

How Does a Cone Crusher Work?

Working principle, CSS control and operating checkpoints for secondary and tertiary cone crushing.

A cone crusher works by using eccentric movement. The mantle moves inside the concave, creating a changing crushing gap. As material moves downward through the chamber, it is compressed several times until it is small enough to pass through the discharge side.

The working process is not only "rock in, smaller rock out." Several control points decide whether the crusher can keep stable output.

Working Point	Technical Meaning	What to Watch During Operation
Feed enters the chamber	Material is delivered from the top into the crushing cavity	Feed size, feed distribution, moisture and clay content
Mantle movement	The mantle moves eccentrically and compresses rock against the concave	Abnormal vibration, uneven wear, load fluctuation
Concave support	The fixed liner forms the outer crushing surface	Liner seating, wear depth, chamber profile
CSS control	Closed side setting controls discharge opening	Output size, return load, power draw
Screening balance	Oversize material may return to the cone crusher	Screen opening, recirculating load, final gradation

CSS control note

CSS, or closed side setting, is the smallest gap between the mantle and concave at the discharge side. It directly affects output size, product gradation, machine load and recirculating material. A smaller CSS can produce finer material, but if the feed, chamber and screen are not matched, it may also increase power draw, liner wear and return load.

Feed condition note

A cone crusher does not perform well when the feed is oversized, wet, sticky or unevenly distributed. Even a strong machine can show unstable capacity if the chamber is not filled correctly or if the downstream screen creates too much return material.