From feed behavior to tooth geometry

A practical decision framework to supplement the blog. Start with actual crushing behavior rather than the profile name.

01 IDENTIFY THE CONTROLLING FEED CONDITION

ROUND / SLIPPING — **Poor initial grip**

Assess more pronounced gripping geometry.

ABRASIVE / COARSE — **Rapid tooth-section loss**

Assess robust wear sections and material balance.

FINES-RICH — **Chamber packing or recirculation**

Assess prescreening and groove clearance.

FLAT / ELONGATED — **Unstable product shape**

Check chamber filling, CSS and tooth interaction.

02 VERIFY THE OPERATING CONSTRAINTS

Design input	Why it matters
Crusher geometry	Compatible chamber, seating, wedges and plate thickness
Crushing setting	OEM-specified CSS range and measurement reference points
Material stream	Maximum lump size, percentage of fines, moisture and particle shape
Wear duty	Abrasiveness, impact intensity and evidence of localized wear

Crushing symptoms and engineering responses

Unlike a maintenance checklist, this matrix connects observed performance with possible causes and evidence that can distinguish them.

Observed behavior	Likely mechanisms to distinguish	Useful engineering response
Rock slips upward	Rounded tooth peaks; flat/slabby feed; uneven chamber filling	Look for slipping marks and observe feed movement before testing a more aggressive tooth pattern.
Lower-zone wear is severe	Fines repeatedly compressed; local abrasion; uneven material distribution	Compare upper/middle/lower liner losses and review feed gradation or scalping.
Chamber packs	Wet fines or clay; restricted grooves; inconsistent feed	Review moisture and fines clearance before treating tooth profile as the sole cause.
Coarse or slabby discharge	Worn chamber geometry; CSS drift; partial chamber filling	Compare discharge samples with actual CSS and liner condition.
Uneven side wear	Off-center feeding; nonuniform liner contact or seating	Map left/center/right wear and correct material distribution.

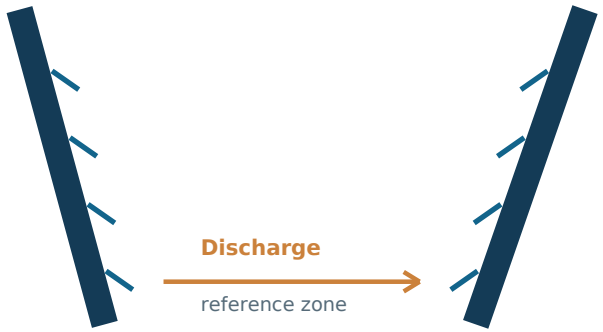
WHY THIS MATTERS

A tooth-profile change can improve gripping or fines passage, but it cannot substitute for correct feeding, prescreening, setup and mounting.

Jaw opening and wear: what to measure

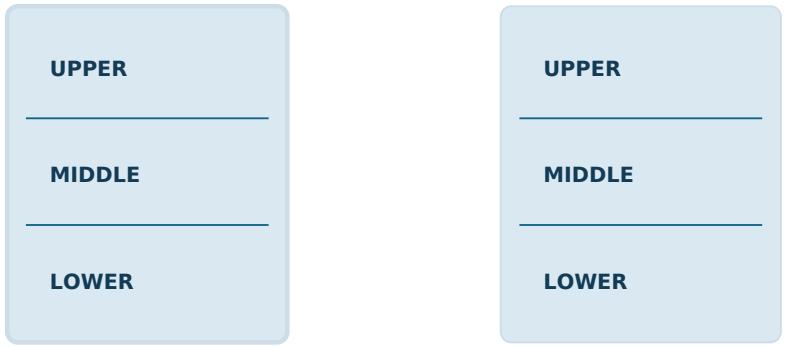
Schematic only; not to scale. Tooth-reference rules, safe access, allowable wear and CSS procedures are model-specific.

A / CHAMBER GAP GEOMETRY



CSS: minimum opening during the crushing cycle

B / REGIONAL WEAR MAPPING



Record zones on both jaws using matched locations.

HOW TO RECORD WEAR

Use consistent upper, middle and lower positions. Link each reading to jaw location, installed profile, operating time, and tonnes processed.

CSS VERIFICATION

Follow the model-specific procedure and tooth-reference convention. Do not infer the actual opening from the adjustment position alone.

TECHNICAL LIMIT: No single universal tooth-tip measurement, minimum CSS or allowable liner thickness applies to all jaw crushers.

Operating value and replacement compatibility

Fully populated evaluation criteria - no blank worksheets. Use these relationships to compare alternative jaw plate designs.

A / COMPARE BY OPERATING OUTCOME

Performance dimension	Measure or calculate	Interpretation
Material grip	Slipping, feed stability and unbroken pieces	Assess before and after with similar feed shape and chamber filling.
Product quality	Oversize fraction and elongated fragment trend	Use comparable screened samples at a verified CSS.
Wear progression	Loss of usable tooth geometry across wear zones	Use matched measurement locations and total processed tonnage.
Throughput	Net processed tonnes / productive operating hours	Exclude unrelated downtime consistently across alternatives.
Liner economics	Delivered liner cost / tonnes processed before replacement	Include replacement losses where available; avoid hour-only comparisons.

B / RELEASE BOUNDARIES FOR REPLACEMENT PLATES

FITMENT

Confirm model, fixed/moving position, mounting faces, wedges and thickness.

MATERIAL

Identify alloy specification, heat/lot traceability and available treatment evidence.

SETTING

Check OEM CSS range, plate positioning and assembly instructions.