SC series impact crusher
概述
Overview
Introduction and technical parameters of the machine

The impact crusher has the international advanced level of high energy and low energy impact. Its performance plays an irreplaceable role in various ore crushing equipment. It is the most effective, practical and reliable shaping and sand making equipment.

Use

Impact crusher is widely used in metal and non-metal ore, cement, refractory materials, abrasives, glass raw materials, building aggregates, artificial sand, river pebbles, rocks (limestone, granite, basalt, diabase, andesite, etc.), ore tailings, artificial sand making of stone chips, building aggregates, Production of road fabrics, cushioning materials, asphalt concrete and cement concrete aggregates, as well as fine and coarse grinding of various metallurgical slags. Especially for medium-hard, special hard and abrasive materials such as silicon carbide, silicon carbide, sintered aluminum-vanadium, magnesia, etc., it is superior to other types of crushers, and it can be used in combination with hydraulic protection to handle various metallurgy. Slag is suitable for construction sand and gravel for road construction.
## Technical Data Sheet

<table>
<thead>
<tr>
<th>Model</th>
<th>Feed particle size (mm)</th>
<th>Rotor speed (r/min)</th>
<th>Processing capacity (T/h)</th>
<th>Motor Power (KW)</th>
<th>Dimensions (mm)</th>
<th>weight (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC-800</td>
<td>≤55</td>
<td>1260-1490</td>
<td>200-445</td>
<td>2×200-4 pole</td>
<td>5530×2444×3395</td>
<td>14.6</td>
</tr>
</tbody>
</table>

### Working principle and performance characteristics

Figure 1: Schematic diagram of SC impact crusher SC
**Working Principle**

The working principle of the impact crusher is simply the principle of collision between stones. The stones in the natural falling process collide with the stones that are accelerated by the impeller to achieve the purpose of crushing, and the stones that are accelerated to form a vortex when colliding with the naturally falling stones, and the crushing process is repeated twice. Therefore, the wear of the machine counterattack during operation is very light.

The stone material falls directly from the upper part of the machine into the high-speed rotating turntable. Under the action of high-speed centrifugal force, the other part is divided into the target stone in the umbrella type by the umbrella type to generate high-speed impact and high-density pulverization. After the stones hit each other, in addition, a vortex motion is formed between the turntable and the casing, causing multiple blows, friction, and pulverization, and straight discharge from the lower portion. The closed loop is formed multiple times and controlled by the screening device to achieve the required particle size.

**Performance Characteristics**

1. the structure is novel, unique, and balanced operation.
2. Low energy consumption, high output and large crushing ratio.
3. The equipment is small in size, easy to operate, and easy to install and maintain.
4. with shaping function, the product is cubic, and the bulk density is large.

5. During the production process, the stone material can form a protective bottom layer, and the body is wear-free and durable.

6. A small amount of wearable parts are made of special hard and wear-resistant materials, which are small in size, light in weight and easy to replace.

**Technical characteristics**

1. High crushing efficiency, with fine crushing and coarse grinding function

2. Simple structure, easy installation and maintenance, low operating cost

3. Affected by the moisture content of the material, the moisture content can reach 8%

4. The product has excellent grain shape, is cubic, and has a very low needle & Sheet-like content. It is suitable for aggregate shaping, artificial sand making and high-grade highway aggregate production.

5. Product bulk density, minimal iron contamination

**Applications**

Widely used in a variety of metal and non-metallic minerals, cement, refractory materials, abrasives, glass raw materials, construction aggregates, machine sand, metallurgical and other industries. Applicable to medium and fine crushing of various ores and rocks of different hardness, such as iron ore, non-ferrous metal ore, silicon carbide, bauxite, quartz sand, brown corundum, perlite, basalt, etc. It is the
core equipment of construction, mining, metallurgy industry and highway, railway, bridge, hydropower, mineral grinding and mechanism sand industry.

**Principle of breaking**

The material enters the impact crusher from the feed hopper, and the material is divided into two parts through the distributor. Part of it enters the high-speed rotating impeller from the middle of the distributor, and is rapidly accelerated in the impeller. The acceleration can reach hundreds of times of gravity acceleration, and then it is ejected from three uniform flow channels of the impeller at a speed of 60-70 m/s. The other part is naturally dropped by the distributor, and then impacts on the material lining of the vortex chamber, rebounds by the material lining, impacts obliquely upward to the top of the vortex chamber, changes its direction of movement, and deflects downward movement. The material emitted from the impeller runner forms a continuous curtain of material. In this way, the material is subjected to two or more impacts, friction and grinding and crushing in the vortex breaking chamber. The broken material is discharged from the lower discharge port. During the whole crushing process, the materials collide with each other and do not directly contact the metal components, which prolongs the wear time of the machine and reduces pollution.

**Structure**

The impact crusher consists of a feed hopper, a distributor, a vortex crushing...
chamber, an impeller, a spindle assembly, a base, a transmission, a lubrication system, and a motor.

1. Feeding hopper: The structure of the feeding hopper is an inverted prismatic body, and the wear ring is provided with a wear ring, and the incoming material from the feeding device enters the impact crusher through the feeding hopper.

2. Dispenser: The distributor is installed in the upper part of the vortex crushing chamber. The function of the distributor is to divert the material from the feeding hopper, so that a part of the material is gradually accelerated into the impeller through the central feeding tube. The speed is thrown out, so that another part of the material is bypassed from the outside of the center feeding pipe, bypassed into the outer side of the impeller in the vortex breaking chamber, and the high-speed material thrown out from the impeller is impact-broken, without increasing power consumption and increasing production capacity. Improve the efficiency of crushing.

3. The vortex breaking chamber: the structure shape of the vortex breaking chamber is an annular space composed of upper and lower cylinders. The impeller rotates at high speed in the vortex breaking chamber, and the material can also reside in the vortex breaking chamber to form a material lining. The crushing process of the material occurs in the vortex crushing chamber, and the material lining layer separates the wall of the crushing vortex crushing chamber, so that the crushing effect is limited to between the materials, and plays the role of wear-resistant self-lining. The observation hole is to observe the wear condition of
the wear block at the launching port of the impeller flow channel and the wear condition of the lining plate at the top of the vortex breaking cavity. The working hole must be sealed tightly when the crusher is working. The distributor is fixed to the upper cylindrical section of the vortex breaking chamber. The impeller rotates at a high speed to generate a swirling flow, and an internal self-circulating system is formed in the vortex breaking chamber through a distributor and an impeller.

4. Impeller: A hollow cylinder made of special material is mounted on the upper end of the main shaft assembly. The conical sleeve and the key joint are used to transmit the button pitch and rotate at high speed. The impeller is the key component of the impact crusher. The material enters the center of the impeller from the central feed pipe of the upper part of the impeller. The material is uniformly distributed to the respective emission channels of the impeller by the cloth cone at the center of the impeller. At the exit of the emission channel, a wear block made of a special material is installed and can be replaced. The impeller accelerates the material to a speed of 60-75m/s, impinges on the material lining in the vortex breaking chamber, and performs strong self-grinding. The upper and lower flow channel plates are installed between the cone cap and the wear block to protect Impeller is not subject to wear.

5. Spindle assembly: The spindle assembly is mounted on the base to transmit the power transmitted by the motor via the V-belt and to support the rotation of the impeller. The spindle assembly is composed of a bearing housing, a main shaft, a bearing, and the like.
6. Base: The vortex breaking chamber, the spindle assembly, the motor and the transmission are all mounted on the bottom. The structure of the base is in the shape of a quadrangular prism in the middle. The center of the quadrangular prism space is used to install the spindle assembly aisle.

7. Transmission: Double-motor driven belt drive mechanism, two motors drive two motors are installed on both sides of the spindle assembly. The two motor pulleys are connected with the main shaft pulley, so that the two sides of the main shaft are balanced and no additional torque is generated.

8. Lubrication system: use Mobil vehicle grease (recommended SHC220), the lubrication part is the upper part of the main shaft assembly and the lower part of the bearing. For the convenience of oil filling, the oil pipe is used to lead to the outside of the machine for regular oil pumping.

**Machine Installation and Commissioning**

The machine is supplied by the manufacturer and supplied in a stage and passed the no-load test. After the user receives the goods, they should be carefully checked to identify and eliminate problems that may arise during transportation.

Machine installation, operation should pay attention to:

1. Because the machine vibration is strong, it is recommended to install the machine on the concrete foundation. The foundation height, depth and area should be calculated according to geological conditions. Refer to the basic drawing for the installation dimensions of the machine.
2. The basic height of the impact crusher should be determined according to the requirements and determined by the user according to the terrain conditions.

3. After the installation is completed, it should be carefully checked. After confirming the correct number by hand, the no-load operation can be performed. Generally, the airborne motion is 2 hours. Check the motor and spindle bearing parts. The temperature rise must not exceed 70 °C. The machine runs smoothly without any abnormalities such as scratches and impacts. All fasteners are not loose.

4. After the no-load test is passed, the load test should be carried out for 6 hours. The temperature rise of the bearing part does not exceed 70 °C. The feeding method must be correct and meet the production requirements.

**Operational regulations**

1. **Preparation before starting:**
   a. Read the duty record and deal with the remaining issues of the previous class.
   b. Check and eliminate any debris in the machine.
   c. Carefully check that all fasteners are fully tightened.
   d. Check the lubrication.
   e. Check if the transmission belt is good, and find that the damage is replaced in time.
   f. Check the protective device and find that the unsafe phenomenon is eliminated in time.
2. start:

a. After inspection, the machine and transmission parts are all normal before starting.

b. This unit is only allowed to start without load.

c. After starting, if abnormal conditions are found, stop immediately, find out the cause and eliminate it, and start again.

3. Use:

a. After the machine is stable, it can be run with material.

b. Feeding should meet the load test requirements

c. The shutdown should be carried out according to the process. It is forbidden to stop at load and continue to feed after the shutdown.

4. Maintenance:

The actual temperature of the main bearing does not exceed 70 °C, and the bearing shell should be cleaned up. There should be no coverings such as debris and garbage on the outer casing. The proper amount of grease should be maintained in the bearing housing, which is about 70% of the space inside the housing. The grease should be replaced when cleaning or replacing the bearing. Grease is applied once every two shifts under normal working conditions.
Safety Procedures

1. The operator must undergo safety technology education.
2. It is strictly forbidden for anyone to approach the machine during operation.
3. Any maintenance and adjustment work is strictly prohibited during operation.
4. Electrical equipment should be grounded and the wires should be placed in the insulation tube.

Attention

1. Stop regularly, open the observation door and observe the internal wear of the impact sand making machine. The wear degree of the center feeding pipe, cone cap, impeller upper and lower runner liner, circumferential guard plate and wear block should be replaced in time after wear or repair, replace the wear block at the same time, to ensure that the wear block weight is the same. It is forbidden to open the observation door during the working process of the crusher to observe the internal working conditions to avoid danger. It was found that the impeller body wear was replaced in time to find a manufacturer to repair. In particular, it is strictly forbidden to make the impeller yourself without the manufacturer’s consent.

2. The impact crusher should add the proper amount of grease when working to a certain extent, or open the spindle assembly to clean the bearing or replace the new bearing when necessary.
3. The tension of the transmission triangle tape should be adjusted appropriately to ensure that the triangular tape should be grouped and matched, so that the length of each group is as uniform as possible. Should be adjusted so that the difference between the two motor currents does not exceed 15A.

4. In the course of work, due to the impact crusher is a high-speed operation equipment, special attention should be paid to safety. The staff should be away from the equipment. If it is necessary to repair the machine, it must be powered off before operation.

**Influencing factors**

There are many factors affecting the production capacity of the impact crusher. The following five factors will be described and corresponding solutions will be proposed.

Hardness of the material: The harder the material is, the more difficult it is to make sand, and the more severe the wear on the impact crusher. Sand production is slow and low in ability. Therefore, we need to pay attention to the selection of materials.

Composition of materials: The more fine powder contained in the material, the more it affects sand production. Because these fine powders are easy to adhere and affect the transportation, materials with a high content of fine powder should be
sieved once in advance. Try to filter the fine powder from the material to avoid affecting the normal operation of the impact crusher.

The fineness of the material after crushing: the fineness requirement is high, that is, the finer the material required to make sand, the smaller the sand making ability. This aspect should be determined according to specific requirements. If there is no special requirement, the fineness of the material is generally set to medium and fine.

The viscosity of the material: that is, the greater the viscosity of the material, the easier it is to adhere. The material with high viscosity will adhere to the inner wall of the sand making chamber in the impact crusher. If it cannot be cleaned in time, it will affect the working efficiency of the impact crusher. In severe cases, it may affect the normal operation of the crusher. Therefore, when selecting materials, it must be noted that the viscosity of the materials is not too much.

Humidity of material: When the moisture contained in the material is large, the material is easy to adhere in the vertical crusher, and it is easy to cause blockage during the feeding process, resulting in a reduced sand making capacity. To solve this problem, we must first strictly control the humidity of the material. If the humidity of the selected material is too large, the percentage of moisture in the material can be reduced by sunshine or air drying.