

## Straight Centrifugal Grinding Mill

### **Application**

The machine is on purpose to grind mining materials in the fields of metallurgy, building materials, chemistry, mining and so on. It can grind the non-flammable and non-explosive mineral materials with the Moh's hardness lower than scale 9.5 such as quartz, feldspar, calcite, talcum, barite, fluorite, rare earths, marble, ceramic, bauxite, manganese ore, iron ore, copper ore, phosphate rock, colcothar, zircon, slag, cement clinker, acticarbon, dolomite, beresite, garnet, iron oxide yellow, bean cake, chemical combination, compound fertilizer, fly ash, soft coal, charred coal, lignite, magnesite, chrome green, gold mine, red mud, clay, kaolin, coke, gangue, porcelain clay, cyanite, fluor, bentonite, maifanshi stone, liparite, muddy green rock, pyrophyllite, redware rock, basalt, gypsum, graphite, carborundum, heat insulator.

### **Main Technical Parameters**

Name	Unit	Parameter
Number of roller	Pcs	6
The inter diameter of ring	Mm	Φ800
Rotation of main unit	r/min	165
Max. feeding size	Mm	20
Fineness of finished product	Mm	0-3
Capacity	t/h	3-7
Overall dimension of main unit	Mm	2500*1520*1840
Power of main unit	Kw	37-45
Power of blower	Kw	2.2
Overall dimension of cloth dust cleaner	M	1200*1000*3800
Weight	T	4.5

## **Working Principle and Main Characteristic**

### **I . The system of ZTM86 straight centrifugal mill**

The system consists of main unit, blower, cloth dust cleaner and pipes.

The working principle is as follows. The central axle is rotated by motor. The roller suspender is connected with the bottom of the axle. The roller setting is set on the suspender. The roller suspender not only rotates with central axle, but also rotates under the friction of ring. The materials fall down from the hopper on the top of the machine to the clearance between roller and ring. Under the extrusion of the centrifugal force, materials will be crushed to pieces. The crushed materials will discharge naturally from the discharging valve. When the mill is working, blower will attract hot air in the mill and the cold air outside will swarm into because of negative pressure. So the heat coming from the working procedure will be taken away, which will lengthen the lifetime of the bearing and other spare parts. The air taken by the blower is sent into cloth dust cleaner, which will collect the fine powder. The purified air is discharged into the atmosphere.

When the system is working with wet method, blower and dust cleaner are not necessary.

## **The Installation and Debugging of the Whole System**

### **I . Installation of the whole set**

#### **i . Preparation before installation**

1. The pulverizer shall be stored and protected well before it is transported to the site for installation. The surface open to the air should be coated with rust-proof grease to avoid solarization and drench. In order to prevent the rustiness of the unit, it is

necessary to set up the maintenance system.

2. According to blueprint, workshop should have enough height and installation location. The foundation of pulverizer shall be constructed with high-mark cement and reinforcing steel bars. The wiring pipes and cable ditches must be well prepared in advance. When the concrete foundation is completed, it is required to have 15 days of the maintenance period.

3. A lifting facility with the capacity of 2-3 ton must be equipped for repair and maintenance.

4. If the pulverizer has been operated for over 6 months after delivery, the central shaft system of the main unit, transmission device, grinding rollers and the oil tank of the classifier must be cleaned and examined. After completion of cleaning and checking, these components shall be lubricated sufficiently.

#### **ii. Installation of the pulverizer**

1. Firstly, prepare for the cement base according to the installation diagram. Pay attention to keeping a suitable height, and the location of anchor bolt. Then adjust the upper plane A by a level gauge.

2. Before the installation of the main unit, the shockproof rubber pads shall be placed at the bottom case contacting the concrete foundation and between the connections of stone bolts. Then adjust the bottom case and upper plane of the wheel by a frame level gauge. The adjustment points are the four points on the cross lines. Adjust the upper plane of the roller in the base 10mm lower than that of ring.

3. The concentricity of main axle and ring must be assured. The error should be less than 0.5mm.

4. The piping system shall be installed with its location and height in conformity with the Master Drawing. Any random change of its location and height is prohibited. All the pipe connections must be sealed well. Air leakage is not permitted after fixing. The electrical device system must be correct and reliable. A trial operation must be

carried out after installation of all the parts.

## II. Debugging

1. No-loading trial operation. The non-loading trial operation of the main unit must last for less than one hour, the main unit run smoothly and stably. The temperature of the oil in the tank must not be over 80°C, and its temperature rise must not exceed 40°C. After one hour of trial, stop the machine and screw down the fastener in turn for three times. Then the machine can be put to work. In the normal performance, please check every week to avoid the loose of the bolt.
2. The blower runs normally without abnormal noises and vibration. The highest temperature of its rolling bearing shall not be over 70°C, and its temperature rise shall not surpass 35°C.
3. The trial operation with load shall last for more than 8 hours. After the normal operation, the whole machine shall be free of abnormal noises and air leakage in pipe connections.

III. If the production goes with wet method, the installation and debugging conform to the principle of simplicity according to the above. This is because there are no blower and dust cleaner.

### **The Operation Rules of the Pulverizer**

Before the machine is started, check whether all the maintenance doors are closed tightly and there is iron or so. Pay attention to the turnaround, the right of which is clockwise dextrorotation when looking down the main axle.

1. Turn on the blower.
2. Turn on the motor of the mill. Feed materials until the motor is under normal condition.

3. When turn off the mill, please wait until the material in the mill is out. Turn off the hopper first and motor of the mill. Turn off the blower in the end.
4. In order to guarantee the production safety, the pulverizer must not be oiled under the normal working condition. If any part of the machine generates abnormal noises, or the load is suddenly raised up, turn off the machine immediately for checking and troubleshooting to avoid serious accidents. Before restarting the machine, take out the residual material first. Otherwise the current will be too strong to affect the start.
5. If the production goes with wet method, the operation rule refers to the above for there are no blower and dust cleaner.
6. The above instruction is as dry wet an example. Wet method conforms to the principle of simplicity.

### **The Lubrication System**

In order to guarantee the normal operation of the whole system, please oil the machine according to the instruction listed below. The lubricating location and the grease name are stated in the following diagram.

Lubricating location	Form of lubrication		Name of lubricaton	Name of Lubrication drops	Interval of lubrication	remarks
	Manual Work	Oil tank				
Central shaft of the main unit	△		No. 3 MOS compound calcium based	2	1-3 days	Replaced by calcium based grease

			grease			
Grinding roller	△		No. 3 MOS compound calcium based grease	6*3	2	Replaced by calcium based grease

### **The Repairs and Maintenance of the Puvrizer**

1. During the application of pulverizer, some personnel shall be arranged to take responsibility of management. The operator must be qualified with the required technical knowledge. Before the installation of the pulverizer, persons related to the operation should receive technical training and fully understand the operating principle, performance and regulation of pulverizer.
2. In order to guarantee the pulverizer in a normal working state, a safety operation system for the repair and maintenance of the equipment must be established. Only in this way can the pulverizer be guaranteed to have a long service life.
3. After a period of working, please examine and repair the machine. Meanwhile repair and exchange the quick-wear parts such as rollers and ring. Check connecting bolts and nuts before make use of roller setting.
4. When the rollers are worn out to a certain extent, please exchange them. Clean all the roller bearing. Exchange the spoilage. Hand petrol pump or lubricating screw can be chosen as oiling equipment.
5. There will be crack when the ring is worn to a certain extent. Please change it in time.
6. The procedure of turning off the roller:
  - A. Open the cover of the roller bearing and unload two circular nuts.
  - B. Turn off the bolt.

C. Turn off the bottom bolt.

D. Fix the bearing and take out the roller axle by chest expander.

### **Common Troubles and Trouble Shooting**

Please deal with the trouble of the using according to the following form.

Common trouble	Causes	Trouble shooting
The current of the main motor and the temperature of the machine go up while the current of the blower drops	The material is fed too much that the airflow in the pipe is locked by the powder. The barrage of the airflow heat the airflow, which makes the current and temperature of the main unit rise up while the current of the blower drop.	Reduce the quantity of the feeding material and clean the accumulated powder in the air passage.
The main motor has loud noise and strong vibration	<ol style="list-style-type: none"> <li>1. the quantity of the feeding material is too small, or the main motor is not coaxial with the transmission device. There is no gap between two clutches. The ground bolts loose.</li> <li>2. the raw material is very hard which results in strong impact, or there is no material layer.</li> <li>3. rollers and ring are not circular or seriously deformed.</li> </ol>	<ol style="list-style-type: none"> <li>1. regulate the quantity of feeding material, correct the coaxiality, and adjust the gap between two clutches.</li> <li>2. reduce the particle size of the feeding material.</li> <li>3. replace the grinding rollers and ring.</li> <li>4. adjust the concentricity of the main axle and roller</li> </ol>
The blower vibrates	1. the accumulation of powder or	1. remove the

	the worn-out on the blade is lopsided. 2. The ground bolts loose.	accumulated powder on the blades or replace the blades. 2. fix the ground bolts tightly.
The axle tree of grinding is easily shattered	1. short of oil or airproof shatter. 2. short of maintenance and cleanout for a long time.	1. put on steam on schedule. 2. clean out and replace oil seal on time.

### **The Name and Quantity of the Quick-wear Parts**

For the grinding mill, and the quick-war parts, you can refer to the rolling bearing table for reference in order that the customer can select them conveniently.

#### Bearing

No.	Code	Name and specifications	Quantity	Relevant unit
1	GB/T288	Bearing 23222cc (200*110*69.8)	1	Up the main frame
2	GB/T288	Bearing 23224cc (215*120*76)	1	Down the main frame
3	GB/T301	Bearing 51324 (210*120*70)	1	Down the main frame
4	GB/T297	Bearing 33113 (110*80*33)	6	Up the grinding roller
5	GB/T288	Bearing 22216c (140*80*33)	6	Down the grinding roller

Home-made parts

Code	Name	Pcs
1	Ring	1
2	Roller	6
3	Roller axle	6
4	Bearing	6
5	Non-polishing cover	12
6	Down cover	6
7	Rubber tyre	12
8	Roller bearing	6
9	Quincunx stand	1
10	V circle	24
11	Scaleboard	1
12	Stop plate	
13	Protective casing	

## Rubber

Standard	Name	Specification	Quantity	Location
GB9877.1-88	Oil seal	100*800*10	12	Down the roller
GB9877.1-88	Oil seal	140*110*12	1	Up the main axle
GB9877.1-88	Oil seal	150*120*12	2	Down the main axle
GB9877.1-88	Oil seal	160*130*12	1	Up the main axle
GB9877.1-88	Oil seal	95*75*10	6	Up the roller bearing
	Triangle belt	SPC4000	6	Main unit

Note: quick-wear parts are excluded from the guarantee.