SANDVIK CH860i & CH865i CONNECTED CONE CRUSHER

TECHNICAL SPECIFICATION

Sandvik CH860i and Sandvik CH865i are high capacity technologically advanced, mid-range cone crushers 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, they offer production flexibility and depending on crushing application, they perform up to 30% better compared to other crushers in their class.

Sandvik CH860i is dedicated for high capacity secondary crushing thanks to its 500kW motor delivering higher power and more crushing force at maximum throw.

With the Sandvik CH865i, the increased crushing force facilitates higher size reduction, resulting in a finer product size and less circulating load in closed circuits. It's particularly beneficial for tertiary and pebble crushing applications.

They bring you a revolution in intelligent crushing. Connected via the My Sandvik portal, they offer 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. My Sandvik 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 CH860i and CH865i comes with the new generation Automation and Connectivity System (ACS) 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

New generation world-class Automation & Connectivity System (ACS)	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

	CH860i	CH865i
Crusher type	Cone crusher, hydraulically adjusted	
Application	Minerals processing	
Crushing stage	Secondary	Tertiary, quartenary, pebble
Max. feed size, F100	315 mm	123 mm
CSS range	13-51 mm	10-44 mm
Nominal capacity*	250–910 mtph	155–517 mtph
Ambient temperature	-20°C to +40°C (Contact Sandvik if outside range)	
Altitude of site	≤ 2000 m (Contact Sandvik if outside range)	

* Capacity and possible CSS 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

	CH860i	CH865i
Weight	39,710 kg	38,930 kg
Main frame	Two-part unibody structure without moving parts. Cast steel.	
Top shell	Two-arm design	
Bottom shell	Four-arm design. Two inspection hatches.	
Feed hopper	Rubber lined steel hopper. Two inspection doors. Capacity 3,050 kg (bulk density 1,600 kg/m³)	
Feed level sensor	Vegapuls 67	
Main shaft	Supported at both ends Top spider bearing and bottom eccentric bearing	
Eccentric bushings (Throws – mm)	• 30, 34, 38, 42 • 42, 46, 50, 54, 58 • 58, 62, 66, 70	
Eccentric speed	290 rpm (4.8 Hz)	
Max. motor power	500 kW	
Drive	Direct	
Safety coupling	Omega	
Pinion shaft speed	990 rpm (50 Hz) 1,190 rpm (60 Hz)	
Subframe	With rubber dampers	
CH660 adaptor	Available as option	
Maintenance tool box	Extractor for eccentric bushing. Extractor for bottom shell bushing. Extractor for step bearing Additional lifting and maintenance tools included	

CRUSHING CHAMBERS

	CH860i	CH865i
Mantle alternatives	A, B, FF	A, B, EF, OB
Concave alternatives	EC, C, MC, M	MF, F, EF, HR*
Alloys for mantles and concaves	M1, M2	
Mantle and concave backing material	Plastic free, metallic contact	
Lifting tool for mantle	Available as option	

* HR concave is only available through aftermarket.

CRUSHER DRIVE SYSTEM

MOTOR CHARACTERISTICS

Manufacturer	WEG
Model	HGF 450
Type	Three-phase, squirrel cage
Weight	5,880 kg
Rated power	500 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	> 0.3 m³/min
Air pressure	> 600 Pa when crusher is operating
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	212 kg
Dimensions (LxWxH)	320x407x643 mm
Heating elements	2 x 200 W

PLC cabinet

Manufacturer	Siemens
Dimensions (LxHxD)	760x760x300 mm
Weight	83 kg
Supply voltage	100-240 VAC
Phases	1
Frequency	50/60 Hz
Power	750 W
Protection class	IP66
Control voltage	24 VDC
Communication interface	Hard-wired communication
Customer feedback signals	Electrical dump valve, ready Electrical dump valve, open Hydroset oil pressure, error Valve assembly temperature, error Electric pilot valve, error

CRUSHER WEAR PROTECTION

SPLITTER (CH865i)

No. of wear components	16
Max. weight	11 kg
Material	Metal
Fastening method	Bolted

UPPER FEED HOPPER

No. of rubber liners	12
Max. weight	10 kg
Material	Sandvik WT6000 rubber
Fastening method	Bolted

LOWER FEED HOPPER

	CH860i	CH865i
No. of rubber liners	12	16
Max. weight	14 kg	9 kg
Material	Sandvik WT6000 rubber	Sandvik WT6000 rubber
Fastening method	Bolted	Bolted

TOP SHELL SPIDER CAP

Max. weight	372 kg
Material	Carbon steel
Fastening method	Bolts, seal with O-ring

TOP SHELL ARM SHIELDS

	CH860i	CH865i
No. of shields	2	2
Max. weight	125 kg	230 kg
Material	Manganese steel	Manganese steel
Fastening method	Bolted	Bolted (welding*)

TOP SHELL RIM LINERS (CH865i)

No. of liners	8
Max. weight	70 kg
Material	Wear-resistant hardened steel
Fastening method	Bolted (welding*)

BOTTOM SHELL BODY LINERS

No. of liners	8
Max. weight	50 kg
Material	Wear-resistant hardened steel
Fastening method	Bolted

BOTTOM SHELL ARM LINERS

No. of liners	4
Max. weight	200 kg
Material	Manganese steel
Fastening method	Bolted (welding*)

* No main frame welding.

AUTOMATION & CONNECTIVITY SYSTEM (ACS)

SETTING REGULATION

MONITORING FUNCTIONS (AVAILABLE WITH METRIC AND IMPERIAL UNITS)
Energy consumption
Hydroset hydraulic pressure
Main shaft position
Calculated CSS (based on main shaft position)
Lubrication oil temperature
Temperature close to the spider bearing
Liner wear
Historical data log
Automatic liner wear compensation (Only available for CH-models)

REGULATION FUNCTIONS (CRUSHING MODES)	
CSS (Auto CSS)	Keep CSS constant
Peak Pressure (Auto Load)	Keep load constant
Multi-CSS (Multi – CSS)	Alternate between two CSS settings
10 customized programs can be stored	

SAFETY FUNCTIONS
Protects the crusher from overload by automatically regulating the crusher based on preset operational limits and the real-time input from the crusher
Alarm severity levels: Direct Stop, Sequential Stop, Feeder stop, Notices and Events
Signal permitting operation of the crusher drive motor
Alarm log

OTHER FUNCTIONS & CABINET DIMENSIONS	
Push button box for manual setting of CSS	
Setting regulation cabinet (LxHxD)	1200x600x250 mm
Connection box crusher (LxHxD)	600x350x155 mm
Network repeater box (LxHxD) (Recommended for distances over 100m)	300x300x210 mm

OPERATOR'S PANEL	
Dimensions (LxHxD)	316X251X72,5 mm
Weight	3.5 kg
Operational temperature	-25°C to +70°C
Protection class	IP65
Power supply	10–30 VDC

ELECTRICAL HARDWARE
Setting regulation control
Power measurement unit
Customer interface gateway
Connection box crusher
Cable kit

LUBRICATION CONTROL (ACS)

MONITORING FUNCTIONS	
Main/secondary lubrication circuit data	Oil temperature Oil flow Oil pressure Oil tank temperature Oil level Differential pressure across filter
Pinion shaft lubrication circuit data	Oil pressure Differential pressure across filter
Over-pressure air system	
Filter monitoring functions	
Offline filter status	

OPERATIONAL FUNCTIONS
Oil heaters
Main lubrication oil pump
Pinion lubrication oil pump
Over-pressure fan
Air/oil coolers
Offline filter functions

ELECTRICAL HARDWARE
Lubrication control
Connection modules tank
Cable kit

CABINET DIMENSIONS	
Lubrication control cabinet (LxHxD)	1200x800x250 mm

SOFTWARE PACKAGE (OPTIONAL)

Communication gateway interface	ControlNet DeviceNet Ethernet/IP Modbus TCP Profibus Profinet
WINi	Simultaneously control up to 9 different crushers with ACS from a PC via Ethernet network
Operating system compatibility: Windows 10, Windows 8, Windows 7, Windows Vista, Windows XP, Windows 2000	Control the ACS remotely using the same graphical user interface
ACS Reporter	Export data from the Automation & Connectivity System to a PC for analysis and storage

TANK UNIT

HYDROSET SYSTEM	
Oil tank reservoir capacity	233 liters
Pump design	Gear pump
Pump capacity	25 l/min (50 Hz) 30 l/min (60 Hz)
Oil filter	
No. of cartridges	1
Blocked filter sensor	No
Pump motor	
Type	Three-phase, squirrel cage
Power	7.5 kW
Speed	975 rpm (50 Hz) 1,180 rpm rpm (60 Hz)
Poles	2
Insulation class	F
Protection class	IP55

MAIN CRUSHER LUBRICATION SYSTEM	
System design	Closed circuit, single pump, gravity return.
Oil tank reservoir capacity	600 liters
Pump design	Screw pump
Standby pump	Available as option
Pump capacity	216 l/min (50 Hz) 208 l/min (60 Hz)
Pump motor	
Type	Three-phase, squirrel cage
Power	9.2 kW
Speed	1,475 rpm (50 Hz) 1,180 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	3
Type	Electrical immersion
Rating	2.0 – 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	66 litres
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 filter	
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 m^3/h
Air pressure	~ 1 kPa
Weight (blower, hoses)	25 kg
Motor power	0.37 kW (50 Hz) 0.46 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	216 l/min (50 Hz) 208 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 m^3/hr 24,000 m^3/hr

WATER/OIL COOLER (OPTION)

No. of units	1
Dry weight	150 kg
Material	Stainless steel
Mounting	Stand alone or on CT86 tank
Oil volume	13 liters
Oil pressure drop	0.13 MPa
Oil flow rate	216 l/min (50 Hz) 208 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 litres
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 ($\beta_3 \geq 75$)
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	CH860i CH865i, CT86, ACS	Any language
Installation manual	CH860i CH865i, CT86, ACS	Any language
Installation manual appendix	CH860i CH865i, CT86, ACS	Any language
Maintenance manual	CH860i CH865i	Any language
Spare parts catalogue	CH860i CH865i	English only

PERFORMANCE

CH860i PERFORMANCE – NOMINAL CAPACITY* (MTPH)

	Concave	EC	C	MC	M
Max. feed size (mm)	Closed side setting (CSS)	130-150	120-140	95-110	–
	F85***	178	149	100	–
	F90	216	181	157	122
	F100	315	263	196	152
Max. motor power (kW)		500	500	500	500
Eccentric throw (mm)		30-70	30-70	30-70	30-70
CSS (mm)	13	–	–	–	250-292
	16	259-281	292-341	281-422	270-495
	19	278-371	313-496	302-553	290-531
	22	297-495	335-614	322-591	310-567
	25	316-579	356-653	343-628	329-604
	29	341-625	385-705	370-679	356-652
	32	360-660	406-744	391-716	375-688
	35	379-695	427-784	411-754	395-724
	38	398-730	449-823	432-792	415-761
	41	417-764	470-862	452-829	435-797
	44	436-799	492-901	473-867	454-833
	48	461-807	520-910	500-876	481-841
	51	480-760	541-857	521-825	501-792
	Mantle	A/B	A/B	A/B	A/B

* based on material with bulk density of 1,600 kg/m^3

CH865i PERFORMANCE – NOMINAL CAPACITY* (MTPH)

	Concave	MF	F	EF
Max. feed size (mm)	F90	86	68	51
	F100	108 (123**)	85 (97**)	63 (72**)
Max. motor power (kW)		500	500	500
Eccentric throw (mm)		30-70	30-70	30-70
CSS (mm)	10	–	183	155-285
	13	215-322	199-365	169-309
	16	231-424	215-394	182-333
	19	248-455	231-423	195-358
	22	265-486	246-452	208-382
	25	282-517	262-480	222-407
	29	305-508	283-472	240-399
	32	322-509	299-473	253-400
	38	356-474	330-440	279-373
	44	389-422	362-392	306-332
	Mantle	EF/OB	EF/OB	EF/OB

* based on material with bulk density of 1,600 kg/m^3
** OB mantle (Oversize Breaker)
*** Additional feed size requirement applicable for FF mantle only (FlexiFeed)

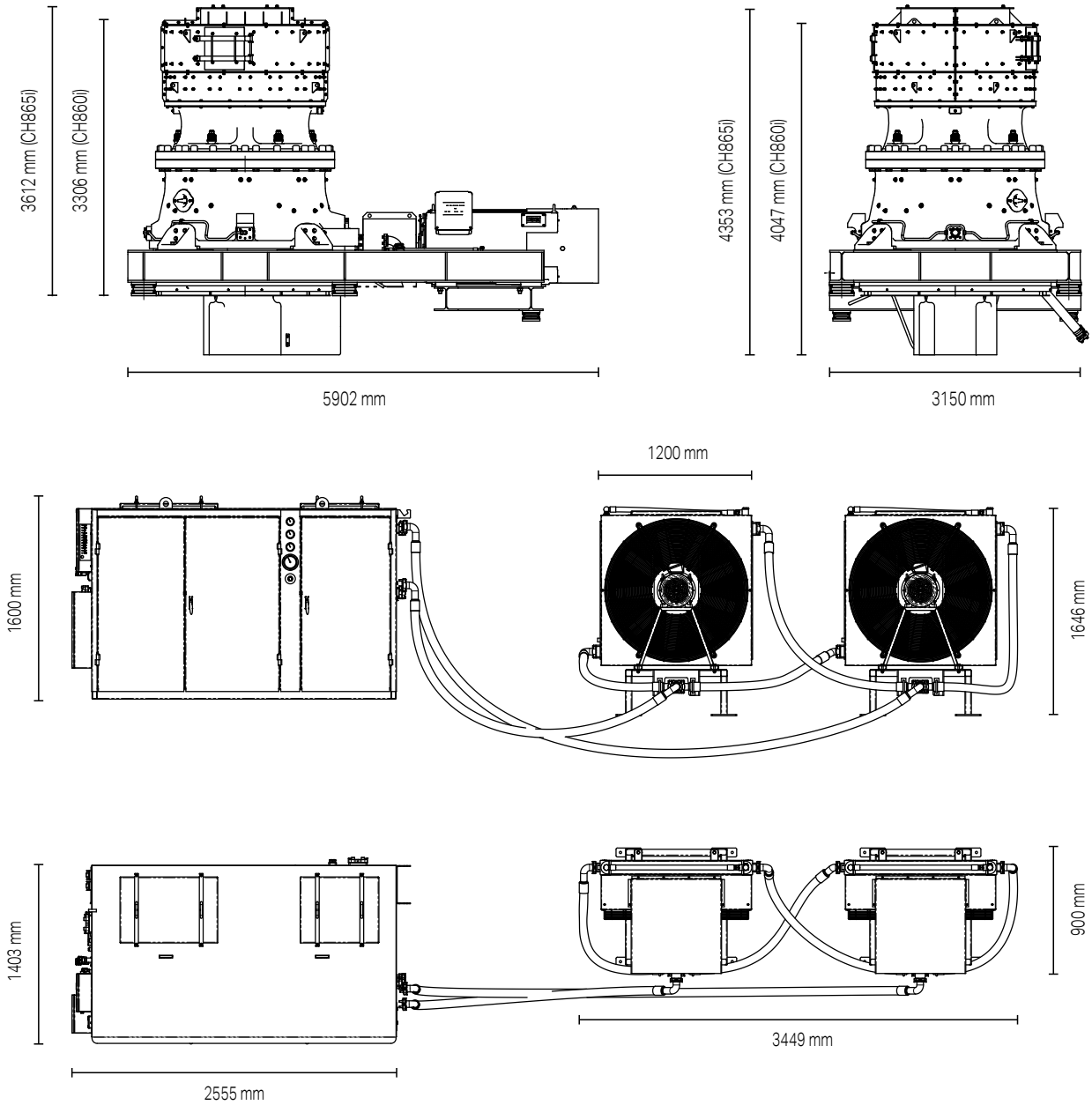
WEIGHT (KG)

	CH860	CH865
Top shell assembly	11,780	11,000
Bottom shell assembly	12,520	12,520
Main shaft assembly	7,930	7,930
Pinion shaft housing assembly	670	670
Hydroset cylinder assembly	2,380	2,380
Feed hopper assembly	1,400 *	1,400 **
Eccentric assembly	1,850	1,850
Dust collar assembly	650	650
Hoses and protection assembly	530	530

	CH860	CH865
Crusher weight	39,710	38,930
Subframe	4,700	4,700
Electric motor (max.)	5,900	5,900
Coupling and shaft	220	220
Total weight (incl. subframe and drive)	50,530	49,750

* incl. cones ** incl. splitter

DIMENSIONS*



* Always refer to the installation manuals

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