

HP Series Multi-Cylinder Hydraulic Cone Crusher

Model Selection and Cavity Guide

A practical reference for matching HP100-HP800 models, cavity profiles, feed size, minimum discharge opening, hydraulic functions and the complete crushing-screening circuit.

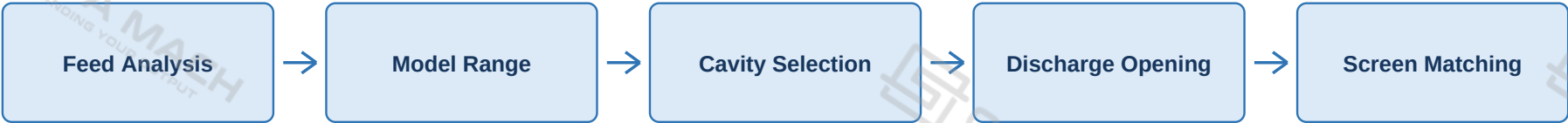
Model Range HP100, HP200, HP300, HP400, HP500 and HP800	Cavity Range C1 Extra Coarse, C2 Coarse, M Medium, F1 Fine and F2 Extra Fine
Typical Duty Secondary, tertiary and fine crushing of hard and abrasive material	Material Examples Granite, basalt, river pebble, iron ore, copper ore and quartzite

Selection Inputs

Selection Input	Required Information	Selection Effect
Feed material	Rock type, hardness and abrasivity	Confirms crushing method and liner duty
Maximum feed size	Largest regular lump after primary crushing	Defines model and cavity opening
Required capacity	Continuous plant output in t/h	Defines crusher size and circuit load
Final products	Required aggregate or ore sizes	Controls cavity and screen selection
Crushing stage	Secondary, tertiary or fine crushing	Defines reduction duty
Circuit type	Open or closed circuit	Determines return load and screen duty

Selection Workflow and Guide Scope

Use the guide in the sequence below. Each step narrows the model and cavity range before the discharge opening and screening circuit are finalized.



Decision Step	Primary Question	Result
Feed analysis	What are the largest regular feed size, hardness and abrasivity?	Confirms crushing suitability and feed opening
Model range	What continuous capacity must the complete circuit deliver?	Narrows HP100-HP800 model range
Cavity selection	Is the crusher used for secondary, tertiary or fine crushing?	Selects C1, C2, M, F1 or F2 cavity
Discharge opening	What product grading is required within the cavity operating range?	Sets the operating discharge opening
Screen matching	Can the screen and return conveyor handle circulating oversize?	Confirms actual closed-circuit duty
The model is not finalized until feed size, cavity type, discharge opening, screen capacity and circulating load have all been checked together.		

HP100 and HP200 Technical Parameters

Small and medium HP models cover multiple cavity profiles for controlled secondary and tertiary crushing.

Model	Cavity Type	Open-Side Feeding Size (mm)	Closed-Side Feeding Size (mm)	Minimum Outlet Size (mm)	Capacity (t/h)	Installed Power (kW)
HP100	C1 Extra Coarse	175	140	19	45-100	90
HP100	C2 Coarse	125	105	13	45-100	90
HP100	M Medium	100	70	10	45-100	90
HP100	F1 Fine	71	50	9	45-100	90
HP100	F2 Extra Fine	33	20	6	45-100	90
HP200	C2 Coarse	235	190	19	65-250	160
HP200	M Medium	171	120	16	65-250	160
HP200	F1 Fine	150	95	13	65-250	160
HP200	F2 Extra Fine	116	70	8	65-250	160

Selection note: Published capacity is for preliminary selection and must be checked against feed gradation, chamber filling, material density, moisture, abrasivity and screening load.

HP300 Technical Parameters

HP300 provides five cavity options, from extra coarse to extra fine, for a broad range of prepared feed sizes.

Model	Cavity Type	Open-Side Feeding Size (mm)	Closed-Side Feeding Size (mm)	Minimum Outlet Size (mm)	Capacity (t/h)	Installed Power (kW)
HP300	C1 Extra Coarse	265	230	25	85-440	220
HP300	C2 Coarse	240	210	20	85-440	220
HP300	M Medium	190	150	15	85-440	220
HP300	F1 Fine	145	105	11	85-440	220
HP300	F2 Extra Fine	120	80	8	85-440	220

Selection note: Published capacity is for preliminary selection and must be checked against feed gradation, chamber filling, material density, moisture, abrasivity and screening load.

HP400 and HP500 Technical Parameters

HP400 and HP500 are used where wider feed acceptance and higher continuous capacity are required.

Model	Cavity Type	Open-Side Feeding Size (mm)	Closed-Side Feeding Size (mm)	Minimum Outlet Size (mm)	Capacity (t/h)	Installed Power (kW)
HP400	C1 Extra Coarse	360	290	30	135-625	315
HP400	C2 Coarse	310	250	25	135-625	315
HP400	M Medium	260	196	20	135-625	315
HP400	F1 Fine	182	110	13	135-625	315
HP400	F2 Extra Fine	135	90	10	135-625	315
HP500	C1 Extra Coarse	370	330	38	200-790	400
HP500	C2 Coarse	320	290	28	200-790	400
HP500	M Medium	245	210	22	200-790	400
HP500	F1 Fine	180	130	13	200-790	400
HP500	F2 Extra Fine	150	95	10	200-790	400

Selection note: Published capacity is for preliminary selection and must be checked against feed gradation, chamber filling, material density, moisture, abrasivity and screening load.

HP800 Technical Parameters

HP800 provides the largest feed range and reference capacity in the listed product series.

Model	Cavity Type	Open-Side Feeding Size (mm)	Closed-Side Feeding Size (mm)	Minimum Outlet Size (mm)	Capacity (t/h)	Installed Power (kW)
HP800	C1 Extra Coarse	450	352	38	265-1200	630
HP800	C2 Coarse	373	298	32	265-1200	630
HP800	M Medium	340	275	25	265-1200	630
HP800	F1 Fine	280	230	16	265-1200	630
HP800	F2 Extra Fine	235	150	10	265-1200	630

Selection note: Published capacity is for preliminary selection and must be checked against feed gradation, chamber filling, material density, moisture, abrasivity and screening load.

Cavity Type and Feed Size Matching

Select the cavity from the largest regular feed size and crushing stage first. The discharge opening is then set within the permitted operating range of that cavity.

Cavity Type	Feed Condition	Typical Duty	Main Selection Limit
C1 Extra Coarse	Larger, well-prepared feed	Secondary crushing	Requires sufficient feed opening and stable chamber filling
C2 Coarse	Medium-large feed	Secondary crushing	Used before intermediate or final screening
M Medium	Balanced feed and output	Secondary or tertiary crushing	General aggregate and ore reduction
F1 Fine	Smaller, controlled feed	Tertiary crushing	Requires effective upstream size control
F2 Extra Fine	Fine and uniform feed	Fine crushing	Normally used with closed-circuit screening

- Choose the cavity before finalizing the outlet setting.
- Do not use an extremely small outlet setting to imitate a finer cavity.
- Do not feed oversized lumps into fine cavities.
- Check feed opening, discharge opening and screen aperture together.

C1 Extra Coarse Largest feed	C2 Coarse Coarse reduction	M Medium Balanced duty	F1 Fine Tertiary duty	F2 Extra Fine Small prepared feed
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Discharge Opening, Capacity and Product Size

The discharge opening affects how long material remains in the chamber and therefore influences product grading, power draw and circulating load. It must remain within the permitted range of the selected cavity.

Operating Change	Typical Result	Engineering Check
Smaller discharge opening	Finer discharge and higher crushing load	Confirm screen aperture, return load and motor load
Larger discharge opening	Higher throughput and coarser product	Confirm required grading and oversize limit
Worn cavity profile	Reduced grading control and unstable capacity	Inspect mantle and concave profile
High return load	Higher actual crusher and screen duty	Check return conveyor and screen capacity
Excessive fines in feed	Poor chamber filling and reduced effective crushing	Review pre-screening and feeder arrangement
Uneven feed distribution	One-sided wear and unstable power draw	Centralize and evenly distribute feed

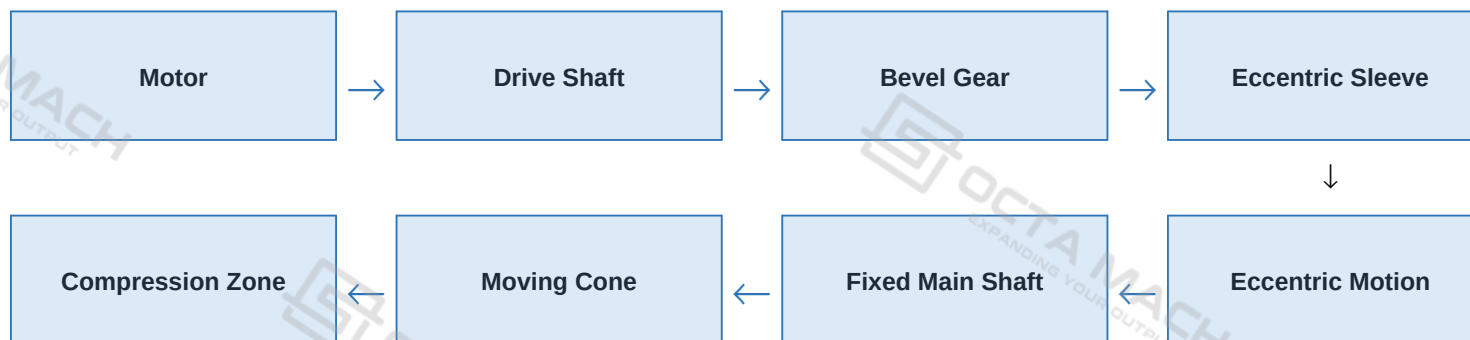
Operating rule: Confirm the cavity, feed top size and screen aperture before selecting the discharge opening. Catalogue capacity is not guaranteed plant output.

Terminology note: CSS is a common industry term for the minimum closed-side gap. In this guide, numerical product data remain under the original field name **Minimum Outlet Size** unless model-specific documentation confirms equivalence.

Full-Chamber Feeding

Full-chamber feeding means maintaining a stable, continuous and evenly distributed material bed around the crushing chamber. It does not simply mean filling the hopper.

Compression-Crushing Sequence



Required Feeding Conditions

- Continuous feed with limited interruptions
- Central material distribution around the full chamber
- Limited feed segregation
- Feed within the selected cavity size range
- Stable power draw and uniform chamber filling

Stable chamber filling supports inter-particle compression, more uniform liner wear and more consistent product grading. Intermittent or one-sided feeding produces unstable load and accelerated local wear.

Hydraulic Control and Protection

The multi-cylinder hydraulic system performs setting control, overload release and chamber-clearing functions. It protects the crusher, but it does not replace correct feed preparation.

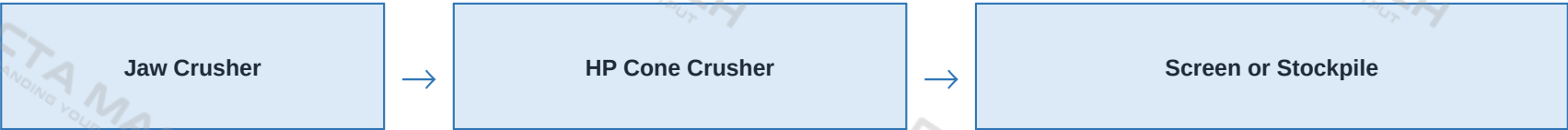
Hydraulic Function	Main Purpose	Operating Result
Hydraulic locking	Holds the adjustment ring at the selected setting	Maintains a stable discharge opening
Discharge adjustment	Changes the operating discharge opening	Controls product grading and circuit load
Tramp release	Opens the chamber under overload	Protects against uncrushable material
Cavity clearing	Opens the chamber after blockage or shutdown	Reduces manual clearing work
Pressure monitoring	Identifies abnormal crushing load	Supports overload and feed-condition diagnosis

- Repeated overload from oversized feed should be corrected at the feeder or upstream crusher.
- Steel contamination and other uncrushable material require upstream control.
- Hydraulic pressure alarms should be investigated rather than repeatedly reset.
- Hydraulic and lubrication conditions should be checked before restarting after a blockage.

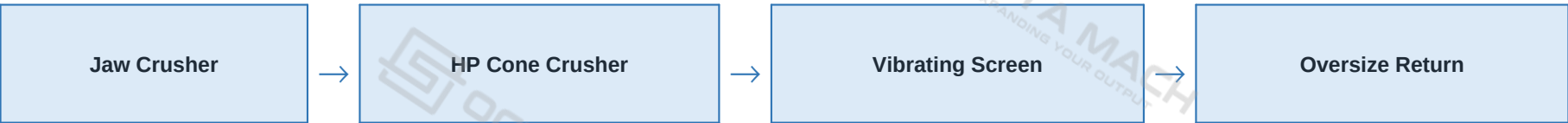
Crusher, Screen and Return-Load Matching

Plant output is determined by the complete circuit. In a closed circuit, the HP cone crusher handles new feed plus the oversize returned by the screen.

Open Circuit



Closed Circuit



Circuit Factor	What to Confirm	Selection Impact
Upstream crusher	Actual discharge size and oversize percentage	Defines prepared feed delivered to the HP crusher
Feeder	Continuous and centrally distributed feed	Supports full-chamber feeding and stable load
Vibrating screen	Aperture, deck area and actual screening capacity	Controls final grading and return load
Return conveyor	Capacity for circulating oversize	Prevents accumulation and circuit restriction
Final products	Number and size of required fractions	Defines screen arrangement and outlet setting
Recirculating load	Included in total crusher and screen duty	Crusher throughput can exceed net plant output

Key point: Required plant output is not the same as total crusher throughput in a closed circuit.

Application Matching

The HP series is normally installed after primary jaw crushing, where feed size has already been reduced and controlled.

Application	Recommended Duty	Main Selection Point
Granite aggregate	Secondary or tertiary crushing	Abrasivity, cavity profile and return load
Basalt roadstone	Secondary and tertiary crushing	Product grading and liner wear
River pebble	Secondary crushing	Uniform feeding and chamber filling
Iron ore	Secondary crushing before grinding	Target mill feed size and ore hardness
Copper ore	Secondary and tertiary reduction	Ore abrasivity and downstream grinding
Mobile hard-rock plant	Integrated crushing and screening	Chassis, feeder and onboard screen capacity

- **Granite and basalt:** Check abrasivity, required product grading and closed-circuit return load.
- **River pebble:** Maintain uniform feeding because smooth particles can segregate and move unevenly.
- **Iron and copper ore:** Match the final crusher product to the downstream grinding requirement.
- **Mobile hard-rock plants:** Confirm that the chassis, feeder, screen and return conveyor can handle the selected crusher duty.

Final Model Selection Checklist

Complete the following checks before confirming an HP series model and cavity.

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| <ul style="list-style-type: none"> • Material type, hardness and abrasivity confirmed • Maximum regular feed size confirmed • Feed gradation available • Crushing stage confirmed • Required net plant capacity confirmed • Final product sizes confirmed • Cavity type selected | <ul style="list-style-type: none"> • Minimum outlet size / operating discharge range checked • Full-chamber feeding arrangement confirmed • Screen aperture and actual screening capacity checked • Return load reviewed • Power supply confirmed • Hydraulic and lubrication requirements confirmed • Maintenance access confirmed |
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Final selection rule: Select the HP cone crusher according to feed size, cavity profile, minimum discharge opening, material abrasivity and the complete screening circuit - not by installed power or catalogue capacity alone.