SANDVIK CH890i & CH895i CONNECTED CONE CRUSHER

TECHNICAL SPECIFICATION

Sandvik CH890i and CH895i are technologically advanced, high-capacity 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.

The main shaft is now 65% stronger and both the top and bottom shells have been strengthened and cast-optimized by up to 50% for maximum reliability and higher availability. Bolted rather than welded arm and body liners reduce maintenance time by up to 90% making the process faster and safer.

Sandvik CH890i is dedicated for high-capacity secondary crushing thanks to its 750 kW motor, delivering higher power and more crushing force at maximum throw.

With the Sandvik CH895i, 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 CH890i and CH895i 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

	CH890i	CH895i
Crusher type	Cone crusher, hydraulically adjusted	
Application	Minerals processing	
Crushing stage	Secondary	Tertiary, quartenary, pebble
Max. feed size, F100	428 mm	127 mm
CSS range	13-70 mm	10-70 mm
Nominal capacity*	275-1,837 mtph	258-1,077 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

	CH890i	CH895i
Weight	97,031 kg	96,483 kg
Main frame	Two-part unibody structure without moving parts. Cast steel.	
Top shell	Two-arm design	
Bottom shell	Four-arm design One inspection hatch	
Feed hopper	Rubber lined steel hopper. Two inspection doors. Capacity 10.8 ton (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)	• 24,28,32,36 • 36,40,44,48 • 48,52,56,60 • 60,64,68,70	
Eccentric speed	230 rpm @ 3.8 Hz	
Max. motor power	750 kW	
Drive	Direct	
Safety coupling	Safeset	
Pinion shaft speed	993 rpm (50 Hz) 890 rpm (60 Hz)	
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

	CH890i	CH895i
Mantle alternatives	A, B, HC, EF, OB, FF	EF, OB, HC*
Concave alternatives	EC, C, MC, M, MF, F	EFX, EF, EEF, HR**
Alloys for mantles and concaves	M1, M9	
Mantle and concave backing material	Epoxy	
Lifting tools for mantles and concaves	Available as option	

*HC used only with HR. **HR Only available through aftermarket.

CRUSHER DRIVE SYSTEM

MOTOR CHARACTERISTICS

Manufacturer	WEG
Model	HGF 500
Type	Three-phase, squirrel cage
Weight	6,500 kg depending on spec
Rated power	750 kW
Frequency	50/60 Hz
Poles	6/8
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 (CH895i)

No. of wear components	8
Max. weight	25 kg
Material	Metal
Fastening method	Bolted

UPPER FEED HOPPER

No. of rubber liners	16
Max. weight	33 kg
Material	Sandvik WT6000 rubber
Fastening method	Bolted

LOWER FEED HOPPER

	CH890i	CH895i
No. of rubber liners	12	16
Max. weight	28 kg	9 kg
Material	Sandvik WT6000 rubber	Sandvik WT6000 rubber
Fastening method	Bolted	Bolted

TOP SHELL SPIDER CAP

Max. weight	1,033 kg
Material	Carbon steel
Fastening method	Bolts, seal with O-ring

TOP SHELL ARM SHIELDS

	CH890i	CH895i
No. of shields	2	2
Max. weight	653	596 kg
Material	Manganese steel	Manganese steel
Fastening method	Welding	Welding

TOP SHELL RIM LINERS (CH895i)

No. of liners	8
Max. weight	168 kg
Material	Wear-resistant hardened steel
Fastening method	Welding

BOTTOM SHELL BODY LINERS

No. of liners	8
Max. weight	89 kg
Material	Wear-resistant hardened steel
Fastening method	Bolted

BOTTOM SHELL ARM LINERS

No. of liners	4
Max. weight	278 kg
Material	Manganese steel
Fastening method	Bolted

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	200 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	970 rpm (50 Hz) 1,180 rpm rpm (60 Hz)
Poles	6
Insulation class	F
Protection class	IP55

MAIN CRUSHER LUBRICATION SYSTEM	
System design	Closed circuit, 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	2,950 rpm (50 Hz) 3,500 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 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) 0.43 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 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
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	50 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 ($\beta_3 \geq 75$)
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	CH890i. CH895i,	Any language CT8, ACS
Installation manual	CH890i,CH895i,	Any language CT8, ACS
Installation manual appendix	CH890i, CH895i, CT8, ACS	Any language
Maintenance manual	CH890i, CH895i	Any language
Spare parts catalogue	CH890i, CH895i	English only

PERFORMANCE

CH890i – NOMINAL CAPACITY* (MTPH)

	Concave	EC	C	MC	M	MF	F
Max. feed size (mm)	Closed side setting (CSS)	170-200	150-180	130-160	-	-	-
	F85***	242	216	171	-	-	-
	F90	294	262	208	175	119	111
	F100	428	382	302	219	149	139 (158**)
Max. motor power (kW)		750	750	750	750	750	750
Eccentric throw (mm)		24-70	24-70	24-70	24-70	24-70	24-70
CSS (mm)	13	-	-	-	-	-	-
	16	-	-	-	-	371-431	366-630
	19	-	-	490	334-501	398-751	392-755
	22	-	504-545	524-692	356-951	426-819	419-806
	25	488-566	536-709	557-960	379-1106	453-871	446-858
	29	527-781	579-998	602-1158	410-1194	489-941	481-927
	32	556-1003	611-1177	635-1223	432-1261	516-993	508-958
	38	614-1182	676-1301	702-1351	478-1394	570-1098	562-968
	44	673-1295	740-1424	769-1480	523-1526	625-1202	615-912
	51	741-1426	815-1569	847-1630	576-1681	688-1324	678-841
	57	800-1539	880-1693	914-1759	622-1814	742-1339	731
	64	868-1670	955-1837	992-1709	675-1800	806-1259	-
	70	926-1783	1019-1674	1059-1569	720-1561	860-1137	-
	Mantle	A/B/FF	A/B/FF	A/B/FF	A/B	A/B	EF/OB

PERFORMANCE

CH890i WITH HC MANTLE – NOMINAL CAPACITY* (MTPH)

	Concave	MC	M	MF
Max. feed size (mm)	Closed side setting (CSS)	145-175	-	-
	F90	239	206	145
	F100	348	257	182
Max. motor power (kW)		750	750	750
Eccentric throw (mm)		24-70	24-70	24-70
CSS (mm)	10	-	-	-
	13	-	-	275
	16	-	368-398	297-560
	19	451-524	395-618	319-613
	22	482-714	422-813	340-655
	25	513-987	449-865	362-697
	29	554-1066	485-934	391-753
	32	584-1125	512-986	413-795
	38	646-1243	566-1089	456-787
	44	707-1219	620-1069	500-741
	51	779-1092	683-957	550-683
	57	841-976	737-855	594
	64	-	-	-
	70	-	-	-
	Mantle	HC	HC	HC

CH895i – NOMINAL CAPACITY* (MTPH)

	Concave	EFX	EF	EEF
Max. feed size (mm)	Closed side setting (CSS)	-	-	-
	F90	89	77	68
	F100	112 (127**)	97 (110**)	86 (97**)
Max. motor power (kW)		750	750	750
Eccentric throw (mm)		24-70	24-70	24-70
CSS (mm)	10	268	263	258-279
	13	291-560	286-550	281-540
	16	314-605	308-594	303-583
	19	337-649	331-637	325-625
	22	360-693	354-680	347-668
	25	383-737	376-724	369-710
	29	414-796	406-782	399-767
	32	437-840	429-825	421-810
	38	483-871	474-912	465-802
	44	529-826	519-999	509-755
	51	582-770	572-1077	561-651
	57	628-679	617-1014	-
	64	-	669-885	-
	70	-	715-772	-
	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)

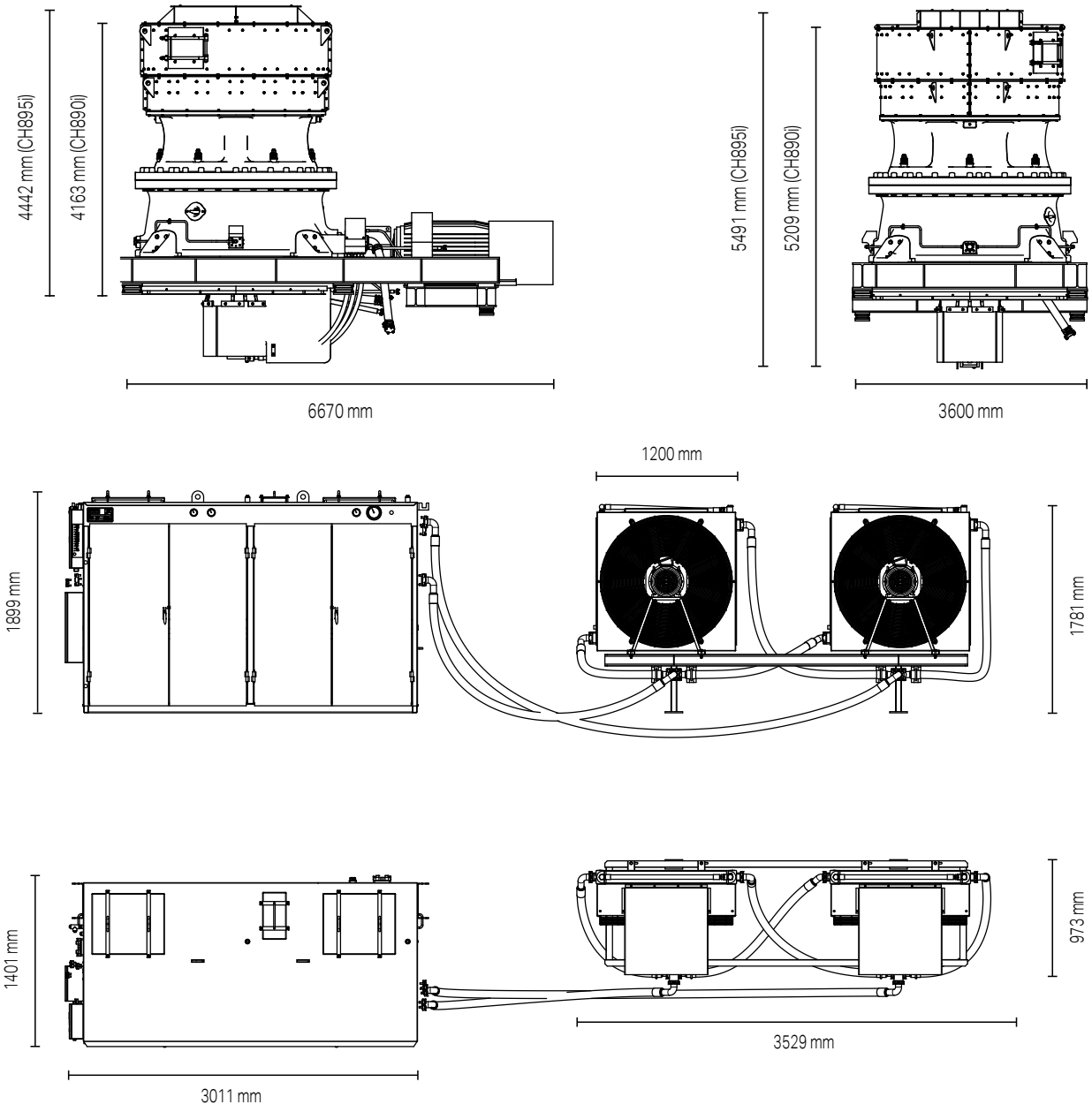
WEIGHT (KG)

	CH890i	CH895i
Top shell assembly	26,280	26,032
Bottom shell assembly	26,965	26,965
Main shaft assembly	18,435	18,435
Pinion shaft housing assembly	857	857
Hydroset cylinder assembly	4,031	4,031
Feed hopper assembly	3,850	3,550*
Eccentric assembly	2,862	2,862
Dust collar assembly	912	912
Hoses and protection assembly	699	699

	CH890i	CH895i
Crusher weight	84,891	84,343
Subframe	5,240	5,240
Electric motor (max.)	6,500	6,500
Coupling and shaft	400	400
Tolat weight (incl. subframe and drive)	97,031	96,483

* incl. splitter

DIMENSIONS*



* Always refer to the installation manuals

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