SANDVIK CS420
CONE CRUSHER

TECHNICAL SPECIFICATION

Sandvik CS420 cone crusher has a hydraulically supported main shaft that is supported at both ends. It also has a robust crusher design, adjustable eccentric throw, and a constant intake opening. This equipment is suitable for a high-capacity secondary crushing application.

Sandvik CS420 cone crusher is characterized by the large intake capability and the high capacity in relation to size. The adjustable throw give the equipment real versatility, allowing it to handle a wide range of applications efficiently and effectively.

The Automatic Setting Regulation control system (ASRi™) enables real-time performance management, giving you a machine that consistently runs at optimum levels, ensuring it consistently produces excellent quality output.

The equipment is extremely reliable, and designed to be easily serviced and maintained. This means Sandvik CS420 can be consistently productive, with minimal downtime.

Two standard crushing chambers are available for each model. The crushers can easily be matched to changes in production by selection of crushing chamber and eccentric throw.

The chambers are:
C = Coarse
EC = Extra coarse

KEY FEATURES

ASRi™	Automatically adapts crusher to feed conditions
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
Hydrolic dump valve for tramp iron protection	Reduces pressure peaks and mechanical stress on the crusher, greatly improving reliability

GENERAL INFORMATION

GENERAL DESIGN CRITERIA	
Crusher type	Cone crusher, hydraulically adjusted
Application	Construction, aggregate
Crushing stage	Secondary
Max. feed size	223-267 mm
CSS range	13-35 mm
Nominal capacity*	70-172 mtph
Ambient temperature	-20°C to +40°C (Contact Sandvik if outside range)
Altitude of site	≤ 1,000 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	7,200 kg
Main frame	Two-part unibody structure without moving parts. Cast steel.
Top shell	Two-arm design
Bottom shell	Three-arm design Two inspection hatches
Feed hopper	One inspection hatch
Feed level sensor	Available as option
Main shaft	Supported at both ends Top spider bearing and eccentric bearing
Eccentric bushings (Throws – mm)	16, 20, 25
Eccentric speed	350 rpm
Max. motor power	90 kW
Drive	V-Belt
Safety coupling	N/A
Pinion shaft speed	1,326 rpm (50 Hz) 1,329 rpm (60 Hz)
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
Concave alternatives	EC, C
Alloys for mantles and concaves	M1, M2, M7
Mantle and concave backing material	Epoxy
Lifting tools for mantles and concaves	Available as option for mantles only

CRUSHER DRIVE SYSTEM

MOTOR CHARACTERISTICS	
Manufacturer	WEG
Model	W21/W22
Type	Three-phase, squirrel cage
Weight	683-800 Kg
Rated power	90 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	Over-pressure air system
Air input	Blower
Air quality	Filtered
Air flow	75 l/min
Air pressure	10kPa max
Weight (blower, hoses)	42 kg
Motor power	0.75 kW @50 Hz / @60 Hz
Motor speed	2,825 rpm (50Hz) 3,440 rpm (60Hz)
Phases	3
Insulation class	H
Protection class	IP55

CRUSHER WEAR PROTECTION

FEED HOPPER	
No. of liners	N/A
Max. weight	N/A
Material	N/A
Fastening method	N/A

TOP SHELL LINER	
No. of liners	4
Max. weight	25 kg
Material	Wear-resistant hardened steel
Fastening method	Hanging and/or bolted

TOP SHELL SPIDER CAP	
Max. weight	70 kg
Material	Carbon steel
Fastening method	Bolted seal with O-ring

TOP SHELL ARM SHIELDS	
No. of shields	2 (1 per spider arm)
Max. weight	65 kg
Material	Manganese steel
Fastening method	Welded

BOTTOM SHELL BODY LINERS	
No. of liners	9
Max. weight	14 kg
Material	Wear-resistant hardened steel
Fastening method	Welded

BOTTOM SHELL ARM LINERS	
No. of liners	3
Max. weight	21 kg
Material	Manganese steel
Fastening method	Welded

*No main frame welding

MANUALS

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

TANK UNIT

GENERAL DATA

Purpose	Supplies oil to the crusher, lubrication system and Hydroset system
No. of doors	2
No. of inspection hatches	3
Cabinet material	Metal
Tank unit dimensions (L x W x H)	1,480 x 930 x 1,751 mm
Dry weight	570 kg

HYDROSET SYSTEM

System design	Single reversible pump
Oil tank reservoir capacity	50 liters
Pump design	Gear pump
Pump capacity	5.6 l/min @50 Hz 6.8 l/min @60 Hz

Oil filter

Filter type	Spin-on
Filtration grade	10 µm
Filter material	Glass fiber
No. of filters	1

Pump motor

Type	Three-phase, squirrel cage
Power	1.5 kW @50 Hz 1.8 kW @60 Hz
Speed	1,450 rpm @50 Hz 1,740 rpm @60 Hz
Insulation class	F
Protection class	IP55

MAIN CRUSHER LUBRICATION SYSTEM

System design	Closed circuit, single pump, gravity return
Oil tank reservoir capacity	200 liters
Pump design	Gear pump
Standby pump	N/A
Pump capacity	28 l/min @50 Hz 34 l/min @60 Hz

Oil filters

Filter type	Spin-on
Filtration grade	25 µm
Filter material	Glass fiber
No. of filters	1

Pump motor

Type	Three-phase, squirrel cage
Power	1.5 kW @50 Hz 1.8 kW @60 Hz
Speed	1,450 rpm @50 Hz 1,740 rpm @60 Hz
Insulation class	F
Protection class	IP55

Oil heaters

No. of heaters	1 (2 Option)
Type	Immersion heater
Rating	1.65 kW
Installation type	Immersion heater tube
Phases	3

PINIONSHAFT LUBRICATION SYSTEM

System design	Closed circuit, bleed off line from main lubrication, gravity return
Oil tank reservoir capacity	N/A
Pump design	N/A

Oil filter

Filter type	N/A
Filtration grade	N/A
Filter material	N/A
No. of filters	N/A

Pump motor

Type	N/A
Power	N/A
Speed	N/A
Pump capacity	N/A
Insulation class	N/A
Protection class	N/A

TANK OVER-PRESSURE AIR SYSTEM

Type	N/A
Air input	N/A
Air quality	N/A
Air flow	N/A
Air pressure	N/A
Weight (blower, hoses)	N/A

Tank air blower motor

Power	N/A
Speed	N/A
Insulation class	N/A
Protection class	N/A
Phases	N/A

CRUSHER TRAMP IRON PROTECTION

ACCUMULATOR

System description	Protection against uncrushable objects by redirecting Hydroset-oil into a pressurized accumulator

OIL COOLING SYSTEMS (FOR MAIN CRUSHER LUBRICATION)

STANDARD AIR/OIL COOLERS

No. of units	1
Dry weight (incl. stand)	120 kg
Material	Aluminum
Oil volume	10.9 liters
Max. air flow	2.0 kg/s @50 Hz 3.6 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	1,450 rpm @50 Hz 1,740 rpm @60 Hz

WATER/OIL COOLER (OPTION)

No. of units	N/A
Dry weight (incl. stand)	N/A
Heat exchanger material	N/A
Oil volume	N/A
Bypass pressure	N/A
Waterflow rate	N/A
Inlet water temperature	N/A
Max. water feed pressure	N/A
Max. cooling capacity	N/A

OFFLINE FILTER UNIT FOR MAIN LUBRICATION

Purpose	Removes particles and water from the main lubrication system in a continuous slow offline filtration process
Model	27/54
Oil capacity	20 liters
Dimensions (L x W x H)	650 x 450 x 1,055mm
Weight	100 kg
Pump design	Gear wheel

OIL FILTER

Filter type	Filter Insert
Filtration grade	3 µm
Filter material	Cellulose
Filter housing material	Cast iron
No. of filters	2

PUMP MOTOR

Type	Three-phase, squirrel cage
Capacity	200 l/h @50 Hz 240 l/h @60 Hz
Speed	915 rpm @50 Hz 1,120 rpm @60 Hz
Protection class	IP55

AUTOMATIC SETTING REGULATION - INTELLIGENT (ASRi)

ASRi is Sandvik's control system used in crushing and screening applications.

The ASRi keeps the setting as close as permitted by the machine without risk of damaging it. Thus, the ASRi helps the user achieve higher production, a higher degree of reduction, and improved product distribution. In addition, a better product shape can be obtained. A further benefit is that the cone crusher's wearing liners can be utilized better.

The ASRi monitors the cone crusher's performance and ensures that the measured values lie within the permitted limits that have been set in the system. If these limits are exceeded, the ASRi will adjust the setting until the desired values are attained.

MONITORING FUNCTIONS (AVAILABLE WITH METRIC AND IMPERIAL UNITS)
Power consumption
Hydroset hydraulic pressure
Main shaft position
Calculated CSS (based on main shaft position)
Liner wear
Historical data log
Automatic liner wear compensation

REGULATING FUNCTIONS AND CRUSHING PROGRAMS	
Auto-CSS	Keep CSS constant
Auto-Load	Keep load constant (automatic compensation for liner wear)
Multi-CSS	Alternate between two CSS settings
20 customized programs can be stored	

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

HARDWARE COMPONENTS

CONTROL UNIT / OPERATOR'S PANEL	
Dimensions (wall mount) (H x W x D)	358 x 290 x 70 mm
Dimensions (panel mount) (H x W x D)	350 x 290 x 88 mm
Weight (wall mount)	6.5 kg
Weight (panel mount)	5.6 kg
Operational temperature	-20°C to +50°C
Protection class	IP65
Protection class (panel mount)	IP65 (front), IP30 (rear)
Power supply	18 - 32 VDC
Communication	Ethernet, RS232, COMLI, XNL

POWER SUPPLY UNIT	
Dimensions (H x W x D)	217 x 120 x 72 mm
Weight	2.7 kg
Operational temperature	-25°C to +70°C
Protection class	IP67
Power supply	100 - 240 VAC

POWER MEASUREMENT UNIT	
Dimensions (H x W x D)	130 x 70 x 135 mm
Weight	0.6 kg
Operational temperature	-25°C to +60°C
Protection class	IP20
Power supply	85 - 250 VAC

HYDROSET DRIVE UNIT	
Dimensions (H x W x D)	320 x 320 x 160 mm
Weight	9.5 kg
Operational temperature	0°C to +50°C
Protection class	IP65, IP20
Power supply	100 - 240 VAC

TANK MEASUREMENT UNIT	
Dimensions (H x W x D)	211 x 30 x 26,5 mm
Weight	0.266 kg
Operational temperature	0°C to +55°C
Protection class	IP67
Power supply	24 VDC via ASRi bus

ASRi BUS	
ASRi bus speed	38,400 Bd
Update frequency CBT	50 - 60 Hz
Update frequency U1N	25 - 30 Hz
Update frequency L3	5 - 6 Hz

SOFTWARE PACKAGE (OPTIONAL)

Operating system compatibility:	Windows 10, Windows 8, Windows 7, Windows Vista, Windows XP, Windows 2000
WINi	Simultaneously control up to 9 different crushers with ASRi / ACS from a PC via Ethernet network. Control the ASRi remotely using the same graphical user interface.
OPC Server	Make it possible to transfer variable values between one or more ASRi system(s) and one or more client application(s).
ASRi Reporter	Export data from the ASRi to a PC for analysis and storage.

PERFORMANCE

CS420 – NOMINAL CAPACITY* (MTPH)

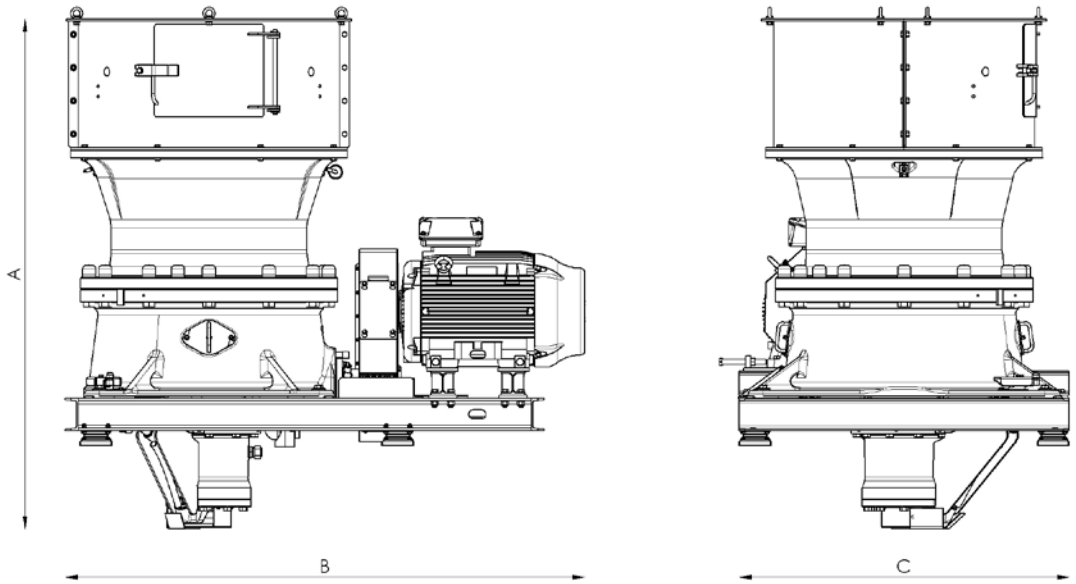
	Concave	EC	C
Max. feed size (mm)	F90	177	148
	F100	267	223
Max. motor power (kW)		90	90
Eccentric throw (mm)		16-25	16-25
CSS (mm)	13	-	70
	16	-	76-105
	19	96-112	82-113
	22	103-142	87-120
	25	109-151	93-128
	29	118-163	100-117
	32	125-172	106
	35	131-153	-
Mantle		A/B	A/B

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

WEIGHT (KG)

	Kg	Lb
Top shell assembly	2,463	5,430
Bottom shell assembly	1,729	3,812
Main shaft assembly	1,795	3,958
Pinion shaft housing assembly	97	215
Hydroset cylinder assembly	381	840
Feed hopper assembly	305	672
Eccentric assembly	292	644
Dust collar assembly	85	186
Hoses and protection assembly	17	38
Crusher weight	7,188	15,850
Subframe	690	1,520
Electric motor (max.)	800	1,765
Tolat weight (incl. subframe and drive)	8,678	19,135

DIMENSIONS*



A	2,530 mm
B	2,585 mm
C	1,740 mm

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