Operation manual of copper rice machine production line

1. Shredder Instruction Manual

1.The double shaft shredder is a series of environmental protection equipment developed by our company according to the current market conditions and social needs. the device

2.The equipment is novel in design, simple in operation, low in energy consumption, pollution-free, and occupies less space. It is a cost-effective product.

3.The double-shaft shredder is designed with low speed and high torque, so that the noise, dust and energy consumption in the production process are greatly reduced.

2. The scope of application of the double-shaft shredder

The crushing bin of the double-shaft shredder is composed of two sets of high-grade alloy steel cutter discs, which crush large objects under the action of mutual shearing.

raw materials and various mixed wastes, as well as metal-containing wastes, or pre-shredded wastes containing sediment and other wastes.

This type of machine runs at low speed, and the noise and dust can reach higher environmental protection standards.

The thickness of the tool and the number of claws can be changed according to different materials. It depends on the density and shape of the crushed material.

A twin-shaft shredder is a machine used for coarse shredding, generally used to process unprocessed raw materials or scraps, making them

The size is smaller. Shredders are used to shred various scrap metals, plastics, rubber, tires, fibers, paper, wood,Solid or hollow materials such as iron drums, waste electrical appliances, waste cables, industrial scraps, and domestic waste.

3. Components of the shredder

The shredder consists of a feeding bin, a chassis, a coupling, a main shaft, a tool, a bearing, a hardened gear reducer, a frame, a motor,

Transmission system, working platform, etc.

working principle

The waste items enter the shredder through the automatic feeding machine (the feeding machine is equipped according to customer requirements), and the shredded box is shredded.

The blade spindle rotates at a medium speed through the variable speed of the motor and the reducer, cutting, cutting, squeezing, pressing and tearing the waste into small pieces.

The body is discharged from the discharge hopper. In order to ensure the damage to the motor during the overcurrent operation of the host, the electrical appliance has a protection function.

Motor monitor, monitoring the motor running current, if it exceeds the set motor current, the host starts to reverse about (10 seconds)

After the material is spit out, the host will automatically rotate forward.

two. Introduction of reducer motor:

Reducer function introduction

The main engine is configured as a cylindrical gear reducer with two-stage cylindrical gear transmission. It is widely used in machinery industries such as heavy machinery and general chemical industry, and its working temperature is

The temperature is -40C° ~+45C° , the input speed is not higher than 1500 r/min, the peripheral speed of the gear transmission is not more than 14 m/s, and it can be operated in both forward and reverse directions

change.

1. The gear is lubricated by a closed transmission oil pool. The oil level of the lubricating oil is indicated by the circular oil mark on the base. When the reducer is in stop operation

In the state, the oil level is within the range indicated by the oil standard.

2. The lubricating oil generally adopts HJ40-50 mechanical oil. HL07-90 gear oil can also be used.

3. Special attention should be paid to the cleanliness of the oil at the beginning of

the operation of the reducer. If the oil is dirty (especially the mixing of metal foam), the oil should be changed immediately.

At the same time as the oil, the dirt in the body should be removed. The quality of the oil must be checked regularly (not less than once every six months). 4. If you need to open the cover for maintenance, pay attention to whether the cover is covered with sealant. If there is sealant, you can use the screw holes on the cover to screw.

Open, do not hammer the sealing surface. After the maintenance, check whether the sealing surface and the through cover are damaged or not, and clean the sealant residue.

three. Shredder use and maintenance instructions:

1. Please add lubricating oil to the reducer before use. The reducer has a dipstick display, and add 80%.

2. It is strictly forbidden to mix large iron blocks and large foreign objects in the material to damage the service life of the tool.

3. Before starting the machine, check whether there is foreign matter in the hopper, whether the tool is normal, and whether the electrical appliance is normal.

4. After everything is normal, turn on the shredder, idle for 20-50 seconds after turning on the machine, and check whether the machine is normal and whether there is any abnormal sound.

Personnel should not come into contact with the equipment when the machine is running.

5. After the normal startup, the feeding material should increase from less to more, the feeding should be uniform, and do not cut too much to prevent too much feeding at one time.

Overcurrent jam protection occurs, which will cause component damage and equipment life.

6. When shutting down, stop feeding first, and then turn off the shredder.

7. After normal production, regularly check the condition of each running part, the condition of the tool and whether the bolt is loose, if any

If it is loose, please tighten it immediately to prevent equipment damage.

8. The bearings of the shredder should be filled with butter once every two shifts, and the bearings of the motor should be filled with butter once every shift. It must be ensured that the bearings are not short of oil and water.

9. The electrical equipment has an overload protection device, which will automatically stop the reverse rotation when overloaded, but try to avoid jamming.

10. Once the machine is blocked too much, please stop it in time, disconnect the main power supply, and clear the feed hopper, middle hopper and bottom net.

's material.

11. After the tool is blunt, it can be repaired or replaced by electric welding, so as not to affect the output.

12. Professionals should be selected to replace the tool to avoid damage. When changing the tool, disconnect the main power supply and turn on the shredding tool.

Chassis body, replace the tool, remember to adjust the clearance and tighten the nut after installing the tool

Wearing part name

NO	NAME	quantity	replacement cycle
1		40*2	One year

2.Instruction Manual for Conveyor

A. Usage

Belt conveyor is a general series of products. It is a continuous conveying equipment with cotton canvas, nylon, polyester canvas and steel rope core conveyor belt as traction components. It can be widely used in coal, metallurgy, mining, port, chemical industry, light industry, petroleum and machinery industries to convey various bulk materials and finished products.

Belt conveyor has the characteristics of large capacity, high crawling capacity, low operating costs, easy to use and maintain, and it is easy to realize the automation control of transportation system.

B. Structural Principle

Belt conveyor is mainly composed of two endpoint drums and closed conveyor belts which are tightly sleeved on them. The drum that drives the conveyor belt to rotate is called driving drum (driving drum); the other drum that only changes the direction of the conveyor belt movement is called changing drum. The driving drum is driven by a motor through a reducer, and the conveyor belt is driven by the friction force between the driving drum and the conveyor belt. The driving drum is usually installed at the unloading

end to increase the traction force, which is beneficial to dragging. The material is fed by the feeding end and falls on the rotating conveyor belt. It is driven by the friction of the conveyor belt and discharged at the discharging end.

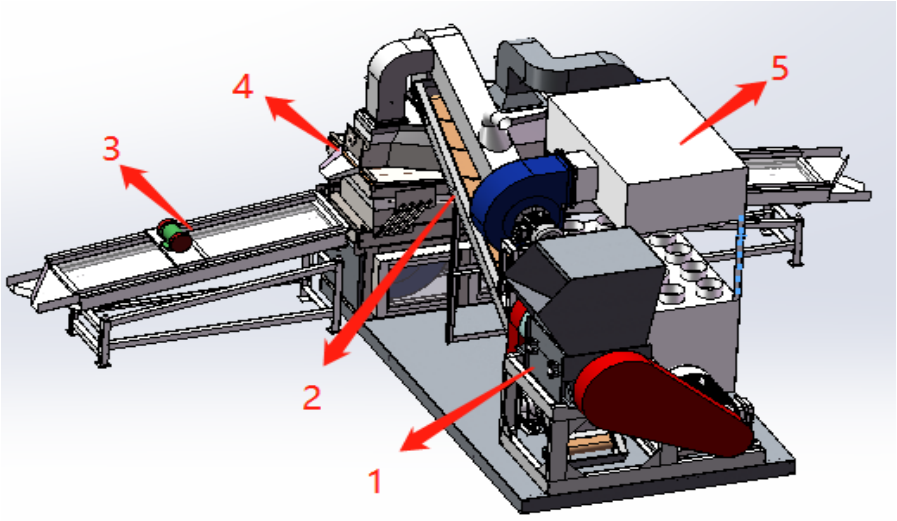
C. Major Components

1. Drive motor
2. Drive belt
3. Rack
4. Carrier roller

3.feed bin

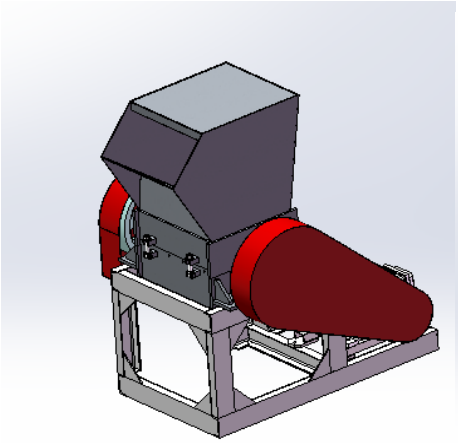
The silo is used to store materials. During normal operation, attention should be paid to timely unloading, and manual accumulation should not be performed, causing material blockage.

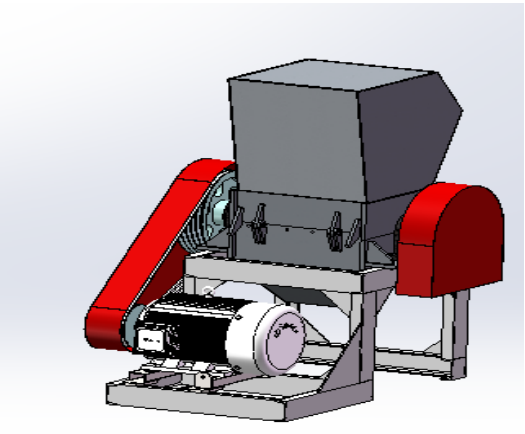
4.Copper rice all-in-one machine manual



No.	Product Name	Quantity
1	Crusher	1
2	Conveyor	1
3	Vibrating Screen	2
4	Gravity Separator	1
5	Dust Collector	1

1. Crusher





A. Equipment Use

The application of crusher can achieve the following main purposes: 1) reducing the particle size of materials to a certain size; 2) sifting materials into small pieces, fine particles or powders of different particle sizes after crushing; 3) increasing the surface area of materials to improve the effect of physical action or the speed of chemical reaction; 4) The different components in the material are separated after crushing so as to further separate them from each other.

B. Structural Principle

Most of the crushers produced by our factory are knife crushers, which crush materials (including shear, collision, friction, etc.) by the relative motion of the high-speed rotating cutter plate (block, piece) and the fixed gear ring. Knife crusher is divided into:

A. Knife-type multi-stage crusher: machine with horizontal spindle, parallel blade and single or multi-stage crushing function.

B. Inclined knife multi-stage crusher: machine with horizontal spindle, inclined knife and single or multi-stage crushing function.

C. Combined vertical cutter crusher: horizontal spindle, multi-layer vertical cutter combination crusher.

D. Vertical Side Knife Crusher: Spindle vertical, side knife turntable movement with grading function of crushing machine.

The crushed material is acted by its own gravity or external force. After entering the crusher from the inlet port, it distributes along the radial direction and obtains centrifugal power through the action of the centrifugal disk which rotates at high speed. After leaving the disk, it flies to the ring plate at high speed. In this way, the material and the ring plate, the material and the material collide and friction with each other continuously, and the material is crushed continuously until a certain fineness is reached. The screen plate is screened out of the crusher and becomes the required product.

C. Composition Of Main Components

No.	Major Components	Parameter
1	Base	-
2	Main Case	-

3	Driving Wheel	-
4	Trailing Wheel	-
5	V-Belt	-

D. Installation And Trial Run

1. Preparations before installation of crushing equipment

1-1 Necessary process design is carried out according to applicable occasion, outline dimension drawing and basic position drawing of the machine.

1-2 Sufficient space for overhaul and feeding should be reserved around and above the crushing equipment.

1-3 Motor foundation should be concreting with machine foundation.

1-4 Prepare necessary tools and hoisting facilities.

1-5 Organize relevant personnel to study installation specifications seriously.

2. Installation of Crushing Equipment

2-1 Machine rotor has been overbalanced and static corrected before leaving the factory. Users usually do not need to do balancing test when installing it. The radial symmetry deviation should be less than 0.5kg if the tool or rotor parts need to be replaced.

2-2 Foundation should be strong enough to install main engine and motor.

2-3 Installation of machine (lower body and rotor) should be adjusted horizontally. Horizontal error of spindle should be less than 0.35 m m/m. Axial center of main and driven pulleys should be in the same plane.

2-4 Adjust the V belt tightness moderately.

2-5 Check whether the parts of crusher are displaced or deformed; Lock all bolts; Check whether the seal is good.

2-6 Check the wiring and tightening of the electronic control cabinet; Check the delay relay and overload protector; Choose the appropriate specification of the fuse; Connect the circuit before the upper triangle belt, test the motor steering (this machine is strictly prohibited to reverse!)

2-7 Check whether the positioning and limit of the grate are correct and the discharging mechanism is flexible. When the grate shaft is initially installed and used, it should be in the lowest adjustment limit position.)

2-8 Manual disc rotor; check for friction and collision.

Trial run vehicle:

1. Close the magnetic starter handlebars to power on.
2. Press the button by two or three times.
3. Start and idle for 1-2 weeks.
4. Joint operation of transporter and crusher;
5. Check that there is no abnormality and send the start-up signal.
6. In operation, machinery and motor should be free from vibration, sound and temperature should be normal, bearing temperature should not exceed 75 C, motor temperature should not exceed the manufacturer's requirements;
7. The chain tightness of the transporter must be the same. Under full load, the chain tightness should not exceed the length of two chains, and there should be no chain jamming or jumping.
8. Wood or other materials shall not be substituted for fusible plugs or explosive

fragments in the joint of a transporter.

9. The safety device of the crusher's protective net should be kept intact and checked frequently during the working process. If there is any damage, the crusher should be stopped immediately for treatment.

10. Safety devices such as tail protection of the transporter must be in good condition.

E. Fault Handling

1. The crusher generally adopts the direct connection of motor to crush device, which is simple and easy to maintain. But if the two can not be well connected in the assembly process, it will cause the overall vibration of the crusher.

(1) The motor rotor is not concentric with the crusher rotor. The motor can be moved left or right or padded under the sole of the motor to adjust the concentricity of the two rotors.

(2) The rotor of crusher is not centrifugal. The reason is that the two supporting surfaces of the rotor shaft are not in the same plane. Copper sheet can be padded on the bottom of the bearing seat or adjustable wedge iron can be added at the bottom of the bearing to ensure that the two axle heads are concentric.

(3) The vibration of the crushing chamber is large. The reason is that the connection between the coupling and the rotor is not centrifugal or the quality of the flat blade in the rotor is not uniform. According to different types of coupling, corresponding methods can be adopted to adjust the connection between coupling and motor: when the blade quality is uneven, each set of blades must be re-selected so that the relative symmetrical blade, so that the relative error of the blade is less than 5g.

(4) The original balance is destroyed. After motor repair, dynamic balance test should be done to ensure the overall balance.

(5) The anchor bolt of crusher system is loose or the foundation is not firm. When installing or maintaining, the anchor bolt should be tightened evenly. Between the foundation and crusher, shock absorber should be installed to reduce vibration.

(6) There are hard debris in the room when the blade is broken or crushed. All these will cause the unbalanced rotation of the rotor and cause the vibration of the whole machine. Therefore, it is necessary to check regularly for severely worn blades. When replacing, it is necessary to replace symmetrically; when abnormal sound occurs in the operation of crusher, it is necessary to stop immediately to check, find out the cause and deal with it in time.

(7) The connection between crusher system and other equipment does not coincide. For example, improper connection of feeding and discharging pipes will cause vibration and noise. Therefore, hard connection is not suitable for these joints, and soft connection is preferred.

2. Bearing overheating. Bearing is an important part of crusher, its performance directly affects the normal operation of equipment and production efficiency. During the operation of the equipment, the users should pay special attention to the heating of the bearing and the noise of the bearing parts, and deal with the abnormalities as soon as possible.

(1) The unevenness of the two bearing seats or the discentricity of the motor rotor and the crusher rotor will cause the bearing to be impacted by the additional load, thus causing the bearing to overheat. In order to avoid early bearing damage, it is necessary to stop and troubleshoot immediately.

(2) Too much, too little or aging lubricant in bearings is also the main cause of Bearing Overheating and damage. Therefore, it is necessary to add lubricant on time and quantitatively according to the requirements of the use book. Generally, lubrication accounts for 70-80% of the bearing space. Too much or too little lubricant is not conducive to bearing lubrication and heat transfer. Bearing can hardly prolong its service life in such a case.

(3) Over-tightening of the bearing cover and shaft, over-tightening or over-loosening of the bearing and shaft will lead to overheating of the bearing. Once this kind of problem occurs, the friction noise and obvious swing will be emitted in the operation of the equipment. Bearings should be removed after shutdown. Repair the friction area and reassemble as required.

3. Blockage of crusher is one of the common faults in crusher use. There may be some problems in machine design, but it is more caused by improper operation.

(1) The feeding speed is too fast, and the load increases, resulting in blockage. In the process of feeding, operators should always pay attention to the large deflection angle of the ammeter pointer. If the current exceeds the rated current, it indicates that the motor is overloaded and overloaded for a long time, it will burn the motor. When this happens, the feeding gate should be reduced or closed immediately, or the feeding mode can be changed, and the feeding quantity can be controlled by increasing the feeder. There are two kinds of feeders: manual feeder and automatic feeder. Users should choose the appropriate feeder according to the actual situation. The crusher has high speed, large load and strong fluctuation of load. Therefore, when the crusher works, the current is generally controlled at about 85% of the rated current.

(2) Imperfect discharge pipeline or too fast blocking of feeding will block the air outlet of crusher; improper matching with conveying equipment will cause the air of discharge pipeline to weaken or block up after no air. After finding out the faults, the unmatched conveying equipment should be cleared through the feeding port, and the feeding quantity should be adjusted to make the equipment run normally.

(3) Blade fragmentation, aging, screen hole closure, broken, crushing material moisture content is too high; these will make crusher blocked. The broken and severely aged blades should be updated regularly to keep the crusher in good working condition and check the screen regularly. The moisture content of crushed materials should be less than 14%. This can not only improve the production efficiency, but also make the crusher not blocked and enhance the reliability of the crusher. Tools will become blunt after a period of time, blunt will affect the crushing effect and sorting effect, so it needs to be grinded every other period of time.

When polishing tools, operators should choose mechanical polishing. They must not polish at will. Otherwise, we would not be responsible for the consequences caused.

The tool will be narrowed after many times of grinding. When the gap between the rotary blade (hereinafter referred to as the moving blade) and the fixed blade (hereinafter referred to as the fixed blade) of the chassis can not meet the breaking requirements, the tool needs to be replaced.

The power supply should be turned off before the tool is polished or replaced. The clearance between the movable tool and the fixed tool should be adjusted after each

grinding or replacement of the tool.

The clearance between the movable cutter and the fixed cutter should be adjusted according to the material of different line diameters. The smaller the clearance between the movable cutter and the fixed cutter, the larger the reverse. Minimum clearance shall be based on the fact that no collision between moving and fixed knives will affect the operation.

4. In the course of use, many users have encountered strong vibration during the operation of crusher, which affects the operation. The reasons and solutions for the strong vibration of crusher are described below.

(1) Installation problems of blades. In the process of overhaul and assembly, when the blade changes face and turns around, only a few blades are replaced, which will cause strong vibration when the crusher is running. The solution is to replace all the blades in the crusher.

(2) The corresponding two groups of blades are not balanced in weight. When the weight difference exceeds 5 grams, the crusher will vibrate strongly. The solution is to adjust the blade position to ensure that the weight difference between the corresponding two groups of blades does not exceed 5 grams.

(3) The blade is not flexible enough. If the blade is too tight, it will cause strong vibration of the fuselage if it is not thrown open during operation. The solution is to turn the blade by hand after shutdown, so that the blade can rotate flexibly.

(4) The weight of other parts on the rotor is unbalanced. The solution is to check the parts separately and adjust the balance.

(5) Bending of spindle. When the spindle bends, it will cause the fuselage to tilt and cause strong vibration during operation. The solution is to correct the spindle or replace the new spindle.

(6) The bearing clearance exceeds the limit or is damaged. The solution is to replace the new bearings.

(7) Bottom foot fixing nut loose. This will cause the crusher to shake during operation, causing strong vibration. The solution is to tighten the nut.

F. Use and Maintenance

After the crusher installation and trial run is completed, before the operator takes over the production operation, please be sure to carefully read the product manual, understand the structural principle of the crusher, be familiar with the performance and operation rules of the crusher, operate in strict accordance with the operation rules, and carry out tour inspection according to the operation rules and matters needing attention.

Please strictly follow the operating procedures while keeping the following in mind:

(1) The crusher motor has been sealed with lead before leaving the factory, and the coupling has been corrected. Please do not loosen.

(2) Check the fineness of crushed products regularly;

(3) Regularly check the wear of the fragile parts of the crusher to see whether they belong to normal wear;

(4) Always pay attention to the vibration of crusher;

(5) When the blade of crusher is badly worn and needs to be replaced, attention should be paid to weighing to ensure that the weight difference between the two opposite blades on

the pin axle of the two opposite (1800 direction) blades is less than 1g and the total weight difference of the blades on the pin axle of the two opposite (1800 direction) blades is less than 2g.

(6) When the grinder screen wear is serious and needs to be replaced, attention should be paid to the smoothness of the new screen and the size of the screen, whether the installation is in place, and when in installation, it is best to make the screen face inward.

(7) If it is found that the crusher has high vibration and noise, it should stop immediately for inspection.

(8) The lubricating grease should be added to the spindle bearing after every day of operation, but only up to 60%. When replacing the fresh grease, add grease to the area around the roller and bearing ring, and add 1/3-1/2 grease to the bottom box. Never add too much grease.

(9) When it is found that the output of crusher drops abruptly, besides the factors of raw materials, it should focus on checking whether the pipeline is leaking, whether the pipeline is blocked, whether the fan is working properly, etc.

G. Installation and Maintenance

Maintenance of machines is a very important and regular work. It should be closely coordinated with operation and maintenance, and full-time personnel should be on duty for inspection.

A. Maintenance of Machines：

1. Bearing bears all the loads of the machine, so good lubrication has a great impact on the life of the bearing. It directly affects the service life and running rate of the machine. Therefore, the lubricating oil injected must be clean and the sealing must be good. The main oil injected part of the machine must be (1) rotating bearing (2) roller bearing (3) all gears (4) movable bearing and sliding plane.

2. The newly installed tyres are prone to loosening and must be checked frequently.

3. Pay attention to the normal operation of all parts of the machine.

4. Attention should be paid to inspecting the wear degree of wearable parts and replacing the worn parts at any time.

5. In order to avoid serious accidents, the movable bearing can't move on the chassis when the machine encounters materials that can't be broken.

6. If the bearing oil temperature rises, the cause of stop check should be eliminated immediately.

2. Conveyor

A. Usage

Belt conveyor is a general series of products. It is a continuous conveying equipment with cotton canvas, nylon, polyester canvas and steel rope core conveyor belt as traction components. It can be widely used in coal, metallurgy, mining, port, chemical industry, light industry, petroleum and machinery industries to convey various bulk materials and finished products.

Belt conveyor has the characteristics of large capacity, high crawling capacity, low

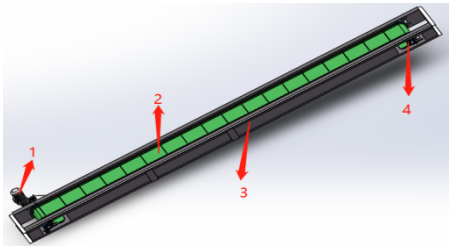
operating costs, easy to use and maintain, and it is easy to realize the automation control of transportation system.

B. Structural Principle

Belt conveyor is mainly composed of two endpoint drums and closed conveyor belts which are tightly sleeved on them. The drum that drives the conveyor belt to rotate is called driving drum (driving drum); the other drum that only changes the direction of the conveyor belt movement is called changing drum. The driving drum is driven by a motor through a reducer, and the conveyor belt is driven by the friction force between the driving drum and the conveyor belt. The driving drum is usually installed at the unloading end to increase the traction force, which is beneficial to dragging. The material is fed by the feeding end and falls on the rotating conveyor belt. It is driven by the friction of the conveyor belt and discharged at the discharging end.

C. Major Components

5. Drive motor
6. Drive belt
7. Rack
8. Carrier roller



1. Belt Width: 500 650 800 1000 1200 1400mm
2. Belt Strength: Cotton Belt 56N/mm.Layer ; Nylon, polyester canvas belt 100~300N/mm.Layer; cable wire belt st630~st2000N/mm.
3. Belt speed : 0.8 1.0 1.25 1.6 2.0 2.5 3.15 4.0 5.0 m/s
4. Maximum conveying capacity: see table below

Matching relationship between belt speed v., belt-width B and conveying capacity Iv

V m/s / Ivm³ /h / B mm	0.8	1.0	1.25	1.6	2.0	2.5	3.15	4	(4.5)	5.0	(5.6)	6.5
500	69	87	108	139	174	217						
600	127	159	198	254	318	397						
800	198	248	310	397	496	620	781					
1000	224	405	507	649	811	1014	1278	1622				
1200		593	742	951	1188	1486	1872	2377	2674	2971		

1400		825	1032	1321	1652	2065	2602	3304	3718	4130		
1600					2186	2733	3444	4373	4920	5466	6122	
1800					2795	3494	4403	5591	6291	6989	7829	9083
2000					3470	4338	5466	6941	7808	8676	9717	11277
2200							6843	8690	9776	10863	12166	14120
2400							8289	10526	11842	13158	14737	17104

Note: 1. The value of Iv of conveying capacity is calculated when the angle of move is 20° and the trough angle of idler is 35°.

2. The belt speed (4.5) (5.6) m/s in the table is a non-standard value, which is generally not recommended.

E. Installation And Commissioning

1. Start-up and shutdown

Conveyors should generally be started under no-load conditions. When several belt conveyors are installed sequentially, the starting device that can be blocked should be adopted to start and stop in a certain order through the central control room. In addition, in order to prevent accidents, each conveyor should also set a local start or stop button, which can stop any one alone. In order to prevent the conveyor belt from being torn longitudinally for some reason, a stop button should be installed along the full length of the conveyor at a certain distance when the length of the conveyor exceeds 30 m (e.g. 25-30 m).

1. Installation of Belt Conveyor

Installation sequence of belt conveyor is generally as follows: installation of frame (head-tail frame) - Installation of upper idler - Installation of two end drums - laying of conveyor belt on upper roller - Installation of lower idler - Installation of main frame support frame and universal wheel, sliding wheel - Installation of hole bin - Installation of tensioning device - driving deceleration motor - tensioning conveyor belt and adjusting the angle - adjusting the height of support frame.

Belt conveyor installation is generally carried out in the following stages.

2.1 Installation of the belt conveyor frame: the frame is installed from the beginning of the frame, and then successively install the middle frame of each section, and finally install the tail frame. Before installing the rack, first of all, pull up the center line of the conveyor. Because keeping the center line of the conveyor in a straight line is an important condition for the normal operation of the conveyor belt, it is necessary to align the center line when installing each rack, and at the same time leveling the rack. The allowable error of the rack to the center line is (+0.1mm) per meter. However, the error of the whole length of the conveyor to the center of the frame shall not exceed 35 mm. When all single sections are installed and located, they can be connected together.

2.2 When installing the driving device, attention must be paid to making the transmission

shaft of the belt conveyor perpendicular to the center line of the belt conveyor, so that the center of the width of the driving drum coincides with the center line of the conveyor, and the axis of the reducer is parallel to the transmission axis. At the same time, all shafts and drums should be leveled. Horizontal error of the shaft is allowed in the range of 0.5-1.5mm according to the width of the conveyor. While installing the driving device, the tensioning device such as tail wheel can be installed. The axis of the drum of the tensioning device should be perpendicular to the center line of the belt conveyor.

2.3 Installation of idlers: After the installation of frame, transmission device and tension device, the upper and lower idlers can be installed, so that the conveyor belt has a slow bending arc. The distance between the idlers in the bending section is 1/2 to 1/3 of the distance between the normal idlers. After the roller is installed, it should turn flexibly and lightly.

2.4 The final alignment of belt conveyor is to ensure that the conveyor belt always runs on the center line of the idler and drum. When installing idler, frame and drum, the following requirements must be met:

1) All idlers must be arranged in rows, parallel to each other and keep horizontal.

2) All drums are arranged in rows and parallel to each other.

3) Supporting structure frame must be straight line and keep horizontal. Therefore, after the installation of driving drum and idler, the center line and level of the conveyor should be finally corrected.

2.5 Then fix the frame on the foundation or floor. After the belt conveyor is fixed, feeding and unloading devices can be installed.

2.6 When installing conveyor belt to install conveyor belt, the conveyor belt strip is first laid on the idler of the no-load section, and then on the idler of the heavy-load section after encircling the driving drum. A hand winch of 0.5-1.5t can be used for hanging strips. When the tension strip is connected, the drum of the tension device should be moved to the limit position, and the trolley and spiral tension device should be pulled to the direction of the transmission device, while the vertical tightening device should make the drum move to the top. Before tightening the conveyor belt, decelerator and motor should be installed, and brake device should be installed in inclined conveyor.

2.7 After the belt conveyor is installed, the idle test is needed. In the no-load test, attention should be paid to the phenomenon of deviation in the operation of conveyor belt, the operating temperature of driving part, the movement of idler, the tightness of contact between cleaning device and guide plate and the surface of conveyor belt, and necessary adjustments should be made so that all parts are normal before running the test machine with load. If the screw tensioner is used, the tightness of the machine must be adjusted again when it is running under load.

The most common faults in the operation of belt conveyor are the deviation of belt. Most of them are caused by the non-straight installation center line, the non-perpendicularity between the roller axis and the conveyor center line, the non-perpendicularity between the roller axis and the belt center line, and the non-straight belt joint. In order to ensure the installation quality, the following points should be achieved: (1) The center line of the head frame and tailstock should coincide with the longitudinal center line of the conveyor, and the tolerance is 3 mm. (2) The transverse center line of the drum should coincide with

the longitudinal center line of the conveyor with a tolerance of 2 mm; the axial center line of the drum should be perpendicular to the longitudinal center line of the conveyor with a tolerance of 2/1000; and the horizontal tolerance of the busbar on the drum should be 0.5/1000, which can be adjusted by the cushion plate at the support. (3) The transverse center line of the idler should coincide with the longitudinal center line of the conveyor with a tolerance of 3 mm. (5) The edges of both sides of the tape joint should be kept in a straight line. The conveyor should run without load for 2 hours. The conveyor belt should not slip, deviate and run smoothly. There should be no friction and collision between the moving parts and the body.

F. Maintenance, Overhaul And Troubleshooting

1. **Maintenance**

In order to ensure the reliable operation of belt conveyor, the most important thing is to find and eliminate possible faults in time. For this reason, the operator must observe the working condition of the transporter at any time, and if any abnormality is found, it should be handled in time. It is important that mechanical workers regularly inspect and inspect any situations or components that need attention. For example, a supporting roller is not very important, but the high-speed conveyor belt conveying abrasive materials may quickly wear through its shell and produce a knife edge, which may seriously damage an expensive conveyor belt. Trained workers or experienced workers are able to detect and prevent impending accidents in a timely manner. The conveyor belt of belt conveyor accounts for a considerable proportion of the whole conveyor cost. In order to reduce the cost of replacing and repairing conveyor belts, it is necessary to pay attention to the training of operation and maintenance knowledge of conveyor belts for operators and maintenance personnel.

1.1 Belt conveyor should be supervised by fixed personnel in the process of working. The custodian must have general technical knowledge and be familiar with the performance of the conveyor.

1.2 Enterprises should formulate the rule that conveyors should comply with for "equipment maintenance, overhaul, safe operation procedures" in order to be observed by custodians. Caregivers must have a succession system.

1.3 The feeding to belt conveyor should be uniform, and the feeding hopper should not be overflowed by the filling of the material due to excessive feeding.

1.4 During the working process of the conveyor, the non-custodian shall not approach the machine and any person shall not touch any rotating parts. When a fault occurs, the operation must be stopped immediately to eliminate the fault. If there is any defect which is not easy to eliminate immediately but has no great impact on the work, it should be recorded and eliminated when it is to be overhauled.

1.5 When taking care of the conveyor, operators should often observe the operation of each component, check the connecting bolts everywhere, find looseness and tighten in time. But it is absolutely forbidden to clean and repair the running parts of the conveyor when it is running.

1.6 The screw tension device assembled at the tail should be adjusted appropriately to keep the conveyor belt working properly. Caretakers should always observe the working conditions of conveyor belts. Local damaged areas should be determined whether to

replace them immediately or when they need to be repaired, depending on the degree of damage (whether it has an impact on production). The dismantled conveyor belt should be used separately according to its wear degree.

1.7 When looking after the belt conveyor, it is necessary to observe its working state, sweep, lubricate and check and adjust the screw tensioner and other sporadic work.

1.8 Belt conveyor should generally start at no load and stop after material unloading.

1.9 In addition to maintaining normal lubrication and removing individual damaged parts during the use of the conveyor, the conveyor must be fully repaired every six months. The defects in use and records must be eliminated, the damaged parts and components must be dismantled, and the lubricants must be replaced.

1.10 Enterprises can make maintenance cycle according to the working conditions of conveyors.

2. Common Troubleshooting

No.	Fault	Cause	Solve the problem	Remark
1	Conveyor Belt Slipping	Most of the slippage of conveyor belt is caused by inadequate tension of conveyor belt or loose conveyor belt after serious wear and tear of conveyor belt; inadequate transport capacity can result in excessive load, which will cause the slippage of conveyor belt; mechanical transmission failure, insufficient lubrication of equipment, electrical protection and control failure will also cause	1. Increase enclosure angle: The enclosure angle of single drive drum should not be too large, otherwise it will aggravate the bending fatigue damage of conveyor belt. Generally, the maximum enclosure angle of single-drive drum does not exceed 210°~230°. The effective way to increase enclosure angle is to adopt double drum or multi-drum transmission. 2. Increasing friction coefficient: Increasing friction coefficient is the best way to avoid using smooth drum as far as possible. The drum is lined with high friction coefficient, stable performance and high wear resistance and specific pressure. 3. Increase the tension: The tension can be increased by stretching the tension device. Although this method can effectively prevent belt slippage, it relatively improves the conveyor belt "mild" requirements. Therefore, too much should not be added to avoid excessive tension on the belt and reduce the service life of the belt.	

		the slippage of conveyor belt.		
2	Material on the conveyor belt is scattered from the conveyor belt.	There are overload, eccentricity of feeding, deviation of conveyor belt, suspension of conveyor belt in concave section, etc.	1. Spraying material at reproducing point The spraying material at the transfer point is mainly in the hopper, the guide trough and so on. If the belt conveyor is overloaded, the rubber skirt plate of the guide groove of the belt conveyor is damaged, and the steel plate at the guide groove is designed longer than the rubber skirt plate at the distance of the belt, which causes the material to rush out of the guide groove. 2. When the concave belt is suspended, the belt will be suspended when the curvature radius of the concave belt is small. At this time, the situation of belt grooving will change. Because the belt has left the groove roller group, the general groove angle will become smaller and some materials will be scattered out. Therefore, large radius of curvature of concave segments should be adopted as far as possible in the design stage to avoid such situations. 3. Spreading material in deviation When the belt runs off, the material is scattered because the height of the two sides of the belt changes, one side is high, the other side is low, and the material is scattered from the lower side. The treatment method is to adjust the belt runs off.	
3	Conveyor belt deviation	The inappropriate position of inlet and outlet or blanking point can easily cause segregation of material flow and lead to the conveyor belt running to one side; the failure of upper and lower idlers will also cause the conveyor belt to run to one side when there are more defects in the upper idlers on one side, and the deviation or non-rotation of the central	1. Adjustment of Load Bearing Roller Set When the conveyor belt deviates in the middle of the whole conveyor, the position of the supporting roller group can be adjusted to adjust the deviation. When manufacturing, the two sides of the supporting roller group are machined with growing holes to adjust. When the specific adjustment method is adopted, which side of the conveyor belt deviates, which side of the idler group moves forward toward the belt, or the other side moves backward. If the conveyor belt runs upward, the lower part of the idler group should move to the left, and the upper part of the idler group should move to the right. 1. Installation of aligning roller group There are many types of self-aligning idler group, such as the middle rotating shaft type and the vertical stick type. Its principle is that the conveyor belt is automatically centripetal to adjust the deviation of the conveyor belt by means of blocking or rotating the idler in the horizontal direction or generating lateral thrust. It is reasonable to adopt this method when the total length of belt conveyor is shorter, because shorter belt conveyor is easier to deviate and not easy to adjust. The arrangement of the centering roller group is different according to the total length of the belt conveyor. Generally, when the belt conveyor is designed, the upward bias roller group is 15 meters per set and the downward bias roller group is 30 meters per set. 2. Adjusting the Position of Driving Drum and Directional Drum	

		position of the current idlers will also cause the conveyor belt to run off, if the upper idler seat frame is not correct, it will also cause the conveyor belt to run off. It will cause deviation of conveyor belt. The uneven quality of the conveyor belt itself will also cause deviation. First, when the belt is bonded, the inclined position of the belt joint is not standardized because of the sloppy work. After bonding, a long and short belt will be formed, which will cause deviation to one side when running. Second, the tape is recycled tape. The manufacturer uses the retrieved old tape retreaded products. The tension of the conveyor belts on both sides is different. After	The adjustment of driving drum and reversing drum is an important link of belt conveyor deviation adjustment. Because there are at least 2 to 5 drums in a belt conveyor, the installation position of all drums must be perpendicular to the center line of the length direction of the belt conveyor. If the deviation is too large, the deviation will inevitably occur. The adjusting method is similar to adjusting the idler group. For the head drum, if the conveyor belt deviates to the right side of the drum, the bearing seat on the right side should move forward and the belt deviates to the left side of the drum, the bearing seat on the left side should move forward, and the corresponding bearing seat on the left side can be moved back or the right bearing seat can be moved back. The adjustment method of the tail drum is just the opposite to that of the head drum. After repeated adjustments until the conveyor belt to a better position. It is best to install the drum accurately before adjusting the drive or changing direction. 4. Adjustment of tension Adjustment of belt tension is a very important part of belt conveyor deviation adjustment. In addition to being perpendicular to the length of conveyor belt, the two reversing drums on the upper part of the heavy hammer tension should also be perpendicular to the gravity vertical line, that is, to ensure the level of the axis center line. When using spiral tension or hydraulic cylinder tension, the two bearing seats of the tensioning drum should be moved at the same time to ensure that the axis of the drum is perpendicular to the longitudinal direction of the conveyor belt. The specific deviation adjustment method is similar to that at the drum. 5. The adjustment of the blanking position at the transfer point has a great influence on the deviation of the conveyor belt, especially when the two belt conveyors are projected vertically on the horizontal plane. Usually the relative height of the upper and lower belt conveyors at the transfer point should be considered. The lower the relative height, the greater the horizontal velocity component of the material, the greater the lateral impact on the lower conveyor belt, and the material is also difficult to center. The material on the transverse section of the conveyor belt is deflected, which eventually leads to the deviation of the conveyor belt. If the material is to the right, the conveyor belt will run to the left and vice versa. In the design process, the relative height of two belt conveyors should be increased as much as possible. The form and size of the upper and lower funnels and guide grooves of the mobile bulk conveyor with limited space should be carefully considered. Generally, the width of the guide trough should be about two-thirds of the width of the conveying band. In order to reduce or avoid deviation of conveyor belt, baffle can be added to block material and change the direction and position of	

		the belt runs, it is as crooked as a snake. When the new conveyor belt is used at the beginning, the belt deviation will also occur due to the breaking strength and elastic deformation of the conveyor belt, but the time will not be long; the inclination of the head and tail wheel will also cause the belt deviation.	material falling.	

G. Lubrication

- Regular lubrication of rotating parts of mechanical equipment is an important part of daily maintenance.
- The table lists the name, brand, lubricating oil replenishment period and replacement period of lubricating oil used in various lubricating parts for reference.

Lubrication Cycle of Components (Reference)

No.	Lubrication part	Lubricating Oil Brand	Oil repleni shing cycle	Oil change cycle	Fuel quantity
1	Roller Bearing	ZL-2 lithium base grease	semim onthly		Extrude used oil when refueling
2	Tightened trolley bearing	ZL-2 lithium base grease	quarter ly		
3	Speed reducer	N220 industrial gear oil N320 industrial gear oil		Semi-a nnual	to specification
4	Motor bearings	ZL-2 lithium base grease		Yearly	

G. Vulnerable parts

1.Belt

2.Bearing

3. Vibrating Screen

A. Usage

Based on the principle of vibration excitation by vibration motor, the material is thrown up on the screen surface, and the screen mesh is properly matched by linear motion to achieve the purpose of screening.

B. Structural Principle

When two vibrating motors rotate synchronously and reversely, the exciting force produced by the eccentric block cancels each other in the direction parallel to the axis of the motor, and superimposes a combined force in the direction perpendicular to the axis of the motor, so the trajectory of the screen machine is a straight line. The two motor shafts have an inclination angle relative to the screen surface. Under the combined action of the exciting force and the gravity of the material, the material is thrown up and jumped forward in a straight line motion on the screen surface, so as to achieve the purpose of screening and grading the material. It can be used to realize automatic operation in pipeline. The utility model has the characteristics of low energy consumption, high efficiency, simple structure, easy maintenance and fully enclosed structure without dust spillover. The highest screening number is 325 meshes, which can screen out 7 kinds of materials with different sizes.

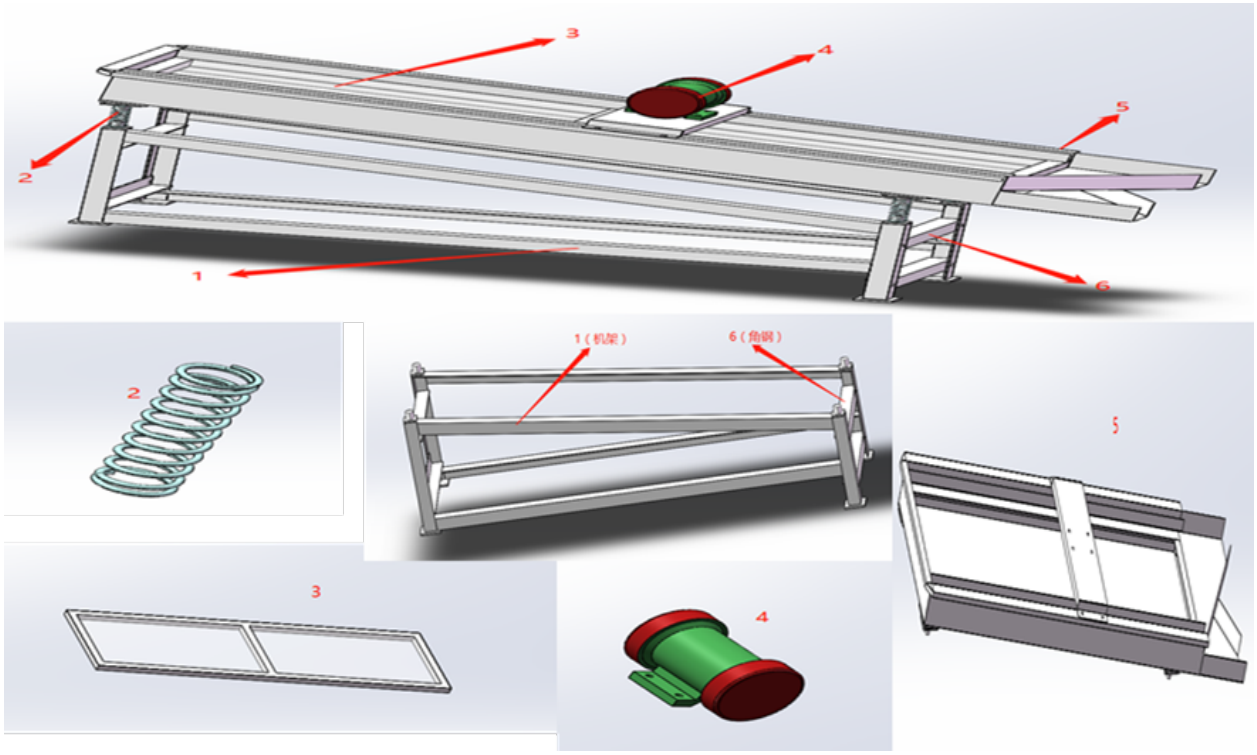
C. Composition Of Main Components

① Vibrating screen mesh

② Vibrating screen rack

③ Vibrating screen motor

④ Vibrating screen spring



E. Installation and Trial Run

1. The motor should be fastened on the installation surface, which must be smooth and flat.
2. The motor can be installed horizontally.
3. Four-core rubber cable YZ-500V is used for motor lead. No sharp break is allowed when connecting power supply, and it is fixed reliably with vibration body.
4. The motor should be grounded reliably. There are grounding devices in the motor. There are signs at the lead end. The sole can also be grounded with solid bolts.
5. Adjustment of exciting force.

F. Fault Handling

(1) Maintenance and overhaul

① Electrical protection devices shall be installed on this machine.

② At the beginning of operation, check the anchor bolts at least once a day to prevent loosening.

③ When the rotation direction of the motor does not meet the requirements, adjust the phase sequence of the power supply.

④ The motor should ensure good lubrication. Lithium-based grease (ZL-3) should be added once every two weeks. When refueling, a proper amount of lithium-based grease should be added through the oil cup. When sealed bearings are used, the motor is not equipped with oil cups

④ After 1500 hours running, the bearing should be inspected and replaced immediately if there is serious damage.
⑥ When the machine is used again after a long time of shutdown, the insulation resistance should be measured. It should be used for measuring 500 volt megohm meters, which should be greater than 0.5 megohm

⑵ Fault Handling
① Failure to start or small amplitude
A. Motor damage: replacement
B. Damage of electrical components in control circuits: replacement of electrical components
C. Voltage deficiency: change power supply
D. Screen material piled up too much: clean up screen material
E. Vibrator Failure: Maintenance of Vibrator
F. Thickening and caking of grease in the vibrator to clean the vibrator and update the abnormal movement of material flow with suitable grease
G. Sieve box horizontal not corrected: adjustment of bracket height
H. Supporting spring too rigid or damaged: adjusting spring
I. Screen surface breakage: adjustment
J. Feeding extremely unbalanced: uniform operation, stable feeding

② Poor screening quality
A. Screen Hole Blockage: Cleaning Screen Load and Cleaning Screen Surface
B. Increase in moisture content of screening materials: change the inclination of the sieve box
C. Non-uniform feeding of sifters: adjusting the feeding of sifters
D. Thicker material layer on screen surface: reducing feeding of screen machine
E. Lack of tension of sieve mesh-too loose transmission belt: tension of sieve mesh, tension of transmission belt in normal operation, slowing down the rotation of sieve machine, heating of bearing
F. Bearings lack lubricant: inject lubricant into bearings
G. Bearing Blocking Cleaning Bearing: Replacement of Sealing Ring, Inspection of Labyrinth Sealing Device
H. Excessive or inappropriate oil injection into bearings: check lubricants for bearings
I. Bearing damage or poor installation, eccentric block falling off on the wheel, eccentric block size is different, labyrinth seal is replaced by plug bearing, installation of eccentric block, adjustment of the wheel.

③ Bearing damage: replacement of bearings
⑤ Lack of tension or fixing of screen surface: tension of screen
⑥ Loose bearing fixing bolt: tighten bolt
⑦ Damage of Spring: Replacement of Spring

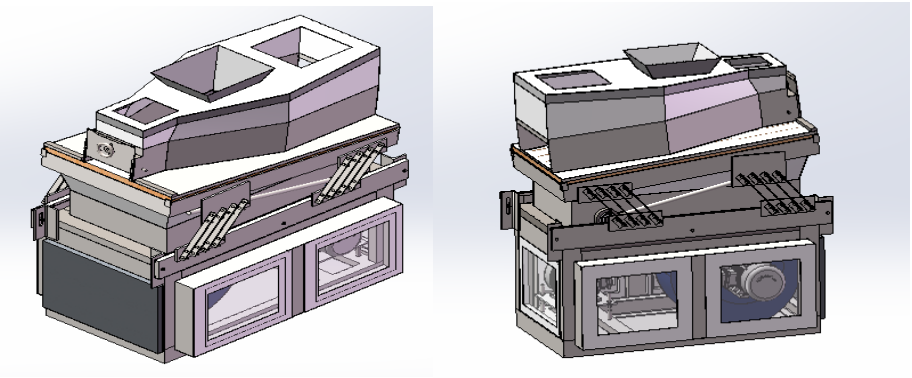
G. Lubrication

Ensure the lubrication of main shaft bearing, eccentric shaft bearing and fan bearing is normal.

H. Vulnerable parts

① Eccentric Shaft Bearing
② Body side shrapnel
③ Screen mesh

4. Gravity Separator



A. Usage

The specific gravity separator is mainly used for material sorting. It is mainly composed of base, angle adjusting mechanism, vibration screen body, dust collecting cover, vibration motor, fan and material sorting mechanism. According to the weight of materials, different materials are usually selected from 120 to 200 meshes. Customers choose the most reasonable gravity separator equipment according to their own processing needs.

B. Structural Principle

Granular materials are continuously fed into the vibrating screen for separation. Due to the different density of granular materials, the purity of materials can be adjusted by adjusting the different frequencies of the vibrating motor. At the same time, by adjusting the wind speed of the fan, the material particles can be in suspension state, which is convenient for sorting. Moreover, the discharging speed of materials can be adjusted by adjusting the inclination angle of the discharging inlet through the screw.

C. Composition Of Main Components

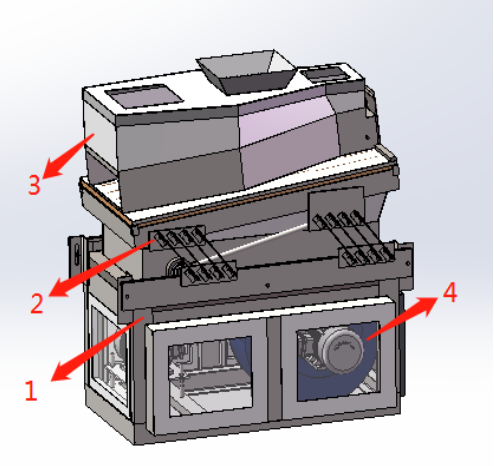
① Base of specific gravity separator

②Vibrating Screen Body of Specific Gravity Separator

③Dust collecting cover of specific gravity separator

④ Vibration motor of specific gravity separator

⑤Gravity separator



D. Main Performance Parameters

No	Equipment	Capacity kg/h	Power /kw	Quantity	Remarks
1	Rack	300-500	-	1	
2	vibrating screen body		2.2	1	
3	Dust cage			1	
4	Draught fan		3	1	

E. Installation And Commissioning

1. Adjustment Of Speed And Frequency Of Downdraft Fan:

The size of downdraft is limited by the amount of air pumped before and after dedusting. When the amount of air pumped by downdraft is larger than that of before and after dedusting, the specific gravity sorting opportunity sprays material to the outside of the machine. If the air volume is too small, the sorting effect will become worse, and even the copper wire and wire skin can not be separated in serious cases. Therefore, the frequency of downdraft fan speed should be adjusted at 0.5Hz for each time, and the interval of adjustment is 1-3 minutes. When adjusting, attention should be paid to the sorting effect, in order to adjust to the minimum amount of line skin and the situation of non-directional external spraying of material. The size of downdraft should adjust different parameters for raw materials of different line diameters.

2. Adjustment of Speed and Frequency of Vibration Sorting Motor:

The motor speed frequency of vibration sorting (hereinafter referred to as seismic frequency) determines the speed of discharging, and affects the sorting effect. The frequency modulation is fast, the quantity of discharging increases, and the sorting effect becomes worse. When the speed is too fast, a large number of wire sheets will flow out of the copper outlet. The slower the vibration frequency is, the smaller the discharging amount is, the better the sorting effect is; too slowly, it will become no discharging phenomenon.

Therefore, the frequency should be adjusted at 0.5Hz for each time, and the interval of adjustment is 1-3 minutes. When adjusting, attention should be paid to the sorting effect and discharge volume, so as to achieve the best coordination effect. Operators should adjust different parameters for different sizes of vibration frequencies.

3. Adjustment of pre-dedusting and exhaust air volume:

The amount of copper in the impurities in the dust collector is determined by the amount of the former exhaust air. If the former exhaust air is too large, the copper content in the impurities in the dust collector will increase, and if the former exhaust air is too small, the separation effect will be affected.

The adjustment interval is 1 - 3 minutes, and the copper content and sorting effect of impurities in the dust collector should be observed to achieve the best coordination effect. The size of the front exhaust should be adjusted to different parameters for the raw materials with different line diameters.

4. Adjustment of exhaust volume after dust removal:

The size of the post-exhaust air volume (hereinafter referred to as post-exhaust) mainly affects the attitude of the material after entering the separation bed. The greater the post-exhaust air, the better the stratification effect of copper and wire skin after entering the separation bed, but too large will affect the pre-exhaust air volume.

The adjustment interval is 1-3 minutes, and the influence on the front air extraction is observed during the adjustment, so as to achieve the best coordination effect of material stratification and the smallest influence on the front air extraction. Different parameters should be adjusted for different sizes of raw materials.

F. Troubleshooting/Maintenance and Repair of Machine

⑴ Maintenance and repair

① Check the residue of the outlet and outlet of the gravity separator to see if there is any residue to be cleaned up in time.

② Start the vibrating screen body, check whether the upper and lower outlets of the screen body are smooth and normal.

③ Start down the blower and check whether the wind speed of the blower is suitable.

④ Clean the bag of dust collector every shift to prevent cloth bag from blocking.

⑤ After checking the screen body, the upper outlet, the lower outlet and the fan motor, push the power switch of the main box and the auxiliary box.

⑵ Common faults

①Overload operation of motor with excessive feeding

② Foreign bodies in the machine cavity

③ Screen blockage

(3) Fault Handling

(1) Reducing feeding quantity

(2) Inspection and cleaning of machine cavity

(3) Check screen

G. Lubrication

Please ensure the lubrication of main shaft bearing, eccentric shaft bearing and fan bearing is normal.

H. Vulnerable Parts

①Eccentric shaft bearing ②Screen body side shrapnel ③Screen mesh

5. Dust Collector

A. Usage

Pulse dust collector is a new type of high efficiency pulse dust collector improved on the basis of bag dust collector. It combines the advantages of various pulse jet dust collectors with chamber back blowing, overcomes the shortcomings of insufficient cleaning intensity and uneven distribution of air in and out of the chamber, and enlarges the application scope. The utility model has the advantages of large gas handling capacity,

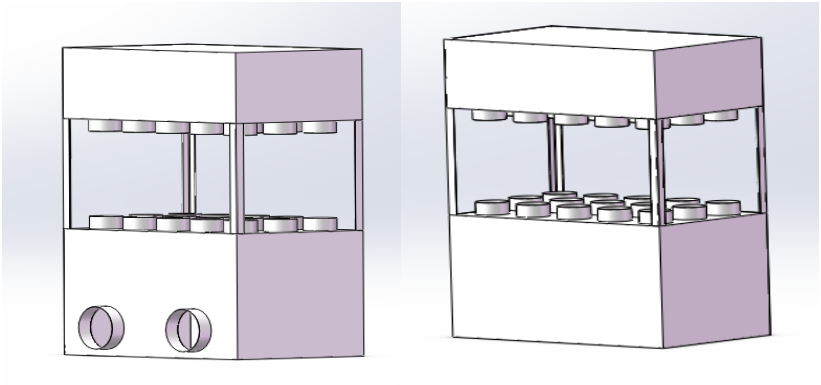
good purification effect, simple structure, reliable working performance and easy maintenance.

A. Structural Principle

Dusty gas enters the filter bag chamber through the intake port or through the open flange opening. Dusty gas filters through the filter bag into the clean air chamber, and then passes through the exhaust port of the clean air chamber and is discharged by the fan. Dust accumulates on the outer surface of the re-filter bag and increases continuously, which makes the resistance of the bag filter increase continuously. In order to make the resistance of the equipment not exceed 1200Pa, the bag filter can continue to work, it is necessary to remove the dust on the filter bag regularly. Cleaning ash is a pulse valve which is started by the programmable controller in a regular sequence, so that the compressed air (0.5-0.7 MPa) in the air chamber can be ejected from the nozzle hole (called primary air) and the surrounding air (called secondary air) which is several times larger than primary air can be induced by the Venturi tube into the filter bag and rapidly expands in an instant, accompanied by the reverse direction of the air flow to shake off the dust, so as to achieve the purpose of cleaning ash.

C. Composition of main components

1. Pulse Dust Removal Upper Box
2. Box Under Pulse Dust Removal
3. Pulse Dust Removal Bag
4. Pulse Dust Removal Fan And Frame



D. Main Performance And Parameters

Equipment type	
Number of filter bags	96
Specification of filter bags (mm)	Diameter 133
Filtration area （㎡）	0.835
Airflow （m³/h）	5712—10562
Efficiency of dust collection	99.9%
Power (kW)	7.5

E. Installation And Commissioning

1. Trial run

1-1: No-load commissioning

(1) Connect all power supply, compress air source and ash cleaning controller.

(2) Start the main fan, observe the resistance of no-load operation (U tube manometer can

be used) to measure the air flow at the inlet and outlet (when conditions permit) and calculate the air leakage rate. The air leakage rate should be less than 5%. At the same time, observe the fan motor, when the temperature rise does not exceed the limit temperature, it will run normally.

(3) If the air leakage is large, the air leakage point should be found out in time and handled.

(4) Observe whether the pulse system works normally.

If the above work is normal, it can enter the load commissioning.

1-2： Load commissioning

(1) Start up all the process equipment and introduce dust-containing flue gas. Observe the rising resistance of the dust collector and the discharge of the exhaust port. When the new filter bag is put into use, there will be a small amount of dust escaping from the discharge port, which is a normal phenomenon and will be eliminated automatically in a period of time.

(2) When the resistance of the dust collector rises to (1200-1500Pa), start the dust-cleaning controller and observe the pressure drop.

(3) When the whole process system is stable and normal, the period can be determined. The method is to start the ash cleaning controller and start the time. When the ash cleaning is finished, observe the operating pressure. When the pressure rises to (1200-1500Pa), stop the timing. This period becomes the period of ash cleaning. This method should be repeated three times, and take its average value as the formal period to adjust the ash cleaning controller.

(4) Observe the automatic control of the ash cleaning controller and all working normally, it can be put into normal operation.

1-3: Debugging of Injection System

Before commissioning, all manhole doors and overhaul doors should be closed and locked. The debugging of the injection system is mainly to check whether the air leakage of the injection system and the normal operation of the pulse valve, and whether the control of the pulse valve by the controller is correct. Turn on the power supply and adjust the pressure of the air source to meet the design requirements. See if there is air leakage at the connection of the pulse valve with the air bag and nozzle. If there is no air leakage correctly, the controller can be opened and the injection situation of the pulse valve can be observed. If the action is correct, the test operation can be carried out.

2. Start-up and shut-down steps of pulse precipitator

2-1 Start-up

2-.1.1 Equipment should be checked before start-up. Compressed air pressure should be maintained at 0.3-0.8MP. Condensate water in the air bag should be discharged. After confirming that the equipment is correct, the machine can be started. Put the cleaning mode in the timing cleaning mode, and the pulse interval is 30-40 s.

2-1.2 Start dust removal system discharge valve fan pulse valve in sequence.

2-2 Shut-down

2-2.1 The dedusting fan can not be stopped until 10 minutes after the production equipment is out of operation.

2-2.2 Put the dust-cleaning mode in a timing mode, so that the dust collector can clean the

dust once.

2-2.3 Stop pulse valve, fan and ash discharge valve in sequence.

E. Maintenance, Overhaul And Troubleshooting

1. Basic Maintenance Methods

(1) In the operation of the equipment, a special person shall be set up to manage the equipment and make a good record of its operation.

(2) Managers should be familiar with the principle, performance and operating conditions of dust collectors, and master the adjustment of operating parameters and maintenance methods of equipment.

(3) Supplementing lubricating oil to lubricating parts of equipment regularly.

(4) Check regularly whether the pulse ash cleaning system of dust collector is properly injected. If it is abnormal, check emphatically whether the pulse valve diaphragm and solenoid valve are out of order or damaged, and should be repaired or replaced in time.

(5) If the pulse valve fails, it should be removed in time. If there are foreign substances such as impurities and moisture in the valve, it should be cleaned up in time and the diaphragm damaged should be replaced in time.

(6) Regular inspection of the cylinder and flange surface, if air leakage is found, the sealing ring should be replaced in time.

(7) Seal strips on overhaul doors should be replaced in time if they are aged.

(8) Regular measurement of process parameters, such as gas temperature concentration, abnormal, should find the cause and timely treatment.

(9) Check the operation of the equipment regularly according to the fluctuation of the resistance of the equipment.

(10) The filter bag is a vulnerable part. The user should check the working condition of the filter bag regularly and replace it in time according to the damage degree of the filter bag.

(11) Check the gas system regularly and remove the abnormalities in time.

(12) According to the water collector in the compressed air system, the accumulated water is discharged regularly.

(13) When shutdown occurs, dust collectors and exhaust fans should be kept working for a period of time after the process system is stopped to remove moisture and dust from the equipment. At the same time, dusting and unloading operations must be repeated before the dust collector stops working.

2.Common troubleshooting

No.	Faults	Cause	Solve the problem	Remarks
1	High Operating Resistance	①Filter bag hardens;②Pulse valve not working or damaged;③Compressed air pressure is too low;④The lifting valve is not closed tightly when pulse valve works;⑤One or more lift	①Clean the filter bag for better ventilation;②Maintain or replace the pulse valve;③Check air circuit and air compressor;④Check Ash Cleaning Controller;	

		valves are in a closed position.		
2	Low Operating Resistance	① Gas short circuit;②Filter bag damage;	① Check the pipe and weld the damaged part;②Check and replace the filter bag;	
3	Pulse valve does not work	①Power failure or dust removal controller failure;②There are sundries in the pulse valve and the air leaks all the time;③Pulse valve coil burnt out;④Compressed air pressure is too low.	①Restore power supply or repair dust removal controller ;②Carefully clean the pulse valve;③Replace the pulse valve coil;④Check the pneumatic system and compressor.	
4	The effect of dust removal is affected by the increase of dust removal resistance.	During the use of filter bags, the phenomenon of filter cloth hardening may be caused by the high dust viscosity, which leads to the increase of dust collector resistance and affects the dust removal effect.	Cleaning and replacement of filter bags	

G. Vulnerable Parts

1. Filter bag

Wearing parts information

NO	NAME	quantity	replacement cycle
1	Crusher Blade	14*2	three months
2	crusher screen	1*2	three months
3	Gravity Separator Screen	1*2	three months

5.Instructions for Magnetic Levitation Magnetic Separator

1. Application

The material from the specific gravity separator is transported to a suitable location by the magnetic separation conveyor (the magnetic material is removed)

2.Structure

The conveyor has a compact structure and adopts the PVC material conveyor belt with corrosion resistance, wear resistance, oil resistance and temperature -10° -80° . , which can effectively magnetically select magnetic materials, and the lower section conveys non-magnetic materials.

3.The chain transmission mode, the transmission is stable. Not easy to slip.

4.Maintenance

A: Always keep the chain clean, oily, oily regularly, clean up sundries, and replace the worn sprockets in time.

B: The bearing parts should be maintained and refueled.

C: The conveyor belt is damaged and should be replaced in time.

6.Instruction Manual for Dust Collector

A. Usage

Pulse dust collector is a new type of high efficiency pulse dust collector improved on the basis of bag dust collector. It combines the advantages of various pulse jet dust collectors with chamber back blowing, overcomes the shortcomings of insufficient cleaning intensity and uneven distribution of air in and out of the chamber, and enlarges the application scope. The utility model has the advantages of large gas handling capacity, good purification effect, simple structure, reliable working performance and easy maintenance.

B.Structural Principle

Dusty gas enters the filter bag chamber through the intake port or through the open flange opening. Dusty gas filters through the filter bag into the clean air chamber, and then passes through the exhaust port of the clean air chamber and is discharged by the fan. Dust accumulates on the outer surface of the re-filter bag and increases continuously, which makes the resistance of the bag filter increase continuously. In order to make the resistance of the equipment not exceed 1200Pa, the bag filter can continue to work, it is necessary to remove the dust on the filter bag regularly. Cleaning ash is a pulse valve which is started by the programmable controller in a regular sequence, so that the compressed air (0.5-0.7 MPa) in the air chamber can be ejected from the nozzle hole (called primary air) and the surrounding air (called secondary air) which is several times larger than primary air can be induced by the Venturi tube into the filter bag and rapidly expands in an instant, accompanied by the reverse direction of the air flow to shake off the dust, so as to achieve the purpose of cleaning ash.

C. Composition of main components

1. Pulse Dust Removal Upper Box
2. Box Under Pulse Dust Removal
3. Pulse Dust Removal Bag

4. Pulse Dust Removal Fan And Frame

7.Instruction Manual for Electrostatic Separator

A.Equipment use

The main feature of high voltage electrostatic separator is that conductors, semiconductors and non-conductors in metal concentrates can be separated.

This equipment is not only suitable for the separation of electronic waste recycling, but also can be used for mineral processing (iron ore, vanadium ore, titanium ore, coal mine, power plant fly ash separation), solid waste treatment, metal recovery, plastic recovery and so on.

The equipment has reliable and safe grounding device to ensure safe operation. This product implements the relevant provisions of GB4793.1-1995 "Safety Requirements for Measurement, Control and Laboratory Electrical Equipment Part I: General Requirements".

B. Structural Features And Applications

Overall Structure And Working Principle

When high voltage direct current is applied to corona wire, corona electric field is generated between electrode and grounding electrode (roller), which makes the whole space near the grounding electrode charged. Material is sent to the roller by a straight-line feeder. When material passes through the corona field, it has the same opportunity to obtain electric charge. Because of the different conductivity of material itself, it receives different electric power in the field, and the transmitted charges are different, so it falls under the electric field. The trajectories are different, so different conductive materials are sorted out.

8.Instruction Manual for High Voltage Electrostatic Generator

A.The principle of electrostatic sorting

The material is evenly distributed on the smooth surface of the grounded rotating electrode through the feeding system, and the charged material is exchanged with the grounded sorting drum electrode, and the two materials with different electrostatic properties are different. Then the charged material enters the sorting area and falls under the combined force of electrostatic force, gravity, centrifugal force, etc. Complete the separation of two different electrical materials. Application in mineral processing, etc.

B.Install

1. After the machine is unsealed, check the appearance for damage before proceeding to the next step of installation;

2. It is also necessary to check whether the high-voltage oil tank in the machine is in good condition, and then add the 10kg transformer oil that comes with the machine into the oil tank and seal it with transparent tape;

3. Insert the high-voltage cable (thick cable with about Φ10mm attached) in place and make close contact with the copper parts in the high-voltage box inside the machine. Turn the cable locker to lock the cable. The other end of the cable should be reliably connected to the

high-voltage power grid, and pay attention to high-voltage insulation to prevent electric shock;

4. The grounding should be set separately, and it is specially used for electrostatic equipment. It is strictly forbidden to share with other equipment, and cannot be connected to the neutral or neutral line of the power supply. The grounding resistance should be less than 4 ohms, bury the grounding electrode and connect the grounding wire according to the requirements of the "Electrical Manual";

5. Turn the voltage adjustment switch to the lowest point (turn it counterclockwise to the end), and test the machine with power on.

C.use and maintenance

1. Do not use this equipment in places where the mains voltage fluctuates greatly;

2. The machine should be well ventilated when running for a long time, the inside of the machine should be kept clean at ordinary times, and the inside of the machine should be cleaned regularly, which is beneficial to prolong the service life of the machine;

3. Although this equipment has a good overload capacity, it should be eliminated in time for high-voltage output short-circuit, sparks and other phenomena;

4. Use the fuse according to the rated specification, and do not increase the current of the fuse at will;

5. When the equipment is out of use for a long time, clean the inside of the machine and store it in a cool and dry place.

D.Equipment operation and safety:

Safety of high-voltage generator: The high-voltage generator is adjusted from 220V AC voltage to 150V AC voltage input through an electrostatic device, and the output is about 150KV DC voltage after transformation. In order to prevent high voltage from hurting people, please note that the ground wire of the high-voltage generator must be firm It is connected to the earth, do not intentionally approach the high-voltage generator and touch the high-voltage grid separated by static electricity. When it is necessary to touch the high-voltage, please turn off the power first, and short-circuit the high-voltage generator, because even if the power is turned off, the high-voltage generator will High voltage still remains inside.

E.operate:

First, check whether each power distribution cabinet is faulty, and check whether the emergency stop button of the electrostatic cabinet is normal, in case it is used in an emergency. Check again that all knobs are at zero. When preparing for work, first turn on the high-voltage automatic button, the high-voltage indicator light is on, and then turn the voltage regulator on the side of the power distribution cabinet to adjust the voltage to 60-70KV, not exceeding 80KV,

F.common troubleshooting

1. When the metal flies to the copper outlet, it is powerless. The reasons are as follows:

a. The output high voltage of the electrostatic generator is too low;

b. The high-voltage cables are poorly connected, so that the high-voltage is not reliably transmitted to the network;

C. Poor grounding of equipment and electrostatic generators;

d. The material is damp;

e. Material quality problems, poor charging capacity.

2. There is frequent ignition in the chassis, and the material sorting is not clean. There are several possible reasons for this:

a. The output high voltage of the electrostatic generator is too high;

b. The distance between the roller and the net is too close;