Sandvik CH830i

Cone crushers

Sandvik CH830i is a technologically advanced, high capacity mid-range cone crusher for secondary and tertiary crushing, designed for crushing applications in mines or large sized quarries.

Each crusher has a hydraulically supported main shaft which is supported at both ends. With a robust design, adjustable eccentric throw, a constant intake opening, high performance can be achieved by proper selection of a Sandvik OEM crushing chamber.

The CH830i 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 CH830i comes with the new generation Automation and Connectivity System as standard. The system continuously monitors and optimizes crusher performanceand 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.

Bolted rather than welded top and bottom shell liners reduce maintenance time and are much safer. It's 90% faster to change liners compared to welding. The improved over-pressure system with dedicated air channel inlets keeps dust out to increase reliability. The standard of-fline filter unit keeps lubrication oil cleaner with 24/7 fine filtration, reducing wear on your internal crusher components and extending oil life by up to 5 times.

SANDVIK

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.
Application	Minerals processing.
Crushing stage	Secondary, tertiary, quartenary, pebble.
Max. feed size	211 mm
CSS range	5-41 mm
Nominal capacity*	61-283 mtph
Ambient temperature	-20°C to +40°C (Contact Sandvik if outside range)
Altitude of site	≤ 2000 m (Contact Sandvik if outside range)

* 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	12,734 kg
Main frame	Two-part unibody structure without moving parts. Cast steel.
Top shell	Two-arm design.
Bottom shell	Five-arm design. Two inspection hatches.
Feed hopper	Rubber/steel lined steel hopper. Two inspection doors.
Feed level sensor	Vegapuls 31
Main shaft	Supported at both ends. Top spider bearing and bottom eccentric bearing.

Eccentric bushings (Throws – mm)	• 24, 28, 32 • 32, 36, 40, 44 • 44, 48, 52
Eccentric speed	361 rpm (50 Hz, SPC-belt) 367 rpm (60 Hz, SPC-belt) 366 rpm (60 Hz, 8V-belt)
Max. motor power	250 kW
Drive	Direct
Safety coupling	Omega
Pinion shaft speed	991 rpm (50 Hz), 1,193 rpm (60 Hz)
Drive	V-belt or direct
Subframe	With rubber dampers.
Maintenance tool box	Extractor for eccentric bushing. Extractor for bottom shell bushing. Extractor for step bearing. Additional lifting and maintenance tools included.

Crushing chambers

Mantle alternatives	A, B, EF, FlexiFeed B
Concave alternatives	EC, C, M, F, EF
Alloys for mantles and concaves	M1, M7, M9
Mantle and concave backing material	Plastic free, metallic contact.
Lifting tools for mantle.	Available as option.

CRUSHER DRIVE SYSTEM

Motor Characteristics

Manufacturer	WEG
Model	W22
Type	Three-phase, squirrel cage.
Weight	1,500-2,150 kg
Rated power	250 kW
Frequency	50/60 Hz
Poles	4
Vibration resistance	Motor is supplied with special winding that is reinforced in order to support the vibration levels.
Insulation class	F
Protection class	IP55

CRUSHER DUST EXCLUSION

System Characteristics

Type	Dust seal air pressure.
Air input	Blower
Air quality	Filtered
Air flow	<70 m^3/min
Air pressure	<10 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

Mechanical dump 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	48 kg
Dimensions (LxWxH)	250x360x470 mm
Heating elements	1 x 200 W

CRUSHER WEAR PROTECTION

Feed hopper

No. of rubber liners	12
Max. weight	4 kg
Material	Sandvik WT7000 rubber
Fastening method	Bolted

Cone liner

No. of rubber liners	16
Max. weight	7 kg/4 kg
Material	Hardox or Sandvik WT6000 rubber (option)
Fastening method	Bolted

Top shell spider cap

Max. weight	145 kg
Material	Carbon steel
Fastening method	Bolts, seal with O-ring

Top shell arm shields

No. of shields	2
Max. weight	38 kg
Material	Manganese Steel
Fastening method	Bolted

Bottom shell body liners

No. of liners	8
Max. weight	13-17 kg/6-9 kg
Material	Wear-resistant hardened steel or Sandvik WT6000 rubber (option)
Fastening method	Bolted

Bottom shell arm liners

No. of liners	5
Max. weight	84-87 kg
Material	Manganese steel
Fastening method	Bolted (weldig*)

* No main frame welding.

TANK UNIT

General data	
Supplies oil to the main lubrication system. Pinion lubrication systems and to the hydroset system	
No. of doors	3
No. of inpection hatches	2 located on top of unit.
Cabinet material	Metal
Tank unit dimensions (LxWxH)	1,980x1,130x2,000 mm
Dry weight	865 kg
Hydroset system	
System design	Single reversible pump
Oil tank reservoir capacity	85 liters
Pump design	Gear pump
Pump capacity	10.4 l/min (50Hz), 12.6 l/min (60Hz)
Oil filter	
No. of filters	1
Filter type	Spin-on
Filter grade	10 µm
Filter material	Glass fiber
Pump motor	
Type	Three-phase, squirrel cage
Power	3 kW @50 Hz, 3.6 kW @60 Hz
Speed	1,500 rpm (50 Hz), 1,800 rpm (60 Hz)
Poles	4
Insulation class	F
Protection class	IP55
Main crusher lubrication system	
System design	Closed circuit, single pump, gravity return.
Oil tank reservoir capacity	400 liters
Pump design	Gear pump
Standby pump	N/A
Pump capacity	70 l/min (50 Hz), 85 l/min (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Power	3 kW @50 Hz, 3.6 kW @60 Hz
Speed	1,500 rpm (50 Hz), 1,800 rpm (60 Hz)
Insulation class	F
Protection class	IP55
Oil filters	
No. of filters	1
Filter type	Filter element insert
Filter grade	25 µm
Filter material	Glass fiber
Oil heaters	
No. of heaters	2 (optional 3)
Type	Immersion heater
Rating	1.65 kW
Istallation type	Immersion heater tube
Phases	3
Pinionshaft lubrication system	
System design	Closed circuit, single pump, gravity return
Oil tank reservoir capacity	52 liters
Pump design	Gear pump
Pump capacity	0.9 l/min (50 Hz), 1.1 l/min (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Power	0.12 kW @50 Hz/@60 Hz
Speed	1,500 rpm (50 Hz), 1,800 rpm (60 Hz)
Insulation class	F
Protection class	IP55
Oil filters	
No. of filters	1
Filter type	Spin-on
Filter grade	10 µm
Filter material	Glass fiber

OIL COOLING SYSTEMS (For main crusher lubrication)

Standard air/oil coolers	
No. of units	1
Dry weight (incl. stand)	240 kg
Material	Aluminum
Oil volume	12.8 liters
Max. air flow	2.8 kg/s @50 Hz, 3.3 kg/s @60 Hz
Air cooler fan motor	
Type	Three-phase, squirrel cage
Power	2.2 kW @50 Hz, 3.6 kW @60 Hz
Speed	1,500 rpm (50 Hz), 1,800 rpm (60 Hz)
Hot climate ai/oil coolers	
No. of units	1
Dry weight (incl. stand)	390 kg
Material	Aluminum
Oil volume	19.0 liters
Max. air flow	7.8 kg/s @50 Hz, 9.3 kg/s @60 Hz
Air cooler fan motor	
Type	Three-phase, squirrel cage
Power	5.5 kW @50 Hz, 6.3 kW @60 Hz
Speed	1,500 rpm (50 Hz), 1,800 rpm (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Capacity	200 @50 Hz, 240 @60 Hz
Speed	915 rpm (50 Hz), 1,120 rpm (60 Hz)
Protection class	IP55

MANUALS

Operator's manual	Any language
Installation manual	Any language
Installation manual appendix	Any language
Maintenance manual	Any language
Spare parts catalogue	English only

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	27/54
Oil capacity	20 liters
Dimensions (LxWxH)	650x450x1,055 mm
Weight	100 kg
Pump design	Gear wheel
Oil filters	
No. of filters	2
Filter type	Filter insert
Filter grade	3 µm
Filter material	Cellulose
Filter housing material	Cast iron

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	**W x H x D - mm (in)**
— Operator panel (IP65)	357 (14.07) x 290 (11.42) x 60 (2.36)
— Electrical cabinet, setting regulation (IP66)	1200 (47.24) x 600 (23.62) x 250 (9.84)
— Electrical cabinet, lubrication control (IP66)	1200 (47.24) x 800 (31.50) x 250 (9.84)
— Electrical cabinet, dump valve control (IP66)	760 (29.92) x 600 (23.62) x 350 (13.78)
— Setting control box (IP66)	80 (3.15) x 170 (6.69) x 65 (2.56)
— Emergency stop reset box (IP66)	80 (3.15) x 140 (5.51) x 65 (2.56)
— Sensor connection box (IP66)	600 (23.62) x 300 (11.81) x 155 (6.10)
— Connectivity box (IP66)	300 (11.81) x 300 (11.81) x 210 (8.27)
— Antenna router box (IP67)	160(6.30) x 280 (11.02) x 160 (6.30)
— Network switch box (IP66)	300 (11.81) x 300 (11.81) x 210 (8.27)
— Tank connection box (IP66)	300 (11.81) x 600 (23.62 x 155 (6.10)
— Power measurement unit (IP20)	250 (9.84) x 130 (5.12) x 101 (3.98)
— Signal exchange unit (IP20)	585 (23.03) x 375 (14.76) x 130 (5.12)
— Tank sensor connection unit (IP65)	385 (15.16) x 275 (10.83) x 51 (2.01)

PERFORMANCE

CH870i – nominal capacity* (mtph)

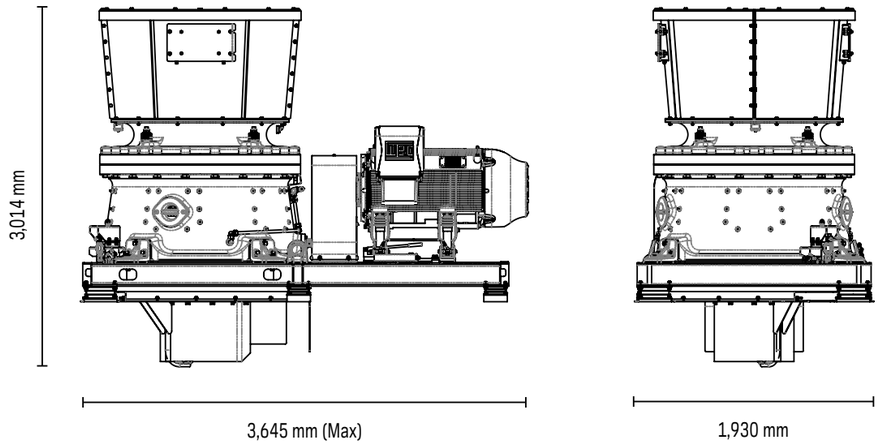
	Concave	EC	C	M	F	EF
Max. feed size (mm)	F85***	119	87	-	-	-
	F90	145	105	74	49	38
	F100	211	153	93	61	48
Max. motor power (kW)		250	250	250	250	250
Eccentric throw (mm)		24-52	24-52	24-52	24-52	24-52
CSS (mm)						
	5	-	-	-	61-81	67-82
	6	-	-	-	63-112	70-123
	8	-	-	84-112	67-119	74-131
	10	-	-	89-158	72-126	79-139
	13	113-150	116-180	97-172	78-137	85-132
	16	121-215	126-222	105-185	84-139	92-133
	19	130-230	135-238	112-199	90-139	99-121
	22	139-246	144-255	120-212	96-128	106-117
	25	148-262	153-271	128-198	102-125	-
	29	160-283	165-256	138-183	110	-
	32	169-280	175-251	146-177	-	-
	35	178-256	184-224	153	-	-
	38	187-248	193-214	-	-	-
	41	196-217	-	-	-	-
	Mantle	A/B/FF	A/B/FF	A/B	A/B	EF

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

WEIGHT (KG)	Kg	Lb
Top shell assembly	3,936	8,677
Bottom shell assembly	3,774	8,320
Main shaft assembly	2,424	5,344
Pinion shaft housing assembly	198	437
Hydroset cylinder assembly	681	1,501
Feed hopper assembly	931	2,053
Eccentric assembly	506	1,116
Dust collar assembly	143	315

Hoses and protection assembly	50	110
Crusher weight	12,734	28,074
Subframe	1,162	2,561
Electric motor (max.)	2,150	4,740
Tolat weight (incl. subframe and drive)	16,594	36,584

Dimensions*



* Always refer to the installation manuals