
Contents

Brief Introduction And Application.....

The Specification And Performance Of PCL Vertical Impact Crusher.....

The Operating Principle & Characteristics Of The Whole System.....

The Installation, Performance & Debugging Of The Whole System.....

The Operating Rules Of The Whole System.....

The Repairs & Safety Technologies Of The Whole System.....

Common Trouble & Trouble Shooting.....

Brief Introduction And Application

PCL vertical impact crusher is an international advanced, high-efficiency and low-consumption machine researched by our company for many years, which is derived from the congeneric products of American BAMACO company, whose performance is very excellent among all kinds of mineral crusher.

This product is applied widely for the powder process of mineral product including metal and non-metal ore, fireproof material, bauxite, diamond dust, glass raw materials, architectural materials, artificial sand and all kinds of metal ore materials, especially which has more advantages than any other machines in processing the more and most hard materials.

The Specification And Performance Of PCL Vertical Impact Crusher

| Model | Rotation speed of the impeller (r/m) | Maximum particle size of the materials to be fed (mm) | Power (kw) | Output (t/h) | Outer dimension:L × W × H (mm) |
|----------|--------------------------------------|-------------------------------------------------------|------------|--------------|--------------------------------|
| PCL-600 | 2000-2600 | 26 | 45-60 | 6-15 | 3000 × 1500 × 2050 |
| PCL-900 | 1300-1700 | 5-30 | 90-150 | 10-35 | 3600 × 2140 × 2620 |
| PCL-900B | 1100-1450 | 40 | 110-180 | 30-45 | 3600 × 2140 × 2620 |
| PCL-1250 | 950-1200 | 40 | 220-360 | 30-80 | 4520 × 2640 × 3100 |

Notes: Output is related to the sort of material, feed size and quantity, if technology data is changed, customers will not be informed.

The Operating Principle & Characteristics Of The Whole System

The Whole PCL vertical impact crusher including feed hopper, classifier, whirl pool cavity, impeller, main bearing assembly base, transmission device and motor etc. Operating principle is as follows: the materials enter the crusher through feeder hopper, which is divided into two parts, one part through the middle of classifier entering into the rotating impeller at high speed, then accelerated, whose speed can reach hundreds of acceleration, then is shot through the tunnels around the impeller by the speed of 60-75 meter/second. First the materials will impact with some materials fallen around classifier, then impact on the whirlpool cavity's scaleboard together, then will be rebounded and impact on the top of the whirlpool cavity, then changes its direction and goes down, forms continual material layers with the materials shot from the impeller. Therefore some materials will be impacted, crusher, milled twice or more times in the whirlpool cavity, then crushed materials will be excluded through the bottom discharging hole. This can form a closed circulation through the circular classifier system; in general, materials can be crushed into 20 mesh through thrice circulation. Airflow self-circulation in the whirlpool cavity can eliminate the dust pollution well.

Characteristics of performance:

- A, simple structure, low cost
- B, high efficiency and low consumption
- C, primary and second crushing capacity
- D, most hard materials can be crushed
- E, cubic shaped final product
- F, little noise and dust pollution
- G, Convenient performance, maintenance, installation

Characteristics of structure

Feed hopper

The structure of the feed hopper is a headstand prism platform, which is assembled

with wear rings; the materials enter the crusher through the feed equipment.

Classifier

The classifier is installed on top of the whirlpool cavity. The function of the classifier is that the materials through the middle feed tube are fired by impeller at high speed, which spends energy, improves productivity and impact efficiency gradually.

Whirlpool cavity

The structure of the whirlpool cavity is an annular space composed by upper cylinder and lower cylinder. impeller can rotate at high speed in the whirlpool cavity; materials can be left in the whirlpool cavity, and then forms the materials layer. The impact of the material takes place between the materials only, and makes the self-layer function, decide the crushed process and whirlpool crushing cavity. Observation door is to watch the information of the impeller rotation and the wear of whirlpool cavity; the observation door must be closed in the process of performance of machine. Classifier is fixed on the top of the cylinder of whirlpool cavity. The airflow through the classifier in the whirlpool crushing cavity, which formed by the impeller forms the self-circulation system.

Impeller

The structure of the impeller is a hollow cylinder composed of special materials. The impellers installed on top of the main bearing assembly, connected by the cone cover and bond, rotates at high speed, the impeller is the part of the PCL vertical impact breaker. The materials enter the middle of the impeller through the middle tube on the top of the impeller, then distributed evenly to every shooting tunnel by the cone parts in the middle of the impeller, the throwing materials parts is installed on the firing tunnel can be replaced. The materials will be fired at the speed of 60-75 meter/second by the impeller. impacts with the fallen materials firstly, and then impacts the whirlpool layer and materials again. The upper and the lower tunnels installed between the cone cover and throwing materials parts can protect the impeller from been abraded.

The main bearing assembly

The main bearing assembly is installed on the base, is to transfer the momentum from the electromotor to support the rotation of the impeller. The main bearing assembly is composed of the bearing base, main bearing and bearing etc.

BASE

The whirlpool cavity, main bearing, electromotor and convey equipment are all installed on the base, double electric motors are installed on the side of base horizontally, the base is placed on the shelf.

Transmission equipment

The double electric motors are placed on the side of main bearing assembly; the belts of the double electric motors are connected with the main bearings, which make the balance of both side of main bearing, produce on the addition

Lubrication system

The lubrication adopts automobile-used lubricating grease, the lubricating position is the upside bearing and downside bearing, in order to lubricate conveniently ,generally add the lubricating oil by the oil tube outside the machine oil the puts regularly with dry oil pump..

The Installation, Performance & Debugging Of The Whole System

PCL vertical impact crusher is installed inside or installed on the cement foundation and steel shelf; the base should endure about four times of the whole machine's weight.

The machine is installed inside or outside of workshop according to the difference of the working place .In the installation, the machine should be adjusted levelly in order to make the main bearing plumb the horizon.

The lifting equipment should be setup on the crusher, the weight of the lifting equipment takes into account the max weight of the crusher, the lifting space should be left on the top of the crusher, and some space should be left besides the crusher in order to check the machine. The lifting weight is following:

| | | | | |
|------------------------------|---------|---------|----------|----------|
| Model of the PCL series | PCL-600 | PCL-900 | PCL-900B | PCL-1250 |
| At least suspend weigh (ton) | 3 | 6 | 6 | 10 |

The debugging of the machine

The breaker had been operated under no-loading condition eight hours before it is carried away from the factory ,all parts is in good performance, however the machine is still checked wholly after the breaker is installed in the site.

Checking the lubricating oil tube, whether it is, connected firmly, the customers are required to automobile-used lubricating grease and 3# pediment gerease before test operation should lubricate the machine once.

Checking there are all parts connection .They should be fixed firmly, checking the impeller whether, there is foreign matter.

Checking whether the electro motors wiring is right and the voltage is normal.

Before installing the belt ,the electro motor should run firstly ,the rotation direction should accord with the breaker's sign, if contrary to the sign, the electro motor's wiring should be adjusted to the sign's direction ,reverse direction must be forbidden.

Double electro motor's drive, main bearing assembly and both sides electro motor should be connected with the main bearing assembly by the triangle belt on the same quantity, should be adjusted to be level. Set up the machine after confirming there are no problems.

Performance of machine

A: the time of no-loading operation should be four hours

B: loading trial operation

The feed size should be according to the requirements of every kinds of machine strictly, materials over the requirements must be forbidden .The materials is fed evenly and humidity is not below the 10%-15%(according to the size of materials), the feed quantity stops until the PCL vertical impact breaker is full loaded; the time of the trial operation should be 8-24hours.

The Operating Rules Of The Whole System

Checking the whirlpool cavity's observation door whether it is closed tightly, in

case the materials is fired from the observation door, to cause danger.

Checking the rotation direction of the impeller .The impeller should rotate in the counter clockwise, or the electro motor's wiring should be adjusted.

The start sequence of the breaker and convey equipment.

Discharge →breaker→feed

Breaker muse be started up under no loading condition, the materials should be fed after the breaker is in good order.

The sequence of shut down and start up is opposite.

The feed size should be according to the requirement of every kind of machine strictly, materials over the requirements must be forbidden otherwise imbalance is produced and the impeller is wired heavily, even the tunnel of impeller and middle of feed tube will be jammed, as a result the machine can not work well.

Feeding should be continuous and even, The huge shake and abnormal noise shouldn't exist in the process of the operation, or the machine should be shut down and checked.

The style of lubrication is dry-oil lubrication; the mobile automobile-used lubricating grease and 3 # spodumene grease should lubricate the machine, proper grease should be added to the breaker per 100 hours.

The Repairs & Safety Technologies Of The Whole System

Turn off the machine regularly and open then observation door to watch the information of the machine 's wear, including the middle tube's ,cone cover's ,impeller's, lower tunnel layer's, throwing materials part's, if there is heavy wear ,they should be replaced or repaired in time, when changing the cast hammer head ,pay attention then weigh is the same as the replaced one .The wear impeller should be replaced or repaired by factory in time ,Note :without the factory's agreement ,customers are not allowed to make the Impeller themselves, opening the observation door is forbidden in the process of machine 's operation, in case the danger happened, or the customers should take the responsibility.

The top bearing of the main bearing assembly is the movable end, the downside

bearing is the fixed end, after installation the belt should rotate smoothly, the main bearing is added by proper lubrication grease per 100 hours, the main bearing should be cleaned per 2000 hours .According to the information of usage and maintenance, the bearing should be replaced per 5000 hours.

Because the machine is operation at high speed, customers should note the safety operation; related person should be far away from the equipment. if there is need to repair on the machine.

Common Trouble & Trouble Shooting

| Number | Common troubles | The cause of troubles | Trouble shooting |
|--------|-----------------------------------------------|----------------------------------------------------|-------------------------------------|
| 1 | The body of the machine shakes heavily | The quick-wear parts of the impeller wears heavily | Replace the quick-wear parts |
| | | Feed size is too big | Reduce the feed size |
| | | The obstacle is in the tunnel of impeller | Take out the obstacle |
| 2 | The size of produce is too big | The tri-belt is too loose | Tighten the tri-belt |
| 3 | The resistance of empty operation is too much | The obstacle is in the seals cover of the bearing | Clean the obstacle |
| 4 | The bearing produces hot | Lack of grease or powder in it | Add the grease or clean the bearing |
| | | Bearing is damaged | Replace the bearing |
| 5 | The noise of impact of metal | Layer and quick-wear part shed | Replace and tighten |