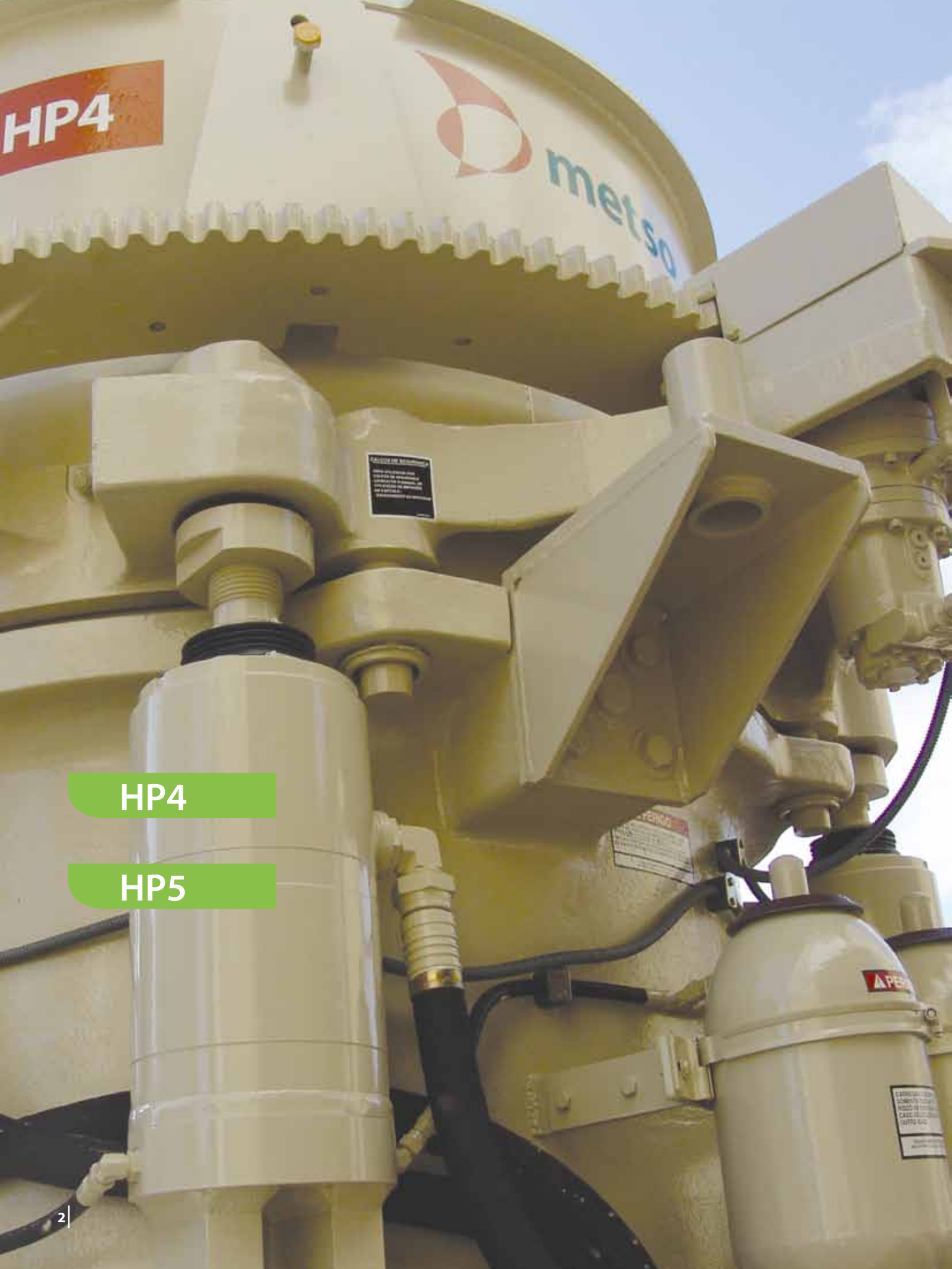


Nordberg Cone Crushers HP4 & HP5 Cone Crushers





HP4

metso

FAVORITE DE ARMAMENTO

PERIGO

PERIGO

LEMBRETE: NÃO TOQUE NUNCA EM PARTES EM MOVIMENTO SEM O MOTOR DESLIGADO E SEM O CILINDRO DE SEGURANÇA DEPRESSÃO DESEMPENHADO.

HP4

HP5



Nordberg HP4 and HP5 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.

Nordberg 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 Nordberg HP5 follows successful HP4 as the second 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 Nordberg HP4 and HP5 achieve 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 re-crushing.

Metso' research and development team met that challenge with the Nordberg HP4 and HP5. No more conflict. Designed for maximum versatility and hardest applications, it provides maximized productivity while minimizing operating costs.

Why Nordberg HP4 and HP5 Cone Crushers?

- Highest performance
- Less downtime
- Easy to maintain
- Versatility



Crusher working benefits

Highest performance

The HP4 and HP5 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, HP4 and HP5 provide the highest reduction ratios of any current cone crusher. Due to their super-efficient crushing action, the HP4 and HP5 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 (cubicity).

The new 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 crushers deliver is less downtime and increased operator

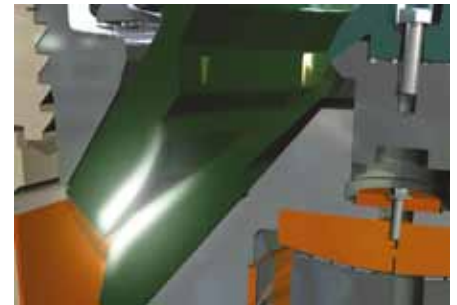
confidence. Dual-acting hydraulic tramp release cylinders let the HP4 and HP5 pass tramp iron that would stall, or damage, many other crushers. If the crusher does stop under load, the dual-acting cylinders provide a large clearing stroke, independent of liner wear, to quickly clear the crushing cavity.

An advanced fastening system for the mantle and bowl liner makes backing material unnecessary, and makes liner changes faster. 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

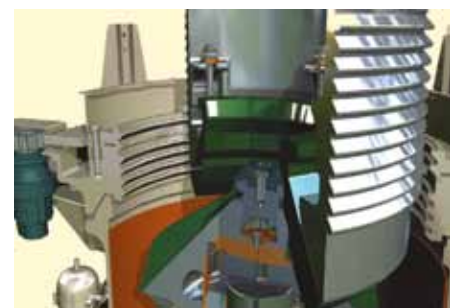
Bronze bushings used throughout provide superior load capability in the dusty, high-shock crushing environment. They cost less than rolling element bearings and are easy to replace in the field with normal tools. The HP4 and HP5 are easy to disassemble. All components are accessible from the top or side. The bowl and head are easily removed; no interference fit to contend with.



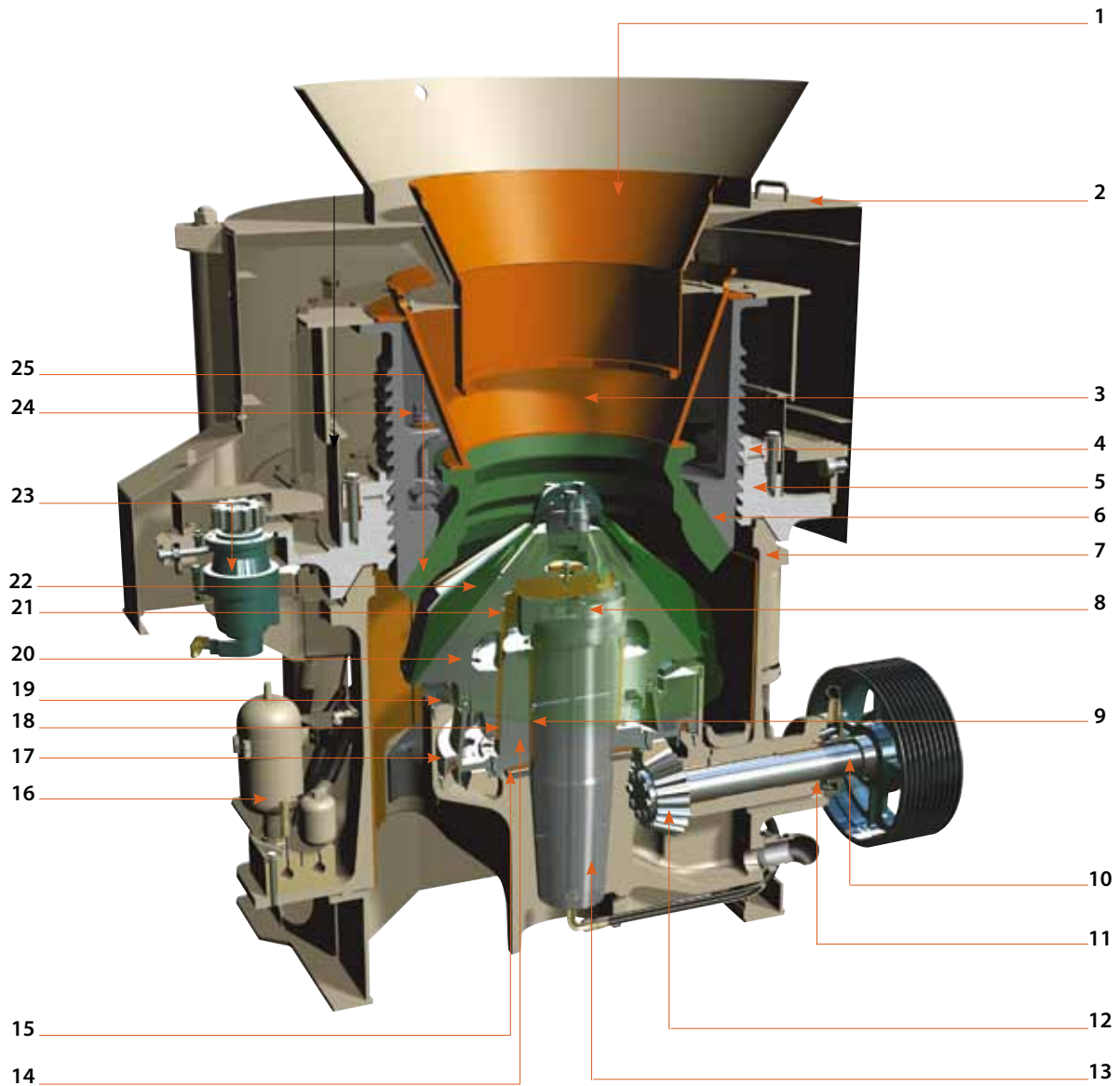
High crushing force



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 Fixation
 25 - Bowl Liner

FEATURES & BENEFITS

Versatility

Due to their strength, speed range and ease of converting from coarse to extra fine applications, the HP4 and HP5 provide application flexibility that was unheard of until now.

- Save stockpile space by re-crushing 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.

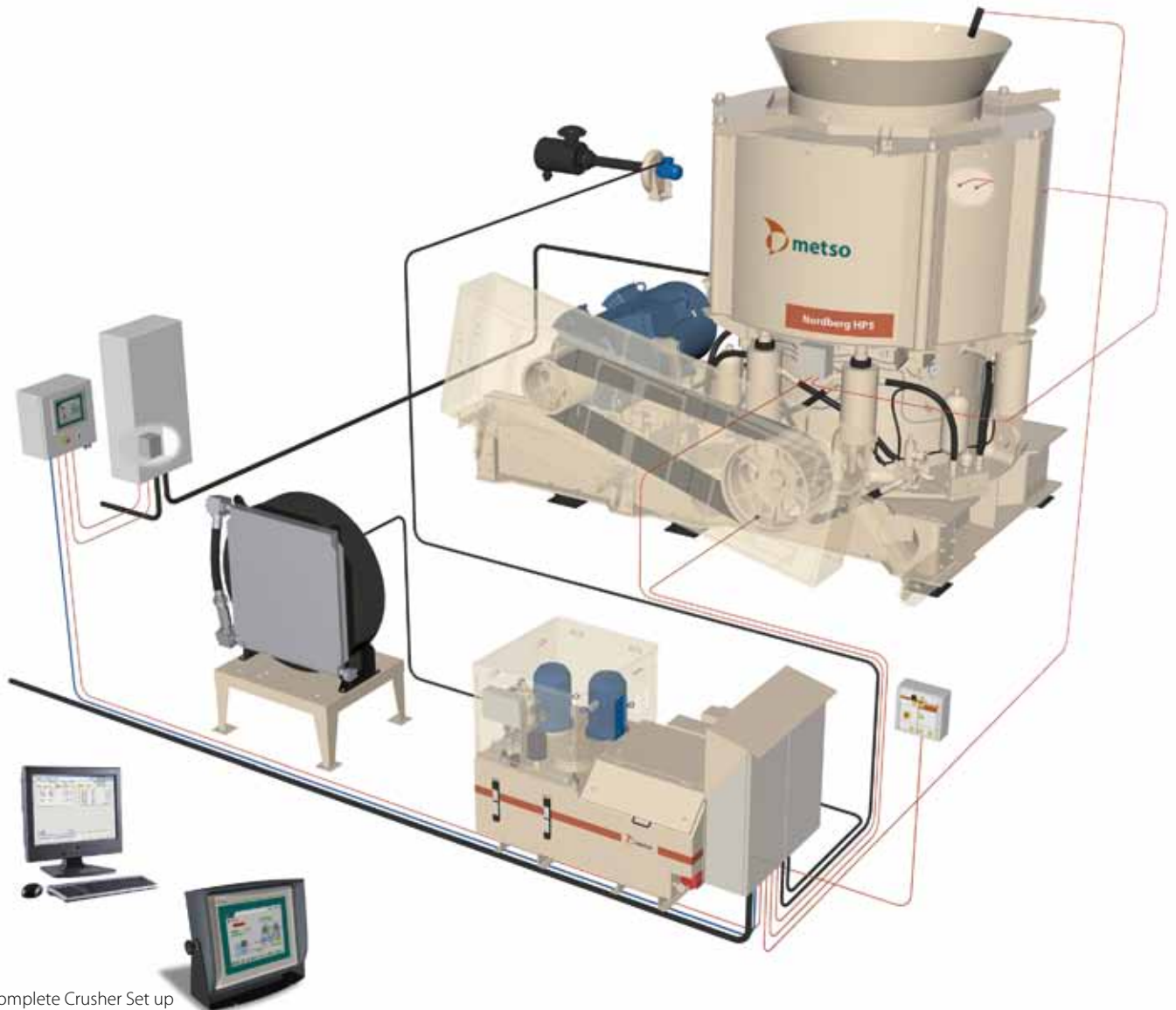
Asset Protection

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.



High crushing force



Complete Crusher Set up

Dimensions

HP Model	A	B	C	D
HP4	2 955 mm 9'8 - 3/8"	2 250 mm 7'4 - 5/8"	2 156 mm 7'0 - 7/8"	2 549 mm 8'4 - 8/8"
HP5	3 854 mm 12'7 - 3/4"	3 062 mm 10' - 1/2"	3 522 mm 11'6 - 5/8"	3 953 mm 12'11 - 5/8"

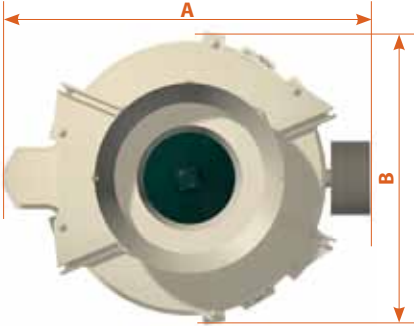
Technical data

HP Model	Nominal feed opening	Motor size up to	Crusher weight	Complete crusher weight*
HP4	252 mm (9.93")	315 kW (400 hp)	19 810 kg (43 586 lbs)	23 672 kg (52 084 lbs)
HP5	330 mm (13.0")	450 kW (600 hp)	33 000 kg (73 000 lbs)	44 500 kg (98 200 lbs)

Cavities

HP Model	Cavity	Minimum setting	Feed opening
HP4	Extra Coarse	28 mm (1.10")	237 mm (9.33")
	Coarse	25 mm (0.97")	203 mm (7.99")
	Medium	16 mm (0.63")	158 mm (6.22")
	Fine	10 mm (0.39")	116 mm (4.55")
	Extra Fine	8 mm (0.31")	67 mm (2.64")
HP5	Extra Coarse	30 mm (1.20")	328 mm (12.91")
	Coarse	25 mm (1.00")	289 mm (11.38")
	Medium	20 mm (0.79")	204 mm (8.03")
	Fine	13 mm (0.52")	112 mm (4.40")
	Extra Fine	9 mm (0.35")	56 mm (2.20")

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



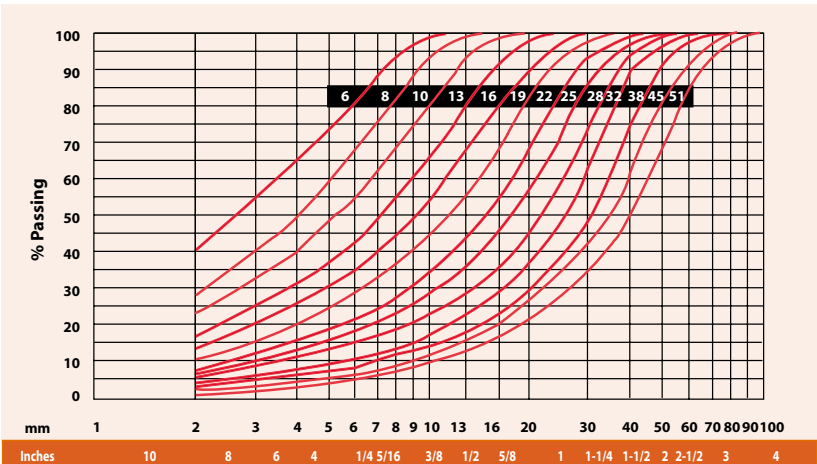
Crusher Capacities

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

HP 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")
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
HP5	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 Mining and Construction Technology crushing equipment

Our Nordberg, Barmac and Lokotrack brand ranges:

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
- B- and V-Series vertical impact crushers
- Laboratory crushers

Mobile equipment

- LT Series mobile crushing plants
- NW Series portable plants

Complete plants

- Complete plants for aggregate production
- Complete plants for recycling

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