

Sandvik CH870i

Cone crushers

Sandvik CH870i is a technologically advanced, high-capacity cone crusher designed for crushing applications in mines or large sized quarries.

Bolted rather than welded arm and body liners reduce maintenance time by up to 90% making the process faster and safer.

The improved over-pressure system with dedicated air channel inlets helps protect your crusher from dust.

When used in secondary crushing applications, the Sandvik CH870i delivers high capacity thanks to its 600 kW motor delivering higher power and more crushing force at maximum throw. It is also suitable for high reduction tertiary/pebble applications. The increased crushing force facilitates higher size reduction, resulting in a finer product size and less circulating load in closed circuits.

It brings you a revolution in intelligent crushing. SAM by Sandvik gives you complete 24/7 access to data generated by your connected Sandvik crusher fleet.

Now you can make decisions based on facts, and clearly see areas where you can improve uptime and productivity. SAM by Sandvik also gives you access to manuals and an e-commerce platform for easily and efficiently buying and reordering wear and spare parts. It lets you track and trace parts online to make maintenance planning simpler.

The CH870i comes with the new generation Automation and Connectivity System as standard. The system continuously monitors and optimizes crusher performance and controls the complete lubrication system, increasing uptime and reliability. It can automatically adjust crusher settings to compensate for crushing chamber wear—ensuring consistent product size. Hydroset™ and the advanced dump valve automatically provide overload protection to let tramp iron or other uncrushable material pass through.



KEY FEATURES		
Automation & Connectivity System (ACS-c)	Automatically adapts the crusher to varying feed conditions ensuring maximum 24/7 performance.	
Hydroset™ system	Provides safety and setting adjustment functions	
Mainframe is built as a unibody without moving parts.	For optimal strength and less components requiring maintenance.	
Top serviceability.	Lifting from above minimizes risks, and allows for quicker and safer maintenance.	
Adjustable eccentric throw.	To exactly balance capacity to the process thus harmonizing the crushing stages.	
Constant liner profile.	Maintains the feed opening and performance during the entire service life of the liners.	
Wide range of crushing chambers suited for all types of applications.	Choose from extra coarse crushing chambers with the largest intake to extremely fine crushing chambers.	
PLC controlled electric dump valve for tramp iron protection.	Reduces pressure peaks and mechanical stress on the crusher, greatly improving reliability.	
Full lubrication monitoring and control.	Real-time monitoring of the crusher lubrication system for increased uptime and reliability.	

GENERAL INFORMATION

General design criteria			
Crusher type	Cone crusher, hydraulically adjusted.	Eccentric bushings (Throws – mm)	• 32, 37, 42, 47 • 47, 52, 57, 62 • 62, 68, 74, 80
Application	Minerals processing.	Eccentric speed	280 rpm
Crushing stage	Secondary, tertiary, quaternary, pebble.	Max. motor power	60 kW
Max. feed size, F100	350 mm	Drive	Direct
CSS range	10-70 mm	Safety coupling	Omega
Nominal capacity*	202-1,370 mtph	Pinion shaft speed	991 rpm (50 Hz), 1,193 rpm (60 Hz)
Ambient temperature	-20°C to +40°C (Contact Sandvik if outside range)	Subframe	With rubber dampers.
Altitude of site	≤ 2000 m (Contact Sandvik if outside range)	Maintenance tool box	Extractor for eccentric bushing. Extractor for bottom shell bushing. Extractor for step bearing. Additional lifting and maintenance tools included.
* Capacity is dependent on the crushing chamber, the eccentric throw, the crusher’s setting and the feed material’s bulk density, crushability, size analysis, moisture content, etc.			
General crusher data			
Weight	67,128 kg (Incl. motor and subframe)	Crushing chambers	
Main frame	Two-part unibody structure without moving parts. Cast steel.	Mantle alternatives	A, B, EF, OB, FF
Top shell	Two-arm design.	Concave alternatives	EC, C, MC, M, MF, F, EF, HR*
Bottom shell	Four-arm design. One inspection hatch.	Alloys for mantles and concaves	M1, M9
Feed hopper	Rubber lined steel hopper. Two inspection doors. Capacity 10,800 kg (bulk density 1,800 kg/m³).	Mantle and concave backing material	Plastic free, metallic contact.
Feed level sensor	Vegapuls 31	Lifting tools for mantle.	Available as option.
Main shaft	Supported at both ends. Top spider bearing and bottom eccentric bearing.	* HR concave is only available through aftermarket.	

CRUSHER DRIVE SYSTEM

Motor Characteristics	
Manufacturer	WEG
Model	W51
Type	Three-phase, squirrel cage.
Weight	7,100 kg depending on spec.
Rated power	600 kW
Frequency	50/60 Hz
Poles	6
Vibration resistance	Motor is supplied with special winding that is reinforced in order to support the vibration levels.
Insulation class	F
Protection class	IP65

CRUSHER DUST EXCLUSION

System Characteristics	
Type	Over-pressure air system.
Air input	Blower (standard) or air regulator (option).
Air quality	Filtered
Air flow	20 m³/min
Air pressure	Approx. 1 kPa
Weight (blower, hoses)	25 kg
Motor power	0.75 kW
Motor speed	2,800 rpm (50Hz), 3,350 rpm (60Hz)
Phases	3
Insulation class	F
Protection class	IP55

CRUSHER TRAMP IRON PROTECTION

Hydraulic pressure relief valve	
System description	Mechanical spring loaded hydraulic valve.
Electric dump valve	
System description	Electrically controlled hydraulic valve.
Pressure transmitter and an electric pilot valve connected to a dedicated, rapid sampling PLC system.	
Hydraulic pressure sampling rate	200 times per second
Mechanical assembly	
Weight	243 kg
Dimensions (LxWxH)	320x407x643 mm
Heating elements	2 x 200 W

CRUSHER WEAR PROTECTION

Splitter	
No. of wear components	8
Max. weight	25 kg
Material	Metal
Fastening method	Bolted
Upper feed hopper	
No. of rubber liners	14
Max. weight	33 kg
Material	Sandvik WT6000 rubber
Fastening method	Bolted
Lower feed hopper	
No. of rubber liners	12
Max. weight	21 kg
Material	Sandvik WT6000 rubber
Fastening method	Bolted
Top shell spider cap	
Max. weight	559 kg
Material	Carbon steel
Fastening method	Bolts, seal with O-ring
Top shell arm shields	
No. of shields	2
Max. weight	233 kg
Material	Manganese Steel
Fastening method	Bolted
Bottom shell body liners	
No. of liners	8
Max. weight	88 kg
Material	Wear-resistant hardened steel
Fastening method	Bolted
Bottom shell arm liners	
No. of liners	4
Max. weight	210 kg
Material	Manganese steel
Fastening method	Bolted

TANK UNIT	
Hydroset system	
Oil tank reservoir capacity	200 liters
Pump design	Gear pump
Pump capacity	25 l/min (50Hz), 30 l/min (60Hz)
Oil filter	
No. of cartridges	1
Blocked filter sensor	No
Pump motor	
Type	Three-phase, squirrel cage
Power	7.5 kW
Speed	970 rpm (50 Hz), 1,180 rpm (60 Hz)
Poles	6
Insulation class	F
Protection class	IP55
Main crusher lubrication system	
System design	Closed circuit, single pump, gravity return.
Oil tank reservoir capacity	900 liters
Pump design	Screw pump
Standby pump	Available as option
Pump capacity	260 l/min (50 Hz), 266 l/min (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Power	11 kW
Speed	1,470 rpm (50 Hz), 1,175 rpm (60 Hz)
Insulation class	F
Protection class	IP55
Oil filters	
No. of filters	6
Blocked filter sensor	Differential pressure sensor
Oil heaters	
No. of heaters	4
Type	Electrical immersion
Rating	1.66 – 2.2 kW depending on voltage
Method	Indirect heating
Phases	3

Pinionshaft lubrication system	
System design	Closed circuit, single pump, gravity return
Oil tank reservoir capacity	80 liters
Pump design	Gear pump
Pump capacity	0.70 l/min (50 Hz), 0.84 l/min (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Power	0.25 kW (50 Hz), 0.28 kW (60 Hz)
Speed	935 rpm (50 Hz) , 1,122 rpm (60 Hz)
Insulation class	F
Protection class	IP55
Oil filters	
No. of cartridges	1
Blocked filter sensor	Pressure switch
Over-pressure air system	
Type	Over-pressure air system
Air input	Blower (standard) or air regulator (option)
Air quality	Filtered
Air flow	20 m³/h
Air pressure	~ 1 kPa
Weight (blower, hoses)	25 kg
Motor power	0.37 kW (50 Hz), 0.43 kW (60 Hz)
Motor speed	2,800 rpm (50Hz), 3,350 rpm (60 Hz)
Phases	3
Insulation class	F
Protection class	IP55

OIL COOLING SYSTEMS (For main crusher lubrication)

Air/oil coolers	
No. of units	2
Dry weight (incl. stand)	522 kg
Material	Aluminum
Oil volume	36 liters
Oil pressure drop	0.15 MPa
Oil flow rate	260 l/min (50 Hz), 266 l/min (60 Hz)

Motor power	5.5 kW
Motor speed	935 rpm (50 Hz), 1,122 rpm (60 Hz)
Max. air flow	21,000 m³/hr, 24,000 m³/hr
Water/oil cooler (Option)	
No. of units	1
Dry weight	150 kg
Material	Stainless steel
Mounting	Stand alone
Oil volume	13 liters
Oil pressure drop	0.13 MPa
Oil flow rate	260 l/min (50 Hz), 266 l/min (60 Hz)
Water flow rate	210 l/min ± 20
Inlet water temperature	< 30°C
Max. water feed pressure	0.30 MPa
Max. cooling capacity	53 kW

OFFLINE FILTER UNIT FOR MAIN LUBRICATION

Purpose	Removes particles, degrading particles, and water from the main lubrication system in a continuous slow offline filtration process
Model	27/108
Oil capacity	40 liters
Dimensions (LxWxH)	650x450x1518 mm
Weight	125 kg
Filter housing material	Cast iron
Filter type	B 27/27
No. of filter inserts	4
Blocked filter sensor	Pressure switch
Filter insert material	Cellulose
Filtration grade	3 µm absolute (β₃ ≥ 75)
Pump design	Gear wheel
Pump capacity	400 l/h (50 Hz), 480 l/h (60 Hz)
Pump motor	Three phase, squirrel cage
Protection class	IP55

MANUALS		
Operator's manual	CH870i, CT8, ACS-c	Any language
Installation manual	CH870i, CT8, ACS-c	Any language
Installation manual appendix	CH870i, CT8, ACS-c	Any language
Maintenance manual	CH870i	Any language
Spare parts catalogue	CH870i	English only

Automation and Connectivity System (ACS-c)

System alternatives

- Turn-key / Integrated
- CE marked / UL compliant
- Supply voltages
 - 380 – 690 V AC 3-phase
 - 110 – 240 V AC 1-phase
 - 50/60Hz
- Network communication cables
 - Profinet CU cables
 - 10 (33), 20 (66), 30 (98), 50 (164), 100 (328) meter (Feet)
 - Fiber optic FO cables
 - 50 (164), 100 (328), 150 (492), 200 (656), 250 (820), 300 (984) meter (Feet)

Features

- One system for complete crusher control
- GUI in Metric/US units and standard languages
- Crusher reliability with proven automatic setting regulation
 - Control modes and programs for constant CSS or maximized reduction
 - Automatic liner wear compensation
 - Automated setting calibration
- Clarified responsibility with roll-based interaction
 - Operator
 - Maintenance
 - Engineer
- Increased availability with optimized alarm management
 - 9 different alarm classes
 - Sensor alarm bypass
- Tools to simplify trouble-shooting and optimization
 - Detailed information
 - Alarms recommended actions
 - Historical trends
 - Alarm and event log
 - User instructions with search
- Full supervision and remote operation with seamless wintegration to plant
 - Supervision of 500 signals
 - Remote control
 - Communication monitoring
 - Plant system clock synchronization

Setting regulation

- Setting regulation monitoring and control
 - Hydroset pressure
 - Main drive power
 - Main shaft position
 - CSS
 - Tank oil level
- Feed material level monitoring and control
- Top shell spider bearing monitoring
 - Temperature
- Main drive monitoring
 - Power
 - Rotation
 - Factor
 - Phase angle
- Emergency stop system

Lubrication control

- Main lubrication monitoring and control
 - Oil pressure
 - Oil filter pressure
 - Oil inlet temperature
 - Oil inlet flow
 - Oil return temperature
 - Oil return flow
 - Tank oil temperature
 - Tank oil level

- Pinion lubrication monitoring and control
 - Oil pressure
 - Oil filter pressure
 - Oil temperature
 - Tank oil level

- Dust seal air pressure monitoring and control
 - Air pressure in crusher

- Off-line filter monitoring and control
 - Oil filter pressure

Dump valve control

- Dump valve monitoring and control
 - Hydroset pressure
 - Assembly temperature
 - Directional valve

Connectivity to SAM

- Gateway for transfer of equipment data thru 4G/3G/2G

Integration to plant control system

- Hard wired digital input/output signals
 - Permissions
 - Status
 - Alarm sum
 - Commands
 - Feedback
- Field bus protocols
 - ControlNet
 - DeviceNet
 - EtherNet/IP
 - Modbus TCP
 - Modbus RTU
 - Profibus DP
 - Profinet
- Remote user interface
 - HTML5
 - OPC DA Server software (optional)
 - WINI software (optional)

Equipment dimensions

- Operator panel (IP65)
- Electrical cabinet, setting regulation (IP66)
- Electrical cabinet, lubrication control (IP66)
- Electrical cabinet, dump valve control (IP66)
- Setting control box (IP66)
- Emergency stop reset box (IP66)
- Sensor connection box (IP66)
- Connectivity box (IP66)
- Antenna router box (IP67)
- Network switch box (IP66)
- Tank connection box (IP66)
- Power measurement unit (IP20)
- Signal exchange unit (IP20)
- Tank sensor connection unit (IP65)

W x H x D - mm (in)

- 357 (14.07) x 290 (11.42) x 60 (2.36)
- 1200 (47.24) x 600 (23.62) x 250 (9.84)
- 1200 (47.24) x 800 (31.50) x 250 (9.84)
- 760 (29.92) x 600 (23.62) x 350 (13.78)
- 80 (3.15) x 170 (6.69) x 65 (2.56)
- 80 (3.15) x 140 (5.51) x 65 (2.56)
- 600 (23.62) x 300 (11.81) x 155 (6.10)
- 300 (11.81) x 300 (11.81) x 210 (8.27)
- 160(6.30) x 280 (11.02) x 160 (6.30)
- 300 (11.81) x 300 (11.81) x 210 (8.27)
- 300 (11.81) x 600 (23.62 x 155 (6.10)
- 250 (9.84) x 130 (5.12) x 101 (3.98)
- 585 (23.03) x 375 (14.76) x 130 (5.12)
- 385 (15.16) x 275 (10.83) x 51 (2.01)

PERFORMANCE

CH870i – nominal capacity* (mtph)

	Concave	EC	C	MC	M
Max. feed size (mm)	Closed side setting (CSS)	140-170	120-150	100-130	-
	F85***	198	162	134	-
	F90	240	197	162	147
	F100	350	287	236	184
Max. motor power (kW)		520	520	520	520
Eccentric throw (mm)		32-68	32-68	32-68	32-68
CSS (mm)	10	-	-	-	-
	13	-	-	-	-
	16	-	-	-	-
	19	-	-	-	351-451
	22	-	-	403-555	375-631
	25	392-466	421-541	429-721	399-671
	29	423-663	455-765	463-779	431-725
	32	446-751	480-808	489-822	455-765
	38	493-830	531-893	540-908	503-846
	44	540-909	581-978	591-995	551-926
	51	595-1001	640-1077	651-1096	606-1020
	57	642-1080	691-1162	703-1182	654-1101
	64	697-1173	750-1261	763-1283	710-1195
	70	744-1167	800-1255	814-1277	758-1189
	Mantle	A/B/FF	A/B/FF	A/B/FF	A/B

	Concave	MF	F	EF
Max. feed size (mm)	Closed side setting (CSS)	-	-	-
	F90	86	79	70
	F100	108 (122**)	99 (112**)	88 (100**)
Max. motor power (kW)		520	520	520
Eccentric throw (mm)		32-74	32-80	32-80
CSS (mm)	10	-	-	202-259
	13	253	236-450	219-418
	16	273-521	254-486	236-451
	19	293-559	273-521	254-484
	22	313-597	292-557	271-517
	25	332-635	310-593	288-550
	29	359-686	335-640	311-594
	32	379-724	354-676	329-627
	38	419-800	391-747	363-693
	44	459-772	428-720	398-714
	51	505-745	472-695	438-645
	57	545-649	509-605	473-607
	64	592	552	513
	70	-	-	-
	Mantle	EF/OB	EF/OB	EF/OB

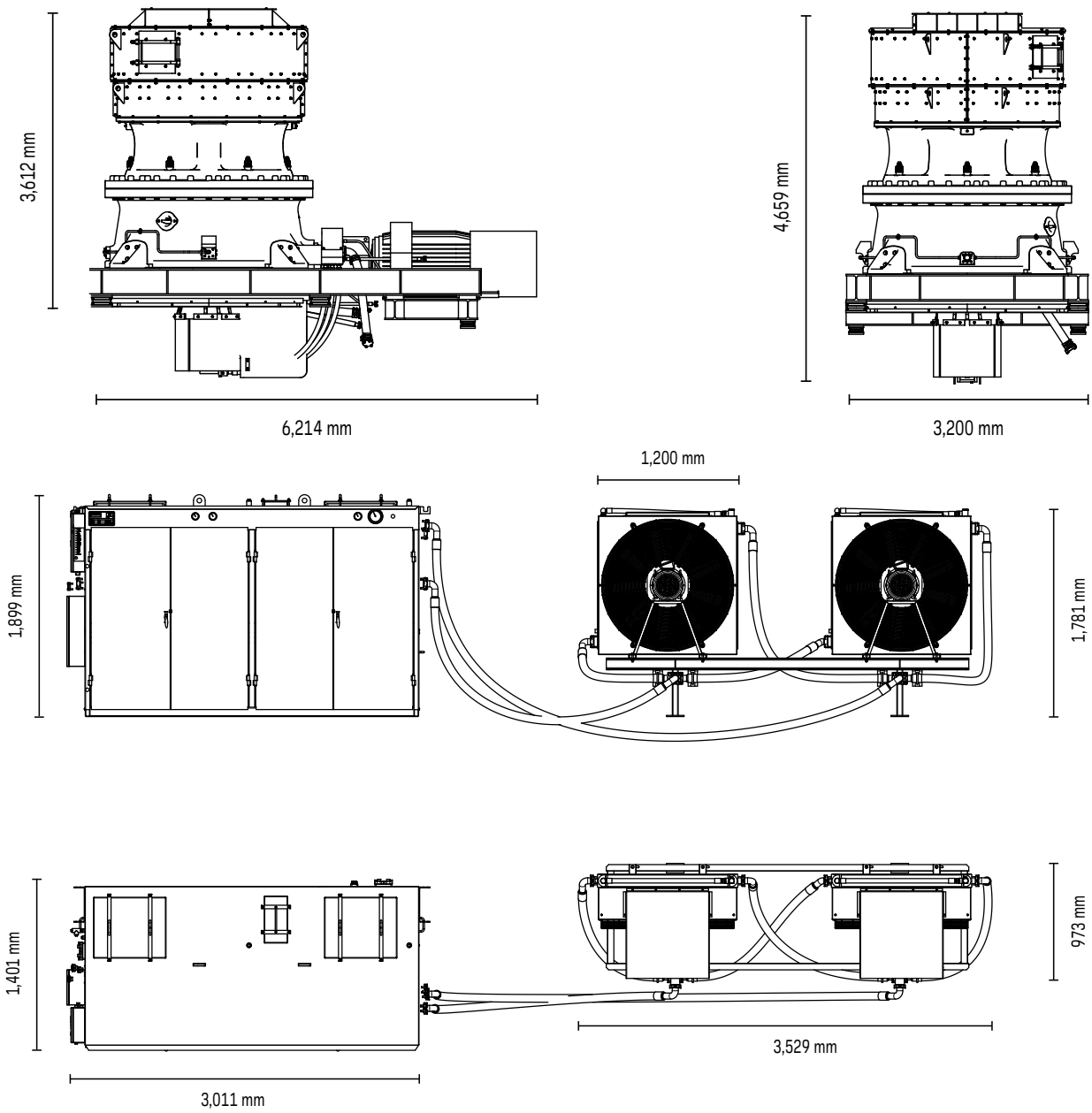
* Based on material with bulk density of 1,600 kg/m3
** OB mantle (Oversize Breaker)
*** Additional feed size requirement applicable for FF mantle only (FlexiFeed)

WEIGHT (KG)

Top shell assembly	17,200	Hoses and protection assembly	723
Bottom shell assembly	20,300	Crusher weight	58,293
Main shaft assembly	11,200	Subframe	6,550
Pinion shaft housing assembly	760	Electric motor (max.)	6,950
Hydroset cylinder assembly	2,820	Coupling and shaft	235
Feed hopper assembly	2,820	Tolat weight (incl. subframe and drive)	72,028
Eccentric assembly	1,820		
Dust collar assembly	650		

* Incl. splitter

Dimensions*



* Always refer to the installation manuals

