Qiming Machinery Impact Crushers

Wear Parts Application Guide

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Impact crusher wear parts

Impact crusher is one of the more widely used crusher models. The impact crusher wear parts are an important part of crusher crusher and need to be replaced on schedule. We can provide various types of impact crusher wear parts, such as blow bars and impact plate, we can also be based on the drawings provided by customers to create different materials products.

Increased Best wear parts suited to your application

Qiming Machinery's vertical and horizontal impact crusher wear parts are produced and manufactured with strict standards to meet the needs of the client in the mining and aggregates industry. Our Impact crusher wear parts are weighted and balanced before every delivery to the client.

Different crushed material, different working conditions need different material crusher blow bars to suit.

Qiming Machinery Offers following kinds of materials :

 High Chromium Blow Bar	 High Manganese Blow Bar
 TIC Insert Blow Bar	 Ceramic Inserts Blow Bar

High Chromium Blow Bar

High chromium iron is widely used in 'classic' horizontal impact crushers and is available in medium 20% and high 26% chromium content materials. High chromium iron can provide high performance in the right application providing NO tramp iron is present in the feed material. The brittle nature of chrome irons means significant damage can occur if tramp iron or large oversize material is fed into the crusher.

Impact crusher high chromium blow bars ensure the highest possible wear life is combined with mechanical reliability and numerous mounting possibilities. Thanks to the accurately balanced structure, the Qiming Machinery chromium blow bars are easy and economical to install.

With chromium steel, the carbon is chemically bonded in the form of chromium carbide. The wear resistance of chrome steel is based on these hard carbides of the hard matrix, whereby the movement is hindered by offsets, which provides for a high degree of strength but at the same time less toughness.

Qiming Machinery supplies following grade chromium blow bars:

- Cr15
- Cr20
- Cr26

Grades	C	Mn	Si	Ni	Cr	Mo	Cu	P	S
KmTBCr12	2.0-3.3	≤2.0	≤1.5	≤2.5	11.0-14.0	≤3.0	≤1.2	≤0.10	≤0.06
KmTBCr15Mo	2.0-3.3	≤2.0	≤1.2	≤2.5	11.0-18.0	≤3.0	≤1.2	≤0.10	≤0.06
KmTBCr20Mo	2.0-3.3	≤2.0	≤1.2	≤2.5	18.0-23.0	≤3.0	≤1.2	≤0.10	≤0.06
KmTBCr26	2.0-3.3	≤2.0	≤1.2	≤2.5	23.0-30.0	≤3.0	≤1.2	≤0.10	≤0.06

Feature Pictures

TIC Insert Impact Crusher Blow Bar

Titanium carbide, TiC, is an extremely hard (Mohs 9–9.5) refractory ceramic material, similar to tungsten carbide. It has the appearance of black powder with the sodium chloride (face-centered cubic) crystal structure. As found in nature its crystals range in size from 0.1 to 0.3mm.

Titanium carbide insert blow bars mean manganese steel or alloy steel as matrix body, insert titanium carbide bars into the body. Under this design, the tic insert blow bars span life more than other material.

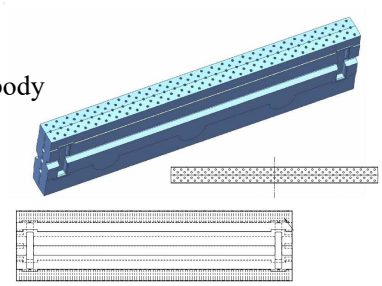
TIC insert blow bars are designed for longest usable wear life for significant cost-savings. Qiming Machinery designs features combine with proprietary high-strength alloys for greatest reliability and better bottom lines.Our blow bars are the solution to industry-wide problems of short wear life and premature breakage found in traditional blow bar design.

TIC Insert Blow Bars Materials Include:

- 30CrNiMo+TIC Crusher Blow Bar
- Mn18Cr2+TIC Crusher Blow Bar
- Cr15+TIC Crusher Blow Bar

Design

- Manganese steel, alloy steel or chrome steel as the liner body
- 20mm, 40mm, 60mm or 80mm titanium carbide bars
- Based on crush area to insert
- Special casting process
- Special heat treatment



Advantages

- Increased Wear Life – Qiming's unique TiC insert HSI blow bars with 3x-7x wear life for significant cost-savings
- Strengthens as It Works –Allows engineers to rotate the bar 3 times
- Consistent Wear – More consistent wear profile for uniform product output and increased efficiency.
- Titanium Carbides – TiC inserts currently available are 20mm, 40mm, 60mm, and 80mm depths.
- Fewer Change-Outs – Greater durability and longer wear life means fewer change outs, more up-time, and lower maintenance costs

High Manganese Steel Blow Bar

Qiming Machinery offers high manganese steel blow bars for customer to crush special material. This is mainly manganese steel. This alloy is used in primary crushers or crushers that have tramp iron in the feed. Manganese steels will be used whenever very high shock resistance or some elongation is needed. The blow bar life is not easily predictable and depends on many factors. Manganese crusher blow bars are commonly used primary crusher applications and provide high shock resistance and are available in both Mn14% and Mn18% material grades. They are well suited to applications where tramp iron is possible in the feed material. Manganese blow bars are often used as a 'safe' choice, however, other materials available can offer significant life costs benefits. For identification purposes, manganese steel blow bars are painted black or red and marked with the respective material grade. Also, ask about our special high-performance material that is proven to outperform other grades of manganese blow bars.

High Manganese Blow Bars Material Chemical Composition

Material	C	Mn	Cr	Si	Mo	Ni	Cu
Mn13Cr2	1.1~1.4	12~15	1.7~2.2	0.3~1.0	----	----	----
Mn18Cr2	1.1~1.4	17~19	1.8~2.2	0.3~1.0	----	----	----

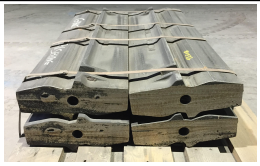
Wear Resistance of Manganese Blow Bars

Severe wear on the surface has a work-hardening affect on the austenitic structure of this steel. This leads to an increase from the initially low hardness (about 200 BHN) to a service hardness of at least 500 BHN. This work-hardening maintains itself through in-service life. The underlays not work-hardened maintain a very high resistance to shock.

Properties

Brinell Hardness 200(approx.)
Tensile Strength 880 N/mm²
Yield Strength 320 N/mm
Elongation 40%

Feature Products




Ceramic Insert Blow Bars

Qiming Machinery offers various kind of ceramic insert blow bar to work in different conditions from low to high wear or impact ,to reduce the cost for our customers.

High manganese with ceramic inserts blow bars

High manganese blow bars are used for applications with large feeding size and high impact, but not suitable for high abrasive materials because of low wear resistance. With high hardness ceramic inserts, it will largely increase the hardness on the wear face and increase the service life.

Chromium Steel+Ceramic

This is a composition blow bar consisting of hard ceramic particles on the wear surface in a chromium iron matrix. This composite has the effect of combining the very hard surface of ceramic with the useful mechanical properties of chromium iron. These (chromium/ceramic) blow bars can have two to four times the life of standard mono-alloy blow bars. Chrome Iron with ceramic is a premium composite metallic matrix iron with hard ceramic alloy inserts on the wear surface. The hard alloy ceramics combined with either medium chrome or high chrome iron matrix provides a significant working life advantage over standard chrome iron bars. Whilst this material can be very successful in secondary applications, it should not be used for primary crushing or very hard and abrasive applications.

Martensitic Alloy Steel + Ceramic

Martensitic alloy steel with ceramic is a premium composite metallic matrix steel with hard ceramic alloy inserts on the wear surface. The hard alloy ceramics combined with either martensitic steel matrix provides a significant working life advantage over standard martensitic steel bars. This material is commonly used in recycling industries and primary crushing in quarries. Certain applications are unsuitable for this material, including limestone crushing and slag recycling. This blow bar consisting of hard ceramic particles on the wear surface in a new martensitic steel matrix. Ceramic inlay is deeper and wider than standard Xwin and will provide higher lifetime. These are high-performance blow bars for recycling applications.

The Advantage Of Ceramic Blow Bars

Materials	Recommendation	Risk of Breakage
Manganese	➢ Very low abrasiveness, e.g. limestone ➢ When there is a very high proportion of unbreakable objects in the feed materials (e.g. iron), or if other blow bars are not cost-effective ➢ Very large feed size	
Martensitic	➢ Building rubble and concrete ➢ Blasted limestone ➢ The impact loads are too low to harden the manganese steel	➢ A large proportion of unbreakable objects in the feed material ➢ Very large feed material
Martensitic with ceramic	➢ Recycling of building rubble with little to medium iron content ➢ Asphalt ➢ Natural stone	➢ Large feed size ➢ Very low abrasiveness, material fatigue can result after a too long service life
Chrome	➢ Secondary crushing level for abrasive applications in natural stone ➢ Smaller feed sizes, e.g. gravel	➢ Unbreakable objects in the crushed material ➢ Too large feed size
Chrome with ceramic	➢ Secondary crushing level with natural stone or river gravel ➢ Asphalt in case of smaller feed size (milled material) and without any iron content	➢ Large feed size (primary crusher) ➢ Iron content in the crushed materials (high risk of breakage)

When & How To Change Crusher Blow Bar

When need to change impact crusher blow bar?

- Normal wear. In order to avoid damage to the rotor, blow bars should be replaced before they are worn through.
- Blow bar break. When chrome blow bar crushes iron steel, it easily breaks; Some "problem" blow bars (Casting shrinkage cavity) also easily break; Other reasons results.
- When one face is used, the blow bar can be turned around to use the other face.

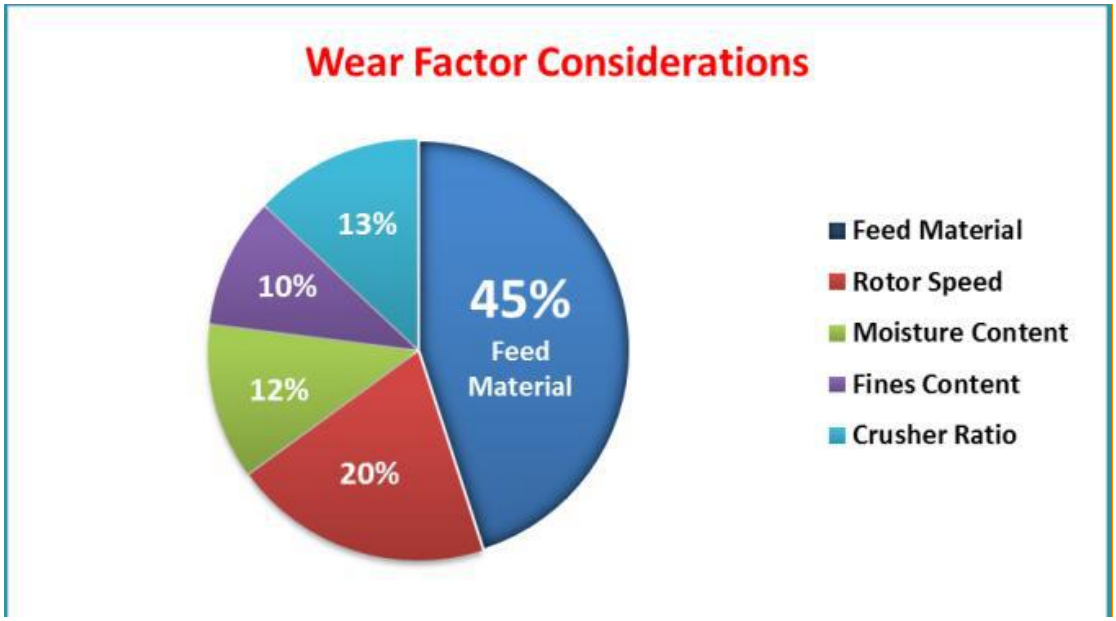
How to change impact crusher blow bar?

- Open the impact crusher as per the instruction manual;
- Switch off the system components and diesel generator;
- Secure the rotor;
- Visually inspect the wear limited on all blow bars;
- Visually check the blow bars for cracks and protrusions;
- Turn around or replace the blow bars as necessary

Notes on change impact crusher wear parts:

- For rough cleaning of crushing chamber, it is recommended to fill the crusher for several minutes with clean, coarse material;
- Always use suitable lifting gear and tack;
- At least two people should take part in installing and removing crusher blow bars;
- Improper replacement of the blow bars can lead to crusher damage;
- Completely extend the crusher gap before blow bar replacement in order to prevent a collision between the blow bars and toggle after new blow bars have been installed;
- Only operate the rotor if the blow bars have been correctly installed;
- Always replace blow bars in sequence;
- Before making the final setting, briefly operate the machine at the highest rotational speed, then check the wedge clamps; tighten the screws if necessary;
- Replace all blow bars even if only one of them broken;
- A non-secured rotor can lead to severe injuries, observe safety instructions;
- Always use conical spring washers with the clamping bolts of the tensioning devices. Retighten the clamping bolts after approx. two operating hours.

Influencing Factors On Blow Bars Wear



Feed Material Factor

The most important factor with regard to the blow bar wear is the composition of the material. The boundary between the economic and non-economic work areas fluctuates. Nature stone is subject to natural fluctuations and can also exhibit severe differences depending on the original.

To increase the life of blow bars the following guidelines should be adhered to:

- Maintain and clean chamber daily
- Inspect blow bars for premature wear or damage
- Select correct blow bars depending on application
- Adjust machine parameters

Rotor Speed Factor

Tips on setting the rotational speed of the rotor:

- Start with the medium speed
- Monitor the material flow
- Monitor the grain size and fine particle proportion in the final product
- Change the rotor speed in consideration of the material flow and final product quality

Increasing the rotor speed results in:

- Generally, more wear of blow bars,impact toggles and abrasion plates
- A tendency, to a higher fine particle proportion

- In some cases, to greater output

Crushing Ratio Factor

The maximum crushing ratio as the ratio of the size of the feed particles to the size of discharged particles essentially depends on the physical properties of the feed material. The result in following:

Feed Material	Theoretical crushing ratio, considering the maximum feed size
Limestone,non-reinforced building rubble,asphalt	Approx 15:1
Steel reinforced concrete	Approx 10:1 -15:1
Medium hard natural stone	Approx 18:1

Crusher Configuration Factor

Rotor with two or three blow bars are always equipped with high blow bars and are universal in use, particularly where materials are changed frequently.

Rotors with four blow bars are usually operated with two high blow bars and two low blow bars so that the maximum feed size can be processed with the maximum crushing ratio. In case where the feed size is under 250mm, the rotor can be equipped for targeted crushing, e.g down to an end product of up to 10mm, with four high blow bar. If the rotor speed is also increased here, the crushing effect is enhanced ever further.

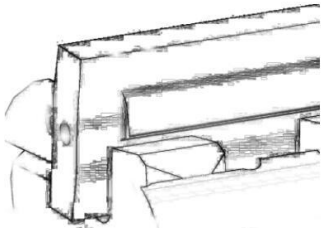
Blow Bar Configuration	4*high	2* high, 2*low	3*high
Feed Size	Less than 0-400mm	Large than 0-400mm	0-600mm

Example Of Blow Bar Wear Problems

Problem 1

Poor penetration on the blow bar means the top of the blow bar is worn down flat

Causes & Issues



- The rotor speed is too high
- Wear rates will be excessive
- Reduced output
- Creates lot of fines

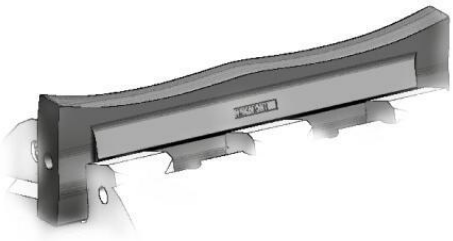
Solution

- Reduce the rotor speed
- Change configuration to 2 high and 2 low blow bars

Problem 2

The blow bar is wearing towards the centre

Causes & Issues



- A trickle feed gives uneven wear
- Reduces the life of the blow bar

Solution

- Increase feed to crusher (E.g. A larger excavator is required to feed machine)
- Increase the speed on the feeder

Problem 3

Wear on the sides of the blow bar

Causes & Issues

- High percentage of fines in the feed or overfeed causing fines to be pushed to outside

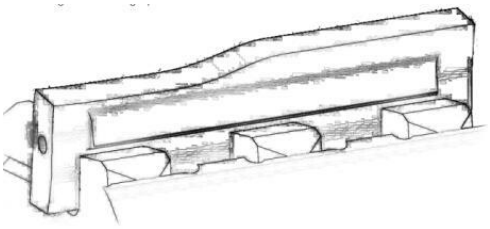
- Crusher chamber contaminated with caked material causing friction wear

Solution

- Reduce speed of feeder so wear becomes even across the surface of the blow bar
- Clean chamber daily after each shift

Problem 4

Blow bar wearing excessively to one side



Causes & Issues

- Machine on uneven ground – material falling to one side
- Machine isn't choke fed
- Feed dropped onto one side of feeder when using recirculating option

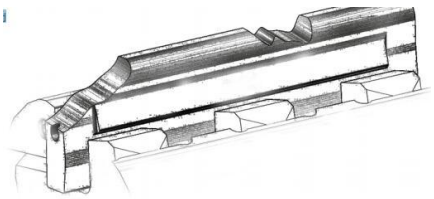
Solution

- Ensure the machine is on level ground
- Continuous loading

Problem 5

Blow bar is damaged or broken

Causes & Issues

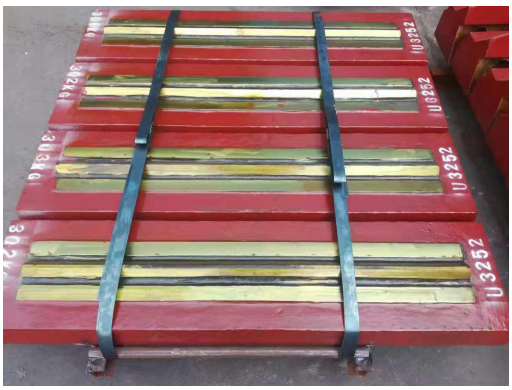


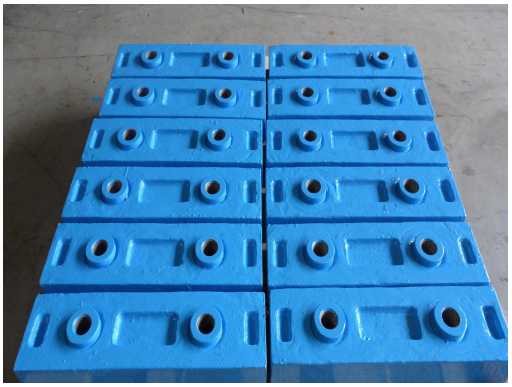
- Incorrect blow bar for application (E.g. Chrome)
- There is steel or rebar in feed
- Feed size is too large

Solution

- Select correct blow bar
- Control feed size
- Remove steel or rebar

Send Pictures & Contact Information





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