SANDVIK 700 RANGE HORIZONTAL SHAFT IMPACTORS (HSI)

TECHNICAL SPECIFICATION

GETS THE JOB DONE - BOTH OF THEM

The all-new 700 range of Horizontal Shaft impact crushers offers new levels of safety and efficiency.

Developed to comply with new EU legislation, you can configure these smart, modular crushers to operate in a variety of applications in either primary or secondary crushing mode.

The result is higher uptime, and lower cost of ownership from proven crushers that add even better performance and cost savings than before.

The crushers come with a host of innovations for greater safety and efficiency including the patented rotor locking and positioning device to ensure no hands need be placed on the rotor during maintenance. The locking feature locks the rotor in position before the crusher pivot is opened in the event of a blockage. The hammer position indicator shows hammer positions in the crusher before the crusher pivot frame is opened.

Built using a modular system, the new impact crushers can be ordered and shipped very fast. And changed even faster — in less than a day if you need to change duties from primary to secondary crushing.

Modularization means the same size bearings and shaft diameter are used between models, reducing stock holding and costs thanks to shorter delivery times.

It's faster and easier to order spare parts and receive aftermarket care. Designed to be placed in a flat rack container, you save on shipping time and expenses, further reducing cost of ownership.

KEY FEATURES

- High reduction ratios
- Reduced power consumption
- Easier and safer maintenance
- Range of wear parts to ensure optimum operating costs
- Designed for quarries and recycling industries
- Good product shape — low flake and elongation ratios
- Ability to handle re-enforced steel bars enabling recycling of both steel and aggregate
- Ability to recycle old road surfacings (asphalt) for inclusion in new asphalt products

FEED SIZE

Technical data on page 3-4 specify maximum feed size for the Sandvik primary and secondary impact crushers. These are recommended values for a smooth and continuous operation of the crushers. Blasted feed homogeneity is also an important criteria for primary impact crushers.

In primary impact crushing process, the physical size of the crusher feed opening must not be considered as the true gauge to set the maximum crusher feed size and - as a result of that - assess that any lump passing through the crusher feed opening has the correct feed size. Significantly larger feed opening than recommended feed top size is recommended to ease material flow and decreases bridging risks when several big lumps come at once.

Table below recalls the relationship between lumps sizes and their approximated masses for material specific gravity of 2.65 g/cm3. Small variation in lump size implies important variation in its mass and the relevant impact energy to the rotor. This must be kept in mind when evaluating applications in primary crushing circuit.

MASS (KG)	DIMENSION SPHERE (MM)	DIMENSION CUBE (MM)
200	525	425
760	820	660
1 000	900	720
1 500	1 020	830
2 000	1 130	910
2 500	1 220	980
3000	1 290	1 040

FEED PRINCIPLE

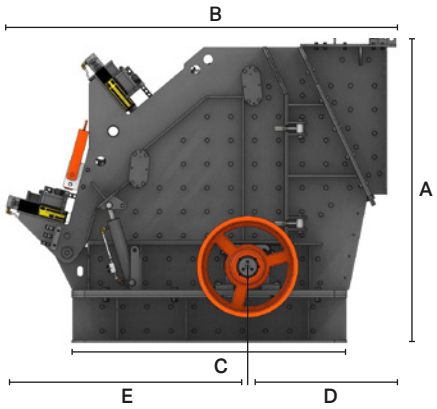
The right feeding principle of impact crushers is basically a regulated feed process. Choke feeding of an impact crusher must not be done as it would create high wear and damages to the equipment.
Removal of fines ahead of an impact crusher is the normal process. Fines in the feed creates additional wear (if material is abrasive), rises risk of clogging if material is sticky and/or will generate additional dust emission. It may also require a larger crusher to achieve the same total production.

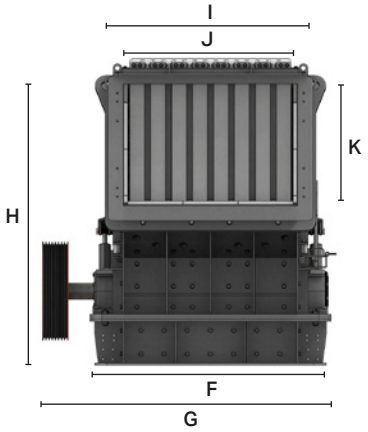
FEED SET-UP

Impact crushers must always be fed on all width of the machine (80 to 90%) to ensure an even wear of the hammers. Concentrated feed will generate localised wear at hammer centre, when material stream is not correctly spread across by the crusher feed chute. Typical case of wrong feed method is a direct material flow penetrating straight into the crushing chamber from a belt conveyor.

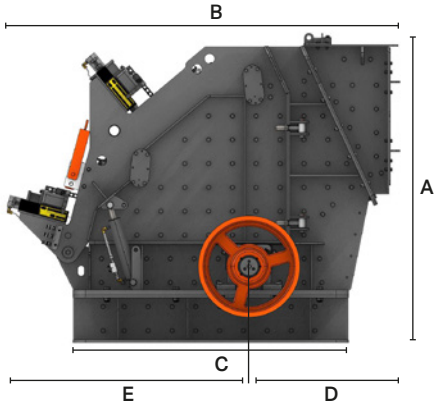
PRODUCT DISCHARGE

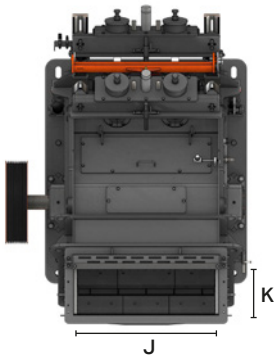
Crushed product has a high velocity when leaving the crushing chamber. Special care must be given to the design of the transfer point underneath the crusher, to prevent damages on collecting belt conveyor/vibrating feeder and to prevent excessive wear : stone box, thick chute liners wherever needed (20 to 30 mm AR steel 400 HB), sufficient headroom underneath the crusher.



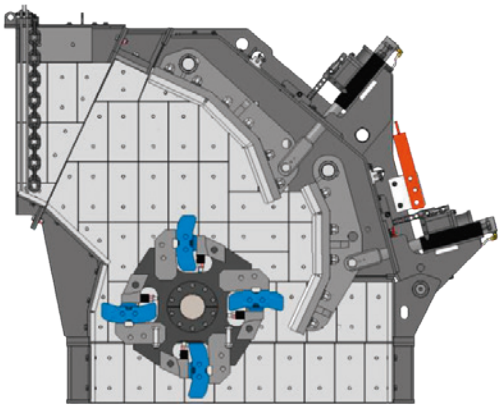


DIMENSIONS MM (IN)	CI711 PRIMARY	CI721 PRIMARY	CI731 PRIMARY
A	2,293 (90 1/4")	2,514 (99")	2,825(111 1/4")
B	2,836 (111 5/8")	3,118 (122 3/4")	3,205 (126 3/16")
C	1,810 (71 1/4")	2,200 (86 5/8")	2,630 (103 1/2")
D	1,067 (42")	1,189 (46 13/16")	1,115 (43 7/8")
E	1,844 (72 5/8")	1,930 (76")	2,090 (82 5/16")
F	1,452 (57 1/8")	1,900 (74 13/16")	2,565 (101")
G	2,003 (78 7/8")	2,370 (93 1/4")	3,224 (126 15/16")
H	2,096 (82 1/2")	2,317 (91 1/4")	2,825 (111 1/4")
I	1,264 (49 3/4")	1,664 (65 1/2")	2,185 (86")
J	980 (38 9/16")	1,360 (53 1/2")	1,935 (76 3/16")
K	819 (32 1/4")	960 (37 3/4")	1,357 (53 7/16")
Weight kg (lbs)	11,005 (24,262)	16,000 (35,274)	27,750 (61,178)
Max. Feed Size mm (in)	600 (23 5/8")	900 (35 1/2")	1,000 (39 3/8")
Rotor Diameter mm (in)	1,005 (39 1/2")	1,150 (45 1/4")	1,390 (54 3/4")
Rotor Width mm (in)	950 (37 3/8")	1,330 (52 3/8")	1,900 (74 13/16")

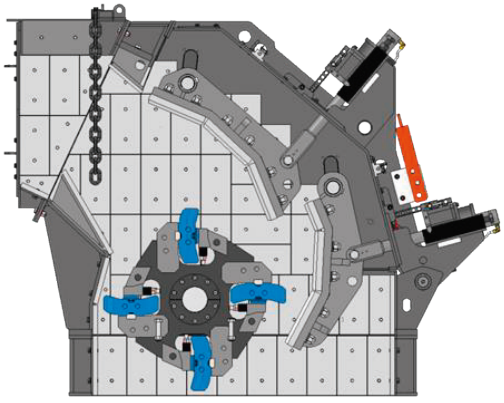




DIMENSIONS MM (IN)	CI712 SECONDARY	CI722 SECONDARY	CI732 SECONDARY
A	2,293 (90 1/4")	2,514 (99")	2,840 (111 13/16")
B	2,836 (111 5/8")	3,118 (122 3/4")	4,070 (160 1/4")
C	1,810 (71 1/4")	2,200 (86 5/8")	2,630 (103 1/2")
D	1,081 (42 9/16")	1,189 (46 13/16")	1,980 (77 15/16")
E	1,844 (72 5/8")	1,930 (76")	2,090 (82 5/16")
F	1,452 (57 1/8")	1,900 (74 13/16")	2,565 (101")
G	2,003 (78 7/8")	2,370 (93 1/4")	3,224 (126 15/16")
H	2,096 (82 1/2")	2,317 (91 1/4")	2,840 (111 13/16")
I	1,264 (49 3/4")	1,664 (65 1/2")	2,165 (85 1/4")
J	980 (38 9/16")	1,360 (53 1/2")	1,935 (76 3/16")
K	434 (17 1/16")	436 (17 3/8")	600 (23 5/8")
Weight kg (lbs)	11,184 (24,656)	16,256 (35,838)	29,650 (65,367)
Max. Feed Size mm (in)	300 (11 7/8")	350 (13 3/4")	350 (13 3/4")
Rotor Diameter mm (in)	1,005 (39 1/2")	1,150 (45 1/4")	1,390 (54 3/4")
Rotor Width mm (in)	950 (37 3/8")	1,330 (52 3/8")	1,900 (74 13/16")



		CI711 PRIMARY	CI721 PRIMARY	CI731 PRIMARY
Rotor diameter	mm	1,005	1,150	1,390
	in	39 1/2"	45 1/4"	54 3/4"
Motor (min/max)	Min (kW)	90	185	220
	Max (kW)	185	250	440
	Min (HP)	125	248	295
	Max (HP)	250	335	590
No. of hammer rows		4	4	5
No. of hammer bars per row		1	1	3
Rotor Speed Range	rpm	555 to 656		398 to 445
Max feed size G	mm	600	900	1000
	in	24"	36"	39 3/8"
Total weight (2 curtains)	kg	11,005	16,000	27,750
	lb	24,262	35,274	61,178
Rotor & shaft assembly with hammers, bearings & sheave	kg	3,060	4,890	11,200
	lb	6,746	10,781	24,692



		CI712 SECONDARY	CI722 SECONDARY	CI732 SECONDARY
Rotor diameter	mm	1,005	1,150	1,390
	in	39 1/2"	45 1/4"	54 3/4"
Motor (min/max)	Min (kW)	90	185	220
	Max (kW)	185	250	440
	Min (HP)	125	248	295
	Max (HP)	250	335	590
No. of hammer rows		4	4	5
No. of hammer bars per row		1	1	3
Rotor Speed Range	rpm	656 to 740		
Max feed size G	mm	300	350	350
	in	11 7/8"	13 3/4"	13 3/4"
Total weight (2 curtains)	kg	11,184	16,256	29,650
	lb	24,656	35,838	65,367
Rotor & shaft assembly with hammers, bearings & sheave	kg	3,004	4,824	11,200
	lb	6,623	10,635	24,692

TONNEAGES VS SETTINGS

		SETTINGS				
PRIMARY	MAX FEED SIZE	2,514 (99″)	30 (1 3/16″)	40 (1 9/16″)	50 (2″)	60 (2 3/8″)
		Throughput MTPH (STPH)				
CI711	600 (23 5/8″)	100 (110)	113 (125)	125 (138)	137 (151)	150 (165)
CI721	900 (35 7/16″)	200 (220)	225 (247)	250 (276)	275 (303)	300 (331)
CI731	1000 (39 3/8″)	285 (314)	315 (347)	344 (380)	373 (431)	403 (446)

70 (2 3/4″)	80 (3 1/8″)	90 (3 1/2″)	100 (3 15/16″)	150 (6″)	160 (6 5/16″)	180 (7 1/16″)	200 (7 7/8″)
163 (180)	175 (193)	188 (207)	200 (220)	–	–	–	–
325 (358)	350 (386)	375 (414)	400 (441)	–	–	–	–
432 (480)	461 (570)	491 (538)	520 (573)	610	628	664	700 (772)

		SETTINGS				
SECONDARY	MAX FEED SIZE	7 (9/32″)	8 (5/16″)	10 (3/8″)	15 (9/16″)	20 (3/4″)
		Throughput MTPH (STPH)				
CI712	300 (11 7/8″)	45 (50)	60 (66)	92 (101)	121 (132)	150 (166)
CI722	350 (13 3/4″)	72 (79)	100 (110)	154 (170)	202 (223)	250 (276)
CI732	350 (13 3/4″)	113 (125)	144 (159)	205 (226)	300 (331)	372 (408)

25 (1″)	30 (1 3/16″)	40 (1 9/16″)	50 (2″)
–	–	–	–
–	–	–	–
427 (463)	468 (518)	523 (573)	572 (628)

OPERATING PARAMETERS

- Machine load is the volumetric load in the crusher
- Only 2 tip speeds per crusher and frequency is available as standard

- CI711	29.1 & 34.4 m/s (50 Hz)	30.6 & 34.5 m/s (60 Hz)
- CI712	34.4 & 38.8 m/s (50 Hz)	34.5 & 38.3 m/s (60 Hz)
- CI721	33.4 & 39.6 m/s (50 Hz)	35.2 & 39.6 m/s (60 Hz)
- CI722	39.6 & 44.6 m/s (50 Hz)	39.6 & 44.0 m/s (60 Hz)
- CI731	30.6 & 34.5 m/s (50 Hz)	29.0 & 32.4 m/s (60 Hz)
- CI732	34.5 & 40.9 m/s (50 Hz)	32.4 & 36.1 m/s (60 Hz)

WORK INDEX LIMITATIONS

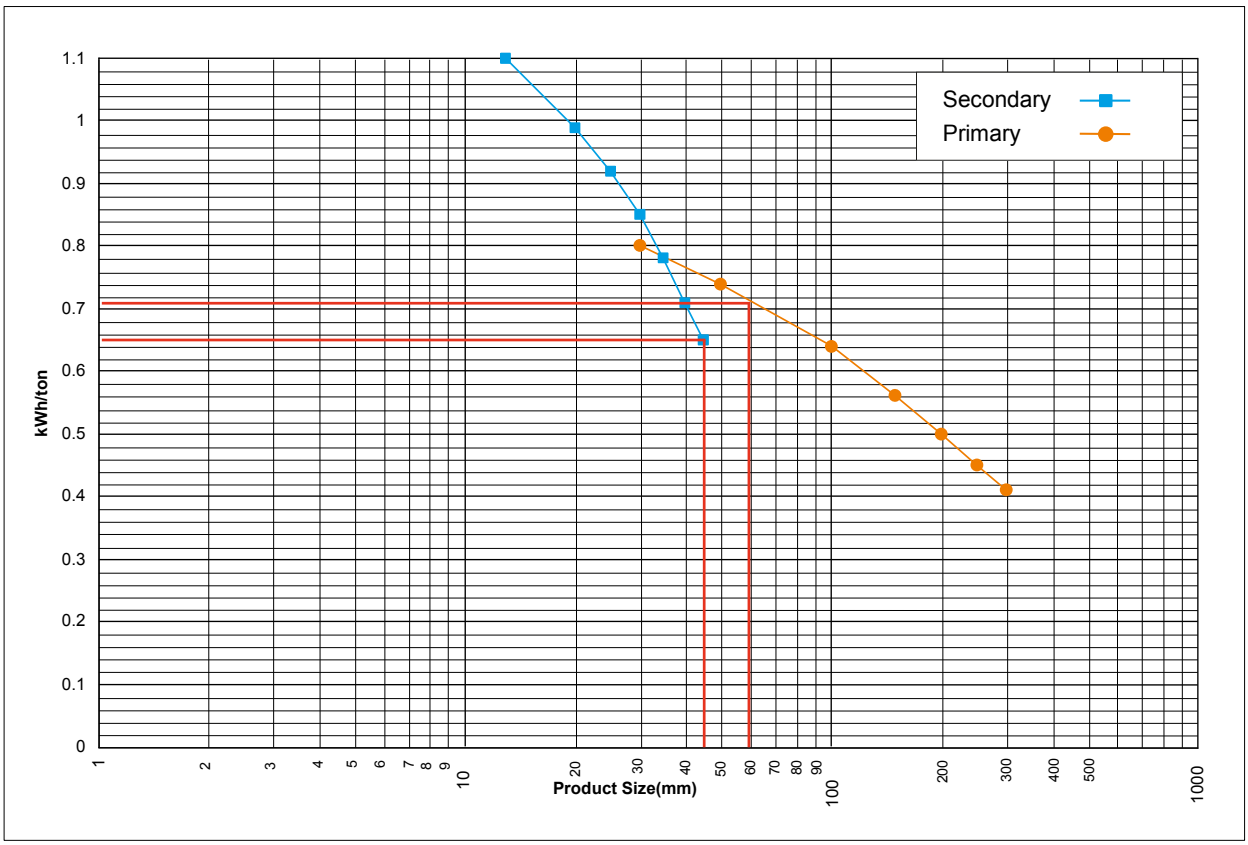
WI up to 18 - ok
WI >18 - 20 - green warning – harder than limestone
WI >20 - yellow warning – check with product department.

ABRASION INDEX LIMITATIONS

AI < 0.25 - ok
AI 0.25 - 0.3 - green warning
AI > 0.3 - yellow warning – check with product department.

REQUIRED MOTOR POWER

* The required power can be approximated if the desired product size is known. (P80 for primary and P90 for secondary crushers)
* Required power = Specific Energy x Total Throughput
* Where the Specific Energy is read from the following chart:



EXAMPLE

Fresh Feed tonnage is 300 t/h. It is a primary Impact Crusher running in open circuit, producing a crushed fraction with P80% = 100 mm.

Production minus 100 mm is 240 MTPH.

The total throughput is 300 MTPH. Then the specific energy is: Specific Energy = 0.64 kWh/ton, see graph.

Therefore the Required Power of the Impact Crusher will be:
Required Power = Specific Energy x Total Throughput = 0.64 x 300 = 192 kW

STANDARD SCOPE OF SUPPLY

- Crusher with fixed and pivot frames.
- Crusher pulley.
- Crusher fitted with semi-automatic curtain adjustment and braking system heavy duty alloy steel main shaft and rotor.
- Curtain liners in chrome steel.
- Frame opening & inspection doors safety interlock system with mechanical 20 mins delay.
- Hammers in chrome steel.
- Tools and handling bar for hammers.
- Four operation and maintenance Manuals.
- Integrated rotor locking and hammer positioning device bearing temperature.
- Sensors fitted to bearing housings.
- Electrically operated hydraulic power pack for curtain adjustment and frame opening.

Note! Drive shaft left hand side of the machine viewed from feed opening.

OPTIONS

HAMMER OPTIONS

The standard hammer for stationary crushers (CI7XX), is CRN-1 (Blue), with the option of CRS ceramic (green), or CRN-2 (orange, for secondary crushers only). CRN-2 (orange) hammers can extend life due to the chemical composition and heat treatment process. This makes them harder, providing more wear life than the other hammer types.

LIFTING JIB AND SUPPORT BRACKET

Lifting jib and support bracket options can be fitted to either the left or right-hand side of the crusher depending on the crusher drive.

CHAIN BLOCK HOIST AND WHEELED TROLLEY

The trolley and hoist are certified (S.W.L.) and designed for lifting the relevant size hammers during routine maintenance.

MOTOR MOUNTING AND DRIVE GUARD ASSEMBLY

The motor mounting plate can be fitted in four various positions around the crusher (front, back, left or right hand). The drive guard assembly is suitable for all available drive options.

DRIVE PULLEY OPTIONS

Select the correct drive for the operating frequency relevant in the country of operation.

ELECTRIC MOTORS

Energy efficient motors with a lower carbon footprint that comply with the latest international standards. Specific governments provide tax breaks/incentives for using this type of motor.

ELECTRIC CONTROL PANELS

Star delta electric control panels specifically designed for use with HSI crushers. Robust and strong, they can be easily connected on site, ensuring correct starting and electrical control of the crusher during normal operation.

PRIMARY CRUSHER RETURNS FEED CHUTE

Returns feed chute options fit the top of the existing standard feed hopper and feeds the re-circulated material on top of the incoming primary feed material.

RETROFIT KIT

Previous crusher models can be retrofitted to the new hammer wedge and lifting tool system.

Sandvik Mining and Rock Technology reserves the right to make changes to the information on this data sheet without prior notification to users. Please contact a Sandvik representative for clarification on specifications and options.

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