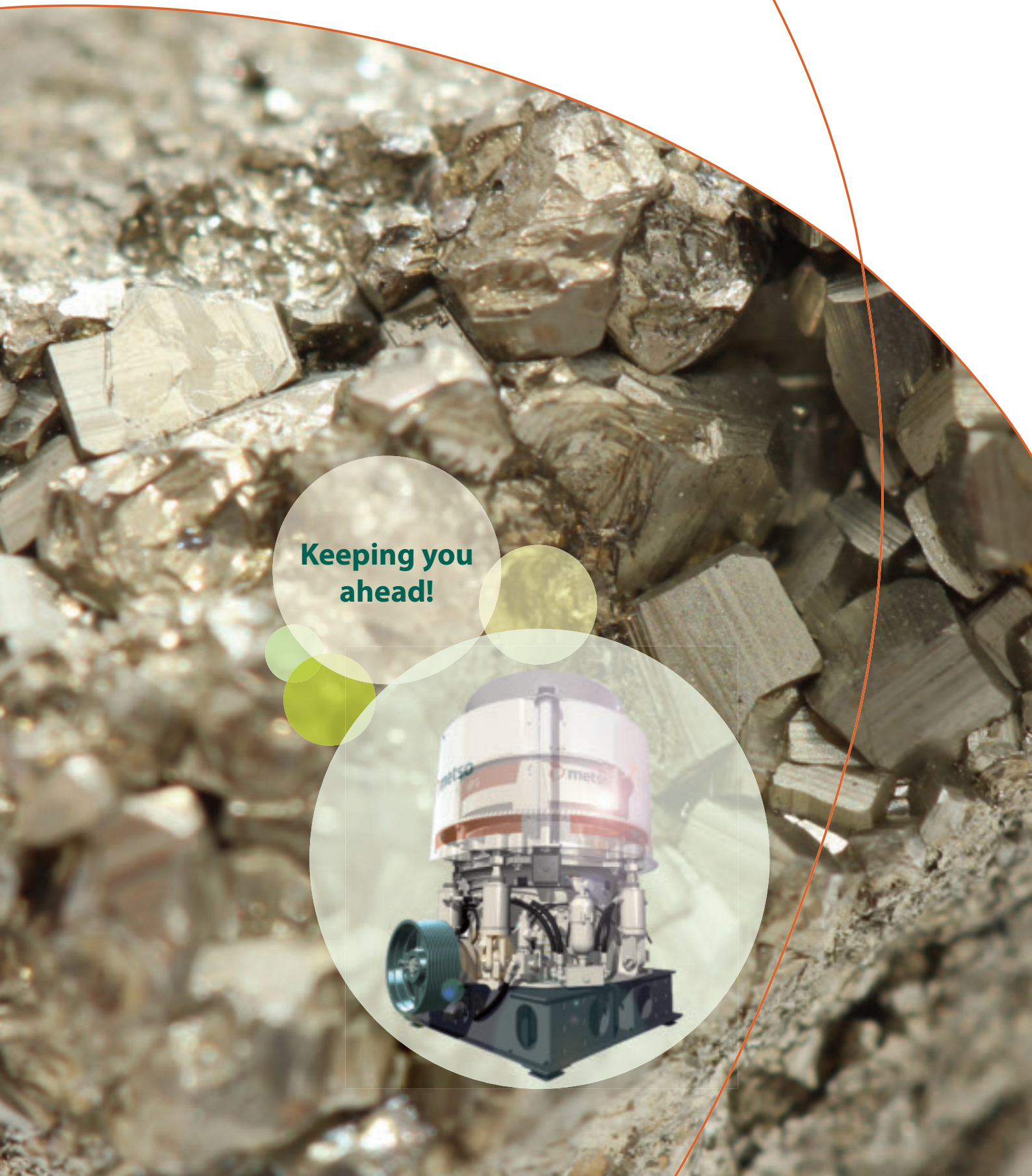
Nordberg cone crushers

HP3, HP4 & HP6

metso
Expect results




HP3
HP4
HP6

Nordberg new generation cone crushers: Keeping you ahead

There's no better choice than a cone crusher when it comes to . . .

- high productivity,
- low operating and wear costs,
- long service life, and high product yield with desired shape and gradation.

Metso leads this market with its high performance HP Series cone crushers for the aggregate and mining markets.
HP (High Performance) Series cone crushers feature a unique combination of crusher speed, throw, and cavity design. This combination is renowned for providing higher capacity and superior product quality, and having a wider range of application suitability:

- limestone to taconite,
- road ballast to manufactured sand,
- compact portable plant to the largest stationary.

Field-proven HP series cone crushers provide unbeatable performance in secondary, tertiary, and quaternary applications. They provide the highest capacity, the best product shape, the highest on-spec yield, easy automation, and the greatest possible reliability and flexibility.

The next generation

The HP3 follows successful HP4 and HP6 as the third model of an all-new range of high performance cone crushers, which benefits from the very latest in Metso crushing technology. Its heavy duty design is a tribute to our 70+ years of experience with the Symons cone, known world-over for its rugged construction and application versatility. Labor saving features such as hydraulic setting adjustment, tramp release and cavity clearing recall the innovative Nordberg Omnicone and first generation of HP crushers.

But the next generation achieves new heights with unique features that produce the highest reduction ratios, ease of operation and low maintenance requirements. New cone delivers the highest performance and lowest operating costs. Make more product, better product at the same time improving the workplace and helping the environment.

Designed for your needs

Fact. In today's dynamic crushing and screening environment, you adapt and innovate or you fall behind. That's why Metso listens to its customers, to find out what they need to succeed. To be honest, a lot of you seemed conflicted, wanting a high capacity tertiary/quaternary machine with:

- a small profile,
- tight settings,
- minimized operating costs, and
- the versatility for recrushing.

Metso' research and development team met that challenge with the new cone crushers. No more conflict. Designed for maximum versatility and hardest applications, it provides maximized productivity while minimizing operating costs.

Why new generation cone crushers?

. Highest performance
. Less downtime
. Easy to maintain
. Power efficient
. Versatility

Technologically unique, the new generation cone crushers offer unprecedented performance. Their safe and easy maintenance ensure maximum reliability.

Crusher working benefits

Highest performance

The new cone crushers enable you to produce much finer products with fewer crushing stages, thereby lowering your investment and saving energy. How is this possible?
With a combination of optimized speed and large throw, HP new generation provides the highest reduction ratios of any current cone crusher. Due to its super-efficient crushing action, the HP3, HP4 and HP6 have the best power utilization per cone diameter. So you save twice with lower kWh per ton of crushed end product and with lower recirculation load. Higher cavity density improves interparticular crushing action for end products with more consistent gradation and superior shape.

The new cone crushers maintain the proven threaded rotating bowl design. Comparative tests show equalized wear and more consistent setting around the entire circumference of the crushing chamber. Also the use of a newly designed tramp release system, with fixed return point, makes sure that the crusher setting is instantaneously maintained even after passing a piece of tramp iron.

Less downtime

Another way the new crushers deliver is less downtime and increased operator confidence. Dual-acting hydraulic tramp release cylinders let the crusher pass tramp iron that would stall, or damage, many other crushers. If the crusher does stop under load, the dual-acting cylinders provide a large clearing stroke, independent of liner wear, to quickly clear the crushing cavity.
An advanced fastening system for the mantle and bowl liner makes backing material unnecessary, and makes liner changes faster. Thicker liners mean more material to wear. When liners are changed or the crusher is reconfigured, the same hydraulic motors that rotate the bowl for setting adjustment will rotate the bowl completely out of the adjustment ring threads, greatly simplifying liner replacement.
If you pull the head you will find a new fixed counterweight guard that protects the counterweight and seals out dust.

Easy to maintain

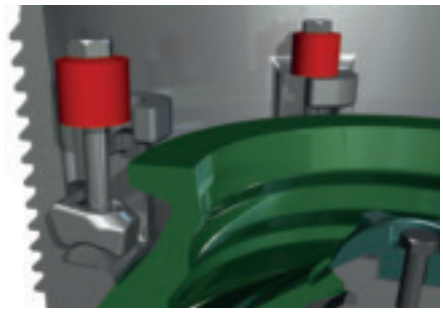
Bronze bushings used throughout provide superior load capability in the dusty, highshock crushing environment. They cost less than rolling element bearings and are easy to replace in the field with normal tools. The new cone crushers are easy to disassemble. All components are accessible from the top or side. The bowl and head are easily removed; no interference fit to contend with.

Power efficient

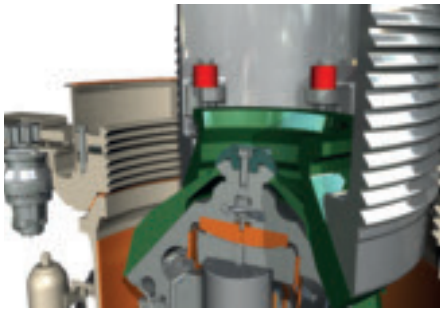
As well as being fitted with the latest in high-efficiency motors, HP new generation crushers enable a higher output of finished product than any other cone crusher with the same power input.

The result is improved overall efficiency (less power consumed, more yield), and as a bonus, less carbon dioxide emission, making this generation of HP cone crushers the most ecological crushing machines on the market.

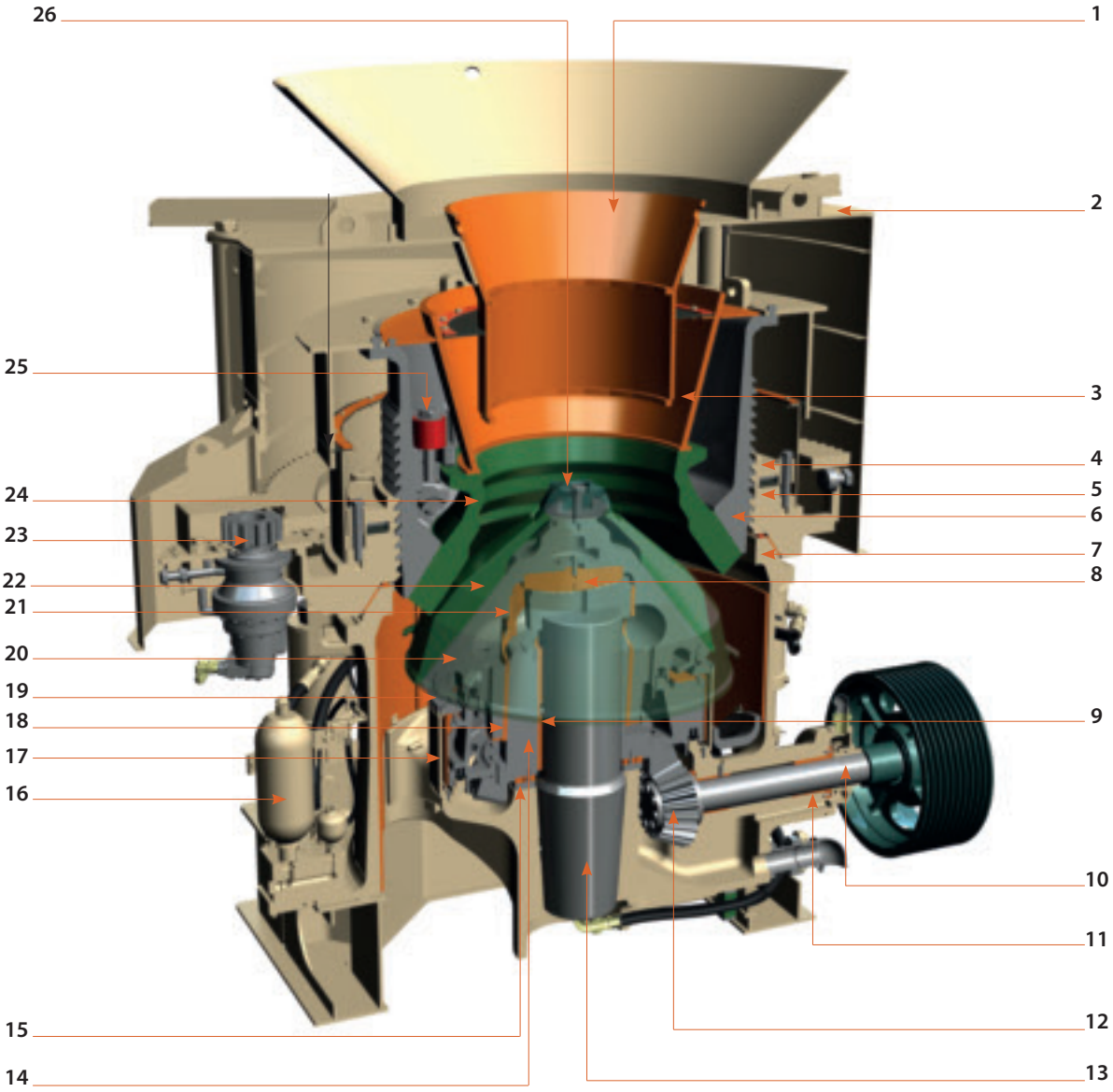
High crushing force



Liner change



Dismantling of crusher



1 - Feed arrangement
2 - Safety shield
3 - Feed bowl hopper
4 - Clamping ring
5 - Adjustment ring
6 - Bowl
7 - Main frame
8 - Socket
9 - Eccentric bushing
10 - Countershaft
11 - Countershaft bushings
12 - Gear and pinion
13 - Main shaft
14 - Eccentric
15 - Eccentric thrust bearing
16 - Tramp release assembly
17 - Counterweight guard
18 - Lower head bushing
19 - Antispin device
20 - Head
21 - Upper head bushing
22 - Mantle
23 - Hydraulic adjustment motor
24 - Bowl liner
25 - Bowl liner fixation
26 - Cone feed plate

Versatility

Due to their strength, speed range and ease of converting from coarse to extra fine applications, the new crushers provide application flexibility that was unheard of until now.

- Save stockpile space by recrushing excess or slowmoving products without an intermediate crushing stage.
- Converting from coarse to extra fine application and back again just by changing liners and rpm.
- Liner and rpm combinations go from secondary applications to sand manufacturing.

Asset protection

The new tramp release design also protects the main frame from uncrushables by smoothing out the impact forces and returns the bowl to its original position after passing tramp iron. Inside, a new fixed guard protects counterweight and seals out dust.

An optional cover around the crusher protects employees from casual contact with adjustment and tramp release mechanisms. It also helps protect the workplace with reduced dust emissions. The environment benefits too from the advanced fastening system for mantle and bowl liner that do not require backing material.

Tramp release

IC7000 automation

- IC7000 "basic" automation: basic control system with fundamental crusher control features (sequence start/stop, power overload, temperature protection and diagnostics).
- IC7000 "advanced" automation: advanced control system with full range of crusher control features, including crusher setting control, feeder control, power mode, winter mode.

IC7000 automation

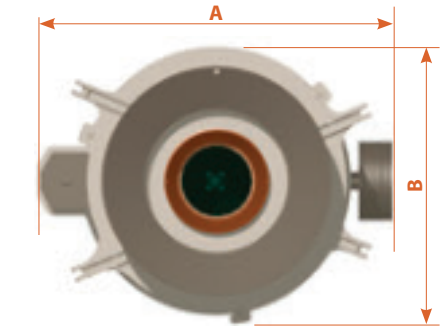
Dimensions

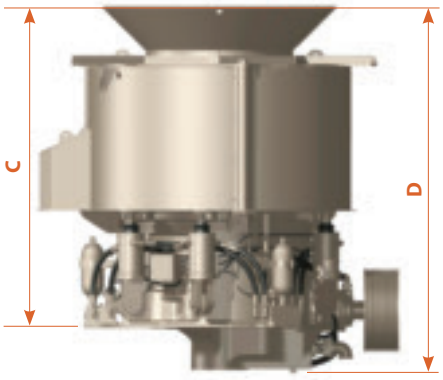
HP model	A	B	C	D
HP3	2 778 mm	2 146 mm	2 156 mm	2 549 mm
HP4	2 955 mm	2 250 mm	2 475 mm	2 817 mm
HP6	3 854 mm	3 062 mm	3 522 mm	3 953 mm

Technical informations

	Nominal feed opening	Motor size up to	Crusher weight	Complete crusher weight*
HP3	220 mm	220 kW	13 040 kg	17 600 kg
HP4	252 mm	315 kW	19 810 kg	25 800 kg
HP6	330 mm	450 kW	33 000 kg	45 400 kg

* Complete crusher weight: crusher + subframe, motor sub frame, covers, feed and discharge arrangement





Cavities

	HP3		HP4		HP6	
Cavity	**Minimum setting** mm (in)	**Feed opening** mm (in)	**Minimum setting** mm (in)	**Feed opening** mm (in)	**Minimum setting** mm (in)	**Feed opening** mm (in)
Extra-coarse	25 (1.00)	200 (7.89)	28 (1.10)	237 (9.93)	30 (1.20)	328 (12.91)
Coarse	20 (0.79)	183 (7.20)	25 (1.00)	203 (7.99)	25 (1.00)	279 (10.98)
Medium	15 (0.59)	156 (6.15)	16 (0.63)	158 (6.22)	20 (0.79)	196 (7.71)
Fine	11 (0.43)	95 (3.74)	10 (0.39)	116 (4.55)	13 (0.52)	106 (4.17)
Extra-fine	8 (0.31)	18 (0.78)	8 (0.31)	67 (2.64)	9 (0.35)	52 (2.05)

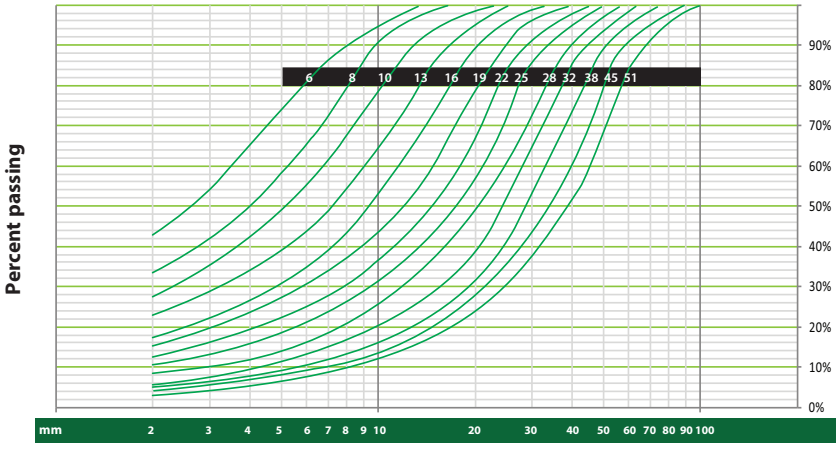
Crusher capacities

The capacity figures given are approximate only and give an idea of what the crusher is able to produce. They apply for open circuits and dry material with a spec. gravity (2.65) of usual Granite. As a crusher is part of a process, its performance depends on crushability and density of the material, proper selection and operation of feeders, conveyors, screens, supporting structure, electric motors, drive components and surge bins. **Contact us for choosing the right machine for your application.**

Closed side setting

Model	CSS	8 mm (5/16")	10 mm (3/8")	13 mm (1/2")	16 mm (5/8")	19 mm (3/4")	22 mm (7/8")	25 mm (1")	32 mm (1 1/4")	38 mm (1 1/2")	45 mm (1 3/4")
HP3	**mtph**	94-122	108-147	136-185	164-220	182-241	199-262	210-279	217-307	251-349	279-388
	stph	104-135	119-162	150-204	181-243	200-266	219-289	231-308	239-339	277-385	308-427
HP4	**mtph**	135-175	155-210	195-265	235-315	260-345	285-375	300-400	310-440	360-500	400-555
	stph	150-190	170-230	215-290	260-345	285-380	315-410	330-440	340-485	395-550	440-610
HP6	**mtph**		220-300	280-380	335-450	370-490	410-535	430-570	440-630	515-715	570-790
	stph		245-330	310-415	370-495	410-540	450-590	470-630	490-690	565-785	630-870

Gradation curves*



* The gradation and capacities shown are dependant on the feed gradation, the crushing chamber, the material density, the material cleanliness, its moisture and its crushability.

Metso's Mining and Construction crushing and screening equipment

Product families:

Unit crushers

- C series jaw crushers
- Primary gyratory crushers
- GP series cone crushers
- HP series cone crushers
- MP series cone crushers
- NP series horizontal impact crushers
- Barmac series vertical impact crushers

Unit screens

- DF series screens
- CVB series screens
- ES series screens
- TS series screens
- MF series screens
- RF series screens

Unit feeders

- TK series feeders
- VF series feeders
- LH.G series feeders
- VG series feeders
- PF series feeders
- HRBM series feeders

Mobile crushing and screening plants

- Lokotrack LT series track-mounted crushing plants
- Lokotrack ST series track-mounted screening plants
- Lokotrack CT and CW series track- and wheel-mounted conveyors
- NW series wheel-mounted crushing plants

Stationary crushing plants

- Complete plants for aggregate production
- Complete plants for recycling applications

metso
Expect results

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