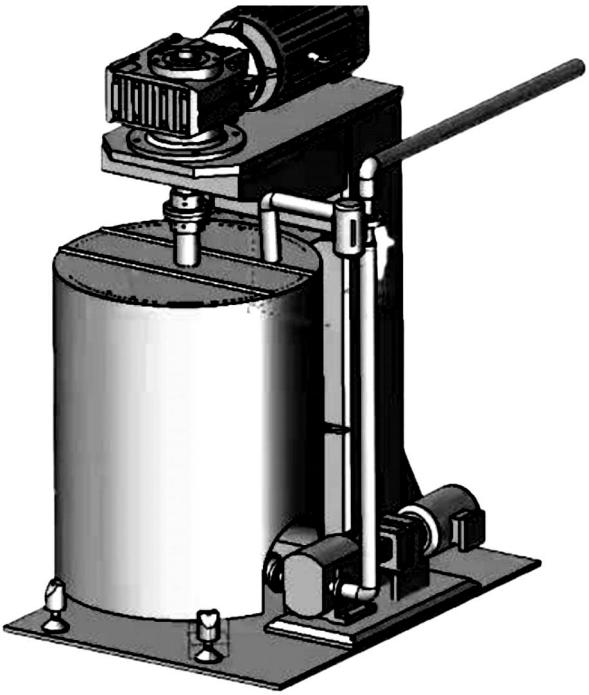
- **Use of equipment by untrained personnel is strictly prohibited. Machine operators must adhere closely to the instructions provided for each machine to prevent operational errors that could lead to system failure or damage to the equipment.**
- **Modifying the system's source code can result in system failure or even damage to the machine. Caution should be exercised when making any changes to the source code, ensuring proper authorization and technical expertise are available.**
- **Pay attention to the possibility of pinching. During operation, ensure that no unauthorized individuals are in close proximity to the machine.**

500L ball mill

User guide



Device Serial No.：QM-BM500

Manufacture Time：2023

Catalogue

1.User's guide for the use of the manual

This chapter provides user considerations for the current use of the guidebook.

This instruction manual serves the following equipment: **500L ball mill**
This instruction manual describes how to standardize the installation and operation of current smart devices to make them operate efficiently, based on the characteristics of the equipment and technical requirements, combined with long-term experience and knowledge to help users. The illustrations contained in this manual may deviate from the actual situation.

To device users and operators, please be informed:
(1)Please use this manual carefully and operate the equipment. If there is any unclear understanding, please contact the after-sales team or on-site debugging technicians for help.
(2)Please note that the user is responsible for any equipment failure or loss resulting from careless reading or misunderstanding during the use of this manual.

1.1 Precautions for The Use of This Manual

(1) This user manual should be kept complete during use to avoid damage and font staining, resulting in blurry or missing content.
(2) Before use, please double-check whether the contents of the manual match your device. If the content is incorrect, please contact the company's after-sales service to provide the correct guidance document.
(3) Before performing all operations on the equipment, please carefully read and understand this instruction manual.
(4) Please follow all safety precautions and operation instructions in this manual.
(5) This manual should be kept near the equipment for easy access by the equipment operator at any time.

1.2 Icon and Highlight

1.2.1 Basic Icon Meaning

The icons in this manual can be categorized into the following types:

	Danger icon: The danger icon serves as a prominent visual indicator aimed at capturing immediate attention. It is used to signal potential hazards, while also providing an explanation of their sources and potential consequences. Additionally, contingency plans and necessary measures will be supplied to guide individuals in responding effectively to such situations.
	Information icon: The information icon is a crucial visual cue that signifies the utmost importance of the forthcoming information. Please take the time to thoroughly review the content as it provides essential guidance for effectively operating the device.
	Illustration icon: This icon indicates that the following information will appear in a flat or stereoscopic display illustration of the device to match your understanding of the instruction.

	Supplemental icon: This icon appears to indicate that the following content provides supplementary explanations and specific explanations of the part pointed to by the arrow.

1.2.2 Highlight Font

(1) Bold font, indicating that it is emphasized in the text and needs the user's attention. As in **Example**
(2) Italic font, indicating tilting to the right in the text, indicating the location and company name. As in *Example.*
(3) Regular font, which means that there is no special formatting in the text, explains the main content. As in Example.

2.Equipment Safety Matters

1. The metal case of all electrical equipment shall be well grounded. The earthing device shall not be removed or performed any work on it in use.
2. All the signs on any electrical equipment shall not be moved except for the person originally placed .
3. General safety operating procedures are used for all production equipment of the company.
4. Only people who have received proper training and checked qualified are allowed to operate the machine.
5. Non-local station staff are not allowed to operate the machine without permission.
6. The machine must be used when the machine is in good condition, all the safety shields and protective instruments are normal, the grounding protection is good, and all the functions of the machine are normal.
7. No safety device shall be idle and shall not prevent the normal operation of any safety device.
8. Machine operators should be aware of all the safety protection equipment, stop, emergency stop, the role of the machine.
9. Make sure there is no one in the machine and no one touches the machine before booting up.
10. When the machine is running, it is forbidden to extend your hand, foot or any part of your body into the machine or near the running machine.
11. The operator must not leave the machine when the machine is running.
12. It is forbidden to climb the machine when the machine is running.
13. It is forbidden to transfer tools across the machine. It is strictly forbidden to place tools and other items on the machine to avoid entering the machine and cause functional accidents.
14. Keeping the work area around the machine and the machine itself clean and tidy. The floor, platform and inside of the machine need to be cleaned regularly. Dangerous goods such as grease, oil, and other sticky materials should be removed in time to prevent personnel from slipping.
15. Before entering the machine for operation, the emergency stop button must be locked. If necessary, the power must be turned off and locked.
16. Non-professionals are not allowed to open electrical junction boxes, power cabinets, power distribution cabinets and control cabinets at will, and professionals should be required to provide guidance when necessary.
17. Some machines may use some solvents for cleaning. No matter what solvents are used, protective items such as gloves should be used, and the remaining solvents should be immediately stored in the designated solvents location. To avoid accidents while the machine is working.
18. Do not place any solvents on the hot parts of the machine or near the original electrical appliances.
19. If the machine is found to be faulty, stop it immediately and report it to the maintenance staff on duty, and notify other people who may use the machine.

3. Equipment Transfer

The current measured size of the 500L ball mill is **L1285xW1401.78xH1764** mm (mm), which may be slightly different from the theoretical size of Figure 1, and the actual data shall prevail.

The weight of the machine is approximately **1500kg**.

The weight of the grinding steel ball is **260kg.**

Before the equipment transfer, prepare the lifting tools and arrange the operator according to the above information.

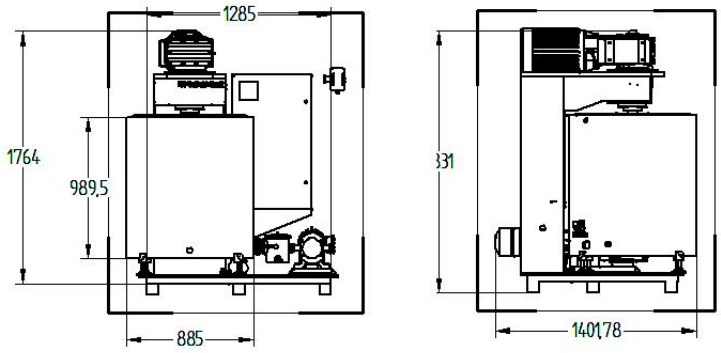


Figure 1: Size view of the 500L ball mill

3.1 Transfer Mode

The 500L ball mill is a large equipment, which needs to be used for safe transfer and smooth placement.

According to the current external structure of the current 500L ball mill, it is necessary to lift the equipment off the ground from the side of the machine through a lifting forklift truck weighing over **3T**.

3.2 Transfer Protection

The 500L ball mill transfer protection is mainly divided into equipment protection and personnel protection.

Equipment protection:

① For equipment transfer, please confirm that the equipment is cut off and cancel the power line, ensure that there is no steel ball and raw materials in the cylinder block, and discharge all the water in the stainless steel insulation interlayer through the valve. Please refer to **5.3.1 circulating (cold) water source.**

② For the cylinder block and electric control box, please prepare foam plate and film protection before transfer to avoid damage during the transfer process. Before the equipment leaves the factory, the manufacturer has wrapped the packaging through the foam board and the film.

③ Please confirm the rationality and safety of the transfer route, and do not cause any kind of equipment collision.

Personnel protection:

① Equipment transfer personnel should wear safety shoes, safety hats, and anti-cutting gloves. And according to the site situation to adjust, do all safety protection measures.

② The equipment transfer personnel shall be operated by the relevant practitioners or strictly trained technical personnel.

③ Please follow the principle of safety first in the equipment transfer, do not put your hands, feet, head and other parts that may be injured close to the lifting tool and the moving equipment.

4. Structural Display

This chapter will show you the overall to the local structure of the 500L ball mill, to help you to better understand the operation principle of the equipment, and quickly improve the familiarity with the whole equipment.

The 500L ball mill is a smart device that uses stainless steel beads for chocolate fine grinding, making the more rough or less thin chocolate more uniform and smooth.

The 500L ball mill adopts PT 100 temperature sensor and multi-function digital display temperature controller to realize the accurate monitoring and control of raw material temperature, providing a comfortable insulation environment for raw materials and maintaining the fluidity of raw materials. High strength, wear-resistant bearing beads will ensure equipment stability and raw material purity in grinding.The magnetic core filter device escorts the purity of raw materials.

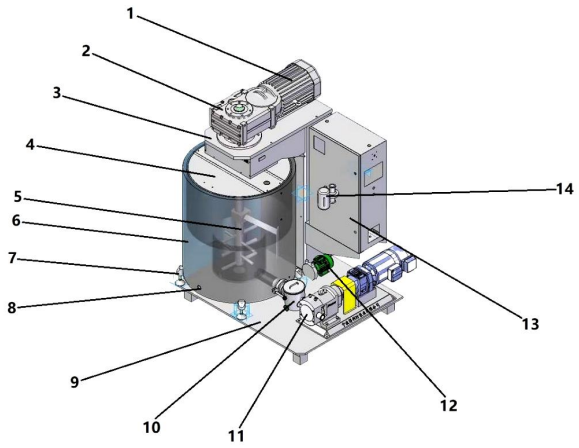


Figure 2: Right-front 3D view of the 500L ball mill

1	Stir the main motor and grind the power source	8	The grinding raw materials are mixed with steel balls and exported, some models are on the side wall of the cylinder block, and some models extend from the lower part of the cylinder block
2	Stir the main motor reducer	9	Bottom plate, stable integration of all parts of the ball mill
3	Vertical ball mill motor support and stirring fixture	10	Magnetic filtration, the ground raw materials are adsorbed by the magnetic core, filtering out possible impurities in long-term grinding
4	Flip the lid, raw material and grinding steel ball addition position	11	The chocolate pump can circulate the raw materials of the primary grind to the inside of the cylinder for secondary grinding and improve the fineness
5	Stir the shaft to make the steel balls move to grind the raw materials	12	Water pump, circulating sandwich insulation water, maintain raw material temperature
6	Cylinder block, double cylinder wall, raw material grinding position	13	Circuit control cabinet and control panel location
7	Ground foot, supporting the ball mill cylinder block	14	Valves that can optionally control the flow of raw material, back to the cylinder block or to other positions

5. Running Preparation

This chapter will introduce the preparation measures and environmental requirements of the 500L ball mill before its formal operation. Ask the operators of the device and any user who may use the device to carefully read and understand everything as required.

5.1 Operating Environment

After the equipment arrives at the site, you need to first confirm whether the installation site meets the normal operating environment of the 500L ball mill. The basic judgment criteria are provided as follows:

① Please confirm that the installation site is clean and tidy without any debris stacking.
② Please confirm that the installation site, except for the main body of the equipment, and reserve the activity space needed for the operators and any equipment that may be used. The operator activity space should be more than 1.5 meters away from the outer edge of the equipment.
③ Please confirm whether there is water, pit surface, dust, sand, oil and other conditions that may threaten the safety of operators and affect the health of the product. The food industry is sure to follow any laws and regulations related to food production. If the consequences are caused by the operating environment or subjective behavior not meeting the requirements, you shall bear the responsibility.
④ Please confirm whether the space temperature and humidity of the installation site meet your production requirements for raw materials, and test them regularly in the later production process.

5.2 Equipment Inspection

After the equipment is placed on the ground, the trained professional operators should make a comprehensive assessment of the equipment situation to ensure the integrity and safety of the equipment, and then conduct subsequent operations. Therefore, the basic items of the designated equipment inspection are listed as follows.

Equipment users and operators are made aware that:
① Please check the overall appearance of the equipment for depression, damage, parts fall off, serious scratches, rust corrosion.
② Please check whether all the screws of the equipment are loose and whether the structures are tightly connected.
③ Please try the following actions to detect whether there is any abnormal lag: open / close the equipment flip cover for three times; repeat the open / close the electric door twice with the key;
④ Please check whether the cable of the equipment motor is loose, check whether the circuit of the electric control box is complete, and whether the installation position of all electrical components is normal.
⑤ Please check whether all the water pipe channels of the equipment are damaged and whether the interface is closely connected.

5.3 Configuration Preparation

After the equipment inspection, confirm with the manufacturer according to the nameplate information and the configuration information provided in this manual. If the equipment failure is caused by not confirmation with the manufacturer, you shall bear the loss.

The current standard configuration requirements of 500L ball mill are divided into circulating (cold) water source and power supply system. The following instructions will be followed up for you.

Note: Some customized models are equipped with pneumatic three-way valves, which need to be connected to a separate compressed air source.

Precautions for compressed air:

①Please confirm the stable source of compressed air so that **the pneumatic valve** can guarantee continuous operation.

②Please pay attention to the discharge location of your air compressor/compressed air tank, not close to the equipment and operators.

③Please confirm that the compressed air terminal (to be used) air pressure should be **0.6-0.8Mpa.**

5.3.1 Circulating (cold) Water Source

The circulating (cold) water source is supplied to the cylinder wall of the cylinder block through the water inlet, and the sandwich water is stabilized by heating or cold water filling alternately.

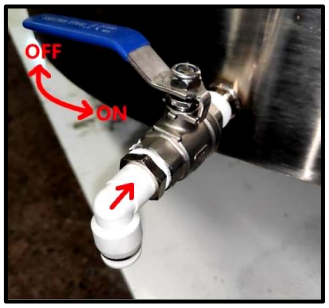


Figure 3: Water input and output view

Open the valve by rotating counterclockwise to ON to pass cold water into the insulation interlayer or drain the insulation water in the interlayer. The OFF shall be kept closed during the daily use of the equipment.

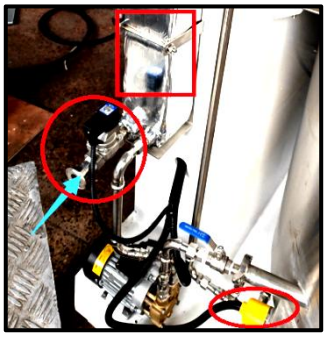


Figure 4: Face view of the cold water connection entrance

Connecting the cold water pipe (arrow), when the raw material needs to be insulated during or after grinding, the electric heating pipe (in the lower circle) starts to work, raising the water temperature in the interlayer. When it is necessary to cool down the grinding raw materials, the solenoid valve (in the upper garden frame) is opened, and the cold water is passed into the **Plate Type Heat Exchanger** (in the box), and at the same time, the hot water in the insulation interlayer of the ball mill also passes through the **Plate Type Heat Exchanger** and returns to the interlayer for water circulation. At this point, there is no direct contact between the hot and cold water, and the hot water is cooled by the **Plate Type Heat Exchanger**.

Plate Type Heat Exchanger is a high-efficiency heat exchanger formed by stacking a series of metal sheets with a certain corrugated shape. A thin rectangular channel is formed between the various plates, through which cold and hot water are exchanged for heat.

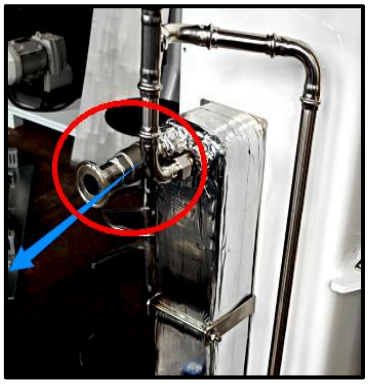


Figure 5: Face view of the cold water outlet

During the cooling process, cold water will overflow from the outlet inside the red circle.

Figure 6: Front view of insulated sandwich exhaust port

In the process of heat preservation of the ball mill cylinder block as raw material, the internal pressure of the cylinder fluctuates with the temperature change, in order to prevent the excessive deformation of the pressure of the cylinder sandwich, please do not block the exhaust port.

Water source considerations:

① Please confirm whether the water quality is good, do not use the water source with any impurities, including but not limited to the corrosive chemicals, activated carbon, any solid substances, do not show turbidity state.

② Please confirm that the water temperature of the cold water source remains stable without change.

③ Please confirm that the input water pressure of the circulating (cold) water source should be between 0.07-0.35Mpa.

④ Please confirm that the diameter of the water pipe inlet is 12MM.(If there are differences in some customized models, please refer to the actual pipe port identification value)

⑤ Please confirm that before officially opening the equipment, make sure that the cylinder insulation interlayer has been added to avoid the damage or even more serious safety accidents caused by water shortage.

⑥ Please confirm whether there is leakage in the insulation system (the water tank is connected to the pipe). If there is leakage, please tighten the leakage pipe port again.

5.3.2 Power Supply System

The power supply system supplies the power supply required for all electrical components, such as running servo motor, servo driver, frequency converter, contactor, programmable logic controller (Programmable Logic Controller).

The power supply voltage of 500L ball mill adopts national standard three-phase five-line system (AC380V) according to GBl2325-1990 "Power quality one allowable deviation of power supply voltage": the sum of the absolute value of positive and negative deviation of the power supply voltage of 35kV and above shall not exceed 10% of the rated voltage; the allowable deviation of the three-phase power supply voltage of 10kV and below is 7% of the rated voltage; the allowable deviation of single-phase power supply voltage of 220V is + 7%~10% of the rated voltage.

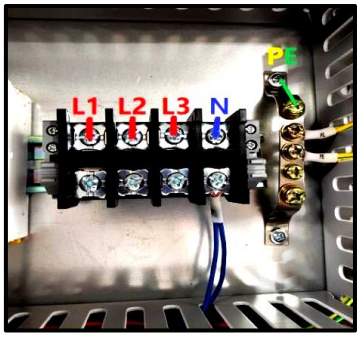


Figure 7: Face view of the access position of the power supply system

Wiring process:

The rated voltage of 500L ball mill is 220v and the total power is 25 kW, so the three-phase fire wire, zero line and ground line should be prepared. Open the circuit control box door and connect the required wire at the top of the circuit board. If there is a zero line N or ground line PE interface, please be sure to connect.

The fire line connection entrance is: L1, L2, L3

The neutral line entry is: N

The ground wire inlet is: PE

Before officially access to the line, in order to avoid equipment damage and ensure your personal safety, please be sure to confirm the following precautions.

Notes of the power supply system:

① Please confirm that there is no damage to the wire insulation sleeve

② Please confirm that there is no abnormality in the circuit board (check that the screws may be loose due to transportation)

③ Please confirm that the operator is a professional circuit worker and wears insulating gloves for safety protection.

④ Please confirm that the power supply cable should not be placed at will, and should be collected by the corner or covered with stainless steel wire groove and fixed on the ground.

⑤ Please confirm that all air switches in the equipment circuit control box are closed before accessing the line.

6. Operating Instructions

6.1 Confirmation Matters Before Startup

Up to now, the 500L ball mill should have completed the basic equipment inspection, on-site damage assessment and repair, equipment transfer and placement, and all configuration preparation. After professional

training, the operators will carefully read the operation instructions and confirmation items of this manual, and start the equipment.

Before start-up confirmation:

① Check whether the operating environment of the equipment meets the requirements **5.1 Operating Environment**

② The water level in the insulation interlayer of the cylinder block shall be at least at the top of the liquid level observation scale line. In addition, it should be noted that when the equipment starts to cool down, the original insulation water will be filled with cold water, filled insulation interlayer, and overflow from the upper overflow outlet, which is a normal phenomenon. Please connect the water pipe at the overflow outlet **5.3.1 circulating (cold) water source**

③ Circulating (cold) water source, the power supply system is all connected, and the cable and pipeline have no abnormal damage.

④ Ensure that the operator has at least read the operating instructions carefully before starting the device.

⑤ The water pressure at the cold water valve should not be greater than the upper limit of the water pressure on the cylinder wall (2Bar). Please pay attention to the water pressure to avoid the deformation and damage of the cylinder body.

⑥ The height of the overflow water pipe should be lower than the overflow water outlet, and the length of the water pipe is recommended to be controlled within 10M.

6.2 Start and Closing of Equipment

Equipment startup:

When you are ready, please open the door of the circuit control box and turn on all the air switches above the circuit board,then turn the power switch clockwise to the ON state. The 500L ball mill will officially start up. Please be ready to work.

Figure 8: Left front view of air switch gear / front view of power switch

Equipment closed:

The operation on the control screen stops all the work of the 500L ball mill, including the heating switch, stirring switch,water pump switch, chocolate pump switch etc., and all the air switches located above the circuit board are moved down in turn, turn the power switch counterclockwise to the OFF state and the equipment is powered off.

6.3 The Login Interface

After the 500l vertical ball mill machine is started, all electrical components are powered on. After waiting for a few seconds, the control screen opens and you enter this interface to log in.

Figure 9: Control screen HMI device login interface view

1	Click to enter the Chinese operation interface
2	Click to enter the English operation interface

6.4 The Initial Interface

The operator will operate the Belt Coating Machine based on all the key functions of this interface, so that the equipment can run efficiently and put into use, it should be noted that this page is a common operation interface for automatic operation and manual operation, and the lower right corner of the panel can realize one-key mode switching.

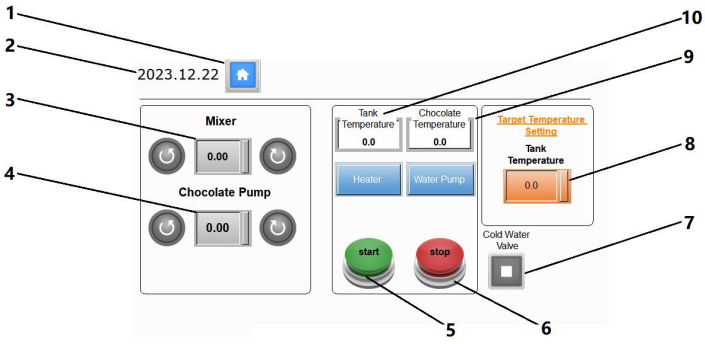


Figure 10: Initial interface view of the HMI device on the control screen

1	Back to the login interface	6	Stop the whole running process of this ball mill
2	Display the date	7	Click to open the cold water valve , the process to decrease the tank temperature will speed up.
3	Mixer switch, click the clockwise or anticlockwise button to choose the direction of spinning , mixer opens, the ball moves, and the chocolate are grinded , the mixer speed can be adjust by fill different number ,bigger for speed up.	8	Tank temperature setting, target temp, then click the heater and water pump to heat up the water layer of whole tank
4	Chocolate pump , click the clockwise or anticlockwise button to choose the direction of spinning , pump chocolate at the pipes, the pump speed can be adjust by fill different number , bigger for speed up.	9	Chocolate temperature monitor, display the degree

5	Clink start to run this ball mill	10	Tank temperature monitor, display the degree

Figure 11: Front view of emergency stop button of 500L ball mill

After pressing the emergency stop button, the ball mill will urgently stop the grinding work, and rotate clockwise to cancel the current emergency stop state and resume work.

As the Figure above, the operator will operate the 500L ball mill based on all the key functions of this panel to run the equipment efficiently and put it into use.

6.5 Equipment Operation Mode

Before the formal production, the distributed steel beads will be put into the 500L ball mill cylinder according to the internal capacity. According to the characteristics of their own products and production requirements, select the appropriate edible oil or clean the inside of the equipment and the steel beads, and start the normal grinding work after completion.

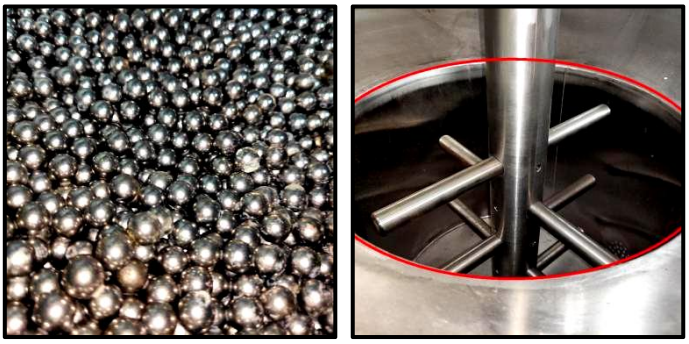


Figure 12: Face view of grinding steel beads/Where the steel balls are placed

Equipment cleaning steps:

① The grinding steel ball should be added to the top of the covering mixing rod is suitable for Figure 12: Where the steel ball is placed. Pour the melted cocoa butter or cooking oil into the cylinder body to drown the steel beads.

② At this time, the insulation sandwich should be filled with water. The operator should set the temperature in the control panel, turn on the heating, and start the stirring. The speed should not be set too fast.

③ After stirring for an hour, open the outlet, release the cooking oil or cocoa butter in the cylinder, and close the outlet. Add new oil again to repeat the cleaning process, it is recommended to repeat 3-4 times, the operator observes the internal cleaning of the cylinder block, after meeting the production requirements (if the grinding steel beads are kept inside the cylinder block), and finish the cleaning.

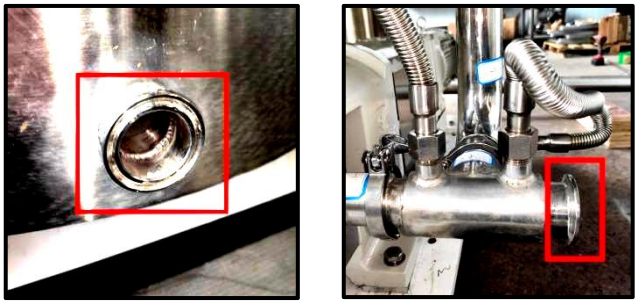


Figure 13: Front view of ball outlet (left), discharge port (right).

The ball outlet is located on the side of the equipment, usually connected to a valve or plugging plate, and the grinding steel ball can be released when opened, and the raw material will be attached at the same time. The discharge port needs to open the front (in the red frame) valve or blocking plate to open and take the raw materials that have been grounded.

Before the two exits are open, please prepare in advance the containers that meet the requirements, so as to avoid scattered raw materials and steel beads.

Grinding steps:

① Based on your product formula, add an appropriate amount of raw materials and cocoa butter, should follow the principle of high oil content means less raw materials, low oil content means more raw materials, to prevent the raw materials from spilling over the cylinder block during the grinding process, resulting in additional costs.
② Set the target temperature on the multi-functional digital display temperature control table, start the heating / cooling function, and keep continuous insulation after reaching the set temperature.
③ Open mixing, can be adjusted to the appropriate speed through the frequency converter knob, grinding for 3-6 hours.
④ Test the fineness of raw materials, reach 18-22 μ m can be discharged, and start the next batch of grinding again.

7. Troubleshooting

During the use of the 500L ball mill, the equipment failure may be due to improper use by operators or long-term cleaning and maintenance of the equipment, abnormal parameter setting and other reasons. When the fault occurs, the operator near the equipment shall close the heating and stirring knob in the control panel to check the current equipment failure.

Common fault alarm information and processing

When the following faults occur to the equipment, please deal with the subsequent words. If other faults that cannot be evaluated or the alarm cannot be eliminated after processing, please contact the manufacturer to assist in handling.

Raw material overflow: please check whether the raw material and grinding steel beads are added in excess, the stirring speed is too fast, open the electric control box to adjust the frequency converter knob to slow down appropriately.

The thermostat temperature display is abnormal:

- Please confirm that you have not changed any parameter settings, confirm that the temperature is displayed as degrees Fahrenheit (℉) or degrees Celsius (℃), and contact the manufacturer to determine the working status of the temperature controller.
- Please confirm whether the circuit connection behind the temperature control meter is loose.
- Please confirm that the temperature sensor PT 100 is connected to loose conditions.

Abnormal in heating or refrigeration:

- Please check your temperature settings and insulation duration. The heating or cooling function should be started when the target temperature is 5℃ away from the current temperature.
- Please confirm whether the heating tube or solenoid valve is started properly and whether it is damaged.

Mixing motor fault:

- Please check your motor inverter fault code and contact the manufacturer for help.
- Please check whether excessive steel beads are added to the cylinder block, and the frequency of mixing motor should not be set too small.
- Please check whether the motor reducer has abnormal sound or vibration, and whether the bottom nut is tightened (please power off before inspection).
- Please check whether the oil seal at the connection between the motor reducer and the cylinder block is damaged. Remove the reducer. For specific operation, please contact the manufacturer for confirmation.

8. Cleaning and Maintenance

As the first-line equipment for product production, 500L ball mill, long-term contact with food raw materials cannot avoid certain raw materials scattered around the equipment. If the equipment is not cleaned in time, it may affect the normal and efficient work of the equipment and even serious machine failure. At the same time, after long-term continuous operation, the mechanical movement structure of the equipment may wear and tear, resulting in operation lag or even operation failure. Therefore, the equipment maintenance link is also essential and needs to be carried out regularly.

In order to ensure the efficient operation of the equipment and extend the service life, the trained professional operators should read the following cleaning and maintenance related content, and implement it regularly. If the equipment is damaged or caused by failing to clean and maintain it on time, you shall bear the responsibility by yourself.

8.1 Cleaning

Clean the position	Cleaning cycle
control panel	Keep it clean at all times during work
Inside the cylinder block and grinding the steel ball	When it is necessary to replace the raw materials/ once a month
Electric control box, motor appearance	Monthly (at least) monthly
Outlet ; Water inlet and Water outlet	Once a day
Overall appearance and structure	If necessary / half a year (at least) twice

When the equipment needs to be stopped for storage, all of the above positions should be carefully cleaned.

Also note, keep the working area and machine clean and tidy. The ground near the equipment shall be cleaned regularly. Oil, oil and other dangerous goods should be removed in time to prevent personnel from slipping. Regularly check whether the electrical components in the control cabinet are in good contact, sensitive and reliable, pay attention to moisture-proof and dust proof, and keep the cabinet clean.

Before the formal cleaning work, keep the equipment in power off, close all air switches in the circuit control box and cut off the power supply to ensure the safety of the equipment and operators.

Control Panel cleaning steps:

① Power off for equipment.

② Use natural, no harmful chemical warm water and towels to clean the control panel, clean the attached raw materials and dry them in time to prevent bacterial breeding.

Cleaning steps for cylinder block inner and grinding steel beads:

① Power off for equipment.

② Release all grinding steel beads and raw materials inside the cylinder block and enter the container.

③ Use natural, no harmful chemical warm water and towel to clean the cylinder body, the container grinding steel beads, can use high temperature water for disinfection rinse.

④ After cleaning, please dry in time to ensure that there is no water residue inside before the next use.

For the electric control box, the appearance of the motor is clean, only need to power off the equipment and wipe the towel or use an air gun to clean the surface deposition ash layer.

Cleaning steps of outlet and inlet:

① Power off for equipment.

② Remove the card chain and blocking plate from the external outlet of the cylinder, and then remove the butterfly valve at the steel ball exit at the side of the cylinder.

③ Use natural, no harmful chemical warm water and towel for cleaning, can use high temperature water for disinfection washing.

④ After cleaning, please dry in time to ensure that there is no water residue inside before the next use.

For the overall appearance and structure cleaning, only need to clean and dry with warm water after the equipment is power off.

After cleaning all the equipment structure, the installation is contrary to the cleaning step.(Under equipment power failure is required)

8.2 Maintenance

Before the maintenance of the 500L ball mill, it is still necessary to power off the equipment, close all the air switches in the circuit control box, and cut off the power supply to ensure the safety of the equipment and the operators.

The main utility of equipment maintenance is to prevent irregular and abnormal wear of parts, ensure the safety of equipment structure, ensure the continuous and efficient work of equipment, and extend the service life of equipment.

The important maintenance structure of 500L ball mill is: mixing shaft inside the cylinder block and motor reducer.

Maintenance steps of the mixing shaft:

① Do not place the equipment in a wet environment.

② Use natural, no harmful chemical warm water and towels to clean the surface of dust and impurities.

Maintenance steps of the motor reducer:

① Power off for equipment.

②Prepare the container, use the inner hexagonal screwdriver to remove the plug below the side of the reducer, and release the original lubricating oil in the reducer to clear the inner cavity.

③ Prepare the reducer lubricating oil that meets the specifications, install the lower plug and remove the upper plug, and inject the new lubricating oil into the inner cavity with an added amount of 8.4L.

professionally trained operators should maintain the reducer according to the lubrication maintenance schedule below.

Lubrication and maintenance periodic table				
The equipment runs for 500 hours for the first time				
Every 6 months or run for 3,000 hours				
The inspection period shall not be longer than three years				
The inspection period shall not be longer than 5 years				
Please replace the reducer lubricating oil at the above time node. Oil requirements and some models are as follows				
Oil requirements	Ambient temperature: -10℃ -40℃ ISO viscosity: VG 220			
Lubricating oil brand	TOTAL	mobil	shell	bp
Lubricating oil model	TOTALCARTER EP220	MOBILGEAR 630	SHELLOMALA 220	ENERGOL GR-XP220

9. Discontinue Use and Storage

If the user's subjective reasons and the special circumstances need to stop and store the current equipment, the operator should strictly follow the following operation procedures and take photos to record the downtime and the overall state of the equipment before shutdown.

9.1 Deactivate the Operation Process

- The Equipment operator shall confirm that the equipment cleaning work has completed the 8.1 cleaning cycle.
- The equipment is power off, the power supply system is off, and all air switches are off.

- Open the outlet below the equipment and observe the height of the sandwich level and whether the outlet is discharged.
- After the insulation water in the insulation interlayer is completely discharged, remove all water pipes and close the electric control box door.

The equipment has been discontinued.

After the equipment is discontinued, if it needs to be turned up again in a short time, the power supply system can be reconnected, the circulation (cold) water source pipeline channel can be resumed, and the grinding steel beads can be added.

9.2 Equipment Storage

Before equipment storage, complete the relevant steps of equipment shutdown and start storage. Please conduct an environmental assessment of the pre-storage location of the current equipment by the professionals. For the ambient air temperature, humidity, ventilation environment, and the presence of corrosive chemicals, which may cause damage to the electrical components and mechanical structure of the equipment. Do not conform to the equipment storage environment, cannot be stored.

10. Appendix

10.1 Technical Description

- The material is SUS304 stainless steel.
- The cylinder body adopts double layer, inner cylinder charging, sandwich filling water and electric heating, and equipped with PT 100 temperature sensor.
- The side of the cylinder block is provided with DN38, G1 / 2 internal wire elbow, and acrylic level meter, and the design has G1 / 2 single external wire inlet and outlet at the bottom of the cylinder block.
- Power of mixing motor is 15KW and speed is 1460r / min; power of sandwich heating tube is 3KW.

10.2 Electrical Description

Refer to the motor reducer instructions.pdf
Refer to the motor instructions.pdf

Thank you very much
Looking forward to your return