Gyratory Crusher

Capacity, Feed Conditions & Selection Guide

A practical reference for interpreting model specifications, reviewing feed conditions, and coordinating a primary gyratory crusher with the downstream plant.

6	1,066–1,575 mm	450–1,500 kW	14,082 t/h
Listed models	Feed port size range	Maximum power range	Highest listed capacity*

What this guide adds

Capacity interpretation Read throughput ranges with the matching model, discharge opening, and stated reference conditions.	Feed-condition review Check size distribution, bulk density, moisture, clay content, and feeding consistency.	Plant integration Review feeder, conveyor, secondary crusher, and screen capacities as one system.

Important technical note

The highest listed capacity, 14,082 t/h, is the upper value shown for model 60-110 at a 305 mm discharge opening under the stated catalog reference conditions. It is not a guaranteed site production rate. Confirm final performance against model-specific manufacturer data and project conditions.

This guide supplements the Gyratory Crusher product page. It organizes the supplied product data and engineering considerations; it does not replace the manufacturer's drawings, operating manual, or project-specific design review.

01 | MODEL RANGE & RATED DATA

Model Specifications and Capacity Reference

Read each capacity range at the intersection of its model and discharge opening. Do not transfer a value from one model to another.

Model	Feed Port Size (mm)	Maximum Power (kW)
42-65	1,066	450
50-65	1,270	450
54-75	1,370	600
62-75	1,575	600
60-89	1,525	750
60-110	1,525	1,500

Processing Capacity by Discharge Opening (t/h)

Discharge Opening (mm)	42-65	50-65	54-75	62-75	60-89	60-110
152	2,354–3,362	2,414–3,449	2,908–4,154	2,913–4,162	—	—
177	2,893–4,133	2,958–4,226	3,170–4,529	3,846–5,494	4,576–6,538	5,579–7,970
203	—	—	3,513–5,018	4,365–6,235	5,337–7,625	7,394–10,562
230	—	—	—	—	5,851–8,359	8,346–11,923
254	—	—	—	—	—	8,961–12,802
305	—	—	—	—	—	9,857–14,082

Reading the capacity table

A dash means the supplied specification does not list a value for that model and opening. It does not mean zero capacity and should not be used to extrapolate an unlisted operating point.

02 | CAPACITY INTERPRETATION

Rated Capacity vs. Actual Plant Throughput

The published ranges are based on a defined feed condition and maximum eccentricity. A different ore, feed distribution, or plant arrangement can produce a different operating result.

Reference conditions used for the listed capacities

Bulk density	1.6 t/m³	Eccentricity	Maximum eccentricity of each unit
Feed sizing 1	100% passes a sieve opening equal to 80% of feed opening width	Feed sizing 2	80% passes a sieve opening equal to 50% of feed opening width
Feed sizing 3	30% passes a sieve opening equal to 10% of maximum feed material size	Capacity unit	Metric tons per hour (t/h)

Variables that influence actual throughput

Variable	Operational Effect	Project Data to Confirm
Bulk density	Changes the mass flow represented by a given volumetric flow.	Measured or agreed ROM bulk density.
Feed-size distribution	Changes chamber loading and material movement; top size alone is not enough.	Top size and representative size distribution.
Hardness / abrasiveness	Affects breakage resistance, operating load, and liner wear.	Ore type, crushability data, and abrasive mineral content where available.
Moisture / clay	Can affect flow, build-up, and consistency of feed entering the chamber.	Seasonal moisture range, clay content, and stickiness.
Feed consistency	Surges or segregation can prevent stable chamber loading.	Feeder arrangement and expected feed-rate variation.
Discharge setting	Influences the crushing condition and discharged particle size and volume.	Selected opening and manufacturer-permitted operating range.

Engineering distinction

Maximum motor power is an equipment rating, not a direct throughput guarantee. The highest catalog capacity is not a universal rating for every material or operating condition.

03 | FEED OPENING & FEED PREPARATION

Feed Opening Is Not Maximum Feed Lump Size

The feed port size describes the available inlet opening. The maximum acceptable rock size must be confirmed for the selected model; it should not be inferred from the opening dimension alone.

Feed Conditions to Define

- Maximum lump dimensions: identify the largest expected rock pieces, including occasional oversize events.
- Particle-size distribution: record coarse, intermediate, and fine fractions rather than top size only.
- Material properties: document bulk density, hardness or crushability, abrasiveness, moisture, and clay content.
- Feed delivery: review whether the hopper and feeder distribute material consistently across the inlet.

Potential Operating Problems

- Oversize material: may bridge at the inlet or create localized loading if it exceeds the approved feed envelope.
- Uneven feed: may leave part of the chamber under-used while overloading another area.
- Wet or sticky feed: may build up around the feed path and interfere with material flow.
- Uncontrolled surges: can destabilize chamber loading and production rate.

Feed-System Review Checklist

Check Item	Information to Record	Confirmation
Maximum feed lump size	Largest expected dimensions and permitted top size for the selected model.	Manufacturer confirmed
Feed-size distribution	Screen analysis or agreed size fractions for representative ROM feed.	Test data / project basis
Material condition	Bulk density, moisture, clay, hardness, and abrasiveness.	Test data / project basis
Feeder and hopper	Feed rate, hopper arrangement, and distribution into the crusher.	Layout review

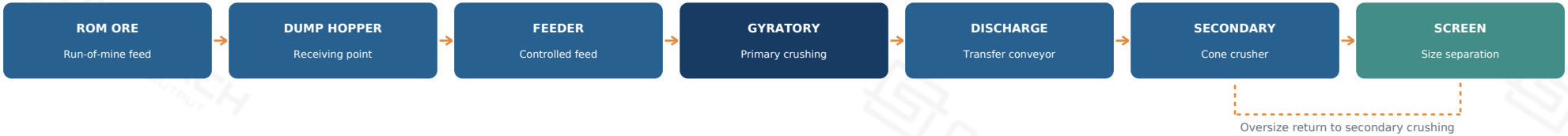
Model-specific confirmation required

The supplied Octa Mach product information lists feed port dimensions but does not provide maximum feed lump size for each model. Obtain the permitted feed size and oversize-handling requirements from the manufacturer before finalizing the hopper, grizzly, or feeder design.

04 | PRIMARY CRUSHING CIRCUIT

Coordinate the Crusher with the Entire Plant

The crusher operates within a connected material-handling system. Its selected capacity must be compatible with the receiving hopper, feeder, discharge conveyor, secondary crushing stage, and screening system.



Plant Interface	Design / Operating Question	Why It Matters
Dump hopper	Can the receiving pocket accommodate the delivery method and expected truck or loader feed pattern?	Avoids interruptions before material reaches the feeder.
Feeder	Can the feeder deliver a controlled, consistent flow across the crusher inlet?	Supports stable chamber loading and throughput.
Discharge conveyor	Can the conveyor continuously remove the expected crusher discharge?	Prevents accumulation below the crusher.
Secondary crusher	Can the secondary stage accept the primary product size and mass flow?	Avoids a downstream capacity bottleneck.
Vibrating screen	Can the screen separate the required size fractions at the design feed rate?	Maintains product grading and circuit stability.

Typical Material Route

ROM ore is received in the dump hopper, metered by the feeder, and reduced in the gyratory crusher. The discharge conveyor transfers the primary product to secondary crushing and screening. Oversize from the screen may return to the secondary crushing stage, while correctly sized material moves to stockpiling or further processing.

System-level capacity check

The effective plant throughput is constrained by the stage with the lowest sustainable capacity. A high-capacity primary crusher cannot maintain its rated output if the feeder, conveyor, secondary crusher, or screen cannot handle the corresponding material flow.

05 | SELECTION & MAINTENANCE CHECKLIST

Model Selection and Wear-Part Monitoring

Use the model range as a starting point, then confirm the operating envelope with project feed data and manufacturer documentation. Wear monitoring should follow measured condition and performance, not an assumed universal replacement interval.

Selection Input	Information Required Before Model Confirmation
Feed opening / maximum feed	Selected model's feed port size and manufacturer-approved maximum feed lump size.
Required throughput	Average and peak t/h, operating hours, and production profile.
Discharge requirement	Target discharge setting and particle-size requirements of the next process stage.
Ore characteristics	Bulk density, feed-size distribution, hardness or crushability, abrasiveness, moisture, and clay content.
Plant interfaces	Feeder, conveyor, secondary crusher, and screen capacities; installation and foundation constraints.

Mantle and Concave Wear: What to Monitor

Indicator	What a Change May Indicate	Practical Follow-up
Liner profile / thickness	Progressive wear changes crushing-surface geometry.	Inspect and measure against the manufacturer's wear limits.
Product gradation	A shift in product size may reflect chamber geometry or operating changes.	Compare representative product samples over time.
Throughput	A decline may relate to feed changes, settings, or liner wear.	Review feed and operating settings before attributing the change to wear.
Power draw / mainshaft position	Trends may help identify loading or liner-condition changes, depending on instrumentation.	Trend readings where available and interpret using OEM guidance.

Replacement decision

The supplied product information does not specify a universal liner service life or fixed replacement thickness. Plan replacement from measured wear, operating performance, inspection findings, and the manufacturer's limits. Do not allow liners to wear through or damage their supporting surfaces.

Scope: This guide is based on the Gyratory Crusher article and the supplied six-model data. Maximum feed size, machine dimensions, weight, liner materials, maintenance intervals, and guaranteed site capacity were not provided and require separate confirmation.