

Metso

Nordberg® NP Series™

Horizontal shaft impact (HSI) crushers



Nordberg® NP Series™ Horizontal shaft impact (HSI) crushers

Nordberg® NP Series™ horizontal shaft impact (HSI) crushers are known for high reduction ratios when processing all type materials. They deliver unbeatable performance in primary, secondary and tertiary crushing in aggregates production, mining operations, as well as recycling applications.

High performance

Nordberg® NP Series™ HSI crushers consist of heavy rotor, wear resistant materials, and an optimal crushing chamber design. This combination has proven revolutionary in improving capacity and product quality, as well as in reducing operating and wear costs.

Nordberg® NP™ crushers have a unique blow bar attachment system. With an optimal blow bar alignment on the backing beam contact faces, the attachment system reduces risks of breakage and enables pushing the use of cast iron in blow bars beyond conventional limits.

At nominal speed, the high inertia, heavy duty rotor improves crushing reduction and provides stability in the process, reducing energy consumption and increasing long-term performance.

Reduced plant operating costs

Long experience in crushing, and continuous collaboration with customers and research laboratories have resulted in technical innovations that improve Nordberg® NP™ crushers' reliability.

High capacity combined with high reduction ratio results in high performance crusher. In addition, whenever tertiary crushing stage can be avoided, the capital costs and need for energy drop notably.

Durable wear parts and mechanical components reduce maintenance costs. Mechanical reliability, simplified process and machine operation, as well as easy and safe maintenance increase the global availability of the plant and profitability.

Configured for your needs

Nordberg® NP crusher is an excellent choice especially if your output and productivity demands are stringent.

The crusher configuration can be adjusted for your requirements. Options like full hydraulic adjustment, third breaker plate, different grades of steel and cast iron for the active wear parts, enable customizing the crusher exactly for your needs.

Furthermore, Metso IC™ crusher automation can control the crusher operation and give a complete overview of the crushing performance. It also allows adjusting Nordberg® NP crusher from a distance.

Nordberg® NP Series™ HSI crushers for primary range

Horizontal Shaft Impact (HSI) crusher primary range has been designed to increase the crushing process productivity thanks to its high inertia rotor and high reduction ratio. Usually utilized in the first crushing stage of the size reduction process in aggregates production, recycling and mining operations.

The Primary range consists of tailored primary crusher Nordberg® NP1620e™ and customizable primary crusher Nordberg® NP1415e™.



High performance

High reduction ratio. Good quality end products.



Reduced plant operating costs

Durable wear parts and mechanical components.



Configured for your needs

Crusher settings can be customized for any requirements.



Easy maintenance

Faster service reduce downtime and increase production capacity.





Nordberg® NPe Series™ HSI crushers for primary and secondary crushing

Nordberg NP1110e, NP1213e, NP1315e & N1520e impact crushers provide significant improvements for your productivity, versatility, safety, and uptime.

The Nordberg NP1110e, NP1213e, NP1315e, and N1520e impact technology crushers, have been proven machines operating in a diverse range of severe applications with excellent results in reliability and operating cost.

Specially designed for secondary and as a small primary application (maximum feed size of 600/700mm, 235/8/279/16 In), the optimized crushing cavity design allows greater benefits of high reduction ratio and power efficiency. This enables you to have high versatility in a diverse range of heavy-duty demanding applications. The maximum available power has been increased to 250kW for the NP1110e, to 315 kW (422 hp) for the NP1213e, to 355 kW (476 hp) for the NP1315e on a single drive, and 630 kW (845 hp) on a dual drive for NP1520e, to maximize the high inertia rotor crushing capacity.

As secondary machine with fine feed applications, a 50° feed wedge can be installed to maximize the rotor penetration at high rotor speed to achieve maximum fragmentation.

Particle shape from an NPe crusher can be described as generally excellent in all product ranges despite of the high reduction ratio that may be demanded from the machine.

As a process machine, NPe's can be utilized in open or closed circuits. It is a very popular technology utilized in low abrasion and soft rocks to produce coarse and fine aggregates.

The Metso HSI technology is also utilized in diverse types of applications worldwide even in recycled materials, and hard and medium abrasion rocks with excellent results in terms of performance and operational cost.

Nordberg® NP Series™ HSI crushers for secondary and tertiary crushing

Nordberg NP13, NP15 and NP20 impact crushers provide significant benefits for your productivity, safety, maintenance and uptime, adding value to your operation.

More throughput, less recirculation load.

The Nordberg NP13, NP15 and NP20 impact crushers have been designed in an innovative way that increases feed material penetration to the rotor. Especially for secondary and tertiary applications, the optimized, steeper design enables greater benefits, as the discharge curve is less sensitive to blow bar wear. This enables you to produce more consistent end products without changing the blow bars too early.

To further improve your productivity, the maximum available power range is 315 kW (422 hp) for the NP13, 355 kW (476 hp) for the NP15 on a single drive and 630 kW (845 hp) on a dual drive. For the use of NP-Crushers in manufactured sand applications there are some recommendations. Particle shape from an NP Crusher can be described as generally excellent – It is more angular than rounded. As a process machine, NP is less sensitive to fines in the feed and is a nearly ideal machine for closed circuit operations. The NP-Crushers are very reliable machines and not sensitive to feed fluctuations and sticky materials possible to treat process as well.

HSI has been used for years to produce crushed fines, it is a very popular technology utilized in low abrasion

and soft rocks to produce aggregates and coarse manufactured sand <6mm very utilized in industrial and asphalt sands.

The Metso HSI technology is also utilized in those types of applications worldwide even in hard and medium abrasion materials as secondary and tertiary crushers. Quick, easy, and safe maintenance; higher uptime Metso developed an advanced two-part rear frame for the NP13, NP15, and NP20. The extra-large opening of the new frame gives greater access to the breaker plates during wear parts replacement.

Metso has also innovated a new breaker plate cassette. This patented solution consists of a removable assembly that allows an easy and safe breaker plate liner change outside the crusher.

The new maintenance bridge gives you safe access to the rotor while changing blow bars, the breaker plates liners and to the mainframe side liners, including the ones located at the highest point. The patented Self-Rotor position system (RPS) is the centralized point for adjusting the crusher setting and changing blow bars, further increasing operator safety.





IC20C in a summary:

- Autocalibration (3 different value settings in the memory) for consistent and precise performance
- Continuous safety and monitoring control to minimize risks
- Remote control possibility improves operator safety and control

IC20C crusher automation

Metso IC™ crusher automation brings precision and consistency to your crushing operations. This leads to predictable and stable production and end-product quality, and thus ensures profitable operation of the crusher and the whole crushing process.

The leading crusher automation solution
A comprehensive range of Metso IC™ intelligent crusher automation solutions is available for all Metso crushers. IC™ automation ensures full performance and is precisely designed to meet your expectations and crushing plant requirements for consistent performance, safety, and easy control of crusher parameters. With optimized start-up and shut-down procedures and sequences integrated into

the IC™ automation, you can be sure that the crusher is working correctly in all circumstances and that the downtime of the crusher is minimal.

Our IC™ crusher automation allows you to maximize the performance of your high-quality Metso crushers. This is done with carefully defined safety parameters to perform maintenance, and for bearing temperature, rotor speed, crusher calibration and power draw during crusher operation, which are indicators of the actual crusher load.

This crusher automation monitors the crusher condition and gives an early indication if there's a problem in the crusher. This can help solve a problem before it becomes

serious and costly. IC™ crusher automation provides instant process information to the operator and Metso Metrics makes key performance indicators available anywhere, anytime.

IC™ crusher automation can be easily connected to any plant automation system used in the crushing and screening industry. This enables centralized control of the crusher and the whole plant, allowing the operator to safely control and alter crusher operating parameters according to production needs from a single location.

Cost-effectiveness and high Metso quality

The Metso IC™ 20C crusher automation ensures high availability with just a single touch of a screen command. The system remarkably increases your long-term profitability and gives you better control of the crusher, along with a complete view of the operating parameters for more accurate crusher monitoring. Among other benefits, the automatic setting calibration ensures accurate control of the discharge product curve, even when crushing abrasive materials.

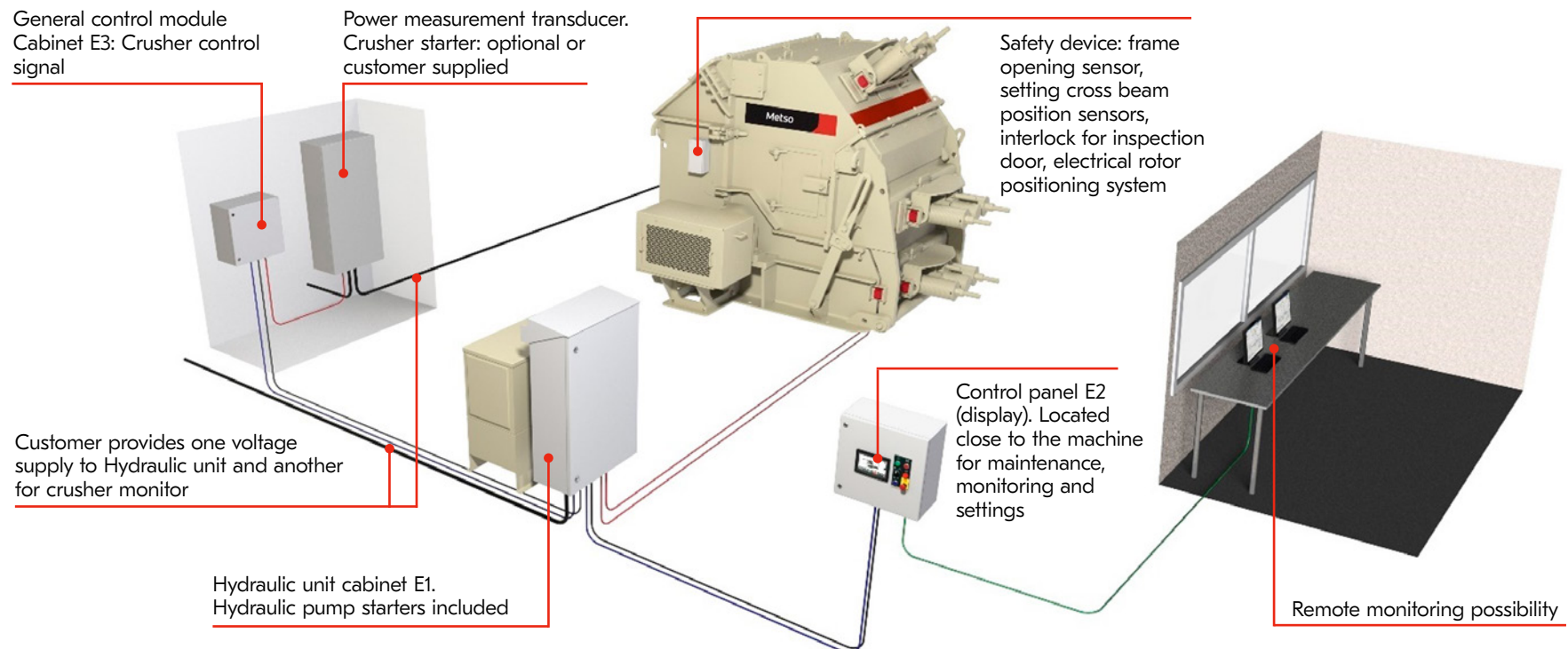
The unique feature of proximity sensors tells the automation system the "zero" calibration point to define the real calibration distance between the top of the hammer and the breaker plate. This operator's pre-defined crusher setting will be maintained constant during the whole crushing operating cycle by the IC20C control and monitoring system.

When the machine is re-started for the next crushing shift, the automation system repeats this procedure again to ensure another period of the crusher operating at the right and real setting calibration.

The proximity switches are maintenance-free and are not subject to mechanical interaction with the crusher breaker plates adjusting system, making it very reliable and easy to access from the outside of the crusher.

The wide selection of seven different blow bars gives you the assurance of having the right tool for all applications, regardless of the abrasiveness of the processed feed material.

You can choose manganese, martensitic steel, or chromium iron for the blow bar material in combination with ceramic inserts.



Technical data

Model	Crushing range	Weight*	Power range	Feed opening	Feed angle	Maximum recommended feed size
Nordberg® NP1415™	Primary	22,300 kg (49,170 lbs)	200 - 355 kW (268 - 476 hp)	1,140 x 1,540 mm (44 7/8" x 60 5/8")	40°	1,000 mm (39 3/8")
Nordberg® NP1620™	Primary	40,500 kg (89,290 lbs)	355** - 630 kW (476** - 845 hp)	1,430 x 2,040 mm (56 5/16" x 80 5/16")	40°	1,300 mm (51 3/16")
Nordberg® NP1110e™	Primary/Secondary	9,300 kg (20,500 lbs)	110 - 250 kW (147 - 335 hp)	710 x 1,020 mm (27 15/16" x 40 2/16")	40° / 50°	600 mm (23 5/8")
Nordberg® NP1213e™	Primary/Secondary	13,000 kg (28,700 lbs)	200 - 315 kW (268 - 422 hp)	750 x 1,320 mm (29 8/16" x 51 15/16")	40° / 50°	600 mm (23 5/8")
Nordberg® NP1315e™	Primary/Secondary	16,200 kg (35,700 lbs)	250 - 355 kW (335 - 476 hp)	805 x 1,540 mm (31 11/16" x 60 5/8")	40° / 50°	600 mm (23 5/8")
Nordberg® NP1520e™	Primary/Secondary	27,500 kg (60,650 lbs)	355** - 630 kW (476** - 845 hp)	850 x 2,040 mm (33 8/16" x 80 5/16")	40° / 50°	700 mm (27 9/16")
Nordberg® NP13™	Secondary and tertiary	11,900 kg (26,250 lbs)	200 - 315 kW (268 - 422 hp)	560 x 1,320 mm (22 1/16" x 51 15/16")	50°	350 mm (13 7/16")
Nordberg® NP15™	Secondary and tertiary	15,700 kg (34,600 lbs)	250 - 355 kW (335 - 476 hp)	595 x 1,540 mm (23 7/16" x 60 5/8")	50°	400 mm (15 3/4")
Nordberg® NP20™	Secondary and tertiary	26,000 kg (50,350 lbs)	355** - 630 kW (476** - 845 hp)	700 x 2,040 mm (27 9/16" x 80 5/16")	50°	500 mm (19 11/16")

Model	Shaft line weight***	Rotor diameter with blow bars	Blow bar weight
Nordberg® NP1415™	7,880 kg (17,375 lbs)	1,370 mm (53 15/16")	445 kg (910 lbs)
Nordberg® NP1620™	15,020 kg (33,115 lbs)	1,610 mm (63 3/8")	735 kg (1,620 lbs)
Nordberg® NP1110e™	2,825 kg (6,230 lbs)	1,100 mm (43 15 5/16")	220 kg (485 lbs)
Nordberg® NP1213e™/NP13™	4,575 kg (10,085 lbs)	1,205 mm (47 7/16")	330 kg (730 lbs)
Nordberg® NP1315e™/NP15™	6,070 kg (13,380 lbs)	1,307 mm (51 7/16")	445 kg (980 lbs)
Nordberg® NP1520e™/NP20™	10,960 kg (24,165 lbs)	1,516 mm (59 11/16")	735 kg (1,620 lbs)

* Weight for complete basic crusher (with 2 breaker plate Mechanical setting with hydraulic assistance) without options

** Single drive is possible with 355kW (476hp) motor maximum

*** Shaft line weight including Shaft line, Rotor, crusher pulley and set of blow bars

Production table* (% passing)

Crusher settings													
Crusher products (for Open circuit)	mm (inch)	200 (5 7/8")	150 (5 15/16")	125 (4 15/16")	100 (3 15/16")	80 (3 3/16")	60 (2 3/8")	50 (2")	40 (1 9/16")	30 (1 3/16")	25 (1")	20 (13/16")	15 (5/8")
	350 (16 3/4")	90	98	100	100	100	100	100	100	100	100	100	100
	250 (9 13/16")	80	90	97	100	100	100	100	100	100	100	100	100
	200 (7 7/8")	72	83	90	97	100	100	100	100	100	100	100	100
	150 (5 15/16")	63	74	81	90	97	100	100	100	100	100	100	100
	125 (4 15/16")	54	66	82	81	90	98	100	100	100	100	100	100
	100 (3 15/16")	45	55	64	70	79	90	95	99	100	100	100	100
	80 (3 3/16")	41	49	53	64	74	84	90	97	100	100	100	100
	63 (2 1/2")	32	41	47	55	63	73	82	90	97	100	100	100
	50 (2")	29	33	40	46	52	61	72	80	90	95	99	100
	40 (1 9/16")	25	29	34	41	49	55	66	76	85	90	97	100
	31.5 (1 1/4")	20	24	28	34	40	46	57	66	76	84	90	97
	25 (1")	16	19	24	28	33	38	48	56	64	75	83	90
	20 (13/16")	15	18	21	25	30	35	46	52	60	67	77	85
	16 (5/8")	11	14	17	20	24	29	37	44	50	56	64	68
	12.5 (1/2")	9	12	14	17	20	25	32	39	44	49	56	60
	10 (3/8")	7	10	12	14	17	21	28	34	38	42	48	53
	8 (5/16")	6	9	10	12	14	18	24	30	33	37	42	46
	6.3 (1/4")	5	8	8	11	13	16	21	26	29	32	37	40
	5 (3/16")	4	5	6	7	9	11	15	17	20	23	25	29
4 (5/32")	2	2	3	3	4	5	5	6	7	8	8	9	

Maximum tonnage** Mtph (Stph)

Primary/Secondary Top feed size = 240 x 400 x 640 mm (9 7/16" x 15 3/4" x 25 3/16")	Settings mm (inch)	125 (4 15/16")	100 (3 15/16")	80 (3 3/16")	60 (2 3/8")	50 (2")	40 (1 9/16")	30 (1 3/16")	25 (1")	20 (13/16")
	NP1520e	1185 (1300)	1050 (1160)	910 (1005)	760 (840)	685 (755)	610 (670)	515 (570)	455 (500)	395 (435)
	NP1315e	600 (660)	525 (580)	465 (515)	385 (425)	340 (375)	305 (335)	255 (280)	225 (250)	200 (220)
	NP1213e	540 (595)	470 (520)	415 (460)	345 (380)	305 (335)	275 (305)	235 (260)	205 (225)	180 (200)
	NP1110e	405 (445)	350 (385)	310 (340)	255 (280)	230 (255)	200 (220)	170 (190)	150 (165)	135 (150)

Maximum tonnage Mtph (Stph)

Primary Top feed size = 480 x 800 x 1250 mm (18 7/8" x 31 1/2" x 49 2/8")		
Settings mm (inch)	NP1620e	NP1415e
200 (7 7/8")	1185 (1300)	725 (800)
150 (5 15/16")	995 (1095)	605 (665)
125 (4 15/16")	885 (975)	540 (595)
100 (3 15/16")	775 (855)	470 (520)
80 (3 3/16")	685 (755)	405 (445)
60 (2 3/8")	545 (600)	330 (365)

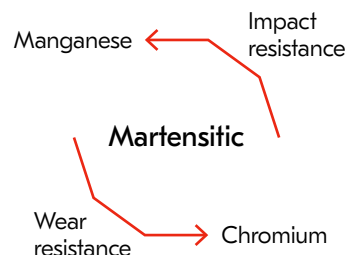
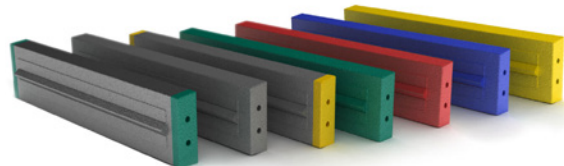
Secondary/Tertiary Top feed size = 120 x 200 x 320 mm (4 3/4" x 7 7/8" x 12 5/8")			
Settings mm (inch)	NP20	NP15	NP13
100 (3 15/16")	1260 (1390)	710 (780)	630 (695)
80 (3 3/16")	1130 (1245)	635 (700)	565 (625)
60 (2 3/8")	945 (1040)	535 (590)	470 (520)
50 (2")	850 (940)	480 (530)	425 (470)
40 (1 9/16")	720 (795)	410 (450)	360 (400)
30 (1 3/16")	645 (710)	365 (400)	330 (365)
25 (1")	580 (640)	320 (350)	280 (310)
20 (13/16")	500 (550)	275 (305)	250 (275)
15 (5/8")	425 (470)	235 (260)	200 (220)

* Production values estimated depending of crushability, rotor speed, material density, power installed and with new hammers.

** Tonnage values estimated depending of feed size and feed curve gradation, crushability, material density, power installed and crusher setting.

Wear and spare parts

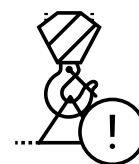
Crusher wear parts for NP Series horizontal shaft impact (HSI) crushers



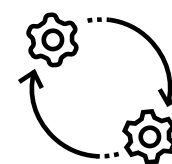
Different alloys for different application

The right tool for safe operation

Simplified maintenance operations — standard delivery with all crushers



Secure and easy blow bar replacement with the blow bar lifting tool



Easy and safe breaker plate liner replacement



Safe and comfortable working area thanks to the service platform



Lifting tools for safer and more efficient Maintenance

Nordberg® NP Series™ horizontal shaft impact (VSI) crushers are originally supplied with all machines. We offer the maintenance bridge and lifting tools for blow bars and breaker plate liners, specially designed fit-for-purpose to make wear parts change-outs safer and more efficient, leading to shortened maintenance times and reduced downtime.

Impact crusher spare parts

Metso's impact crusher spare parts are known for ease of maintenance and reliability. They enable better process control and a stable production pace when processing rock, sand, gravel or recycled materials.

Main components

- Frames
- Shaft line with Rotor
- Breaker plates
- Safety sensors
- Hydraulic unit
- Maintenance tools
- First set of complete Wear parts

Common options:

- Automation capable
- Hoist beam
- Rotor positioning system
- Automatic lubrication

Parts fastening kit:

- Blow bar fastening package



Learn more:



Metso is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. We improve our customers' energy and water efficiency, increase their productivity, and reduce environmental risks with our product and service expertise. We are the **partner for positive change**.

metso.com

