.2	3
machine	voltage v	380 220	380	380	380	380	380	380	380	380
speed r/min		2825	2900	2880	2900	2900	2930	1700-3500	1700-3500	1700-3500
Diameter of discharge port (in.)		Φ5/8″	Φ1″	Φ1″	Φ1″	Φ1″	Φ1 1/2″	Φ5/8″	Φ1”	Φ1″
Inlet diameter (in.)		Φ1 1/4″	Φ1 1/2″	Φ2’	Φ2 1/2″	Φ2 1/2″	Φ2 1/2″	Φ1 1/4″	Φ1 1/2″	Φ2″
Cooling water pipe diameter (in.)		Φ1/8″	Φ1/8″	Φ1/8″	Φ1/4″	Φ1/4″	Φ1/4″	Φ1/8″	Φ1/8″	Φ1/8″
ideotype size	long mm	270	320	360	410	410	500	500	500	820
	wide mm	270	320	360	410	410	500	310	310	400
	tall mm	650	70	820	960	960	1160	500	550	830
weight kg		45	70	100	150	160	230	60	70	200

model		JMF-100 JMFB-100	JMF-120 JMFB-120	JMF-140 JMFB-140	JMF-180 JMFB-180	JMF-200 JMFB-200	JMW-80	JMW-100	JMW-120	JMW-140
Emulsification fineness μm		≥2	≥2	≥2	≥2	≥2	≥2	≥2	≥2	≥2
Mediation range mm		1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01	1-0.01
output t/h		0.5-2	0.7-3	1-4	2-7	3-9	0.3-1	0.5-2	0.7-3	1-4
electricity	power kw	5.5	7.5	11	18.5	22	3	5.5	7.5	11
machine	voltage v	380	380	380	380	380	380	380	380	380
speed r/min		1700-3500	1700-3500	2930	2940	2900	2880	2900	2900	2930
Diameter of discharge port (in.)		Φ1″	Φ1	Φ1 1/2″	Φ2″	Φ2″	Φ1″	Φ1″	Φ1”	Φ1 1/2″
Inlet diameter (in.)		Φ2 1/2″	Φ1 1/2″	Φ2 1/2″	Φ3 1/3″	Φ3 1/3″	Φ2 1/2″	Φ2 1/4″	Φ1 1/2″	Φ2 1/2″
Cooling water pipe diameter (in.)		Φ1/4″	Φ1/4″	Φ1/4″	Φ1/4″	Φ1/4″	Φ1/8″	Φ1/4″	Φ1/4″	Φ1/4″
ideotype size	long mm	870	870	870	1060	1070	760	900	900	1050
	wide mm	460	460	460	530	550	300	400	400	460
	tall mm	970	970	1040	1200	1200	450	550	550	650
weight kg		275	285	320	450	500	90	130	140	200

* The JM series of colloid mills are: JML means vertical, JMF means split, JMW means horizontal, JMLB means vertical integral stainless steel JMFB means split integral stainless steel.