Contents

I. Attention ……13
II. Product characteristics……13
III. Product application……13
IV. Specifications and technical parameters……14
V. Structure description and assembly……15-18
VI. Installation, debugging and trial operation……19
VII. Operation and maintenance……20-22
VIII. Common trouble and trouble shooting……23-25

Remarks:

* The book is subject to the technical department of Shanghai Zenith Machinery Co., Ltd.
* Since the product performance is being improved, there will be no notice if any changes to the technical parameters.
* Please read the instruction carefully before using the machine.
* please reserve the book and other related documents.

I. Attention

Thanks for choosing and using “Zenith” product, which are excellent in quality and performance. In order to facilitate your use, please read the manual carefully, and operate according to the manual. In order to guarantee your service information is dealt with in time, please contact through our company hot-line, our company will offer the unified and standard service. After professional people’s installing and debugging, please fill in “products debug report”. If you feel dissatisfied with the service, please reflect to our company directly. Our company will deal with it in time and guarantee your satisfaction. From the beginning to the end, the satisfactory service of “Zenith” will follow you. Again, thank you for using the products of our company. Because of the improvement of our products, there are some items not complying with the operation instruction.

II. Product Characteristics

High reduction ratio;
Simple structure;
Reliable operation;
Easy maintenance

III. Product Application

PE series jaw crusher, whose reduction ratio is up to 4-6 and the finished products are even, can be widely used in crushing hard, medium-hard, soft ore, such as various

kinds of ore, slag, building stones, marble, etc with compression strength below 320Pa. This machine is suitable for mines, building materials, highway, water conservancy and chemical industry, etc.

IV. Specifications and Technical Parameter

Weight	Size (mm)								
	A	B	C	D	E	F	G	H	I
0.81	758	528	300	530	640	875	450	140	480
2.8	1315	938	554	890	812	1450	750	220	735
6.5	1732	1110	636	1105	962	1565	955	255	990
10.1	1916	1356	820	1270	1200	1890	1375	395	1190
15.5	1840	1420	960	1540	1515	2305	1590	400	1505
28	2472	1820	1060	2010	1660	2450	1850	530	1980
29	2472	1820	1060	2010	1660	2500	1900	530	1980
50	3182	1976	1200	2125	1800	3335	2155	830	2560
51	3182	1976	1200	2125	1800	3435	2255	830	2530
100	3732	1780	1620	2700	2285	4200	2940	970	3480
6.5	1992	1500	1010	930	900	1530	905	330	850
7.7	2192	1700	1220	930	1000	1900	1965	365	850
11	2320	1840	1320	1110	1220	1750	1170	430	930
6.8	1880	1470	770	1030	800	1580	855	305	850

Model	Feed opening (mm)	15-80Max feed size	Discharge adjusted scope	Capacity	speed of eccentri	Motor power
PE-150×250	150×250	125	10-40	1-5	300	5.5
PE-250×400	250×400	210	20-60	5-20	300	15
PE-400×600	400×600	340	40-100	16-60	275	30
PE-500×750	500×750	425	50-100	45-80	275	55
PE-600×900	600×900	500	65-160	50-120	250	55-75
PE-750×1060	750×1060	630	80-140	52-180	250	110
PE-800×1060	800×1060	640	100	136-228	250	110
PE-900×1200	900×1200	750	200	140-260	200	110
PE-1000×1200	1000×1200	850	95-165	315-342	200	110
PE-1200×1500	1200×1500	1020	195-265	400-800	180	160
PEX-250×1000	250×1000	210	150-300	16-52	330	30-37
PEX-250×1200	250×1200	210	25-60	20-60	330	37
PE-300×1200	300×1200	250	25-60	16-104	300	55
PE-350×750	350×750	300	20-90	30-52	300	30

V. Structure Description and Assembly

This machine uses motor as its power. Through the motor's wheels, the eccentric shaft is driven by the triangle belt and slot wheel to make the movable jaw plate move by a regulated track. Therefore, the materials in the crushing cavity composed of fixed jaw plate, movable jaw plate and side-lee board can be crushed and discharged through the discharging opening.

1. parts of the frame
   the frame of the jaw crusher is shocked heavily when at work, so it should be rigid and tensile enough. The frame is jointing (the small jaw crusher is steel cast). The fixed jaw plate fastened by the bolt is installed at the front of the frame. The upper and lower lee board are installed at the left and right side of the frame.
2. parts of movable jaw plate
   (1).structure characteristic

Movable jaw plate is made of high-quality casting steel structure. Its holes and slots are tested and machined exactly, which can make sure that they can work safe and credible.

The eccentric shaft is made of excellent foreign steel. It is processed and inspected many times, so it is of high intensity and rigidity.

The bearing adopts four sets of center-adjusted ball bearing, which is of excellent loading and automatic enter adjusting ability.

Both the fixed and movable jaw is made of manganese-steel. In order to extend its working time, it is designed symmetrically. So if one end is frayed, another end also can be used. Flywheel and groove wheel are made of good casting iron. Their weight and structure can ensure the crusher work in balance. The flywheel on the eccentric shaft can be exchanged and connected by the distensible cover.

(2). Installation of movable jar parts

a. The eccentric shaft and the bearing must be washed by coal oil, then install the protect oil plate at two ends of the eccentric shaft. Put the two bearing in to the oil of 80-100degree for 15 minutes. When the hole is bigger than the eccentric shaft by 0.15mm, withdraw the two bearings and put them on the ends of eccentric shaft. Press the bearing so that it would be close to the shoulder of the bearing until the bearing become cool. The gap should be lower than 0.05mm. After clearing, users are required to put lubricant at 50-70%.

b. put the cover and the paper gasket on one end of the movable jaw and fastens the bolt. At this time, set up the movable jaw and make sure the one with the cover down. Then, put the eccentric shaft assembly parts into the movable jaw and when arrange it, please make sure that the eccentric shaft and the movable jaw’s center lines are consistent. Put the bearing cover well and press light. Strike and press it gradually when the pressing amount is even. (Do not strike the bearing directly with hammer. A copper stick should be placed on the bearing first before striking.) The procedure is the same as pressing the second bearing after the first one is pressed. Then pour 50-70% lubricating grease in the bearing. Then put on another cover, paper gasket, etc on the other end and fasten the bolt. After finishing, make sure that the gap between the outer surface of the bearing and the cover is 0.2-0.4mm, which can be achieved by putting in proper paper gasket.

c. put each key into the keyway of eccentric shaft, and then packs them into the cover of inner loop of the maze. Pay attention to the direction. Fetch another two bearings and wash them with coal oil. Put the adapter sleeve into the hole of the bearing and install them on the eccentric shaft. Then, fasten them into the round bolt according to the structure chart. Withdraw the nut. Pay attention the whorl is on the eccentric shaft, with purpose that the eccentric shaft can make round nut fasten tightly when rotating. Fasten the round nut on the eccentric shaft first, make inner ring of the bearing close to the sealed ring. Repeat for several times to fasten the bearing well and withdraw the round nut on the bush. Make sure the gap between round nut and the inner loop of bearing is about 1mm. (when dismantling the bearing, loose the round nut on the eccentric shaft first and fasten

the round nut on the bush, then the bearing can be removed. Press the long0short teeth of gasket into the inner loop of round nut and fasten them, then pour 50-70% lubricant into bearing, then put them into the inner loop of the cover respectively.

d. installation of flywheel and grooved pulley

put flywheel, grooved pulley and intensity cover on the eccentric shaft and have flywheel and grooved pulley close to sealed ring. Then fasten the bolt of intensity cover after make sure that the mark of flywheel and grooved pulley be corresponding to the mark of eccentric. The installation of intensity cover should be according to this book, then, put the backstop of the bearing well. (note: the flywheel and the grooved pulley are cast iron. Hot is forbidden when installation.) Usually, the grooved pulley is installed at the left side of the eccentric shaft (see from the feed opening). The fly wheel and the grooved pulley can be exchanged according to the site's requirement.

3. toggle plate and adjust parts

(1) toggle plate is made of accurate casting iron. It is not only the component that spreads the strength, but also the insurance parts of the crusher. The toggle will break up immediately and the crusher will stop working when some unbreakable materials go into the crusher. Toggle and toggle mat adopt rolling contact way, which can reduce attrition during the normal operation, so the user only needs to put some lubricant on the contact surface.

(2) The adjust parts are used to adjust the discharging size and reducing the attrition among jaw plate, toggle and toggle mat.

Installation of the adjust parts:

Toggle mat is fixed on the adjusting base or movable jaw plate though angle steel and bolts. Adjust the toggle mat to the supporting frame in the middle of the adjusting base and mainframe. The rise tip bolt supports the adjusting base through the nut or by adjusting the mat. The adjusting base is connected with the machine frame directly or through wedge. The tipping bolt or the rise tip and the hydraulic pressure device can all be used for adjusting.

When adjusting the discharging opening, unscrew the pull rod nut of the strained parts, then unclamp the spring, the wedge bolt, the wedge, and screw the tipping bolt. The tipping bolt or the tip push the adjusting base to a certain degree, then, withdraw the adjusting mat to enlarge the discharging opening. If putting in the adjusting mat, the discharging opening will be reduced. When it reaches the requirement of the customers, unscrew the tipping bolt first, adjusting base and adjusting mat group go backwards to the back wall of the framework and press with it by the gravity of the movable jaw plate. Pay attention that the loosing degree of the tipping bolt should be adjusted to make sure that the adjusting base is close to the back wall but not touch the wall. Then, screw the wedge bolt. Fasten the wedge block and the adjusting base as well as the framework. Screw the pull rod bolt properly to frap the spring. Thus, the adjustment of the discharging opening is completed.

4. strained parts

the strained parts are to make sure every parts of the crusher are connected well.

And to balance the inertial force produced by the movable jaw plate and toggle.

Assembly process of the strained parts:

One end of the pull rod is connected with the ring at the lower end of the movable jaw plate. The other end supports the back wall of the framework through the gasket. The spring presses the bolts tightly through its two ends. When the crusher is at work, the spring needs some pre-force to prevent the toggle from falling. But the force should not be too big, just big enough to eliminate the striking noise between the toggle, movable jaw plate and adjusting parts, otherwise, the service life of the spring will be affected, even be broken.

5. rail parts

   the rail is fastened to the concrete base through the ground bolts.

   The motor is installed on the rail. The supporting base is inbuilt in the groove of the rail. Adjust the distance between the motor and mainframe according to the loosing degree of the triangle belt. When the distance is fixed, use the adjusting bolt on the supporting base to withstand the base of the motor to prevent it from moving.

6. lubricating parts

   The lubricating parts are used to help put the lubricant to the positions that need lubricating reliably. (there are 4 lubrication positions in the crusher that is the 4 bearing.)

7. protective device: the protective device is made, installed and marked by the customers in the site

VI. Installation, Debugging and Trial Operation

The machine can be offered after assembled by our factory. The customers should check the machine after receiving it so as to make sure whether some problems appear during the transportation.

1. because the machine vibrates heavily during operation, it must be installed on the concrete base. The weight of he base should be 8-10 times that of the machine. The depth of the groundwork should be deeper than the congeal depth of the earth. The size on the foundation diagram is the relative position of the mainframe and the ground bolts of the motor, as well as other related parameters which are not used as construction diagram. When installing the ground bolts, the holes must be prepared for the second grouting. The height and size of the material funnel is determined by the site.
2. in order to reduce vibration, when installing the equipment, it’s better to put a 10mm rubber belt between the crusher and the concrete base as a cushion material. When the concrete of the second grouting time is tight, screw the ground bolts. During this process, a gradienter should be used to measure the crusher. The warp of the level degree should be controlled below 2mm. the level degree of the frame is very important. It can make sure the position of the feed opening is not decline, so that unilateral feeding does not appear to avoid the machine being broken due to uneven loading.

3. when installing the motor, not only the distance with the mainframe should be inspected, customers also should make sure that the grinding roller is corresponding to each other, before the belt of motor and the grooved wheel of mainframe is balanced, so as to ensure that all the triangle belts work efficiently.
4. the size of the discharging open should be adjusted according to the product size and the disposal capacity. Before adjust the discharge open, unscrew the frapped spring. Then, adjust the tensibility of the spring to prevent the toggle from falling. (see details in the adjusting parts)
5. trial operation
   (1) No-loading trial operation
      a. lasting for 2 consecutive hours, and the temperature rise of the bearing should be lower than 30℃
      b. All the firmware is fastened well.
      c. The fly wheel and grooved pulley run well
      d. There are no abrasion, rubbing and abnormal noises in abrasive parts
      e. The adjusting range of discharge open should be based on the requirement.

   (2) loading trial operation

   This can only be operated when the no-loading trial operation is successful.

   a. there should not be periodical or striking noise in the crusher;
   b. the max feeding size should be according to the design.

   Lasting for 8 hours, and the temperature rise should not be over 30℃. The highest temperature should below 70℃

VII. Operation and Maintenance

1. preparation before start-up
   (1) check the lubrication of the bearing; the condition of the toggle, the movable law plate, as well as the contacting condition of the toggle mat in the adjusting base; check there are enough lubricant between the toggle and the toggle mat.
   (2) Make sure all the firmware is fastened well.
   (3) Make sure the central position of the flywheel and the grooved pulley is correct. The correct position can ensure the lightest vibration of the crusher.
   (4) Check whether the transmission belt is installed correct. If there is abrasion on the belt, change it on time. If there is dirt on the belt or grooved pulley, clean it with neat cloth in time.
   (5) Check whether the protection device is installed well. If there are any unsafe elements, solve it immediately.
   (6) Check whether the adjusting mat is installed correct and well.
2. the start-up
   （1） start the machine if the machine and the transmission parts are in

good condition;

（2） the machine can only be started in no-loading condition;

（3） if any abnormal phenomenon appears, stop the machine immediately. After the problems are solved can the machine be started?

3. the operation of the crusher
   (1) feed the machine when it operates stably.
   (2) Feed the machine evenly to avoid overfeeding or unilateral feeding. In normal circumstances, the temperature rise of the bearing should not over 30℃, the highest temperature should below 70℃
   (3) Stop feeding the machine before stop the machine. When the materials in the crushing cavity are all discharged, the motor can be switched off.
   (4) When the materials in the crushing cavity are blocked to affect the crusher, stop the motor immediately. When the materials are cleared, the machine can be restarted.
   (5) When the fixed jaw plate and the movable jaw plate are abraded to a certain degree, they can be exchanged.
   (6) After a certain time's use, the firmware should be refastened.
4. lubrication
   (1) to ensure the normal operation of the machine and prolong the machine's service time, the machine should be oiled regularly.
   (2) The quantity of the lubricant to be added should be 50-70% of the volume of the bearing. Change the oil every 3-6 months. When changing the lubricant, clean the bearing with gasoline or coal oil. During cleaning, the oil discharging hole under the bearing should be open.
   (3) The lubricant of the machine is decided by the local environment conditions. Normally, calcium based, natrium based and calcium-natrium based oil can be adopted. If the oil is too dry, use the composite of the watery oil and lubricant.
   (4) The space between toggle and toggle mat needs lubricating only when assembling and examination.
   (5) Common troubles and trouble shooting

Possible troubles	Cause	Trouble shootings
After the violent broken sound, the movable jaw stops swinging, the flywheel continues to gyre, the pull rod springs are loose	Uncrushed materials enter the crushing cavity or the thrust plate is destroyed.	Unscrew the pull rod bolt, remove the spring and hang the movable jaw plate, change a new thrust plate
The crushing plate vibrates and produces striking sound	the bolt that fixes the crushing plate is loose or broken	1. Fasten the screw. If the resilience of the spring is not enough, replace it. 2. change the bolt

The flywheel keeps turning and the crushing stops. The thrust plate withdraws from the supporting base.	The pull rod spring or pull rod is broken	1. fasten or replace the spring 2. replace the supporting base of thrust plate 3. replace the thrust plate to adjust the discharging open.
The supporting base of thrust plate produces striking sound or other abnormal noises	1. the spring is loose 2. the supporting base is loose or abraded 3. toggle head of the trust plate is abraded heavily 4. the discharging device is unbalanced that the force of the thrust is not even	1. fasten or replace the spring 2. replace the supporting base 3. replace the thrust plate and adjust he discharging open
The flywheel is loose	1. the keyboard connection is loose. The keyboard and keyboard groove is damaged 2. the locking device of the end of the shaft is loose	Fasten the keyboard, or replace it and fasten the locking device
The size of final product is too big	The bottom of the jaw plate is abraded too heavy	Adjust the adjusting device at the discharging open, reduce the discharging open. If this is impossible, exchange the two ends of the jaw plate or change a new jaw plate
The crushing cavity is blocked, the electricity is higher than the normal	1. Big stones enter the upper part of the crushing cavity, but not blocked 2. something is wrong with the belt conveyor under the crusher. The discharging open is blocked 3. sticky materials or other materials enter the machine and block	1. stop the machine, fasten the big stone with steel rope and remove it with a lifting device 2. stop feeding , solve the problems of belt but try not stop the machine 3. stop feeding, dredge the discharging open but try not stop the

	the discharging open 4. overfeed	machine 4. slow the feeding speed, reduce feeding quantity
The temperature of bearing is too high	1. the grease is not enough 2. the grease is too dirty 3. the bearing is destroyed	1. add proper quantity of oil 2. clean the bearing and change the grease 3. replace the bearing

VIII. Safety Precautions

Users can operate the machine only after safe know-how education.

1. no adjustment or overhauling is allowed in course of operation
2. no washing is allowed in the operation
3. customers are not allowed to spy the machine on the top while operation. Do not carry or move the materials in the feeding opening with hands.
4. The electric equipment should touch the earth. The electric wire should be insulated and should be inlaid in the steel.