



ROCK PROCESSING GUIDE 2016

STANDARD EDITION 2016-02-01





A	GENERAL
B	PRIMARY GYRATORY CRUSHERS CG series
C	JAW CRUSHERS CJ series
D	CONE CRUSHERS CH series
E	CONE CRUSHERS CS series
G	VSI IMPACT CRUSHERS CV series
H	HSI PRISEC IMPACT CRUSHERS CI series
J	HAMMER MILLS
K	CENTER AND SIDE SIZERS
L	HYBRIDS
M	SCREENS
N	SCREENING MEDA
O	FEEDERS
P	STATIONARY & PORTABLE STATIONS
Q	MOBILE UNITS - CRAWLER HD AND XHD RANGE
R	MOBILE UNITS - CRAWLER PREMIUM RANGE
S	MOBILE UNITS - WHEELED HD AND XHD RANGE
T	BELT CONVEYORS
U	WEAR AND DUST PROTECTION
V	RAWMATERIAL, TEST METHODS AND NORMS
X	OTHER INFORMATION



ROCK PROCESSING GUIDE 2016

Chapter A – GENERAL

CONTENTS 2016-02-01



[INTRODUCTION](#)

[APPLICATION QUESTIONNAIRE](#)

[RAW MATERIAL QUESTIONNAIRE](#)

ROCK PROCESSING GUIDE 2016

Chapter A - GENERAL

INTRODUCTION 2016-02-01

Dear Customers and Colleagues!

Please find the latest version of the

Sandvik Rock Processing Guide 2016 Standard edition – RPG 2016 Std.

The **RPG 2016 Standard edition** contains basic information about Sandvik Crushing and Screening Equipment.

It is available in digital pdf-format and can be opened with a conventional pdf-viewer.

The file can be downloaded from the Construction Intranet (PA Equipment / Stationary Crushing & Screening / Sales Support).

There is also a professional edition available which contains more detailed information. It is available in digital format and is intended to be used by Sandvik employees, advanced Sandvik dealers, Engineering houses and VIP customers. It can be used only with the viewer program Locklizard and require a license key.

If you belong to any of the groups mentioned above and need the Professional edition you should contact your local Sandvik sales representative.

We hope that RPG is a useful tool in your daily work. We will be very grateful therefore if you will share with us your comments, questions and thoughts concerning the contents in the book. Feedback from you is the only way to improve next edition of RPG. Send your comments to e-mail: bengt-olle.persson@sandvik.com.

Best regards

Bengt-Olle Persson

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Stationary Crushers

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ROCK PROCESSING GUIDE 2016

Chapter A - GENERAL

APPLICATION QUESTIONNAIRE 2016-01-01

PLEASE FILL IN WHAT APPLIES TO THE PROJECT

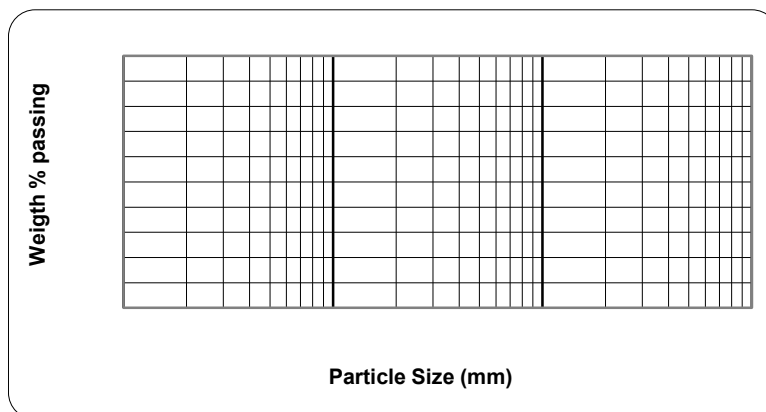
Project /Location _____

Customer: _____

Sandvik representative in the region / Written by: _____

1. Max feed size and feed curve

- ☐ Gravel (< 200 mm)
- ☐ Coarse Gravel (< 300 mm)
- ☐ Ripped rock (< 400 mm)
- ☐ Blasted rock (< 750 mm)
- ☐ Coarse blasted rock (< 1000 mm)
- ☐ Others, please specify in diagram



2. Feed material

- ☐ Limestone / Marble
- ☐ Dolomite
- ☐ Sandstone
- ☐ Quartzite
- ☐ Gneiss / Granite
- ☐ Basalt / Diabase
- ☐ Ore, please specify, _____
- ☐ Valuable minerals content, _____ (% by weight)
- ☐ Type of gangue minerals, _____
- ☐ Slag, please specify, _____
- ☐ Moisture, please specify _____ (% by weight)
- ☐ Contamination, please specify _____
- ☐ Others, please specify, _____

3. Crushability test

- ☐ Impact Work Index test, $WI =$ _____
- ☐ Other crushability test, specify, _____
- ☐ No crushability test of the feed material
- ☐ Abrasion Index test, $AI =$ _____
- ☐ No abrasion index test

4. Capacity and products

- ☐ Max capacity fed into the plant in one hour _____ (MTHP)
- ☐ Required production in one month: _____ (tons)
- ☐ Working hours/day: _____ (h)
- ☐ Working hours/month: _____ (h)
- ☐ Working hours/year _____ (h)

5. Is a natural fines separation required?

- ☐ Yes, with separation size: _____ (mm)
- ☐ No

ROCK PROCESSING GUIDE 2016

Chapter A - GENERAL

APPLICATION QUESTIONNAIRE 2016-01-01





6. Final products

Product 1: 0 - mm (%)	Product 4: - mm (%)
Product 2: - mm (%)	Product 5: - mm (%)
Product 3: - mm (%)	Product 6: - mm (%)

Others please specify:

Quality: ☐ SI ☐ FI ☐ ASTM ☐ British std ☐ Gost ☐ Chinese std ☐ Not required

7. Will the Plant be moved?

<input type="checkbox"/> Yes frequently on site  Crawler unit / plant	<input type="checkbox"/> Yes fairly often between sites  Mobile unit / plant	<input type="checkbox"/> Occasionally between sites  Portable unit / plant	<input type="checkbox"/> No  Stationary unit / plant
---	--	---	--

8. Laws and regulations to take in considerations

Please, specify:

9. Assumptions

♦ Plant to be erected on flat ground	♦ Products to be stored in stockpiles on ground
♦ Material bulk density 1.6 t/m3	♦ Power from main supply (or customer's generator)
♦ Material clean and dry	♦ European Union's laws and safety regulations are adequate

Please, give details if assumptions are incorrect and/or specify needed other information

ROCK PROCESSING GUIDE 2016

Chapter A - GENERAL

RAW MATERIAL QUESTIONNAIRE 2016-01-01

GUIDELINES FOR MATERIAL SAMPLING FOR WORK INDEX AND ABRASION INDEX TESTING

Work- and Abrasion index is a part of our basic application data needed for project design. A Work- and Abrasion index test is required before giving performance guarantees to our clients.

General Instruction

Sample Properties

For conducting the test **25-30** rocks is needed for good and reliable results.

Size and shape of the rocks is crucial;
the sample rock shall pass a **75x75 mm** square hole, but retain on a **55x55mm** square hole.
The shape shall be fairly cubical. The definition of cubical shape is length/thickness ratio of the stone is less than 3.

The rock shall be only primary broken (e.g. blasting), no cutting or hand chiselling to improve the shape is allowed. Drill Cores cannot be used for testing.

Sample Selection

The sample shall be representative for the quarry. The best way to obtain this is to take samples from a new blast, from where raw material is loaded and fed to the plant at the moment. If the material varies a lot, multiple samples shall be taken in consideration

Sample Data

The following Data must be accompanied to the raw material sample:

- Customers Name
- Plant Name
- Material description (e.g. granite)
- Country
- Date Sent
- Send Test Summary Report(s) to: (name)
- with e-mail:
- Test(s) required: (e.g. Abrasion Index and/or Work Index)

ROCK PROCESSING GUIDE 2016

Chapter A - GENERAL

RAW MATERIAL QUESTIONNAIRE 2016-01-01

Send the sample(s) to:

Sandvik Rock Processing
 Attention: The test center / Krosslab
 Stenbocksgatan 2
 SE 233 42 Svedala
 SWEDEN

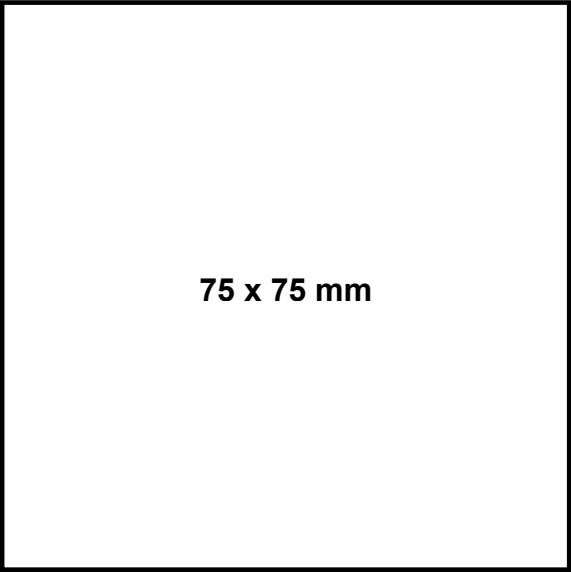
Please find herewith 30 sample stones for testing. These stones have a commercial value of less than USD 10. They will be tested to destruction in Sweden.

This sample of: (Material name)
 was taken from:..... (Plant name)
 in:..... (Country)
 owned by:..... (Customers name)
 on:..... (Date)

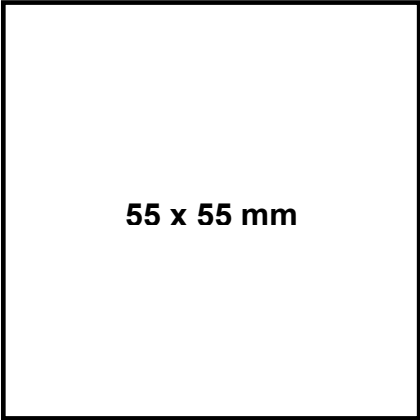
Please test for: Abrasion Index: Yes / No
 Work Index: Yes / No
 Other Test:..... (Please specify)

After test, please send
 the Test Summary Report(s) to:..... (Name)
 At:..... (E-mail / address)
 In:..... (Country)

Each stone has been hand posted
 through this 75 mm by 75 mm
 square hole



but was too large to
 pass through this 55 mm
 by 55 mm square hole



The width of an A4 size paper is 210mm which is
 ~75x3 = max allowed length



ROCK PROCESSING GUIDE 2016

Chapter B – PRIMARY GYRATORY CRUSHERS

CONTENTS 2016-02-01



SELECTION GUIDE

GENERAL

APPLICATION

SPECIFICATIONS

ROCK PROCESSING GUIDE 2016

Chapter B – PRIMARY GYRATORY CRUSHERS

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

The information in the table below is a guideline only. It is not a collection of strict rules.

The important rule is: We shall offer the solution that gives the customer the best profit.

For various applications are the suitability of different crushers stated in three categories:

BEST (B) is the obvious selection unless the customer has other experience.

GOOD (G) is an alternative which can be used.

POSSIBLE (P) is a solution that may work but is normally not recommended.

Application / Type of crusher	Primary Gyratory Crusher	Jaw Crusher	Primary HSI Impact Crusher	Cone Crusher CS series	Secondary HSI Impact Crusher	Cone Crusher CH series	VSI Impact Crusher
Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

1. A typical example of primary crushing is reducing top size from 900 to 300 mm.
2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
5. Typical abrasive rocks are Granite, Quartzite, Diorite, Trap rock, Basalt, Gneiss.
6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

GENERAL 2016-01-01

FUNCTION

The direction of rotation of the pinionshaft and pinion is clockwise (seen from outside the crusher). The rotation of the pinion is transmitted to the gear that is fixed to the eccentric. Consequently, the eccentric rotates in a clockwise direction (viewed from above).

The eccentric is located by the bottomshell bushing and is supported by the eccentric wearing plate and eccentric support plate. The eccentric bushing is fitted in the bore of the eccentric with a small displacement between the centerlines of the eccentric and the eccentric bushing.

The mainshaft is located radially by the spherical bearing (at the top) and the eccentric bushing (at the bottom) and is supported in the vertical direction by the step bearing assembly, on top of the Hydroset piston. Since the top end of the mainshaft is journaled in the spherical bearing, the rotation of the eccentric causes the mainshaft to gyrate about the crusher's vertical centerline, with the centre of the spherical bearing as the pivot point. The gyratory direction is clockwise (viewed from above the crusher).

The mainshaft is free to rotate but is not directly rotated by the drive system. When the crusher is running empty, viscous drag in the lubricating oil between the mainshaft and the eccentric bushing causes the mainshaft to rotate clockwise. During loaded operation, the mainshaft rotates counter-clockwise.

Since the mantle is fixed on the mainshaft, the mantle also gyrates. The distance between the mantle and any given point around the concaves thus constantly changes and it is this that provides the crushing action.

The discharge setting is expressed as either the minimum distance between the mantle and the concaves at the bottom of the crushing chamber, measured at the point where the mantle is closest to the concaves (the CSS, or Close Side Setting), or at a point diametrically opposite (to give the OSS, or Open Side Setting). The difference between the CSS and the OSS is simply the eccentric throw of the mainshaft, at the bottom of the crushing chamber.

Since the mainshaft assembly is supported by the step bearing assembly on top of the Hydroset piston, the discharge setting can be adjusted by simply moving the Hydroset piston up or down.

CRUSHING CHAMBER

The crushing chamber is formed on the inside by the mantle - which moves with the mainshaft – and on the outside by the concaves, which are fixed in the topshell. The mantle and concaves are made of high-manganese cast steel that has excellent wear resistance and toughness.

The mantle is mounted on the mainshaft. It is backed with plastic composition and is secured by the head nut. Since the head nut and mantle are locked to each other by locking pins and welding, the head nut tends to tighten on the mainshaft when material is being crushed. This prevents the mantle coming loose on the mainshaft.

The concaves are located in the topshell by bolts and are backed with plastic composition.

ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

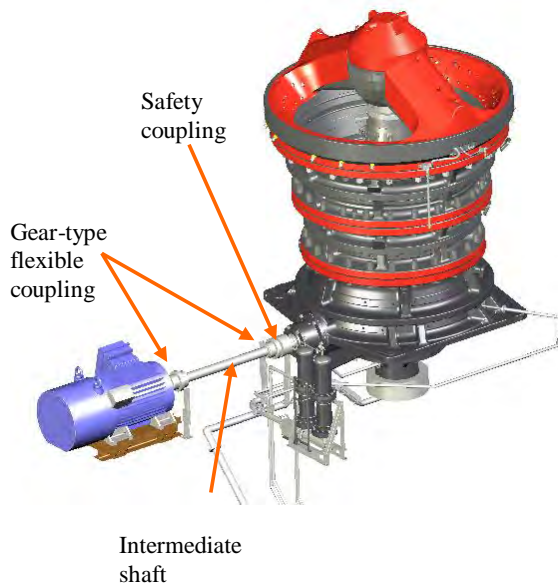
GENERAL 2016-01-01

DRIVE

The power from the motor is transmitted to the crusher by a direct drive or by V-belts, causing the pinionshaft to rotate at a fixed rpm.

A direct drive arrangement is preferred since it considerably reduces the loads on the motor and gear set, compared to a V-belt arrangement

The direct drive consists of two gear-type flexible couplings, a safety coupling and an intermediate shaft. The flexible couplings compensate for axial, angular and radial misalignment between the motor and the crusher's pinionshaft, while the safety coupling protects the crusher from overloads when uncrushable objects are fed into the crusher. The intermediate shaft permits removal of the pinionshaft housing assembly without moving the drive motor.

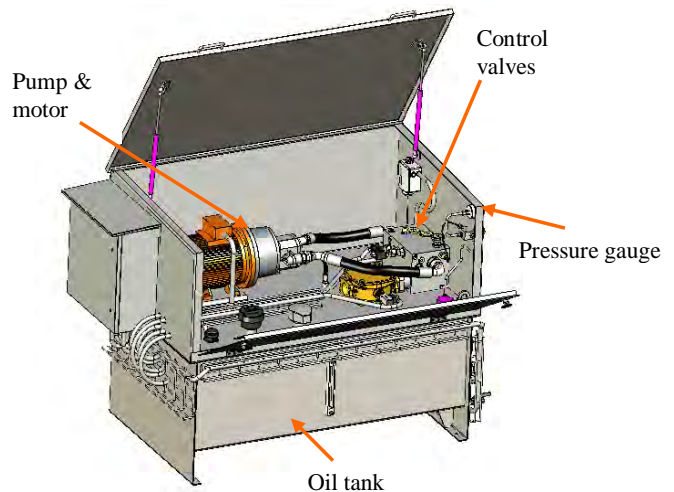


HYDROSET SYSTEM

The Hydroset system has the following main functions:

- Adjustment of the discharge setting
- Protection against overloads
- Prevention of damage to the step bearing assembly if the mainshaft "climbs" or "jumps"

The crusher's discharge setting is adjusted by raising (setting decrease) or lowering (setting increase) the Hydroset piston and the mainshaft assembly (complete with mantle). When the setting is to be reduced, oil is pumped into the Hydroset cylinder by a motor-driven pump.



ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

GENERAL 2016-01-01

When the setting is to be increased, oil is pumped back to the tank.

The Hydroset tank unit incorporates the Hydroset oil tank, the Hydroset pump, the Hydroset control valve, and a pressure gauge which displays the pressure in the Hydroset system.

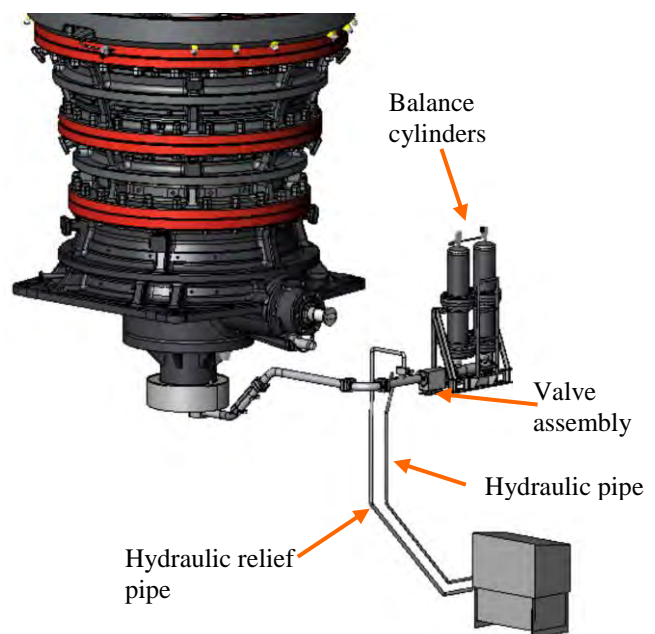
In addition, there is a relief valve in the Hydroset system to protect the piping and other components.

The balance cylinder module incorporates the balance cylinders and a valve assembly.

It is these balance cylinders that are the main difference between the Hydroset system for a gyratory crusher and the Hydroset system for a cone crusher.

With the steep angle on the crushing surface of the mantle of a primary gyratory crusher, abnormally shaped stones or uncrushable objects in the feed to the crusher can sometimes create an upward vertical force that makes the mainshaft "climb" or "jump".

The duty of the balance cylinders is to prevent a loss of contact between the mainshaft, the components of the step bearing assembly and the Hydroset piston under such conditions. Pressurized air in the balance cylinders automatically pushes additional oil into the Hydroset cylinder and thus forces the Hydroset piston to follow the mainshaft as it "jumps" or "climbs". A flow control valve allows the oil to flow rapidly into the Hydroset cylinder but restricts the flow back from the crusher so that the mainshaft is lowered smoothly back to its previous position when the abnormal condition has disappeared.



LUBRICATION

The crusher has three separate lubrication systems since the various bearings in the crusher operate under very different conditions:

- A circulatory system provides filtered and cooled oil for the oil-film lubrication of the bushings, the step bearing components and the gear and pinion.
- An automatic greasing system provides grease for the heavily loaded, low-speed spherical bearing
- An oil bath is provided inside the pinionshaft housing for lubrication of the rolling-element bearings which support the pinionshaft.

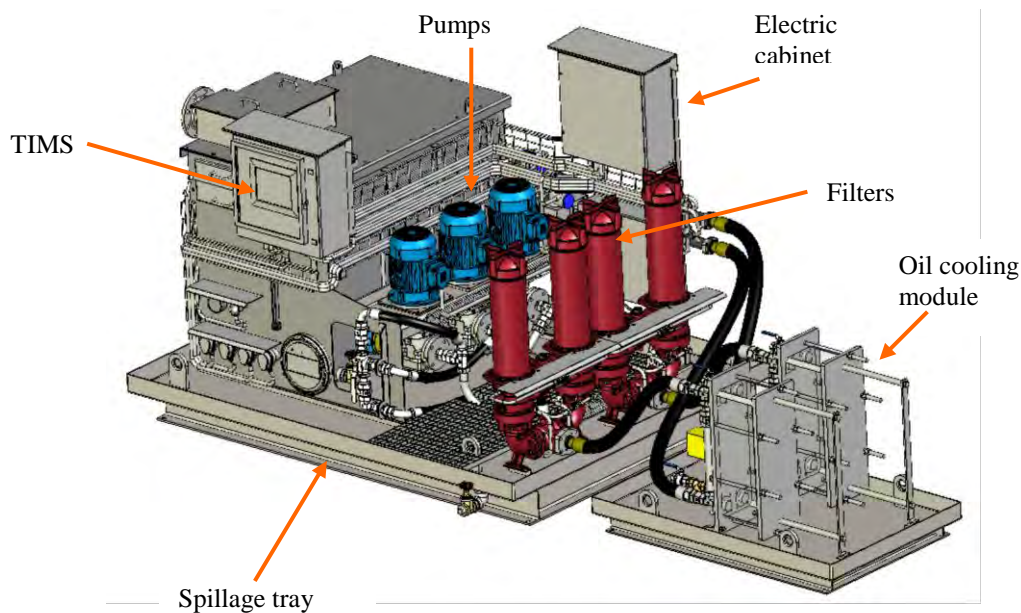
ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

GENERAL 2016-01-01

The circulatory lubrication system is based on a lubrication tank unit and an oil cooling module. The tank unit incorporates an oil tank for the circulatory lubrication system, plus pumps, filters and other safety and monitoring devices. The separate oil cooling module has suitable heat exchangers to cool the oil. Air/oil or water/oil heat exchangers can be used, as appropriate to local conditions.

A Tank Instrumentation Monitoring System (TIMS) is housed in an encapsulated cabinet on the tank unit.



Oil is pumped to the crusher through two lubricating oil inlet lines:

- Oil pumped to the crusher through the lower lubricating oil line enters the crusher through the side of the Hydroset cylinder. The oil passes up through the Hydroset piston and lubricates the step bearing. Some of the oil flows outwards to lubricate the eccentric wearing plate. The rest flows upwards between the mainshaft and the eccentric bushing and then flows through holes in the bottomshell hub and down over the gear and pinion.
- Oil pumped to the crusher through the upper lubricating oil line enters the crusher through a pipe in the bottomshell. The pipe directs the oil to the bottomshell bushing, where it splits into two flows, upward and downward. Oil flowing downwards lubricates the lower part of the bottomshell bushing and then flows outwards to lubricate the eccentric wearing plate. Oil flowing upwards lubricates the upper part of the bottomshell bushing and then joins the oil from the lower lubricating inlet line, flowing down over the gear and pinion.

All of the oil drains into a sump in the bottomshell and flows by gravity back to the lubrication tank unit through the return oil line.

ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

GENERAL 2016-01-01

OVER-PRESSURE AIR SYSTEM

Dust is prevented from entering the crusher by the creation of a slight over-pressure inside the crusher. Air is drawn through a filter and pumped through a hose into the crusher by a blower unit.



TIMS – TANK INSTRUMENTATION MONITORING SYSTEM

The TIMS provides the control logic necessary for the proper operation of the crusher's auxiliary systems (lubrication and over-pressure air systems). The TIMS can be connected to the plant's control system via hard-wired digital inputs and outputs or via a variety of industrial bus systems.

The TIMS receives input signals from a variety of sensors in the oil tank unit and close by. It monitors the values that it receives, compares them with the set points in the TIMS program and sends the appropriate output signals to the plant's control system. These output signals are in turn used by the plant's control system to start and stop motors, to initiate alarms and to shut down the crusher's main drive motor in the event of an emergency condition.



ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

GENERAL 2016-01-01

ASRi - AUTOMATIC SETTING REGULATION SYSTEM

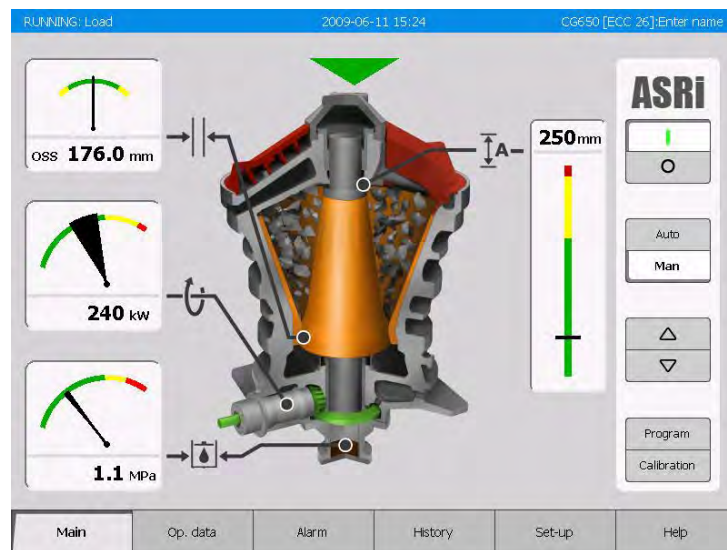
The crusher has an ASRi Automatic Setting Regulation System which has several functions:

- It provides a display of the crusher's operating conditions, in particular the discharge setting at which the crusher is operating, the power drawn by the crusher's drive motor and the pressure in the Hydroset system.
- It provides a number of crushing programs to optimize the operation of the crusher for different product requirements.
- It protects the crusher from overloads by lowering the mainshaft if abnormal conditions occur.
- It provides a wide range of information about operating conditions, statistics and alarms.

At its heart, the ASRi system has a control cabinet with a colour touch screen. The control cabinet communicates continuously with three I/O units (I/O = input/output unit), through which the ASRi system obtains the necessary input information from a number of transducers.

The ASRi system provides a variety of possibilities for communication with other systems in the plant.

The use of ASR on Primary Gyratory Crushers is well proven with more than 20 successful installations.



ROCK PROCESSING GUIDE 2016

Chapter B - PRIMARY GYRATORY CRUSHERS

APPLICATION 2016-01-01

MAX FEED SIZE

Model	Feed Opening		Recommended max feed size (square hole)		Max size on one individual block (TxWxL)
	mm	Inch	F100	F95	
CG650	1143	45"	1000 mm	915 mm	670x1000x1670 mm
CG820	1372	54"	1200 mm	1100 mm	800x1200x2000 mm
CG840	1549	61"	1350 mm	1240 mm	900x1350x2250 mm
CG850	1549	61"	1350 mm	1240 mm	900x1350x2250 mm
CG880	1651	65"	1450 mm	1320 mm	970x1450x2420 mm

NOMINAL CAPACITIES

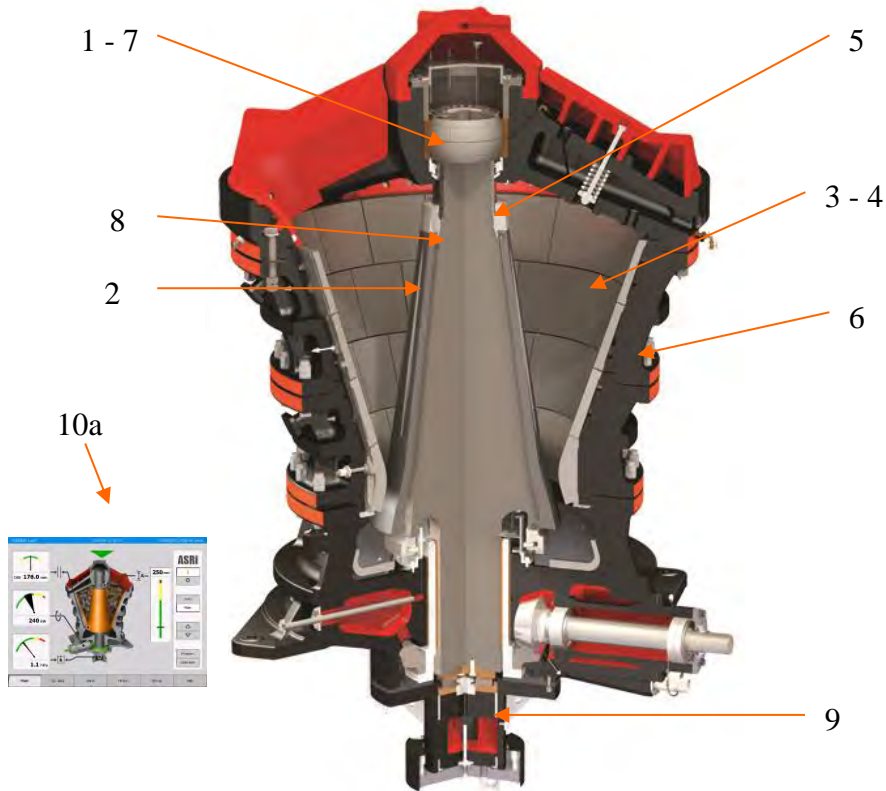
Including normal amount of fines

Model	Ecc throw	OSS	Capacity range
CG650	26 mm	127-177 mm	1000-1900 MTPH
	30 mm	127-190 mm	1300-2200 MTPH
	35 mm	127-190 mm	1700-2500 MTPH
	38 mm	127-203 mm	2000-3000 MTPH
CG820	28 mm	127-190 mm	1800-2700 MTPH
	32 mm	127-203 mm	2000-3100 MTPH
	37 mm	140-215 mm	2300-3600 MTPH
	42 mm	140-228 mm	2500-4000 MTPH
CG840	29 mm	140-203 mm	2700-4000 MTPH
	33 mm	153-215 mm	3100-4700 MTPH
	39 mm	166-228 mm	3700-5500 MTPH
	45 mm	166-241 mm	4000-6000 MTPH
CG850	31 mm	153-228 mm	3500-5300 MTPH
	35 mm	166-241 mm	4000-6000 MTPH
	41 mm	178-254 mm	4700-7000 MTPH
	47 mm	178-254 mm	5000-7500 MTPH
CG880	34 mm	166-254 mm	5400-7500 MTPH
	38 mm	178-254 mm	6000-8400 MTPH
	44 mm	191-266 mm	7000-9800 MTPH
	50 mm	191-266 mm	7500-10500 MTPH

Bulk Density is assumed 1.6 t/m³ or Compact Density 2.65 t/m³.

Note that the above capacities can vary widely depending on the feed distribution.

MAIN FEATURES



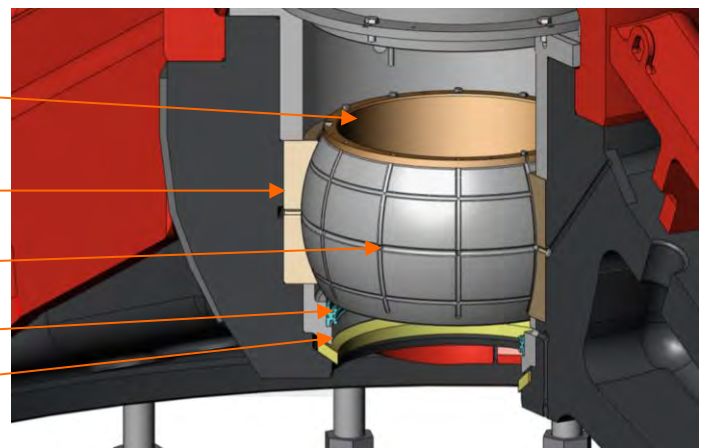
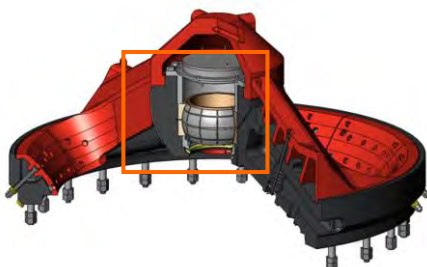
1. Spherical bearing - High load-carrying capacity gives longer life

The spherical bearing is designed to support crushing loads from all directions and to provide smooth motion.

SANDVIK's spherical bearing has a very robust inner ring.

Spherical bearing

- Al-bronze inner bushing
- Two-piece Al-bronze outer ring
- Steel ball (inner ring)
- Grease seal
- Scraper



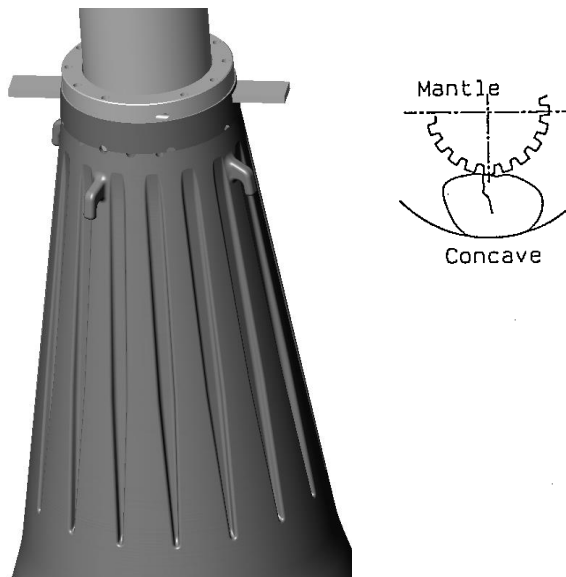
ROCK PROCESSING GUIDE 2016

Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

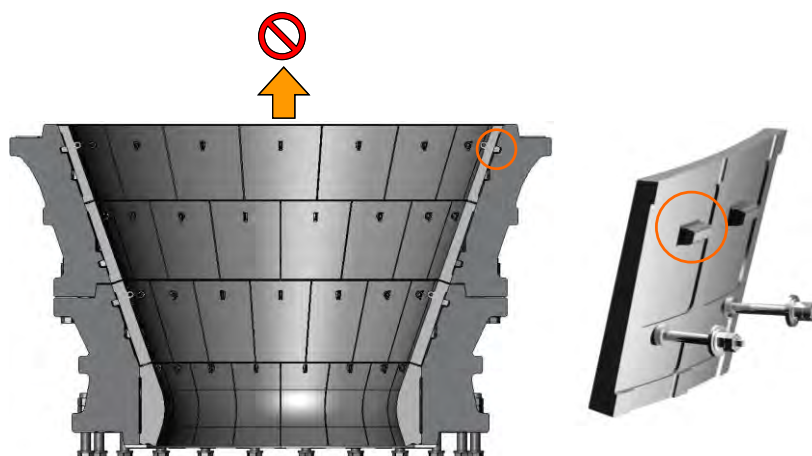
2. Grooved mantle design – Stable operation and energy saving

Hard, large lumps which cannot be crushed by a “smooth” mantle can usually be crushed with a grooved mantle. With a grooved mantle, there is less chance of boulders” skidding” around the crushing chamber.



3. Self-tightening concave design – Maintenance-free

Under loaded operation, each concave expands and this in time eliminates the clearances between adjacent concaves. As a result, the concaves tend to expand upwards but this phenomenon is prevented by projections on the backs of the concaves. Instead, the concaves fit more and more securely around the topshell's circumference. We call this the “Self-tightening Concave Design”.



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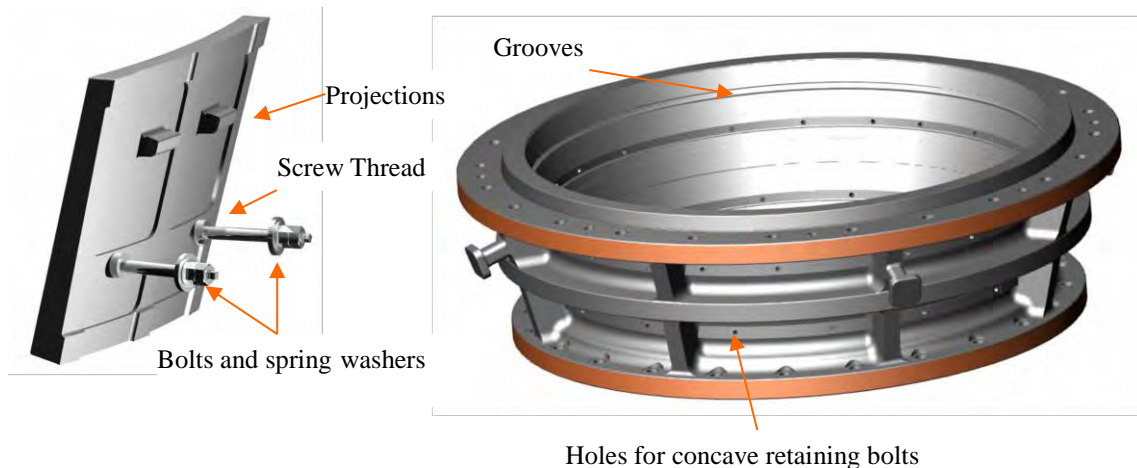
Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

4. Concaves with locating projections and retaining bolts – Easy installation

The concaves are located in the vertical direction by projections which engage in circumferential grooves in the topshell. They are kept in place by retaining bolts that pass through holes in the topshell.

This system with locating projections and retaining bolts permits easy, correct and safe installation of the concaves in the shortest possible time.

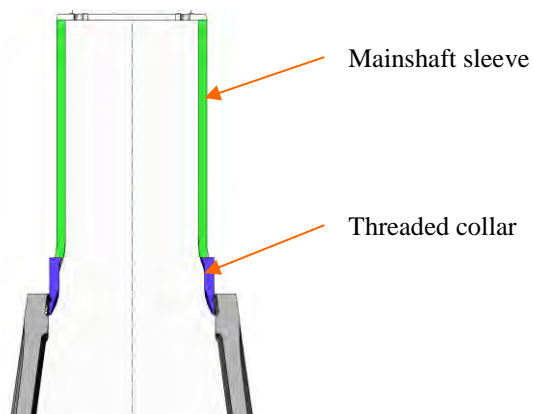


5. Mainshaft design - Replaceable parts

- Mainshaft with integrated headcenter – Easy maintenance
- Replaceable mainshaft sleeve
- Replaceable threaded collar. No threads on the mainshaft itself.

The top part of the mainshaft is exposed when the mainshaft is in its lowest position and can be damaged by the raw material fed into the crusher. It is protected by the mainshaft sleeve, which can be replaced if it is damaged.

The threaded collar can be replaced without difficult repair work.



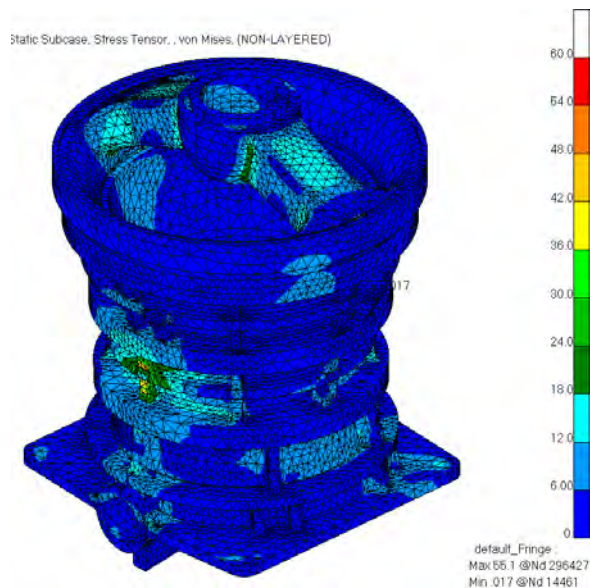
ROCK PROCESSING GUIDE 2016

Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

6. Robust design of shell castings, using FEM analysis

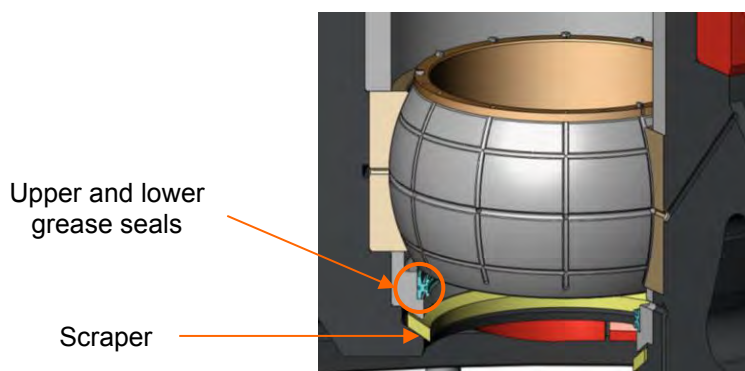
High forces have been used in the simulation and the frame components have been designed accordingly. Loadings from all directions have been evaluated, as have fatigue stresses.



7. Sealing arrangement for spherical bearing

The motion of the mainshaft is complicated and the grease sealing arrangement must therefore accommodate this complex motion. This calls for special seals.

The SANDVIK CG crusher is equipped with two special long-lip type grease seals, backed up by a specially shaped scraper which removes dust and soil adhering to the mainshaft sleeve.



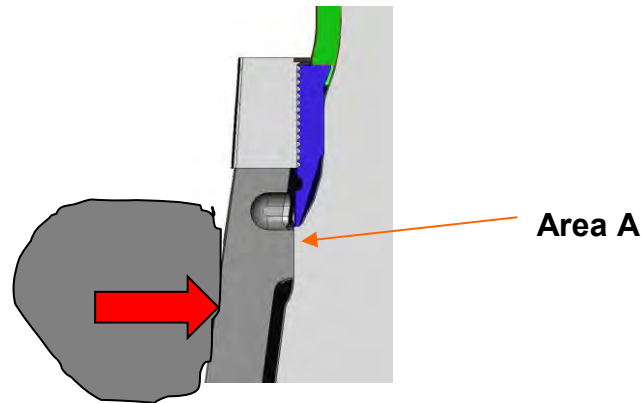
ROCK PROCESSING GUIDE 2016

Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

8. More effective crushing of large boulders

The load arising from the crushing of large lumps is transmitted directly to the mainshaft at the area shown by (A), thus reducing the loading on the head nut.



9. Long-stroke Hydroset cylinder

Since the Hydroset cylinder is designed with a long stroke, the discharge setting can be adjusted through a wide range. This feature helps to maintain the desired product size over a long period.

10. Most advanced control system

- a) **ASRi automatic setting regulation - offers different crushing programs for different feeds**
The main duties of the ASRi system are to automatically regulate the crusher and to protect the crusher from overloads. The system also ensures that the crusher provides optimal performance. It is easy to install, and a user-friendly touch screen makes it easy to understand and operate.

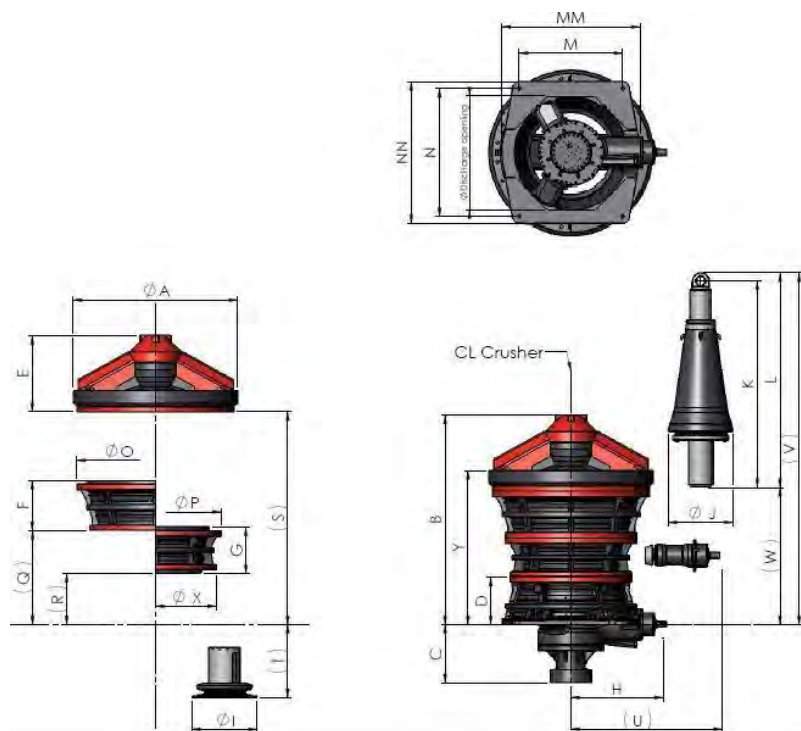
The system provides statistical and historical information on the crusher's operation and also incorporates several functions which simplify operation and save time.
- b) **TIMS (Tank Instrumentation Monitoring System) - provides control logic for auxiliary systems**
The TIMS receives inputs from sensors in the circulatory lubrication system and provides outputs to control oil pumps, oil cooling etc. TIMS provides output signals to initiate alarms and - if an emergency occurs – to shut down the crusher's drive motor.
- c) **Balance cylinders - cope with unusual operating conditions**
The balance cylinders prevent separation between the mainshaft, the step bearing and the Hydroset piston when the mainshaft "jumps" or "climbs", and thus prevent damage.

ROCK PROCESSING GUIDE 2016

Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS



Crusher	CG 650	CG820	CG 840	CG850	CG 880
Dimension (mm)					
A	4200	4760	5840	5940	6540
B	5380	6060	7250	7590	8310
C	1660	1840	2365	2475	2775
D	1250	1370	1750	1850	2090
E	1980	2200	2650	2760	3200
F	*	1445	1540	1610	1665
G	2350	1345	1670	1760	1760
H	2442	2820	3446	3500	4015
I	1640	1900	2300	2380	2690
J	1720	1880	2440	2615	3060
K	5309	6013	7377	7887	8482
L	5509	6258	7677	8232	8837
M	2800	3000	4268	4400	5100
MM	3545	4000	5200	5200	6000
N	3400	3700	4268	4600	5300
NN	3700	4100	5200	5200	6000
O	*	4560	5360	5540	6080
P	4000	3820	4640	4840	5360
(Q)	*	2865	3400	3580	3850
(R)	1500	1620	1850	1950	2330
(S)	4765	5395	6425	6697	7220
(T)	1855	2130	2430	2660	2915
(U)	3822	4341	5435	5465	6300
(V)	9249	10468	12647	13442	14332
(W)	3740	4210	4970	5210	5495
X	3200	3520	4440	4620	5150
Y	3980	4460	5460	5730	6190
Discharge opening (Diameter in mm)	2900	3280	4240	4300	4900

* One piece topshell

Note 1: Dimensions in brackets are minimum free space needed when assembling/disassembling the crusher.

Note 2: Dimensions are for reference only. For detail design refer to latest installation drawing

ROCK PROCESSING GUIDE 2016

Chapter B - Primary Gyratory CRUSHERS

SPECIFICATIONS 2016-01-01

WEIGHTS

The CG-series crusher shells, shaft and gear design is significantly stronger than the competition which is reflected in the crusher weight.

Component weight	CG650	CG820	CG840	CG850	CG880
Spider assembly	36 700	49 200	90 600	105 400	157 000
Toppshell assembly	55 000	87 400	130 200	158 800	202 200
Upper toppshell assembly	*	43 400	62 300	76 400	98 200
Lower toppshell assembly	*	44 000	67 900	82 400	104 000
Mainshaft assembly	30 200	40 800	74 500	92 500	126 800
Bottomshell assembly	36 900	50 300	92 300	108 100	153 400
Eccentric assembly	3 700	5 800	9 600	12 500	16 300
Pinionshaft assembly	2 100	2 800	5 000	5 700	7 600
Hydraulic cylinder assembly	5 100	7 500	15 500	18 100	24 300
Casting compound**	1 100	2 000	2 600	2 800	4 500
Total (kg)	169 700	243 800	417 700	501 100	687 600

* One piece Top Frame

** Casting compound weight is already considered in the assembly weight.

The weights shown in the table above are only approximate.

MAIN MOTORS

Crusher	Max permitted and recommended Motor power (kW)	Pinionshaft speed range (rpm)	Number of poles direct drive installation 50Hz (60Hz)	Eccentric speed (rpm)
CG650	375	490-520	12 (14)	160 (170)
CG820	525	490-520	12 (14)	162 (166)
CG840	720	490-520	12 (14)	152 (156)
CG850	950	490-520	12 (14)	149 (153)
CG880	1100	425-450	14 (16)	130 (138)

To be able to start the crusher with material in, it is necessary to have a special motor with minimum 200% starting torque and 250% breakdown torque.

ROCK PROCESSING GUIDE 2016

Chapter C – JAW CRUSHERS

CONTENTS 2016-02-01



SELECTION GUIDE

JAW PLATES

PRODUCT CURVES

SPECIFICATION AND PERFORMANCE

Jaw Crusher CJ211

Jaw Crusher CJ409

Jaw Crusher CJ411

Jaw Crusher CJ412

Jaw Crusher CJ612

Jaw Crusher CJ613

Jaw Crusher CJ615

Jaw Crusher CJ815

ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

The information in the table below is a guideline only. It is not a collection of strict rules.

The important rule is: We shall offer the solution that gives the customer the best profit.

For various applications are the suitability of different crushers stated in three categories:

BEST (B) is the obvious selection unless the customer has other experience.

GOOD (G) is an alternative which can be used.

POSSIBLE (P) is a solution that may work but is normally not recommended.

Application / Type of crusher	Primary Gyratory Crusher	Jaw Crusher	Primary HSI Impact Crusher	Cone Crusher CS series	Secondary HSI Impact Crusher	Cone Crusher CH series	VSI Impact Crusher
Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

1. A typical example of primary crushing is reducing top size from 900 to 300 mm.
2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
5. Typical abrasive rocks are Granite, Quartzite, Diorite, Trap rock, Basalt, Gneiss.
6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

JAW PLATES 2016-02-01

JAW PLATES

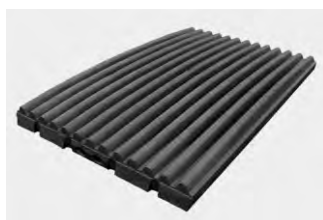
Crusher	Wide Teeth (WT)	Corrugated (C)	Coarse Corrugated (CC)	Sharp Teeth (ST)	Heavy Duty (HD)
CJ211		1		1*	
CJ409		1		1*	
CJ411	1	1*	1		
CJ412	1	1*	1	1	3
CJ612			1	1	3*
CJ613	1	1*	1	1	
CJ615			1*	1	3
CJ815			2	1	6*

* Standard plates for the machine type.

The number shown in the table is the number of parts per side for each Jaw crusher size.



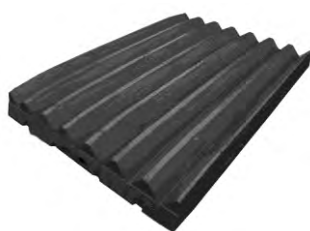
Wide Teeth (WT)



Corrugated (C)



Coarse Corrugated (CC)



Sharp Teeth (ST)



Heavy Duty (HD)

- Wide Teeth (**WT**): This plate can be used on both sides, less stock. Good wear resistance.
- Corrugated (**C**): Suitable for less abrasive material. Good for small CSS. Good top size control.
- Coarse Corrugated (**CC**): More wear resistant compared to C. Used for bigger CSS. Good top size control.
- Sharp Teeth (**ST**): Very good top size control. Good gripping ability. Good reduction ratio. Highly recommended if the Ai is not too high.
- Heavy Duty (**HD**): For very abrasive material. Not as good top size control. Can be combined with CC plates. HD on the fixed side and CC on the swing side.

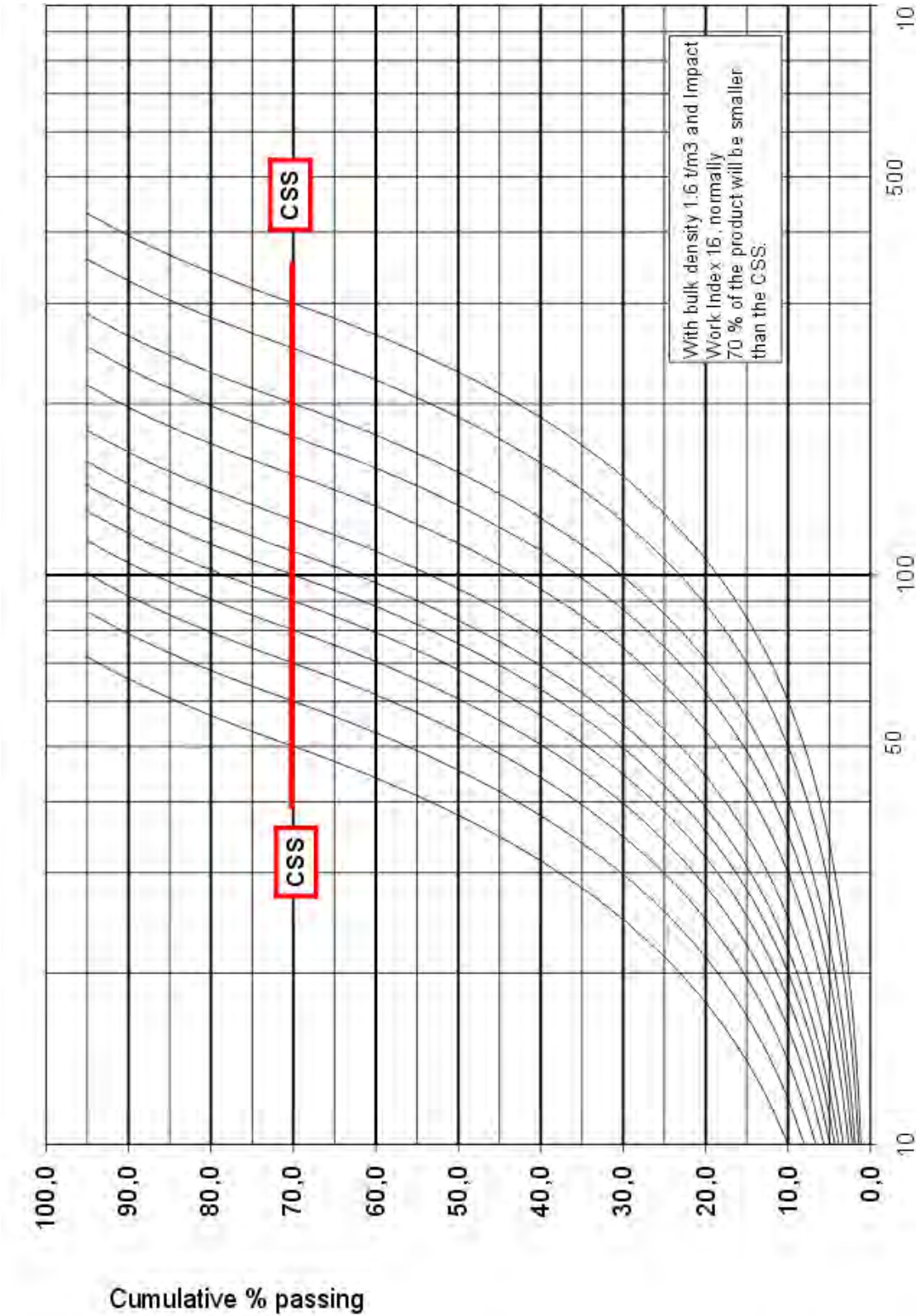
Please contact the crusher product department for further details and guidance to choose the right jaw plates.

ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

PRODUCT CURVES 2016-02-01

STANDARD PRODUCT CURVES FROM JAW CRUSHERS



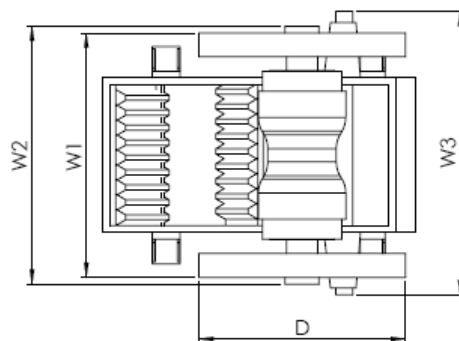
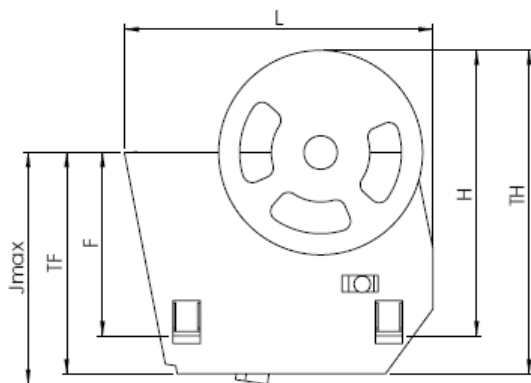
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ211

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ211	1585	N.A.	1120	2386	1735	N.A.	2054	2082	2447	1230

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ211	850	160	25	6000	8300	14300

Performance

Feed Opening (mm)	1100 x 700									
Max feed size (mm) *	630									
Max motor power (kW)	90									
CSS (mm)	60	70	80	90	100	125	150	170	200	
Nominal Cap MTPH	110-160	120-180	135-205	150-230	160-250	195-310	230-370	265-430	300-490	
Standard Jaw Plates	Corrugated (C)/Sharp Tooth (ST)									

*Apply for regularly shaped material. Occasional larger lumps can be accepted, but if material is irregularly shaped, difficulties may be also experienced with smaller lumps.

The left figures refer to fines removed from feed and the right refers to fines included in the feed.

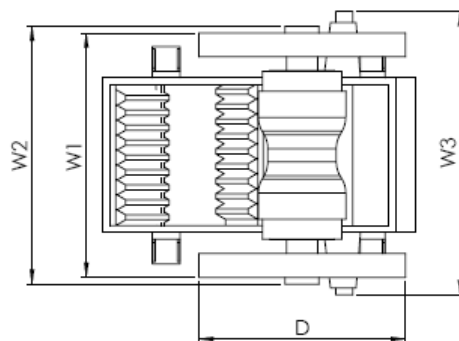
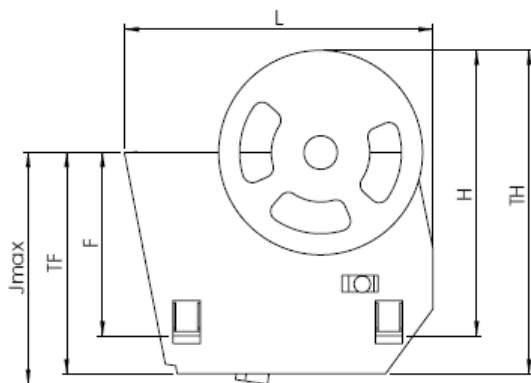
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ409

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ409	1780	1580	N.A.	2554	N.A.	2383	1723	1882	N.A.	1605

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ409	1050	200	20	5100	8100	13200

Performance

Feed Opening (mm)	895 x 660								
Max feed size (mm) *	600								
Max motor power (kW)	75								
CSS (mm)	50	75	100	125	150	175	200	225	250
Nominal Cap MTPH	85-115	100-160	125-200	150-235	175-275	200-320			
Standard Jaw Plates	Corrugated (C)/Sharp Teeth (ST)								

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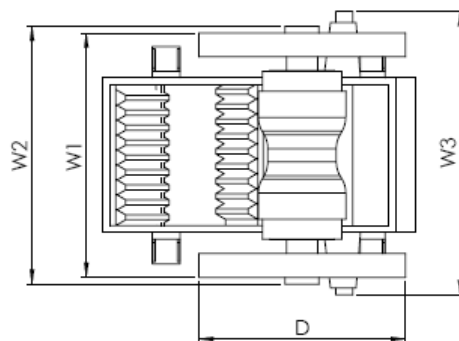
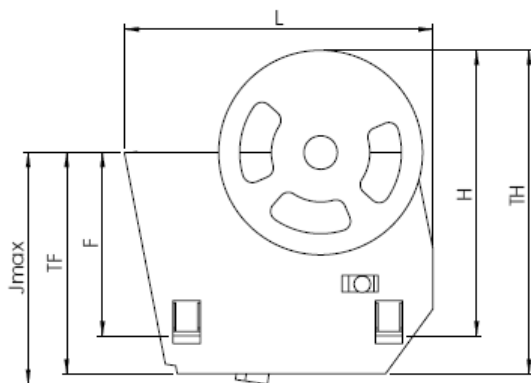
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ411

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ411	2032	1882	N.A.	2986	N.A.	2815	1965	2093	N.A.	1865

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ411	1800	260	40	6200	14400	20600

Performance

Feed Opening (mm)	1045 x 840									
Max feed size (mm) *	750									
Max motor power (kW)	110									
CSS (mm)	50	75	100	125	150	175	200	225	250	
Nominal Cap MTPH		150-200	200-265	245-325	295-390	340-445	385-505	430-565		
Standard Jaw Plates	Wide Teeth (WT)/Corrugated (C)/Coarse Corrugated (CC)									

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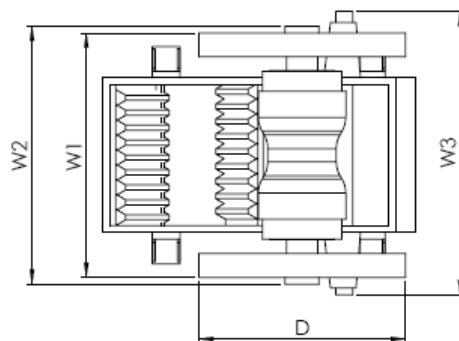
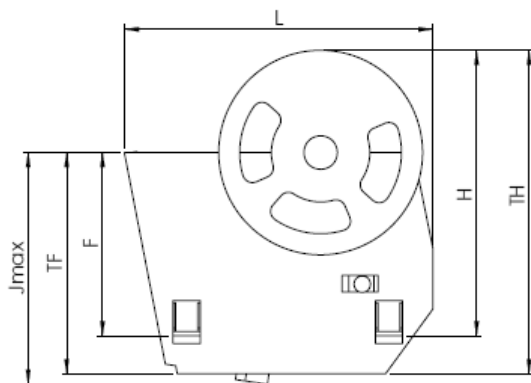
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ412

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ412	2098	1938	1590	3230	2603	2950	2208	2336	2571	1865

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ412	1800	330	45	11500	14300	25200

Performance

Feed Opening (mm)	1200 x 830									
Max feed size (mm) *	750									
Max motor power (kW)	132									
CSS (mm)	75	100	125	150	175	200	225	250	275	
Nominal Cap MTPH	165-220	220-290	270-355	325-430	385-505	445-580	495-650	550-720	605-790	
Standard Jaw Plates	Wide Teeth (WT)/Corrugated (C)/Coarse Corrugated (CC)/ Sharp Teeth (ST)/Heavy Duty (HD)									

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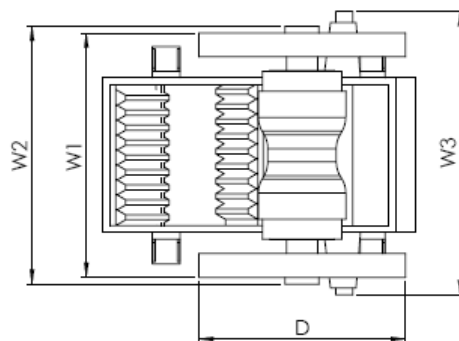
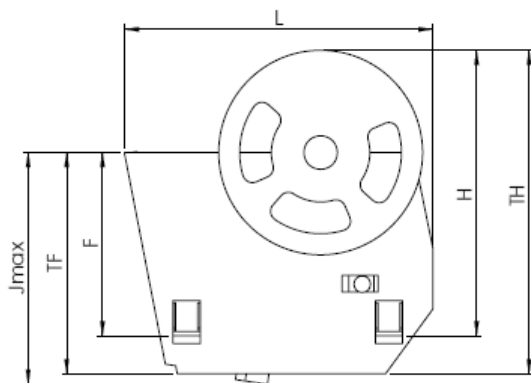
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ612

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ612	2700	2520	N.A.	3996	N.A.	3508	2199	2347	2826	1865

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ612	2400	450	65	12500	22000	39000

Performance

Feed Opening (mm)	1200 x 1100									
Max feed size (mm) *	990									
Max motor power (kW)	160									
CSS (mm)	75	100	125	150	175	200	225	250	275	
Nominal Cap MTPH			300-395	355-465	405-530	455-595	505-660	560-735	610-805	
Standard Jaw Plates	Coarse Corrugated (CC)/Sharp Teeth (ST)/Heavy Duty (HD)									

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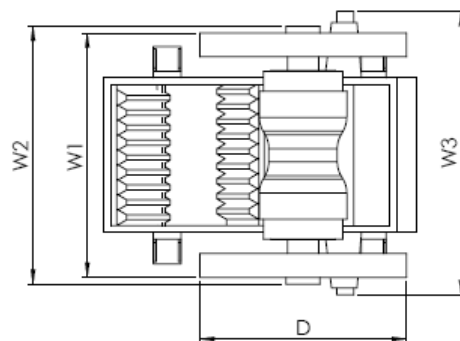
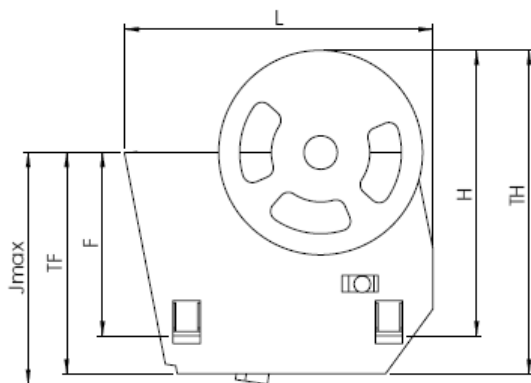
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ613

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ613	2902	2678	N.A.	3762	N.A.	3843	2326	2468	N.A.	2170

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ613	1900	420	45	22500	19000	41500

Performance

Feed Opening (mm)	1300 x 1130								
Max feed size (mm) *	1070								
Max motor power (kW)	160								
CSS (mm)	100	125	150	175	200	225	250	275	300
Nominal Cap MTPH		330-430	385-505	440-575	495-650	550-730	605-810	660-885	715-960
Standard Jaw Plates	Wide Teeth (WT)/Corrugated (C)/Coarse Corrugated (CC)/Sharp Teeth (ST)								

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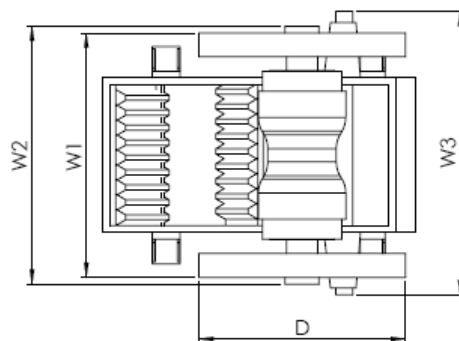
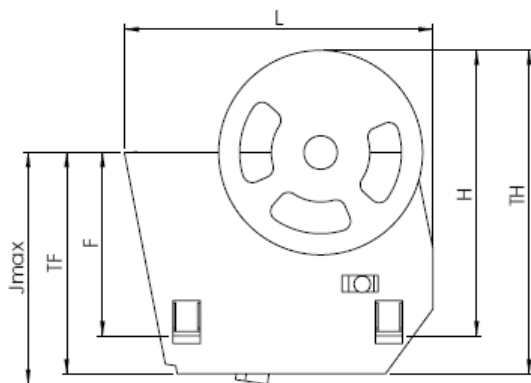
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ615

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ615	2695	2394	N.A.	4117	N.A.	3330	2876	2992	N.A.	1760

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ615	3000	800	130	22500	30500	53000

Performance

Feed Opening (mm)	1500 x 1070							
Max feed size (mm)	960							
Max motor power (kW)	200							
CSS (mm)	125	150	175	200	225	250	275	300
Nominal Cap MTPH	385-495	445-590	505-665	570-745	630-825	700-920	765-1000	825-1085
Standard Jaw Plates	Coarse Corrugated (CC)/Sharp Teeth (ST)/Heavy Duty (HD)							

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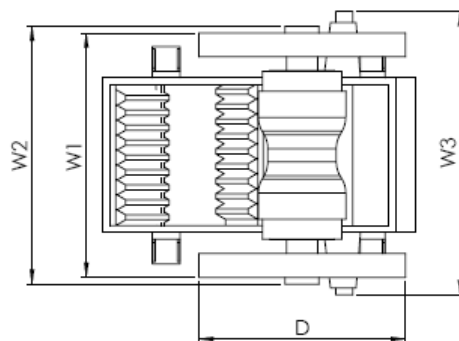
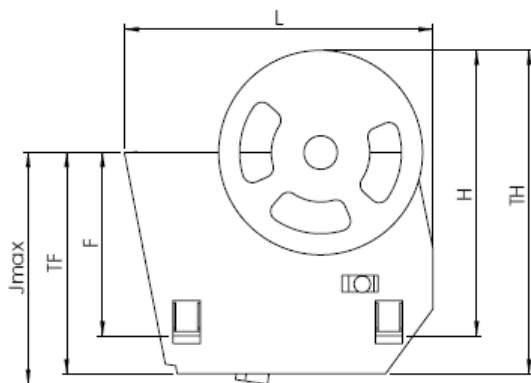
ROCK PROCESSING GUIDE 2016

Chapter C - JAW CRUSHERS

SPECIFICATION AND PERFORMANCE 2016-02-01

CJ815

Dimensions



mm	Jmax,	TF	F	L	H	TH	W1	W2	W3	D
CJ815	3319	3045	N.A.	4496	N.A.	4186	2750	2894	N.A.	2170

Weight

(kg)	Flywheel	Toggle Plate	Toggle Seat	Swing Jaw Complete	Frame Complete	Total Weight (approx.)
CJ815	2800	800	130	26500	37000	63500

Performance

Feed Opening (mm)	1500 x 1300							
Max feed size (mm) *	1170							
Max motor power (kW)	200							
CSS (mm)	125	150	175	200	225	250	275	300
Nominal Cap MTPH		480-625	545-710	610-800	675-885	745-975	820-1070	885-1160
Standard Jaw Plates	Coarse Corrugated (CC)/Sharp Teeth (ST)/Heavy Duty (HD)							

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SELECTION GUIDE

GENERAL

SPECIFICATION AND APPLICATION

Cone Crusher CH420

Cone Crusher CH430

Cone Crusher CH540

Cone Crusher CH440

Cone Crusher CH550

Cone Crusher CH660

Cone Crusher CH860

Cone Crusher CH865

Cone Crusher CH870

Cone Crusher CH890

Cone Crusher CH895

GENERAL PRODUCT CURVES

AUTOMATION

ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

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For various applications are the suitability of different crushers stated in three categories:

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Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

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2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
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6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

GENERAL

The Sandvik CH-series of cone crushers have a wide field of use as they can easily be matched to changes in production through the proper selection of crushing chamber and eccentric throw. Our cone crushers are an excellent choice as secondary crushers in combination with a jaw or a primary gyratory crusher or in the third or fourth crushing stage.

In combination with the Constant Liner Performance (CLP) crushing chambers and high motor power, these crushers have capacities which are in most cases comparable with those of other, larger crushers.

The Sandvik CH series is equipped with a Hydroset system that provides safety and setting adjustment functions, and incorporates a heavy-duty hydraulic cylinder which supports the mainshaft and adjusts its position.

The Hydroset system provides automatic overload protection to permit the passage of tramp iron or other uncrushable material. The system then automatically returns the mainshaft smoothly to its original position.

When cone crushers are equipped with the Automatic Setting Regulation system, ASRi, the actual crushing load inside the crusher is continuously monitored. This makes it possible to optimize crusher utilization allowing you to squeeze the ultimate performance from your machine at all times.



ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

GENERAL ABOUT ECC BUSHINGS & MANTLES

ECCENTRIC THROW

The eccentric throw of an H-type Cone crusher can be adjusted within a wide range. A number of different eccentric bushings is available for each size of crusher. Each eccentric bushing has multiple key-ways, so that the bushing can be installed in different positions in the eccentric.

The eccentric throw combinations provided by the different eccentric bushings are shown in the “Ecc. Bushing keyways” column in the following tables.

MANTLE TYPE A AND B - STANDARD

The crushing chamber of a Cone crusher is determined principally by the outer crushing liner – concave ring. It is the concave ring that is usually given when a crusher is described – CH440-MF, for example.

The inner crushing liner – the mantle – is normally chosen to suit the machine’s eccentric throw and the setting at which it is to run.

For most models, two different “standard” mantles are available – A and B. These two have the same profile so there is no difference in the crushing chamber. The difference between A and B mantles is instead the position of the crushing surface in relation to the contact surface of the head center.

The Type A mantle can normally be used. However there are cases when the Type A mantle is not the best solution. If a crusher is to operate with a large setting, the mainshaft will be lower than when a small setting is used. There must always be a certain amount of oil beneath the Hydroset piston. The mainshaft assembly can be lowered only to a level where there is enough of oil below the Hydroset piston. When the Type A mantle is new, it could be impossible to lower the mainshaft enough to achieve the desired setting. In such a case, is it better to use the Type B mantle, which has the crushing surface sitting lower on the head center. The eccentric throw also has an influence on the selection of the mantle.

MANTLE TYPE HC – HEAVY CHOKE

Another type of mantle is the HC (Heavy Choke) type. The HC mantle has been designed with the choke point at a higher position than in a “standard” crushing chamber. The result is that the throughput of the crusher is reduced but the crusher can be operated at a smaller setting.

ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

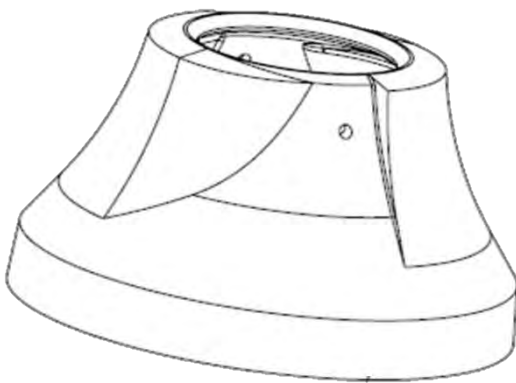
MANTLE TYPE FF - FLEXIFEED

The Flexifeed mantle, FF, is particularly intended for the secondary stage, where the feed to the crusher is reduced in size after primary treatment of the blast rock. The top size is then limited, but the size distribution is still wide, say 0-200 mm as an example. The crushing chamber required for the application must have a feed opening wide enough for the largest occasional stone, whilst only a minor part, usually less than 10 %, is larger than 150 mm in the example.

The Flexifeed mantle reduces the problem with inefficient utilization of traditional crushing chambers by the introduction of a varying feed opening. The largest stones are able to enter

at the same time as the finer part of the feed is object for efficient crushing right at the entrance of the chamber. A secondary, but most valuable effect of the mantle is that the wear becomes more distributed, resulting in a substantial increase of the liner life.

The FF mantle may be of both type A and B. The selection follows the same guide as for normal mantles A and B. Note that the maximum permitted feed size is the same for FF, but the amount of coarse stones in the feed is limited.



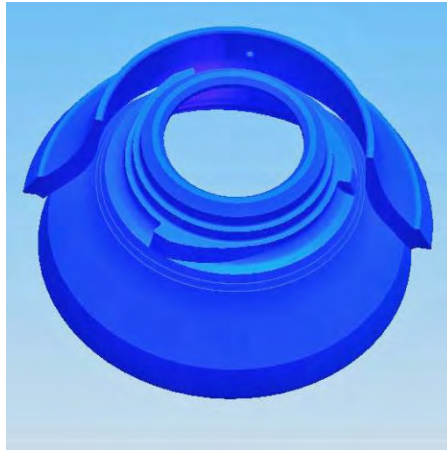
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

MANTLE TYPE OB - OVERSIZE BREAKER

The Oversize Breaker OB mantle is based on the EF mantle and has added projecting wings that will break the oversize material existing in a not calibrated feed, allowing it to enter the crushing chamber.



The contra rotation motion of the mantle moves the wings towards the oversize material and narrows down the distance between the wing and the concave. This will break the oversize material.

The capability to crush bigger material depends partially on the top size of the feed material and partially on the quantity bigger material feed. To allow the chamber keeping its high capacity, the feed to the chamber must have at least 90% of the material passing the maximum square hole size stated for the chamber with normal EF mantle. The remaining 10% of the feed material must not exceed the top size stated for the chamber with OB mantle.

The OB mantle should only be selected when the feed is too large to enter the preferred crushing chamber with normal EF mantle.

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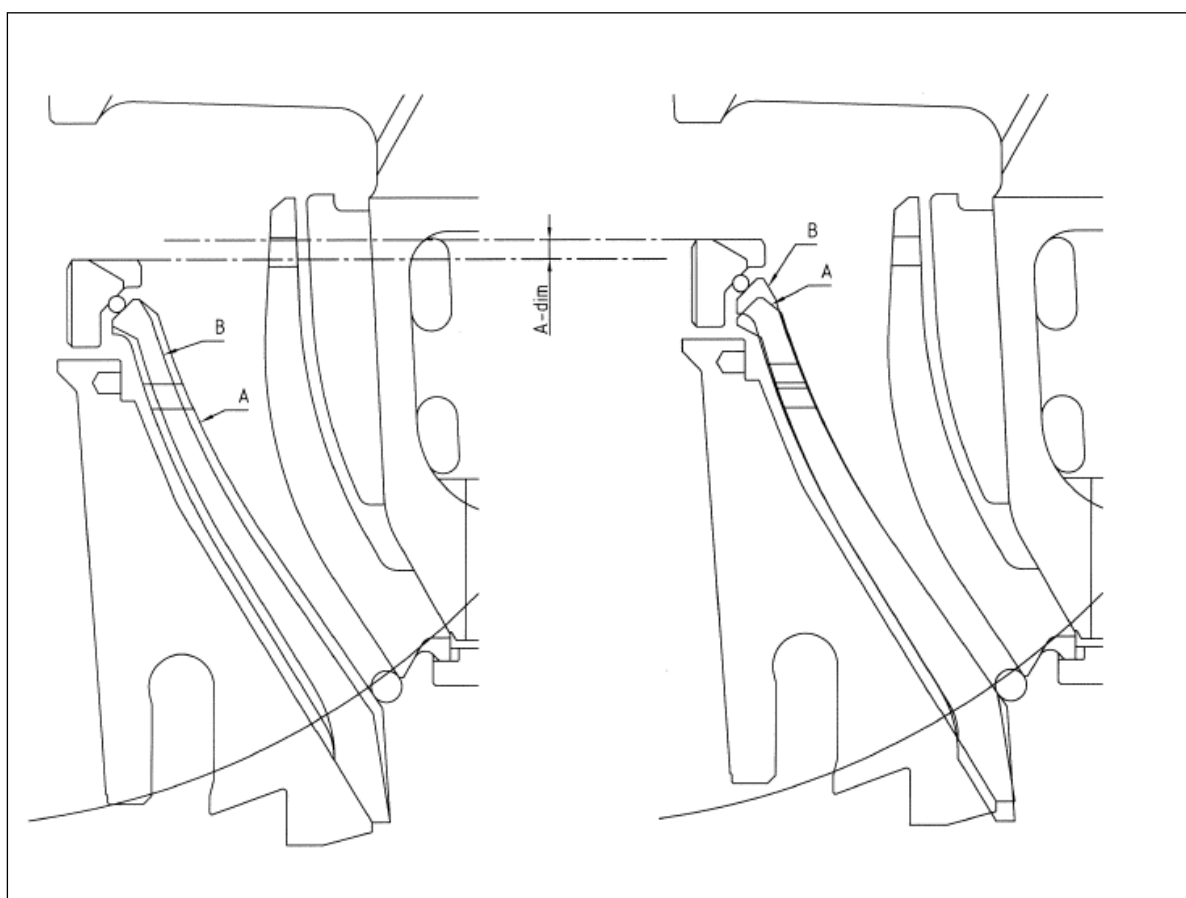
Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

OTHER MANTLES

A special EF mantle is normally used on the larger crushers if the crusher is to have a finer crushing chamber. See the relevant table for the crusher in question.

A Type D mantle is available for the CH660. The shape is between the Type A and the Type B.



Difference between A and B mantle

ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

GENERAL ABOUT MOTOR POWER AND FEED SIZE

The motor power required for a given crushing duty depends on the crusher size, the crushing chamber, the characteristics of the material, the eccentric throw and the setting (CSS). Guidelines for the estimated power required for given combinations of crusher size, crushing chamber and eccentric throw at minimum setting are given in the tables in this section. The Impact Work Index has no effect on the power draw at minimum setting, but higher Work Index is equal to bigger min setting.

Note! The power figures are theoretical and shall be used only as an indication. There can be big variations in actual applications.

In some cases, it may be desired at some future date to increase the crusher's eccentric throw or change the crushing chamber. In either case, it may be necessary to use a larger motor from the beginning. However, the average power input to the crusher must not exceed the applicable limit.

The best way to protect the crusher from excessive power input is to use an ASRi automatic setting regulation system. This will provide the necessary protection and also permit optimum crusher operation under the conditions in question.

If an ASRi system is fitted to the crusher, a larger motor can sometimes be used. See the figures in the "Max. permitted motor power" column.

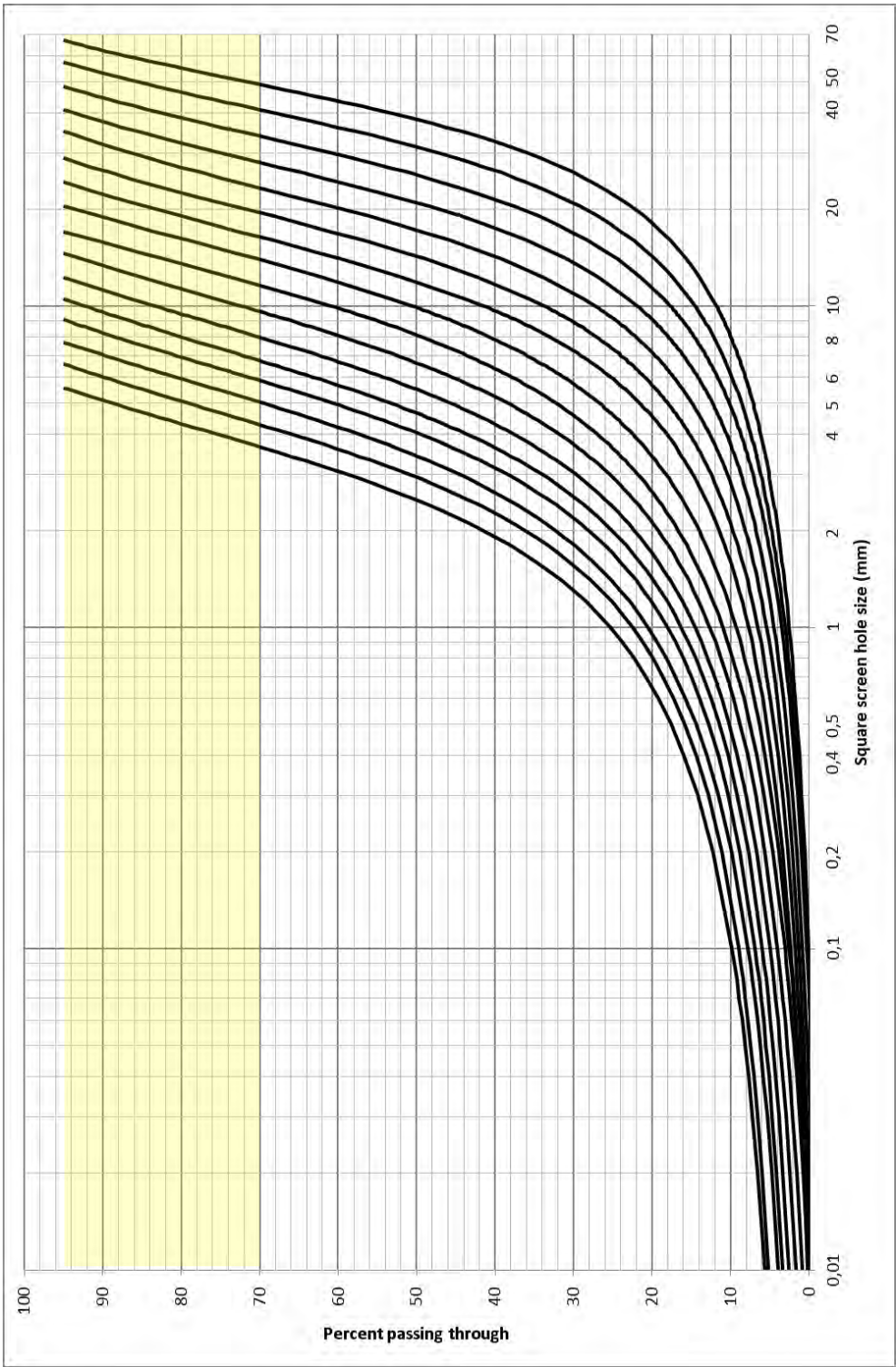
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL 2016-01-01

GENERAL PRODUCT CURVES FOR CONE CRUSHERS CH Series

Yellow area shows the normal range of nominal percentage smaller than CSS (70-95%). The actual product curve is calculated according in PlantDesigner.



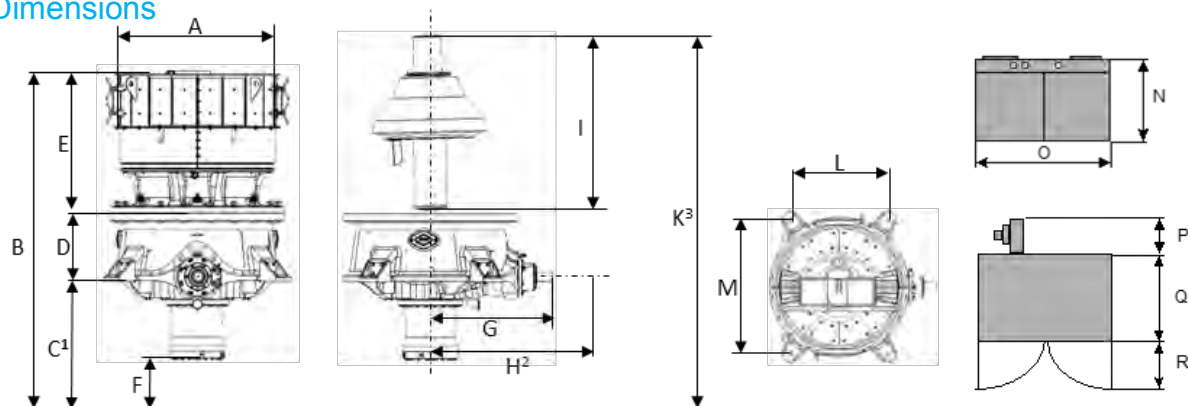
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH420

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH420	1204	2560	1020	540	1000	400	876	1276	1461	3000	1090	1400	943	1470	1140	940	650

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH420	235	70	1831	1 400	291	1729	97	381	5 600	570

Performance

Nominal capacities MTPH for cone crusher CH420							
	Chamber	EC	C	M	MF	F	EF
Max feed size (mm)	CSS	70-85	50-65				
	F90 (mm)	106	71	61	47	34	25
	F100 (mm)	155	103	76	58	42	31
Max motor power (kW)		90	90	90	90	90	90
Ecc. Throw (mm)		13-25	13-25	13-28	13-28	13-28	13-28
CSS (mm)	4					26-32	23-37
	5					27-45	23-39
	6					28-46	24-37
	8				43-71	30-49	26-34
	10	55	59-72	57-94	46-75	32-52	27-31
	13	59-90	64-97	96-102	49-75	35-48	
	16	64-97	69-105	67-101	53-65	37-42	
	19	69-104	74-113	72-81	57		
	22	73-111	79-120				
	25	78-118	85-128				
	29	84-128	91-119				
	32	89-123	96				
	35	94-106					
Standard Mantles		A/B	A/B	B	B	B	EF

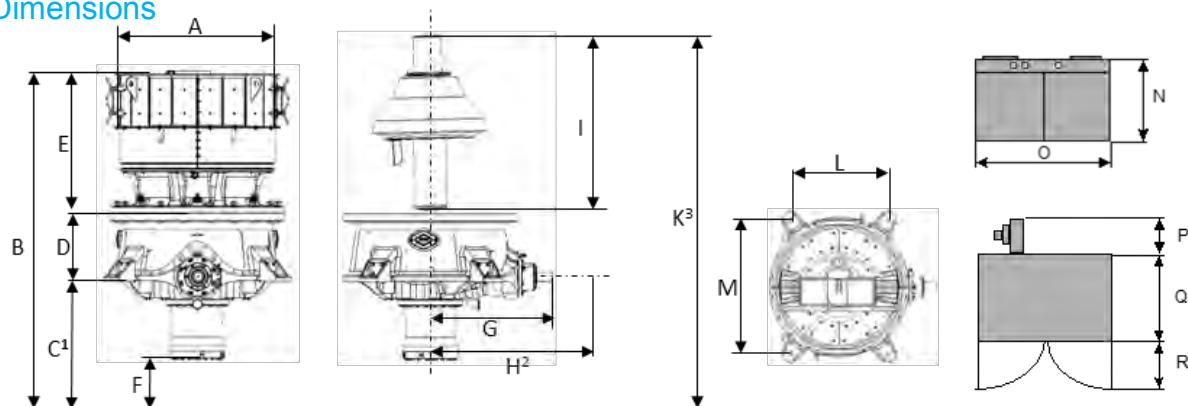
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH430

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH430	1490	2990	1130	660	1207	420	1096	1655	1718	3570	1270	1676	943	1470	1140	940	650

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH430	457	100	3330	2298	463	2914	163	575	10100	570

Performance

Nominal capacities MTPH for cone crusher CH430								
	Chamber	EC	C	MC	M	MF	F	EF
Max feed size (mm)	CSS	95-110	75-90					
	F90 (mm)	147	116	103	81	69	49	33
	F100 (mm)	214	168	129	101	86	62	42
Max motor power (kW)		132	132	132	132	132	132	132
Ecc. Throw (mm)		16-34	16-34	16-36	16-36	16-36	16-36	16-36
CSS (mm)	4						42	
	5						43-73	48-70
	6					52-57	44-76	49-84
	8				61	55-94	47-81	53-90
	10		81	73-88	64-109	59-100	50-86	56-95
	13	82-119	88-143	79-134	70-119	64-108	55-93	61-103
	16	88-144	95-155	85-145	75-128	69-117	59-92	65-102
	19	95-155	102-166	91-155	81-137	74-120	63-83	70-92
	22	101-165	109-177	97-166	86-147	79-115	67-75	75-83
	25	108-178	116-189	104-176	92-143	84-101		
	29	116-190	125-204	112-163	99-130			
	32	123-200	132-215	118-156	105-116			
	35	129-211	139-217	124-138				
	38	136-212	149-176					
	41	142-172	153					
Standard Mantles		A/B	A/B	A/B	A/B	A/B	A/B	EF

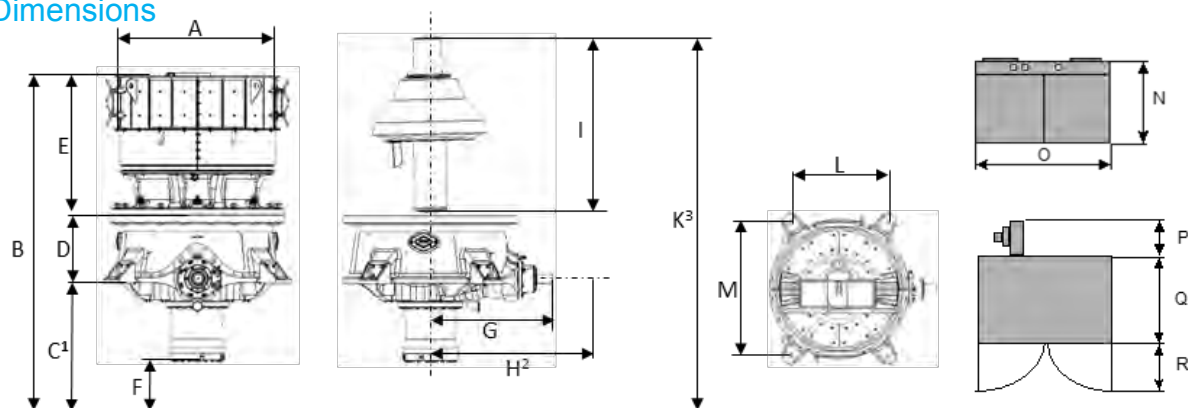
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH540

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH540	1549	3296	1160	800	1336	370	1137	1707	1853	3904	1164	1602	1023	1680	1200	1050	850

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH540	933	146	4010	2500	479	3730	189	727	12947	695

Performance

Nominal capacities MTPH for cone crusher CH540						
	Chamber	EC	C	M	F	EF
Max feed size (mm)	CSS	95-110	70-85			
	F90 (mm)	145	105	74	49	38
	F100 (mm)	211	153	93	61	48
Max motor power (kW)		250	250	250	250	250
Ecc. Throw (mm)		24-52	24-52	24-52	24-52	24-52
CSS (mm)	4					
	5				61-81	67
	6				63-112	70-123
	8			84-94	67-119	74-131
	10			89-158	72-126	79-130
	13	113-137	116-180	97-172	78-137	85-132
	16	121-201	126-222	105-185	84-139	92-122
	19	130-230	135-238	112-199	90-139	99-121
	22	139-246	144-255	120-212	69-128	106
	25	148-262	153-271	128-198	102-125	
	29	160-283	165-274	138-183	110	
	32	169-280	175-251	146-177		
	35	178-256	184-244	153		
	38	187-248	193-214			
	41	196-217	202			
Standard Mantles		A/B	A/B	A/B	A/B	EF

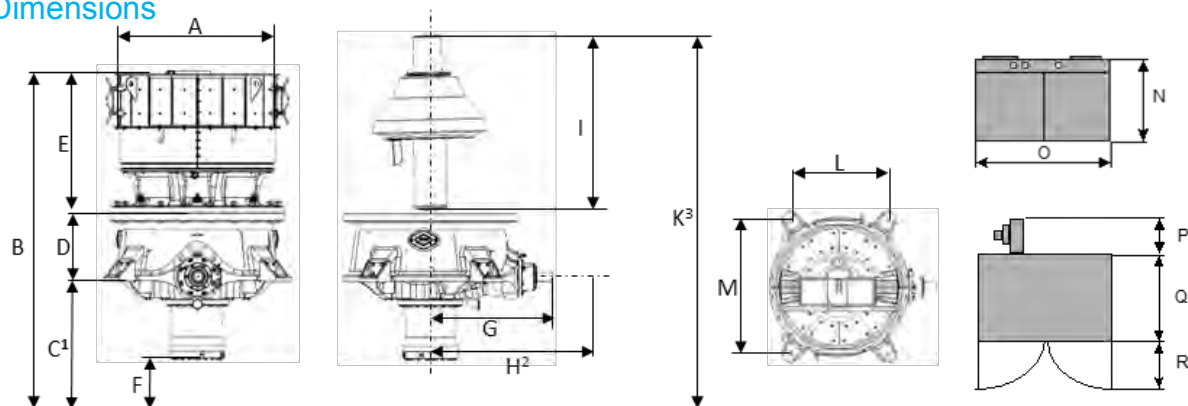
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Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH440

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH440	1690	3410	1300	750	1365	450	1315	1970	2033	4000	1350	1880	1023	1680	1200	1050	850

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH440	600	160	5232	3821	803	4701	262	914	16200	695

Performance

Nominal capacities MTPH for cone crusher CH440								
	Chamber	EC	C	MC	M	MF	F	EF
Max feed size (mm)	CSS	110-130	95-110					
	SH	185	155	125-145	100-120	75-90	65-80	38
	TS	215	175	140-160	110-130	85-100	70-85	42
Max motor power (kW)		220	220	220	220	220	220	220
Ecc. Throw (mm)		16-44	16-44	16-44	16-44	16-44	16-44	16-44
CSS (mm)	4							58-110
	5							60-114
	6							62-110
	8						80	66-108
	10						85-162	70-106
	13	112-155	108-137	118-164	125-206	108-207	92-175	76-95
	16	121-214	117-223	128-243	135-257	117-223	99-189	82-92
	19	129-247	126-239	137-261	145-276	126-239	107-203	
	22	138-263	134-256	146-279	154-294	134-256	114-217	
	25	147-280	143-272	156-297	164-313	143-272	121-231	
	29	159-303	154-294	168-320	177-292	154-254	131-215	
	32	168-320	163-310	177-292	187-284	163-247	138-209	
	35	176-336	171-282	187-284	197-248	171-216	145-183	
	38	185-353	180-273	196-247	207-234	180-203	153-172	
	41	194-320	188-237	205-232				
	44	203-308	197-222					
	48	215-270						
Standard Mantles		A/B	A/B	A/B	A/B	A/B	A/B	EF

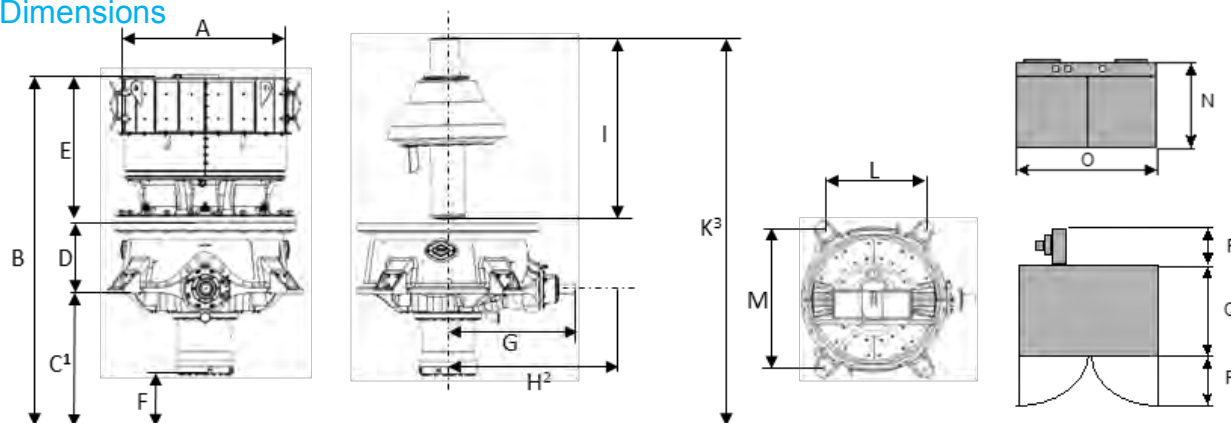
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH550

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH550	1890	3685	1297	910	1646	430	1276	1885	2096	4352	1352	1861	1023	1680	1200	1050	850

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH550	1300	192	6300	4300	731	5800	260	1176	21740	710

Performance

Nominal capacities MTPH for cone crusher CH550							
	Chamber	EC	C	MC	M	MF	F
Max feed size (mm)	CSS	110-130	95-110				
	F90 (mm)	185	141	127	92	71	58
	F100 (mm)	250	205	159	115	88	73
Max motor power (kW)		330	330	330	330	330	330
Ecc. Throw (mm)		28-52	28-52	28-52	28-52	28-52	28-52
CSS (mm)	6						
	8						
	10						126-173
	13				187	151-179	137-213
	16	162-178	177-194	187-239	202-315	162-253	148-230
	19	174-256	190-297	201-313	217-338	174-272	158-232
	22	189-290	203-317	214-334	231-339	186-273	169-232
	25	198-309	216-337	228-356	246-315	198-272	180-214
	29	214-334	233-364	246-384	266-291	214-254	195
	32	226-352	246-361	260-406	281	226	
	35	238-371	259-356	274-401			
	38	250-343	272-323	287-395			
	41	261-335	285-312	301-357			
	44	273-299		315-344			
Standard Mantles		A/B	A/B	A/B	A/B	A/B	A/B

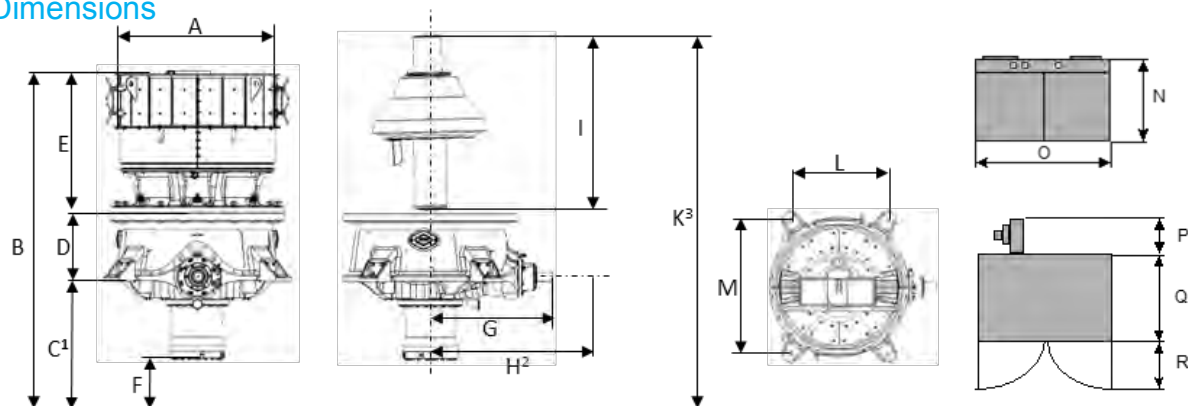
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Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH660

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH660	2139	4250	1600	860	1800	630	1543	2283	2390	4835	1528	2103	1023	1680	1200	1050	850

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH660	2100	360	8500	6200	1280	8442	361	1555	27000	710

Performance

Nominal capacities MTPH for cone crusher CH660									
	Chamber	EC	CX	C	MC	M	MF	F	EF
Max feed size (mm)	CSS	130-150	120-140	110-130	90-105				
	F90 (mm)	220	189	174	158	124	106	77	50
	F100 (mm)	321	275	253	198	155	133	96	62
Max motor power (kW)		315	315	315	315	315	315	315	315
Ecc. Throw (mm)		18-48	18-48	18-48	18-48	18-50	18-50	18-50	18-50
CSS (mm)	8								110-116
	10								116-220
	13						184-215	149-257	126-239
	16			219-231	207-264	203-326	198-375	161-304	136-235
	19	169-197	200-255	235-379	222-407	217-411	213-402	173-327	146-236
	22	180-290	213-367	251-460	237-434	323-438	227-430	185-349	159-217
	25	192-351	227-416	267-490	252-462	247-466	242-457	197-371	166-213
	29	207-379	245-449	288-529	272-499	267-504	261-494	212-401	180-190
	32	218-400	259-474	305-558	287-527	282-532	276-521	224-423	
	35	230-421	272-499	321-588	302-554	296-560	290-532	236-432	
	38	241-442	286-524	337-617	318-582	311-536	305-491	248-399	
	41	253-463	299-549	353-646	333-536	326-489	319-479	259-360	
	44	264-485	313-539	369-635	348-522	341-473	334-427	271-347	
	48	280-482	331-497	390-585	368-470	361-421	353-373	287-303	
	51	291-469	345-440	406-519	383-404	375			
Standard Mantles		A/B/D	A/B/D	A/B/D	A/B/D	A/B/D	A/B/D	A/B/D	EF

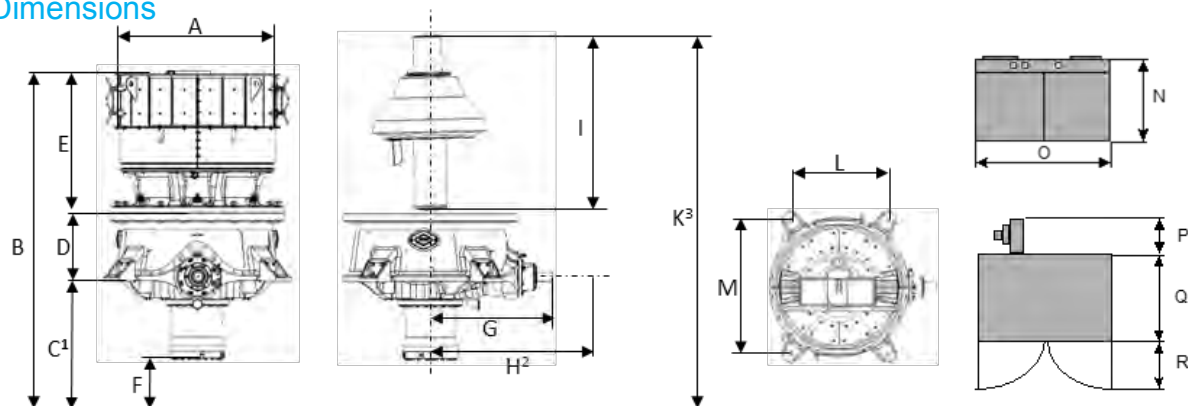
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Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH860

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH860	2101	4544	1815	1126	1603	497	1803	2638	2966	5960	1781	2122	1600	2400	-	1403	667

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH860	1400	390	11780	7930	1850	18600	670	2380	39710	1860

Performance

Nominal capacities MTPH for cone crusher CH860					
	Chamber	EC	C	MC	M
Max feed size (mm)	CSS	130-150	120-140	95-110	
	F90 (mm)	216	181	157	122
	F100 (mm)	315	263	169	152
Max motor power (kW)		500	500	500	500
Ecc. Throw (mm)		30-70	30-70	30-70	30-70
CSS (mm)	8				
	10				
	13				250-271
	16	259	292-341	281-375	270-473
	19	278-371	313-496	302-553	290-531
	22	297-470	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	461-769	520-867	500-834	481-801
	51	480-760	541-857	521-825	501-792
Standard Mantles		A/B	A/B	A/B	A/B

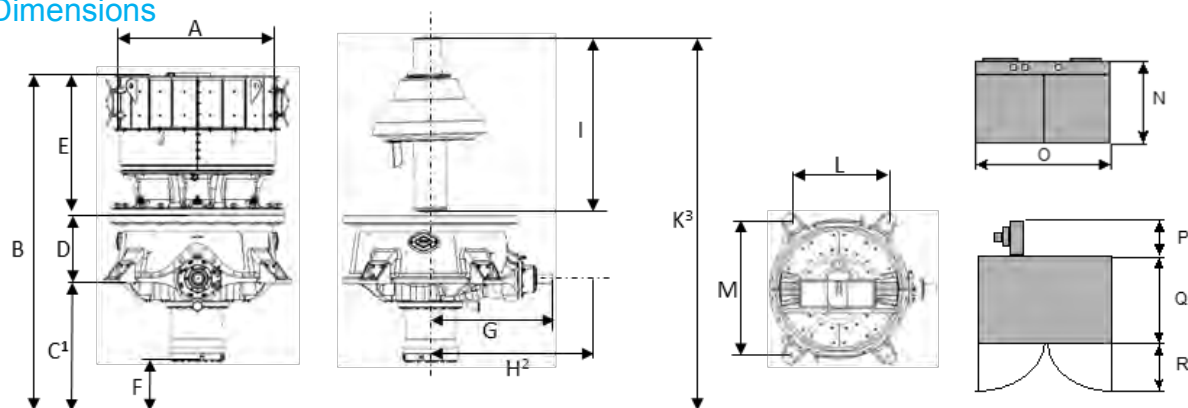
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Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH865

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH865	2101	4635	1815	1126	1694	497	1803	2638	2966	5960	1781	2122	1600	2400	-	1403	667

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH865	1397	372	11000	7930	1850	18600	670	2380	38930	1860

Performance

Nominal capacities MTPH for cone crusher CH865					
	Chamber	MF	F	EF	-
Max feed size (mm)	CSS				
	F90 (mm)	86	68	51	
	F100 (mm)	108	85	63	
Max motor power (kW)		500	500	500	
Ecc. Throw (mm)		30-70	30-70	30-70	
CSS (mm)	8			142-225	
	10		179-268	151-276	
	13	215-340	194-356	163-300	
	16	231-424	209-384	176-323	
	19	248-455	225-412	189-347	
	22	265-486	240-440	202-371	
	25	282-517	255-468	215-394	
	29	305-508	276-460	232-387	
	32	322-483	291-437	245-368	
	35	339-480	306-434	258-366	
	38	356-445	322-402	271-339	
	41	373-435	337-393	284-331	
	44	389	352	297	
	48				
	51				
Standard Mantles		EF	EF	EF	

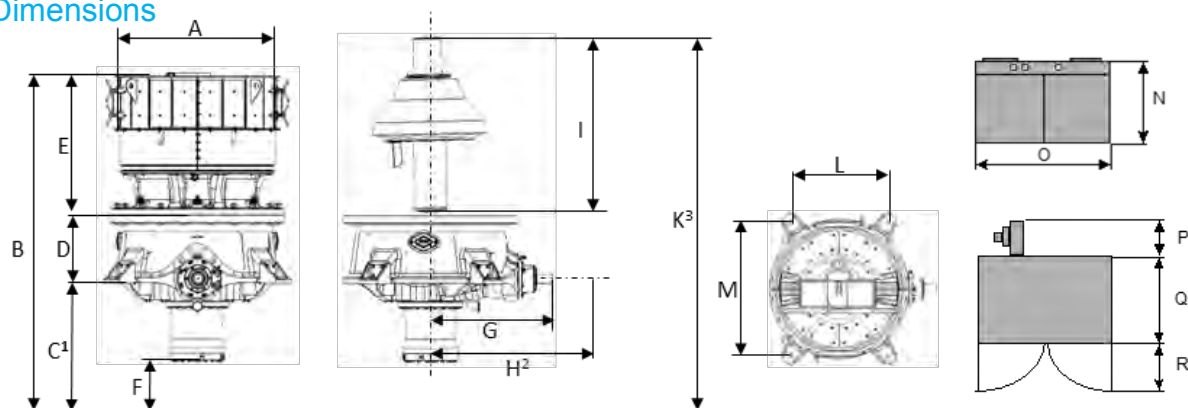
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH870

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH870	2507	5647	2200	1228	2229	998	1824	2850	3095	6600	2324	2324	1800	2850	-	1350	685

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH870	2850	600	13200	11200	2100	22700	700	2700	49800	1100

Performance

Nominal capacities MTPH for cone crusher CH870								
	Chamber	EC	C	MC	M	MF	F	EF
Max feed size (mm)	CSS	140-170	120-150	100-130				
	F90 (mm)	240	197	162	147	86	79	70
	F100 (mm)	350	287	236	184	108	99	88
Max motor power (kW)		520	520	520	520	520	520	520
Ecc. Throw (mm)		32-68	32-68	32-68	32-68	32-80	32-80	32-80
CSS (mm)	10							202-240
	13						236-397	219-418
	16					273-490	254-486	236-451
	19				351-418	293-559	273-521	254-484
	22			403-517	375-631	313-597	292-557	271-517
	25	392-466	421-541	429-721	399-671	332-635	310-593	288-550
	29	423-623	455-713	463-779	431-725	359-686	335-640	311-594
	32	446-751	480-808	489-822	455-765	379-724	354-676	329-627
	38	493-830	531-893	540-908	503-846	419-800	391-747	363-693
	44	540-909	581-978	591-995	551-926	459-772	428-720	398-669
	51	595-1001	640-1077	651-1096	606-1020	505-697	472-650	438-645
	57	642-1080	691-1162	703-1182	654-1101	545-649	509-605	473-562
	64	697-1173	750-1261	763-1283	710-1195			513
	70	744-1167	800-1255	814-1277	758-1189			
Standard Mantles		A/B	A/B	A/B	A/B	EF	EF	EF

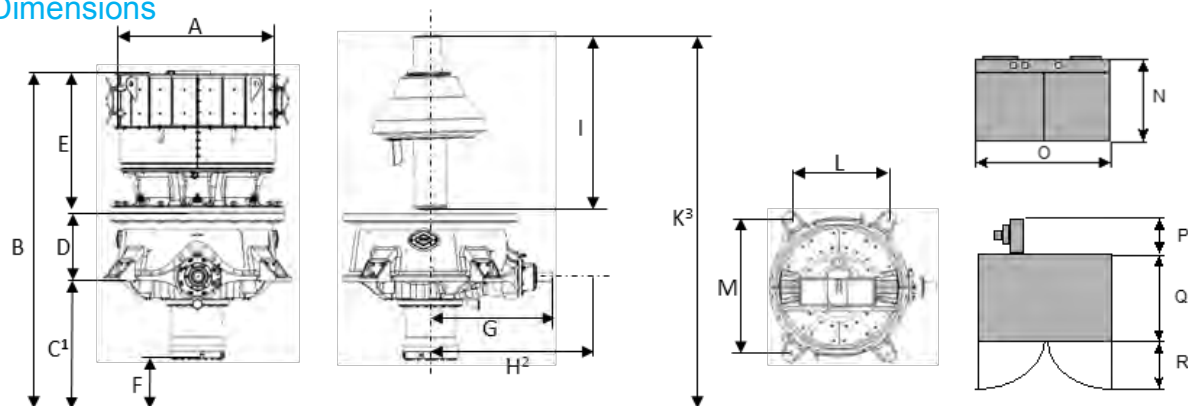
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH890

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH890	2900	6450	2870	1190	2400	1150	1960	3100	3500	7700	2489	2489	1800	2850	-	1350	685

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH890	3850	1000	21600	18250	2850	32400	850	4175	76100	1100

Performance

Nominal capacities MTPH for cone crusher CH890							
	Chamber	EC	C	MC	M	MF	F
Max feed size (mm)	CSS	170-200	150-180	130-160			
	F90 (mm)	294	262	208	175	119	111
	F100 (mm)	428	382	302	219	149	139
Max motor power (kW)		750	750	750	750	750	750
Ecc. Throw (mm)		24-70	24-70	24-70	24-70	24-70	24-70
CSS (mm)	13						
	16					371-401	366-601
	19				460-534	398-719	392-755
	22		504	524-692	491-807	426-819	419-806
	25	488-566	536-709	557-916	522-1005	453-871	446-858
	29	527-781	579-952	602-1158	564-1086	489-941	481-927
	32	556-1003	611-1177	635-1223	595-1146	516-993	508-978
	38	614-1182	676-1301	702-1351	658-1267	570-1098	562-1058
	44	673-1295	740-1424	769-1480	721-1387	625-1202	615-1011
	51	741-1426	815-1569	847-1630	794-1528	688-1324	678-895
	57	800-1539	880-1693	914-1759	857-1649	742-1429	731-790
	64	868-1670	955-1837	992-1789	930-1677	806-1324	
	70	926-183	1019-1838	1059-1654	992-1551	860-1206	
Standard Mantles		A/B	A/B	A/B	A/B	A/B	EF

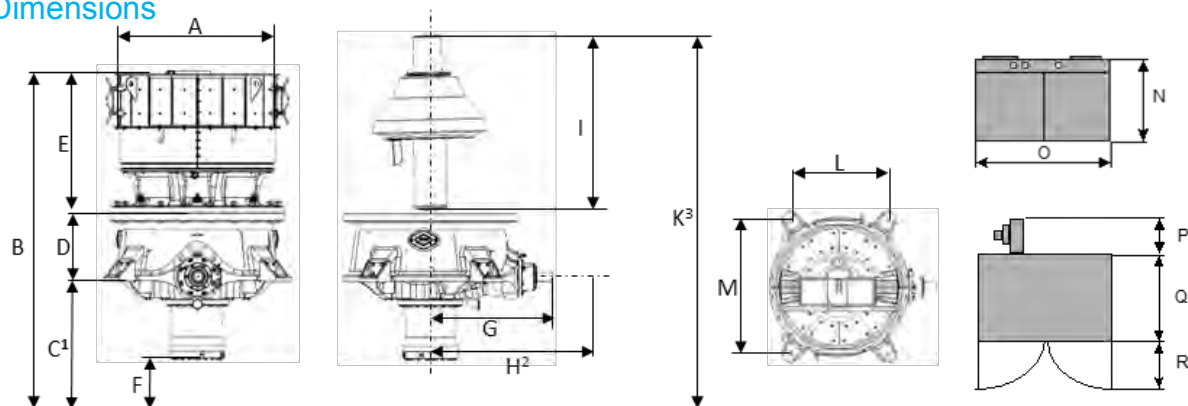
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

SPECIFICATION AND APPLICATION 2016-02-01

CH895

Dimensions



(mm)	A	B	C ¹	D	E	F	G	H ²	I	K ³	L	M	N	O	P	Q	R
CH895	2900	6450	2870	1190	2400	1150	1960	3100	3500	7700	2489	2489	1800	2850	-	1350	685

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CH895	3550	1000	24900	18250	2850	32400	850	4175	79100	1100

Performance

Nominal capacities MTPH for cone crusher CH895				
	Chamber	EFX	EF	EEF
Max feed size (mm)	CSS			
	F90 (mm)	89	77	68
	F100 (mm)	112	97	89
Max motor power (kW)		750	750	750
Ecc. Throw (mm)		24-70	24-70	24-70
CSS (mm)	10		263-306	258-321
	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	483-910	474-912	465-839
	44	529-869	519-999	509-796
	51	582-770	572-1100	561-696
	57	628-679	617-1014	605
	64		669-939	
	70		715-830	
Standard Mantles		EF	EF	EF

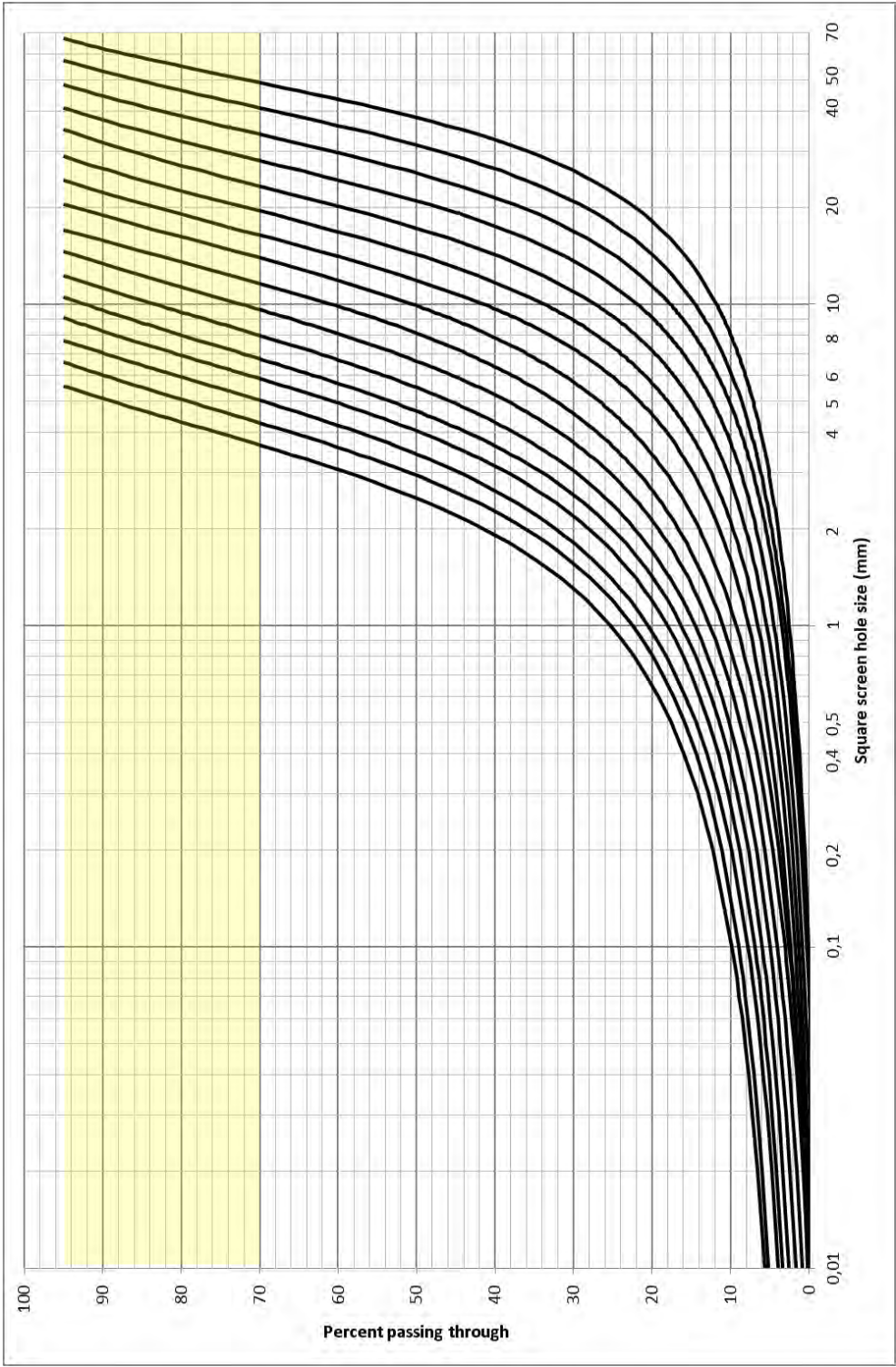
ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

GENERAL PRODUCT CURVES 2016-02-01

GENERAL PRODUCT CURVES FOR CONE CRUSHERS CH Series

Yellow area shows the normal range of nominal percentage smaller than CSS (70-95%). The actual product curve is calculated according in PlantDesigner.



ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

AUTOMATION - ASRi 2016-01-01

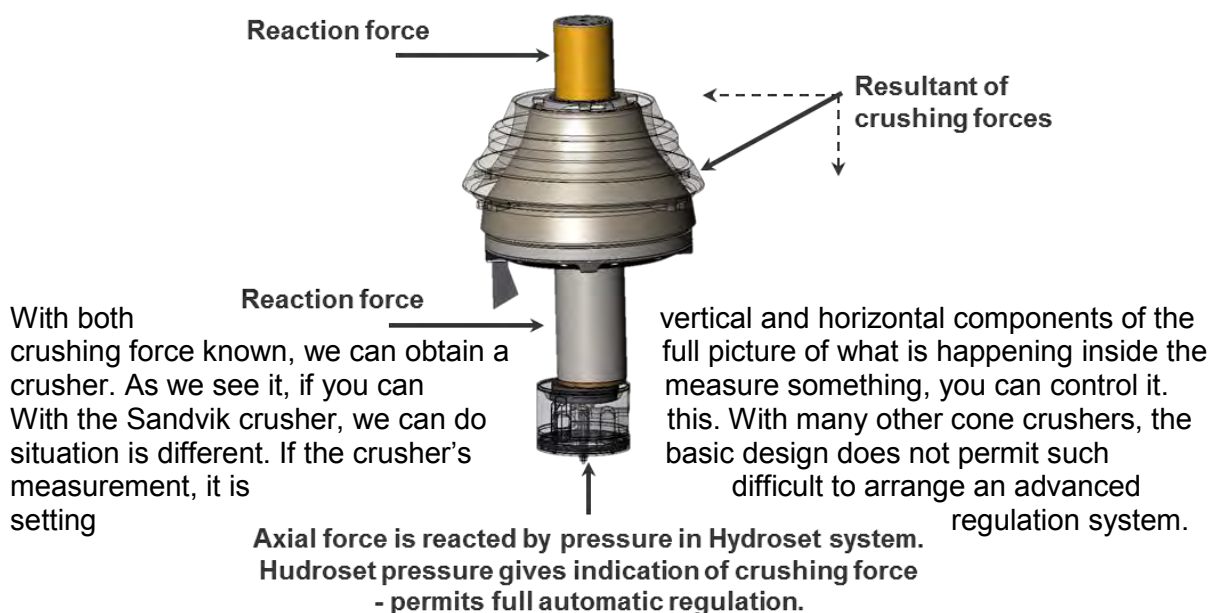
ASRi – AUTOMATIC SETTING REGULATION SYSTEM

The term “Crusher Automation” is sometimes used to describe the equipment that starts and stops the crusher’s drive motor and its ancillaries (lubrication oil pump, oil heating and cooling, etc.) and monitors the operation of these ancillaries (oil system interlocked, for example). Sandvik Mining and Construction regards this as part of the normal electrical system in the plant rather than a form of “crusher automation”. It is usual that the customer arranges this himself, although Sandvik Mining and Construction can supply such equipment if required.

“Automatic setting regulation”

Some manufacturers – principally those whose crushers feature an adjustable “top shell” that is clamped to the “bottom shell” – do not have the benefit of a clear picture of what is happening inside the crusher and consequently have to make do with a fairly elementary form of crusher automation. This can take many forms, from a simple regulation of the feed rate to a slow-reacting setting adjustment system. Such setting adjustment systems often suffer from the disadvantage that they cannot adjust the setting while the crusher is under full load – a consequence of the crusher’s basic design.

In Sandvik Mining and Construction’s view, the only true way of automating a cone crusher is to continuously monitor the load in the crusher and to regulate the CSS in accordance with a pre-determined control program. This is most easily accomplished with a crusher like the Hydrocone since it has its mainshaft supported by the Hydroset piston – in effect a hydraulic jack. This hydraulic jack provides a means of easily and simply adjusting the vertical position of the crusher’s mainshaft (and thus its CSS) - **under load**. The hydraulic jack also makes it possible to measure the vertical component of the crushing force inside the crushing chamber. The horizontal component can be measured by monitoring the power input to the crusher.

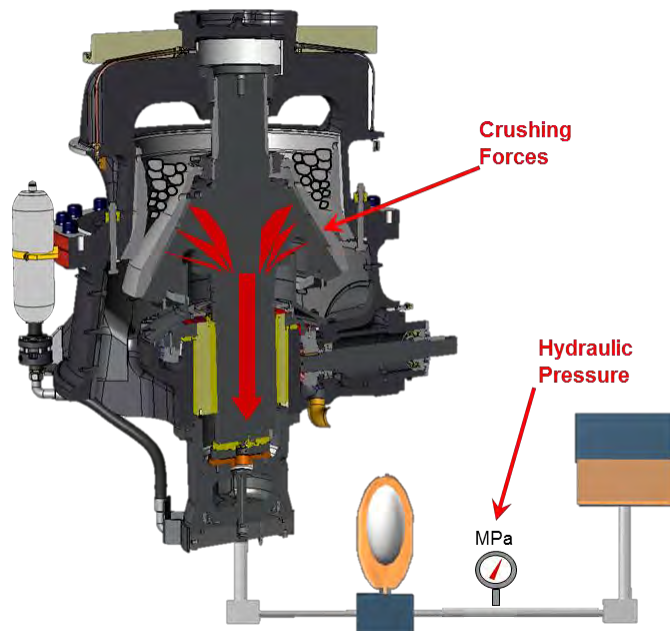


ROCK PROCESSING GUIDE 2016

Chapter D - CONE CRUSHERS CH SERIES

AUTOMATION - ASRi 2016-01-01

ASRi – AUTOMATIC SETTING REGULATION SYSTEM



With both vertical and horizontal components of the crushing force known, we can obtain a full picture of what is happening inside the crusher. As we see it, if you can measure something, you can control it. With the Sandvik crusher, we can do this. With many other cone crushers, the situation is different. If the crusher's basic design does not permit such measurement, it is difficult to arrange an advanced setting regulation system.

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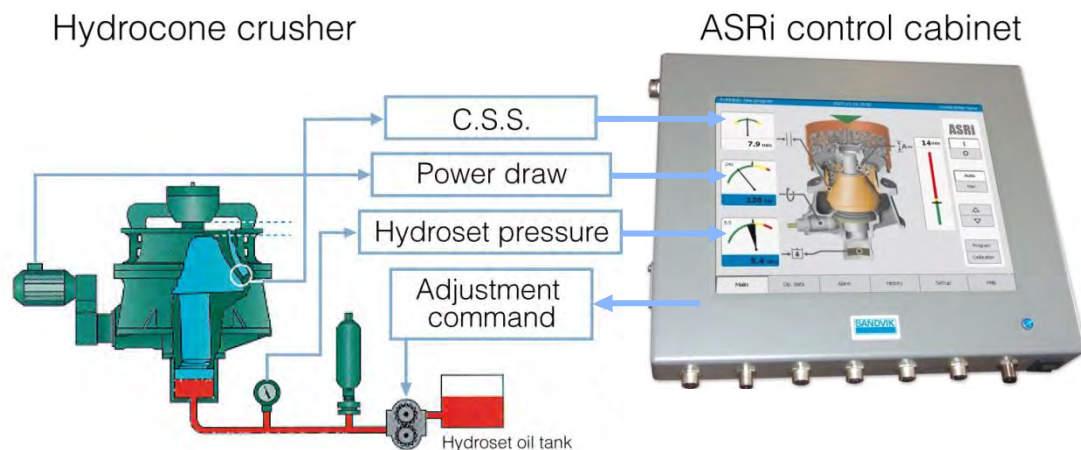
Chapter D - CONE CRUSHERS CH SERIES

AUTOMATION - ASRi 2016-01-01

WHAT IS ASRi?

ASRi is the name of Sandvik Mining and Construction's current Automatic Setting Regulation system for H-type and S-type cone crushers. ASRi is the latest (fifth) generation of crusher automation system produced by Sandvik and its predecessors, and over 6500 systems have been supplied over the past 40 years.

ASRi Automatic Setting Regulation



ASRi measures the load conditions and adjusts the setting accordingly

ASRi continuously monitors the Hydroset pressure and the power drawn by the crusher's drive motor. In addition, a position sensor beneath the crusher monitors the position of the mainshaft, and the output from the sensor is converted by the ASRi computer into the equivalent CSS. These values are compared with the values that have been put into the crushing program and adjustments are made accordingly.

The system is proportional - major overloads or underloads result in rapid changes, whilst small discrepancies result in very small changes.

The cabinet is encapsulated and is available for wall-mounting or in a flanged version for panel-mounting. All cable connections are made with robust M12 plugs and sockets.

The values provided by the measuring devices are also presented on the screen of the ASRi control cabinet. This is a colour touch screen, which is also used to select different pictures and to input information. The system is easy to learn, easy to set up and easy to use. Up to twenty different crushing programs can be stored and a wealth of information is available at the touch of a finger – operating data, alarms, historical data, etc. ASRi makes it easier than ever before to get a picture of the crusher's health!

ROCK PROCESSING GUIDE 2016

Chapter E – CONE CRUSHERS CS series

CONTENTS 2016-02-01



SELECTION GUIDE

GENERAL

SPECIFICATION AND APPLICATION

Cone Crusher CS420

Cone Crusher CS430

Cone Crusher CS440

Cone Crusher CS660

GENERAL PRODUCT CURVES

AUTOMATION

ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

The information in the table below is a guideline only. It is not a collection of strict rules.

The important rule is: We shall offer the solution that gives the customer the best profit.

For various applications are the suitability of different crushers stated in three categories:

BEST (B) is the obvious selection unless the customer has other experience.

GOOD (G) is an alternative which can be used.

POSSIBLE (P) is a solution that may work but is normally not recommended.

Application / Type of crusher	Primary Gyratory Crusher	Jaw Crusher	Primary HSI Impact Crusher	Cone Crusher CS series	Secondary HSI Impact Crusher	Cone Crusher CH series	VSI Impact Crusher
Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

1. A typical example of primary crushing is reducing top size from 900 to 300 mm.
2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
5. Typical abrasive rocks are Granite, Quartzite, Diorite, Trap rock, Basalt, Gneiss.
6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

GENERAL 2016-01-01

GENERAL

The Sandvik CS-series of cone crushers have a wide field of use as they can easily be matched to changes in production through the proper selection of crushing chamber and eccentric throw. Our cone crushers are an excellent choice as secondary crushers in combination with a jaw or a primary gyratory crusher or in the third or fourth crushing stage.

The Sandvik CS-serie is equipped with a Hydroset system that provides safety and setting adjustment functions, and incorporates a heavy-duty hydraulic cylinder which supports the mainshaft and adjusts its position.

The Hydroset system provides automatic overload protection to permit the passage of tramp iron or other uncrushable material. The system then automatically returns the mainshaft smoothly to its original position.

When the cone crusher is equipped with our automatic setting system, ASRi, the actual crushing load inside the crusher is continuously monitored. This makes it possible to optimize crusher utilization allowing you to squeeze the ultimate performance from your machine at all times.



ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

GENERAL 2016-01-01

GENERAL - MAXIMUM FEED SIZE

The maximum feed size is given in the table as CSS, GG, SH and ML.

CSS denotes the maximum permitted CSS of a jaw crusher ahead of the crusher in question. The lower value is normally used. It is valid for most applications with medium-hard or hard material (Impact Work Index 14-22) and for worn jaw plates. If the jaw crusher product is much finer than normal or the shape is cubical, the upper CSS value is valid. Note: If the material has a tendency to form slabs (i.e. has a laminated or linear structure), a CSS smaller than the lower value may be needed.

GG denotes the maximum grizzly gap through which the feed material should pass ahead of the crusher.

SH denotes the maximum square hole size on a screen ahead of the crusher in question when the feed to the crusher passes through the screen deck. Note that separations above about 150 mm are too large to be realistic on a normal screen with square holes, but the SH value can still be used for comparison purposes.

ML denotes the maximum length of **occasional** large and irregularly shaped lumps fed to the crusher in question. All dimensions of the lump must be less than ML.

Contact **Sandvik Construction** or **Sandvik Mining** if you are in doubt when selecting a crushing chamber.

ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

GENERAL 2016-01-01

GENERAL - ECCENTRIC BUSHING

The eccentric throw of a CS-type cone crusher can be adjusted within a wide range. This is because the eccentric bushing has multiple key-ways, so that the eccentric bushing can be installed in different positions in the excenter.

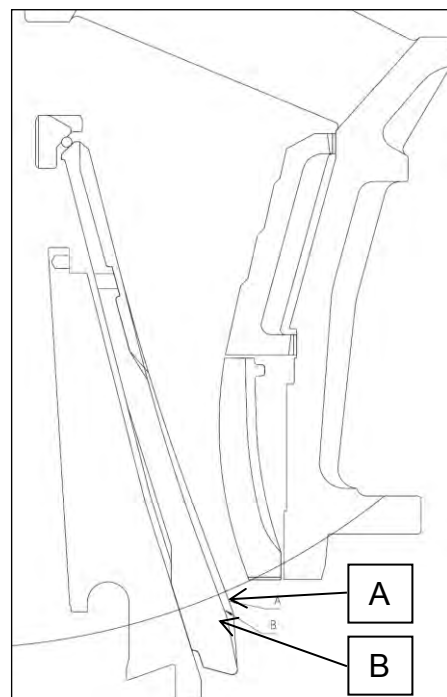
GENERAL - CRUSHING CHAMBER

The crushing chamber in a Cone crusher is determined principally by the outer crushing liner – the lower concave ring and upper concaves (or concave ring). It is the type of concave ring that is usually given when a crusher is described – CS420-EC, for example. The inner crushing liner – the mantle – is normally chosen to suit the machine's eccentric throw and the setting at which it is to run.

Mantle types (A and B)

For CS-type cone crushers are two different mantles available – Type A and Type B. These two have the same profile so there is no difference in the crushing chamber. The difference between A and B mantles is instead the position of the crushing surface in relation to the contact surface of the head center.

The Type A mantle is normally used with smaller eccentric throws and smaller settings. However, if a crusher is to operate with a larger setting and/or a larger eccentric throw, the Type-B mantle is normally a better choice. This is because there must always be a certain amount of oil beneath the Hydroset piston. The mainshaft assembly can only be lowered to a level where there is enough of oil below the Hydroset piston. If the Type A mantle is new, it could be impossible to lower the mainshaft far enough to achieve the desired big setting. In such a case it is better to use the Type B mantle, which has the crushing surface sitting lower on the head center.



ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

GENERAL 2016-01-01

GENERAL - MOTOR POWER

The motor power required for a given crushing duty depends on the crusher size, the crushing chamber, the characteristics of the material, the eccentric throw and the setting (CSS). Guidelines for the power required for given combinations of crusher size, crushing chamber and eccentric throw are given in the tables in this section. The figures given in the "Estimated power required" column apply for "normal" applications processing material with an Impact Work Index (Wi) = max 16.

Electric motors are normally available only in certain standard sizes. In most cases, closest standard motor with a higher output power can be selected. The biggest permitted motor is the figure given in the "Max permitted motor power" column.

In some cases, it may be desired at some future date to increase the crusher's eccentric throw or change the crushing chamber. In either case, it may be necessary to use a larger motor from the beginning. However, the average power input to the crusher must not exceed the applicable limit.

The best way to protect the crusher from excessive power input is to use an ASRi, automatic setting regulation system. This will provide the necessary protection and also permit optimum crusher operation under the conditions in question.

If an ASRi system is fitted to the crusher, a larger motor can sometimes be used. See the figures in the "Max. permitted motor power" column.

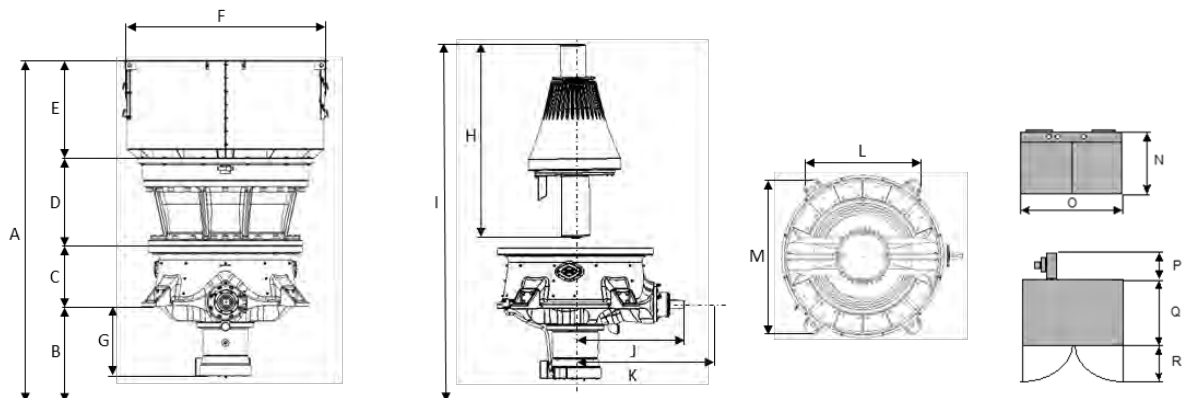
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Chapter E – CONE CRUSHERS CS SERIES

SPECIFICATION AND APPLICATION – 2016-02-01

CS420

Dimensions



(mm)	A	B	C	D	E	F	G	H	I
CS420	2902	1020	540	692	650	1375	649	1739	3365
(mm)	J	K	L	M	N	O	P	Q	R
CS420	838	1326	1090	1400	943	1470	1140	940	650

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CS420	283	70	2463	1800	292	1731	97	381	7188	570

Performance

Nominal capacities MTPH for cone crusher CS420			
	Chamber	EC	C
Max feed size (mm)	CSS	120-135	110-115
	GG	125	105
	SH	190	165
	ML	240	200
Max motor power (kW)		90	90
Ecc. Throw (mm)		16-25	16-25
CSS (mm)	16		77
	19		82-110
	22	102-118	87-116
	25	108-144	92-123
	29	115-154	98-113
	32	121-162	103
	35	127-145	
	38	132	
	41		
	44		
	48		
	51		
Standard Mantles		A/B	A/B

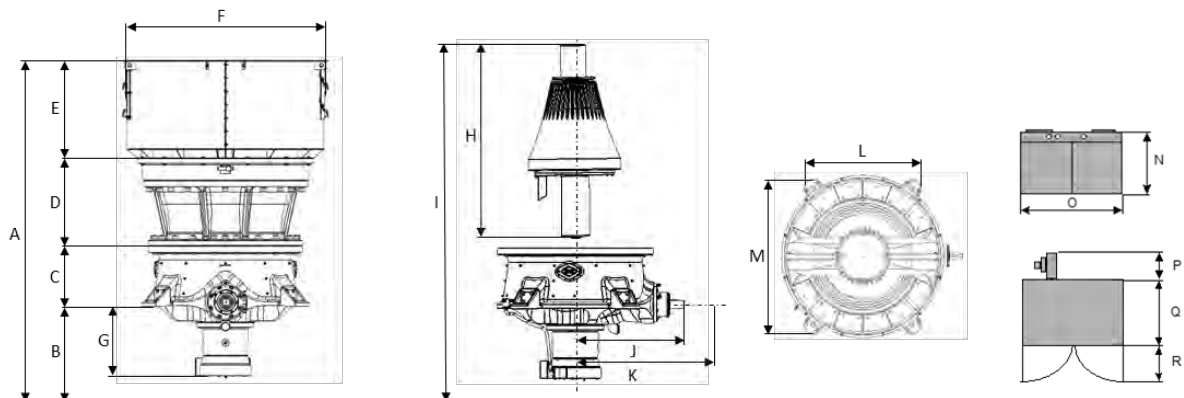
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Chapter E – CONE CRUSHERS CS SERIES

SPECIFICATION AND APPLICATION – 2016-02-01

CS430

Dimensions



(mm)	A	B	C	D	E	F	G	H	I
CS430	3485	1125	655	825	880	1765	737	2073	3930
(mm)	J	K	L	M	N	O	P	Q	R
CS430	1096	1655	1270	1676	943	1470	1140	940	650

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CS430	689	141	5017	3051	448	2914	163	575	13098	570

Performance

Nominal capacities MTPH for cone crusher CS430				
	Chamber	EC	C	MC
Max feed size (mm)	CSS	160-180	140-160	110-130
	GG	170	145	115
	SH	275	240	195
	ML	360	300	235
Max motor power (kW)		132	132	132
Ecc. Throw (mm)		16-30	16-30	16-30
CSS (mm)	22			130
	25	151	170-196	137-209
	29	161-245	182-277	147-224
	32	169-257	191-290	154-235
	35	176-269	199-304	161-245
	38	184-281	208-317	168-256
	41	192-292	217-330	175-267
	44	200-304	226-302	182-244
	48	210-281	237	192
	51	218-250		
	54	225		
Standard Mantles		A/B	A/B	A/B

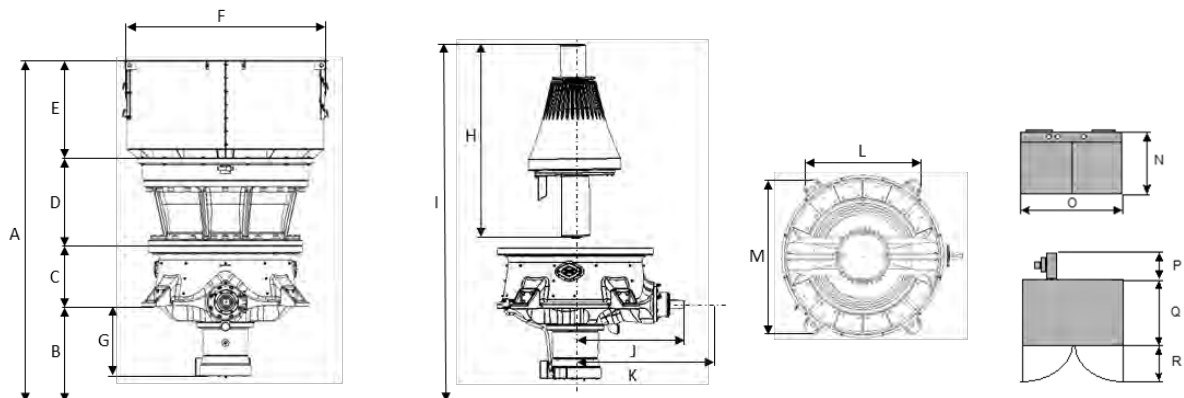
ROCK PROCESSING GUIDE 2016

Chapter E – CONE CRUSHERS CS SERIES

SPECIFICATION AND APPLICATION – 2016-02-01

CS440

Dimensions



(mm)	A	B	C	D	E	F	G	H	I
CS440	4075	1300	745	980	1050	2150	890	2475	4600
(mm)	J	K	L	M	N	O	P	Q	R
CS440	1322	1970	1350	1880	1023	1680	1200	1050	691

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CS440	761	306	8623	5240	803	4701	262	914	21367	695

Performance

Nominal capacities MTPH for cone crusher CS440				
	Chamber	EC	C	MC
Max feed size (mm)	CSS	190-215	175-200	140-165
	GG	200	185	145
	SH	330	310	245
	ML	450	400	300
Max motor power (kW)		220	220	220
Ecc. Throw (mm)		20-36	20-36	20-36
CSS (mm)	19			
	22			
	25			
	29			245
	32		291	257-391
	35	273-318	304-463	269-409
	38	285-434	317-483	281-427
	41	297-452	331-503	292-445
	44	309-470	344-456	304-403
	48	325-495	362-421	320-372
	51	337-447	375	332
	54	349-406		
Standard Mantles		A/B	A/B	A/B

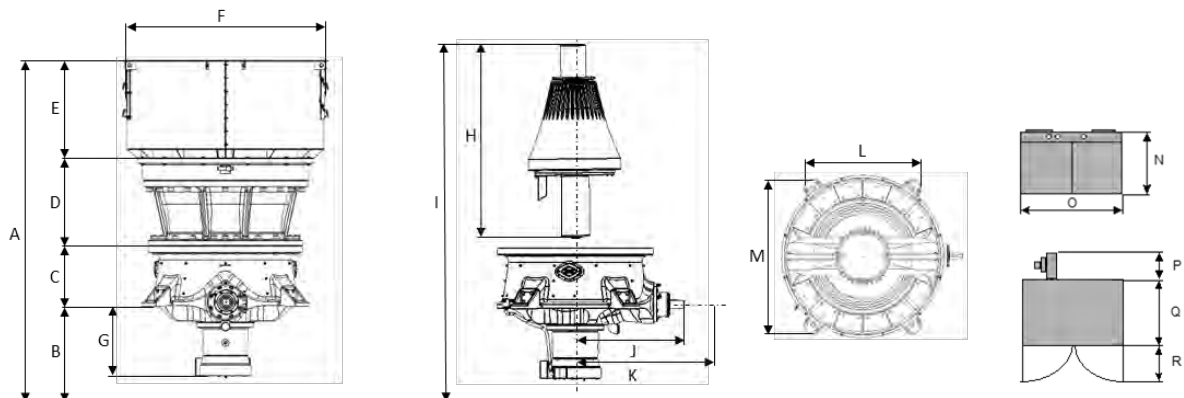
ROCK PROCESSING GUIDE 2016

Chapter E – CONE CRUSHERS CS SERIES

SPECIFICATION AND APPLICATION – 2016-02-01

CS660

Dimensions



(mm)	A	B	C	D	E	F	G	H	I
CS660	5100	1600	860	1240	1400	3111	1680	2940	5346
(mm)	J	K	L	M	N	O	P	Q	R
CS660	1543	2289	1528	2103	1023	1680	1200	1050	691

Weights

(kg)	Feed hopper	Spider cap	Topshell, complete	Mainshaft assembly complete	Eccentric, complete	Bottomshell assembly complete	Pinionshaft housing complete	Hydroset cylinder complete	Total Weight (approx.)	Oil tank unit
CS660	1988	416	17722	8317	1280	8442	361	1555	40254	710

Performance

Nominal capacities MTPH for cone crusher CS660			
	Chamber	EC	C
Max feed size (mm)	CSS	230-260	210-240
	GG	245	220
	SH	385	360
	ML	560	500
Max motor power (kW)		315	315
Ecc. Throw (mm)		20-40	20-40
CSS (mm)	35		335
	38	331-385	350-464
	41	345-514	364-602
	44	359-593	379-626
	48	378-624	399-658
	51	392-647	413-683
	54	406-670	428-707
	57	420-693	443-731
	60	433-716	458-755
	64	452-746	477-710
	70	480-792	507-589
	76	508-756	
	83	540	
Standard Mantles		A/B	A/B

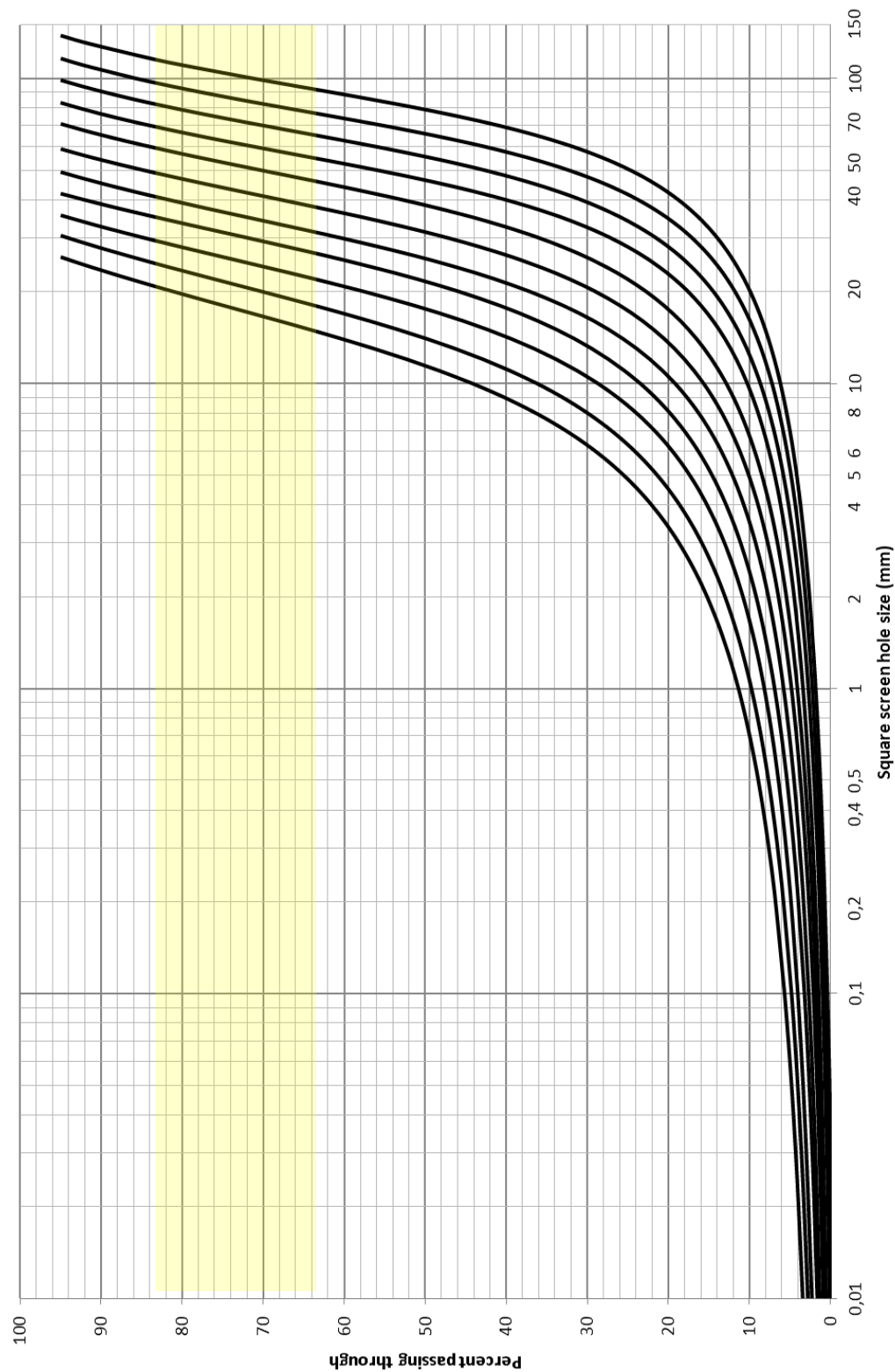
ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

GENERAL PRODUCT CURVES 2016-02-01

GENERAL PRODUCT CURVES FOR CONE CRUSHERS CS series

Yellow area shows the range of nominal percentage smaller than CSS. The percentage varies between 60-80% depending on crusher size and crushing chamber.



ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

AUTOMATION - ASRi 2016-01-01

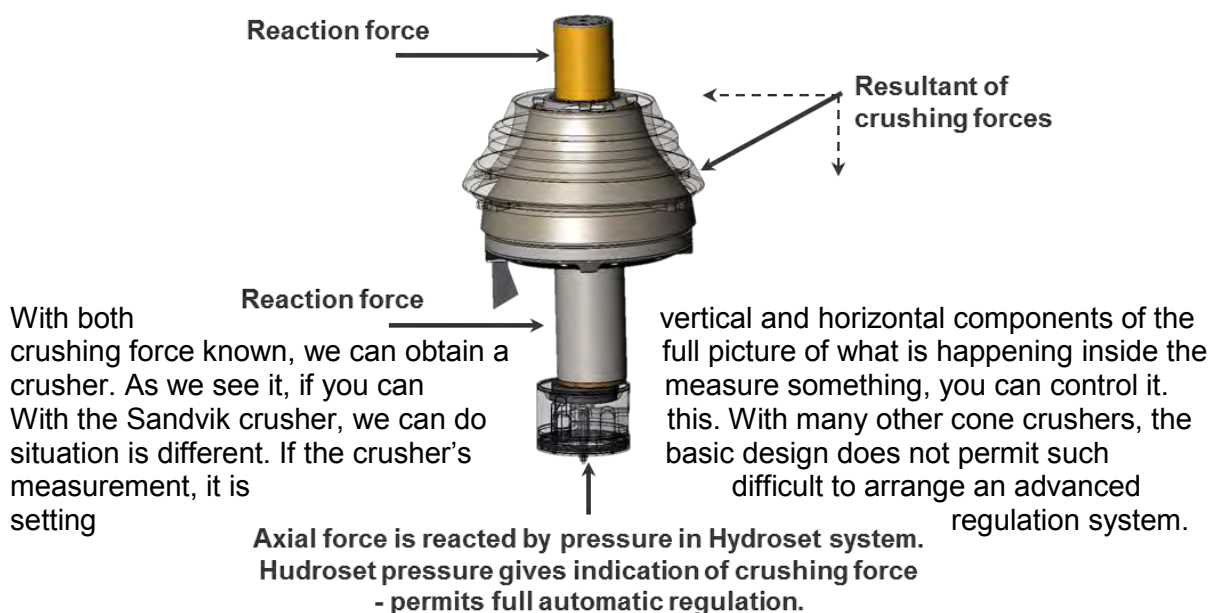
ASRi – AUTOMATIC SETTING REGULATION SYSTEM

The term “Crusher Automation” is sometimes used to describe the equipment that starts and stops the crusher’s drive motor and its ancillaries (lubrication oil pump, oil heating and cooling, etc.) and monitors the operation of these ancillaries (oil system interlocked, for example). Sandvik Mining and Construction regards this as part of the normal electrical system in the plant rather than a form of “crusher automation”. It is usual that the customer arranges this himself, although Sandvik Mining and Construction can supply such equipment if required.

“Automatic setting regulation”

Some manufacturers – principally those whose crushers feature an adjustable “top shell” that is clamped to the “bottom shell” – do not have the benefit of a clear picture of what is happening inside the crusher and consequently have to make do with a fairly elementary form of crusher automation. This can take many forms, from a simple regulation of the feed rate to a slow-reacting setting adjustment system. Such setting adjustment systems often suffer from the disadvantage that they cannot adjust the setting while the crusher is under full load – a consequence of the crusher’s basic design.

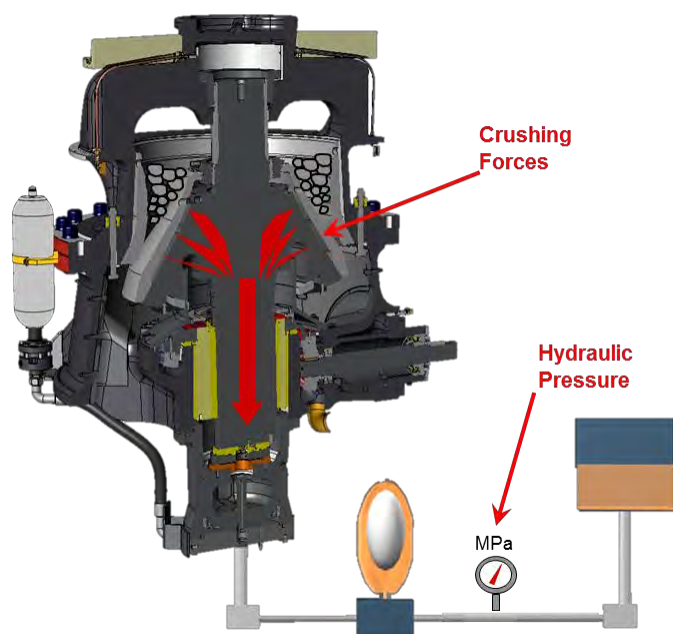
In Sandvik Mining and Construction’s view, the only true way of automating a cone crusher is to continuously monitor the load in the crusher and to regulate the CSS in accordance with a pre-determined control program. This is most easily accomplished with a crusher like the Hydrocone since it has its mainshaft supported by the Hydroset piston – in effect a hydraulic jack. This hydraulic jack provides a means of easily and simply adjusting the vertical position of the crusher’s mainshaft (and thus its CSS) - **under load**. The hydraulic jack also makes it possible to measure the vertical component of the crushing force inside the crushing chamber. The horizontal component can be measured by monitoring the power input to the crusher.



ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

AUTOMATION - ASRi 2016-01-01



With both vertical and horizontal components of the crushing force known, we can obtain a full picture of what is happening inside the crusher. As we see it, if you can measure something, you can control it. With the Sandvik crusher, we can do this. With many other cone crushers, the situation is different. If the crusher's basic design does not permit such measurement, it is difficult to arrange an advanced setting regulation system.

ROCK PROCESSING GUIDE 2016

Chapter E - CONE CRUSHERS CS SERIES

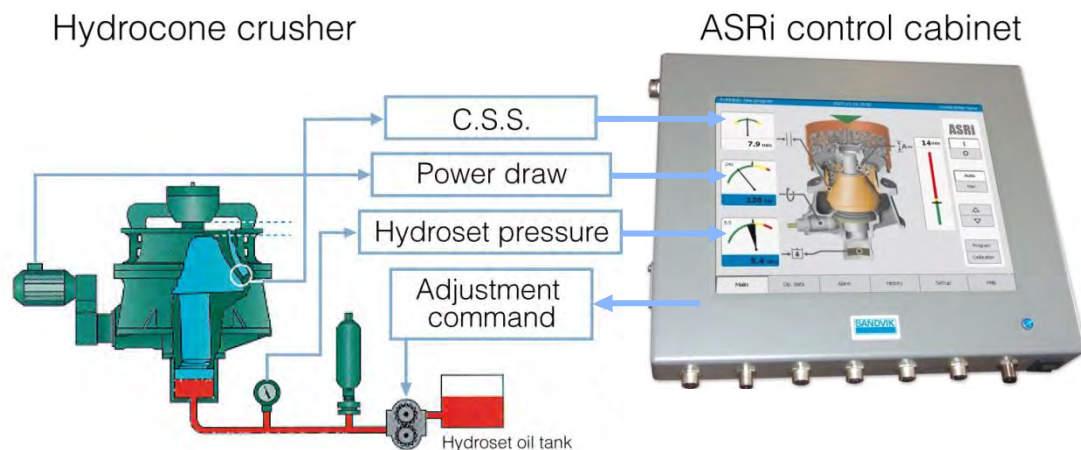
AUTOMATION - ASRi 2016-01-01

WHAT IS ASRi?

ASRi is the name of Sandvik Mining and Construction's current Automatic Setting Regulation system for H-type and S-type cone crushers. ASRi is the latest (fifth) generation of crusher automation system produced by Sandvik and its predecessors, and over 6500 systems have been supplied over the past 40 years.

ASRi

Automatic Setting Regulation



ASRi measures the load conditions and adjusts the setting accordingly

ASRi continuously monitors the Hydroset pressure and the power drawn by the crusher's drive motor. In addition, a position sensor beneath the crusher monitors the position of the mainshaft, and the output from the sensor is converted by the ASRi computer into the equivalent CSS. These values are compared with the values that have been put into the crushing program and adjustments are made accordingly.

The system is proportional - major overloads or underloads result in rapid changes, whilst small discrepancies result in very small changes.

The cabinet is encapsulated and is available for wall-mounting or in a flanged version for panel-mounting. All cable connections are made with robust M12 plugs and sockets.

The values provided by the measuring devices are also presented on the screen of the ASRi control cabinet. This is a colour touch screen, which is also used to select different pictures and to input information. The system is easy to learn, easy to set up and easy to use. Up to twenty different crushing programs can be stored and a wealth of information is available at the touch of a finger – operating data, alarms, historical data, etc. ASRi makes it easier than ever before to get a picture of the crusher's health!



ROCK PROCESSING GUIDE 2016

Chapter G – VSI IMPACT CRUSHERS

CONTENTS 2016-01-01



SELECTION GUIDE

GENERAL

BI-FLOW

SPECIFICATIONS

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

The information in the table below is a guideline only. It is not a collection of strict rules.

The important rule is: We shall offer the solution that gives the customer the best profit.

For various applications are the suitability of different crushers stated in three categories:

BEST (B) is the obvious selection unless the customer has other experience.

GOOD (G) is an alternative which can be used.

POSSIBLE (P) is a solution that may work but is normally not recommended.

Application / Type of crusher	Primary Gyratory Crusher	Jaw Crusher	Primary HSI Impact Crusher	Cone Crusher CS series	Secondary HSI Impact Crusher	Cone Crusher CH series	VSI Impact Crusher
Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

1. A typical example of primary crushing is reducing top size from 900 to 300 mm.
2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
5. Typical abrasive rocks are Granite, Quartzite, Diorite, Trap rock, Basalt, Gneiss.
6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

GENERAL 2016-01-01

GENERAL

Our VSI Impact Crushers are a reliable, robust and efficient autogenous crusher range. Mainly used in the tertiary / quaternary stages of aggregate production, for manufacturing quality sand and aggregates used in bridge and dam production, industrial mineral production, mining and glass recycling. However, the full application range is extremely varied and ever growing.

The crusher operates by accelerating the material to be crushed via a high energy (patented) rotor, into a crushing chamber lined with the same material. This gives the rock on rock (autogenous) crushing action, which has several unique advantages. Some of those being:

- Excellent product shape (can be used to reduce flake and elongation from preceding crushers).
- Virtually no contamination of the product during the crushing action.
- It is the most efficient method of crushing for the manufacture of sand, when compared to any other type of crusher.
- Allows for huge cost savings in mining applications, when used as a pre-grinder for the Mills.
- Consistent product gradation (gradation remains constant even when rotor wear parts are worn).
- Differential crushing, e.g. removal of contaminants (clay, sandstone, lignite etc.).
- Breaks the material across any inherent weak planes, (ideal for Gold heap leaching etc.) which result in a very strong product (in both shear and compression), ideal for quality concrete production and road surfacing.
- The more abrasive the material to be crushed, the lower the relative cost per tonne of production when compared to all other types of crushing.

Where a product size is required below that of the feed size, it is usual to operate the crusher in closed circuit, with a screen of appropriate size and adequate capacity. However, the crusher can be operated in open circuit. In both cases a screen is required for final sizing. Product gradation is further controlled by the rotational speed of the rotor and /or the quantity (percentage) of Bi-Flow[®] used.

The Bi-Flow[®] is a unique patented system, which allows for:

- Extra throughput of the crusher, without consumption of any extra power.
- Control of the crushing process to allow for either maximum intensity of crushing, or reduced intensity for optimum reduction in flake and elongation with minimal fines production.

Feed Material Size

The maximum feed size varies with the various sizes of crushers available. This maximum feed size is the maximum length of the material acceptable.

The minimum feed size to the crusher, must always be less than 25mm (1"), in either open or closed circuit.

For a more accurate and precise VSI calculation, use our crushing and screening simulation program PlantDesigner[®].

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

BI-FLOW 2016-02-01

BI-FLOW

The Bi-Flow® system is a very versatile tool. Maximum crushing efficiency, when using Bi-Flow® in a given crusher range, can be realised when the following parameters have been selected:

- Maximum motor size for the relevant crusher size.
- Tip speed selected at 0.9-1Kw / Tonne rotor throughput.
- Crusher operated at maximum motor amps. with rotor only feed.
- Addition of up to a further 20% extra material into Bi-Flow®, resulting in no change to the “rotor only” product curve.

Example

CV216 crusher fitted with a 50Hz 110Kw motor.

Tip Speed 52 M/Sec.

Rotor throughput 120 tph

Bi-Flow® material = 23 tph. i.e. Rotor throughput x 20%.

Total crusher throughput 143 tph.

Varying the ratios of rotor to Bi-Flow® feed material can be extremely beneficial when attempting to “tailor make” a product for the customer. However this is best done on site at the commissioning stage.

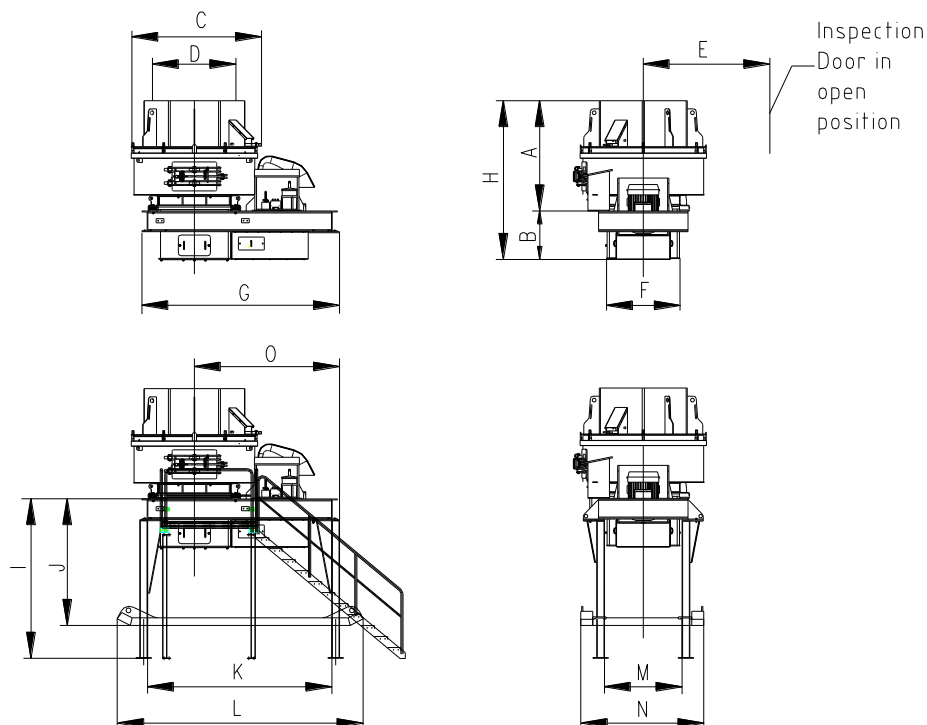
As a general rule, flake and elongation figures can be reduced by half (of those realised in the feed), when processed through the crusher. Again the introduction of Bi-Flow® can be most advantageous in this type of application, as it can also reduce the amount of fines production.

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS AND WEIGHTS



Data in metric units. Imperial columns (Imp.) list inches, pounds, short tons and 60 Hz speeds.

Dimension mm (inch)	CV215		CV216	
	metric	IMP.	metric	IMP.
A	1212	47 3/4"	1648	64 7/8"
B	790	31 1/8"	905	35 5/8"
C	1730	68 1/8"	2040	80 3/8"
D (Across Flats)	902	35 1/2"	1016	40
E	1840	72 3/8"	1912	75 1/4"
F	1070	42 1/8"	1250	49 1/4"
G	3166	124 5/8"	3626	142 3/4"
H	2002	78 7/8"	2553	100 1/2"
I	2231	87 7/8"	2970	117
J	2362	93	2362	93
K	2978	117 1/4"	3438	135 3/8"
L	4355	171 1/2"	4352	171 3/8"
M	1170	46	1430	56 1/4"
N	2158	85	2158	85
O	2427	95 1/2"	2757	108 1/2"
Weight (kg)	6000	13228	9500	20944
Max. Feed Size (mm)*	40	1 5/8"	50	2"
Std Capacity Range (tph)**	10-50	11-55	51-121	56-133
Rotor rpm range	1568-2101	1576-2112	1381-1982	1388-1980

*: Max feed size = Max length of the material acceptable.

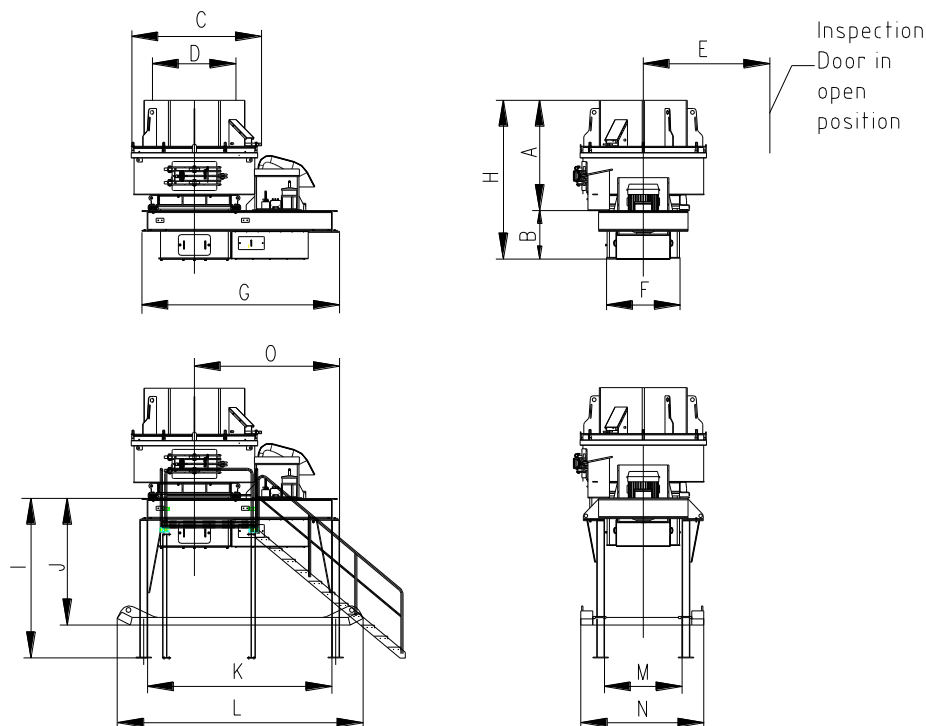
** : For detailed capacities see previous pages "Application – Capacity and Motor Power"

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS AND WEIGHTS



Data in metric units. Imperial columns (Imp.) list inches, pounds, short tons and 60 Hz speeds.

Dimension mm (inch)	CV217		CV218	
	metric	IMP.	metric	IMP.
A	1648	64 7/8"	2130	83 7/8"
B	905	35 5/8"	931	36 5/8"
C	2040	80 3/8"	2444	96 1/4"
D (Across Flats)	1016	40	1216	47 7/8"
E	1912	75 1/4"	2090	82 1/4"
F	1250	49 1/4"	1420	56
G	3626	142 3/4"	3750	147 5/8"
H	2553	100 1/2"	3061	120 1/2"
I	2970	117	3076	121 1/8"
J	2362	93	2480	97 5/8"
K	3438	135 3/8"	3562	140 1/4"
L	4352	171 3/8"	4355	171 1/2"
M	1430	56 1/4"	1480	58 1/4"
N	2158	85	2228	87 3/4"
O	2757	108 1/2"	2806	110 1/2"
Weight (kg)	9500	20944	11776	25963
Max. Feed Size (mm)*	50	2"	55	2 3/16"
Std Capacity Range (tph)**	122-192	134-211	193-250	212-275
Rotor rpm range	1391-1973	1487-1965	1401-1677	1408-1666

*: Max feed size = Max length of the material acceptable.

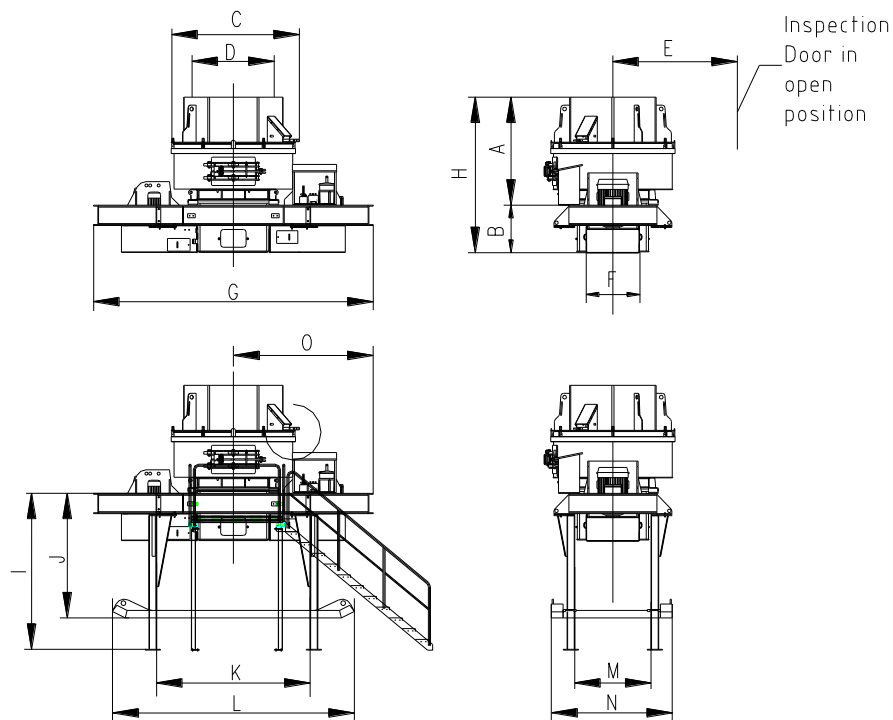
**.: For detailed capacities see previous pages "Application – Capacity and Motor Power"

ROCK PROCESSING GUIDE 2016

Chapter G - VSI IMPACT CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS AND WEIGHTS



Data in metric units. Imperial columns (Imp.) list inches, pounds, short tons and 60 Hz speeds.

Dimension mm (inch)	CV228		CV229	
	metric	IMP.	metric	IMP.
A	2130	83 7/8"	2130	83 7/8"
B	931	36 5/8"	931	36 5/8"
C	2444	96 1/4"	2444	96 1/4"
D (Across Flats)	1216	47 7/8"	1216	47 7/8"
E	2090	82 1/4"	2090	82 1/4"
F	1420	56	1420	56
G	5500	216 1/2"	5500	216 1/2"
H	3061	120 1/2"	3061	120 1/2"
I	3090	121 5/8"	3090	121 5/8"
J	2480	97 5/8"	2480	97 5/8"
K	3018	118 7/8"	3018	118 7/8"
L	4355	171 1/2"	4355	171 1/2"
M	1500	59	1500	59
N	2228	87 3/4"	2228	87 3/4"
O	2750	108 1/4"	2750	108 1/4"
Weight (kg)	14826	32686	14826	32686
Max. Feed Size (mm)*	55	2 3/16"	55	2 3/16"
Std Capacity Range (tph)**	251 - 444	276 - 489	445 - 600	490 - 661
Rotor rpm range	1401 - 1677	1408 - 1666	1401 - 1677	1408 - 1666

*: Max feed size = Max length of the material acceptable.

** : For detailed capacities see previous pages "Application – Capacity and Motor Power"



ROCK PROCESSING GUIDE 2016

Chapter H – HSI PRISEC IMPACT CRUSHERS

CONTENTS 2016-02-01



[SELECTION GUIDE](#)

[APPLICATION](#)

[SPECIFICATIONS](#)

ROCK PROCESSING GUIDE 2016

Chapter H – HSI PRISEC IMPACT CRUSHERS

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

The information in the table below is a guideline only. It is not a collection of strict rules.

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For various applications are the suitability of different crushers stated in three categories:

BEST (B) is the obvious selection unless the customer has other experience.

GOOD (G) is an alternative which can be used.

POSSIBLE (P) is a solution that may work but is normally not recommended.

Application / Type of crusher	Primary Gyratory Crusher	Jaw Crusher	Primary HSI Impact Crusher	Cone Crusher CS series	Secondary HSI Impact Crusher	Cone Crusher CH series	VSI Impact Crusher
Primary crushing, blasted & abrasive, > 800 MTPH ^{1.5}	B	G	P				
Primary crushing, blasted & abrasive, < 800 MTPH ^{1.5}	G	B	P				
Primary crushing, blasted, non-abrasive ^{1.6}	G	G	B				
Secondary crushing, abrasive ^{2.5}				B	P	B	
Secondary crushing, non-abrasive (limestone) ^{2.6}				G	B	G	
Fine crushing, max fines, abrasive ^{3.5.7}					P	G	B
Fine crushing, max fines, non-abrasive ^{3.6.7}					G	P	B
Fine crushing, moist and sticky feed ³					G		G
Fine crushing, low amount of fines in product ^{3.7}						B	P
Manufactured sand, abrasive ⁵						G	B
Manufactured sand, non-abrasive ⁶					G	P	B
Cubisizing, abrasive ⁵					P	G	B
Crushing ferro-alloys, low amount of fines in product ⁷						G	

1. A typical example of primary crushing is reducing top size from 900 to 300 mm.
2. A typical example of secondary crushing is reducing top size from 300 to 100 mm.
3. A typical example of fine crushing is producing concrete aggregates in sizes up to 16 mm.
4. Manufactured sand is typically smaller than 5 mm (85% smaller than 2.36 mm).
5. Typical abrasive rocks are Granite, Quartzite, Diorite, Trap rock, Basalt, Gneiss.
6. Typical non-abrasive rock is clean Limestone (Marble). Abrasion Index < 0.1.
7. Fines is normally smaller than 2 mm.

ROCK PROCESSING GUIDE 2016

Chapter H - HSI PRISEC IMPACT CRUSHERS

APPLICATION 2016-01-01

FEED SIZE

Technical data on page 3-4 specify maximum feed size for the Sandvik primary and secondary impact crushers. These are recommended values for a smooth and continuous operation of the crushers. Blasted feed homogeneity is also an important criteria for primary impact crushers.

In primary impact crushing process, the physical size of the crusher feed opening must not be considered as the true *gauge* to set the maximum crusher feed size and - as a result of that - assess that any lump passing through the crusher feed opening has the correct feed size. Significantly larger feed opening than recommended feed top size is recommended to ease material flow and decreases bridging risks when several big lumps come at once.

Table below recalls the relationship between lumps sizes and their approximated masses for material specific gravity of 2.65 g/cm^3 . Small variation in lump size implies important variation in its mass and the relevant impact energy to the rotor. This must be kept in mind when evaluating applications in primary crushing circuit.

Mass (kg)	Dimension Sphere (mm)	Dimension Cube (mm)
200	525	425
760	820	660
1 000	900	720
1 500	1 020	830
2 000	1 130	910
2 500	1 220	980
3 000	1 290	1 040

FEED PRINCIPLE

The right feeding principle of impact crushers is basically a regulated feed process. Choke feeding of an impact crusher must not be done as it would create high wear and damages to the equipment.

Removal of fines ahead of an impact crusher is the normal process. Fines in the feed creates additional wear (if material is abrasive), rises risk of clogging if material is sticky and/or will generate additional dust emission. It may also require a larger crusher to achieve the same total production.

FEED SET-UP

Impact crushers must always be fed on all width of the machine (80 to 90%) to ensure an even wear of the hammers. Concentrated feed will generate localised wear at hammer centre, when material stream is not correctly spread across by the crusher feed chute. Typical case of wrong feed method is a direct material flow penetrating straight into the crushing chamber from a belt conveyor.

PRODUCT DISCHARGE

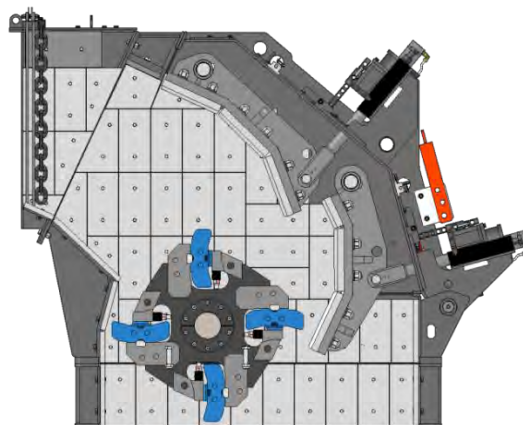
Crushed product has a high velocity when leaving the crushing chamber. Special care must be given to the design of the transfer point underneath the crusher, to prevent damages on collecting belt conveyor/vibrating feeder and to prevent excessive wear : stone box, thick chute liners wherever needed (20 to 30 mm AR steel 400 HB), sufficient headroom underneath the crusher.

ROCK PROCESSING GUIDE 2016

Chapter H - HSI PRISEC IMPACT CRUSHERS

APPLICATION 2016-01-01

TECHNICAL DATA - PRIMARY CRUSHERS PRISEC CI511, CI521 AND CI531



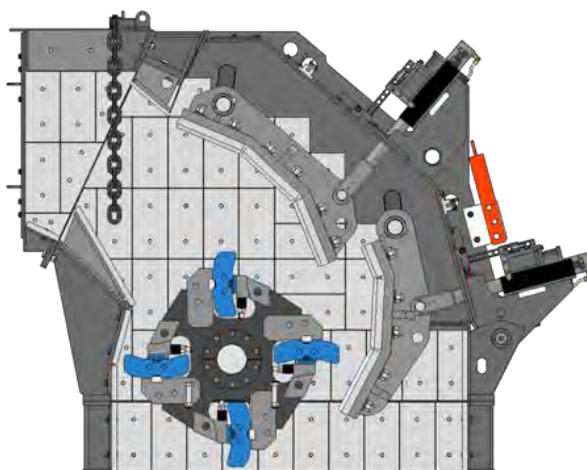
		CI511	CI521	CI531
Rotor diameter	mm	1005	1150	1390
	in	39 1/2"	45 1/4"	54 3/4"
Motor (min/max)	Min (kW)	90	185	220
	Max (kW)	185	250	440
	Min (HP)	125	248	295
	Max (HP)	250	335	590
No. of hammer rows		4	4	5
No. of hammer bars per row		1	1	3
Rotor Speed Range	rpm	555 to 656		398 to 445
	H (mm)	819	980	1 357
Feed opening (FH : Free Feed Height)	W (mm)	980	1360	1 935
	H (in)	32 1/4"	37 3/4"	53 7/16"
	W(in)	38 9/16"	53 1/2"	76 3/16"
Max feed size	mm	600	900	1000
	in	24"	36"	39 3/8"
Total weight (2 curtains)	kg	11005	16000	27 750
	lb	24262	35274	61 178
Rotor & shaft assembly with hammers, bearings & sheave	kg	3060	4890	11 200
	lb	6746	10781	24 692

ROCK PROCESSING GUIDE 2016

Chapter H - HSI PRISEC IMPACT CRUSHERS

APPLICATION 2016-01-01

TECHNICAL DATA - SECONDARY CRUSHERS PRISEC CI512, CI522 AND CI532



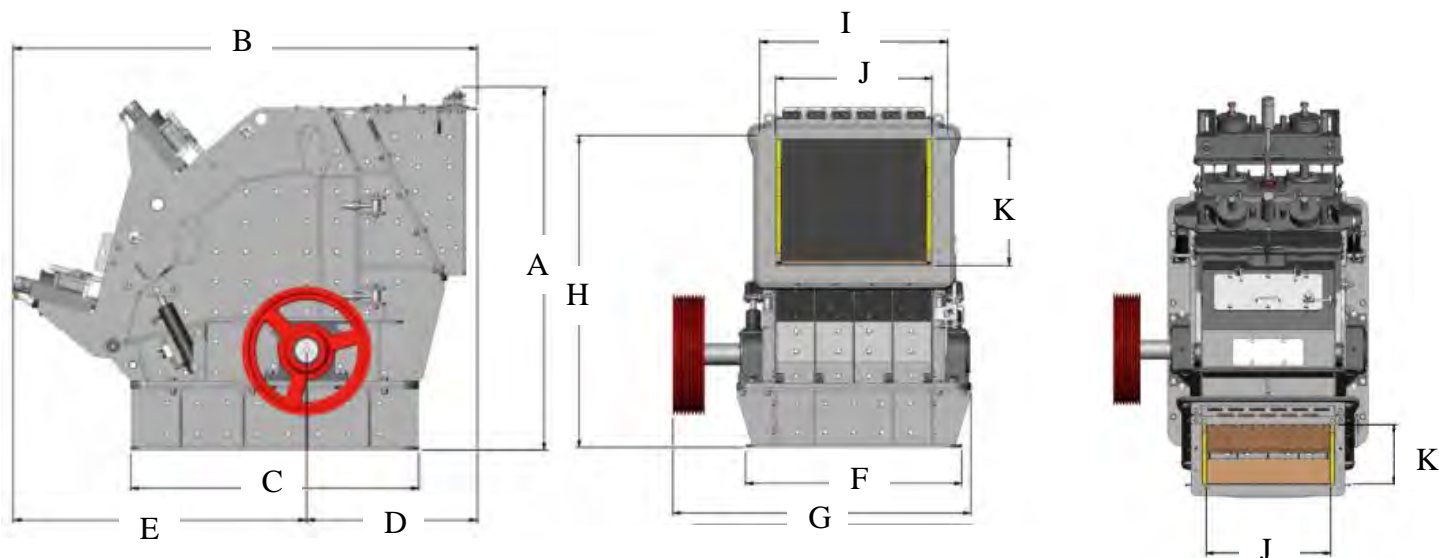
		CI512	CI522	CI532
Rotor diameter	mm	1005	1150	1390
	in	39 1/2"	45 1/4"	54 3/4"
Motor (min/max)	Min (kW)	90	185	220
	Max (kW)	185	250	440
	Min (HP)	125	248	295
	Max (HP)	250	335	590
No. of hammer rows		4	4	5
No. of hammers per row		1	1	3
Rotor Speed Range	Rpm	656 to 740		
Feed opening	H (mm)	434	436	600
	W (mm)	980	1360	1 935
	H (in)	17 1/16"	17 3/8"	23 5/8"
	W (in)	38 9/16"	53 1/2"	76 3/16"
Max feed size	mm	300	350	350
	in	11 7/8"	13 3/4"	13 3/4"
Total weight (2 curtains)	kg	11184	16256	29 650
	lb	24656	35838	65 367
Rotor & shaft assembly with hammers & bearings	kg	3004	4824	11 200
	lb	6623	10635	24 692

ROCK PROCESSING GUIDE 2016

Chapter H - HSI PRISEC IMPACT CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS FOR PRIMARY HSI CRUSHERS



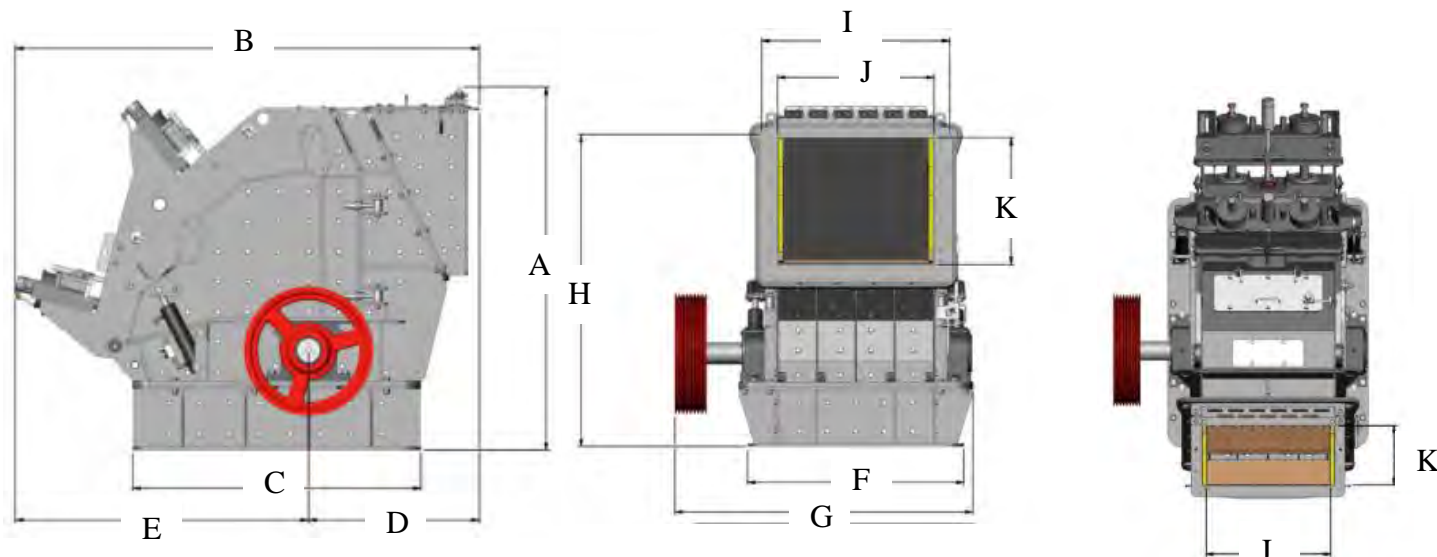
Dimensions mm (in)	CI511 primary	CI521 primary	CI531 primary
A	2293 (90 1/4")	2514 (99")	2825 (111 1/4")
B	2836 (111 5/8")	3118 (122 3/4")	3205 (126 3/16")
C	1810 (71 1/4")	2200 (86 5/8")	2630 (103 1/2")
D	1067 (42")	1189 (46 13/16")	1115 (43 7/8")
E	1844 (72 5/8")	1930 (76")	2090 (82 5/16")
F	1452 (57 1/8")	1900 (74 13/16")	2565 (101")
G	2003 (78 7/8")	370 (93 1/4")	3224 (126 15/16")
H	2096 (82 1/2")	2317 (91 1/4")	2825 (111 1/4")
I	1264 (49 3/4")	1664 (65 1/2")	2185 (86")
J	980 (38 9/16")	1360 (53 1/2")	1935 (76 3/16")
K	819 (32 1/4")	960 (37 3/4")	1357 (53 7/16")
Weight kg (lbs)	11005 (24262)	16000 (35274)	27750 (61178)
Max. Feed Size mm (in)	600 (23 5/8")	900 (35 1/2")	1000 (39 3/8")
Rotor Diameter mm (in)	1005 (39 1/2")	1150 (45 1/4")	1390 (54 3/4")
Rotor Width mm (in)	950 (37 3/8")	1330 (52 3/8")	1900 (74 13/16")

ROCK PROCESSING GUIDE 2016

Chapter H - HSI PRISEC IMPACT CRUSHERS

SPECIFICATIONS 2016-01-01

DIMENSIONS FOR SECONDARY HSI CRUSHERS



Dimensions mm (in)	CI512 secondary	CI522 secondary	CI532 secondary
A	2293 (90 1/4")	2514 (99")	2840 (111 13/16")
B	2836 (111 5/8")	3118 (122 3/4")	4070 (160 1/4")
C	1810 (71 1/4")	2200 (86 5/8")	2630 (103 1/2")
D	1081 (42 9/16")	1189 (46 13/16")	1980 (77 15/16")
E	1844 (72 5/8")	1930 (76")	2090 (82 5/16")
F	1452 (57 1/8")	1900 (74 13/16")	2565 (101")
G	2003 (78 7/8")	2370 (93 1/4")	3224 (126 15/16")
H	2096 (82 1/2")	2317 (91 1/4")	2840 (111 13/16")
I	1264 (49 3/4")	1664 (65 1/2")	2165 (85 1/4")
J	980 (38 9/16")	1360 (53 1/2")	1935 (76 3/16")
K	434 (17 1/16")	436 (17 3/8")	600 (23 5/8")
Weight kg (lbs)	11184 (24656)	16256 (35838)	29650 (65367)
Max. Feed Size mm (in)	300 (11 7/8")	350 (13 3/4")	350 (13 3/4")
Rotor Diameter mm (in)	1005 (39 1/2")	1150 (45 1/4")	1390 (54 3/4")
Rotor Width mm (in)	950 (37 3/8")	1330 (52 3/8")	1900 (74 13/16")



ROCK PROCESSING GUIDE 2016

Chapter J – HAMMER MILLS

CONTENTS 2016-01-01



SELECTION GUIDE

GENERAL

APPLICATION

SPECIFICATIONS

ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

Machine type	Nominal capacity ¹⁾	Standard Feed Material	Max. Feed Size	Min. Final Size	Environmental Temperature ²⁾
	(mt/h) (st/h)	(-)	(mm) (in)	(mm) (in)	(°C) (°F)
Hammer Mill	≤800	Coal	≤100	≥1	-20≤T≤+40
CM420	≤882	Salt Limestone	≤3,94	≥0.04	-4≤T≤+104

¹⁾ For dry feed material with continuous even flow.

²⁾ Extraordinary operating environmental temperatures ($-40 \leq T < -20^{\circ}\text{C}$, $-4 \leq T \leq +104^{\circ}\text{F}$) require additional configurations to ensure operational performance in these conditions.

The parameters refer to standard equipment in normal operating conditions.

It is possible to realize a maximum capacity of 2,500 mtpH (2,756 stph) using a Hammer Mill – for more information please contact the Product Line Manager in Cologne, Germany.

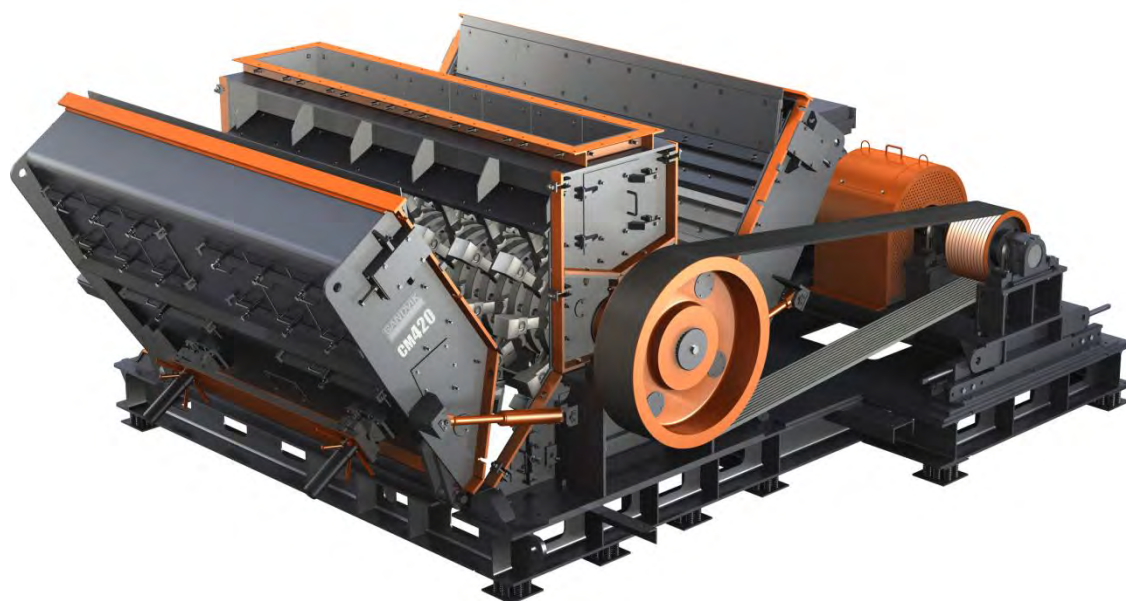
ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

GENERAL 2016-01-01

Hammer Mills are used to crush boiler and coking coal, limestone, gypsum rock, salt and other minerals, commonly for use in applications such as coal power stations for CFB processes and the iron and steel industry. Hammer Mills are designed exclusively for low and medium abrasive materials; the machine has a high rotor speed (usually between 50-60 m/s) and has a throughput capacity of 800 t/h (882 st/h). The impact between the hammer heads and the grinding wall crushes the material. The max feed size is 100mm (3.9") and this process achieves a crushing ratio of up to 1:15 (in individual cases up to 1:25).

All Hammer Mills are designed for reversible use to extend the lifetime of wear parts and reduce maintenance requirements. A moveable hydraulic system to open the side walls safely facilitates easy maintenance of the Hammer Mills. Different options are available to meet specific customer requirements such as heating systems for wet material and a grinding grid in the outlet of the machine to avoid oversized material. Customers can opt for an ATEX approved version of the Hammer Mill which is becoming a global standard for safe operating equipment in flammable and explosive environments.



HAMMER MILL CM420

ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

APPLICATION 2016-01-01

REDUCTION RATIO AND NOMINAL CAPACITY

Hammer Mill	Reduction Ratio ¹	Feed Size F_{100} ²		Product Size P_{100} ³	Nominal Capacity ⁴
	(-)	(mm)	(in)	(mm)	(mtph) (stph)
CM420/10-10	10	100	10	75	
		3,92	0,39	83	
CM420/12-12	10	100	10	120	
		3,92	0,39	132	
CM420/14-14	10	100	10	150	
		3,92	0,39	165	
CM420/14-18	10	100	10	250	
		3,92	0,39	276	
CM420/16-22	10	100	10	400	
		3,92	0,39	441	
CM420/16-26	10	100	10	500	
		3,92	0,39	551	
CM420/16-30	10	100	10	600	
		3,92	0,39	661	
CM420/16-34	10	100	10	800	
		3,92	0,39	882	

¹) Reduction ratio r (-) $r = F_{100}/P_{100}$ (-)

²) F_{100} - 100% size of feed material measured on lab screens with square holes.

³) P_{100} - 100% size of crushed material measured on lab screens with square holes.

⁴) Capacity Notes: Capacity is calculated assuming that product $P_{95} = 10$ mm (0.4"), measured on lab screens with square holes. Nominal capacity calculations assume a continuous even feed of dry material with a typical size distribution

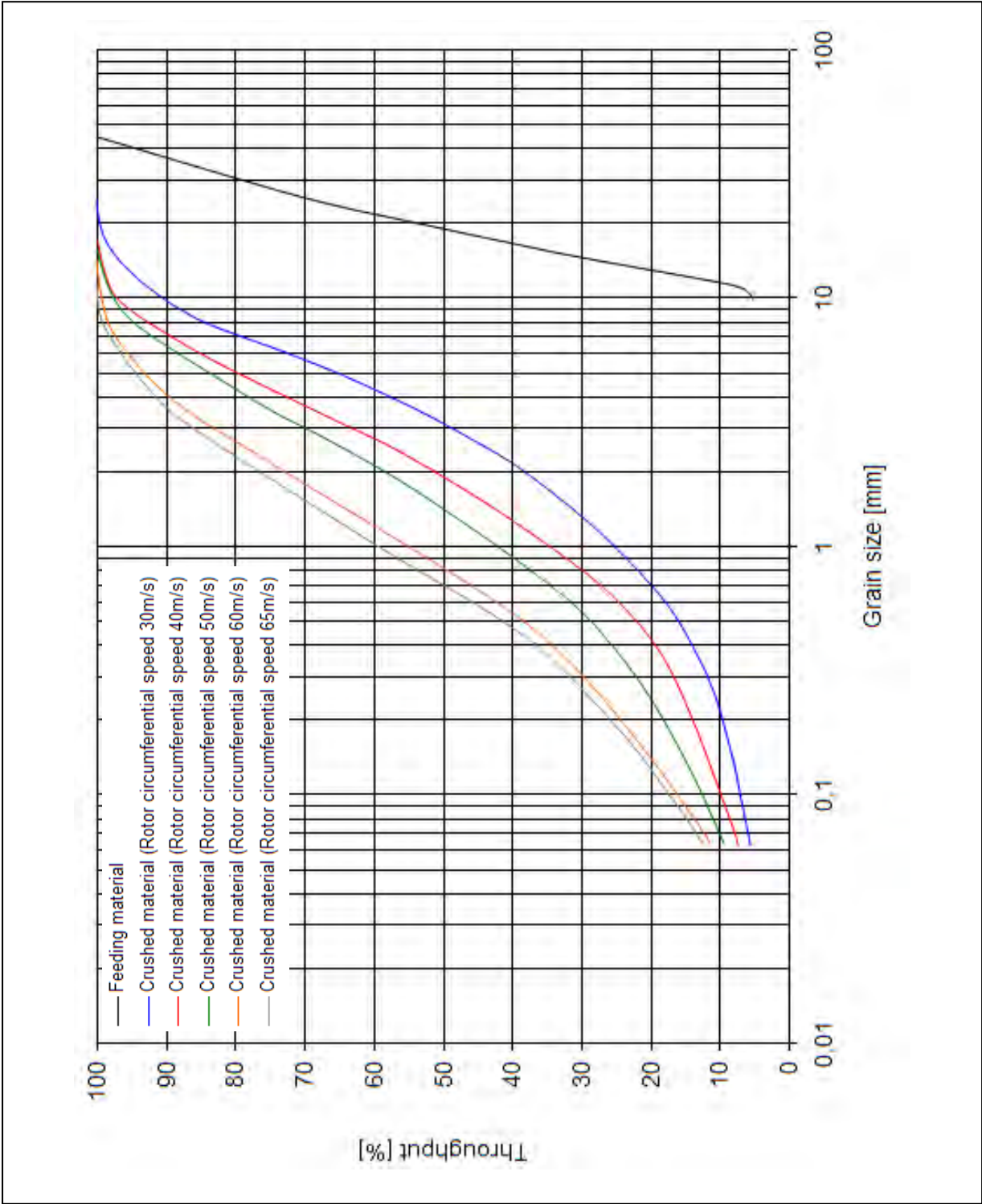
The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

APPLICATION 2016-01-01

PRODUCT CURVE¹⁾



¹⁾ These results are for a standard machine and is set for one speed. There is an option to equip the machine for different speeds. Also the machine can be used with a Frequency Converter to achieve different product sizes.

ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

APPLICATION 2016-01-01

MOTOR POWER

Hammer Mill	Feed material	Roll diameter	Roll length	Motor Power ¹⁾
		(mm)	(mm)	(kW)
		(in)	(in)	(ph)
CM420/10-10	Coal	1000	1000	75-110
		39,4	39,4	101-148
CM420/12-12	Coal	1200	1200	90-160
		47,2	47,2	121-215
CM420/14-14	Coal	1400	1400	200-355
		55,1	55,1	268-476
CM420/14-18	Coal	1400	1800	355-710
		55,1	70,9	476-952
CM420/16-22	Coal	1600	2200	500-800
		63,0	86,6	671-1073
CM420/16-26	Coal	1600	2600	560-1000
		63,0	102,4	751-1341
CM420/16-30	Coal	1600	3000	630-1250
		63,0	118,1	845-1676
CM420/16-34	Coal	1600	3400	750-1400
		63,0	133,9	1006-1877

¹⁾ Values are based on an average application (coal), however actual motor power depends on throughput and material type.

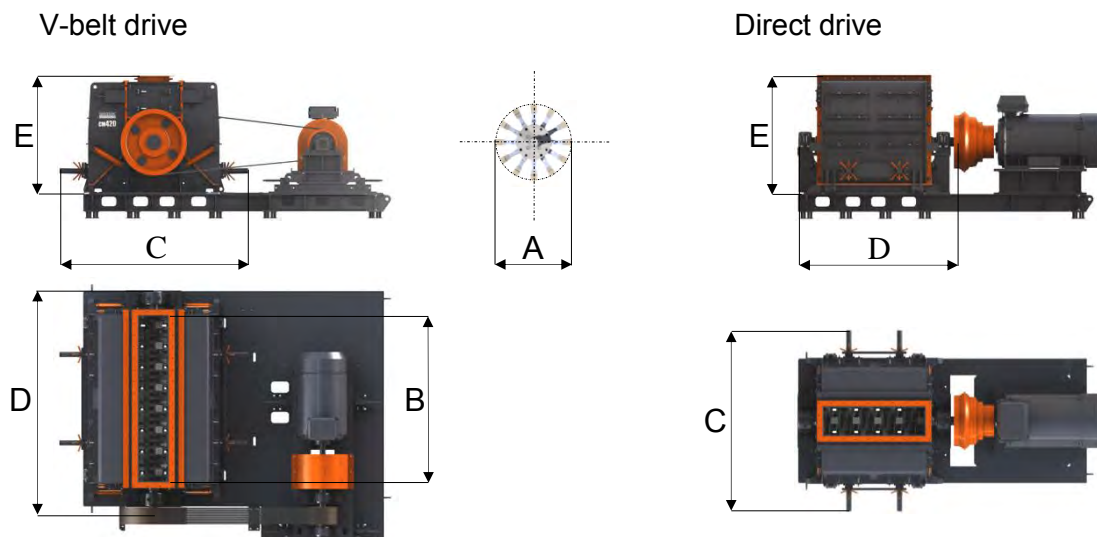
The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

ROCK PROCESSING GUIDE 2016

Chapter J - HAMMER MILLS

SPECIFICATIONS 2016-01-01

DIMENSIONS



Hammer Mill	Weight	A	B	C	D	E
	(kg)	(mm)	(mm)	(mm)	(mm)	(mm)
	(lb)	(in)	(in)	(in)	(in)	(in)
CM420/10-10	7000	1000	1000	2050	2700	1400
	15432	39,4	39,4	80,7	106,3	55,1
CM420/12-12	8000	1200	1200	2150	2800	1700
	17637	47,2	47,2	84,6	110,2	66,9
CM420/14-14	12500	1400	1400	2650	3250	2000
	27558	55,1	55,1	104,3	128,0	78,7
CM420/14-18	15500	1400	1800	3050	3250	2000
	34172	55,1	70,9	120,1	128,0	78,7
CM420/16-22	20500	1600	2200	3400	3600	2200
	45195	63,0	86,6	133,9	141,7	86,6
CM420/16-26	23000	1600	2600	3950	3600	2200
	50706	63,0	102,4	155,5	141,7	86,6
CM420/16-30	25500	1600	3000	4300	3600	2200
	56218	63,0	118,1	169,3	141,7	86,6
CM420/16-34	28500	1600	3400	4700	3600	2200
	62832	63,0	133,9	185,0	141,7	86,6

Dimensions for informational purposes. Frame, drive parts, motor, hydraulic and electrical units are not included

Technical data subject to change without notice.



SELECTION GUIDE

CENTRE SIZER - GENERAL

CENTRE SIZER - APPLICATION

CENTRE SIZER - SPECIFICATIONS

SIDE SIZER - GENERAL

SIDE SIZER - APPLICATION

SIDE SIZER - SPECIFICATIONS

GUIDELINES FOR SELECTION OF CRUSHERS

Machine type	Nominal capacity ¹⁾	Standard Feed Material	Max. Feed Size	Min. Final Size	Environmental Temperature ²⁾
	(mt/h) (st/h)	(-)	(mm) (in)	(mm) (in)	(°C) (°F)
Centre Sizer					
	≤4000	Soft Ores	≤1200	≥100	-20≤T≤+40
CR610	≤4409	Coal Lignite	≤47,2	≥3,9	-4≤T≤+104
Side Sizer					
	≤2000	Soft Ores	≤300	≥50	-20≤T≤+40
CR620	≤2208	Coal Lignite	≤11.8	≥1.9	-4≤T≤+104
Hybrid					
	≤6600	All Ores	≤1500	≥31,5	-20≤T≤+40
CR810	≤7275	Overburden Limestone Coal	≤59	≥1.2	-4≤T≤+104

1) Assuming a continuous even flow of dry feed material

2) Extraordinary operating environmental temperatures (-40≤T<-20°C, -4≤T≤+104°F) require additional configurations to ensure operational performance in these conditions.

The parameters refer to standard equipment in normal operating conditions.

It is possible to realize a maximum capacity of 10,000mtph (11,023stph) using a Centre Sizer and 2,500mtph (2,756stph) using a Side Sizer – for more information please contact the Product Line Manager in Cologne, Germany.

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

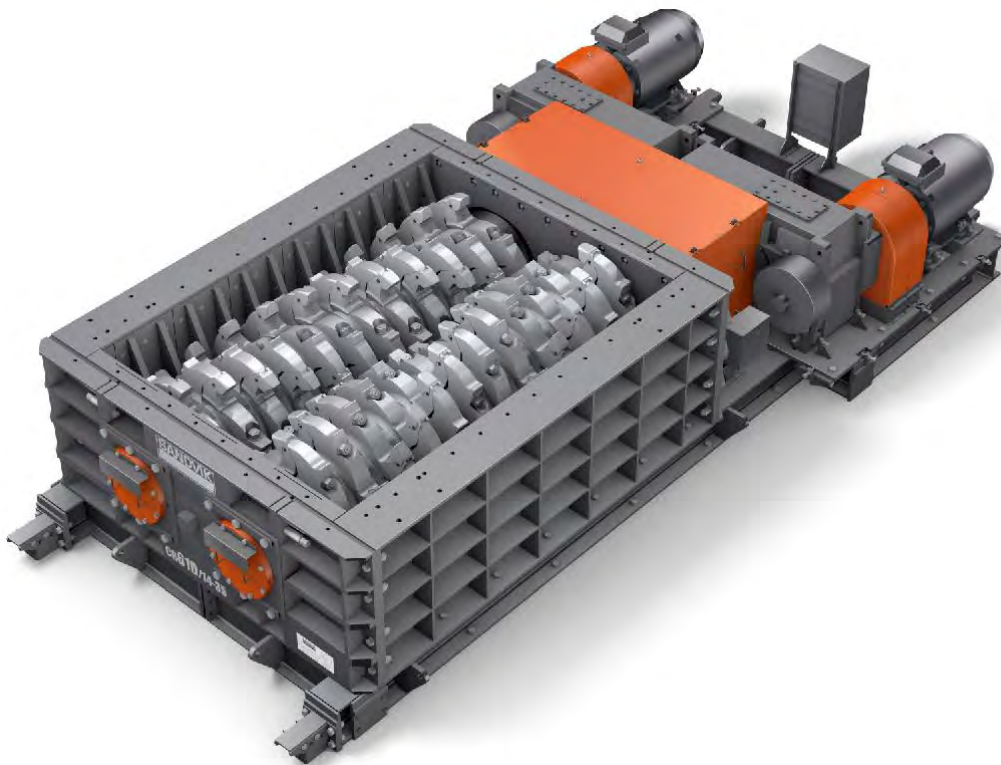
CENTRE SIZER - GENERAL 2016-01-01

CR610 Centre Sizers are commonly used in open pit mining for processing run of mine (ROM) material in primary applications; they are also effective in secondary and tertiary crushing stages for improved materials handling.

Inward rotating rolls crush coal, soft ores and overburden with a hardness of up to 120Mpa with capability to handle hardness up to 150Mpa. The CR610 Centre Sizer is designed for crushing dry material although it can handle slightly wet and sticky material.

In standard coal applications the CR610 Centre Sizer can crush maximum feed size of 1200mm (47") with a reduction ratio of 1:4. Standard coal applications have a nominal throughput capacity of up to 4,000 mtp (4,409 stph), however in application it is possible to achieve higher throughput capacities. A spiral teeth configuration generates a narrow particle size distribution with a low portion of oversized grains and fines.

For ease of maintenance the CR610 Centre Sizers Ø1400 crushing teeth have been designed to be removed individually while the Centre Sizers Ø800 uses a system of changeable segments. These design features and rolls designed for quick changes are features of the CR610 Centre Sizer that reduces machine down time during servicing and maintenance.



CR610 CENTRE SIZER

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

CENTRE SIZER – APPLICATION 2016-01-01

CENTRE SIZER - REDUCTION RATIO

Centre Sizer	Max. Uniaxial Compression strength	Reduction Ratio ¹	k100 Tool		k150 Tool ⁴		k300 Tool	
			Feed Size F ₉₅ ²	Product Size P ₉₅ ³	Feed Size F ₉₅ ²	Product Size P ₉₅ ³	Feed Size F ₉₅ ^{2,5}	Product Size P ₉₅ ³
			(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)
CR610/08-15	<120	4	400	100	600	150	-	-
			15,7	3,9	23,6	5,9	-	-
CR610/08-20	<120	4	400	100	600	150	-	-
			15,7	3,9	23,6	5,9	-	-
CR610/08-30	<120	4	400	100	600	150	-	-
			15,7	3,9	23,6	5,9	-	-
CR610/14-25	<120	4	-	-	-	-	1200	300
			-	-	-	-	47,2	11,8
CR610/14-30	<120	4	-	-	-	-	1200	300
			-	-	-	-	47,2	11,8
CR610/14-35	<120	4	-	-	-	-	1200	300
			-	-	-	-	47,2	11,8

CENTRE SIZER - NOMINAL CAPACITY

Centre Sizer	Roll Diameter	Roll Length	Nominal Capacity ⁶		
			k100 Tool	k150 Tool ⁷	k300 Tool
	(mm) (in)	(mm) (in)	(mtph) (stph)	(mtph) (stph)	(mtph) (stph)
CR610/08-15	800	1500	550	825	-
	31,5	59,1	606	909	-
CR610/08-20	800	2000	750	1125	-
	31,5	78,7	827	1240	-
CR610/08-30	800	3000	1100	1650	-
	31,5	118,1	1213	1818	-
CR610/14-25	1400	2500	-	-	2800
	55,1	98,4	-	-	3086
CR610/14-30	1400	3000	-	-	3400
	55,1	118,1	-	-	3748
CR610/14-35	1400	3500	-	-	4000
	55,1	137,8	-	-	4409

¹) Reduction ratio $r = F_{95}/P_{95}$ depends on uniaxial compression strength of feed material. Typical coal with low content of ballast material has a strength of UCS $\square \square 60$ MPa which allows crushing ratios of up to $r = 4$. If feed material is in the range of $60 \text{ MPa} < \text{UCS} \square 120 \text{ MPa}$ the reduction ratio should not exceed $r = 3$.

²) F₉₅ - 95% size of feed material measured on lab screens with square holes.

³) P₉₅ - 95% size of crushed material measured on lab screens with square holes.

⁴) A product size of P₉₅ = 200 mm (8") is also possible by changing the gap width.

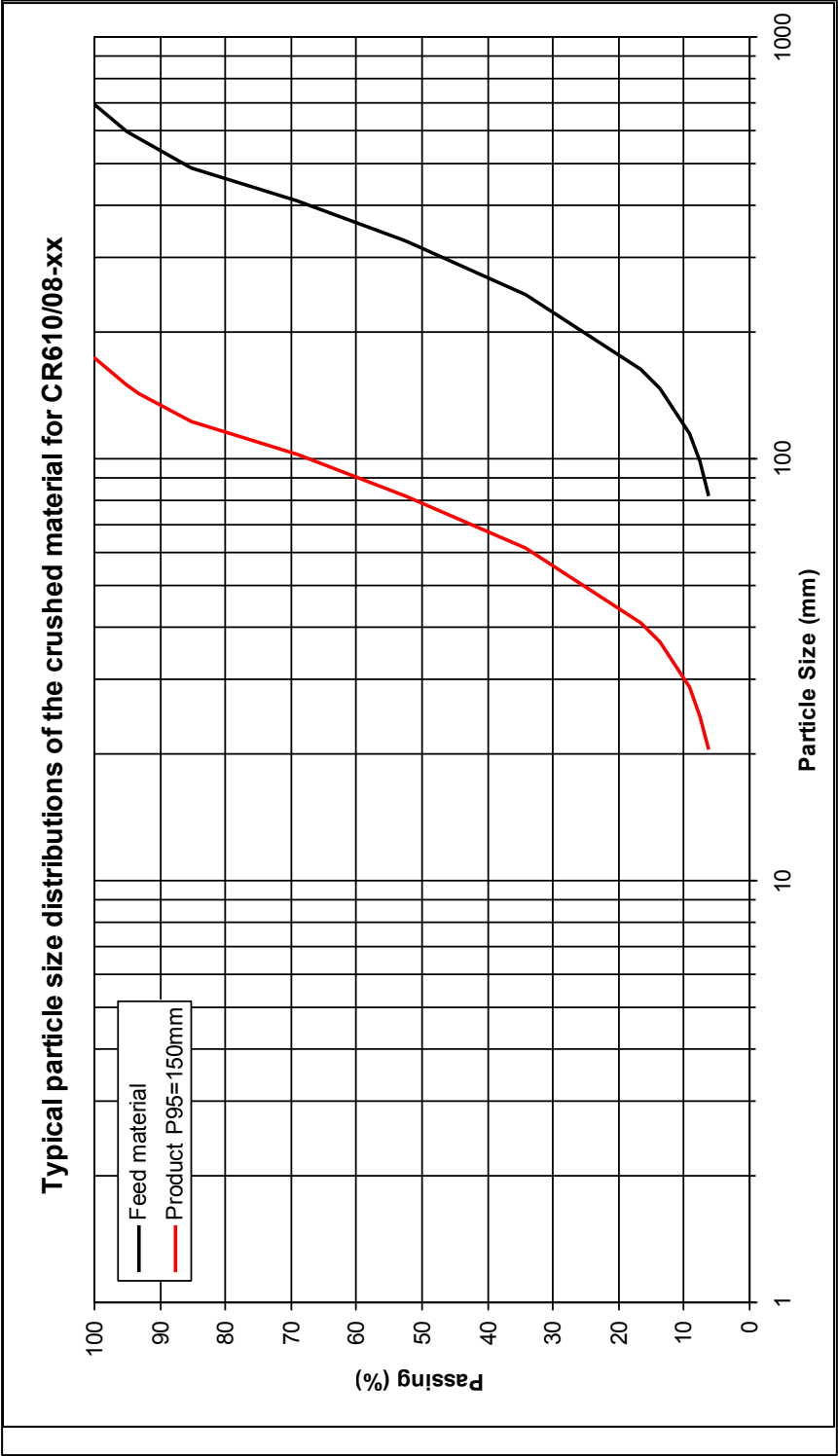
⁵) The maximum one edge length is 1800mm (71") in one dimension.

⁶) Nominal capacity was calculated for dry feed material with continuous, even feed and a typical ROM feed size distribution, a roll tip speed of $v = 2.5 \text{ m/s}$, a filling factor in the gap of $\eta = 0.40 - 0.45$ and a bulk density of $\rho = 1.0 \text{ t/m}^3$ (coal).

⁷) Higher capacity can be achieved by adjusting the gap to achieve a product size P₉₅ of 200mm (8").

The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

CENTRE SIZER - PRODUCT CURVE



The particle size distribution will maintain a similar incline for the CR610/14-xx models however the curves will shift to the right to account for a larger product P₉₅.

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

CENTRE SIZER – APPLICATION 2016-01-01

CENTRE SIZER - MOTOR POWER

Centre Sizer	Feed material (Mpa)	Roll diameter	Roll length	Motor power ¹⁾
		(mm)	(mm)	(mm)
		(in)	(in)	(in)
CR610/08-15	Coal	800	1500	2x110
		31,5	59,1	2x148
CR610/08-20	Coal	800	2000	2x132
		31,5	78,7	2x177
CR610/08-30	Coal	800	3000	2x200
		31,5	118,1	2x268
CR610/14-25	Coal	1400	2500	2x200
		55,1	98,4	2x268
CR610/14-30	Coal	1400	3000	2x250
		55,1	118,1	2x335
CR610/14-35	Coal	1400	3500	2x315
		55,1	137,8	2x422

¹⁾ Motor power is suitable for coal with a low content of ballast material.

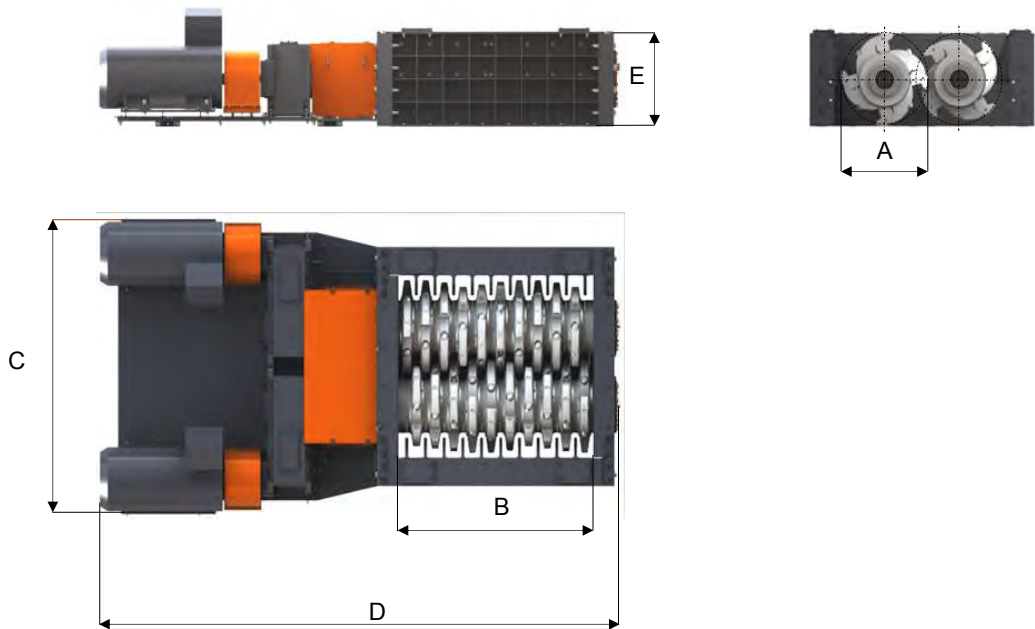
The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

CENTRE SIZER – SPECIFICATIONS 2016-01-01

CENTRE SIZER – WEIGHTS AND DIMENSIONS¹⁾



Centre Sizer	Weight	A	B	C	D	E
	(kg)	(mm)	(mm)	(mm)	(mm)	(mm)
	(lb)	(in)	(in)	(in)	(in)	(in)
CR610/08-15	24000	800	1540	3420	5250	1055
	52911	31,5	60,6	134,6	206,7	41,5
CR610/08-20	27000	800	2040	3420	5750	1055
	59525	31,5	80,3	134,6	226,4	41,5
CR610/08-30	41000	800	3040	3520	7530	1430
	90390	31,5	119,7	138,6	296,5	56,3
CR610/14-25	79000	1400	2555	4500	8005	1800
	174165	55,1	100,6	177,2	315,2	70,9
CR610/14-30	92500	1400	3125	4500	8605	1800
	203928	55,1	123,0	177,2	338,8	70,9
CR610/14-35	106000	1400	3725	4500	9205	1800
	233690	55,1	146,7	177,2	362,4	70,9

1) Weights and dimensions include drive and frame as per standard configuration which may differ depending on model selection

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ROCK PROCESSING GUIDE 2016

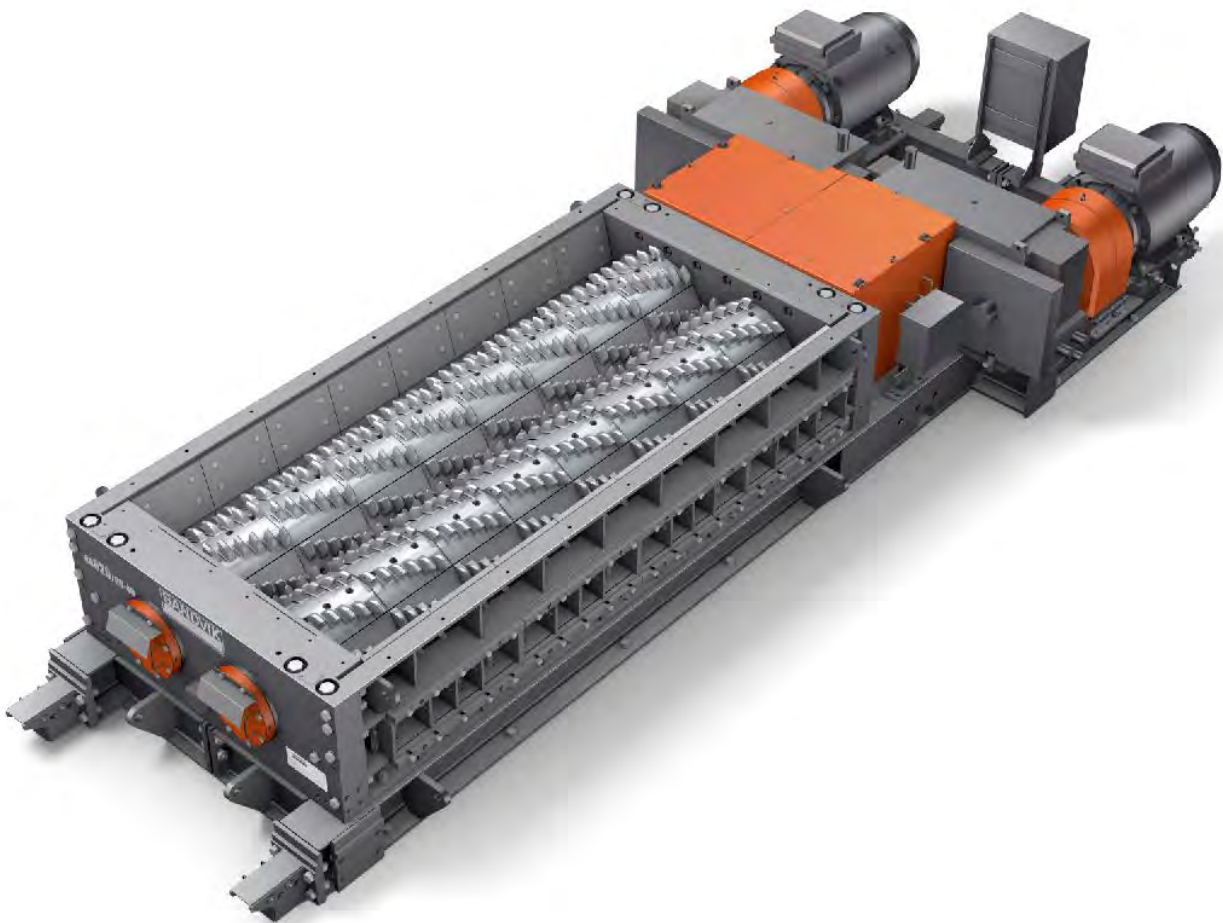
Chapter K - SIZERS

SIDE SIZER - GENERAL 2016-01-01

CR620 Side Sizers are designed for use in secondary and tertiary crushing applications.

Outward rotating rolls crush coal and soft ores between the rolls and crushing plates/combs. Inclined lateral components with integrated crushing combs enables a product feed of big lumps up to 300mm (12") achieving a crushing ratio of up to 1:6. Standard coal applications have a nominal throughput capacity of up to 2,000 mtpd (2,208 stph) with a low portion of oversized grains and fines.

To achieve reduced down time during machine maintenance the Side Sizer has two key features. Firstly the crushing segments have been designed according to the special Sandvik quick-lock system for easy maintenance and changing of tools. Secondly an elastic coupling enables complete rolls to be changed quickly.



CR620 SIDE SIZER

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

SIDE SIZER – APPLICATION 2016-01-01

SIDE SIZERS - REDUCTION RATIO

Side Sizer	Max. Uniaxial Compression strength (Mpa)	Reduction Ratio ¹ (-)	k50 Tool ⁴	
			Feed Size F ₉₅ ²	Product Size P ₉₅ ³
			(mm) (in)	(mm) (in)
CR620/06-15	<120	6	300	50
			11,8	2,0
CR620/06-20	<120	6	300	50
			11,8	2,0
CR620/08-30	<120	6	300	50
			11,8	2,0
CR620/08-40	<120	6	300	50
			11,8	2,0

SIDE SIZERS - NOMINAL CAPACITY

Side Sizer	Roll Diameter	Roll Length	Nominal Capacity ⁵
			k50 Tool ⁶
	(mm) (in)	(mm) (in)	(mtph) (stph)
CR620/06-15	600	1500	600
	23,6	59,1	662
CR620/06-20	600	2000	800
	23,6	78,7	883
CR620/08-30	800	3000	1500
	31,5	118,1	1656
CR620/08-40	800	4000	2000
	31,5	157,5	2208

¹) Reduction ratio $r = F_{95}/P_{95}$ depends on uniaxial compression strength UCS of feed material. Typical coal with low content of ballast material has a strength of UCS $\square \square 60$ MPa which allows crushing ratios of up to $r = 6$. If feed material is in the range of $60 \text{ MPa} < \text{UCS} \square 120$ MPa the reduction ratio should not exceed $r = 4$.

²) F₉₅ - 95% size of feed material measured on lab screens with square holes.

³) P₉₅ - 95% size of crushed material measured on lab screens with square holes.

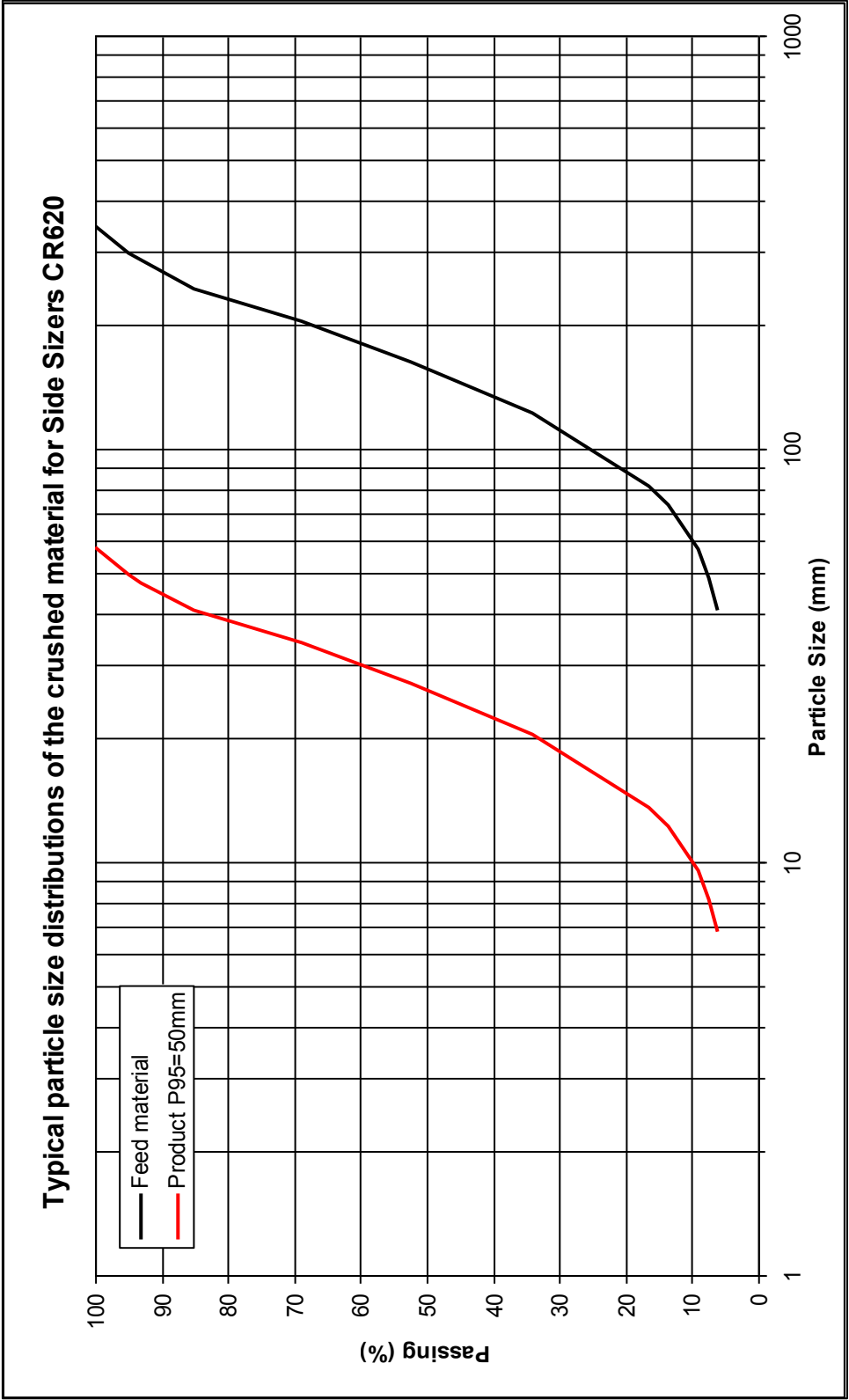
⁴) A product size of P₉₅ = 80 mm (3") is also possible by changing the gap width.

⁵) Nominal capacity was calculated for dry feed material with continuous, even feed and a typical ROM feed size distribution, a roll tip speed of $v = 2.5$ m/s, a filling factor in the gap of $\eta = 0.50 - 0.55$ and a bulk density of $\rho = 1.0$ t/m³ (coal).

⁶) Higher capacity can be achieved by adjusting the gap to achieve a product size P₉₅ of 80mm (8").

The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

SIDE SIZERS - PRODUCT CURVE



ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

SIDE SIZER – APPLICATION 2016-01-01

SIDE SIZERS - MOTOR POWER

Side Sizer	Feed Material	Roll diameter	Roll length	Motor Power ¹⁾
		(mm)	(mm)	(kW)
		(in)	(in)	(hp)
CR620/06-15	Coal	600	1500	2x75
		2,6	59,1	2x100
CR620/06-20	Coal	600	2000	2x90
		23,6	78,7	2x120
CR620/08-30	Coal	800	3000	2x160
		31,5	118,1	2x214
CR620/08-40	Coal	800	4000	2x200
		31,5	157,5	2x268

¹⁾ Motor power is suitable for coal with a low content of ballast material.

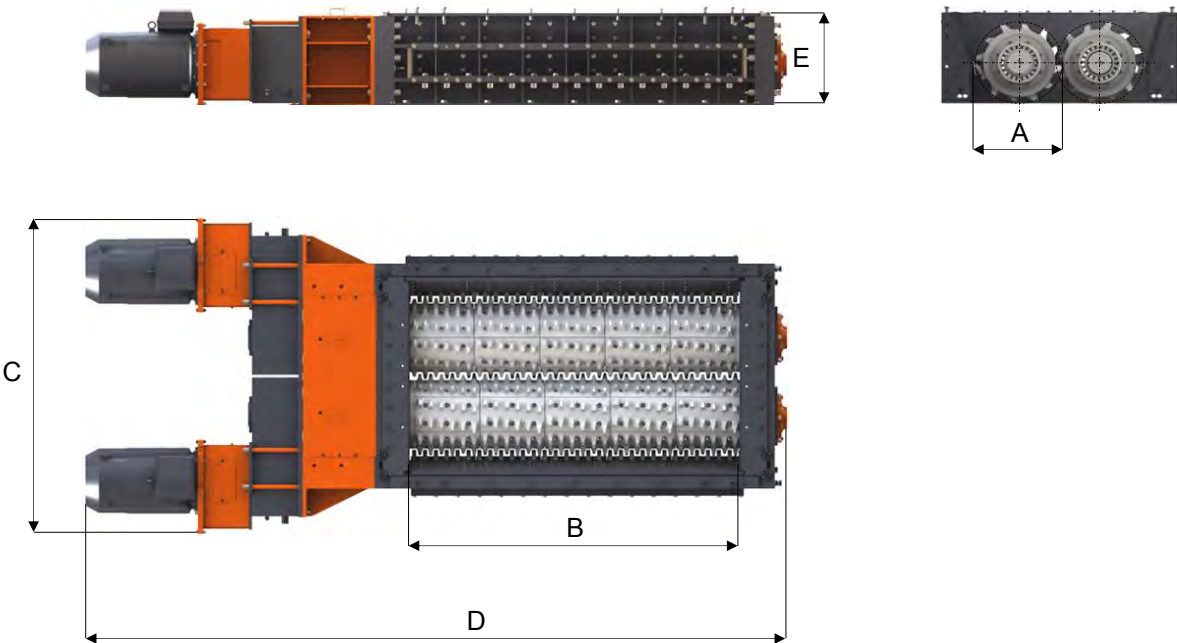
The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

ROCK PROCESSING GUIDE 2016

Chapter K - SIZERS

SPECIFICATIONS – SIDE SIZER 2016-01-01

SIDE SIZER - WEIGHTS AND DIMENSIONS¹⁾



Side Sizer	Weight	A	B	C	D	E
	(kg)	(mm)	(mm)	(mm)	(mm)	(mm)
	(lb)	(in)	(in)	(in)	(in)	(in)
CR620/06-15	14000	600	1520	2890	4760	860
	30865	23,6	59,8	113,8	187,4	33,9
CR620/06-20	16000	600	2020	2890	5260	860
	35274	23,6	79,5	113,8	207,1	33,9
CR620/08-30	41500	800	3020	3540	7530	1450
	91492	31,5	118,9	139,4	296,5	57,1
CR620/08-40	51000	800	4020	3610	9025	1450
	112436	31,5	158,3	142,1	355,3	57,1

1) Weights and dimensions include drive and frame as per standard configuration which may differ depending on model selection

Technical data subject to change without notice.



ROCK PROCESSING GUIDE 2016

Chapter L – HYBRIDS

CONTENTS 2016-01-01



SELECTION GUIDE

GENERAL

APPLICATION

SPECIFICATIONS

WEAR PARTS

ROCK PROCESSING GUIDE 2016

Chapter L - HYBRID

SELECTION GUIDE 2016-01-01

GUIDELINES FOR SELECTION OF CRUSHERS

Machine type	Nominal capacity ¹⁾	Standard Feed Material	Max. Feed Size	Min. Final Size	Environmental Temperature ²⁾
	(mt/h) (st/h)	(-)	(mm) (in)	(mm) (in)	(°C) (°F)
Center Sizer CR610	≤4000 ≤4409	Soft Ores Coal Lignite	≤1200 ≤47,2	≥100 ≥3,9	-20≤T≤+40 -4≤T≤+104
Side Sizer CR620	≤2000 ≤2208	Soft Ores Coal Lignite	≤300 ≤11.8	≥50 ≥1.9	-20≤T≤+40 -4≤T≤+104
Hybrid CR810	≤6600 ≤7275	All Ores Overburden Limestone Coal	≤1500 ≤59	≥31,5 ≥1.2	-20≤T≤+40 -4≤T≤+104

1) Assuming a continuous even flow of dry feed material

2) Extraordinary operating environmental temperatures (-40≤T<-20°C, -4≤T≤+104°F) require additional configurations to ensure operational performance in these conditions.

The parameters refer to standard equipment in normal operating conditions.

It is possible to realize a maximum capacity of 11,000mtph (12,125stph) using a Hybrid – for more information please contact the Product Line Manager in Cologne, Germany.

ROCK PROCESSING GUIDE 2016

Chapter L - HYBRID

GENERAL 2016-01-01

The Hybrid is a unique machine in the Sandvik Mining portfolio combining the benefits of a classical double roll crusher with sizer technology to create a compact machine that provides a high throughput capacity with comparatively low infrastructure requirements. The aggressive teeth configuration of the Hybrid achieves a reduction ratio ranging from 1:4 – 1:6 with feed material up to 1,500mm (55"). A standard Hybrid machine is capable of achieving a throughput of up to 6,600 mtpm (7,277 stph) while Hybrids installed in Sandvik Mining Systems crushing stations have a capability up to 11,000 mtpm (12,125 stph).

The Hybrid has a hydraulic system which can be connected to the local PLC; this allows the operator to adjust the gap width by moving only one shaft. The hydraulic control ensures the shaft will give way while processing un-crushable material such as tramp iron to avoid damage to the machine.

All Hybrid machines are able to store kinetic energy in the mounted pulleys (belt drive) and fast running fly wheels (direct drive). This enables the Hybrid to crush big lumps and maintain a stable crushing process even during peak conditions.

The Hybrid crusher is capable of crushing a wide range of materials with different characteristics up to 200Mpa including various ores to softer materials such as coal and salt. An integrated scraping system provides an additional benefit of allowing the Hybrid to easily handle both wet and sticky feed material.



CR810 HYBRID WITH DIRECT DRIVE

ROCK PROCESSING GUIDE 2016

Chapter L - HYBRIDS

APPLICATION 2016-01-01

REDUCTION RATIO

Hybrid	Max. Uniaxial Compression strenght	Reduction Ratio ¹	k31,5 Tool		k50 Tool		k100 Tool		k150 Tool	
			Feed Size F ₉₅ ²	Product Size P ₉₅ ³	Feed Size F ₉₅ ²	Product Size P ₉₅ ³	Feed Size F ₉₅ ²	Product Size P ₉₅ ³	Feed Size F ₉₅ ²	Product Size P ₉₅ ³
			(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)
CR810/08-10	<200	4	126	31,5	200	50	400	100	600	150
			5,0	1,2	7,9	2,0	15,7	3,9	23,6	5,9
CR810/08-15	<200	4	126	31,5	200	50	400	100	600	150
			5,0	1,2	7,9	2,0	15,7	3,9	23,6	5,9
CR810/08-20	<200	4	126	31,5	200	50	400	100	600	150
			5,0	1,2	7,9	2,0	15,7	3,9	23,6	5,9
CR810/08-25	<200	4	126	31,5	200	50	400	100	600	150
			5,0	1,2	7,9	2,0	15,7	3,9	23,6	5,9
CR810/08-30	<200	4	126	31,5	200	50	400	100	600	150
			5,0	1,2	7,9	2,0	15,7	3,9	23,6	5,9

Hybrid	Max. Uniaxial Compression strenght	Reduction Ratio ¹	k250 Tool		k350 Tool ⁴	
			Feed Size F ₉₀ ²	Product Size P ₉₀ ³	Feed Size F ₉₀ ²	Product Size P ₉₀ ³
			(mm) (in)	(mm) (in)	(mm) (in)	(mm) (in)
CR810/12-15	<200	4	1000	250,0	-	-
			39,4	9,8	-	-
CR810/12-20	<200	4	1000	250,0	-	-
			39,4	9,8	-	-
CR810/14-20	<200	4	-	-	1500	350
			-	-	59,1	13,8
CR810/14-25	<200	4	-	-	1500	350
			-	-	59,1	13,8
CR810/14-30	<200	4	-	-	1500	350
			-	-	59,1	13,8

¹⁾ The reduction ratio ($r = F_x/P_x$) depends on the uniaxial compression strength (UCS) of the feed material.

²⁾ F_x – x% size of feed material measured on lab screens with square holes. The largest dimension may not exceed 110% of the F₉₅ value.

³⁾ P_x – x% size of crushed material measured on lab screens with square holes.

⁴⁾ The maximum possible feed size for a k350 segment is 1500 x 1500 x 2500mm (59.1 x 59.1 x 82.6 in)

The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

ROCK PROCESSING GUIDE 2016

Chapter L - HYBRIDS

APPLICATION 2016-01-01

NOMINAL CAPACITY

Hybrid	Roll diameter	Roll length	Nominal capacity ¹			
			k31,5 Tool	k50 Tool	k100 Tool	k150 Tool
	(mm)	(mm)	(mtph)	(mtph)	(mtph)	(mtph)
	(in)	(in)	(stph)	(stph)	(stph)	(stph)
CR810/08-10	800	1000	250	400	800	1200
	31,5	39,4	276	441	882	1323
CR810/08-15	800	1500	350	600	1200	1800
	31,5	59,0	386	662	1323	1985
CR810/08-20	800	2000	500	800	1600	2400
	31,5	78,7	551	882	1764	2646
CR810/08-25	800	2500	600	1000	2000	3050
	31,5	98,4	662	1103	2205	3363
CR810/08-30	800	3000	750	1200	2400	3650
	31,5	118,1	827	1323	2646	4024

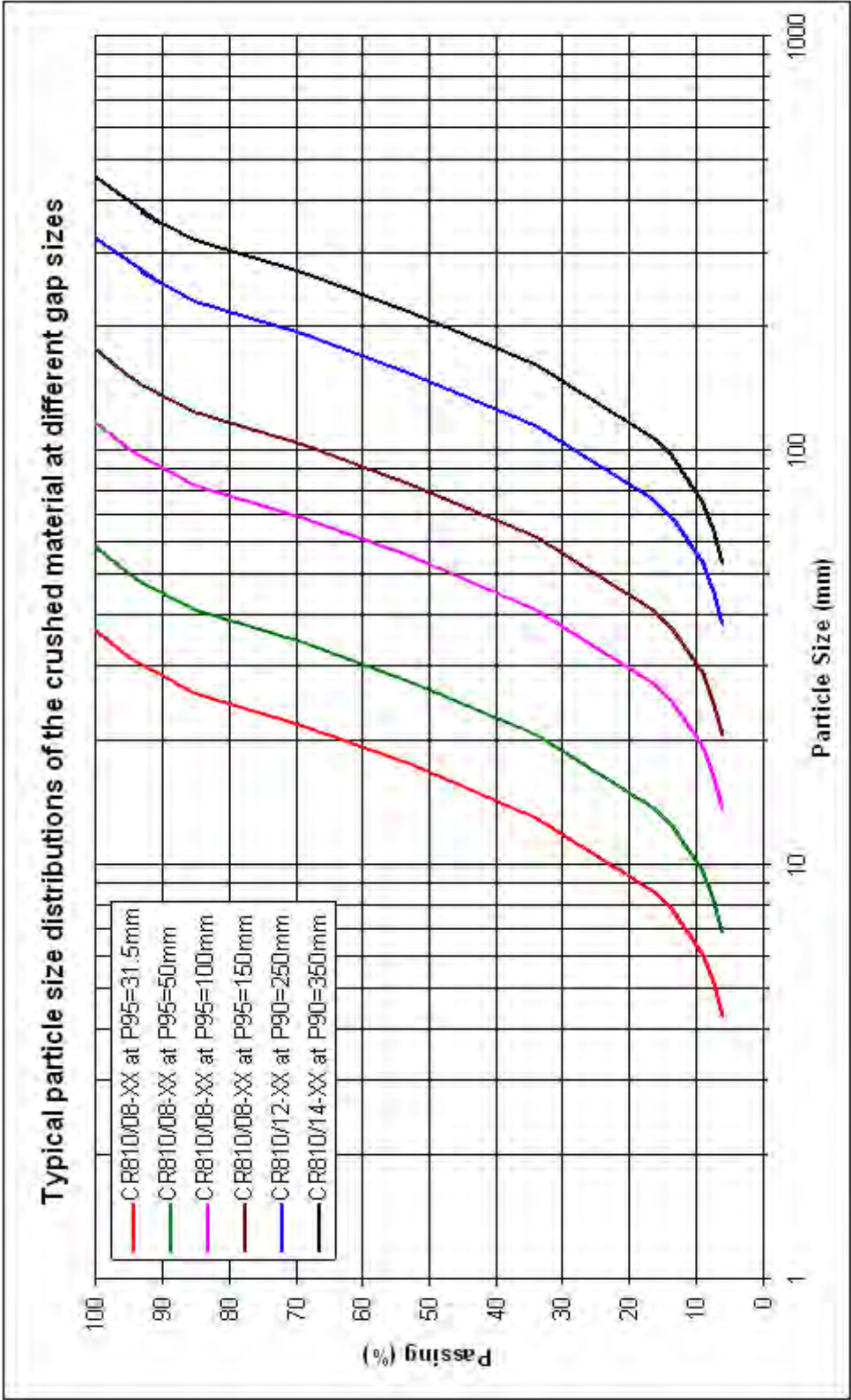
Hybrid	Roll diameter	Roll length	Nominal capacity ²	
			k250 Tool	k350 Tool
	(mm)	(mm)	(mtph)	(mtph)
	(in)	(in)	(stph)	(stph)
CR810/12-15	1200	1500	2700	-
	47,2	59,1	2976	-
CR810/12-20	1200	2000	3600	-
	47,2	78,7	3968	-
CR810/14-20	1400	2000	-	4400
	55,1	78,7	-	4850
CR810/14-25	1400	2500	-	5500
	55,1	98,4	-	6064
CR810/14-30	1400	3000	-	6600
	55,1	118,1	-	7275

¹⁾ Nominal capacity was calculated assuming a continuous even feed of dry material with a typical size distribution. A roll tip speed of $v = 3.4$ m/s, a filling factor in the gap of $\rho = 0.35$ and a bulk density of $\eta = 2,0$ t/m³ (iron ore) was used for capacity calculations.

²⁾ Nominal capacity was calculated assuming a continuous even feed of dry material with a typical size distribution. A roll tip speed of $v = 2.6$ m/s (CR810/14-xx) or 3.0 m/s (CR810/12-xx), a filling factor in the gap of $\rho = 0.35$ and a bulk density of $\eta = 2,0$ t/m³ (iron ore) was used for capacity calculations.

The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

PRODUCT CURVES



ROCK PROCESSING GUIDE 2016

Chapter L - HYBRIDS

APPLICATION 2016-01-01

MOTOR POWER - V-BELT DRIVE

Hybrid	Roll diameter	Roll length	Motor Power
	(mm)	(mm)	(kW)
	(in)	(in)	(hp)
CR810/08-10	800	1000	2x90
	31	39	2x121
CR810/08-15	800	1500	2x110
	31	59	2x148
CR810/08-20	800	2000	2x160
	31	79	2x215
CR810/08-25	800	2500	2x200
	31,5	98	2x268
CR810/08-30	800	3000	2x250
	31	118	2x335
CR810/12-15	1200	1500	2x132
	47	59	2x177
CR810/12-20	1200	2000	2x200
	47	79	2x268

MOTOR POWER - DIRECT DRIVE

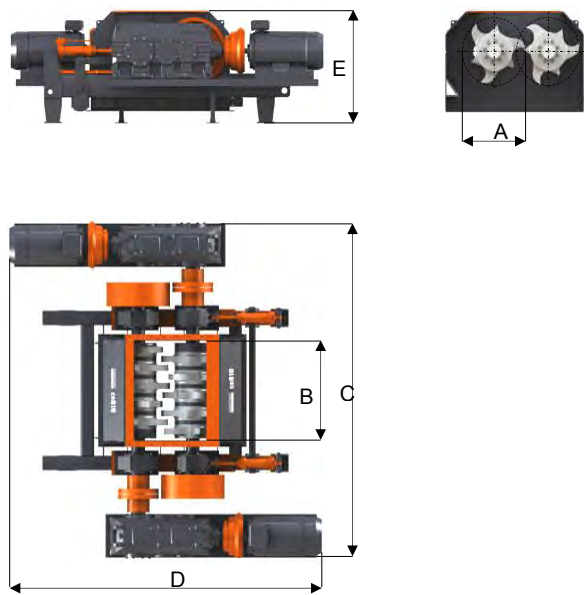
Hybrid	Roll diameter	Roll length	Motor Power
	(mm)	(mm)	(kW)
	(in)	(in)	(hp)
CR810/14-20	1400	2000	2x250
	55	79	2x335
CR810/14-25	1400	2500	2x315
	55	98	2x423
CR810/14-30	1400	3000	2x400
	55	118	2x506

The parameters above refer to typical feed material and standard machine design in normal operating conditions. Variations are possible for special tasks. Please contact the Product Line in this case.

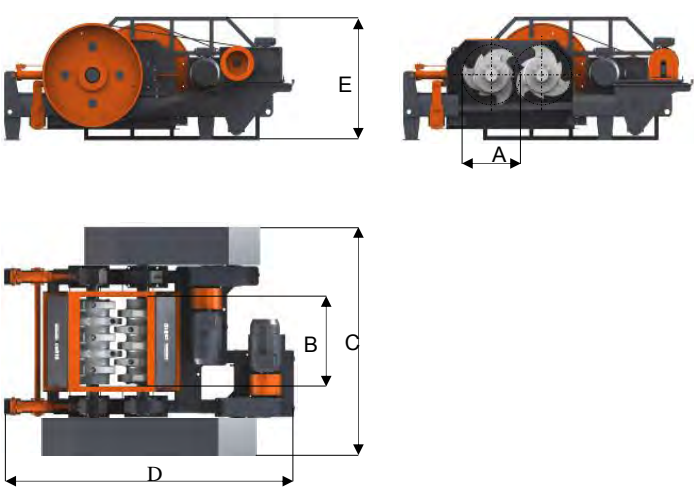
DIMENSIONS AND WEIGHTS

Hybrid	Drive	Weight	A	B	C	D	E
		(kg)	(mm)	(mm)	(mm)	(mm)	(mm)
		(lb)	(in)	(in)	(in)	(in)	(in)
CR810/08-10	V-Belt	21082	800	1000	3000	4860	1870
		46478	31,5	39,4	118,1	191,3	73,6
CR810/08-15	V-Belt	27616	800	1500	3490	5770	1980
		60883	31,5	59,1	137,4	227,2	78,0
CR810/08-20	V-Belt	36906	800	2000	4580	6340	2020
		81364	31,5	78,7	180,3	249,6	79,5
CR810/08-25	V-Belt	40673	800	2500	5175	6330	2020
		89669	31,5	98,4	203,7	249,2	79,5
CR810/08-30	V-Belt	45610	800	3000	5570	6520	2020
		100553	31,5	118,1	219,3	256,7	79,5
CR810/12-15	V-Belt	51192	1200	1500	4170	7450	2400
		112859	47,2	59,1	164,2	293,3	94,5
CR810/12-20	V-Belt	56159	1200	2000	4570	7470	2400
		123809	47,2	78,7	179,9	294,1	94,5
CR810/14-20	Direct Drive	61138	1400	2000	7170	5914	1870
		134786	55,1	78,7	282,3	232,8	73,6
CR810/14-25	Direct Drive	74698	1400	2500	7730	6117	1925
		164681	55,1	98,4	304,3	240,8	75,8
CR810/14-30	Direct Drive	85470	1400	3000	8440	6430	1925
		188429	55,1	118,1	332,3	253,1	75,8

DIRECT DRIVE



V-BELT



PRIMARY CRUSHER SEGMENTS



SECONDARY/TERTIARY CRUSHER SEGMENTS





SELECTION GUIDE

SG GRIZZLY SCREENS

SG...H GRIZZLY SCREENS

SK SCREENS

SC SCREENS

LF SCREENS

MSO SCREENS

SS FREE-FALL SCREENS

SF FREE-FALL SCREENS

SR ROLLER SCREENS AND CRUSHERS

SUITABLE SCREENING DUTIES FOR THE SANDVIK SCREENING RANGE

Screen Type	Maximum Feed Size (mm) ①	Maximum Separation (mm) ① Top Deck	Suitable Applications						
			Scalping before primary crusher	Scalping after primary crusher	Scalping after secondary crusher	Closed circuit screening	Mining Duties ②	Final fractioning sep. 16-64	Final fractioning sep. 0-16
Grizzly	1500	250	★ ★ ★	★			★ ★ ★		
Grizzly	1200	250	★ ★ ★	★					
Circular	200	130		★	★ ★	★ ★	★ ★	★ ★ ★	★ ★ ★
Circular	300	140		★ ★	★ ★	★ ★	★ ★	★ ★ ★	★ ★ ★
Linear	300	100		★	★	★	★ ★ ★	★ ★	★ ★ ★
Circular	300	140			★ ★	★ ★	★ ★	★ ★ ★	★ ★ ★
Free-	350	100	★	★ ★ ★	★ ★ ★	★ ★	★		
Free-	150	80			★ ★	★ ★ ★		★	★
Free-	120	64						★ ★	★ ★ ★
Roller	1200	160	Scalping: 5-160 mm (i.e. Limestone and Coal)						

Note: Stars indicate a general level of suitability (i.e. the more stars the more suitable).

① These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/screen sizes).

② Mining duties, in terms of high-density ore as well as 24-hour operations and 365 days per year.

The above table gives an example of the most commonly used duties for our screen range in aggregate plants (i.e. other applications are possible). The following parameters should be considered in the screen selection process: feed size, separation size, feed rate, required screening accuracy and stickiness of the material. It is important to notice that the maximum separation size depends on the screening media.

Selection of Screen and Screening Element

The selection of the most appropriate screen type is to a great extent based on experience. This basically means that the screen selection process is not always an explicit assignment. In fact, most applications have several more or less suitable solutions.

Unfortunately there are far too many factors involved and it is impossible to accurately analyse them all, since the relative importance of each one varies from case to case. However, the following description should provide a few valuable clues.

Important factors

- Separation size
- Maximum feed size
- Feed rate
- Particle size distribution
- Screening media requirements
- Accuracy requirements
- Installation aspects
- Service aspects
- Weight and size
- Price

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SELECTION GUIDE 2016-01-01

SCALPING DUTIES

Scalping means that there are no severe requirements of the separation accuracy, however the feed rates are normally high. Suitable machines for coarse scalping are (i.e. separation > 100 mm) a vibrating grizzly feeder or an extra robust free-swinging screen with bar or pin grizzlies, or heavy-duty rubber elements. Suitable machines for scalping of finer material are (i.e. separation < 100 mm): a compact free-fall screen or a conventional circular motion screen with rubber elements.

CLOSED-CIRCUIT SCREENING

Closed-circuit screening are usually corresponding to high capacities and "reasonable" accuracy requirements. The separation size is normally within 16 to 100 mm. Suitable machines are: a compact free-fall screen or a conventional circular motion screen (i.e. with rubber elements in order to achieve a low wear cost). Multiple decks are often used to reduce the bed thickness in applications with a large proportion of circulating material.

FINAL PRODUCT SCREENING

This duty is usually associated with severe product specifications, which requires a screen with good separation accuracy. Suitable machines for small separations are (i.e. < 16 mm): a free-swinging linear/elliptical-motion screen, a free-fall screen or in some cases a circular-motion screen. Wire or special rubber elements should be used. When the separation accuracy is not too severe or if the fractions are longer, a free-swinging circular-motion screen can be selected. Plastic elements should be used for wet screening.

DESIGNATIONS

SG	Heavy duty, linear/elliptic motion, horizontal screen with grizzlies
SG...H	Circular motion, inclined heavy duty screen with grizzlies
SK	Circular motion, inclined screen
SC	Circular motion, inclined screen
LF	Linear/elliptical motion, horizontal screen
MSO	Circular/elliptical motion, inclined screen
Free-Fall	Free fall screen, compact, high capacity
SS...H	Extra heavy duty screen
SS	Heavy duty and standard duty screen
Free-Fall, SF	Free fall screen, high accuracy, high capacity
Roller Grizzly	Roller Screen for primary scalping, limestone or similar materials
Roller Screen	Roller Screen for scalping, limestone, coal or similar materials

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

GENERAL – SG GRIZZLY SCREENS

The SG screens are especially designed for heavy scalping duties. Its main purpose is to remove fines from the feed before primary crushing. It is often successfully combined with a Reciprocating Plate Feeder when heavy dump loads and high capacities are required, in conjunction with a by-pass of the fines ahead of the crusher.

All SG screens have their vibrating mechanism mounted under the feed pan. The double shaft mechanism generates a linear stroke, which consequently means a better feeding as well as a sustained material speed on the screen. The SG screens are available with 2, 3 and 4 grizzly steps for the single deck models, depending on the size of the screen. The double deck models are equipped with three grizzly steps on the top deck and wire or rubber media on the bottom deck (i.e. not for fines and classification screening).

The drive unit incorporates two motors with cardan shafts (i.e. no gearbox or gearwheels are necessary since the mechanism is self-synchronizing). The components of the mechanism are mainly the same as for the LF and MSO screens.

The double shaft mechanism makes the installation slope of 5 degrees sufficient in most cases. Hence, the SG screens require considerably low headroom, which implies a significant advantage in some applications.

Adjustability

- Stroke length (i.e. by adding extra counter weights)
- Rotation speed (i.e. by optional frequency converter)
- Grizzly gap (i.e. separate grizzly bars)
- Inclination

Nominal Operating Limits

- Maximum feed size: 900-1500 mm (one dimension only, for SG2452X: 500 mm) @ bulk density 1,6 t/m³
- Maximum drop height: 750 mm
- Inclination range: 5-10 degrees (std. 5 deg.)
- Separation range: 60-250 mm
- Speed range: 700 - 980 rpm
- Stroke range: 5-14 mm
- Acceleration: up to 4,5 x G
- Ambient temperature range: -20 to +40 °C
- Installation altitude 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

SCOPE OF SUPPLY – SG GRIZZLY SCREENS

Standard delivery includes

- Screen body and vibrating mechanism bolted together
- Drive unit including electric motors, motor bases and power transmission components
- Support coil springs
- Spring seats (i.e. top and bottom parts)
- Grizzly bars
- AR400 steel wear liners for pan and sides
- Buffers to restrict excess lateral movement
- Screen media side clamps and center clamps when side tensioned media is applicable (all clamps are made of steel) and steel wire media
- Surface treatment according to Sandvik standard
- Installation, operating and maintenance manuals

Options

- Screening media for bottom deck: side tensioned rubber
- AR500 steel liners for pan and sides
- Tool kit for mechanism bearing change
- Special grizzly bars for slag handling
- Special surface treatment for corrosive atmosphere (special paint)
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
- Preparation (in the factory before dispatch) for a long period storage

General technical data

- Stroke angle: 40-55 degrees
- Recommended inclination: 5 degrees (for SG2452X 12 deg.)
- Motors according to IEC standard, enclosure class IP55, frame B3, speed 750/1000/1500 rpm
- Drive through cardan shaft, one motor for each shaft, no gears
- Spherical roller bearings
- Oil bath lubrication
- Buffers to restrict excess lateral movement included
- Dual shaft mechanism is fixed with pre-tensioned bolts
- Mechanism is equipped with oil level gauge and breather
- Wear liners: AR400 steel
- Welded frame including heavy steel profiles
- Stroke length is adjustable by adding extra weights
- When grizzly separation is over 130 mm, the grizzly bars and side plate will be higher than std.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

DATA SHEETS - SG GRIZZLY SCREEN

1- DECK



Photo: SG1531

Screen	SG1231	SG1531	SG1831	SG1541	SG1841
Max. Feed Size (mm/one dimension)*	900	1 200	1 500	1 200	1 500
Inside Width (mm)	1 220	1 520	1 820	1 520	1 820
Inside Length (mm)	3 000	3 000	3 000	3 900	3 900
Grizzly Steps, amount x length (mm)	2 x 900	2 x 900	2 x 900	3 x 900	3 x 900
Screening Area (m ²)	2,2	2,7	3,3	4,0	4,9
Wear liner thickness, pan/sides (mm)	16/8	16/8	16/8	16/8	16/8
Weight with Grizzlies (kg) **	4 200	5 000	6 400	6 500	7 850
Installed Power (kW)	2 x 7,5	2 x 7,5	2 x 11	2 x 11	2 x 11
Mechanism Type / Size	Dual 16	Dual 16	Dual 20	Dual 20	Dual 20

Screen	SG2141	SG1851	SG2151	SG2451
Max.Feed Size (mm/one dim.) *	1 500	1 500	1 500	1 500
Inside Width (mm)	2 120	1 820	2 120	2 420
Inside Length (mm)	3 900	4 800	4 800	4 800
Grizzly Steps, amount x length (mm)	3 x 900	4 x 900	4 x 900	4 x 900
Screening Area (m ²)	5,7	6,4	7,5	8,6
Wear liner thickness, pan/sides (mm)	16/8	16/8	16/8	20/10
Weight with Grizzlies (kg) **	9 260	10 500	11 640	13 500
Installed Power (kW)	2 x 18,5	2 x 22	2 x 22	2 x 22
Mechanism Type / Size	Dual 24	Dual 24	Dual 24	Dual 24

* These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/screen sizes).

** The weight includes the weight of the grizzlies (grizzly gap appr. 100 mm). Total weight of the equipment varies when the grizzly gap changes. Please contact the Product Line S&F for further details regarding these weights.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

DATA SHEETS - SG GRIZZLY SCREEN

2- DECKS



Photo: SG1542 on transport supports without springs

Screen	SG1242	SG1542	SG1842	SG2452X***
Max. Feed Size (mm/one dimension) *	900	1 200	1 500	500
Inside Width (mm)	1 220	1 520	1 820	2420
Inside Length (mm)	3 900	3 900	3 900	5160
Grizzly Steps, amount x length (mm)	3 x 900	3 x 900	3 x 900	4 x 1200
Screening Area, top/bottom deck (m ²)	3,24 / 3,12	4,05 / 3,90	4,86 / 4,86	11,5 / 12
Wear liner thickness, pan/sides (mm)	16/8	16/8	16/8	20/10
Weight with Grizzlies (kg) **	7 000	7 900	10 450	20 500
Installed Power (kW)	2 x 11	2 x 11	2 x (18,5)22	2 x 37
Mechanism Type / Size	Dual 20	Dual 20	Dual 24	Dual 38

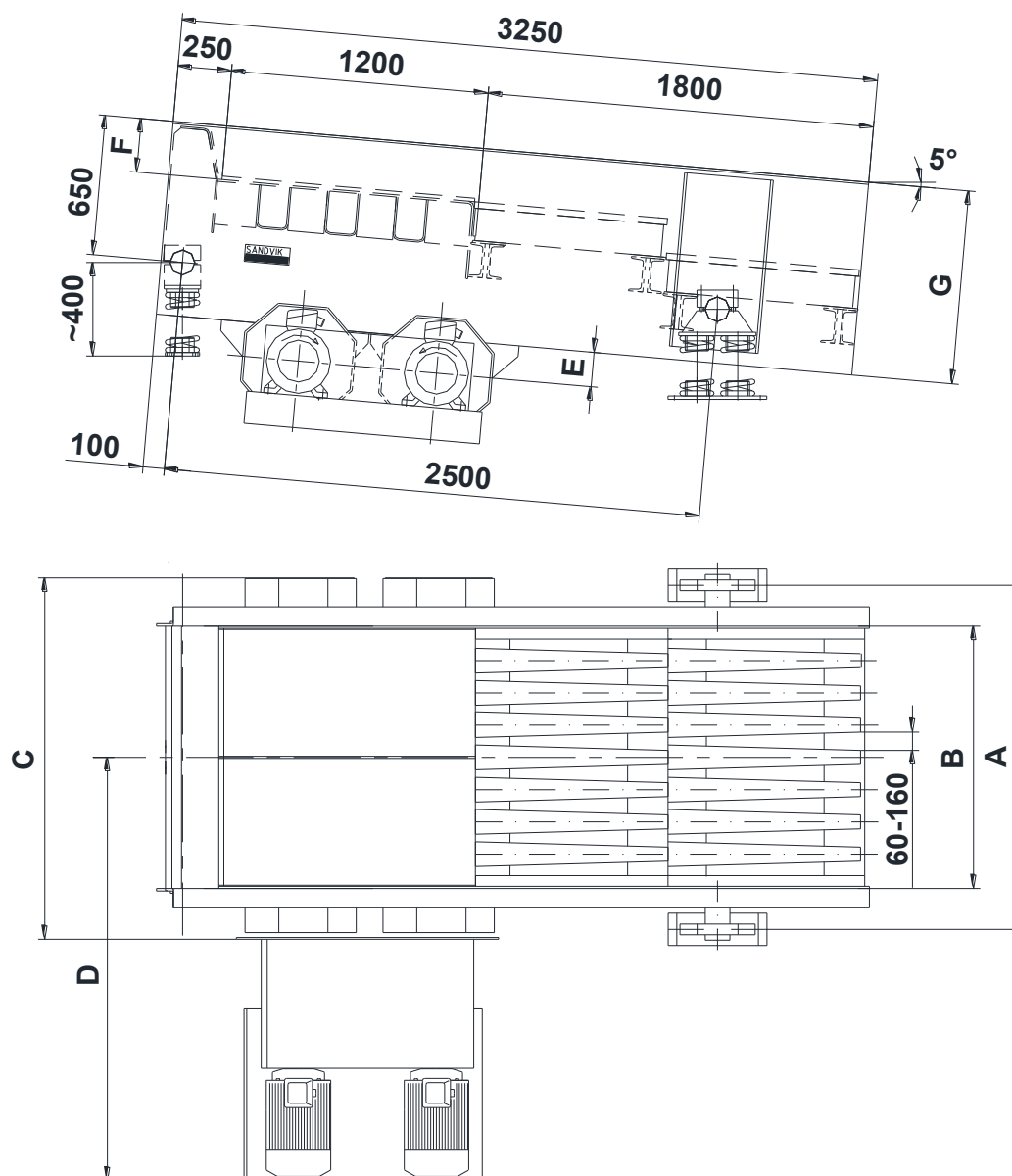
* These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/screen sizes).

** The weight includes the weight of the grizzlies (grizzly gap appr. 100 mm) and wire media on the bottom deck. Total weight of the equipment varies when the grizzly gap changes. Please contact the Product Line S&F for further details regarding these weights.

*** Special design

DIMENSIONS - SG GRIZZLY SCREEN

TWO STEPS, SINGLE DECK



Screen Type	Deck Area (m ²)	Total Weight (kg)	Dimensions (mm)						
			A	B	C	D	E	F	G**
SG1231	2.2	4200	1600	1220	1680	2040	160	250	900
SG1531	2.7	5000	1900	1520	1980	2120	160	250	900
SG1831	3.3	6400	2200	1820	2350	2300	200	250	900

* Please check from the latest GA drawing

** Screen height depending on grizzly gap, please check from the latest GA drawing.

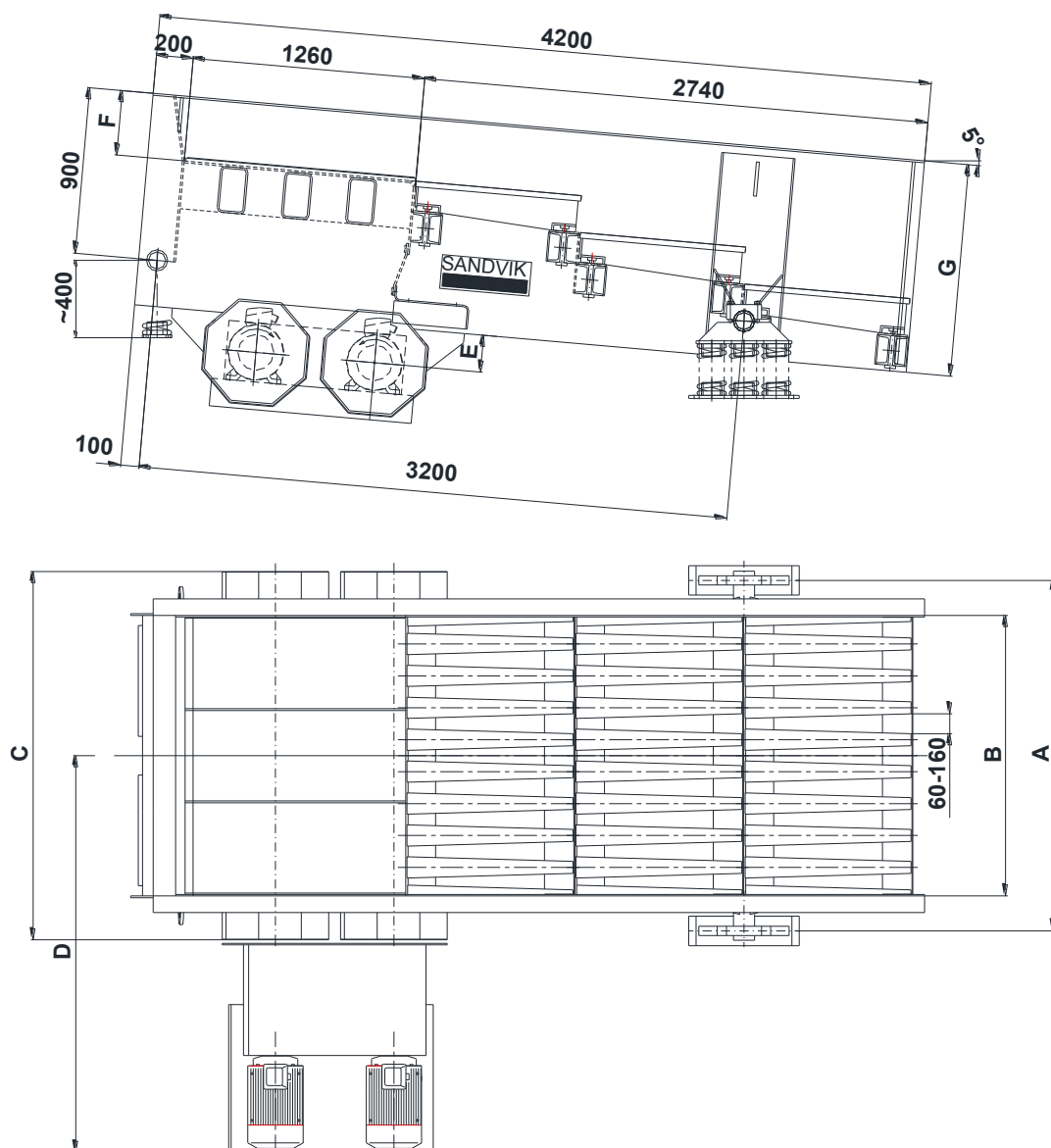
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

DIMENSIONS - SG GRIZZLY SCREEN

THREE STEPS, SINGLE DECK



Screen Type	Deck Area (m ²)	Total Weight (kg)	Dimensions (mm)						
			A	B	C	D	E*	F	G**
SG1541	4.0	6500	1900	1520	2050	2150	200	350	1150
SG1841	4.9	7850	2200	1820	2350	2250	200	350	1150
SG2141	5.7	9260	2500	2120	2650	2580	235	350	1150

* Please check from the latest GA drawing

** Screen height depending on grizzly gap, please check from the latest GA drawing

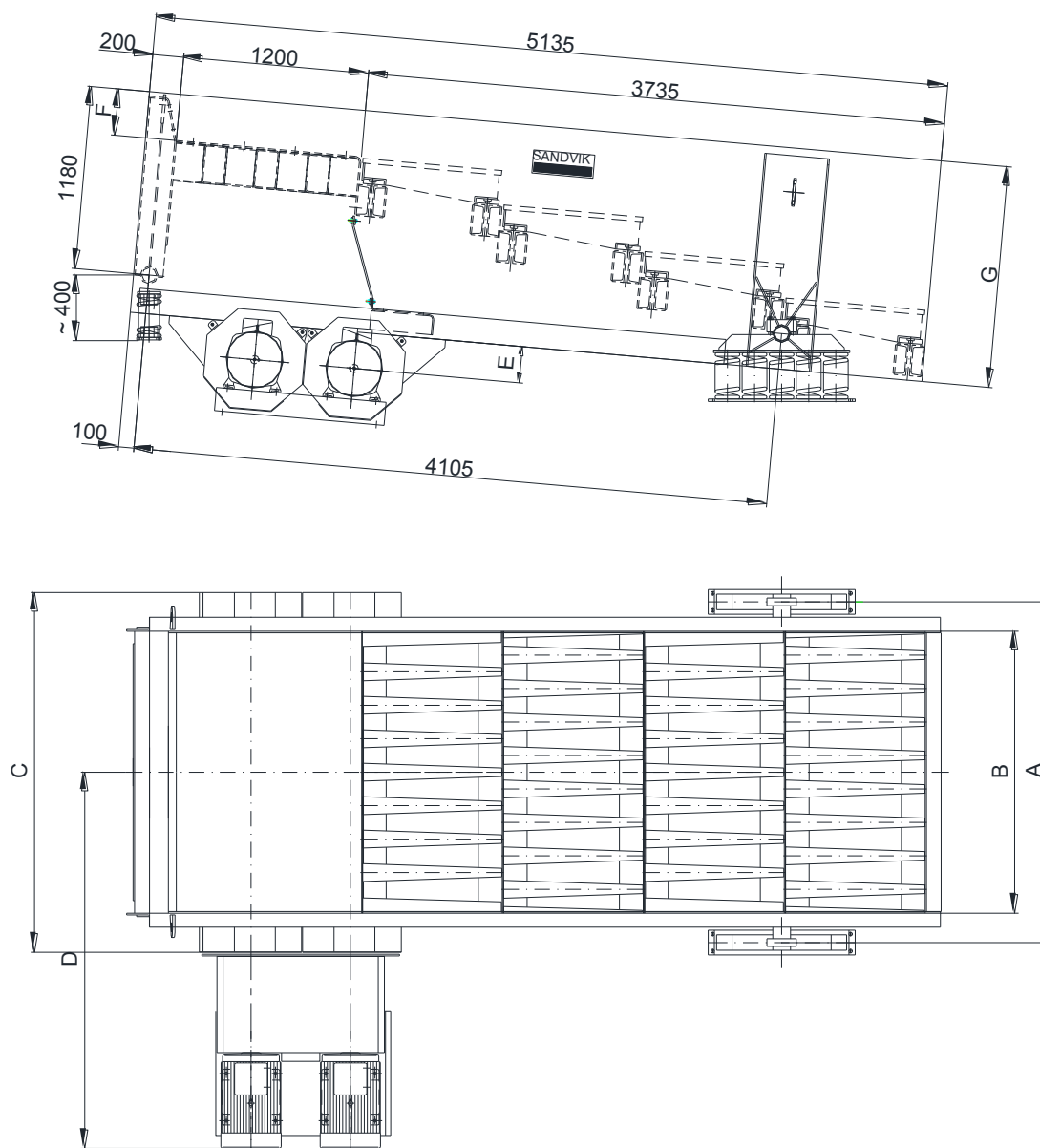
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

DIMENSIONS - SG GRIZZLY SCREEN

FOUR STEPS, SINGLE DECK



Screen Type	Deck Area (m ²)	Total Weight (kg)	Dimensions (mm)						
			A	B	C	D	E*	F	G**
SG1851	6.4	10500	2200	1820	2450	2430	235	300	1400
SG2151	7.5	11640	2500	2120	2750	2520	235	300	1400
SG2451	8.6	13200	2800	2420	3050	2770	300	300	1400

* Please check from the latest GA drawing

** Screen height depending on grizzly gap, please check from the latest GA drawing

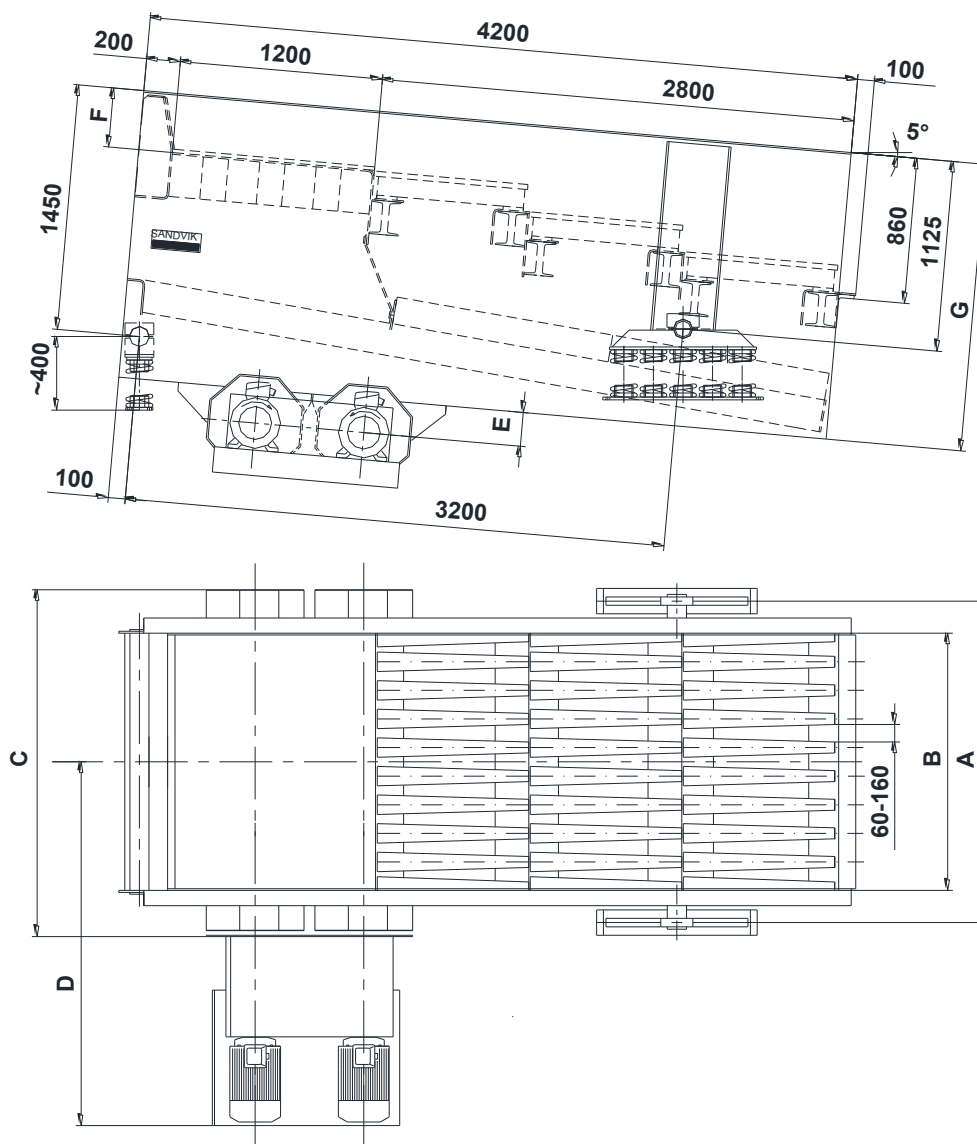
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

DIMENSIONS - SG GRIZZLY SCREEN

THREE STEPS, DOUBLE DECK



Screen Type	Deck Area (m ²)		Total Weight (kg)	Dimensions (mm)						
	Top	Bottom		A	B	C	D	E*	F	G**
SG1242	3.24	3.12	7000	1600	1220	1750	2000	200	250	1700
SG1542	4.05	3.90	7900	1900	1520	2050	2190	200	250	1700
SG1842	4.86	4.86	10450	2200	1820	2400	2430	235	250	1700
SG2452X ***	11,5	12,0	20500	2800	2420	3185	2850	n/a	n/a	1800

* Please check from the latest GA drawing

** Screen height depending on grizzly gap, please check from the latest GA drawing.

*** Special design, please consult with Product Line S&F

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG GRIZZLY SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - SG GRIZZLY SCREENS

Screen Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SG1231	4300	3250	1760	1300	7.4
SG1531	5100	3250	2060	1380	9.6
SG1831	6500	3250	2360	1440	11.0
SG1541	6700	4200	2060	1660	14.4
SG1841	8000	4200	2360	1690	16.7
SG2141	9500	4200	2660	2050	14.5
SG1851	10700	5000	2360	2050	24.2
SG2151	11850	5000	2660	2050	27.3
SG2451	13500	5000	2960	2160	32.0
SG1242	7100	4200	1760	2300	17.0
SG1542	8000	4200	2060	2300	19.9
SG1842	10600	4200	2360	2300	22.8
SG2452X	19000*	6050	3185	2660	51,2

* Without drive unit, see table below for the drive unit.

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Screen is shipped on it's own transport supports, vibrating mechanism is bolted to the screen frame.

In all deliveries: motors, motor bases, cardan shaft parts, covers, support springs, lower spring pedestals and extra counter weights are packed in a separate box, which is tied on top of the screen deck when possible.

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk.

Drive size	Approximate Net Shipping Dimensions for SG2452X drives				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
38	2000	2900	1750	1000	5.1

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG...H GRIZZLY SCREENS 2016-01-01

GENERAL – SG...H GRIZZLY SCREENS

The SG...H screens are designed for installation after a primary feeder and before a primary crusher. The feed will typically be blasted rock, ripped rock or gravel with a high fines content, often containing some difficult wet natural fines or clay.

The SG...H range of screens has a single grizzly or plate type scalping deck with the option of a second deck with woven wire.

Screens immediately after a primary feeder gives more effective scalping than a primary feeder with a built-in grizzly. The stroke and speed remain constant while the feed rate is adjusted by varying the feeder speed providing efficient separation at all times.

Application:

Designed to process blasted run of quarry or coarse natural material ahead of a primary crusher.

Deck Inclinations:

Top deck 12 degrees and bottom deck 18 degrees.

Screening Media:

- Top deck equipped with two integral stepped mounted grizzly sections, featuring diverging gap between bars
- Bottom deck equipped with cross-tensioned steel wire mesh (i.e. standard set-up). Perforated steel plates or rubber self-supporting screening panels may be mounted.

Max Separation Size:

- Top deck (i.e. grizzly sections): up to 200/250 mm
- Bottom deck: up to 80 mm

These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/screen sizes).

Nominal Operating Limits

- Maximum feed size: 1200 mm (one dimension only) @ bulk density 1,6 t/m³
- Maximum drop height: 750 mm
- Inclination range: 15-20 degrees (std. 18 deg.)
- Separation range: 2-140 mm
- Speed range: 650-725 rpm
- Stroke range: 7-11 mm
- Acceleration: up to 3,5 x G
- Maximum material temperature: + 80 °C
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG...H GRIZZLY SCREENS 2016-01-01

SCOPE OF SUPPLY - SG...H GRIZZLY SCREENS

Frame Includes

- Bolted screen body
- Side plates with top and bottom flanges
- Top deck is fitted with two integral grizzly sections, featuring diverging gap between the bars
- The grizzly is made of AR steel, one piece for each grizzly section and bolts to the crossbeams
- Bottom deck designed for side-tensioned media. C-type clamps are used for bottom deck
- Bolted AR liners to protect the sidewalls at the top and bottom decks
- Discharge plate at the bottom deck (i.e. equipped with 10 mm thick AR steel plate)
- Surface treatment according to Sandvik standard, components according to supplier's std painting.
- Installation, operating and maintenance manuals

Circular Motion Mechanism Includes

- Eccentric shaft with spherical roller bearings
- Unbalanced flywheels with external counterweights (i.e. facilitates stroke adjustments)
- The mechanism tube is protected by rubber liner

Drive Transmission Includes

- Motor pulley, V-belts, sheave and pivoting motor base
- Transmission guard
- Flywheel guard (i.e. the flywheel is positioned at the opposite side of the transmission)

Suspension Includes

- Support brackets
- Coil springs
- Base mountings equipped with friction brakes

Options

- Perforated steel plates or self-supporting rubber panels (i.e. bottom deck)
- Preparation (in the factory before dispatch) for a long period storage

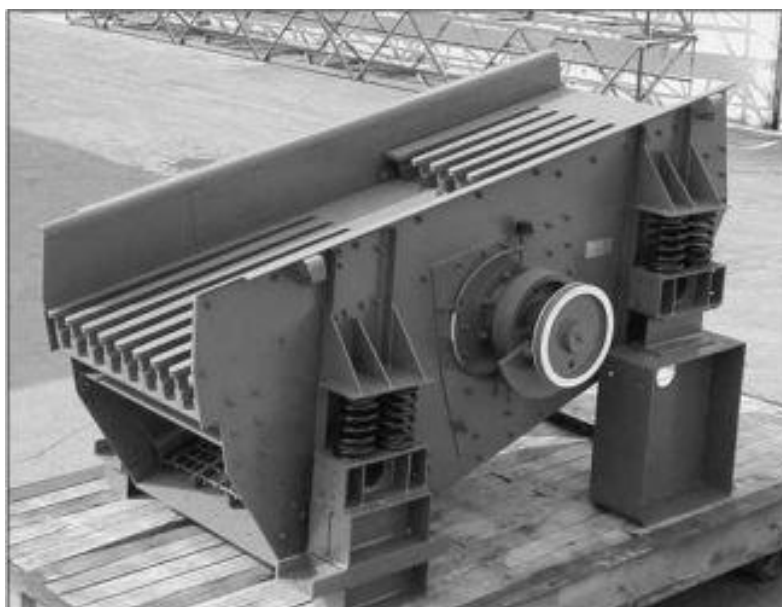
Please contact the Product Line S&F prior to any quoting of the above options.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SG...H GRIZZLY SCREENS 2016-01-01

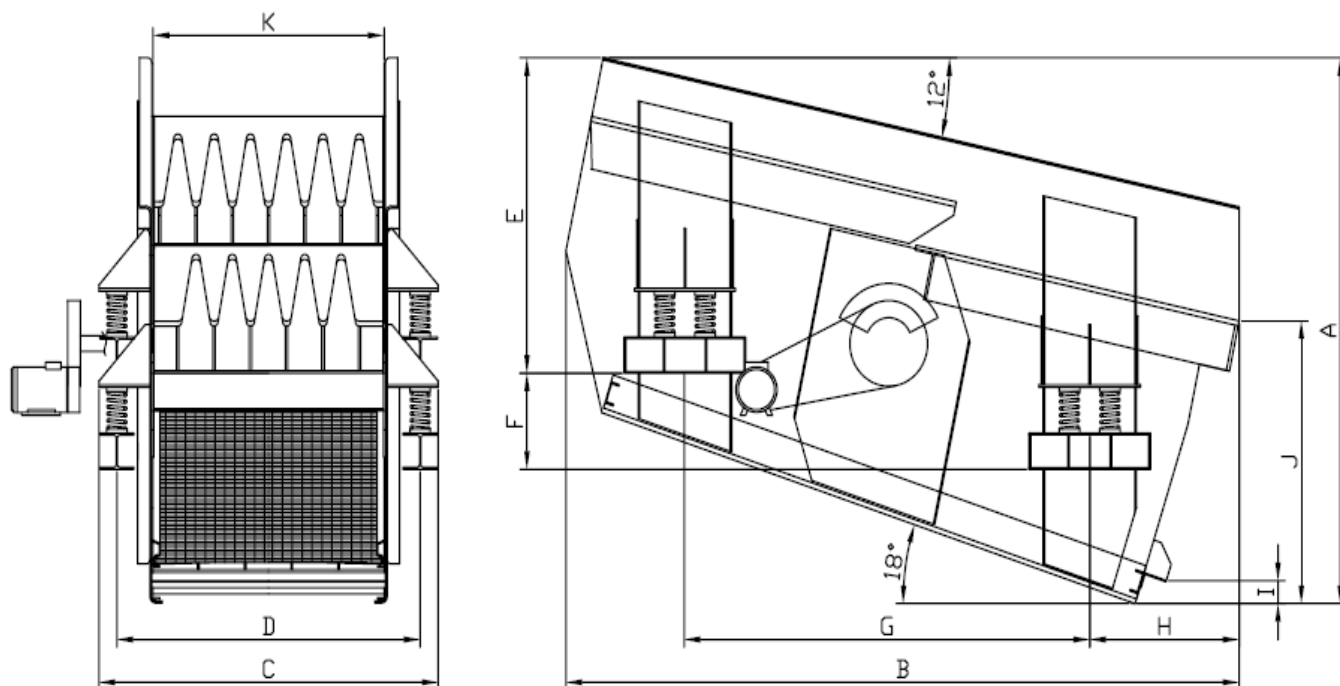
DATA SHEETS - SG...H GRIZZLY SCREEN



Screen Type	SG1241H	SG1242H	SG1541H	SG1542H
Number of Decks	1	2	1	2
Width (mm)	1200	1200	1500	1500
Length (mm)	3600	3600	4000	4000
Screening Area (m ²)	4,3	4,3	6,0	6,0
Stroke	7-11	7-11	7-11	7-11
Vibrating Unit Size	26 B1	26 B1	32 B	32 B
Rated Speed (rpm)	652-725	652-725	652-725	652-725
Motor Power (kW)	18,5	18,5	22,0	22,0
Weight (kg)	4 330	4 600	8 850	9 400

These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/screen sizes).

DIMENSIONS - SG...H GRIZZLY SCREEN



Model	Dimensions (mm)										
	A	B	C	D	E	F	G	H	I	J	K
SG1241H	2234	3503	1856	1648	1114	604	2000	858	156	1121	1180
SG1242H											
SG1541H	3177	4325	2180	1948	1838	560	2600	960	107	1621	1484
SG1542H											



GENERAL PACKING PROCEDURE - SG...H GRIZZLY SCREEN

Screen Type	Approximate Net Shipping Dimensions			
	Length (mm)	Width (mm)	Height (mm)	Weight (kg) *
SG1241H	3600	2100	1700	4300
SG1242H	3600	2100	1700	4600
SG1541H	4300	2500	2400	8500
SG1542H	4300	2500	2400	9400

* Includes steel wire mesh media

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Screen is shipped on loose timber and its drive mechanism is tied on the first screen deck.
 In all deliveries: springs, lower spring support parts and other parts are packed in a separate wood box (i.e. wood box dimensions can be reviewed in the below chart).
 Counter weight guard is assembled on the screen.

When export packing is required (i.e. wooden crate), please consult with factory.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

GENERAL - SK SCREENS

The SK screens are designed for medium and fine screening applications. The screens are circular motion inclined screens in two, three and four deck design. Inclination range is 16-22 degrees.

The SK range of screens is designed for general quarrying and with a separation range from 130 mm down to 1 mm. The maximum feed size is generally limited to 200 mm somewhat depending on the selected screening media. The SK screens can also be used as splitter screens to divide flows within a plant and are frequently used for final screening of finished fractions.

Preferred Applications

- For screening **after** primary crushing.
- A fine screen from secondary stage to final accurate sizing.
- Size range 5.4 - 24 m²

Adjustability

The screen performance can easily be modified according to present conditions by adjusting the following factors:

- Screen angle (i.e. adjustable spring seats)
- Stroke length
- Rotation speed (i.e. transmission belt pulley)

Nominal Operating Limits

- Maximum feed size: 200 mm (with bulk density 1,6 t/m³)
- Maximum drop height: 750 mm
- Inclination range: 15-22 degrees (std. 18 deg.)
- Separation range: 1-130 mm
- Speed range: 780-950 rpm
- Stroke range: 7-12 mm
- Acceleration: up to 3,5 x G
- Maximum material temperature: + 80 °C
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude: 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

SCOPE OF SUPPLY – SK SCREENS

Standard delivery includes

- Bolted screen body (assembly by Huck-bolting) of high quality steel plates, with top flanges. Standard slope 18 deg.
- Deck support frames, round crossbeams combining maximum strength with reduced weights.
- Welded deck design
- Mechanism, circular motion oil bath or grease type consisting of an eccentric shaft and spherical roller bearings and external adjustable unbalanced counterweights for stroke adjustment. Flywheel has SPB grooves for the transmission
- Screen decks are prepared for side tensioned media.
- No kind of screening media included, selectable from options list.
- Belt drive transmission, V-belts, motor pulley, guards, electrical motor and pivoting motor base.
- Feed end closing, rubber dust seal curtain between the decks.
- Suspension, complete with base mounting support brackets, coil springs with covers.
- Wear protection, glued wear rubber on mechanism tube, bolted rubber elements on feed box and AR400 steel plate on discharge lips.
- Surface treatment according to Sandvik standard, components according to supplier's std painting.
- Installation, operating and maintenance manuals

Options

- Dust encapsulation preparation
- Dust encapsulation, with roof and sealing parts
- Rubber lined cross members
- Drive with cardan shaft
- Friction brakes
- Washing spray bar system
- Tool kit for mechanism bearing change
- Other color than Sandvik scheme
- Special surface treatment (special painting or galvanizing)
- Special decks for third party screening media – special option
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

General technical data

- Circular stroke inclined screen
- For construction applications
- Max. stroke 12 mm
- Max. allowed feed size 200 mm
- Recommended inclination: 18 degrees
- Normal inclination range: 15-22 degrees
- Motors according to IEC standard, enclosure class IP55
- Transmission by v-belts and v-belt pulleys
- Spherical roller bearings, special for vibrating duty
- Oil bath lubrication OR grease lubrication for mechanism
- Mechanism is equipped with oil level gauge and breather
- Wear liners in feed box: 30 mm thick rubber
- Wear liners in discharge lips: 8 mm AR400 steel plate
- Frame bolted with huck bolts
- Screens wider or equal to 1 800 mm have steel center clamp for side tensioned media
- Min. horizontal clearances: across flow direction 30 mm, flow direction 50 mm
- Min. vertical clearance, screen foundation 80 mm

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

DATA SHEETS - SK SCREENS 2 DECKS



Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m ²) per deck	Mechanism	Motor Size (kW)	Total weight without media (kg)
SK1542	3600	1500	5,4	1 x 18	15	3900
SK1852	4800	1800	8,6	1 x 18	15	5000
SK1862	6000	1800	10,8	1 x 22	18,5	6050
SK2162	6000	2100	12,6	1 x 22	18,5	6550
SK2462	6000	2400	14,4	1 x 26	22	7250
SK3062	6000	3000	18	1 x 30	30	10000
SK3072	7000	3000	21	1 x 34	37	11750
SK3082	8000	3000	24	1 x 34	37	12750

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

DATASHEETS - SK SCREENS 3 DECKS

Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m ²) per deck	Mechanism	Motor Size (kW)	Total weight without media (kg)
SK1543	3600	1500	5,4	1 x 18	15	4900
SK1853	4800	1800	8,6	1 x 22	18,5	6850
SK1863	6000	1800	10,8	1 x 26	22	8350
SK2163	6000	2100	12,6	1 x 30	30	9000
SK2463	6000	2400	14,4	1 x 30	30	10300
SK3063	6000	3000	18	1 x 38	45	14200
SK3073	7000	3000	21	1 x 38	45	15500

DATASHEETS - SK SCREENS 4 DECKS

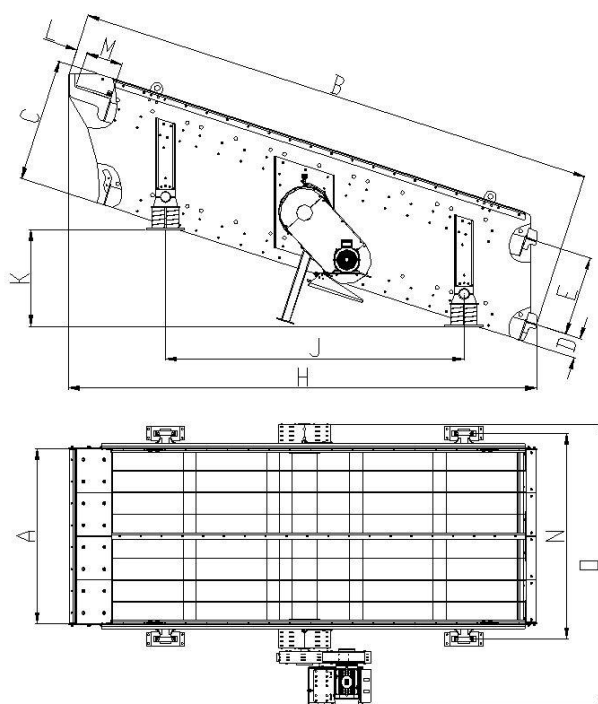
Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m ²) per deck	Mechanism	Motor Size (kW)	Total weight without media (kg)
SK1854	4800	1800	8,6	1 x 30	22	8500
SK1864	6000	1800	10,8	1 x 30	30	10150
SK2164	6000	2100	12,6	1 x 34	37	11200
SK2464	6000	2400	14,4	1 x 34	45	12650

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

DIMENSIONS - SK SCREENS 2 DECKS



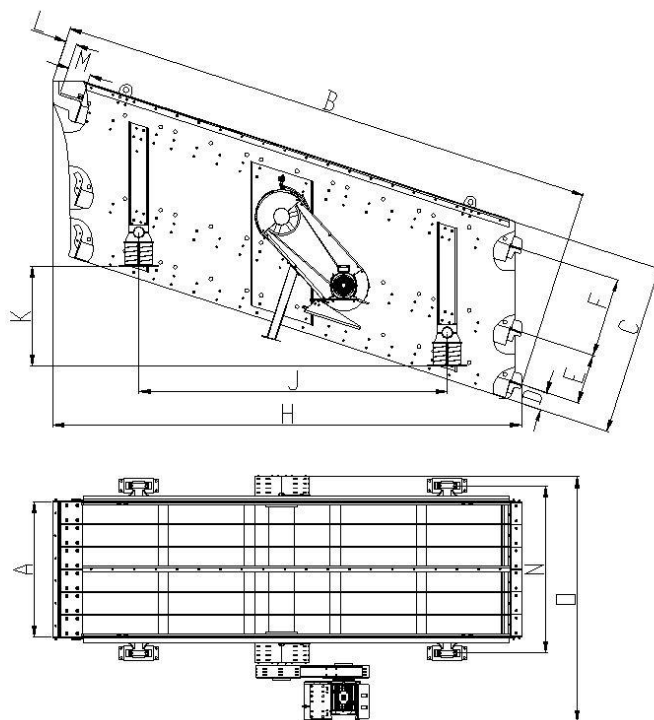
Screen Type	Total weight without media (kg)	Dimensions (mm) (* dimensions in 18° slope)														
		A	B	C	D	E	F (3 or 4 deck only)	G (4 deck only)	H*	J*	K*	L	M	N	O	
SK1542	3670	1500	4482	1412	215	877	N/A	N/A	3936	2282	742	146	300	1920	2950	
SK1852	4630	1800	5687	1452	235	897	N/A	N/A	5077	3424	1112	146	300	2220	3250	
SK1862	6050	1800	6922	1560	235	1005	N/A	N/A	5809	4090	1327	146	300	2220	3270	
SK2162	6570	2100	7129	1600	255	1025	N/A	N/A	6408	4090	1329	146	500	2520	3570	
SK2462	7250	2400	7150	1685	275	1090	N/A	N/A	6408	4090	1329	146	500	2820	3890	
SK3062	10000	3000	7176	1805	315	1170	N/A	N/A	6408	4332	1408	146	500	3420	4570	
SK3072	11760	3000	8189	1845	315	1210	N/A	N/A	7359	4755	1545	146	500	3420	4640	
SK3082	12750	3000	9189	1845	315	1210	N/A	N/A	8310	5706	1854	146	500	3420	4640	

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

DIMENSIONS - SK SCREENS 3 DECKS



Dimensions (mm) (* dimensions in 18° slope)

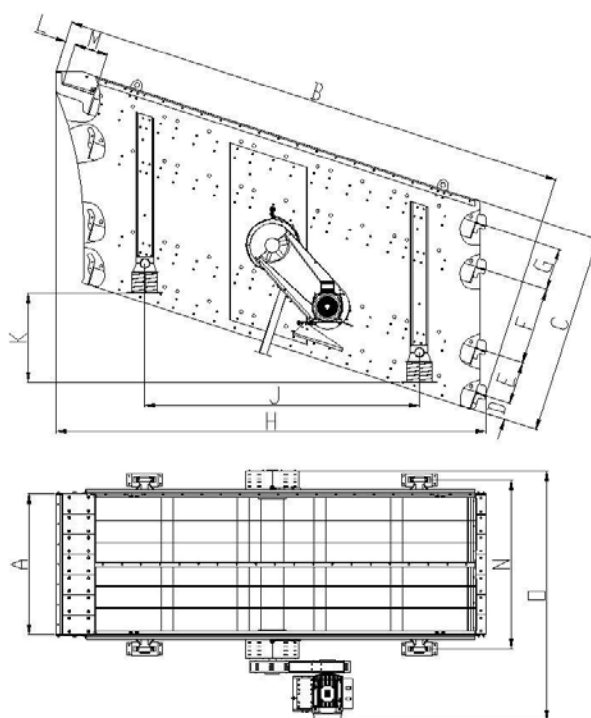
Screen Type	Total weight without media (kg)	Dimensions (mm) (* dimensions in 18° slope)													
		A	B	C	D	E	F (3 or 4 deck only)	G (4 deck only)	H*	J*	K*	L	M	N	O
SK1543	4900	1500	4627	1841	215	450	877	N/A	3935	2282	742	146	300	1920	2950
SK1853	6850	1800	5875	2030	235	470	1005	N/A	5077	3424	1112	146	300	2220	3270
SK1863	8370	1800	7151	2265	235	660	1050	N/A	6218	4090	1327	146	300	2220	3280
SK2163	9020	2100	7377	2365	255	680	1110	N/A	6408	4090	1329	146	500	2520	3660
SK2463	10280	2400	7390	2425	275	700	1130	N/A	6408	4090	1329	146	500	2820	3960
SK3063	14200	3000	7466	2697	315	740	1322	N/A	6408	4332	1408	146	500	3420	4610
SK3073	15500	3000	8466	2697	315	740	1322	N/A	7359	4755	1545	146	500	3420	4660

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

DIMENSIONS - SK SCREENS 4 DECKS



Screen Type	Total weight without media (kg)	Dimensions (mm) (* dimensions in 18° slope)													
		A	B	C	D	E	F (3 or 4 deck only)	G (4 deck only)	H*	J*	K*	L	M	N	O
SK1854	8500	1800	6055	2585	235	470	1090	470	5077	3424	1112	146	300	2220	3300
SK1864	10170	1800	7255	2585	235	470	1090	470	6218	4090	1329	146	300	2220	3360
SK2164	11200	2100	7579	2985	255	630	1150	630	6408	4090	1329	146	500	2520	3740
SK2464	12650	2400	7572	2985	275	610	1170	610	6408	4090	1329	146	500	2820	4060

Note ! Preliminary data. Please verify the latest dimensions from Product Line S&F

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SK SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - SK SCREENS

Screen Type	Approximate Net Shipping Dimensions				
	Net Weight Kg	Width (mm)	Height (mm)	Length (mm)	Volume (m3)
SK1542	4170	2370	1552	4490	16,5
SK1543	5320	2370	2002	4630	22,0
SK1852	5500	2670	1592	5690	24,2
SK1853	7540	2670	2170	5880	34,1
SK1854	9420	2700	2725	6060	44,6
SK1862	6640	2670	1700	6930	31,5
SK1863	9260	2670	2405	7160	46,0
SK1864	11350	2700	2725	7260	53,4
SK2162	7270	2970	1740	7130	36,8
SK2163	10060	3000	2505	7380	55,5
SK2164	12540	3010	3125	7580	71,3
SK2462	8060	3280	1825	7150	42,8
SK2463	11490	3300	2565	7390	62,6
SK2464	14240	3300	3125	7580	78,2
SK3062	11050	3910	1945	7180	54,6
SK3063	15780	3930	2837	7470	83,3
SK3072	12990	3900	1985	8190	63,4
SK3073	17350	3930	2837	8470	94,4
SK3082	14160	3900	1985	9190	71,1

* Net weight includes steel wire mesh media (estimated weights).

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Screen is shipped on loose timber and its drive mechanism is tied on the screen deck.
In all deliveries: springs, lower spring support parts and other parts are packed in a separate box or on pallets.
Counter weight guard is assembled on the screen.

When export packing is required (i.e. wooden crate etc.), please consult with Global Order Service Desk S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

GENERAL - SC SCREENS

The SC screens are designed for heavy-duty, medium and fine screening applications. The screens are circular motion inclined screens in two, three and four deck design. Standard inclination is 18-20 degrees, depending on the size of the machine. The decks can be equipped with any kind of modern synthetic screening media, wire mesh or steel plate. The SC range of screens is designed for general quarrying and mining applications and with a separation range from 140 mm down to 2 mm. The maximum feed size is generally limited to 300(400) mm somewhat depending on the selected screening media. The SC screens can also be used as splitter screens to divide flows within a plant and are frequently used for final screening of finished fractions. This range is also available with a successful water spray system. The all decks have separate stationary spray bars.

Preferred Applications

- For screening **after** primary crushing and for arduous mining applications.
- An extra heavy duty, heavy duty and fine screen from secondary stage to final accurate sizing.
- Size range 4.3-25.2 m²

Adjustability

The screen performance can easily be modified according to present conditions by adjusting the following factors:

- Screen angle (i.e. adjustable spring seats)
- Stroke length
- Rotation speed (i.e. transmission belt pulley)

Nominal Operating Limits

- Maximum feed size: 300 mm (with bulk density 1,6 t/m³)
- Maximum drop height: 750 mm
- Inclination range: 15-20 degrees (std. 18 deg.)
- Separation range: 1-140 mm
- Speed range: 600-1100 rpm
- Stroke range: 5-13 mm
- Acceleration: up to 3,5 x G (available up to 4,5 x G with low bed depth)
- Maximum material temperature: + 80 °C
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

SCOPE OF SUPPLY

Standard Delivery Includes

- Bolted screen body (assembly by Huck-bolting) of high quality steel plates, with top flanges. Standard installation slope 18 deg.
- Deck support frames, round crossbeams combining maximum strength with reduced weights.
- Welded deck design
- Mechanism, circular motion oil bath or grease type consisting of an eccentric shaft and spherical roller bearings and external adjustable unbalanced counterweights for stroke adjustment. Flywheel has SPB grooves for the transmission. When Dual mechanisms are used, two unbalanced shafts are synchronized with a timing belt.
- Screen decks are prepared for side tensioned media (May change according to the screening media selection).
- No kind of screening media included, selectable from options list.
- Belt drive transmission; V-belts, motor pulley, guards, electrical motor and pivoting motor base.
- Feed end closing, rubber dust seal curtain between the decks.
- Suspension, complete with base mounting support brackets, coil springs with covers, friction brakes (delivered loose).
- Wear protection, glued wear rubber on mechanism tube, bolted rubber elements on feed box and on discharge lips.
- Surface treatment according to Sandvik standard, components according to supplier's std painting.
- Installation, operating and maintenance manuals

Options

- All Sandvik screening medias are adaptable to every deck
- Dust encapsulation preparation
- Dust encapsulation, with roof and sealing parts
- Rubber lined cross members
- Washing spray bar system
- Drive with cardan shaft
- Other color than Sandvik scheme
- Tool kit for mechanism bearing change
- Special surface treatment (special painting or galvanizing)
- Special decks for third party screening media
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
- Preparation (in the factory before dispatch) for a long period storage

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

General technical data

- Circular stroke inclined screen
- For mining and construction applications
- Max. stroke 13 mm
- Max. allowed feed size 300 mm
- Recommended inclination: 18 degrees
- Available inclination range: 15-20 degrees
- Motors according to IEC standard, enclosure class IP55
- Transmission by v-belts and v-belt pulleys
- Spherical roller bearings, special for vibrating duty
- Oil bath lubrication OR grease lubrication for mechanism
- Mechanism is equipped with oil level gauge and breather
- Wear liners in feed box and discharge lips: 30 mm thick rubber
- Frame bolted with Huck bolts
- Screens wider or equal to 1 800 mm have steel center clamp for side tensioned media
- Min. horizontal clearances: across flow direction 30 mm, flow direction 50 mm
- Min. vertical clearance, screen foundation 80 mm

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DATA SHEETS – SC SCREENS 2- DECK



Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m ²)	Mechanism *)	Motor Size (kW) *)	Weight without media (kg) *)	Mechanism or motor size change when heavy media **)
SC1242	3600	1200	4,3	1 x 22	1 x 15	4200	
SC1542	3600	1500	5,4	1 x 22	1 x 15	4700	
SC1552	4800	1500	7,2	1 x 22	1 x 18,5	5400	
SC1852	4800	1800	8,6	1 x 22	1 x 18,5	6300	
SC1862	6000	1800	10,8	1 x 22	1 x 22	7200	X
				1 x 26	1 x 22	7400	upgraded
SC2152	4800	2100	10,1	1 x 22	1 x 22	6900	X
				1 x 26	1 x 22	7200	upgraded
SC2162	6000	2100	12,6	1 x 26	1 x 22	7900	
SC2452	4800	2400	11,5	1 x 26	1 x 22	7800	X
				1 x 26	1 x 30	8200	upgraded
SC2462	6000	2400	14,4	1 x 30	1 x 30	9300	
SC2472	7200	2400	17,3	1 x 30	1 x 37	10500	X
				1 x 34	1 x 37	11300	upgraded
SC2782	8400	2700	22,7	1 x 38	1 x 45	14400	X
				2 x 30	2 x 30	16600	upgraded
SC3062	6000	3000	18,0	1 x 34	1 x 37	12400	
SC3072	7200	3000	21,6	1 x 38	1 x 45	14400	
SC3082	8400	3000	25,2	2 x 30	2 x 30	18000	

*) Value for screen constructed for side tensioned screening media.

**) Consult with Product Line S&F for further information and data.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DATA SHEETS – SC SCREENS

3- DECK

Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m²)	Mechanism *)	Motor Size (kW) *)	Weight without media (kg) *)	Mechanism or motor size change when heavy media **)
SC1243	3600	1200	4,3	1 x 22	1 x 15	5100	
SC1553	4800	1500	7,2	1 x 22	1 x 22	6800	
SC1853	4800	1800	8,6	1 x 26	1 x 22	8300	
SC1863	6000	1800	10,8	1 x 30	1 x 30	9800	
SC2153	4800	2100	10,1	1 x 30	1 x 30	9000	
SC2163	6000	2100	12,6	1 x 30	1 x 37	10700	X
				1 x 34	1 x 37	11400	upgraded
SC2453	4800	2400	11,5	1 x 30	1 x 37	10400	X
				1 x 34	1 x 37	11200	upgraded
SC2463	6000	2400	14,4	1 x 34	1 x 37	12500	X
				1 x 38	1 x 45	13500	upgraded
SC2473	7200	2400	17,3	1 x 38	1 x 45	14600	X
				2 x 30	2 x 30	16900	upgraded
SC2783	8400	2700	22,7	2 x 30	2 x 37	19300	
SC3063	6000	3000	18,0	2 x 30	2 x 30	18500	
SC3073	7200	3000	21,6	2 x 30	2 x 37	20600	
SC3083	8400	3000	25,2	2 x 34	2 x 37	23200	X
				2 x 34	2 x 45	23200	upgraded

*) Value for screen constructed for side tensioned screening media.

**) Consult with Product Line S&F for further information and data.

DATA SHEETS – SC SCREENS

4- DECK

Screen Type	Deck Length (nominal)	Deck Width (nominal)	Screening Area (m²)	Mechanism *)	Motor Size (kW)	Weight without media (kg) *	Mechanism or motor size change when heavy media **)
SC1864	6000	1800	10,8	1 x 34	1 x 37	12300	X
				1 x 34	1 x 45	12600	upgraded
SC2464	6000	2400	14,4	2 x 26	2 x 22	16300	X
				2 x 30	2 x 30	16800	upgraded

*) Value for screen constructed for side tensioned screening media.

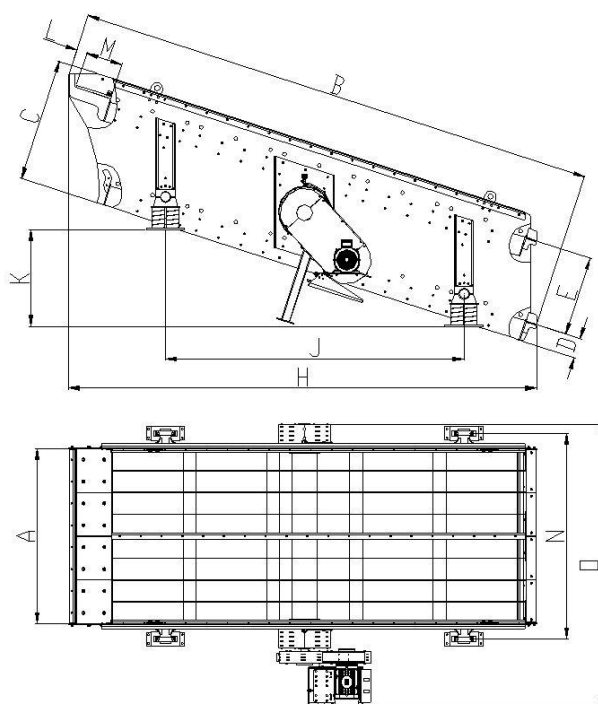
**) Consult with Product Line S&F for further information and data

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DIMENSIONS – SC SCREENS 2 DECKS



Screen Type	Weight without media (kg) **	Weight without media (kg) ***	Dimensions (mm)						
			(* dimensions at 18° slope)						
			A B	C	D E	H*	J* K*	L M	N O**
SC1242	4200	4300	1200 4750	1700	160 1130	4072	2853 927	170 300	1620 2840
SC1542	4700	4700	1500 4760	1780	200 1170	4072	2891 939	170 300	1920 3140
SC1552	5400	5400	1500 5960	1780	200 1170	5213	3424 1112	170 300	1920 3160
SC1852	6300	6200	1800 6260	1780	200 1170	5514	3424 1112	164 600	2220 3460
SC1862	7200	7400	1800 7460	1780	200 1170	6655	3994 1298	164 600	2220 3460
SC2152	6900	7200	2100 6280	1860	220 1230	5514	3424 1112	164 600	2520 3760

** Value for screen prepared for side tensioned screening media.

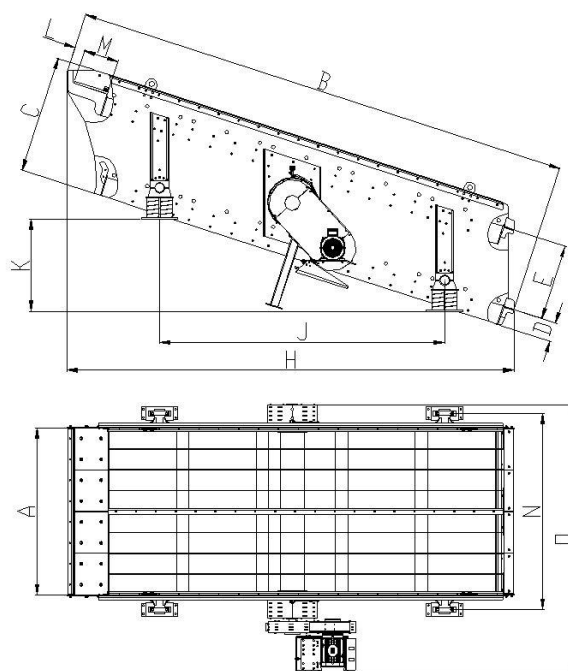
*** Value for screen prepared for Sandvik Modular screening media.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DIMENSIONS – SC SCREENS 2 DECKS



Screen Type	Weight without media (kg) **	Weight without media (kg) ***	Dimensions (mm) (* dimensions at 18° slope)						
			A B	C	D E	H*	J* K*	L M	N O**
SC2162	7900	8100	2100	1860	220	6655	3994	164	2520
			7480		1230		1298	600	3780
SC2452	7800	8200	2400	1900	260	5514	3424	164	2820
			6280		1230		1112	600	4080
SC2462	9300	9500	2400	1900	260	6655	3994	164	2820
			7480		1230		1298	600	4130
SC2472	10500	11300	2400	1900	260	7797	5136	164	2820
			8680		1230		1669	600	4220
SC2782	14400	16600	2700	1900	260	8938	6277	164	3130
			9880		1230		2040	600	4550
SC3062	12400	11700	3000	1980	300	6655	4565	165	3430
			7500		1270		1483	600	4830
SC3072	14400	14700	3000	1980	300	7797	5136	165	3430
			8700		1270		1669	600	4850
SC3082	18000	17700	3000	1980	300	8938	6277	165	3430
			9900		1270		2040	600	4750

** Value for screen prepared for side tensioned screening media.

*** Value for screen prepared for Sandvik Modular screening media

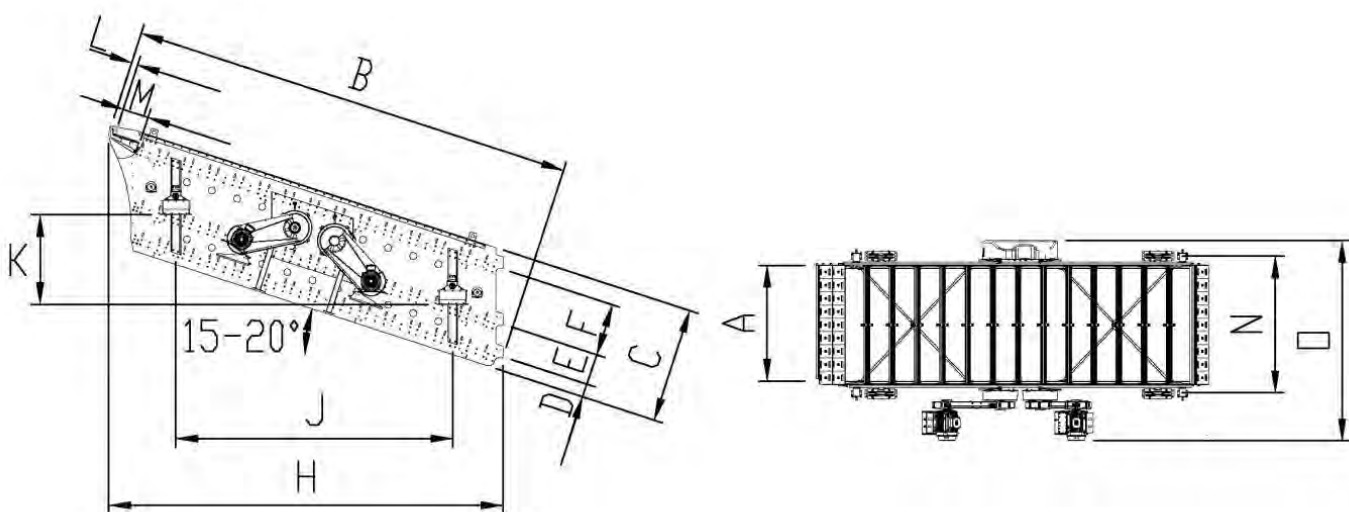
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DIMENSIONS - SC SCREENS

3 DECKS



Screen Type	Weight without media (kg) **	Weight without media (kg) ***	Dimensions (mm) (* dimensions at 18° slope)							
			A B	C	D E	F	H*	J* K*	L M	N O**
SC1243	5100	5200	1200 4940	2300	160 600	1130	4072	2853 927	170 300	1620 2840
SC1553	6800	6900	1500 6170	2420	200 640	1170	5213	3424 1112	170 300	1920 3160
SC1853	8300	7900	1800 6470	2420	200 640	1170	5514	3424 1112	164 600	2220 3480
SC1863	9700	9800	1800 7670	2420	200 640	1170	6655	3994 1298	164 600	2220 3530
SC2153	9000	9300	2100 6510	2560	220 700	1230	5514	3424 1112	164 600	2520 3830
SC2163	10700	11400	2100 7710	2560	220 700	1230	6655	3994 1298	164 600	2520 3920

** Value for screen prepared for side tensioned screening media.

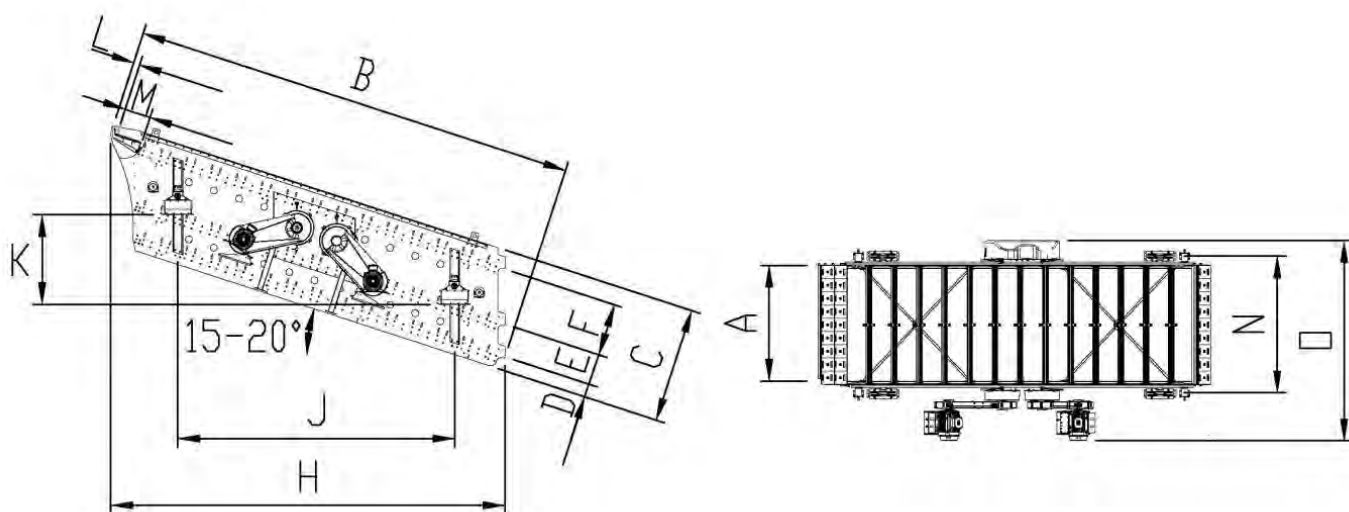
*** Value for screen prepared for Sandvik Modular screening media

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DIMENSIONS - SC SCREENS 3 DECKS



Screen Type	Weight without media (kg) **	Weight without media (kg) ***	Dimensions (mm) (* dimensions at 18° slope)							
			A B	C	D E	F	H*	J* K*	L M	N O**
SC2453	10400	11200	2400 6510	2600	260 700	1230	5514	3424 1112	164 600	2820 4220
SC2463	12500	13500	2400 7710	2600	260 700	1230	6655	3994 1298	164 600	2820 4230
SC2473	14600	16900	2400 8905	2600	260 700	1230	7797	5136 1669	164 600	2820 4250
SC2783	19300	20500	2700 10110	2600	260 700	1230	8938	6277 2040	164 600	3130 4550
SC3063	18500	18000	3000 7740	2720	300 740	1270	6655	4565 1483	165 600	3430 4750
SC3073	20600	20500	3000 8940	2720	300 740	1270	7797	5136 1669	165 600	3430 4850
SC3083	23200	22200	3000 10140	2720	300 740	1270	8938	6277 2040	165 600	3430 4860

** Value for screen prepared for side tensioned screening media.

*** Value for screen prepared for Sandvik Modular screening media

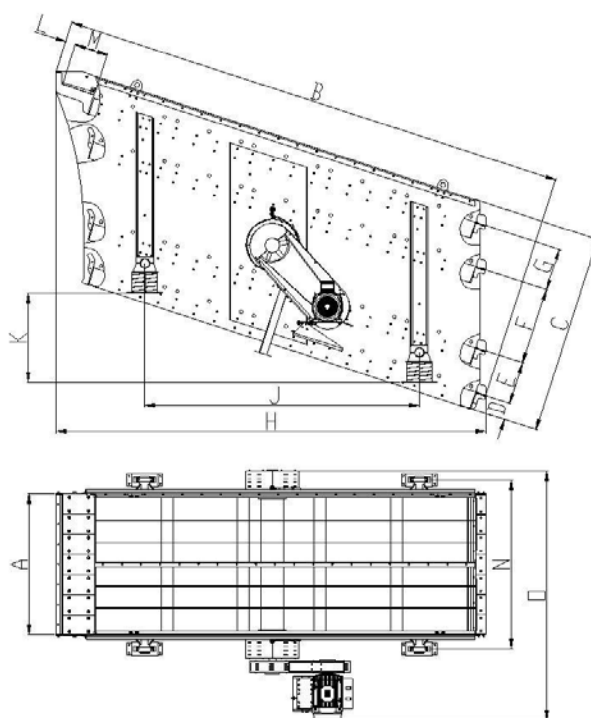
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

DIMENSIONS - SC SCREENS

4 DECKS



Screen Type	Weight without media (kg) **	Weight without media (kg) ***	Dimensions (mm) (* dimensions at 18° slope)							
			A B	C	D E	F G	H*	J* K*	L M	N O**
SC1864	12300	12600	1800 7850	2980	200 610	1170 610	6656	4565 1483	150 600	2220 3650
SC2464	16300	16800	2400 7845	2980	215 623	1146 668	6656	3994 1298	150 600	2820 4120

** Value for screen prepared for side tensioned screening media.

*** Value for screen prepared for Sandvik Modular screening media

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SC SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - SC SCREENS

Screen Type	Approximate Net Shipping Dimensions				
	Net Weight (kg) *	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SC1242	4400	4750	2280	1865	20,2
SC1243	5400	4940	2280	2465	27,8
SC1542	5000	4760	2580	1945	23,9
SC1552	5750	5960	2580	1945	30,0
SC1553	7350	6170	2580	2585	41,2
SC1852	6700	6260	2880	1945	35,1
SC1853	9000	6470	2890	2585	48,4
SC1862	7750	7460	2890	1945	42,0
SC1863	10500	7670	2900	2585	57,5
SC1864	13400	7830	2910	3145	71,7
SC2152	7500	6280	3180	2025	40,5
SC2153	9800	6510	3200	2725	56,8
SC2162	8550	7480	3190	2025	48,4
SC2163	11650	7710	3210	2725	67,5
SC2452	8400	6280	3490	2065	45,3
SC2453	11300	6510	3500	2765	63,0
SC2462	10000	7480	3500	2065	54,1
SC2463	13600	7710	3510	2765	74,9
SC2464	17800	7830	3510	3145	86,5
SC2472	11400	8680	3500	2065	62,8
SC2473	15900	8910	3530	2765	87,0
SC2782	15550	9880	3830	2065	78,3
SC2783	21000	10110	3830	2765	107,1
SC3062	13300	7500	4110	2145	66,2
SC3063	19900	7740	4130	2885	92,3
SC3072	15500	8700	4130	2145	77,1
SC3073	22200	8940	4130	2885	106,6
SC3082	19250	9900	4140	2145	88,0
SC3083	25000	10140	4140	2885	121,2

* Includes steel wire mesh media (Estimated weights).

When screen with Modular Media in question please verify the weight from Product Line S&F.

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Screen is shipped on loose timber and its drive mechanism is tied on the screen deck. In all deliveries: springs, lower spring support parts and other parts are packed in a separate box or on pallets. Counter weight guard is assembled on the screen.

When export packing is required (i.e. wooden crate etc.), please consult with Global Order Service Desk.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

GENERAL – LF SCREENS

The LF screen series is designed for classification screening as well as for scalping ore ahead of a cone crusher. Screens are available with 1, 2 or 3 decks but also half decks are available as a special option. Additional information regarding available options can be found on page “Scope of Supply”.

Preferred Applications

- The height is limited by the surrounding facilities
- Screening of small and short fractions
- Heavy material is loaded on the screen
- Linear or elliptical stroke improves the screening
- Mining applications
- Quick and efficient maintenance procedures are essential (i.e. easily accessible vibrating mechanism)

Adjustability

The screen performance can easily be modified according to present conditions by adjusting the following factors:

- Screen angle (by adjustable spring seats)
- Stroke angle (by moveable vibrating mechanism)
- Stroke length (by extra counterweights)
- Rotation speed (by transmission timing belt pulley)
- The shape of the stroke (from “thin” ellipse to linear)

Nominal Operating Limits

- Maximum feed size: 300 mm (with bulk density 1,6 t/m³)
 - Mining screens (with bulk density 1,6 t/m³): 350 mm
 - Mining screens (with bulk density 2,5 t/m³): 250 mm
- Maximum drop height: 750 mm
- Inclination range - all except mining screens: 0-10 degrees (std 5 degrees)
- Inclination range - mining screens: 0-10 degrees (std 10 degrees)
- Separation range: 2-100 mm
- Standard Speed range: 730 - 940 rpm
- Stroke range: 5-16 mm
- Acceleration: up to 5,0 x G
- Maximum material temperature: +80 °C
- Ambient temperature range: -20 to +40 °C

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

SCOPE OF SUPPLY – LF SCREENS

Standard Delivery Includes

- Screen body and vibrating mechanism bolted together
- Drive unit including electric motor(s), motor base(s) and power transmission components
- Support coil springs and spring seats (i.e. top and bottom parts)
- Deck construction for side tensioned media
- Side clamps and center clamps when side tensioned media is applicable (clamps made of steel)
- 30 mm rubber elements as wear liners on the bottom of the feed box
- Discharge lips on top and mid decks (i.e. replaceable wear liners made of AR400 steel)
- Surface treatment according to Sandvik standard, components acc. to supplier's std painting.
- Installation, operating and maintenance manuals

Options

- Deck construction for all Sandvik screening media (adaptable to every deck)
- Dust encapsulation preparation (for dust canvas)
- Dust encapsulation (canvas roof type)
- Washing spray bar system
- Deck cross member tubes protection by glued wear resistant rubber (6 mm)
- Side plate protection by AR steel liners on top deck (i.e. for applications with large top size or high bed thickness on the top deck)
- AR steel liners for the feed box
- Discharge lip for bottom deck (i.e. wear resistant rubber or AR steel)
- End tensioned deck instead of side tensioned
- Half-decks (i.e. intermediate short deck)
- Cardan shaft (direct) drive for all screen sizes
- Frequency converter for cardan shaft drive
- Tool kit for mechanism bearing change
- Special surface treatment for corrosive atmosphere (special paint or galvanizing)
- Special decks for third party screening media
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
- Preparation (in the factory before dispatch) for a long period storage

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

Mining Duty Screen Delivery Includes

- Screen body and vibrating mechanism bolted together
- Drive unit including electric motor(s), motor base(s) and power transmission components
- Support coil springs and spring seats (i.e. top and bottom parts)
- Deck construction for side tensioned media OR Modular media
- Side clamps and center clamps when side tensioned media is applicable (clamps made of steel)
- Discharge lips on top and mid decks, includes replaceable rubber liners
- Deck cross member tubes protection by heavy duty rubber (10 mm)
- Replaceable rubber liners on bottom (50 mm) and sides (15 mm) for feed box.
- Surface treatment according to Sandvik standard, components acc. to supplier's std painting.
- Installation, operating and maintenance manuals

Options for Mining duty screen

- All Sandvik screening media are adaptable to every deck
- Dust encapsulation preparation (for. dust canvas)
- Dust encapsulation (two options: canvas roof type OR steel box type)
- Washing spray bar system
- Side plate protection by AR steel liners on top deck (i.e. for applications with large top size or high material bed thickness on the top deck)
- Discharge lip for bottom deck including replaceable rubber liners
- Cardan shaft (direct) drive for all screen sizes
- Frequency converter for cardan shaft drive
- Tool kit for mechanism bearing change
- Special surface treatment for corrosive atmosphere (special paint or galvanizing)
- Special decks for third party screening media
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)

Special Media Requirements

Please consult with Product Line S&F if any of the following cases are considered:

- **If other media than side tensioned media is required (and LF screens for mining duty), there may be need for bigger mechanism for some screen sizes. Those screen sizes are marked with an "X" in the data sheets tables. The size of the vibrating mechanism can easily be changed according to different screening applications. Standard mechanism is applicable for steel wire meshes.**
- If special, third party media is required

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

General Technical Data

- Stroke angle: 55-65 degrees
- Normal inclination range: 0-10 degrees
- Recommended inclination: 5 degrees (for Mining Duty versions 10 deg)
- Motors according to IEC standard, enclosure class IP55, 400V/50Hz /1500rpm as standard
- Spherical roller bearings
- Oil bath lubrication
- Mechanism is equipped with oil level gauge and breather
- Frame bolted with huck bolts
- Mechanism is fixed to the screen body with special pre-tensioned bolts
- Feed box bottom has 30 mm rubber wear liner (for Mining Duty versions 50 mm rubber)
- Discharge spout has 12 mm AR400 steel wear liners (for Mining Duty versions rubber liners)
- Screens wider or equal to 1 800 mm have steel center clamp for side tensioned media
- Standard drawings exhibits the screen with side tensioned media
- Available media options: Sandvik module, self-supporting, etc
- Stroke length is adjustable by adding extra weights

Note:

All LF screens are available for mining duty as well.

Mining duty screens contains special features explained in previous page and possible combination of other, selected options. For more detailed information please consult with Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

DATA SHEETS – LF SCREENS

1-DECK



	LF1030S	LF1230S	LF1240S	LF1540S	LF1550S
Inside Width (mm)	1 020	1 220	1 220	1 520	1 520
Inside Length (mm)	3 000	3 000	4 000	4 000	5 000
Screening Area (m ²)	3,0	3,6	4,8	6,0	7,5
Weight without screen media (kg)	2 500	2 800	3 250	3 450	4 800
Installed Power (kW)	2 x 5,5	2 x 5,5	2 x 5,5	2 x 5,5	2 x 11
Mechanism Type	Dual 16	Dual 16	Dual 16	Dual 16	Dual 20

Mining Duty Screens

Weight without screen media (kg)	*)	*)	*)	*)	*)
Installed Power (kW)	2 x 5,5	2 x 5,5	2 x 5,5	2 x 5,5	*)
Mechanism Type	Dual 16	Dual 16	Dual 16	Dual 16	Dual 20

	LF1850S	LF1860S	LF2160S	LF2460S	LF2470S	LF3060S
Inside Width (mm)	1 820	1 820	2 120	2 420	2 420	3020
Inside Length (mm)	5 000	6 000	6 000	6 000	7 000	6000
Screening Area (m ²)	9,0	10,8	12,6	14,4	16,8	18
Weight without screen media (kg)	5 100	5 500	5 900	6 800	7 500	13000
Installed Power (kW)	2 x 11	2 x 11	2 x 11	2 x 15	2 x 15	2 x 30
Mechanism Type	Dual 20	Dual 20	Dual 20	Dual 24	Dual 24	Dual 34

Mining Duty Screens

Weight without screen media (kg)	5 400	5 850	6 100	7 000	*)	13 400
Installed Power (kW)	2 x 11	2 x 11	2 x 11	2 x 15	*)	2 x 30
Mechanism Type	Dual 20	Dual 20	Dual 20	Dual 24	*)	Dual 34

Contact PL if screen weight
increased by heavy media or dust
enclosure parts

X

X

Bulk density for screen calculations and values 1,6 t/m³.

Values are given for screens with side tensioned screening media decks. For other type of medias always verify the correct data from Product Line S&F.

*) Contact Product Line S&F for more specific information.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

DATA SHEETS – LF SCREENS

2- DECK



	LF1030D	LF1230D	LF1240D	LF1540D	LF1550D
Inside Width (mm)	1 020	1 220	1 220	1 520	1 520
Inside Length (mm)	3 000	3 000	4 000	4 000	5 000
Screening Area (m ²)	3,0	3,6	4,8	6,0	7,5
Weight without screen media (kg)	2 800	3 400	4 100	4 800	5 400
Installed Power (kW)	2 x 5,5	2 x 5,5	2 x 11	2 x 11	2 x 11
Mechanism Type	Dual 16	Dual 16	Dual 20	Dual 20	Dual 20

Mining Duty Screens

Weight without screen media (kg)	*)	*)	4 400	5 200	5 800
Installed Power (kW)	2 x 5,5	*)	2 x 11	2 x 11	2 x 11
Mechanism Type	Dual 16	*)	Dual 20	Dual 20	Dual 20

Contact PL if screen weight increased
by heavy media or dust enclosure parts

x

	LF1850D	LF1860D	LF2160D	LF2450D	LF2460D
Inside Width (mm)	1 820	1 820	2 120	2420	2 420
Inside Length (mm)	5 000	6 000	6 000	5000	6 000
Screening Area (m ²)	9,0	10,8	12,6	11,5	14,4
Weight without screen media (kg)	6 150	7 800	8 350	10 400	11 500
Installed Power (kW)	2 x 11	2 x 15	2 x 15	2 x 22	2 x 22
Mechanism Type	Dual 20	Dual 24	Dual 24	Dual 30	Dual 30

Mining Duty Screens

Weight without screen media (kg)	6 600	8 200	8 750	11 000	12 600
Installed Power (kW)	2 x 11	2 x 15	2 x 15	2 x 22	2 x 22
Mechanism Type	Dual 20	Dual 24	Dual 24	Dual 30	Dual 30

Contact PL if screen weight
increased by heavy media
or dust enclosure parts

x

x

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

DATA SHEETS – LF SCREENS

2- DECK

	LF2470D	LF2770D	LF3060D	LF3070D
Inside Width (mm)	2 420	2720	3020	3 020
Inside Length (mm)	7 000	7000	6000	7 000
Screening Area (m ²)	16,8	18,9	18	21,0
Weight without screen media (kg)	13 200	14 550	14 700	15800
Installed Power (kW)	2 x 22	2 x 30	2 x 30	2 x 30
Mechanism Type	Dual 30	Dual 34	Dual 34	Dual 34
Mining Duty Screens				
Weight without screen media (kg)	*)	*)	16 600	19 400
Installed Power (kW)	*)	*)	2 x 37	2 x 37
Mechanism Type	*)	*)	Dual 38	Dual 38
Contact PL when screen weight increased by heavy media or dust enclosure parts	X		X	X

Bulk density for screen calculations and values 1,6 t/m³.

Values are given for screens with side tensioned screening media decks. For other type of medias always verify the correct data from Product Line S&F.

*) Contact Product Line S&F for more specific information

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

DATA SHEETS – LF SCREENS 3- DECK



	LF1030T	LF1240T	LF1540T	LF1550T	LF1850T
Inside Width (mm)	1 020	1 220	1 520	1 520	1 820
Inside Length (mm)	3 000	4 000	4 000	5 000	5 000
Screening Area (m ²)	3,0	4,8	6,0	7,5	9,0
Weight without Media (kg)	3 500	4 800	5 100	6 850	8 300
Installed Power (kW)	2 x 5,5	2 x 11	2 x 11	2 x 15	2 x 15
Mechanism Type	Dual 16	Dual 20	Dual 20	Dual 24	Dual 24

Mining Duty Screens

Weight without screen media (kg)	*)	*)	*)	*)	*)
Installed Power (kW)	*)	*)	*)	*)	*)
Mechanism Type	*)	*)	*)	*)	*)

Contact PL when screen weight increased by heavy media or dust enclosure parts

X

X

X

	LF1860T	LF2160T	LF2460T	LF2470T
Inside Width (mm)	1 820	2 120	2 420	2 420
Inside Length (mm)	6 000	6 000	6 000	7 000
Screening Area (m ²)	10,8	12,6	14,4	16,8
Weight without Media (kg)	11 000	12 600	14 600	17 500
Installed Power (kW)	2 x 22	2 x 22	2 x 30	2 x 30
Mechanism Type	Dual 30	Dual 30	Dual 34	Dual 34

Mining Duty Screens

Weight without screen media (kg)	*)	*)	15 600	*)
Installed Power (kW)	*)	*)	2 x 30	*)
Mechanism Type	*)	*)	Dual 34	*)

Contact PL if screen weight increased by heavy media or dust enclosure parts.

X

Bulk density for screen calculations and values 1,6 t/m³.

Values are given for screens with side tensioned screening media decks. For other type of medias always verify the correct data from Product Line S&F.

*) Contact Product Line S&F for more specific information.

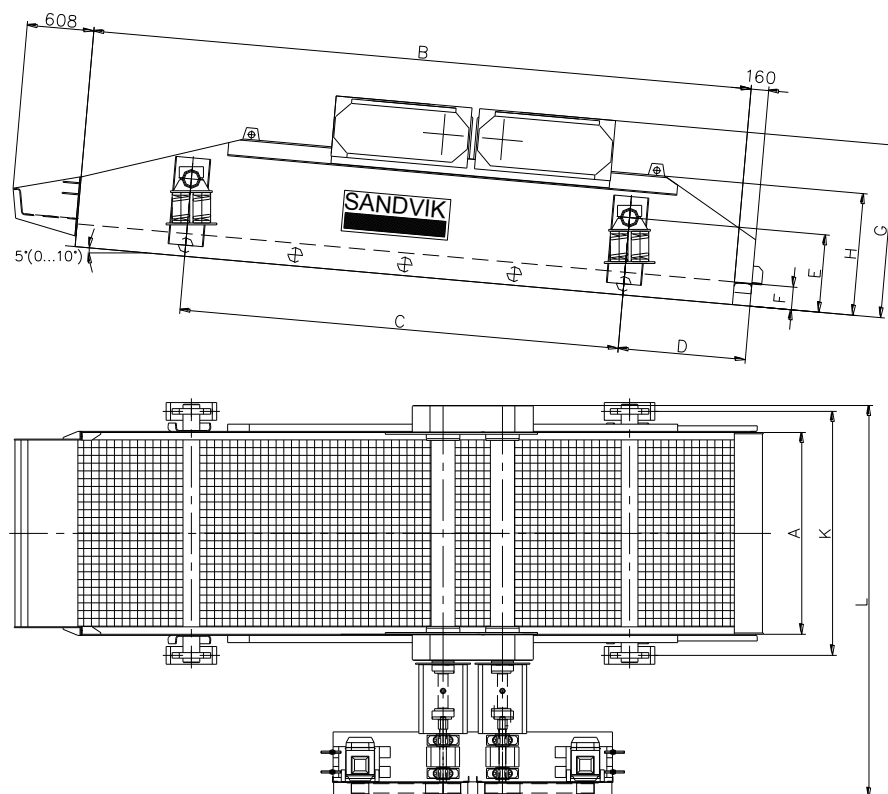
ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

DIMENSIONS - LF SCREENS

1- DECK



Screen Size

	Dimensions (mm)									
	A	B	C*	D*	E*	F*	G*	H*	K	L
LF 1030 S	1020	3000	2000	580	400	140	1210	800	1400	2675
LF 1230 S	1220	3000	2000	580	400	160	1210	800	1600	2875
LF 1240 S	1220	4000	3000	580	425	160	1310	900	1600	2875
LF 1540 S	1520	4000	3000	580	425	180	1310	900	1900	3175
LF 1550 S	1520	5000	4000	580	450	180	1485	1000	1900	3235
LF 1850 S	1820	5000	4000	580	450	200	1485	1000	2200	3535
LF 1860 S	1820	6000	4000	1160	500	200	1585	1100	2200	3535
LF 2160 S	2120	6000	4000	1160	500	240	1585	1100	2500	3835
LF 2460 S	2420	6000	4000	1160	500	260	1660	1100	2800	4140
LF 2470 S	2420	7000	5000	1160	500	260	1810	1250	2800	4140
LF3060 S	3020	5980	4200	1045	650	300	2040	1250	3400	5000

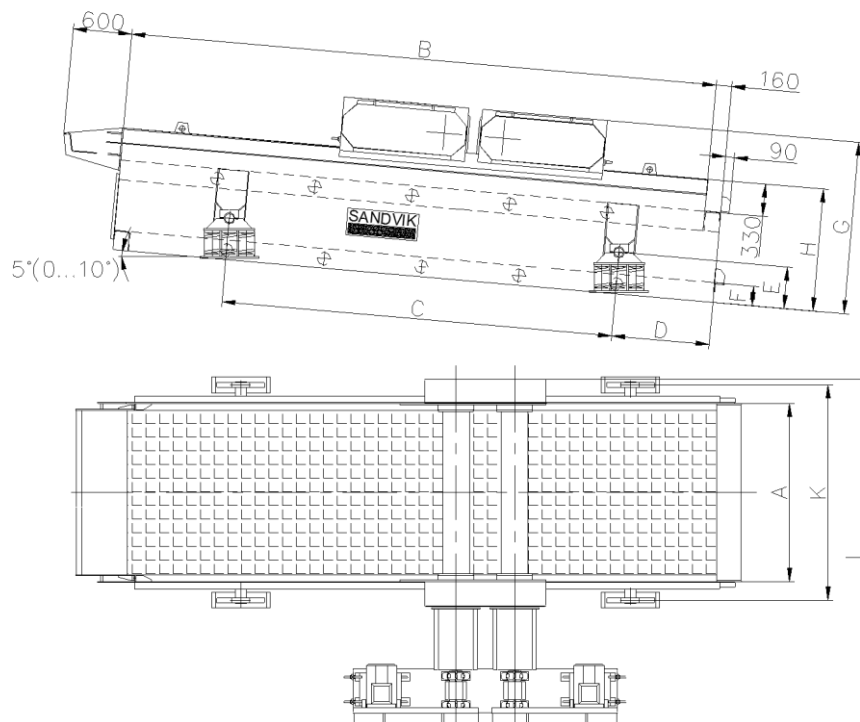
* May change, depends on media selection. Also in Mining Duty screens these dimensions may differ so always verify the values from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

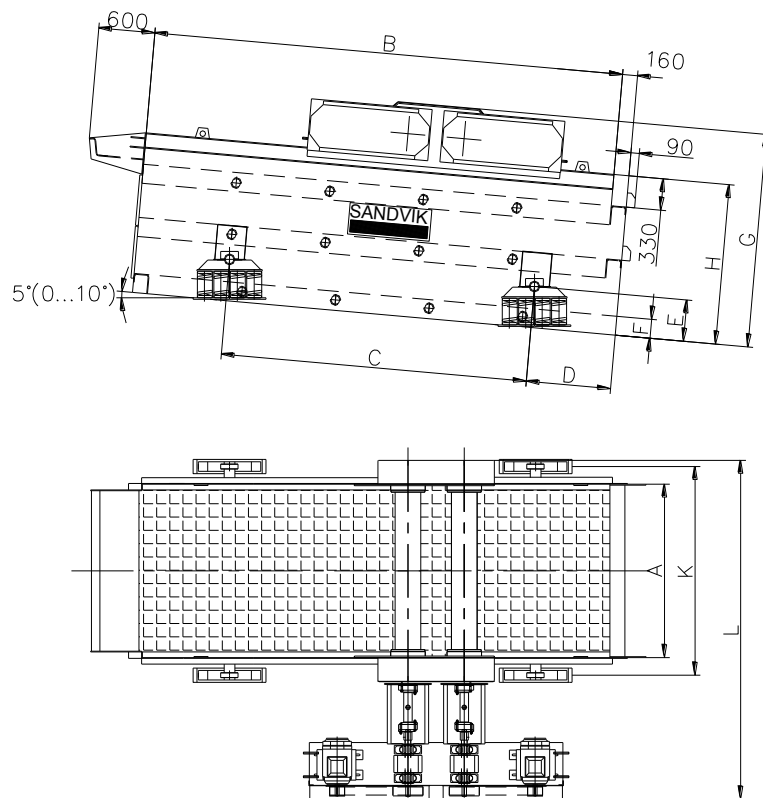
DIMENSIONS - LF SCREENS 2- DECKS



Screen Size	Dimensions (mm)									
	A	B	C*	D*	E*	F*	G*	H*	K	L
LF 1030 D	1020	3000	2000	580	345	140	1390	980	1400	2675
LF 1230 D	1220	3000	2000	580	365	160	1390	980	1600	2875
LF 1240 D	1220	4000	3000	580	365	160	1505	1020	1600	2935
LF 1540 D	1520	4000	3000	580	385	180	1505	1020	1900	3235
LF 1550 D	1520	5000	4000	580	385	180	1555	1070	1900	3235
LF 1850 D	1820	5000	4000	580	405	200	1555	1070	2200	3535
LF 1860 D	1820	6000	5000	580	405	200	1810	1250	2200	3540
LF 2160 D	2120	6000	5000	580	455	240	1810	1250	2500	3840
LF 2450 D	2420	5000	4000	tba	495	260	2010	1300	2800	4300
LF 2460 D	2420	6000	5000	580	475	260	1960	1250	2800	4285
LF 2470 D	2420	7000	6000	580	475	260	2160	1450	2800	4285
LF 2770 D	2720	7000	6000	580	495	300	2205	1450	3100	4635
LF 3060 D	3020	6000	4000	tba	550	300	2305	1450	3400	5100
LF 3070 D	3020	7000	6000	580	495	300	2205	1450	3400	4935

* May change, depends on media selection. Also in Mining Duty screens these dimensions may differ so always verify the values from the Product Line S&F.

DIMENSIONS - LF SCREENS 3- DECKS



Screen Size	Dimensions (mm)									
	A	B	C*	D*	E*	F*	G*	H*	K	L
LF 1030 T	1020	3000	2000	580	345	140	1790	1380	1400	2675
LF 1240 T	1220	4000	3000	580	365	160	1925	1440	1600	2935
LF 1540 T	1520	4000	3000	580	385	180	1985	1599	1900	3235
LF 1550 T	1520	5000	4000	580	385	180	2060	1500	1900	3240
LF 1850 T	1820	5000	4000	580	405	200	2240	1680	2200	3540
LF 1860 T	1820	6000	5000	580	405	200	2390	1680	2200	3685
LF 2160 T	2120	6000	5000	580	455	240	2450	1740	2500	3985
LF 2460 T	2420	6000	5000	580	475	260	2510	1800	2800	4325
LF 2470 T	2420	7000	6000	580	475	260	2555	1800	2800	4325

* May change, depends on media selection. Also in Mining Duty screens these dimensions may differ so always verify the values from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - LF SCREENS

Screen Type	Drive size	Approximate Net Shipping Dimensions without drive				
		Net Weight (kg) *	Length (mm)	Width (mm)	Height (mm) **	Volume (m ³)
LF1030S	16	2 100	3750	1600	1500	9.0
LF1230S	16	2 300	3750	1800	1500	10.1
LF1240S	16	2 800	4750	1800	1600	13.7
LF1540S	16	3 000	4750	2100	1600	16.0
LF1550S	20	4 000	5750	2100	1700	20.5
LF1850S	20	4 500	5750	2470	1700	24.1
LF1860S	20	5 000	6750	2470	1800	30.0
LF2160S	20	5 500	6750	2770	1800	33.7
LF2460S	24	7 000	6750	3130	1900	40.1
LF2470S	24	7 900	7750	3130	1900	46.1
LF3060S	34	13000	6850	3710	2040	51.8
LF1030D	16	2 700	3810	1600	1700	10.4
LF1230D	16	3 000	3810	1800	1700	11.7
LF1240D	20	3 900	4810	1800	1800	15.6
LF1540D	20	4 200	4810	2100	1800	18.2
LF1550D	20	4 800	5810	2100	1800	22.0
LF1850D	20	5 600	5810	2470	1800	25.8
LF1860D	24	7 200	6810	2470	2100	35.3
LF2160D	24	8 000	6810	2830	2100	40.5
LF2450D	30	10500	5650	3010	2010	34.2
LF2460D	30	11 000	6810	3300	2200	49.4
LF2470D	30	12 800	7810	3300	2400	61.9
LF2770D	34	15 100	7810	3600	2500	70.3
LF3060D	34	14400	6850	3790	2310	60.0
LF3070D	34	16 200	7810	3900	2500	76.1
LF1030T	16	3 400	3810	1600	2100	12.8
LF1240T	20	4 800	4810	1800	2200	19.0
LF1540T	20	5 400	4810	2100	2200	22.2
LF1550T	24	6 700	5810	2100	2300	28.1
LF1850T	24	8 100	5810	2470	2500	35.9
LF1860T	30	11 200	6810	2470	2600	43.7
LF2160T	30	12 700	6810	2830	2700	52.0
LF2460T	34	15 200	6810	3300	2800	62.9
LF2470T	34	16 700	7810	3300	2800	72.2

* Includes media: 50 kg/deck length

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from GOSD of S&F.

Approximate values are for standard screen without options.

** Includes the possibility to get higher side plates and timber under the screen

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

LF SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - LF SCREENS DRIVES AND ACCESSORIES

Drive size	Approximate Net Shipping Dimensions for drives and accessories				
	Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
16	1000	2750	1650	750	3.4
20	1250	2750	1650	750	3.4
24	1550	2750	1650	950	4.3
30	1900	2900	1750	1000	5.1
34	2000	2900	1750	1000	5.1
38	2200	3000	1750	1200	6.3

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options, like dust encapsulation parts in a separate packages etc.

Screen body is shipped on loose timber.

Screens having a cardan shaft drive: the motor, cardan shafts and motor base are packed on pallet or in separate package.

In all deliveries: springs, lower spring support parts and extra counter weights are packed in a separate box or pallet, which is tied on top of the screen deck. Or alternatively loose parts are put in the same package with the drive unit parts.

When export packing is required (wooden crate etc.) please consult with Global Order Service Desk S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

GENERAL - MSO SCREENS

The MSO screen has circular motion stroke in the center of the screen and elliptical stroke at the feed and discharge end. The primary advantage of that is that it increases the material speed at the feed end while it in the same time decreases the material speed at the discharge end. The combined effect of these aspects will evidently result in a more accurate screening.

Screens are available with 1, 2 or 3 decks in the standard range of screens and half decks are available as an option. Additional information regarding other main options can be reviewed on page "Scope of supply".

The MSO is a classification screen. Frame construction is like the LF screen. The most significant difference between these two units is that the MSO has only one vibrating mechanism, which makes it less expensive than the LF screen. MSO screen is installed in 15-20 deg inclination so it requires more head room than LF screen

Preferred Applications

- High bulk density of the material loaded on the screen (Note: Please consult with Sandvik S&F Product Line prior to any quoting, if a high content of the material is passing over the deck(s))
- Mining applications
- Construction applications
- Quick and efficient maintenance procedures are essential (i.e. easily accessible vibrating mechanism)

Adjustability

The screen performance can easily be modified according to present conditions by adjusting the following factors:

- Screen angle (by adjustable spring seats)
- Stroke angle (by moveable vibrating mechanism)
- Stroke length (by extra counterweights)
- Rotation speed (by transmission belt pulley, direct drive through cardan shaft requires a frequency converter)

Nominal Operating Limits

- Maximum feed size: 300 mm (with bulk density 1,6 t/m³)
 - Mining screens (with bulk density 1,6 t/m³): 350 mm
 - Mining screens (with bulk density 2,5 t/m³): 250 mm
- Maximum drop height: 750 mm
- Inclination range: 15-20 degrees (std. 18 deg.)
- Separation range: 2-140 mm
- Speed range: 730-940 rpm
- Stroke range: 4-16 mm
- Acceleration: up to 5,0 x G (discharge end)
- Maximum material temperature: + 80 °C
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

SCOPE OF SUPPLY

Standard delivery includes

- Screen body and vibrating mechanism bolted together
- Drive unit including electric motor(s), motor base(s) and power transmission components
- Support coil springs and spring seats (i.e. top and bottom parts)
- Deck construction for side tensioned media
- Side clamps and center clamps when side tensioned media is applicable (clamps made of steel)
- 30 mm rubber elements as wear liners on the bottom of the feed box
- Discharge lips on top and mid decks (replaceable wear liners made of AR steel HB360-440)
- Surface treatment according to Sandvik standard, components acc. to supplier's std painting.
- Installation, operating and maintenance manuals

Options

- All Sandvik screening media adaptable to every deck
- Dust encapsulation preparation (for dust canvas)
- Dust encapsulation (canvas roof type)
- Washing spray bar system
- Deck cross member tubes protection by glued wear resistant rubber (6 mm)
- Side plate protection by AR steel liners on top deck
- AR steel liners for the feed box
- Discharge lip for bottom deck (i.e. wear resistant rubber or AR steel)
- End tensioned deck instead of side tensioned
- Half-decks (i.e. intermediate short deck)
- Cardan shaft (direct) drive for all screen sizes, frequency converter for cardan shaft drive
- Tool kit for mechanism bearing change
- Special surface treatment for corrosive atmosphere (special paint or galvanizing)
- Special decks for third party screening media
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
- Preparation (in the factory before dispatch) for a long period storage

For mining applications the screen delivery includes

- Screen body and vibrating mechanism bolted together
- Drive unit including electric motor(s), motor base(s) and power transmission components
- Support coil springs and spring seats (i.e. top and bottom parts)
- Deck construction for side tensioned media OR Modular media
- Side clamps and center clamps when side tensioned media is applicable (clamps made of steel)
- Discharge lips on top and mid decks, includes replaceable rubber liners
- Deck cross member tubes protection by heavy duty rubber (10 mm)
- Replaceable rubber liners on bottom (50 mm) and sides (15 mm) for feedbox.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

SCOPE OF SUPPLY cont.

- Surface treatment according to Sandvik standard, components acc. to supplier's std painting.
- Installation, operating and maintenance manuals

Options for mining application screens

- All Sandvik screening media are adaptable to every deck
- Dust encapsulation preparation
- Dust encapsulation (canvas or roof type)
- Washing spray bar system
- Side plate protection by AR steel liners on top deck
- Discharge lip for bottom deck including replaceable rubber liners
- Cardan shaft (direct) drive for all screen sizes, frequency converter for cardan shaft drive
- Tool kit for mechanism bearing change
- Special surface treatment for corrosive atmosphere (special paint or galvanizing)
- Special decks for third party screening media
- Special decks for bulk density over 1,6 t/m³
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
- Preparation (in the factory before dispatch) for a long period storage

General technical data

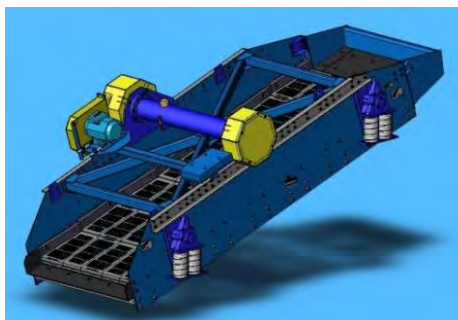
- Type of stroke:
 - Center: circular motion
 - Feed and Discharge end: elliptical motion
- Recommended inclination: 18 degrees
- Normal inclination range: 15-20 degrees
- Motors according to IEC standard, enclosure class IP55, frame B3, speed 1500 rpm
- Transmission by v-belts and v-belt pulleys
- Spherical roller bearings
- Oil bath lubrication
- Mechanism is equipped with oil level gauge and breather
- AR400 wear liners (12 mm) on discharge spout
- Frame bolted with huck bolts
- Mechanism is fixed with special pre-tensioned bolts
- Feed box bottom has 30 mm rubber wear liner
- Screens wider or equal to 1 800 mm have steel center clamp for side tensioned media
- Typical drawings shows screen for side tensioned media
- Available media options: Sandvik module, self-supporting, etc
- Stroke length is adjustable by adding extra weights

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

DATA SHEETS - MSO SCREEN 1- DECK



	MSO 1030S	MSO 1230S	MSO 1240S	MSO 1540S	MSO 1550S
Inside Width (mm)	1 020	1 220	1 220	1 520	1 520
Inside Length (mm)	3 000	3 000	4 000	4 000	5 000
Screening Area (m ²)	3,0	3,6	4,8	6,0	7,5
Weight without Media (kg)	1 630	1 720	2 320	2 620	3 145
Installed Power (kW)	1 x 5,5	1 x 5,5	2 x 5,5	2 x 5,5	2 x 5,5
Mechanism Type	1 x 16	1 x 16	1 x 20	1 x 20	1 x 20
Drive Unit bolted to the screen body (moving together with the screen) *	X	X	X	X	X

	MSO 1850S	MSO 1860S	MSO 2160S	MSO 2460S
Inside Width (mm)	1 820	1 820	2 120	2 420
Inside Length (mm)	5 000	6 000	6 000	6 000
Screening Area (m ²)	9,0	10,8	12,6	14,4
Weight without Media (kg)	3 890	4 375	4 800	5 410
Installed Power (kW)	1 x 15	1 x 15	1 x 15	1 x 15
Mechanism Type	1 x 24	1 x 24	1 x 24	1 x 24
Contact PL when modular or other heavy media increases weight of the screen				X
Drive Unit beside the screen	X	X	X	X

Bulk density for standard screen calculations and values 1,6 t/m³.

* Also available as stationary beside the screen (Option). Please consult with Product Line S&F.

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

DATA SHEETS – MSO SCREEN 2- DECK



	MSO 1030D	MSO 1230D	MSO 1240D	MSO 1540D	MSO 1550D
Inside Width (mm)	1 020	1 220	1 220	1 520	1 520
Inside Length (mm)	3 000	3 000	4 000	4 000	5 000
Screening Area (m ²)	3,0	3,6	4,8	6,0	7,5
Weight without Media (kg)	2 200	2 400	2 900	3 530	4 020
Installed Power (kW)	2 x 5,5	2 x 5,5	2 x 5,5	1 x 15	1 x 15
Mechanism Type	1 x 16	1 x 20	1 x 20	1 x 24	1 x 24
Contact PL when modular or other heavy media increases weight of the screen	X				
Drive Unit beside the screen				X	X
Drive Unit bolted to the screen body (moving together with the screen) *	X	X	X		

	MSO 1850D	MSO 1860D	MSO 2160D	MSO 2460D	MSO 2470D
Inside Width (mm)	1 820	1 820	2 120	2 420	2420
Inside Length (mm)	5 000	6 000	6 000	6 000	7000
Screening Area (m ²)	9,0	10,8	12,6	14,4	16,8
Weight without Media (kg)	4 780	6 860	7 660	8 830	10 800
Installed Power (kW)	1 x 15	1 x 22	1 x 22	1 x 22	1 x 30
Mechanism Type	1 x 24	1 x 30	1 x 30	1 x 30	1 x 34
Contact PL when modular or other heavy media increases weight of the screen	X			X	X
Drive Unit beside the screen	X	X	X	X	X

Bulk density for standard screen calculations and values 1,6 t/m³.

* Also available as stationary beside the screen (Option). Please consult with Product Line S&F.

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

DATA SHEETS - MSO SCREEN 3- DECK



	MSO 1030T	MSO 1240T	MSO 1540T	MSO 1550T
Inside Width (mm)	1 020	1 220	1 520	1 520
Inside Length (mm)	3 000	4 000	4 000	5 000
Screening Area (m ²)	3,0	4,8	6,0	7,5
Weight without Media (kg)	2 780	3 920	4 510	5 140
Installed Power (kW)	2 x 5,5	1 x 15	1 x 15	1 x 15
Mechanism Type	1 x 20	1 x 24	1 x 24	1 x 24
Contact PL when modular or other heavy media increases weight of the screen				X
Drive Unit beside the screen		X	X	X
Drive Unit bolted to the screen body (moving together with the screen) *	X			

	MSO 1850T	MSO 1860T	MSO 2160T	MSO 2460T
Inside Width (mm)	1 820	1 820	2 120	2 420
Inside Length (mm)	5 000	6 000	6 000	6 000
Screening Area (m ²)	9,0	10,8	12,6	14,4
Weight without Media (kg)	7 520	8 280	9 890	13660
Installed Power (kW)	1 x 22	1 x 22	1 x 22	1 x 45
Mechanism Type	1 x 30	1 x 30	1 x 30	1 x 38
Contact PL when modular or other heavy media increases weight of the screen			X	
Drive Unit beside the screen	X	X	X	X

Bulk density for standard screen calculations and values 1,6 t/m³.

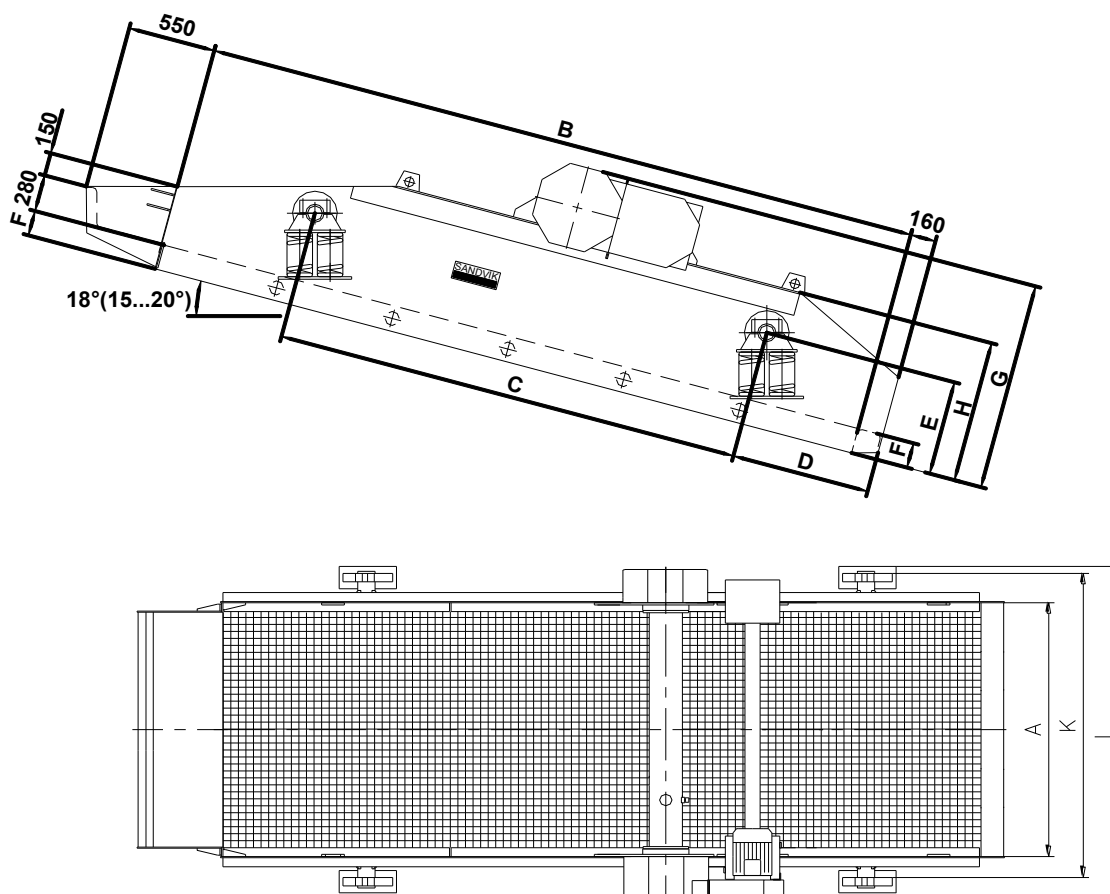
* Also available as stationary beside the screen (Option). Please consult with Product Line S&F.

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01



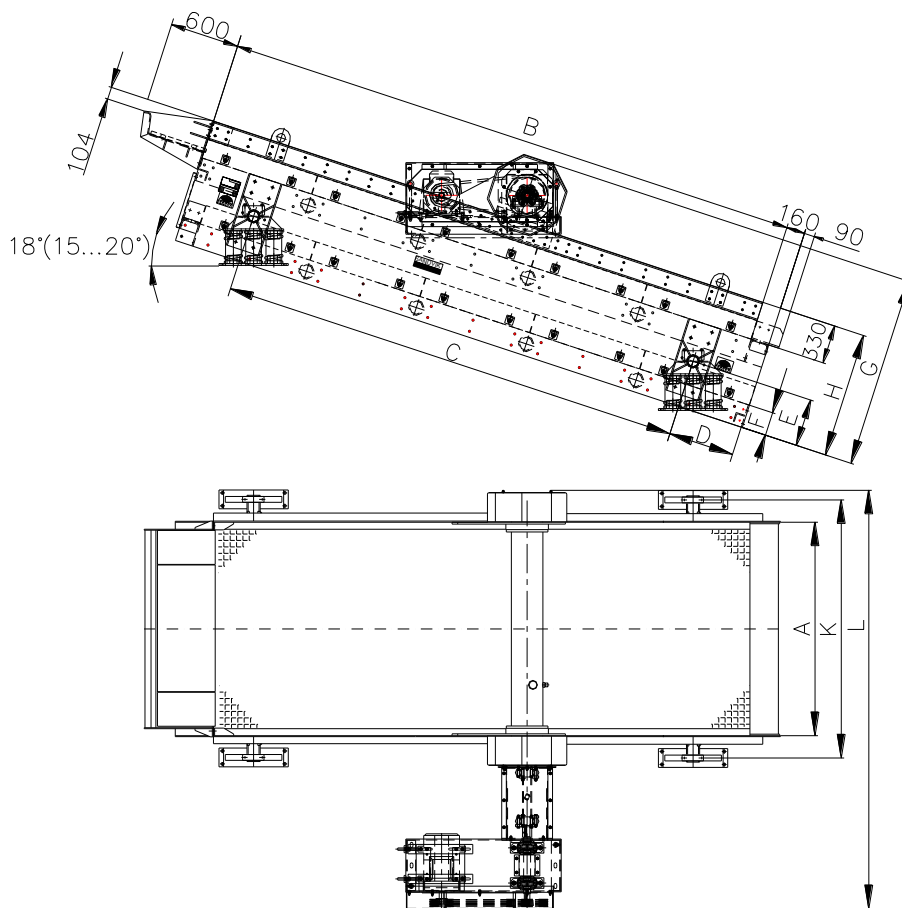
Screen Size	Total Weight	Dimensions (mm)									
	(kg)	A	B	C*	D*	E	F	G	H	K	L**
MSO 1030 S	1630	1020	3000	2000	580	400	140	1210	800	1300	1520
MSO 1230 S	1720	1220	3000	2000	580	400	160	1210	800	1600	1720
MSO 1240 S	2320	1220	4000	3000	580	425	160	1385	900	1600	1800
MSO 1540 S	2630	1520	4000	3000	580	425	180	1385	900	1900	2100
MSO 1550 S	3145	1520	5000	4000	580	450	180	1485	1000	1900	2100
MSO 1850 S	3890	1820	5000	4000	580	450	200	1560	1000	2200	2445
MSO 1860 S	4375	1820	6000	4000	1160	500	200	1660	1100	2200	2445
MSO 2160 S	4800	2120	6000	4000	1160	500	240	1660	1100	2500	2745
MSO 2460 S	5510	2420	6000	4000	1160	500	260	1660	1100	2800	3045

* May change, depend on media selection

** Total width is different for those screens with separate drive unit beside the screen, consult with PL

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

DIMENSIONS - MSO SCREEN 2- DECK



Screen Size	Total Weight (kg)	Dimensions (mm)									
		A	B	C*	D*	E	F	G	H	K	L**
MSO 1030 D	2200	1020	3000	2000	580	345	140	1465	980	1400	1600
MSO 1230 D	2400	1220	3000	2000	580	365	160	1465	980	1600	1800
MSO 1240 D	2900	1220	4000	3000	580	365	160	1505	1020	1600	1800
MSO 1540 D	3530	1520	4000	3000	580	385	180	1580	1020	1900	2145
MSO 1550 D	4000	1520	5000	4000	580	385	180	1630	1070	1900	2145
MSO 1850 D	4780	1820	5000	4000	580	405	200	1630	1070	2200	2445
MSO 1860 D	6860	1820	6000	5000	580	405	200	1935	1250	2200	2465
MSO 2160 D	7660	2120	6000	5000	580	455	240	1935	1250	2500	2765
MSO 2460 D	8830	2420	6000	5000	580	475	260	1935	1250	2800	3065
MSO 2470 D	10800	2420	7000	6000	580	475	260	2180	1450	2800	3065

* May change, depend on media selection

** Total width is different for those screens with separate drive unit beside the screen, consult with PL

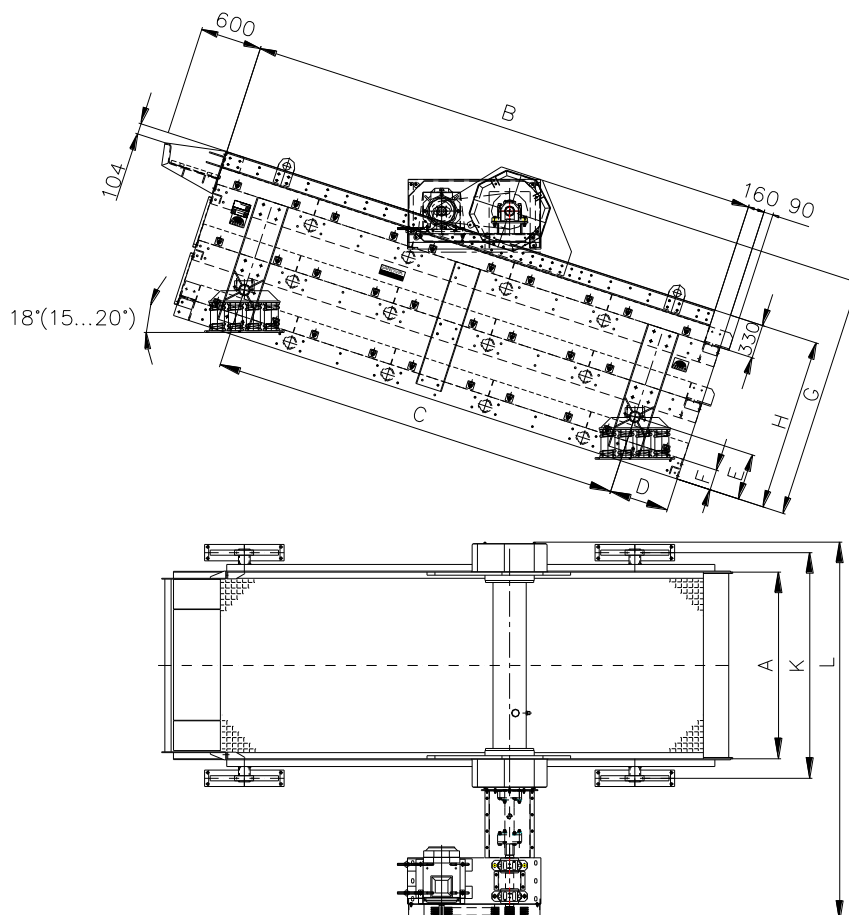
For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

DIMENSIONS – MSO SCREEN 3- DECKS



Screen Size	Total Weight	Dimensions (mm)									
	(kg)	A	B	C*	D*	E	F	G	H	K	L**
MSO 1030 T	2780	1020	3000	2000	580	345	140	1865	1380	1400	1600
MSO 1240 T	3920	1220	4000	2700	580	365	160	2000	1440	1600	1845
MSO 1540 T	4510	1520	4000	3000	580	385	180	2060	1500	1900	2145
MSO 1550 T	5140	1520	5000	4000	580	385	180	2060	1500	1900	2145
MSO 1850 T	7520	1820	5000	4000	580	405	200	2365	1680	2200	2465
MSO 1860 T	8280	1820	6000	5000	580	405	200	2365	1680	2200	2465
MSO 2160 T	9890	2120	6000	5000	580	455	240	2425	1740	2500	2765
MSO 2460 T	14900	2420	6000	5000	580	702	260	3155	2300	2800	3295

* May change, depend on media selection

** Total width is different for those screens with separate drive unit beside the screen, consult with PL

For Mining Duty Screens the weight of the screen may differ essentially from the values above. Always verify from the Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

MSO SCREENS 2016-01-01

GENERAL PACKING PROCEDURE - MSO SCREENS

Screen Type	Approximate Net Shipping Dimensions				
	Net Weight (kg) *	Length (mm)	Width (mm)	Height (mm) **	Volume (m ³)
MSO1030S	1 860	3750	1600	1500	9.0
MSO1230S	1 960	3750	1800	1500	10.1
MSO1240S	2 700	4750	1800	1600	13.7
MSO1540S	2 900	4750	2150	1600	16.3
MSO1550S	3 500	5750	2150	1700	21.0
MSO1850S	4 160	5750	2450	1800	25.4
MSO1860S	4 680	6750	2450	1900	31.4
MSO2160S	5 060	6750	2770	1900	35.5
MSO2460S	5 740	6750	3070	1900	39.4
MSO1030D	2 320	3810	1600	1700	10.4
MSO1230D	2 700	3810	1800	1700	11.7
MSO1240D	3 300	4810	1800	1800	15.6
MSO1540D	3 930	4810	2150	1800	18.6
MSO1550D	4 520	5810	2150	1900	23.7
MSO1850D	5 280	5810	2450	1900	27.0
MSO1860D	7 460	6810	2450	2200	36.7
MSO2160D	8 260	6810	2770	2200	41.5
MSO2460D	9 430	6810	3070	2200	46.0
MSO2470D	11 210	7810	3300	2400	61.9
MSO1030T	3 230	3810	1600	2100	12.8
MSO1240T	4 520	4810	1800	2200	19.0
MSO1540T	5 110	4810	2150	2200	22.8
MSO1550T	5 890	5810	2150	2300	28.7
MSO1850T	8 550	5810	2470	2600	37.3
MSO1860T	9 430	6810	2470	2600	43.7
MSO2160T	10 800	6810	2770	2700	50.9
MSO2460T	14 560	6890	3300	3160	71.8

* Includes media: 50 kg/deck length

**Includes the possibility to get higher side plates and timber under screen

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options, like dust encapsulation parts in a separate box.

Screen body is shipped on loose timber and its drive mechanism is assembled on the screen up till mechanism size 20.

Screens having a cardan shaft drive (mechanism size 24 and bigger): the motor, cardan shafts and motor base are packed on pallet or in separate box (and tied on screen deck when possible).

Springs, lower spring support parts and extra counter weights are packed on pallet or in a separate box, (tied on top of the screen deck when possible).

For more detailed information for these packages please consult with Global Order Service Desk S&F.

When export packing is required (i.e. wooden crate etc.) for the screen body, please consult with Global Order Service Desk.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

GENERAL – SS FREE-FALL SCREENS



Sandvik Free-Fall SS is a further development of the free-fall screens, invented and manufactured by Svedala-Arbrå AB throughout the last decades. The principle of free-fall screening is a free flow of material, through and over the decks. The opposite is a conventional screen, which in fact is designed to operate with a certain bed thickness for optimal performance. In contrast to the conventional screens, the optimal performance is achieved when at least 70% of the feed to the separating deck is smaller than the separation size. This allows for small stones to pass the screen deck in an early stage, which consequently results in a limited or even negligible bed thickness.

A free-fall screen can be designed considerably short and more compact compared to the conventional screens. The principle of free-fall screening enables a quick removal of large amounts of fines, by the use of a steep deck inclination and an effective linear stroke, almost perpendicular to the deck.

The principle of free-fall screening corresponds to a relatively low accuracy, since the velocity of the oversize particles is quite high, which consequently means that each particle has a limited number of chances to pass a hole. However, its ability to handle large loads of material in comparison to its modest size is the main advantages of the Free-Fall screens.

The Free-Fall screens were originally developed to meet the requirements of a compact screen with a high capacity, primarily suitable for mobile crushing units. The range of applications for this type of machine has steadily expanded since the launch.

The Free-Fall screen is now suitable for several screening duties. For example, it is often used instead of a slot sizer for removal of natural fines before crushers, to separate material for different crushing stages and for final products of natural gravel e.g. scalping, closed circuit screening and final product screening of gravel. Suitable screening media: rubber, wire or plate elements for the top deck and wire mesh at the lower deck(s).

The heavy-duty version of the Free-Fall is normally used after larger crushers, giving a maximum feed size over 150 mm. The three different frame models, which are associated with the Free-Fall range can be reviewed in the below summary:

- SS... for standard applications
- SS... for heavy duty applications
- SS...H for extra heavy duty installations

SCOPE OF SUPPLY – SS FREE-FALL SCREENS

Standard delivery includes

- Bolted screen body with rubber lined feed box and wear protected side plates for all decks
- Back wall designed of heavy rubber sheets
- Two electrical motors, self-synchronizing and unbalanced (as standard 6-pole/1000 rpm, 50 Hz/400 V, protection class IP 65)
- Suspension with steel coil springs and spring supports
- Screening elements and clamping arrangements
- SS... for standard applications: Longitudinally tensioned wire mesh (any hole size) for all decks
- SS... for heavy duty applications and SS...H for extra heavy duty applications: The top deck has self-supporting rubber elements (100 mm square holes) and the second and third deck is delivered with wire mesh (any hole size)
- Surface treatment according to Sandvik S&F standard painting procedure
- Installation, operating and maintenance manuals

Options

- Vibrating discharge chute for fines (i.e. chute and screen are bolted together and the chute is made of rubber, steel or a combination of both)
- Electrical motors with other voltage alternatives
- SS... for heavy duty applications and SS...H for extra heavy duty applications: Alternative hole sizes up to 120 mm (i.e. for the self-supporting rubber elements at the top deck)
- Screen Unit (Note: detailed specification can be reviewed in the following pages)
- Screen Station (Note: detailed specification can be reviewed in the following pages)

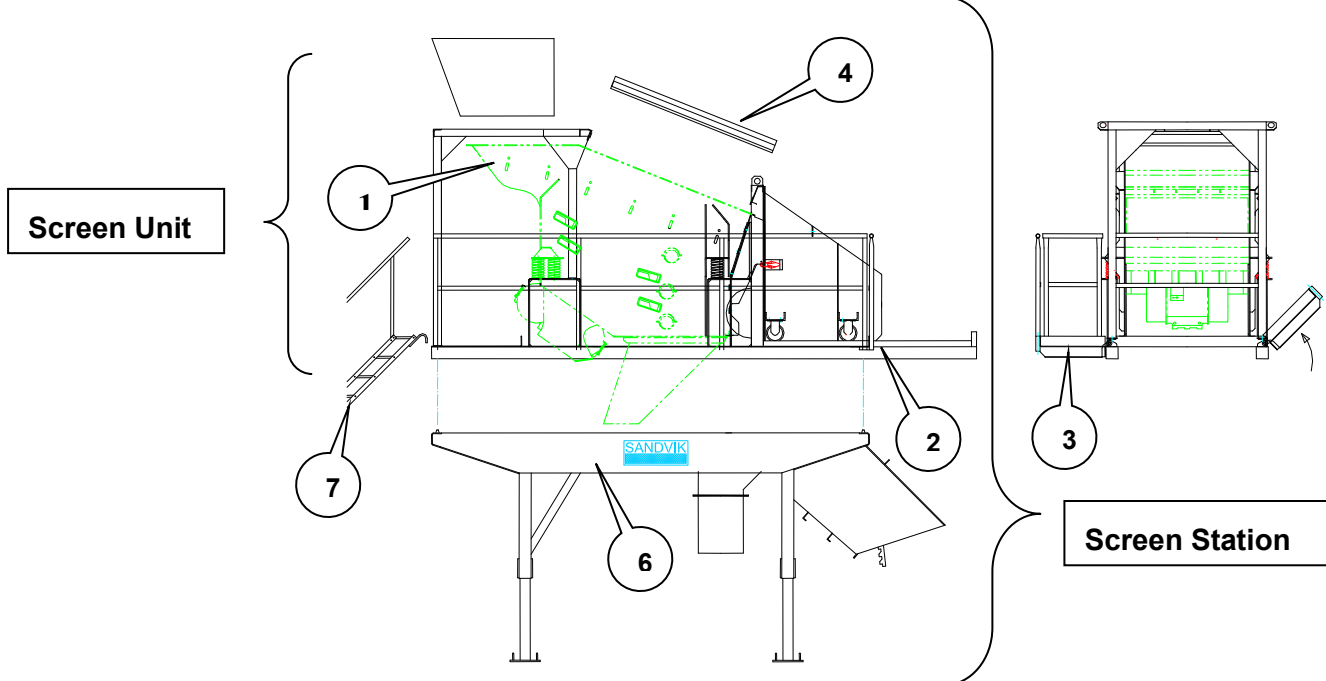


ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

SCOPE OF SUPPLY – SCREEN UNIT/SCREEN STATION



Note:

- Item no. 1-7 corresponds to the modules required for a complete screen station and item no. 1-4 to a complete screen unit. Some modules offer more than one alternative, of which only one of them can be selected.
- The screen units and stations mentioned in the below are only available for the screen models stated in Chapter R - page 10.

Screen Unit (Item No. 1-4)

Item No. 1	Required Quantity	Description
Free-Fall SS Screen	1	See first page (i.e. standard delivery includes)

Item No. 2	Required Quantity	Description
Basic Screen Unit Assembly	1	Includes: base frame, feed chute support and roll away chute

Item No. 3	Required Quantity	Description
Folding Platform Assembly	1	Service platform for both sides

Item No. 4	Required Quantity	Description
Dust Seal Assembly	1	Dust encapsulation on top of the screen as well as at the discharge end

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

Screen Station (Item No. 1-7)

Item No. 1	Required Quantity	Description
Free-Fall SS Screen	1	See first page (i.e. standard delivery includes)
Item No. 2	Required Quantity	Description
Basic Screen Unit Assembly	1	Includes: base frame, feed chute support and roll away chute
Item No. 3	Required Quantity	Description
Folding Platform Assembly	1	Service platform for both sides
Item No. 4	Required Quantity	Description
Dust Seal Assembly	1	Dust encapsulation on top of the screen as well as at the discharge end
Item No. 5	Required Quantity	Description
Discharge chute	1	Extension chute for discharge of the oversize fraction (i.e. extra discharge chute for the top deck) Note: this item is not shown in the above drawing due to deficient space
Item No. 6	Required Quantity	Description
Support Assembly, G1	1	Support structure, single discharge chute (top deck) and extension stands to obtain different height alternatives
Support Assembly, G2	1	Support structure, dual discharge chute (top deck) and extension stands to obtain different height alternatives
Item No. 7	Required Quantity	Description
Staircase (12 steps)	1	Standard design which allows for different height alternatives, horizontal and adjustable steps

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

DATA SHEETS – SS FREE-FALL SCREENS



Model	Note! (below)	Inside Width (mm)	Max. Feed Size (mm) *	Number of Decks	Installed Power (kW Input @ 50 Hz)	Installed Power (kW Input @ 60 Hz)	Stroke (mm) **	Acc. (G)	Weight (kg)
SS1012	¹⁾	1020	120	2	2 x 2.0	2 x 2.1	9	5,0	1000
SS1013H	³⁾	1020	300	3	2 x 2.6	2 x 3.0	8	5,0	1300
SS1223	¹⁾	1240	150	3	2 x 3.0	2 x 3.0	9	5,0	1950
SS1233	²⁾	1240	225	3	2 x 3.0	2 x 3.0	9	5,0	1950
SS1233H	³⁾	1240	350	3	2 x 5.5	2 x 5.0	9	4,5	2700
SS1433	²⁾	1430	225	3	2 x 5.5	2 x 5.0	8	4,7	2600
SS1633H	³⁾	1618	350	3	2 x 9.8	2 x 8.5	8	4,5	4450
SS1823	¹⁾	1818	150	3	2 x 8.5	2 x 7.0	8	4,5	3650
SS1833	²⁾	1818	225	3	2 x 8.5	2 x 7.0	8	4,5	3850

- ¹⁾ = Standard duty, length tensioned media on all decks (separation range: 2 – 80 mm **)
- ²⁾ = Heavy duty, self supporting media on the top deck, length tensioned media on second and third deck (separation range 2 – 100 mm **)
- ³⁾ = Extra heavy duty, self supporting media on the top deck, length tensioned media on second and third deck (separation range 2 – 100 mm **)

* Refers to material with bulk density 1.6 t/m³ (Note: the tabulated value may vary due to different feed distributions)

** Refers to standard setting

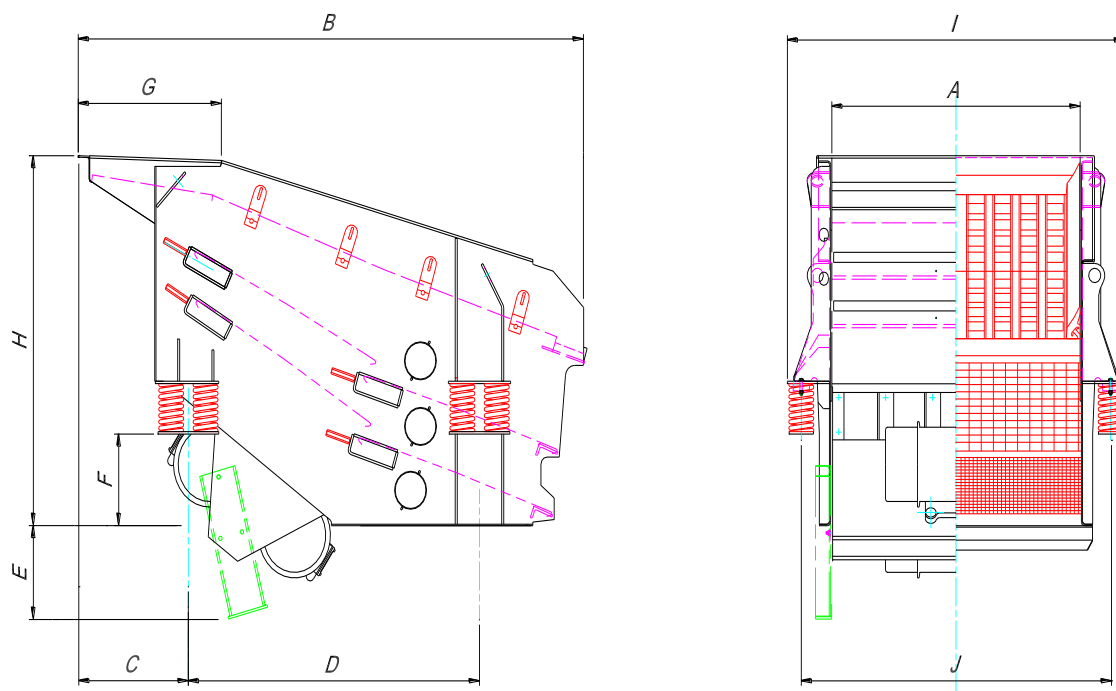
The Free-Fall screens usually require additional screening decks compared to the conventional screens, in order to perform at its impressive capacities. If not all screening decks are being used, a special protection cloth can be supplied in order to cover and protect the open support frames from excessive wear.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

DIMENSIONS – SS FREE-FALL SCREENS



The above drawing and figures correspond to the model SS1233.

Model	Number of Decks	A B	C D	E F	G H	I J	Weight (kg)
SS1012	2	1020 1330	100 1050	70 450	440 1450	1400 1300	1000
SS1013H	3	1020 1460	310 960	250 490	N/A 1400	1400 1300	1300
SS1223	3	1240 2435	540 1440	370 380	710 1540	1670 1530	1950
SS1233	3	1240 2500	545 1440	370 380	710 1540	1670 1530	1950
SS1233H	3	1240 2990	805 1710	245 573	710 1917	1724 1500	2760
SS1433	3	1430 2500	547 1440	390 375	710 1540	1858 1720	2600
SS1633H	3	1618 2920	510 1840	328 717	835 2150	1950 1900	4450
SS1823	3	1818 2645	616 1511	510 517	695 2025	1818 2120	3650
SS1833	3	1818 2645	616 1511	510 517	695 2025	1818 2120	3850

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

GENERAL PACKING PROCEDURE – SS FREE-FALL SCREENS

This Chapter exhibits the below parts according to the specification on the previous pages “Scope of Supply”.

- Free-Fall Screen (below)
- Screen Unit (next page)
- Screen Station (next page)

Free-Fall Screen (according to the scope of standard delivery)

Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SS1012	1000	1600	1900	2200	7
SS1013H	1300	1600	1900	2200	7
SS1223	1950	2300	1700	2200	9
SS1233	1950	2300	1700	2200	9
SS1233H	2700	2500	1800	2500	13
SS1433	2600	2300	1900	2200	10
SS1633H	4450	2800	2100	2800	16
SS1823	3650	3200	2300	2100	15
SS1833	3850	3200	2300	2100	15

Applicable for all type of shipments:

The screen is bolted to a reinforced wooden pallet (i.e. free of charge). Regular lifting eyes are applicable during hoist procedures.

Accessories:

Manuals and springs are packed separately in a wooden box, which is fastened to the machine. Discharge chute and/or extra media are transported at a separate pallet (i.e. except for the SS1223/1233 where the discharge chute is attached to the screen).

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SS FREE-FALL SCREENS 2016-01-01

Screen Unit (optional equipment)

Type of Equipment	Approximate Net Shipping Dimensions				
	Net Weight (kg) *	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
Unit for SS1223/1233	4000 / 4150	4900	2300	2100	24
Unit for SS1633H	7100	5900	2500	2800	41
Unit for SS1823/1833	5300	5100	2500	2500	32

* Includes the weight of the screen

Screen Station (optional equipment)

Type of Equipment	Approximate Net Shipping Dimensions				
	Net Weight (kg)*	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SPC - SS1223/1233	TBA	TBA	2500	TBA	TBA
SPC - SS1633H	TBA	TBA	2800	TBA	TBA
SPC - SS1823/1833	TBA	TBA	3000	TBA	TBA

* Includes the weight of the screen

Note: The most economical and appropriate way of packing a complete screen station should be considered case-by-case, depending on the final destination. For further assistance regarding this issue, please consult with Global Order Service Desk.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

GENERAL – SF FREE-FALL SCREENS



The Free-Fall SF screen originates from the design and basic principles of the Free-Fall SS screen. The SF screen incorporates two different screening sections on each deck. This allows for the free-fall principle to act at the first section, while a more accurate stratification is conducted at the second section. Consequently, resulting in a combination of the high capacity associated with free-fall screening and the good separation accuracy of horizontal screening. In fact, a third positive side effect is achieved by this screening method, maintaining a compact design.

Typical applications are: screening of crushed stone (0-16/0-22 mm) to asphalt fractions, screening of crushed stone (0-70 mm) to railway ballast (32-64 mm) as well as screening of natural gravel (0-32 mm) into short concrete fractions.

The Free-Fall SF screen was developed primarily for portable and mobile crushing plants. Its compact design makes it possible to efficiently transport the screen (i.e. as a complete screening station) at a standard dimensioned truck, adapted to local road legislations. Today it is also used in stationary plants, due to its impressive separation accuracy while operating at high capacities.

The Free-Fall SF is a free-swinging screen with a linear motion, created by two self-synchronizing unbalanced motors. The linear motion enables an optimum screening accuracy, especially when the size of the particles is equal or close to the separation size. The SF screen is also designed for fitting of ball decks as well as dust encapsulation.

Sandvik manufactures this type of screen in three (3) different sizes, which can outperform considerably larger conventional screens. The SF screens are approximately 35 percent more effective than conventional screens, in terms of a footprint area comparison. This figure will be even greater if the footprint of a complete station is evaluated, due to its lightweight design, which consequently gives extremely low dynamic loads to the structure.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

SCOPE OF SUPPLY – SF FREE-FALL SCREENS

Standard delivery includes

- Bolted screen body with rubber lined feed box and wear protected side plates
- Two electrical motors, self-synchronizing and unbalanced (as standard 6-pole 1000 rpm, 50 Hz/400 V, protection class IP 65)
- Suspension with steel coil springs and spring supports
- Length tensioned wire mesh (any hole size) for all decks
- Rubber covered discharge lips (SF1843 and SF1844)
- Transport plane under the bottom deck collecting fine material towards discharge end
- Back wall made of rubber for dust retention
- Friction checks integrated into spring base mounts (SF1843 and SF1844)
- Surface treatment according to Sandvik S&F standard.

Options

- Vibrating discharge chute for fines (i.e. chute and screen are bolted together)
- Electrical motors with other voltage alternatives
- Ball deck (i.e. including rubber balls, support mesh and required clamping devices, available for the two lower decks in the SF1843 and SF1844)
- Screen Unit (Note: detailed specification can be reviewed in the following pages)
- Screen Station (Note: detailed specification can be reviewed in the following pages)
- Extension chute for discharge of the oversize fraction (i.e. extra discharge chute for the top deck, including 10 mm thick side and bottom liners, HB 400)

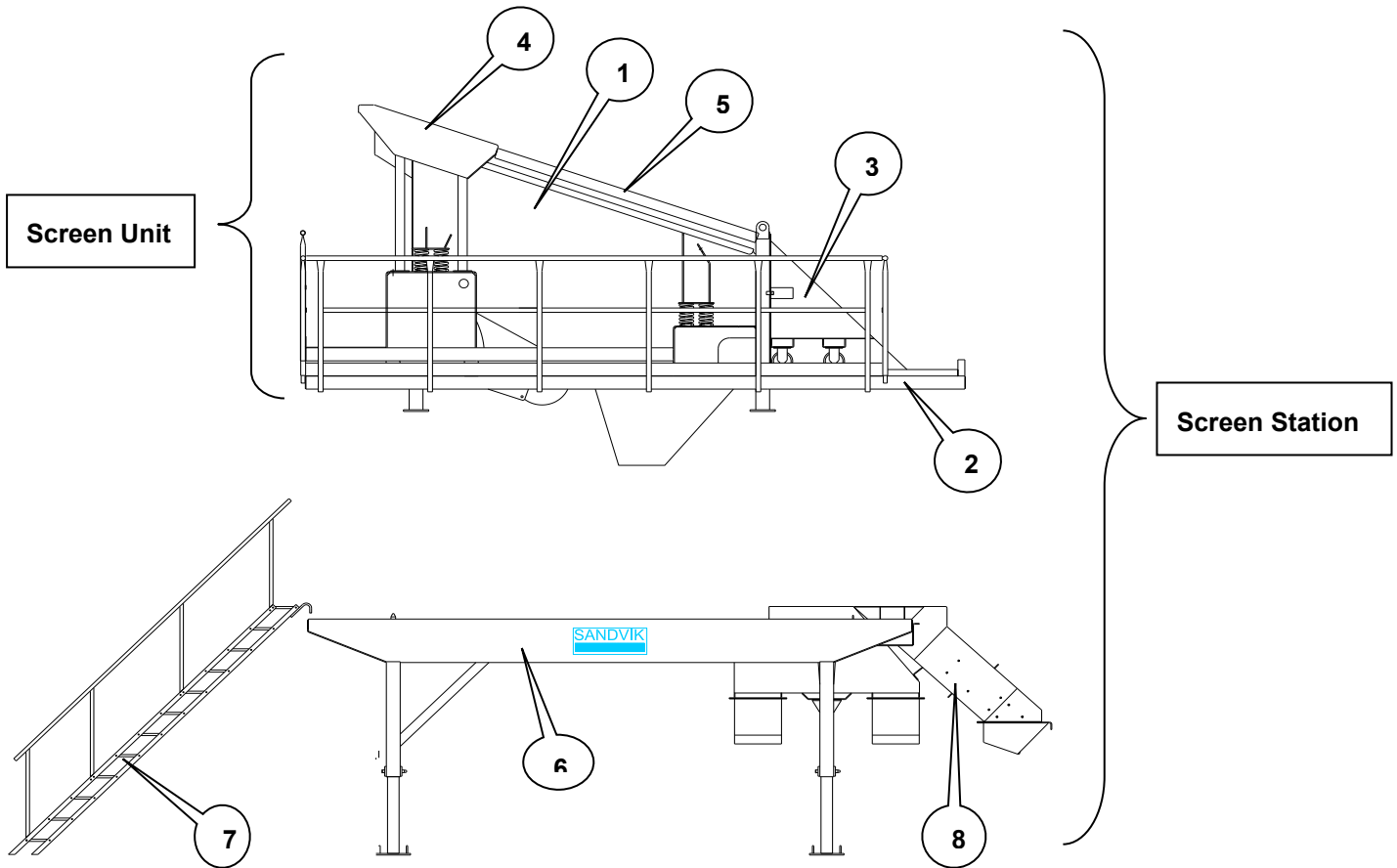


ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

SCOPE OF SUPPLY – SF FREE-FALL SCREEN UNIT/SCREEN STATION



Note:

- Item no. 1-8 corresponds to the modules required for a complete screen station and item no. 1-5 to a screen unit. Some modules offer more than one alternative, of which only one of them can be selected.
- The screen units and stations according to the below are available for the screen models SF1443 and SF1843.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

Screen unit (Item No. 1-5)

Item No. 1	Required Quantity	Description
Free-Fall Screen SF	1	See first page (i.e. standard delivery includes)

Item No. 2	Required Quantity	Description
Screen Unit Assembly 1	1	Basic screen unit frame with platforms
Screen Unit Assembly 2	1	Shortened screen unit frame without platform

Item No. 3	Required Quantity	Description
Roll Away Chute	1	Basic roll away chute

Item No. 4	Required Quantity	Description
Feed Chute Support	1	Basic feed chute support

Item No. 5	Required Quantity	Description
Dust Encapsulation	1	Rubber curtain style

Screen Station (Item No. 1-8)

Item No. 6	Required Quantity	Description
Support Assembly	1	Support structure with dual discharge chutes (i.e. midsize fractions)

Item No. 7	Required Quantity	Description
Staircase (12 steps)	1	Horizontal and adjustable staircase with hooks

Item No. 8	Required Quantity	Description
Discharge Chute	1	Extension chute for discharge of the oversize fraction (i.e. for the top deck)

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

DATA SHEETS – SF FREE-FALL SCREENS



	SF1443	SF1843	SF1844
Number of Decks	3	3	4
Inside Width (mm)	1400	1800	1800
Separation Range* (mm)	2-64	2-64	2-64
Maximum Feed Size* (mm)	120	120	120
Installed Power (kW, Input @ 50 Hz)	2 x 8,5	2 x 11,5	2 x 14,5
Installed Power (kW, Input @ 60 Hz)	2 x 7,0	2 x 9,7	2 x 11,5
Weight (kg)	3200	5900	7700
Acceleration** (G)	5	4,5	5
Stroke** (mm)	8	9	9

* Refers to material with bulk density 1.6 t/m³ (note: also depending on the feed size distribution)

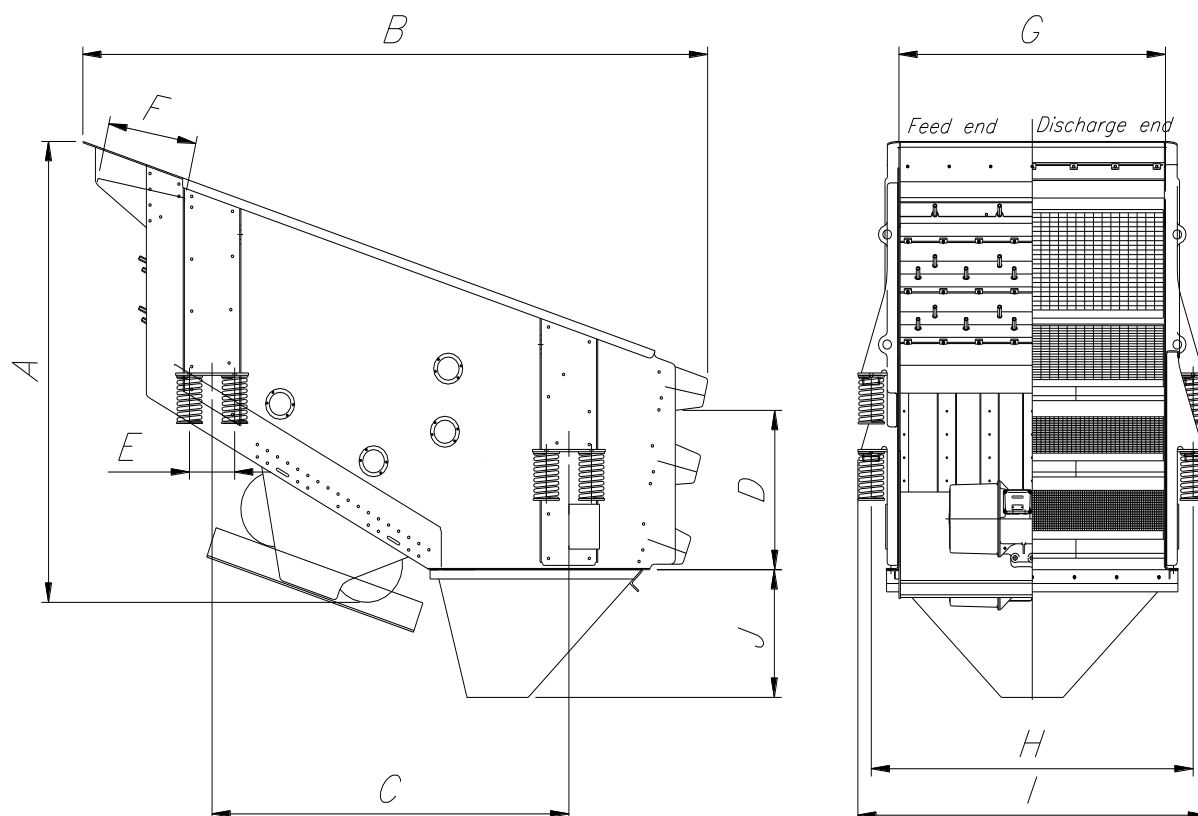
** Refers to standard setting (i.e. not maximum)

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

DIMENSIONS – SF FREE-FALL SCREENS



Model	Number of decks	A B	C D	E F	G H	I J	Length of screening media (mm)	Weight (kg)
SF1443	3	2580 3540	2300 740	170 610	1430 1720	1860 860	2X1600	3200
SF1843	3	2977 4290	2450 1029	310 610	1830 2210	2394 825	2X1900	5900
SF1844	4	3350 4290	2450 1360	310 610	1830 2210	2390 825	2X1900	7700

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

GENERAL PACKING PROCEDURE – SF FREE-FALL SCREENS

Screen (corresponds to the scope of standard deliveries, page “Scope of Supply”)

Screen Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SF1443	3200	4000	1900	2100	16
SF1843	5900	4800	2400	2300	26
SF1844	7700	4800	2400	2800	32

The content in this Chapter is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Applicable for all type of shipments:

The screen body is transported at two transitory steel skids, which can be lifted by a forklift. Regular lifting eyes are applicable during hoist procedures.

Accessories:

Manuals, friction brakes, stabilizer, spring support guide and springs are packed separately in a wooden crate. Discharge chute and/or extra screening media are transported on a separate pallet.

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk.

Screen Unit

Station Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)*	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SF1443	5550	7000	2500	2820	41
SF1843	8900	7500	3000	4000	76
SF1844 **	TBA	TBA	TBA	TBA	TBA

* Including the weight of the screen.

** This screen model is not yet available in the new design but can be delivered according to an earlier edition. Please consult with factory for further details regarding this unit.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SF FREE-FALL SCREENS - 2016-01-01

GENERAL PACKING PROCEDURE – SF FREE-FALL SCREENS

Screen Station

Station Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)*	Length (mm)	Width (mm)	Height (mm)	Volume (m3)
SPC – SF1443	8200				
SPC – SF1843	11000				
SPC – SF1844 **	TBA	TBA	TBA	TBA	TBA

* Including the weight of the screen and oversize extension chute.

** This screen model is not yet available in the new design but can be delivered according to an earlier edition. Please consult with factory for further details regarding this station.

Note: The most suitable way of transporting/packing a complete screen station must be considered case-by-case, depending on the final destination as well as the method of transportation. Please consult with Global Order Service Desk S&F prior to any quoting.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

GENERAL – SR ROLLER SCREENS AND CRUSHERS

The aperture and the separation are the same for the entire set of roller screens, irrespective of the screen's inclination.

Note! For all technical questions, inquiries, applications and quotations regarding Roller Screens and Crushers, please contact our Product Line Stationary Screens & Feeders. In addition to the standard models described in this chapter, special sizes available by request.

Roller Grizzly

The Roller Grizzly is designed for scalping and screening duties of low abrasive materials (e.g. limestone and coal). Harder and abrasive materials are not suitable for the Roller Grizzly (i.e. abrasion index (A_i) higher than 0,03). Applications with A_i above 0,03 should be consulted with the Product Line S&F prior to any quoting.

This screen model is considerably compact compared to the conventional screens and its ability to handle high capacities and moisture material has been proven in many applications. The Roller Grizzly is available for both primary and secondary duties, depending on the maximum feed size.

It is important to spread the feed along the entire width of the screen in order to achieve the best possible screening result. The drop height of the material should be as low as possible since there are no springs underneath the screen (i.e. there are no springs that can absorb the impact energy and therefore reduce the risk of cracks and fractures in the screen body).

The required screen size is selected according to the following parameters: capacity, feed distribution, separation and bulk density. The correct separation size is obtained by changing the distance between the rollers as well as the discs. These adjustments are conducted at the factory, which limit the ability to adjust the separation size on site. Please consult with Product Line for the correct screen size and separation settings. The speed of the rollers can be adjusted by changing the v-belt pulley.

Roller Screen

The Roller Screens are primarily designed for coal and lignite screening as well as similar soft, non abrasive materials like limestone. These screens are superior to the vibrating equipment when the material is sticky and exhibits high moisture content. No vibration is transferred to the support structure and its compact size in conjunction with the high capacity range makes these screens highly competitive.

- Roller Screen for ROM (run of mine): coal screening
- Roller Screen for Secondary applications: to screen washed coal.
- Roller Screen for Fine screening: Screening in one dimension only

The required screen size is selected according to the following parameters: capacity, feed distribution, separation size, moisture and bulk density. The correct settings are determined at Product Line, which limit the ability for further adjustments on-site. Please consult with the Product Line prior to any quoting of this equipment.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

Roller Screen Crusher

This equipment is specially designed for coal-fired power plants, in order to remove impurities of commercial coal as well as to crush down existing coal lumps to acceptable sizes.

The Roller Screen Crusher includes: dust encapsulation, pre-screen, two crusher drums and after-screen. A pre-crusher might be necessary to put on top of the pre-screen if many lumps are present (e.g. frozen coal).

The crusher drums have a releasing mechanism to enable wood pieces, stones and other impurities to be rejected. The sensitivity of the release mechanism is adjustable.



Roller Screen Crusher, discharge end

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

SCOPE OF SUPPLY – SR ROLLER SCREENS AND CRUSHERS

ROLLER GRIZZLY

Standard Delivery Includes

- Frame, rollers, power transmission parts, drive unit(s) with motor(s)
- First two rollers are equipped with scrapers
- Rotation detector
- Surface treatment according to Sandvik S&F standard, components according to supplier's standard painting. Inside surface as well as the rollers have primer coat only.
- Installation, operating and maintenance manuals

Options

- Scrapers under all rollers
- Dust cover
- Automatic grease lubrication for the bearings
- Automatic oil lubrication for chains
- Special surface treatment for corrosive atmosphere (special paint)
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)

ROLLER SCREEN

Standard delivery includes

- Frame, rollers, power transmission parts, drive unit(s) with motor(s)
- Rotation detector
- Surface treatment according to Sandvik S&F standard, components according to supplier's standard painting. Inside surface as well as the rollers have primer coat only
- Installation, operating and maintenance manuals

Options

- Scrapers under all rollers (except for the Fine Screening models which can not be equipped with scrapers)
- Dust cover
- Automatic Grease lubrication for the bearings
- Automatic Oil lubrication for chains
- Toothed belt drive for secondary transmission instead of roller chains
- Special surface treatment for corrosive atmosphere (special paint)
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

SCOPE OF SUPPLY – SR ROLLER SCREENS AND CRUSHERS

ROLLER SCREEN CRUSHER

Standard delivery includes

- Frame, rollers, power transmission parts, drive units with motors
- Rotation detector
- Surface treatment according to Sandvik S&F standard, components according to supplier's standard painting. Inside surface as well as the rollers have primer coat only
- Installation, operating and maintenance manuals

Options

- Automatic Grease lubrication for the bearings
- Automatic Oil lubrication for chains
- Toothed belt drive for secondary transmission instead of roller chains
- Special surface treatment for corrosive atmosphere (special paint)
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER GRIZZLY



	SR1221	SR1521	SR1821
Nominal Width (mm)	1200	1500	1800
Nominal Length (mm)	2000	2000	2000
Standard Separation (mm)	110	110	110
Installed Power/Drive (kW)	22	22	30
Number of Drives (pcs)	1	1	1
Weight of the Machine (kg)	7 200	7 900	8 600

	SR2131	SR2431	SR1541
Nominal Width (mm)	2100	2400	1500
Nominal Length (mm)	3000	3000	4000
Standard Separation (mm)	110	110	110
Installed Power/Drive (kW)	22	22	22
Number of Drives (pcs)	2	2	2
Weight of the Machine (kg)	15 100	15 500	14 500

	SR1841	SR2141	SR2441
Nominal Width (mm)	1800	2100	2400
Nominal Length (mm)	4000	4000	4000
Standard Separation (mm)	110	110	110
Installed Power/Drive (kW)	22	22	22
Number of Drives (pcs)	2	2	2
Weight of the Machine (kg)	15 500	16 500	18 500

	SR1861	SR2161	SR2461
Nominal Width (mm)	1800	2100	2400
Nominal Length (mm)	6000	6000	6000
Standard Separation (mm)	110	110	110
Installed Power/Drive (kW)	30	30	30
Number of Drives (pcs)	3	3	3
Weight of the Machine (kg)	24 500	26 500	28 500

Note! Table above is for standard primary screen sizes. Also other sizes available by request as well as screens for secondary duty.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

General Technical Data

- Roller Grizzly is available for primary (1) and for secondary (2) duty
Sample designation: SR1541
SR1542
- Maximum feed size: 1500 mm (primary) and 400 mm (secondary)
- Separation range: 50-180 mm
- Recommended inclination: 5-15 degrees
- Rotation detector is included
- Scrapers under first two rollers are included
- Drop height of the material should be as low as possible (especially when large lumps)
- Spread of the material at the feed end should be the entire width
- Material to handle are limestone and coal
- Nominal roller rotation: 25-40 rpm
- Motors according to IEC standard, enclosure class IP55
- Motor nominal speed of rotation: 1500 rpm
- Drive unit, nominal power alternatives: 22 and 30 kW
- Number of drive units: 1-3 pcs
- Primary transmission type (drive): gearbox+v-belt
- Secondary transmission type (rollers): roller chain 24B-2
- Thickness of the liners: 8-10 mm
- Hardness of the liners: HB 370-430
- Hardness of the roller discs: HB 370-430
- Height of the machine: 1 m
- When the abrasion index of the feed is higher than 0,03 please consult with Product Line
- Must be fed by a separate feeding equipment
- Weights, nominal power and prices depends on the feed characteristics as well as the required separation

For more information please contact Product Line Screens and Feeders.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER SCREEN



	SR1234	SR1534	SR2144
Nominal Width (mm)	1200	1500	2100
Nominal Length (mm)	2500	2500	4000
Standard Separation (mm)	50	50	50
Installed Power/Drive (kW)	7.5	7.5	7.5
Number of Drives (pcs)	2	2	4
Weight of the Machine (kg)	5 200	5 900	11 900

	SR2454	SR2464	SR2474
Nominal Width (mm)	2400	2400	2400
Nominal Length (mm)	5000	6000	7000
Standard Separation (mm)	50	50	50
Installed Power/Drive (kW)	7.5 or 11	7.5 or 11	7.5 or 11
Number of Drives (pcs)	5	6	6
Weight of the Machine (kg)	16 700	19 500	23 200

General Technical Data

- Material to handle is ROM coal
- Maximum feed size: 300 mm
- Separation range: 20-80 mm
- Inclination: 0 degrees
- Motors according to IEC standard, enclosure class IP55
- Nominal motor speed: 1500 rpm
- Primary transmission type (drive): gearbox+v-belt
- Rotation detector is included
- Spread of the material at the feed end should be the entire width
- Recommended material speed to the screen 0,1-0,5 m/s
- Special Roller coating (i.e. hi-chrome wear resistant castings; discs and spacers are replaceable) *
- Nominal roller rotation: 100-150 rpm
- Secondary transmission type (rollers): Roller chain 16B-2 or toothed belt
- Thickness of liners: 10-16 mm
- Hardness of liners: HB 370-430
- Hardness of roller discs: HB 500-550
- Height of the machine: 1 m
- Additional separations and sizes are available, please consult Product Line in Hollola, Finland

Note! Screening in two dimensions (i.e. discs are always included).

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER SCREEN



	SR1035	SR1035	SR1535	SR1535
Nominal Width (mm)	1000	1000	1500	1500
Nominal Length (mm)	2500	2500	3000	3000
Standard Separation (mm)	30	50	30	50
Installed Power/Drive (kW)	7.5	7.5	7.5	7.5
Number of Drives (pcs)	1	1	2	2
Weight of the Machine (kg)	4 000	4 000	4 200	4 200

	SR2045	SR2045	SR2065
Nominal Width (mm)	2000	2000	2000
Nominal Length (mm)	4000	4000	6000
Standard Separation (mm)	30	50	50
Installed Power/Drive (kW)	7.5	7.5	7.5
Number of Drives (pcs)	3	3	4
Weight of the Machine (kg)	7 500	7 500	11 200

General Technical Data

- Material to handle is commercial coal
- Inclination: 0 deg
- Spread of the material at the feed end should be the entire width
- Material speed on the screen should be the same as the conveying speed
- Maximum feed size: 300 mm
- Separation range: 20-80 mm
- Nominal roller rotation: 100-150 rpm
- Motors according to IEC standard, enclosure class IP55
- Nominal motor speed: 1500 rpm
- Rotation detector is included
- Primary transmission type (drive): gearbox+v-belt
- Secondary transmission type (rollers): roller chain 16B-2 or toothed belt
- Thickness of liners: 8-10 mm
- Hardness of liners: HB 370-430
- Type of roller coating: spiral, discs *
- Hardness of roller discs: HB 370-430
- Height of the machine: 1 m
- Additional separations and screen sizes are available, please consult Product Line S&F.

Note! Screening in one or two dimensions (i.e with or without discs), depending on the screening requirements.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER SCREEN



	SR1237	SR1537	SR2147	SR2167	SR2477
Nominal Width (mm)	1200	1500	2100	2100	2400
Nominal Length (mm)	2500	3000	4000	6000	6500
Installed Power/Drive (kW)	5,5	5,5	5,5	5,5	5,5
Number of Drives (pcs)	2	3	4	6	10
Weight of the Machine (kg) **	3 500	5 000	8 000	13 400	16 000

General Technical Data

- Material to handle is ROM, commercial coal ***
- For fine screening
- Roller shape: elliptical
- Separation range: 5-20 mm
- Maximum feed size: 300 mm
- Inclination: 0 degrees
- Spread of the material at the feed end should be the entire width
- Material speed on the screen should be the same as the conveying speed
- Special Roller coating (i.e. hi-chrome wear resistant castings, replaceable components) *
- Nominal roller rotation: 230-350 rpm
- Nominal motor speed: 1500 rpm
- Motors according to IEC standard, enclosure class IP55
- Rotation detector is included
- Primary transmission type (drive): motor + gearbox
- Secondary transmission type (rollers): timing belt
- Thickness of liners: 10 mm
- Hardness of liners: HB 370-430
- Height of the machine: 1 m

Note! Screening in one dimension (i.e. discs are always excluded, casted coating of rollers for ROM coal screening)

** Weights correspond to separation 8 mm (i.e. change of separation affects the number of rollers, hence the total weight of the machine)

*** For commercial coal and for Non-abrasive materials a lighter model of fine roller screen is available by request. For more information please contact Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER SCREEN CRUSHER



Excluding Pre-Crusher	SR1039		SR1539	
Including Pre-Crusher	SR1039		SR1539	
Nominal Width (mm)	1000	1000	1500	1500
Nominal Length, total (mm)	4500	4500	5000	5000
Standard Separation (mm)	50	50	50	50
Installed Power / pre-screen (kW)	2 x 7.5	2 x 7.5	2 x 7.5	2 x 7.5
Installed Power / after screen (kW)	7.5	7.5	7.5	7.5
Installed Power / main crusher (kW)	15,0	15,0	30,0	30,0
Installed Power / pre-crusher (kW)		15,0		15,0
Installed Total Power (kW)	37.5	52.5	52.5	67.5
Number of Drives (pcs)	4	5	4	5
Weight of the Machine (kg)	8 000	9 100	9 800	11 500

Excluding Pre-crusher	SR1549	
Including Pre-crusher	SR1549	
Nominal Width (mm)	1500	1500
Nominal Length, total (mm)	6000	6000
Standard Separation (mm)	50	50
Installed Power / pre-screen (kW)	2 x 7.5	2 x 7.5
Installed Power / after screen (kW)	7.5	7.5
Installed Power / main crusher (kW)	30,0	30,0
Installed Power / pre-crusher (kW)		15,0
Installed Total Power (kW)	52.5	67.5
Number of Drives (pcs)	4	5
Weight of the Machine (kg)	10 950	12 400

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DATA SHEETS – SR ROLLER SCREEN CRUSHER, CONT.

Excl Pre-crusher	SR2049		SR2069	
Incl Pre-crusher	SR2049		SR2069	
Nominal Width (mm)	2000	2000	2000	2000
Nominal Length, total (mm)	6000	6000	8000	8000
Standard Separation (mm)	50	50	50	50
Installed Power / pre-screen (kW)	2 x 7.5	2 x 7.5	4 x 7.5	4 x 7.5
Installed Power / after screen (kW)	7.5	7.5	7.5	7.5
Installed Power / main crusher (kW)	37,0	37,0	37,0	37,0
Installed Power / pre-crusher (kW)		22,0		22,0
Installed Total Power (kW)	59.5	81.5	74.5	96.5
Number of Drives (pcs)	4	5	6	7
Weight of the Machine (kg)	11 700	13 500	14 900	16 700

General Technical Data

- Material to handle is commercial coal
- Maximum feed size: 300 mm
- Separation range: 20-80 mm
- Additional separations and sizes are available, please consult Product Line S&F
- Inclination: 0 degrees
- Rotation detector is included
- Spread of the material at the feed end should be the entire width
- Material speed on the screen should be the same as the conveying speed
- Encapsulated unit
- Nominal roller rotation: 100-150 rpm
- Motors according to IEC standard, enclosure class IP55
- Nominal motor speed: 1500 rpm
- Primary transmission type (drive): gearbox+v-belt
- Secondary transmission type (rollers): roller chain 16B-2 or toothed belt
- Thickness of liners: 8 mm
- Hardness of liners: HB 370-430
- Type of roller coating: spiral, discs *
- Hardness of roller discs: HB 370-430
- Scrapers under the first rollers (appr. 1/3 of the total roller amount)
- Height of the machine: 2,4 m (i.e. +300 mm for the precrusher)

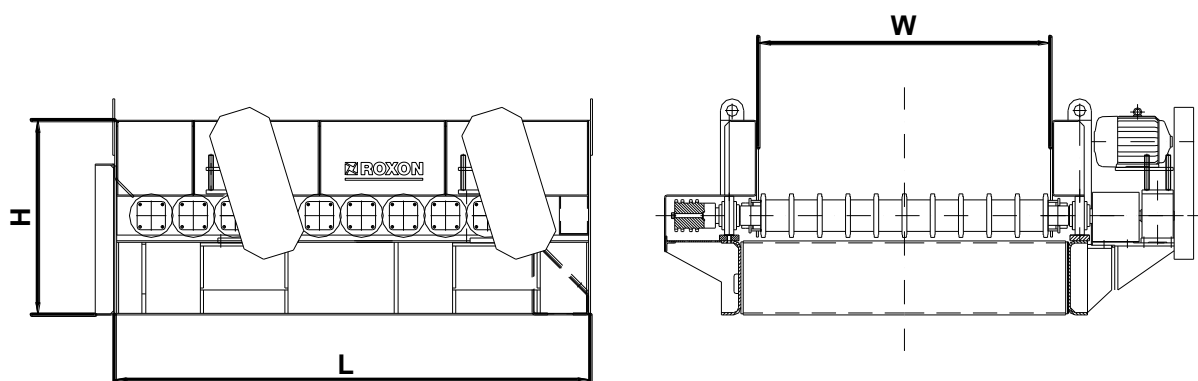
Note! Screening in one or two dimensions (with or without discs), depending on the screening requirements.

Note! Special options for ATEX requirements available by request.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01



Screen Type	Separation Size	Nominal Rotation Speed	Nominal Height (H)	Available Width (W) by 300 mm steps	Available Length (L) by 1000 mm steps	Maximum Feed Capacity
	(mm)	(rpm)	(mm)	(mm)	(mm)	(MTPH)
Roller Grizzly	50-180	25-40	1000	1000-2400	1000-8000	4000 *
Roller Screen	20-80	100-150	1000	1000-2400	1000-8000	3000 **
Roller Screen	3-20	230-350	1000	1000-2400	1000-8000	800 **

* Capacity figure refers to bulk density 1,6 t/m³

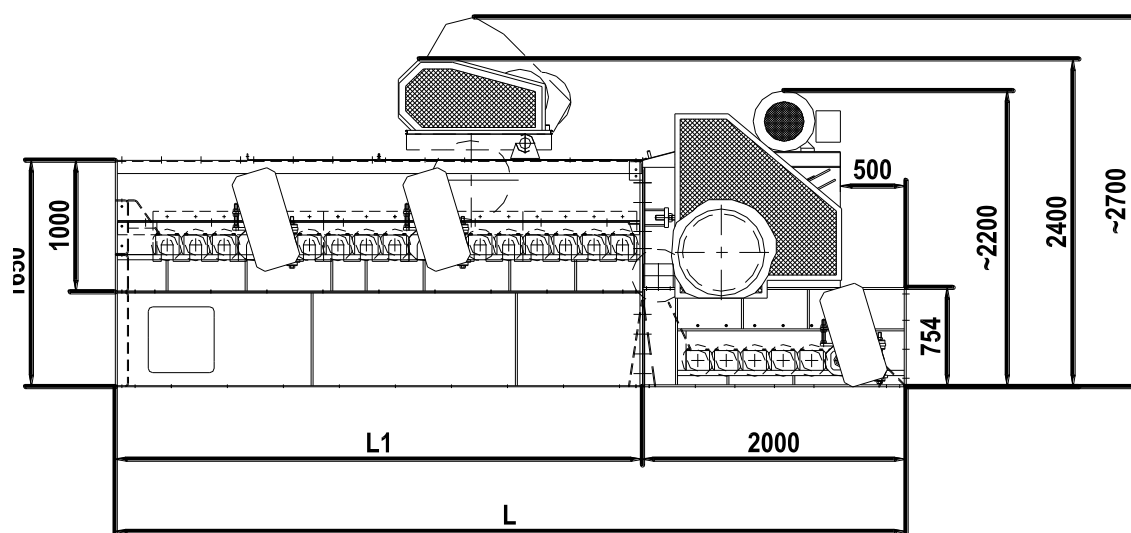
** Capacity figures refer to bulk density 0,9 – 1,1 t/m³

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

DIMENSIONS – SR ROLLER SCREEN CRUSHER



	SR1039	SR1539	SR1549	SR2049	SR2069
Screen Width (mm)	1000	1500	1500	2000	2000
Total Width (mm)	1850	2350	2350	2850	2850
Total Length, L (mm)	4500	5000	6000	6000	8000
Screen Length, L1 (mm)	2500	3000	4000	4000	6000
Approximate Screen Weight (kg) *	2600	3900	4900	5600	8000
Approximate Total Weight (kg) *	8000	9800	10950	11700	14900

* Without precrusher. Separation 50 mm

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

GENERAL PACKING PROCEDURE – SR ROLLER GRIZZLY

Grizzly Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SR1221	7 200	2500	3200	1200	9.6
SR1521	7 900	2500	3500	1200	10.5
SR1821	8 600	2500	3800	1200	11.4
SR2121	9 300	2500	4100	1200	12.3
SR2421	10 000	2500	4400	1200	13.2
SR1541	14 500	4400	3500	1200	18.5
SR1841	15 500	4400	3800	1200	20.1
SR2141	16 500	4400	4100	1200	21.6
SR2441	18 500	4400	4400	1200	23.2
SR1861	24 500	6300	3800	1200	28.7
SR2161	26 500	6300	4100	1200	31.0
SR2461	28 500	6300	4400	1200	33.3
SR1222	5 700	2500	2800	1200	8.4
SR1522	6 250	2500	3200	1200	9.6
SR1822	6 800	2500	3600	1200	10.8
SR2122	7 350	2500	4000	1200	12.0
SR2422	7 900	2500	4400	1200	13.2
SR1542	11 500	4500	3200	1200	17.3
SR1842	12 400	4500	3600	1200	19.4
SR2142	13 300	4500	4000	1200	21.6
SR2442	14 200	4500	4400	1200	23.8
SR1862	20 500	6300	3600	1200	27.2
SR2162	21 500	6300	4000	1200	30.2
SR2462	22 500	6300	4400	1200	33.3

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk S&F.

ROCK PROCESSING GUIDE 2016

Chapter M - SCREENS

SR ROLLER SCREENS AND CRUSHERS - 2016-01-01

GENERAL PACKING PROCEDURE – SR ROLLER SCREENS

Screen Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SR1035	4 000	2700	2100	1200	6.8
SR1535	4 200	3200	2400	1200	9.2
SR2045	7 500	4200	3100	1200	15.6
SR2065	11 200	6200	3100	1200	23.1
SR1234	5 200	2700	2600	1200	8.4
SR1534	5 600	2700	2900	1200	9.4
SR2144	8 000	4200	3700	1200	18.6
SR2454	10 000	5200	4000	1200	25.0
SR2464	13 000	6200	4000	1200	29.8
SR2474	16 000	7200	4000	1200	34.6
SR1237	3 500	2700	2600	1200	8.4
SR1537	5 000	3200	2900	1200	11.1
SR2147	8 000	4200	3400	1200	17.1
SR2167	13 400	6200	3400	1200	25.3
SR2477	16 000	6700	3900	1200	31.4

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk S&F.

GENERAL PACKING PROCEDURE - SR ROLLER SCREEN CRUSHERS

Screen/Crusher Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SR1039	8 500	4700	2100	2900	28.6
SR1539	13 300	5200	2600	2900	39.2
SR1549	15 450	6200	2600	2900	46.7
SR2049	17 700	6200	3100	2900	55.7
SR2069	23 900	8200	3100	2900	73.7

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

When export packing is required (wooden crate etc.), please consult with Global Order Service Desk S&F.



SELECTION GUIDE

GENERAL

WM4000 & WM5000 - Modular Anti-blinding Rubber

WM6000 & WM7000H - Modular Rubber

WM7000 - Modular PU

WX1000 - Wire Mesh

WX6000 - Tensioned Rubber

WX7000 - Tensioned Anti-blinding PU

WX8500 - Tensioned PU

WK6000 - Pre-tensioned Rubber Panel

WK8500 - Pre-tensioned PU Panel

WS6000 - Flat Self-supporting Rubber Panel

WS6000H - Self-supporting Rubber Panel with skidbars

WF9000 - Special PU Screening Media

WA6000 - Accessories

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

SELECTION GUIDE 2016-01-01

	WM4000 & WM5000 Modular anti- blinding rubber	WM6000 & WM7000H Modular rubber	WM7000 Modular PU	WX1000 Wire Mesh	WX6000 Tensioned rubber	WX7000 Tensioned anti-blinding PU
Screening duty:	Final	Intermediate and final	Intermediate and final	Intermediate and final	Intermediate and final	Final
Max feed size (mm):	10 - 50	20 – 200	10 - 100	4 - 200	20 - 150	20 - 30
Separation	2 - 16	10 - 63	1 - 31.5	1 - 90	5.6 - 63	2 - 16
Application:	Dry / anti-blinding	Dry	Wet / dry	Dry	Dry	Dry / anti-blinding
Dewatering	No	No	Yes	No	No	No
Deck design:	Special	Special	Special	Cambered	Cambered	Cambered
Panel type	Modular	Modular	Modular	Tensioned	Tensioned	Tensioned
Material:	Soft rubber	Rubber	Polyurethane	Spring steel	Rubber	Soft Polyurethane
Aperture:	Punched	Moulded and punched	Moulded	Woven	Punched	Punched
Most common thickness (mm):	2.5, 3.5, 5.5, 8, 11 and 15	8, 11, 15, 20, 25, 30, 35 and 45	Hole size dependent	NA	5, 7, 10, 12, 15, 20, 25, 30, 35, 40 and 50	2.5, 3.5 and 5.5
Fastening:	Snap-on	Snap-on	Snap-on	Cross- or length tensioned	Cross- or length tensioned	Cross- or length tensioned
Accessories	Side liner and side liner spacer	Side liner and side liner spacer	Side liner and side liner spacer	Centre hold down and Capping	Centre hold down and Capping	Centre hold down, Centre hold down spacer and Capping

Bulk density max. 1,8 metric ton/m³

If your application falls outside the limits specified above, please contact your Sandvik Mining and Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

SELECTION GUIDE 2016-01-01

	WX8500 Tensioned PU	WK6000 Pre-tensioned rubber panel	WK8500 Pre-tensioned PU panel	WS6000 Flat self- supporting rubber panel	WS6000H Self- supporting rubber panel with skidbars	WF9000 Special PU screening media
Screening duty:	Intermediate and final	Secondary, intermediate	Intermediate and final	Primary, secondary	Primary, secondary	Final
Max feed size (mm):	10 - 100	30 - 250	10 - 100	150 - 300	75 - 400	10 - 50
Separation	1 - 45	16 - 90	1 - 45	45 - 120	45 - 120	2 - 25.4
Application:	Wet / dry	Dry	Wet / dry	Dry	Dry	Wet / dry / anti-blinding
Dewatering	Yes	No	Yes	No	No	No
Deck design:	Cambered	Cambered	Cambered	Flat	Flat	Special
Panel type	Tensioned	Pre-tensioned	Pre-tensioned	Self-supporting	Self-supporting	Special
Material:	Polyurethane	Rubber	Polyurethane	Rubber	Rubber	Polyurethane
Aperture:	Moulded	Punched	Moulded	Moulded and punched	Moulded	Punched
Most common thickness (mm):	Hole size dependent	15, 20, 25, 30, 35, 40, 50 and 60	Hole size dependent	40, 50, 55, 60 and 70	55+20, 70+50 and 70+60	2, 3, 4, 5, 6, 7, 8 and 9
Fastening:	Cross- or length tensioned	Clamp down	Clamp down	Clamp down	Clamp down	Wedged or bolted depending on screen design
Accessories	Centre hold down and Capping	Side hold down, Centre hold down and Capping	Side hold down, Centre hold down and Capping	Side hold down and Centre hold down	Side hold down and Centre hold down	Wedge

Bulk density max. 1,8 metric ton/m³

If your application falls outside the limits specified above, please contact your Sandvik Mining and Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

GENERAL 2016-01-01

MEETING EXPECTATIONS THROUGH INNOVATION AND DEDICATION

Innovation

Our creative way of working result in innovative products, always of the highest quality. Our determination not to compromise is the guiding principle in product design and material selection. We offer user-friendly, value adding products that optimize our customers' processes.

Dedication

In Product Area, Wear Protection & Screening Media we focus on our customers' needs, wishes and ambitions. Our extensive product, process and application know-how helps us in our commitment to solve our customers' screening, dust and wear protection problems in the most professional and cost efficient way possible.

Meeting expectation

If you are looking for innovative, reliable and cost-effective ways of solving various challenges in connection with your present assignment the best way of achieving good results is to have a reliable, competent and dedicated business partner. A partner who can and will live up to promises made, and who will meet your expectations!

Our strong global presence makes it possible for us to serve our customers locally in the best possible way. The various product areas within the Group can all utilize the global distribution and service network, making it easy to solve our customers' most intricate problems. As our customer you have a business partner at the forefront of state-of-the-art technology. A partner who has been a leading actor on the business stage for many years and will remain so for years to come.

Our ambition is to be more than just a supplier of equipment; it is to be a lifecycle service provider, continuously giving our customers increased added value.

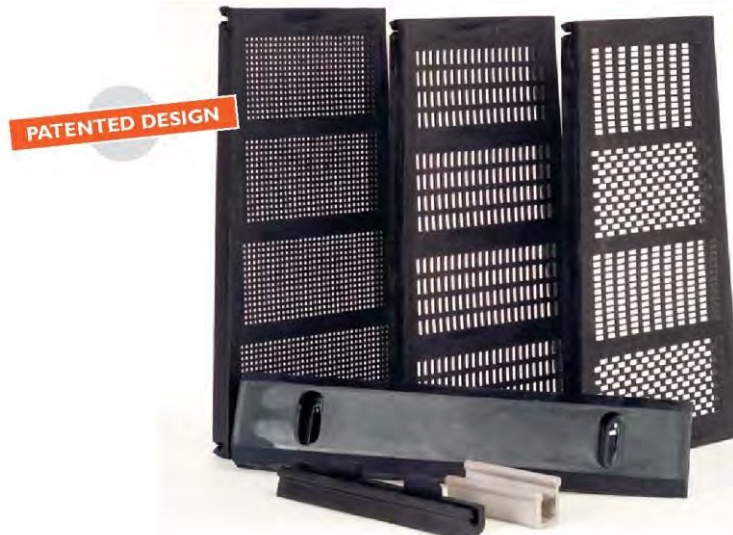
We are proud to present a number of new and interesting products, as well as our existing proven product range.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM4000 & WM5000 MODULAR ANTI-BLINDING SCREENING MEDIA 2016-01-01

WM4000 & WM5000



A MODULAR SCREENING MEDIA OF SOFT RUBBER WITH PUNCHED OPENINGS, PRIMARILY FOR FINE SCREENING IN DIFFICULT CONDITIONS.

Sandvik modular screening media allow for many deck configurations. Using an adapter, the system can be easily mounted on some competitor's assembly profiles.

The screen module is nominally 600 mm x 300 mm and therefore fits most screens. The modular system gives great flexibility. Individual panels can be easily replaced for reasons of wear or in order to change hole size.

Safe and easy installation

A double snap-on locks the modules on extruded steel profiles. The screen modules are designed to protect the profiles against wear. An adapter system has been developed making it possible to install cross-tensioned media on screens, equipped with our snap-on profile. Combinations of modules and cross-tensioned media are also possible.

Special soft rubber prevents pegging and blinding

Sandvik anti-blinding modules are made of a special soft rubber of flexibility that prevents pegging and blinding. When screening small particles with high moisture content WM4000 and WM5000 prevents build up of material on the screen surface. With these modules, the screen deck can be either flat or stepped. A flat

deck enables the material to be distributed evenly over the full width of the screen, increasing efficiency. The steps allow the smaller particles to come into contact with the screen surface more rapidly.

More accurate screening

The risk of material migrating is reduced through the trapezoidal shape of the panel, giving a staggered hole pattern and joints between the panels that do not run parallel with the screen side plates. The side protection is wedge shaped to allow for minor adjustment in width, and also to prevent material migrating along the sides of the screen. The result is more accurate screening and less misplaced particles in the end product.

Reduced noise level and improved working environment

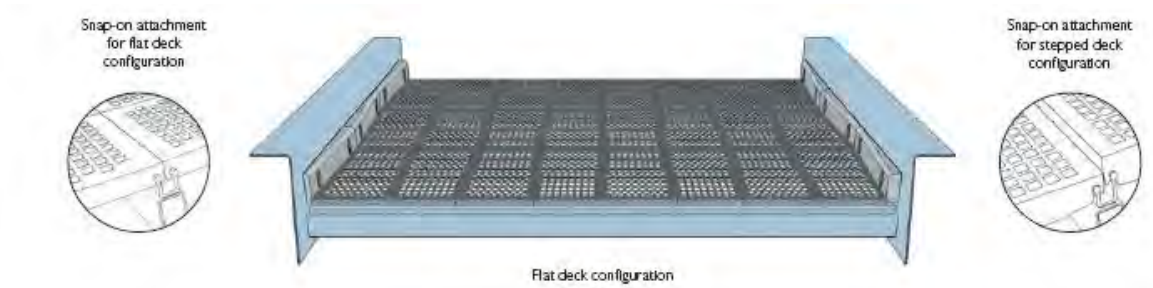
By using rubber modules in the screen, the noise level in the plant is reduced, improving the working environment. Low weight and manageable size makes Sandvik modules easy and safe to handle and ship. Sandvik anti-blinding modular screening media is also manufactured in hardwearing rubber for primarily fine to medium coarse screening in dry applications, and polyurethane primarily for wet screening.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM4000 & WM5000 MODULAR ANTI-BLINDING SCREENING MEDIA 2016-01-01

WM4000 & WM5000



Type

WM4000 & WM5000 modular anti-blinding screening media.

Dimensions

Thicknesses: 2.5, 3.5, 5.5, 8, 11 and 15 mm.

Length: 600 mm.

Width: 320 / 265 mm.

Installation

On extruded steel profiles mounted crosswise in the screen. Stepped deck configuration using high-low snap-on profiles or flat deck configuration using low-low snap-on profile. On screens with a width dividable by 300 mm and a length dividable by 600 mm only full modules are needed. For all others, narrow modules and side liner spacers are available. Maximum drop height on the top deck is 300 mm, in between decks max. 800 mm.

Materials

Wearing material: 40 Shore A rubber (50 Shore A in t=2.5 mm).

Reinforcement: Steel frame.

Tensioning device: Snap-on attachment.

Apertures

Punched holes available in all thicknesses, max. hole size 38 mm.

FR - Square holes in line (rows staggered): Used under normal conditions.

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

ST, STS - Slots across the material flow: Used for fine screening

Applications

Sandvik anti-blinding modular screening media is designed primarily for final and intermediate stage screening, generally with separations between 2–16 mm with a max feed lump size between 10–50 mm. Especially suitable for applications with high fines content.

NOTE

Do not use in applications with any amount of oil present. The recommended hole size should be 1.25–2.5 times the screen panel thickness. Check the bed depth since an excessively high bed depth can cause sagging and an excessively thin bed might make the material bounce.

Max load limitation

2.5 and 3.5 mm: 60 kg/m^2 ,
 5.5 mm: 80 kg/m^2 , 8 mm: 100 kg/m^2 ,
 11 mm: 120 kg/m^2 , 15 mm: 140 kg/m^2 .

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM4000 & WM5000 MODULAR ANTI-BLINDING SCREENING MEDIA 2016-01-01

WM4000 & WM5000

RECOMMENDED THICKNESS AND AREA OF USE

Separation (mm)	Max particle size (mm)*										
	10	20	30	50	75	100	125	150	200	250	300
2	2.5	2.5	-	-	-	-	-	-	-	-	-
4 - 6	3.5	3.5	3.5	-	-	-	-	-	-	-	-
8	3.5, 5.5	3.5, 5.5	5.5	-	-	-	-	-	-	-	-
10 - 12,5	-	5.5, 8	8	8	-	-	-	-	-	-	-
16	-	8, 11	8, 11	8, 11	-	-	-	-	-	-	-
19 - 25,4	-	-	15	15	-	-	-	-	-	-	-
31,5	-	-	-	-	-	-	-	-	-	-	-
37,5	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application

* Bulk density max. 1.8 metric ton/m³



= Borderline case



= Not recommended

If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM6000 & WM7000H MODULAR RUBBER SCREENING MEDIA 2016-01-01

WM6000 & WM7000H



A MODULAR SCREENING MEDIA OF RUBBER WITH PUNCHED OR MOULDED OPENINGS PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN DRY APPLICATION

Fit most screens

Sandvik modular rubber screening media allow for many deck configurations. Using an adapter, the system can be easily mounted on some competitor's assembly profiles. The screen module is nominally 600 mm x 300 mm and therefore fits most screens. The modular system gives great flexibility. Individual panels can be easily replaced for reasons of wear or in order to change aperture size.

Safe and easy installation

A double snap-on locks the modules on extruded steel profiles. The screen modules are designed to protect the profiles against wear. An adapter system has been developed making it possible to install cross-tensioned media on screens, equipped with our snap-on profile. Combinations of modules and cross-tensioned media are also possible.

Long life and minimal maintenance requirements

Sandvik modular screening media is made of hardwearing rubber material specially developed to give long life and minimal maintenance requirements. The screen deck can be made either flat or stepped. A flat deck

enables the material to be distributed evenly over the full width of the screen, increasing efficiency. Steps allow the smaller particles to come into contact with the screen surface more rapidly.

More accurate screening

The risk of material migrating is reduced through the trapezoidal shape of the panel, giving a staggered hole pattern and joints between the panels that do not run parallel with the screen side plates. The side protection is wedge shaped to allow for minor adjustment in width, and also to prevent material migrating along the sides of the screen. The result is more accurate screening and less misplaced particles in the end product.

Reduced noise level and improved working environment

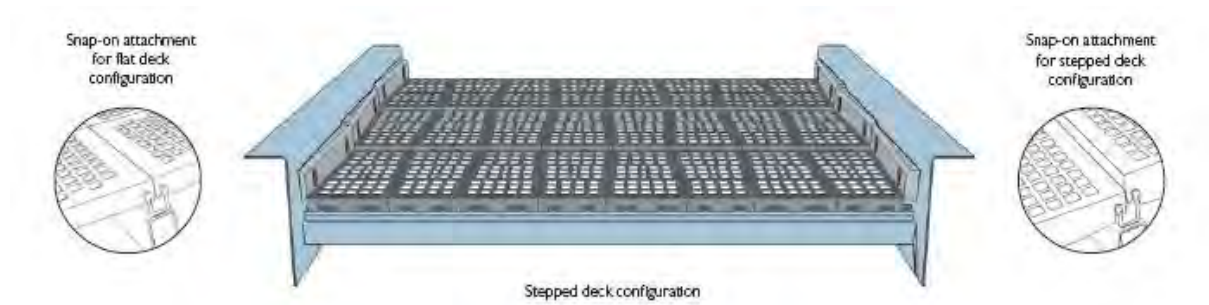
By using rubber modules in the screen, the noise level in the plant is reduced, improving the working environment. Low weight and manageable size makes Sandvik modules easy and safe to handle and ship. Sandvik modular screening media is also manufactured in polyurethane, primarily for wet screening, and soft, flexible rubber for fine screening in difficult conditions.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM6000 & WM7000H MODULAR RUBBER SCREENING MEDIA 2016-01-01

WM6000 & WM7000H



Type

WM6000 & WM7000H modular rubber screening media.

Dimensions

Thicknesses:

Punched: 8, 11, 15, 20, 25, 30, and 35 mm.
Molded: 10, 12.5, 15, 20, 25, 30, 35, 40 and 45 mm.

Length: 600 mm.

Width: 320 / 265 mm.

Installation

On extruded steel profiles mounted crosswise in the screen. Stepped deck configuration using high-low snap-on profiles or flat deck configuration using low-low snap-on profile. On screens with a width dividable by 300 mm and a length dividable by 600 mm only full modules are needed. For all others narrow modules and side liner spacers are available. If the feed drop height exceeds 1 m, either an impact pad or a thicker screen panel should be used at the point of impact.

Materials

Wearing material: WM6000 - 60 Shore A rubber,

WM7000H - 70 Shore A rubber.

Reinforcement: Steel frame.

Tensioning device: Snap-on attachment.

Apertures

Max hole size punched: FR88

Max hole size moulded: FR120

FR - Square holes in line (rows staggered):

Used under normal conditions.

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

CR, CS - Round holes: Used for screening coarse crushed material only when extra long wear life is required. Increased risk of pegging. Less open area.

Applications

Sandvik modular rubber screening media is designed primarily for final and intermediate stage screening, generally with separations between 10 - 63 mm and a max feed lump size between 20 - 150 mm. WM7000H modules with moulded apertures available primarily for mining applications.

NOTE

Do not use in applications with any amount of oil present. The recommended hole size should be 1.25 –2.5 times the screen panel thickness (punched holes).

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM6000 & WM7000H MODULAR RUBBER SCREENING MEDIA 2016-01-01


WM6000 & WM7000H


RECOMMENDED THICKNESS AND AREA OF USE

(Thickness 8-35 mm valid for punched apertures only. Check availability of moulded apertures)


Max particle size (mm)*


Separation (mm)	10	20	30	50	75	100	125	150	200	250	300
2	-	-	-	-	-	-	-	-	-	-	-
4 - 6	-	-	-	-	-	-	-	-	-	-	-
8	8	8	8	-	-	-	-	-	-	-	-
10 - 12,5	-	8	8	8, 11	-	-	-	-	-	-	-
16	-	8, 11	11, 15	11, 15	15	-	-	-	-	-	-
19 - 25,4	-	-	11, 15	11, 15	15, 20	20	-	-	-	-	-
31,5	-	-	-	15, 20	15, 20	20, 25	25	-	-	-	-
37,5	-	-	-	15, 20	20, 25	25, 30	30	-	-	-	-
45	-	-	-	-	25, 30	30, 35	30, 35	35	-	-	-
63	-	-	-	-	25, 30	30, 35	35, 45	45	45	-	-
70 - 90	-	-	-	-	-	45	45	45	45	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-

 = Recommended area of use

 = Improbable application

* Bulk density max. 1.8 metric ton/m³

 = Borderline case

 = Not recommended

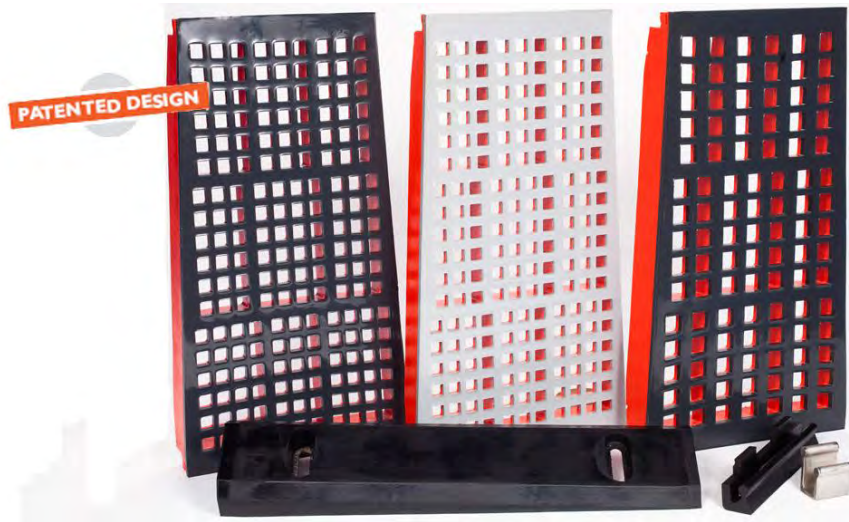
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM7000 MODULAR PU SCREENING MEDIA 2016-01-01

WM7000



A MODULAR SCREENING MEDIA OF POLYURETHANE WITH MOULDED OPENINGS PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN WET APPLICATIONS.

Fit most screens, safe and easy installation

Sandvik PU modules allow for many deck configurations. Using an adapter, the system can be easily mounted on some competitor's assembly profiles. The screen module is nominally 600 mm x 300 mm and therefore fits most screens. The modular system gives great flexibility. Individual panels can be easily replaced for reasons of wear or in order to change hole size. A double snap-on locks the modules on extruded steel profiles. The screen modules are designed to protect the profiles against wear. An adapter system has been developed making it possible to install cross-tensioned media on screens, equipped with our snap-on profile. Combinations of modules and cross-tensioned media are also possible.

Many deck configurations

The screen deck can be either flat, stepped, or with a high-low design. A flat deck enables the material to be distributed evenly over the full width of the screen, increasing efficiency. Steps allow the smaller particles to come into contact with the screen surface more rapidly. The high-low design causes the material closest to the screen surface to zigzag over the screen. This slows the material down, resulting in improved screening efficiency.

Long life and minimal maintenance requirements

The PU modules are made of Dual hardness with

a rigid lattice at the base for strength and with a soft, flexible screen membrane at the top for reduced blinding and pegging.

This design gives a long life and low weight, therefore reducing the load on the screen. The self-supporting design gives narrower blank areas between the panels, allowing greater open areas, which result, in higher capacity and less risk of material migrating.

More accurate screening

The risk of material migrating is reduced through the trapezoidal shape of the panel, giving a staggered hole pattern and joints between the panels that do not run parallel with the screen side plates. The side protection is wedge shaped to allow for minor adjustment in width, and also to prevent material migrating along the sides of the screen. The result is more accurate screening and less misplaced particles in the end product.

Reduced noise level and improved working environment

By using polyurethane modules in the screen, the noise level in the plant is reduced, improving the working environment. Low weight and manageable size makes the Sandvik PU modules easy and safe to handle and ship.

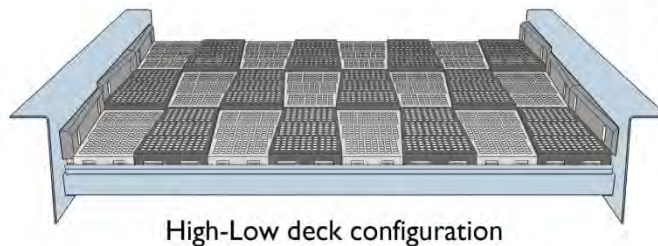
ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM7000 MODULAR PU SCREENING MEDIA 2016-01-01

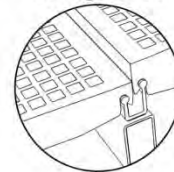
WM7000

Snap-on attachment
for flat deck
configuration



High-Low deck configuration

Snap-on attachment
for hi/low and stepped deck
configuration



Type

WM7000 modular polyurethane screening media.

Dimensions

Thicknesses: Hole size dependent.

Length: 600 mm.

Width: 320 / 265 mm.

Installation

On extruded steel profiles mounted crosswise in the screen.

Stepped deck configuration using high-low snap-on profiles, flat deck configuration using low-low snap-on profile or high-low deck configuration using high-low snap-on profiles and thick and thin modules.

On screens with a width dividable by 300 mm and a length dividable by 600 mm only full modules are needed. For all others narrow modules and side liner spacers are available.

If the feed drop height exceeds 1 m, either an impact pad or a thicker screen panel should be used at the point of impact.

Materials

Wearing material: Polyurethane.

Reinforcement: Steel frame

Tensioning device: Snap-on attachment.

Apertures

Moulded holes.

FR - Square holes 3.5 - 40 mm in line (rows staggered): Used under normal conditions.

STS - Slots from 0.5 - 3 mm across the material flow: Used for wet screening and in dewatering screens.

SLS - Slots from along the material flow

Applications

Sandvik modular polyurethane screening media is used primarily for wet screening in intermediate and final stages, generally with separations between 1 - 31.5 mm and a max feed lump size between 10 - 100 mm.

Ska vara kursiv text

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WM7000 MODULAR PU SCREENING MEDIA 2016-01-01



WM7000

RECOMMENDED AREA OF USE

Separation (mm)	Max particle size (mm)**										
	10	20	30	50	75	100	125	150	200	250	300
Dewatering	*	-	-	-	-	-	-	-	-	-	-
1 - 2	*	*	-	-	-	-	-	-	-	-	-
4 - 6	*	*	*	-	-	-	-	-	-	-	-
8	*	*	*	-	-	-	-	-	-	-	-
10 - 12,5	-	*	*	*	-	-	-	-	-	-	-
16	-	*	*	*	*	-	-	-	-	-	-
19 - 25,4	-	-	*	*	*	-	-	-	-	-	-
31,5	-	-	-	*	*	*	*	-	-	-	-
37,5	-	-	-	*	*	*	*	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application



= Borderline case



= Not recommended

* Sandvik WM7000 modular PU screening media thickness is hole size dependent

** Bulk density max. 1.8 metric ton/m³

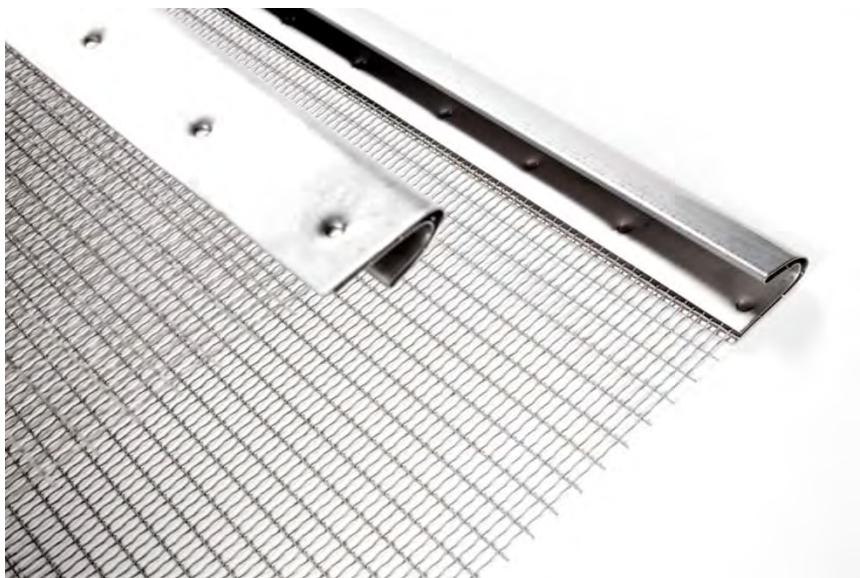
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX1000 TENSIONED WIRE MESH SCREENING MEDIA 2016-01-01

WX1000



A TENSIONED WIRE MESH SCREENING MEDIA FOR FINE TO MEDIUM COARSE SCREENING IN DRY APPLICATIONS.

WX1000 is tailor made to suit different screens

WX1000 is intended for installation in screens with cambered decks complete with support bars. The support bars are protected with capping rubber available in several sizes. For wide screens, centre hold down bars are recommended to prevent the media from flapping. Tensioned wire mesh and polymer screening media can be combined on the same deck to optimize screening. Tensioning hooks can be manufactured to fit almost any screen with cambered deck on the market.

Wide range for a variety of applications

WX1000 is available in a variety of widths, lengths and with different steel wire thicknesses. A large selection of aperture sizes is available, both square and slotted. Steel wire thickness is selected based on the application: thinner wire when a more flexible cloth or high accuracy is needed, thicker wire when maximum lifetime is requested or when coarse material is fed to the screen. Wire mesh cloths are available in several weave patterns and steel grades. For demanding

applications, welded panels are recommended.

Large open area

WX1000 is produced by precision crimping of high quality steel wire. The aperture size is created upon crimping of the wire. WX1000 has large open area and thereby high capacity and great accuracy. Slotted holes are used to provide an even larger open area than with regular square holes. Long slot wire mesh is suitable for applications where the material is damp and tends to blind, or when larger throughput is required.

Simplicity and low initial cost

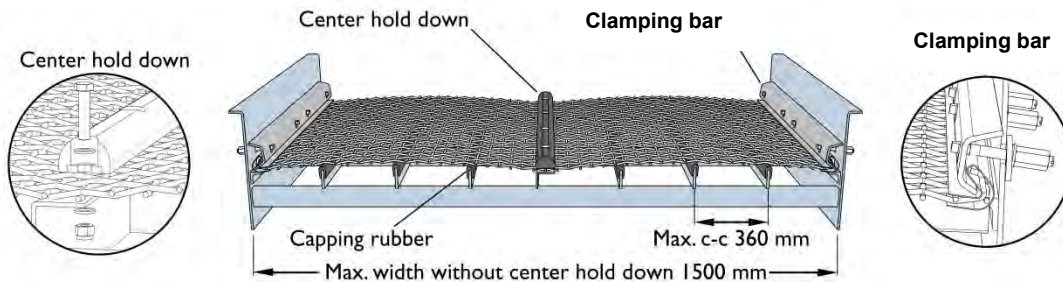
The wide range of wire thickness, grade and hooks makes wire mesh suitable for applications where the separation size is frequently changed. WX1000 is quick and easy to change, which facilitates the cloth replacement. WX1000 has a low initial cost compared to other types of media on the market.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX1000 TENSIONED WIRE MESH SCREENING MEDIA 2016-01-01

WX1000



Type

WX1000 tensioned wire mesh screening media.

Dimensions

Diameter of wires: Depending on hole size and application.

Length (cross-tensioned): max. 2000 mm.

Width (cross-tensioned): max. 3000 mm.

Max width without centre hold down: 1800 mm.

Length (length tensioned): max. 3000 mm.

Installation

Different hook designs are available (see pictures). If the drop height is above average a larger wire diameter should be used at the point of impact.

Materials

Wire material: Spring steel.

Tensioning device: Steel hooks.

Apertures

FR - Square holes in line: 2-100 mm.

STS - Slots across the material flow: 2-18 mm.

SLS - Slots with the material flow: 2-18 mm.

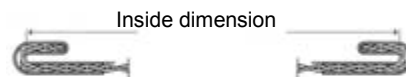
Used when higher capacity is desired, and when accuracy is less important than size control to avoid pegging in small apertures.

Applications

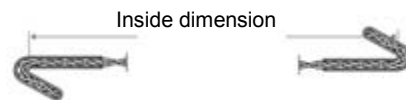
This is a tensioned screening media used primarily for fine to medium screening in dry applications. Generally with separations between 1-90 mm and max feed lump size at 200 mm.

Hooks

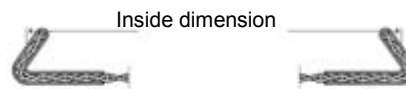
U-fold 180°



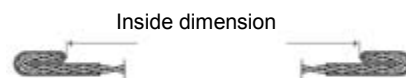
S-fold



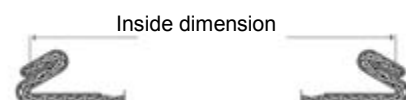
U-fold



Compressed fold



Double U-fold



ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX1000 TENSIONED WIRE MESH SCREENING MEDIA 2016-01-01



WX1000

HOLE SIZE SELECTION GUIDE VIBRATING INCLINED SCREEN, CRUSHED MATERIAL

Separation (mm)	Hole size (mm)	Wire thickness		
		Light duty (mm)	Medium duty (mm)	Heavy duty (mm)
2	2,5	1.1	1.3	1.5
4	5	1.3	2	2.5
5	6	2	2	2 and 2.5
6	7	1.8	2	2 and 2.5
8	9	2	2.5	3
10	12	2.5	3	4 and 5
11	13	3	3	4
14	16	3	4	5
16	18	4	4	6
18	20	4	5	6
20	22	4	6	6
22	24	5	6	6
25	27	5	6	6
28	30	6	6	8
30	32	6	6	8
35	37	6	6	6
40	42	6	8	8
45	50	8	10	10
50	55	8	10	10
60	65	8	10	12
70	75	10	12	12
80	85	10	12	12
90	100	10	12	12

In the cases marked in blue, consider Sandvik Rubber media

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX6000 TENSIONED RUBBER SCREENING MEDIA 2016-01-01

WX6000



A TENSIONED RUBBER SCREENING MEDIA WITH PUNCHED HOLES PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN DRY APPLICATIONS

Tailor-made to suit the application

It is intended for installation in screens with cambered screen decks complete with support bars. The support bars are protected with capping rubber available in several sizes. For wide screens, centre hold down bars is recommended to prevent the media from flapping. Sandvik tensioned rubber screening media is available in a variety of widths, lengths and thicknesses. A large selection of apertures is available, including round, square and slotted. The hole pattern is punched out with precision in an efficient and ultra-modern automatic punching machine. When the hole pattern is designed, blank areas are left over the support bars. The hole pattern is available in standard or close pitch, depending on the requirement for optimum open area or maximum panel life.

Long life and minimal maintenance requirements

This product is made of hardwearing rubber specially produced to cope with the tough requirements imposed on screening cloth. Its high quality gives a long life resulting in long intervals between servicing and minimal maintenance requirements. The cloth has strong fabric reinforcement to ensure minimal stretching,

reducing the requirement for subsequent re-tensioning.

Hole patterns can also be tailored to fit screens special requirements – for example, with blank sections in areas with high localized wear.

Replaces wire mesh without modifications to the screen

Sandvik tensioned rubber screening media can be manufactured for both crosswise and lengthways tensioned screens. It replaces wire cloth without modification of the screen.

Flexible rubber prevents pegging and blinding

The flexibility of the rubber reduces the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements.

Reduced noise level and improved working environment

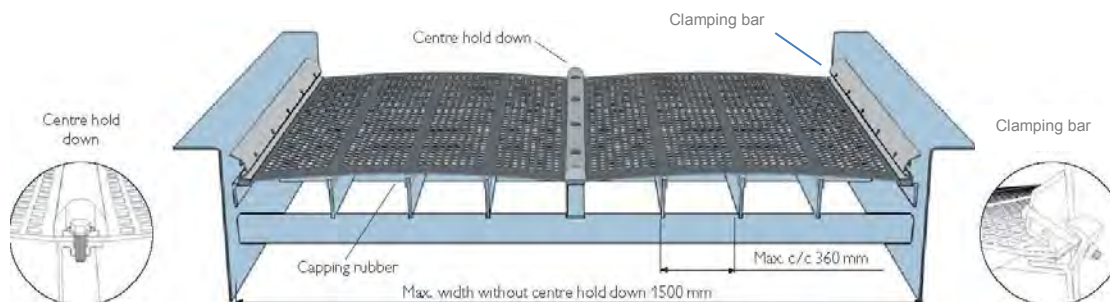
By using rubber media on the screens, the noise level in the plant is reduced, improving the working environment. Sandvik tensioned rubber cloths are easy to handle resulting in the reduced risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX6000 TENSIONED RUBBER SCREENING MEDIA 2016-01-01

WX6000



Type

WX6000 tensioned rubber screening media.

Dimensions

Thicknesses: 5, 7, 10, 12, 15, 20, 25, 30, 35, 40 and 50 mm.

Length (cross tensioned): 1000, 1200 and 1500 mm in stock. Other lengths on request

Width (cross tensioned): Max 3000 mm.

Max. width without centre hold down: 1500 mm.

Length (longitudinally tensioned): Max 3000 mm.

Installation

On cambered screen decks. Cross tensioned or longitudinally tensioned.

Different hook designs are available (see pictures).

If the feed drop height exceeds 1 m, either an impact pad or a thicker screen panel should be used at the point of impact.

Materials

Wearing material: 60 Shore A rubber.

Reinforcement: Hot stretched Polyester cord fabric.

Tensioning device: Extruded aluminium hooks.

Apertures

Punched holes, max. 100 mm, staggered or in line. For larger holes contact your Sandvik Mining or Sandvik Construction representative.

FR - Square holes in line: Used under normal conditions.

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

ST, STS - Slots across the material flow:

Used for wet screening and in dewatering screens.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

CR, CS - Round holes: Used for screening coarse crushed material only when extra long wear life is required. Increased risk of pegging. Less open area.

Applications

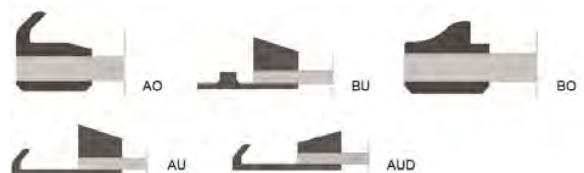
Sandvik tensioned rubber screening media can be regarded as an all-round screening media designed primarily for final and intermediate stage screening in dry applications, generally with separations between 5.6 - 63 mm and max feed lump size of 150 mm.

NOTE

Do not use in applications with any amount of oil present.

The recommended hole size should be 1.25–2.5 times the screen panel thickness.

Hooks for cross tensioned cloths



Hooks for longitudinally tensioned cloths





ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX6000 TENSIONED RUBBER SCREENING MEDIA 2016-01-01



ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX6000 TENSIONED RUBBER SCREENING MEDIA 2016-01-01



WX6000

RECOMMENDED THICKNESS AND AREA OF USE

Separation (mm)	Max particle size (mm)*									
	10	20	30	50	75	100	125	150	200	250
2	-	-	-	-	-	-	-	-	-	-
4 - 6	5	5	5	-	-	-	-	-	-	-
8	5	5	5, 7	-	-	-	-	-	-	-
10 - 12,5	-	7	7	10, 12	-	-	-	-	-	-
16	-	7, 10	10, 12	12	15	-	-	-	-	-
19 - 25,4	-	-	12, 15	12, 15	15, 20	20	-	-	-	-
31,5	-	-	-	15, 20	15, 20	20, 25	25	-	-	-
37,5	-	-	-	20	20, 25	25, 30	30	-	-	-
45	-	-	-	-	25, 30	30, 35	30, 35	35	-	-
63	-	-	-	-	30	30, 35	35, 40	50	50	-
70 - 90	-	-	-	-	-	35, 40	50	50	50	-
105	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application

* Bulk density max. 1.8 metric ton/m³



= Borderline case



= Not recommended

If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX7000 TENSIONED ANTI-BLINDING PU SCREENING MEDIA 2016-01-01

WX7000



A TENSIONED SOFT POLYURETHANE SCREENING MEDIA WITH DAM BARS AND PUNCHED HOLES PRIMARILY FOR FINE SCREENING IN DIFFICULT CONDITIONS

Tailor-made to suit the application

This product is available in a variety of widths, lengths and thicknesses. It can be manufactured for both crosswise and lengthways tensioned screens with cambered screen decks. It replaces wire cloth without modification of the screen. The support bars are protected with standard capping rubber available in several sizes. For wide screens, centre hold down bars is recommended to prevent the media from flapping.

More accurate screening

Special dam bars slow down undersize material on the screen deck while allowing oversize material to pass quickly over the deck. The result is more accurate screening and less misplaced particles in the end product. The hole pattern is punched out with precision in an ultra-modern automatic punching machine. When the hole pattern is designed, blank areas are left over the support bars. A large selection of apertures is available, including round, square and slotted in standard or close pitch, depending on the requirement for optimum open area or maximum panel life. Hole patterns can also be tailored to fit screens special requirements – for example, with blank sections in areas with high localized wear.

Long life and minimal maintenance requirements

Sandvik tensioned anti-blinding screening media is made of hardwearing polyurethane specially designed to cope with the tough requirements imposed on screening cloth. Its high quality gives a long life resulting in long intervals between servicing and minimal maintenance requirements. The cloth is reinforced with steel wires, resulting in a more secure fixing, minimal stretching and a reduced requirement for adjustment.

Soft polyurethane prevents pegging and blinding

The flexibility of the soft polyurethane reduces the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements. These cloths are especially suitable for fine screening in difficult conditions.

Reduced noise level and improved working environment

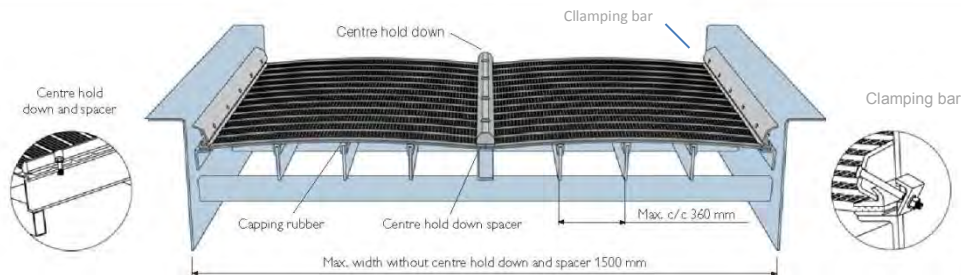
By using polyurethane media on the screens, the noise level in the plant is reduced, improving the working environment. These cloths are easy to handle resulting in the reduced risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX7000 TENSIONED ANTI-BLINDING PU SCREENING MEDIA 2016-01-01

WX7000



Type

WX7000 tensioned anti-blinding polyurethane screening media.

Dimensions

Thicknesses: 2.5, 3.5 and 5.5mm.

Length (cross tensioned): 1000, 1200 and 1500 mm in stock. Other lengths on request.

Width (cross tensioned): Max width 3000 mm. Max. width without centre hold down and spacer 1500 mm.

Length (longitudinally tensioned): Max length 3000 mm.

Installation

On cambered screen decks. Cross tensioned or longitudinally tensioned. Different hook designs are available (see pictures). If the feed drop height exceeds 0,5 m, either an impact pad or a thicker screen panel should be used at the point of impact.

Materials

Wearing material: Polyurethane.

Reinforcement: Steel wires.

Tensioning device: Extruded aluminium hooks.

Apertures

Punched holes, max. 20 mm, staggered or in line.

FR - Square holes in line: Used under normal conditions.

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

ST, STS - Slots across the material flow: Used

for fine separation and wet screening.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

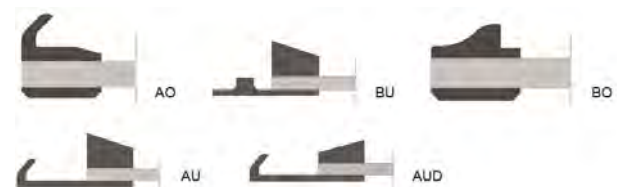
Applications

Sandvik tensioned anti-blinding screening media is a soft polyurethane screening media with dam bars primarily for intermediate and final stage screening, generally with separations between 2 - 16 mm and max feed lump size of 30 mm. Especially suitable for applications with high fines content.

NOTE

The recommended hole size should be 1.25–3.5 times the screen panel thickness.

Hooks for cross tensioned cloths



Hooks for longitudinally tensioned cloths



ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX7000 TENSIONED ANTI-BLINDING PU SCREENING MEDIA 2016-01-01



WX7000

RECOMMENDED THICKNESS AND AREA OF USE

Separation (mm)	Max particle size (mm)*										
	10	20	30	50	75	100	125	150	200	250	300
2	2.5	2.5	-	-	-	-	-	-	-	-	-
4 - 6	2.5	2.5	3.5	-	-	-	-	-	-	-	-
8	3.5	3.5	5.5	-	-	-	-	-	-	-	-
10 – 12.5	-	5.5	5.5	-	-	-	-	-	-	-	-
16	-	5.5	5.5	-	-	-	-	-	-	-	-
19 – 25.4	-	-	-	-	-	-	-	-	-	-	-
31.5	-	-	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application



= Borderline case



= Not recommended

* Bulk density max. 1.8 metric ton/m³

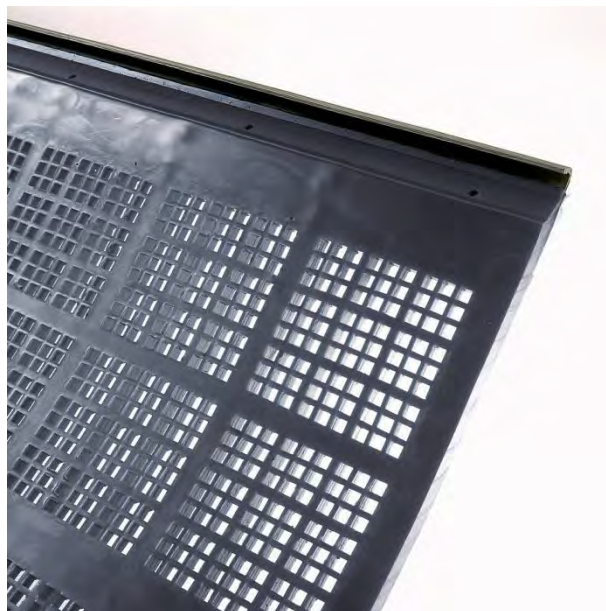
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX8500 TENSIONED PU SCREENING MEDIA 2016-01-01

WX8500



A TENSIONED POLYURETHANE SCREENING MEDIA WITH MOULDED HOLES PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN WET APPLICATIONS

Sandvik tensioned PU screening media is tailor-made to suit the application

It is intended for installation in screens with cambered screen decks complete with support bars. The support bars are protected with capping rubber available in several sizes. For wide screens, centre hold down bars is recommended to prevent the media from flapping. Sandvik tensioned PU screening media is available in a variety of widths, lengths and thicknesses.

Moulded apertures for more accurate screening

A large selection of square and slotted apertures is available. During the moulding process apertures are created using special moulds with release angles. When the hole pattern is designed, blank areas are left over the support bars. Hole patterns can also be tailored to fit a screen's special requirements – for example, with blank sections in areas with high localized wear.

Long life and minimal maintenance requirements

This product is made of hardwearing polyurethane specially designed to cope with

the tough requirements imposed on screening cloth. Its high quality gives a long life resulting in long intervals between servicing and minimal maintenance requirements. The moulded holes and the flexibility of the polyurethane reduce the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements. The cloth is reinforced with steel wires, resulting in a more secure fixing, minimal stretching and a reduced requirement of adjustment.

Replaces wire mesh without modifications to the screen

Sandvik tensioned PU screening media can be manufactured for both crosswise and lengthways tensioned screens. It replaces wire cloth without modification of the screen.

Reduced noise level and improved working environment

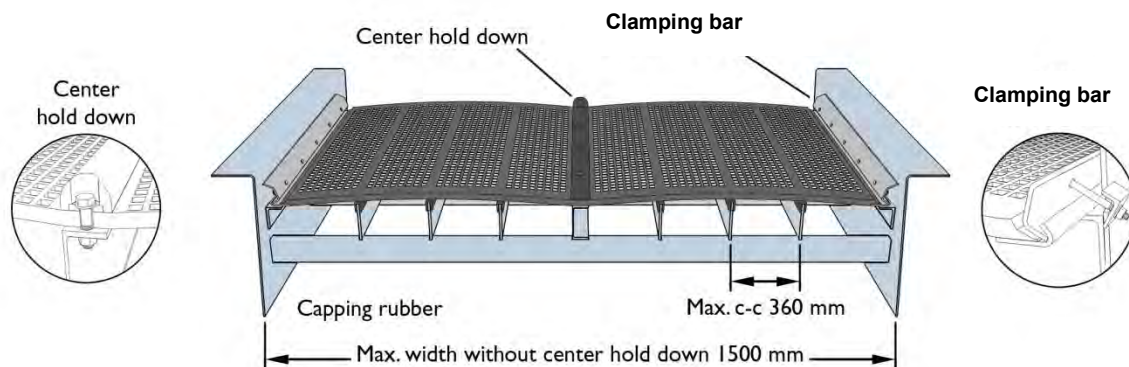
By using polyurethane media on the screens, the noise level in the plant is reduced, improving the working environment. Sandvik tensioned PU cloths are easy to handle resulting in the reduced risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX8500 TENSIONED PU SCREENING MEDIA 2016-01-01

WX8500



Type

WX8500 tensioned polyurethane screening media.

Dimensions

Thicknesses: Hole size dependent.

Length (cross tensioned): 1000, 1200 and 1500 mm as standard. Other lengths on request.

Width (cross tensioned): Max width 2440 mm. Max. width without centre hold down: 1500 mm.

Length (length tensioned): Max length 2440 mm.

Installation

On cambered screen decks. Cross tensioned or longitudinally tensioned.

Different hook designs are available (see pictures). If the feed drop height is over 1 m, either an impact pad or a thicker screen panel should be used at the point of impact.

Materials

Wearing material: Polyurethane.

Reinforcement: Steel wires.

Tensioning device: Steel hooks.

Apertures

FR - Square holes 3 - 51 mm in line: Used under normal conditions.

STS - Slots from 0,5 – 16,5 mm across the material flow: Used for wet screening and in dewatering screens.

SLS - Slots from 0,5 – 16,5 mm with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

Applications

This is a polyurethane screening media used primarily for wet screening in intermediate and final stages, generally with separations between 1 - 45 mm and max feed lump size of 100 mm.

Hooks for cross tensioned cloths



Hook for longitudinally tensioned cloths



ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WX8500 TENSIONED PU SCREENING MEDIA 2016-01-01



WX8500

RECOMMENDED AREA OF USE

Separation (mm)	Max particle size (mm)**										
	10	20	30	50	75	100	125	150	200	250	300
Dewatering	*	-	-	-	-	-	-	-	-	-	-
1 - 2	*	*	-	-	-	-	-	-	-	-	-
4 - 6	*	*	*	-	-	-	-	-	-	-	-
8	*	*	*	-	-	-	-	-	-	-	-
10 - 12,5	-	*	*	*	-	-	-	-	-	-	-
16	-	*	*	*	*	-	-	-	-	-	-
19 - 25,4	-	-	*	*	*	*	-	-	-	-	-
31,5	-	-	-	*	*	*	*	-	-	-	-
37,5	-	-	-	*	*	*	*	-	-	-	-
45	-	-	-	-	*	*	*	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application



= Borderline case



= Not recommended

* Sandvik WX8500 tensioned PU screening media thickness is hole size dependent

** Bulk density max. 1.8
metric ton/m³

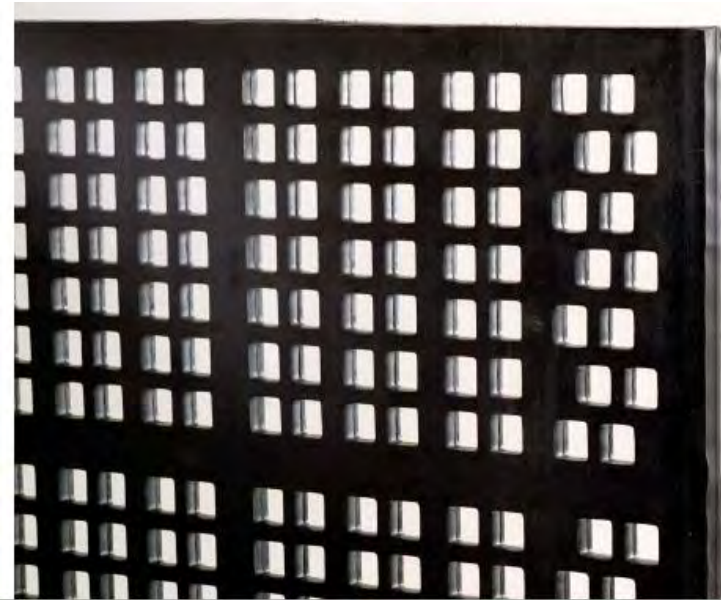
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK6000 PRE-TENSIONED RUBBER SCREEN PANEL 2016-01-01

WK6000



A PRE-TENSIONED RUBBER SCREEN PANEL, WITH PUNCHED HOLES, PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN DRY APPLICATIONS

Suitable for cambered screen decks and trommel screens

Sandvik pre-tensioned rubber screening media is intended for installation in screens with cambered screen decks, equipped with support bars. The support bars would be protected with capping rubber. Panels are secured using Sandvik hardwearing side securing system. For wide screens, centre hold down bars is recommended to prevent the panel from flapping. The panel has a strong reinforcement consisting of a flat bar frame and a pre-tensioned fabric, giving it stability and eliminating the need for subsequent adjustment. The flat bar reinforcement of the panel enables it to be rolled to a radius, making it suitable for Trommel screens.

Sandvik pre-tensioned rubber screen panels are tailor-made to suit the application

A made to measure panel manufactured in a number of lengths, widths and thicknesses. It is available with a variety of hole sizes. The apertures are punched for maximum flexibility. The location of the hole pattern can be tailored to suit the special requirements of a particular screen – for example, with blank areas in

areas of high local wear. The hole pattern is available in standard or close pitch depending on the requirement for optimum open area or maximum panel life.

Long life and minimal maintenance requirements

This type of screening media is made of hardwearing rubber, specially produced to cope with the tough requirements imposed on screen panels. Its high quality gives a long life, long intervals between servicing and minimal maintenance requirements.

Flexible rubber prevents pegging and blinding

The flexibility of the rubber reduces the risk of pegging and blinding of the panel, which gives further reduction of maintenance requirements.

Reduced noise level and improved working environment

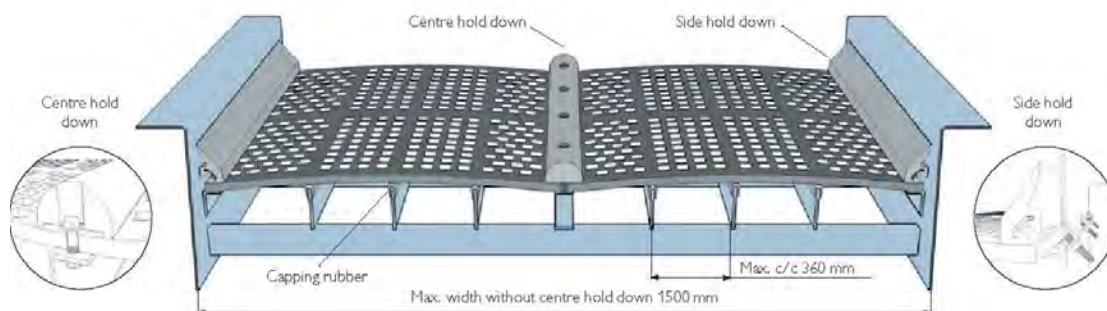
By mounting rubber panels on the screens, the noise level in the plant is reduced, improving the working environment and reducing the risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK6000 PRE-TENSIONED RUBBER SCREEN PANEL 2016-01-01

WK6000



Type

WK6000 pre-tensioned rubber screen panel.

Dimensions

Thickness (mm)	Width Max (mm)	Length Max (mm)
15, 20, 25, 30, 35, 40, 50, 60	2700	1000
15, 25	1700	1700
20	1710	1710
30	1690	1690
35	1680	1680
40	1670	1670
50	1650	1650
60	1630	1630

Max. width without centre hold down 1500 mm.

Installation

On cambered screen decks.

On some screens, changing from cross tensioned to clamps or wedges is impossible making this type of screening media unsuitable.

Materials

Wearing material: 60 Shore A rubber.

Reinforcement: Flat steel bar frame and hot stretched Polyester cord fabric.

Tensioning device: side hold down and centre hold down.

Apertures

Punched holes, max. 100 mm, staggered or in line. For larger holes contact your Sandvik Mining and Construction representative.

FR - Square holes in line: Used under normal conditions

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

ST, STS - Slots across the material flow: Used for wet screening and in dewatering screens.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

CR, CS - Round holes: Used for screening coarse crushed material only when extra long wear life is required. Increased risk of pegging. Less open area.

Applications

Sandvik pre-tensioned screening media has a wide range of applications but is predominantly used for medium to coarse screening with separation between 16 - 90 mm and a max feed lump size between 30-250 mm. In addition to the applications listed below, they are also ideal in trommel screens.

NOTE

Do not use in applications with any amount of oil present. The recommended hole size should be 1.25–2.5 times the screen panel

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK6000 PRE-TENSIONED RUBBER SCREEN PANEL 2016-01-01



WK6000

RECOMMENDED THICKNESS AND AREA OF USE

	Max particle size (mm)*											
Separation (mm)	10	20	30	50	75	100	125	150	200	250	300	
2	-	-	-	-	-	-	-	-	-	-	-	
4 - 6	-	-	-	-	-	-	-	-	-	-	-	
8	-	-	-	-	-	-	-	-	-	-	-	
10 - 12,5	-	-	-	-	-	-	-	-	-	-	-	
16	-	15	15	15	15	-	-	-	-	-	-	
19 - 25,4	-	-	15	15	15, 20	-	-	-	-	-	-	
31,5	-	-	-	15, 20	20, 25	25	30	-	-	-	-	
37,5	-	-	-	15, 20	20, 25	25, 30	30	-	-	-	-	
45	-	-	-	-	25, 30	30, 35	35, 40	40	-	-	-	
63	-	-	-	-	30, 35	35, 40	40, 50	40, 50	50, 60	-	-	
70 - 90	-	-	-	-	-	35, 40	40, 50	50	60	60	-	
105	-	-	-	-	-	-	50	50, 60	60	60	-	
120	-	-	-	-	-	-	-	-	-	-	-	



= Recommended area of use



= Improbable application

* Bulk density max. 1.8 metric ton/m³



= Borderline case



= Not recommended

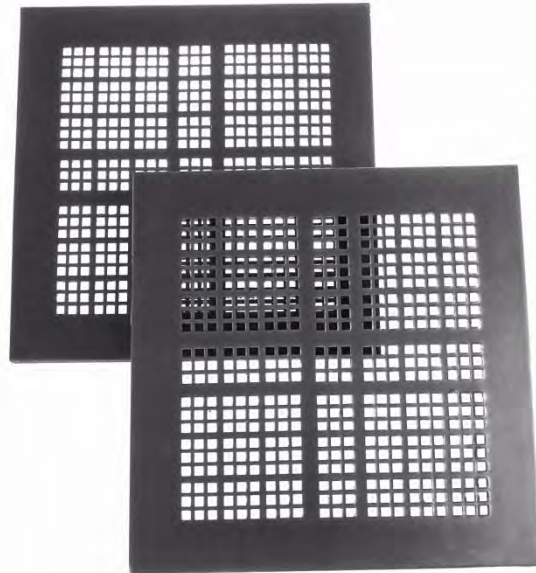
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK8500 PRE-TENSIONED PU SCREEN PANEL 2016-01-01

WK8500



A PRE-TENSIONED POLYURETHANE SCREEN PANEL WITH MOULDED HOLES PRIMARILY FOR FINE TO MEDIUM COARSE SCREENING IN WET APPLICATIONS.

Suitable for cambered screen decks and trommel screens

Sandvik pre-tensioned PU screening media is intended for installation in screens with cambered screen decks, equipped with support bars. The support bars would be protected with capping rubber. Panels are secured using Sandvik hardwearing securing system. For wide screens, centre hold down bars is recommended to prevent the panel from flapping. The panel has strong reinforcement consisting of a flat bar frame, giving it stability and eliminating the need for subsequent adjustment. The flat bar reinforcement of the panel enables it to be rolled to a radius, making it suitable for Trommel screens.

Tailor-made to suit the application

Sandvik pre-tensioned PU screen panels is a made to measure panel manufactured in a number of lengths, widths and thicknesses and is available with a variety of hole sizes.

Moulded apertures for more accurate screening

During the moulding process apertures are created using special moulds with release

angles. When the hole pattern is designed, blank areas are left over the support bars. Hole patterns can also be tailored to fit a screen's special requirements – for example, with blank sections in areas with high localized wear.

Long life and minimal maintenance requirements

Sandvik pre-tensioned PU screening media is made of hardwearing polyurethane specially produced to cope with the tough requirements imposed on screening cloth. Its high quality gives a long life resulting in long intervals between servicing and minimal maintenance requirements.

The moulded holes and the flexibility of the polyurethane reduce the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements.

Reduced noise level and improved working environment

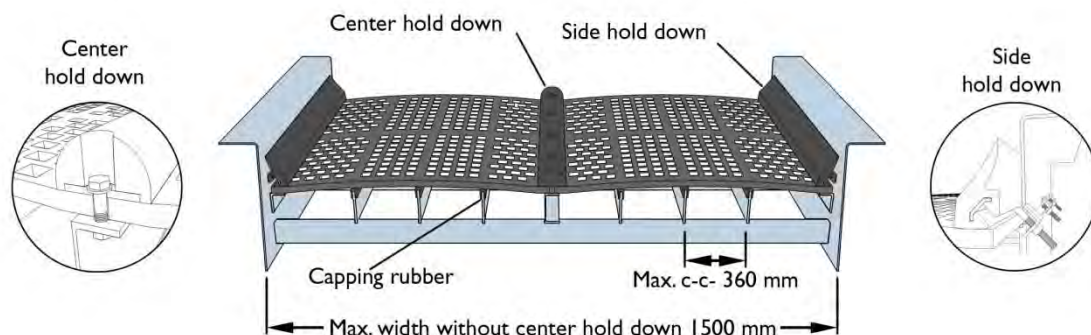
By mounting polyurethane panels on the screens, the noise level in the plant is reduced, improving the working environment and reducing the risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK8500 PRE-TENSIONED PU SCREEN PANEL 2016-01-01

WK8500



Type

WK8500 pre-tensioned polyurethane screen panel.

Dimensions

Thicknesses: Hole size dependent.

Length: Max. length 1500 mm.

Width: Max. width 2440 mm. Max. width without centre hold down 1500 mm.

Installation

On cambered screen decks.

On some screens, changing from cross-tensioning to clamps or wedges is not possible making this type of screening media unsuitable.

Materials

Wearing material: Polyurethane.

Reinforcement: Flat steel bar frame.

Tensioning device: Side hold down and centre hold down.

Apertures

FR - Square holes 3 - 51 mm in line: Used under normal conditions.

STS - Slots from 0.5 – 14,5 mm across the material flow: Used for wet screening and in dewatering screens.

SLS - Slots from 0.5 – 14,5 mm with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

Applications

Sandvik pre-tensioned PU screening media has a wide range of applications but is predominantly used for wet screening of medium to coarse separations, generally with separations between 1 - 45 mm and max feed lump size of 100 mm. In addition to the applications listed below, they are also ideal in trommel screens.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WK8500 PRE-TENSIONED PU SCREEN PANEL 2016-01-01



WK8500

RECOMMENDED AREA OF USE

Separation (mm)	Max particle size (mm)**										
	10	20	30	50	75	100	125	150	200	250	300
Dewatering	*	-	-	-	-	-	-	-	-	-	-
1 - 2	*	*	-	-	-	-	-	-	-	-	-
4 - 6	*	*	*	-	-	-	-	-	-	-	-
8	*	*	*	-	-	-	-	-	-	-	-
10 - 12,5	-	*	*	*	-	-	-	-	-	-	-
16	-	*	*	*	*	-	-	-	-	-	-
19 - 25,4	-	-	*	*	*	*	-	-	-	-	-
31,5	-	-	-	*	*	*	*	-	-	-	-
37,5	-	-	-	*	*	*	*	-	-	-	-
45	-	-	-	-	*	*	*	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application



= Borderline case



= Not recommended

* Sandvik WK8500 pre-tensioned PU screen panel thickness is hole size dependent

** Bulk density max. 1.8 metric ton/m³

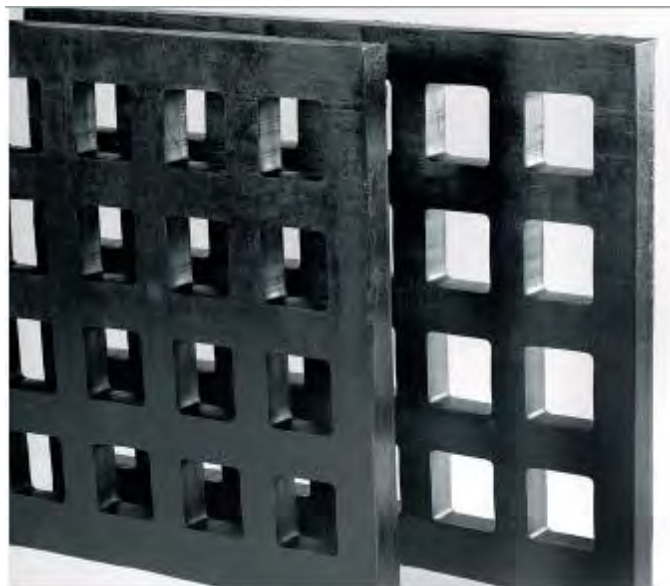
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000 FLAT SELF-SUPPORTING RUBBER SCREEN PANEL 2016-01-01

WS6000



A FLAT SELF-SUPPORTING RUBBER SCREEN PANEL WITH MOULDED HOLES PRIMARILY FOR MEDIUM COARSE TO COARSE SCREENING IN THE QUARRYING AND MINING INDUSTRIES

Designed for tough conditions

A self-supporting panel with steel reinforcement that gives greater strength for resisting the impact of heavy material. The panels are installed on screens with flat screening decks. It only requires support along the sides. Panels are secured using Sandvik hardwearing side securing system. Where necessary centre hold down bars are also used.

Tailor-made to suit the application

A made to measure panel manufactured in a number of different lengths, widths and thicknesses. It is available with a variety of hole sizes primarily for coarse separations. The holes in 70 mm thick panels are moulded, while thinner panels have punched holes for maximum flexibility. The location of the hole pattern can be tailored to suit the special requirements of a particular screen - for example, with blank areas in areas of high local wear.

Flat screen deck for even material bed depth

The flat screen deck design helps material spread quickly for more efficient screening. The bed depth is consistent across the width of the screen.

Long life and minimal maintenance requirements

Sandvik self-supporting screening media is made of hardwearing rubber specially produced to cope with the tough requirements imposed on screen panels in heavy-duty applications. Its high quality gives a long life, long intervals between servicing and minimal maintenance requirements.

The flexibility of the rubber reduces the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements.

Reduced noise level and improved working environment

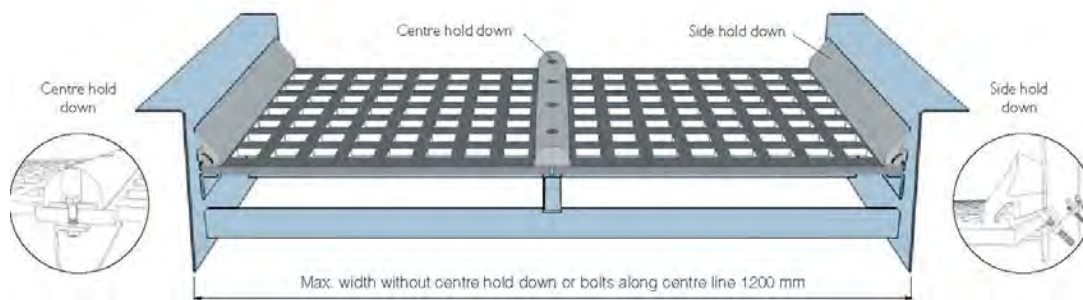
By mounting rubber panels on the screens, the noise level in the plant is reduced, improving the working environment and reducing the risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000 FLAT SELF-SUPPORTING RUBBER SCREEN PANEL 2016-01-01

WS6000



Type

WS6000 flat self-supporting rubber screen panel.

Dimensions

Thickness (mm)	Width Max (mm)	Length Max (mm)
40, 50, 55, 60, 70	2700	1000
40	1670	1670
50	1650	1650
55	1640	1640
60	1630	1630
70	1600	1600

Max. width without centre hold down 1200 mm.

Installation

Sandvik self-supporting screening media is designed for flat open frame screens. For screen widths up to 1200 mm, no central longitudinal support is needed, as the panels should be clamped along the sides of the screen box. On wider screens a center hold down bar or additional fastening bolts must be used.

Materials

Wearing material: 60 Shore A rubber.
Reinforcement: Angle steel bar frame and steel flat bar cross members.
Tensioning device: Side hold down and centre hold down.

Apertures

Punched holes in t=40, 50 and 60 mm, max. hole size 90 mm.

Moulded holes in t=55 FR50, 55, 60, 70 and 75 mm

Moulded holes in t=70 FR80, 90, 100, 120 and 140 mm

FR - Square holes in line: Used under normal conditions.

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging.

CR, CS - Round holes: Used for screening coarse crushed material only when extra long wear life is required. Increased risk of pegging. Less open area.

Applications

This is a strong and reliable self-supporting screening element designed for coarse screening with separations from 45 mm and up with a max feed lump size up to 300 mm.

NOTE

Do not use in applications with any amount of oil present. The recommended hole size should be 1.25–2.5 times the screen panel thickness (punched holes).

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000 FLAT SELF-SUPPORTING RUBBER SCREEN PANEL 2016-01-01




WS6000


RECOMMENDED THICKNESS AND AREA OF USE


Separation (mm)	Max particle size (mm)**										
	10	20	30	50	75	100	125	150	200	250	300
2	-	-	-	-	-	-	-	-	-	-	-
4 - 6	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
10 - 12,5	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
19 - 25,4	-	-	-	-	-	-	-	-	-	-	-
31,5	-	-	-	-	-	-	-	-	-	-	-
37,5	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	40, 55*	40, 55*	40, 55*	40, 55*	-	-	-
63	-	-	-	-	40, 55*	40, 55*	40, 50, 55*	40, 50, 55*	50, 55*, 60	60	-
70 - 90	-	-	-	-	-	70*	70*	70*	70*	70*	70*
105	-	-	-	-	-	-	70*	70*	70*	70*	70*
120	-	-	-	-	-	-	-	70*	70*	70*	70*

 = Recommended area of use

 = Improbable application

* Moulded apertures

 = Borderline case

 = Not recommended

** Bulk density max. 1.8 metric ton/m³

If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000H SELF-SUPPORTING RUBBER SCREEN PANEL WITH SKID BARS 2016-01-01

WS6000H



A SELF-SUPPORTING RUBBER SCREEN PANEL WITH SKID BARS AND MOULDED HOLES PRIMARILY FOR MEDIUM COARSE TO COARSE SCREENING IN THE QUARRYING AND MINING INDUSTRIES

Rugged panel for heavy duty conditions

A self-supporting panel with steel reinforcement that gives greater strength for resisting the impact of heavy material. The panels are installed on screens with a flat screening deck. Sandvik self-supporting screening media only requires support along the sides. Panels are secured using Sandvik hardwearing side securing system. Where necessary centre hold down bars are also used.

Tailor-made to suit the application

A made to measure panel manufactured in a number of different lengths, widths and thicknesses. It is available with a variety of different hole sizes, primarily for coarse separations. The holes are moulded with a release angle, making possible thick panels without the increased risk of pegging.

Skid bars protect the panel and guide fines

These panels are design with ribs that keep the coarse material off the apertures

preventing premature wear. The ribs also guide fine material towards the holes, giving more rapid and improved screening with a higher capacity.

Long life and minimal maintenance requirements

Sandvik self-supporting screening media is made of hardwearing rubber specially produced to cope with the tough requirements imposed on screen panels in heavy-duty applications. Its high quality gives a long life, long intervals between servicing and minimal maintenance requirements.

The flexibility of the rubber reduces the risk of pegging, which gives further reduction of maintenance requirements.

Reduced noise level and improved working environment

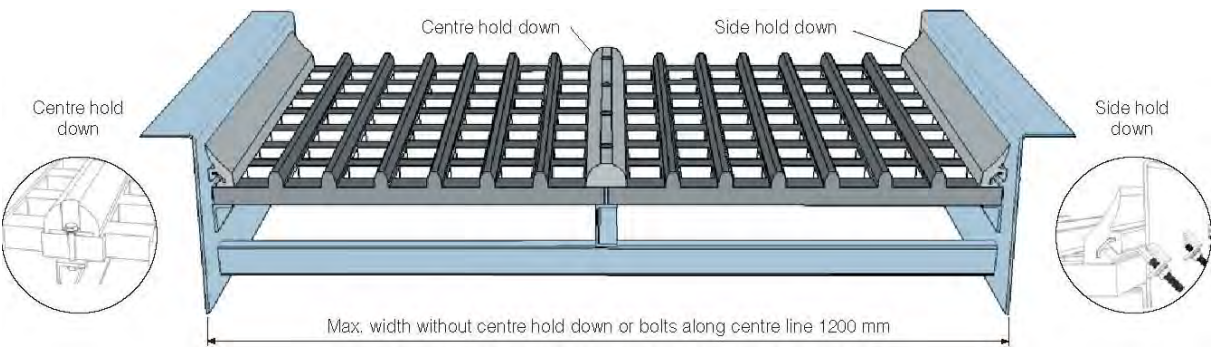
By mounting rubber panels on the screens, the noise level in the plant is reduced, improving the working environment and reducing the risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000H SELF-SUPPORTING RUBBER SCREEN PANEL WITH SKID BARS 2016-01-01

WS6000H



Type
WS6000H self-supporting rubber screen panel.

Dimensions		
Thickness (mm) panel +ribs	Width Max (mm)	Length Max (mm)
55+20, 70+50, 70+60	2700	1000
55+20, 70+50, 70+60	1600	1220

Max. width without centre hold down 1200 mm.

Installation
Sandvik self-supporting screening media is designed for flat open frame screens. For screen widths up to 1200 mm, no central longitudinal support is needed, as the panels should be clamped along the sides of the screen box. On wider screens a centre hold down or additional fastening bolts must be used.

Materials
Wearing material: 60 Shore A rubber.
Reinforcement: Angle steel bar frame and steel flat bar cross members.
Tensioning device: Side hold down and centre hold down.

Apertures
Moulded holes in t=55+20 FR50, 55, 60, 70 and 75 mm
Moulded holes in t=70+50 FR80, 90 and 100
Moulded holes in t=70+60 FR120 and 140 mm
FR - Square holes in line
SLS – Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging.

Applications
This is a strong and reliable self-supporting screening element designed for coarse screening with separations from 45 mm and up with a max feed lump size up to 400 mm.

NOTE
Do not use in applications with any amount of oil present.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WS6000H SELF-SUPPORTING RUBBER SCREEN PANEL WITH SKID BARS 2016-01-01





WS6000H


RECOMMENDED THICKNESS AND AREA OF USE

Separation (mm)	Max particle size (mm)*										
	10	20	30	50	75	100	125	150	200	250	300-400
2	-	-	-	-	-	-	-	-	-	-	-
4 - 6	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
10 - 12,5	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
19 - 25,4	-	-	-	-	-	-	-	-	-	-	-
31,5	-	-	-	-	-	-	-	-	-	-	-
37,5	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	55+20	55+20	55+20	55+20	55+20	55+20	-
63	-	-	-	-	55+20	55+20	55+20	55+20	55+20	55+20	-
70 - 90	-	-	-	-	-	70+50	70+50	70+50	70+50	70+50	70+50
105	-	-	-	-	-	-	70+60	70+60	70+60	70+60	70+60
120	-	-	-	-	-	-	-	70+60	70+60	70+60	70+60

 = Recommended area of use

 = Improbable application

 = Borderline case

 = Not recommended

* Bulk density max. 1.8 metric ton/m³

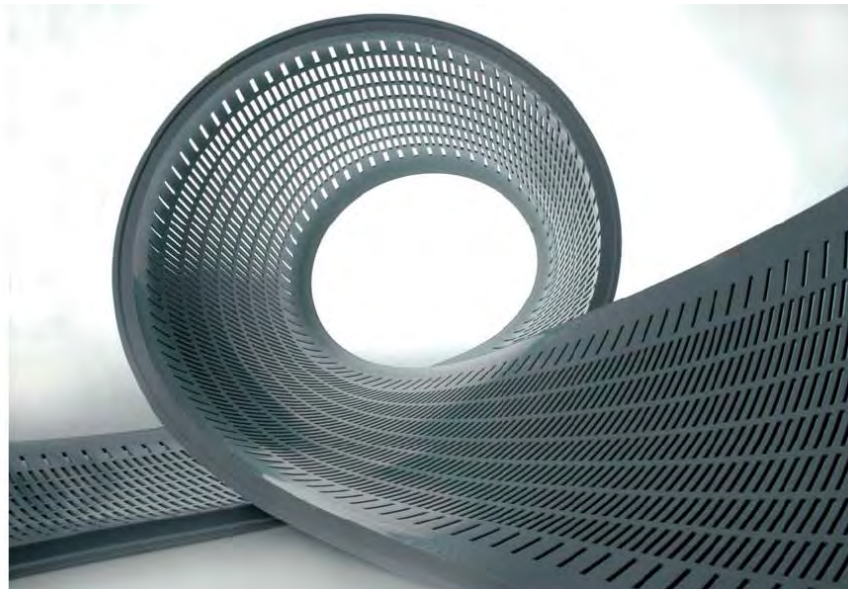
If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WF9000 SPECIAL PU SCREENING MEDIA 2016-01-01

WF9000



A SPECIAL POLYURETHANE SCREENING MEDIA WITH PUNCHED HOLES PRIMARILY FOR FINE SCREENING IN DIFFICULT CONDITIONS

Sandvik special screening media is available for many different applications

These panels are available in a variety of widths, lengths and thicknesses. The panels can be manufactured flat with mounting holes or profiled for installation using special wedges (see illustrations). Panels extend up the sides of the screen machine making sure no material escapes along the sides of the screen deck.

Tailor-made panels for optimal performance

The hole pattern is punched out with precision in an ultramodern automatic punching machine. Hole patterns can be tailored to fit screens special requirements – for example, with less holes in areas with high localized wear or in high stress areas. A large selection of apertures is available, including square and slotted in standard or close pitch, depending on the requirement for optimum open area or maximum panel life.

Long life and minimal maintenance requirements

Sandvik special screening media is made of hardwearing polyurethane specially designed to cope with the tough requirements imposed

on screening cloth. Its high quality gives a long life resulting in long service intervals and minimal maintenance requirements. The cloth is securely fastened eliminating the requirement of adjustment.

Highly flexible polyurethane prevents pegging and blinding

The flexibility of the polyurethane in combination with the special movement of the screen reduces the risk of pegging and blinding of the cloth, which gives further reduction of maintenance requirements. The panels are alternately stretched and relaxed, thereby flipping the material as it passes down the screen. This action makes these cloths panels especially suitable for screening difficult-to-screen materials.

Reduced noise level and improved working environment

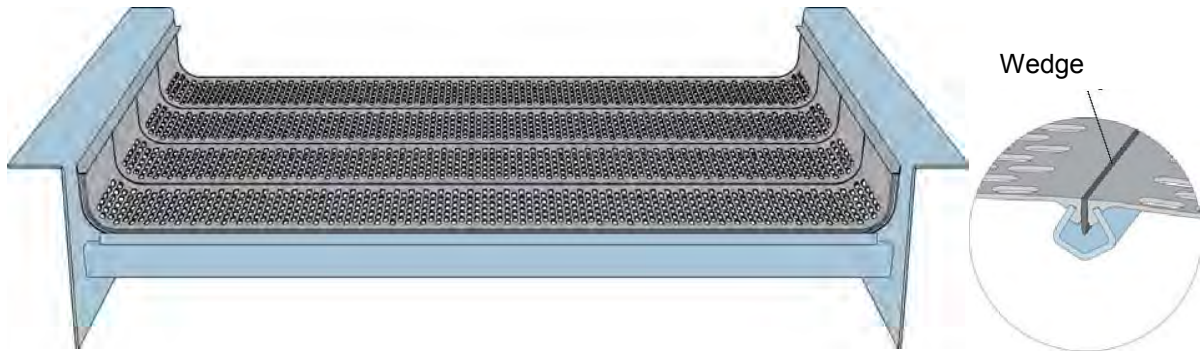
By using polyurethane media on the screens, the noise level in the plant is reduced, improving the working environment. These cloths are easy to handle resulting in the reduced risk of accidental damage or injury during working.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WF9000 SPECIAL PU SCREENING MEDIA 2016-01-01

WF9000

**Type**

WF9000 special polyurethane screening media.

Dimensions

Thicknesses: 2, 3, 4, 5, 6, 7, 8 and 9 mm

Length: Max 2750 mm.

Width: 245 mm and 328 mm.

Other sizes available on request.

Installation

On flat screen decks.

Mounted crosswise in the screen.

Tensioning device: Wedges

Maximum drop height on the top deck is 300 mm, in between decks max. 800 mm.

Materials

Wearing material: Polyurethane

Reinforcement: None

Apertures

Punched holes max. 38 mm, staggered or in line.

FR - Square holes in line: Used under normal conditions

FS - Square holes staggered: Used to prevent fines tracking with high fines content or on short screens. Slightly reduced open area.

ST, STS - Slots across the material flow: Used for wet screening and in dewatering screens.

SL, SLS - Slots with the material flow: Used when higher capacity is desired, accuracy (oversize control) is less important and to avoid pegging in small apertures.

Applications

This type of polyurethane screening media is used primarily for screening moist materials in intermediate and final stages, generally with separations between 2 - 25.4 mm and max feed lump size of 50 mm.

NOTE

The recommended hole size should be 1.25–2.5 times the screen panel thickness.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WF9000 SPECIAL PU SCREENING MEDIA 2016-01-01



WF9000

RECOMMENDED THICKNESS AND AREA OF USE

Separation (mm)	Max particle size (mm)*										
	10	20	30	50	75	100	125	150	200	250	300
2	2	2	-	-	-	-	-	-	-	-	-
4 - 6	3	3	3, 4	-	-	-	-	-	-	-	-
8	4	4	4, 5	-	-	-	-	-	-	-	-
10 - 12,5	-	5	5, 6	6, 7	-	-	-	-	-	-	-
16	-	7, 8	7, 8	8	9	-	-	-	-	-	-
19 - 25,4	-	-	8	8, 9	9	-	-	-	-	-	-
31,5	-	-	-	9	9	-	-	-	-	-	-
37,5	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
70 - 90	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-



= Recommended area of use



= Improbable application

* Bulk density max. 1.8 metric ton/m³



= Borderline case



= Not recommended

If your application falls outside the limits spec

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WA6000 ACCESSORIES SCREENING MEDIA 2016-01-01

WA6000



WA6000 SIDE HOLD DOWN

The side securing system is used to hold self-supporting or pre-tensioned screen panels in position on screens with cambered or flat screen decks. It is made of hardwearing rubber material, which protects the screen side plates and gives a long life. It is mounted along the sides of the screen using special T-bolts, which are inserted in the rubber strip. The bolts go through the side plate and are angled at 45 degrees to give a force directed downwards. Specially angled washers are used for simple, safe installation.

WA6000 CENTRE HOLD DOWN

The centre hold down bars clamp self-supporting, tensioned or pre-tensioned screen panels in position on screens with cambered or flat screen decks. It is made of a hardwearing rubber material with a vulcanised metal reinforcement for secure fixture. It is available in two widths, depending on whether one or two screen panels are used to cover the width of the screen. The centre hold down can be supplied with holes located according to the customer's requirements, simplifying installation.

WA6000 CAPPING

The capping rubber is mounted on the support bars of screens with cambered decks. The capping rubber protects the support bar, and above all, protects the underside of the screen cloth from wear. Capping rubber is available in several different widths and heights to suit the different support bars on the market.

ROCK PROCESSING GUIDE 2016

Chapter N – SCREENING MEDIA

WA6000 ACCESSORIES SCREENING MEDIA 2016-01-01



WA6000 SIDE HOLD DOWN



Dimensions

Width 75 mm, height 130 mm, length 1220 mm or 1520 mm (cut to other lengths on request).

Installation

Special M16 T-bolt.
Bolt head length 360 mm.
Bolt length 150 mm.
3 bolts per 1220 mm and
4 bolts per 1520 mm length.
Special angle washer required.

Material

Wearing material: 60 Shore A rubber.

Applications

To hold down pre-tensioned media and self-supporting media along the screen side plates.

WA6000 CENTRE HOLD DOWN



Dimensions

Size: 75 x 50 x 1500 mm (W x H x L) and 125 x 75 x 1500 mm (W x H x L) (drilled and cut to other lengths on request).

Installation

Regular bolts or studs.

Materials

Wearing material: 60 Shore A rubber. Reinforcement: Steel flat bar.

Applications

To hold down pre-tensioned media, pre-tensioned media and self-supporting media. Sandvik WA6000 centre hold down 75 is used when a single panel is used to cover the width of the screen and the panel width exceeds 1500 mm. Sandvik WA6000 centre hold down 125 is used to cover the joint if two panels are used to cover the width of the screen.

WA6000 CAPPING



Dimensions

7/15, 9/15 and 11/15 mm
(inside width/cap height).
Length 20 m.

Installation

Has a groove on the bottom side. Is knocked on the buckler bars in the screen. 7/15 for 8 mm flat bar, 9/15 for 10 mm flat bar and 11/15 for 12 mm flat bar.

Material

Wearing material: 60 Shore A rubber.

Applications

To be installed on top of the buckler bars underneath the tensioned media or pre-tensioned media to protect against wear.



SELECTION GUIDE

GENERAL

SW GRIZZLY FEEDER

ST FEEDER AND SCREEN COMBINATION

SV...E HEAVY GRIZZLY FEEDER

SV MECHANISM GRIZZLY FEEDER

SH RECIPROCATING PLATE FEEDER

SP PAN FEEDER

HF BELT FEEDER

HD APRON FEEDER

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SELECTION GUIDE 2016-01-01

SUITABLE FEEDING DUTIES FOR THE SANDVIK FEEDER RANGE

Sandvik Mining and Construction offers a wide range of high quality feeders. The complete range is summarized below:

Model	Max Feed Size (mm) ①	Max Capacity (MTPH) ①	Suitable Applications										
			Large Primary Hopper	Portable Plants	Mining Duties ②	Fines Removal	Coarse Removal	Tunnel Feed Station	Bin to Crusher	Bin to Conveyor	Abrasive Material	Moist Material	Flow Control
SW	700	450	**	***		*	***				*		*
ST	850	550	*	***		***	*					*	*
ST...H	950	800	**			***	***				***		*
SV...E	1000	1200	***		***	**	***		**		***		*
SV	1500	2040	***		***		***		**		***		*
SH	2400	2720	***		***				**	**	**	***	
SP	500	1500						**	***	**	***	*	***
SP...M	600	2200			***			***	*	***	***	*	***
HF	150	4000		**	***			**	**	***	***	***	***
HD	360	4300		**	***			***	***	***	***	***	**

Note!: Stars indicate a general level of suitability (i.e. the more stars the more suitable)

① These values correspond to material with bulk density 1,6 t/m³ and are recommended values only (i.e. other figures might occur in special applications/feeder sizes)

② Mining duties, in terms of high density ore as well as 24 hour operations and 365 days per year

The above table gives an example of the most commonly used duties for our feeder range in aggregate plants (i.e. other applications are possible). It is important to notice that the maximum feed size as well as the maximum capacity depends on the bulk density, moisture content, inclination as well as feed distribution. Please review the table explanation below:

- Large Primary Hopper**

Suitability to be installed in a stationary primary station with large hopper volume
(*** excellent, ** very good, * good)

- Portable Plants**

Suitability to be installed at a wheel or crawl mounted unit (** excellent, ** very good, * good)

- Mining Duties**

Suitability to operate in mining applications, in terms of high density ore and 24 hr operations
(*** excellent, ** very good, * good)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SELECTION GUIDE 2016-01-01

- **Fines Removal**

Ability to remove fine material from the feed (** excellent, ** very good, * good)

- **Coarse Removal**

Ability to remove/scalp coarse material from the feed (** excellent, ** very good, * good)

- **Tunnel Feed Stations**

High capacity, low spillage and ability to handle high head loads
(** excellent, ** very good, * good)

- **Bin to Crusher**

High capacity, easy to adjust and install (** excellent, ** very good, * good)

- **Bin to Conveyor**

High capacity, low spillage, easy to adjust and install (** excellent, ** very good, * good)

- **Abrasive Materials**

Ease of replacing wear liners/total wear cost
(** very easy/extremely low, ** easy/very low, * replaceable/low)

- **Moist Materials**

Ability to feed moist and sticky material (** can feed any kind of material, ** can feed moist material, * can feed clean moist material)

- **Flow Control**

Smooth feeding, ability to adjust capacity and automate (** excellent, ** very good, * good)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

GENERAL 2016-01-01

GENERAL DESCRIPTION OF THE SANDVIK RANGE OF PRIMARY FEEDERS

SW feeders: (Grizzly Feeders)

For small or medium jaw or impact crushers (Up to CJ411 or CI122)

- Suitable when a wheel loader or a small dump truck is used
- The maximum feed size is 400-700 mm and the capacity range is 150-450 t/h, depending on the feed gradation.
- The discharge end has 2 grizzly sections (i.e. to by-pass the jaw crusher) and a second deck for removal of natural fines can be mounted underneath the grizzly sections
- The grizzly sections are made of: AR-steel plates, bars with removable manganese wear segments or pin grizzlies suitable for applications in moist gravel
- Hopper volume up to 30 m³, depending on the size of the feeder
- The feeder is driven by unbalanced electrical motors

ST feeders: (Feeder/Screen)

A combination of a separate feeder as well as screening unit, for primary feeding

- Most commonly used before a jaw crusher up to CJ411 or an impact crusher (any size) with a high content of fines in the material, often in limestone
- A combination of a separate feeder (i.e. feeder without grizzly) and a separate double-deck vibrating screen
- Suitable when a wheel loader or a small truck is used. The maximum feed size is 500-850 mm and the capacity range is 110-550 t/h, depending on the feed gradation. The separate screen offers a better screening result, than the SW feeder, when the raw material has a high content of fines, moisture or clay
- The screen has 2 grizzly sections at the top deck and a second deck with wire elements for removal of natural fines
- Suitable live hopper volume is 15-30 m³, depending on the size of the feeder
- Both feeder and screen are driven by unbalanced electrical motors

ST...H-feeders: (Feeder/Screen)

A heavy-duty combination of a separate feeder as well as screening unit, for primary feeding

- Most commonly used before jaw crushers CJ412-CJ615, suitable for all types of material
- A combination of a separate feeder (i.e. feeder without grizzly) and a separate double-deck vibrating screen
- Suitable for truck loading, maximum feed size is 950 mm and the capacity range is 300-800 t/h
- The separate screen offers a better screening result, than the SV...H feeder, when the raw material has a high content of fines, moisture or clay
- The screen has 2 grizzly sections at the top deck and a second deck with wire elements for removal of natural fines
- Suitable live hopper volume is up to 80 m³
- Both feeder and screen are driven by unbalanced electrical motors

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

GENERAL 2016-01-01

GENERAL DESCRIPTION OF THE SANDVIK RANGE OF PRIMARY FEEDERS cont.

SV...E feeders: (Heavy Grizzly Feeders)

Especially designed for heavy duties. Suitable for mining applications.

- Suitable conditions: when a large truck is used, when the maximum feed size is considerably high and for medium/high capacities
- The feeder is available in four (4) different sizes with a maximum feed size between 700-1000 mm and a capacity range of 170-1560 t/h, depending on the feed gradation as well as the size of the feeder
- The feeder has 2 grizzly sections at the top deck and an optional second deck with steel wire screening elements for removal of natural fines
- Suitable hopper volume is 30-200 m³, depending on the size of the feed and feeder as well as the geometry of the hopper. Our largest standard hopper has live volume 100 m³
- The SV...E feeder is equipped with a heavy-duty double shaft mechanism with a built in shaft synchronizing gearbox and a separate electrical motor with direct cardan shaft drive. This allows for adjustments of both speed and stroke parameters.

SV feeders: (Mechanism Grizzly Feeders)

Especially designed for heavy duties and high capacities. Suitable for mining applications.

- Suitable conditions: when a large truck is used, when the maximum feed size is considerably high and for medium/high capacities
- The feeder is available in 16 different sizes with a maximum feed size between 700-1500 mm and a capacity range of 170-2040 t/h, depending on the feed gradation as well as the size of the feeder
- The feeder has 2 grizzly sections with adjustable gaps
- Suitable for hopper volumes between 30-200 m³, depending on the size of the feed and feeder as well as the geometry of the hopper
- The SV feeder is equipped with a heavy-duty double shaft mechanism driven by electrical or hydraulic motor(s). The power is transferred from the motor through a cardan shaft and into a gear that drives the feeder's double shaft mechanism. The gear is oil-bath lubricated. This allows for adjustments of both speed and stroke parameters

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

GENERAL 2016-01-01

GENERAL DESCRIPTION OF THE SANDVIK RANGE OF PRIMARY FEEDERS cont.

SH feeders: (Reciprocating Plate Feeders)

For extraheavy and heavy duty applications.

- Suitable conditions: when a truck is used, the maximum feed size is considerably high and for medium/high capacities
- Suitable for high drop heights (self protective pan, always material on it)
- The feeder is often followed by a screen for removal of natural fines containing moisture or clay
- The feeder is available in several different sizes with a maximum feed size between 700-2400 mm and a maximum capacity between 480-2700 t/h, depending on the raw material bulk density as well as the size of the feeder
- Handles moist material
- The hydraulic piston that drives the feeder back and forth has an adjustable stroke and frequency for simple feed-rate correction
- Own models for Construction and Mining duty and for truck loading applications (designation "M" after model type for mining duty feeders)

GENERAL DESCRIPTION OF THE SANDVIK RANGE OF SECONDARY FEEDERS

HD100 feeders: (Apron Feeders)

For heavy duty feeding applications.

- Suitable applications: unloading bins, under stockpiles, under feed hoppers
- Available in many sizes and with several drive sizes in order to handle a wide range of capacities, bulk densities and material sizes
- Maximum capacity is 5000 t/h (2.0 t/m³) depending on the raw material and the size of the feeder
- Nominal max feed size is P99=300...520 mm and the maximum feed side length is 500...1000 mm depending on the size of the feeder
- Standard crawler under-carriage parts
- Driven by planetary gear and electric motor as standard and is able to carry heavy material loads
- The feed rate adjustments can be conducted by the use of an optional frequency converter

SP feeders: (Pan Feeders)

For secondary or tertiary feeding applications

- Suitable applications: under large crushers, unloading bins, under stockpiles, under feed hoppers
- The SP feeder is available in many sizes and with several drive alternatives in order to handle a wide range of capacities, bulk densities and material sizes
- The maximum feed size is 220-600 mm and the maximum capacity is 2200 t/h, depending on the feed gradation as well as the size of the feeder
- The discharge end is rectangular at the SP version and it is also available with U-lip in order to efficiently centre the material into a conveyor belt

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

GENERAL 2016-01-01

GENERAL DESCRIPTION OF THE SANDVIK RANGE OF SECONDARY FEEDERS

SP feeders: (Pan Feeders) cont.

- It is important to consider the bin and feed chute design in order to ensure a homogenous flow of the material (i.e. to achieve an optimum capacity as well as to avoid an unnecessary head-load)
- The feeder is driven by unbalanced electrical motors and on-line feed rate adjustments can be conducted by the use of a frequency converter (option)
- Own models for Mining applications (designation "M" after the model type)

SH feeders: (Reciprocating Plate Feeders)

For tough secondary duty applications (materials corresponding to low/medium abrasion levels)

- Suitable applications: under large crushers, unloading bins, under stockpiles, under ore passes
- The feeder is suspended type with feed hopper (only biggest feeders need to be base supported)
- The feeder is available in several different sizes with a maximum feed size between 250-1200 mm and a maximum capacity between 240-1760 t/h, depending on the raw material as well as the size of the feeder
- Handles moist material
- The hydraulic piston that drives the feeder back and forth has an adjustable stroke and frequency for simple feed-rate correction
- Own models for Mining applications (designation "M" after the model type)

HF feeders: (Belt Feeders)

For secondary or tertiary feeding applications

- Suitable applications: unloading bins, under stockpiles, under feed hoppers, under large receiving hoppers and feeding e.g. crushers and screens
- The HF feeder is available in many sizes and with several drive sizes in order to handle a wide range of capacities, bulk densities and material sizes
- The maximum feed size is 100-150 mm and the maximum capacity is 4000 t/h, depending on the raw material and the size of the feeder
- Standard receiving hopper volumes are between 12-18 m³, depending on the size of the feeder as well as the geometry of the hopper. Bigger hoppers are also available on request.
- Suitable feeder for sticky and fine materials due to no material compacting effect during discharging.
- Belt feeder is able to carry heavy material loads and standard Sandvik conveyor components are used.
- The feeder is driven by gear reducer and electric motor and wide feed rate adjustments can be conducted by the use of a material adjustment gate as well as with an optional frequency converter.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

GENERAL - SW GRIZZLY FEEDERS

SW Grizzly Feeders are especially developed for mobile and portable plants but they are also suitable for small to medium size stationary plants. It is primarily the compact design in conjunction with a high capacity that makes this product become a highly competitive and successful choice.

A second deck for removal of organic materials and fines can be supplied as an option. The dual section grizzly design allows for a step that turns over large material, effectively liberating more fines. Furthermore, the two-section grizzly reduces the bar length which enables sufficient taper of the bars. In addition, the integral grizzly sections are replaceable to ensure structural rigidity, long wear life and consequently reduced operating and maintenance costs.

The dual unbalanced electrical motor drive allows for a simple stepless feed rate adjustment, both on-line and off-line by use of a frequency converter. This system provides a flexible and reliable operation with high availability. The SW family consists of several different feeders, three machines with the standard design and five with heavy design.

Nominal operating limits

- Maximum feed size range: 400-700 mm
- Bulk density 1,6 t/m³
- Standard installation: Horizontal
- Maximum grizzly gap: 80-105 mm
- Nominal Speed: 1000 rpm
- Maximum stroke range: 6-9 mm
- Capacity range: 150-450 MTPH @ BD 1,6 t/m³
- AR wear liners quality: HB 400 or HB 160
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude 1000 masl



ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

SCOPE OF SUPPLY – SW GRIZZLY FEEDERS

Standard delivery includes

- Feeder body
- Grizzly
- Support springs
- Two encapsulated and unbalanced electrical motors (6-pole/1000 rpm, 400 V/50 Hz)
- Front and rear suspension (i.e. rubber elements (SW) and coil springs (SW...H))
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals

SW ("Chauny design")

- Scalping deck: Double integral grizzly sections, step design, diverging interchangeable grizzly bars
- Wear liners: Feed pan is equipped with bolted AR400 steel liners; 12 mm at the bottom and 10 mm at the sides of the pan
- Surface treatment acc. to Sandvik S&F standard, components acc. to supplier's std. paint
- Installation, operating and maintenance manuals

SW...H ("Arbrå design")

- Scalping deck /two section stepped bar grizzly (integral frame with replaceable wear parts)
- Scalping deck / one section bar grizzly (applicable only for SW0843H, SW1043H and SW1252X)
- Scalping deck / two section pin grizzly (divergent design in which each section is independently replaceable, only applicable for the SW1052H and SW1053H feeder)
- Wear liners: Feed pan is equipped with bolted AR400 steel liners; 10 mm at the bottom and 10 mm at the sides of the pan
- Surface treatment acc. to Sandvik S&F standard, components acc. to supplier's std. paint
- Installation, operating and maintenance manuals

Options

SW ("Chauny design")

- Second screening deck: cross-tensioned wire media underneath the grizzly sections, including all tensioning devices
- Other media (i.e. rubber, stainless steel)
- Electrical heating system for the pan
- Frequency converter

SW...H ("Arbrå design")

- Second screening deck: longitudinally tensioned wire media underneath the grizzly sections, including all tensioning devices
- Frequency converter
- Wear liners made of rubber, for pan bottom (t = 80 or 105 mm)
- Electrical heating system for the pan

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

DATA SHEETS - SW GRIZZLY FEEDERS

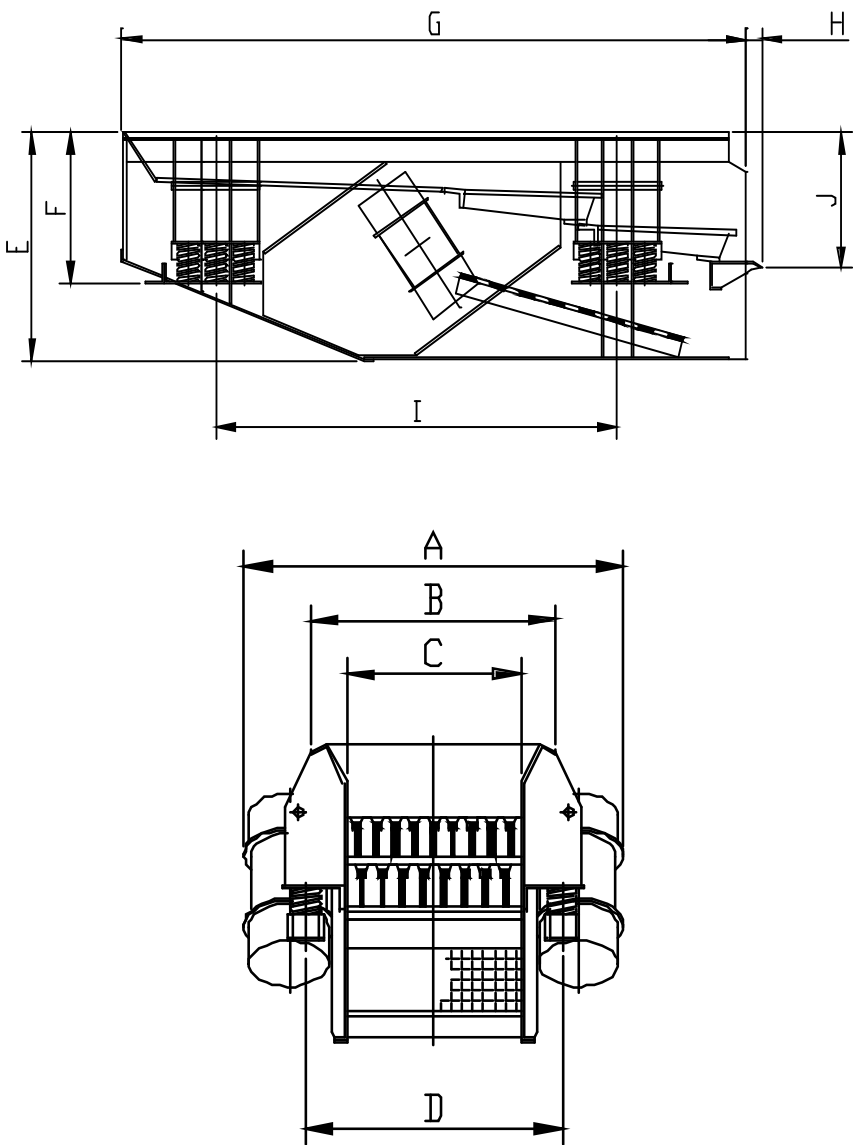
Only Grizzly deck	SW0732	SW0842	SW1042			SW1052H	SW1252H
Incl Second deck	SW0733	SW0843	SW1043	SW0843H	SW1043H	SW1053H	SW1253H
Pan Length (mm)	3375	4220	4200	3645	4260	4750	4850
Net Feeding Length (mm)	3200	4000	4000	3500	4100	4600	4600
Net Pan Width (mm)	655	810	980	800	1000	1000	1200
Grizzly Section (mm) (i.e. integral type)	2 x 750	2 x 900	2 x 900	1250	1365	2 x 600	1200
Bottom Deck (wire mesh)	Optional (0.7 m ²)	Optional (1.2 m ²)	Optional (1.2 m ²)	0.6 m ²)	0.8 m ²)	Optional (0.9 m ²)	Optional (1.0 m ²)
Max. Capacity (TPH) *	200	250	350	140	250	400	450
Max. Feed Size (mm) **	400	500	600	500	650	600	700
Max. Grizzly Gap (mm)***	100	100	100	105	120	105	90 (std) 105 (max)
Max. Separation, 2 nd deck (mm)	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40
AR Steel Liner (mm)	10	10	10	10	10	10	10
Suspensions	Rubber Elements	Rubber Elements	Rubber Elements	Coil springs	Coil springs	Coil springs	Coil springs
Hopper Volume (m ³)	15	15	20	12	9 (Mobile)	30	6 (Mobile)
Power (kW, Input) @ 50 Hz	2 x 3.0	2 x 5.5	2 x 8.0	2 x 3.0	2 x 8.0	2 x 8.5	2 x 9.8
Weight (kg)	2800	3300	4800	2100	3600	4500	5000
Standard Inclination (degrees)	2	2	2	0	0	0	0
Suitable Crushers	CI121	CJ408 CJ409	CJ409 CJ411	CJ408	CJ409 CJ411	CJ409 CJ411	CJ411 CJ412

* Figures correspond to material bulk density 1,6 t/m³ and the minimum capacity is approximately 30% of the maximum capacity

** Figures correspond to material with bulk density 1,6 t/m³

*** Refers to standard setting, please contact Product Line S&F for applicable grizzly gaps

DIMENSIONS - SW GRIZZLY FEEDERS
 (SW0732 AND SW0733)



Dimensions (mm)										Weight (kg)
A	B	C	D	E	F	G	H	I	J	
1477	955	680	1000	1160	766	3375	83	2175	690	2800

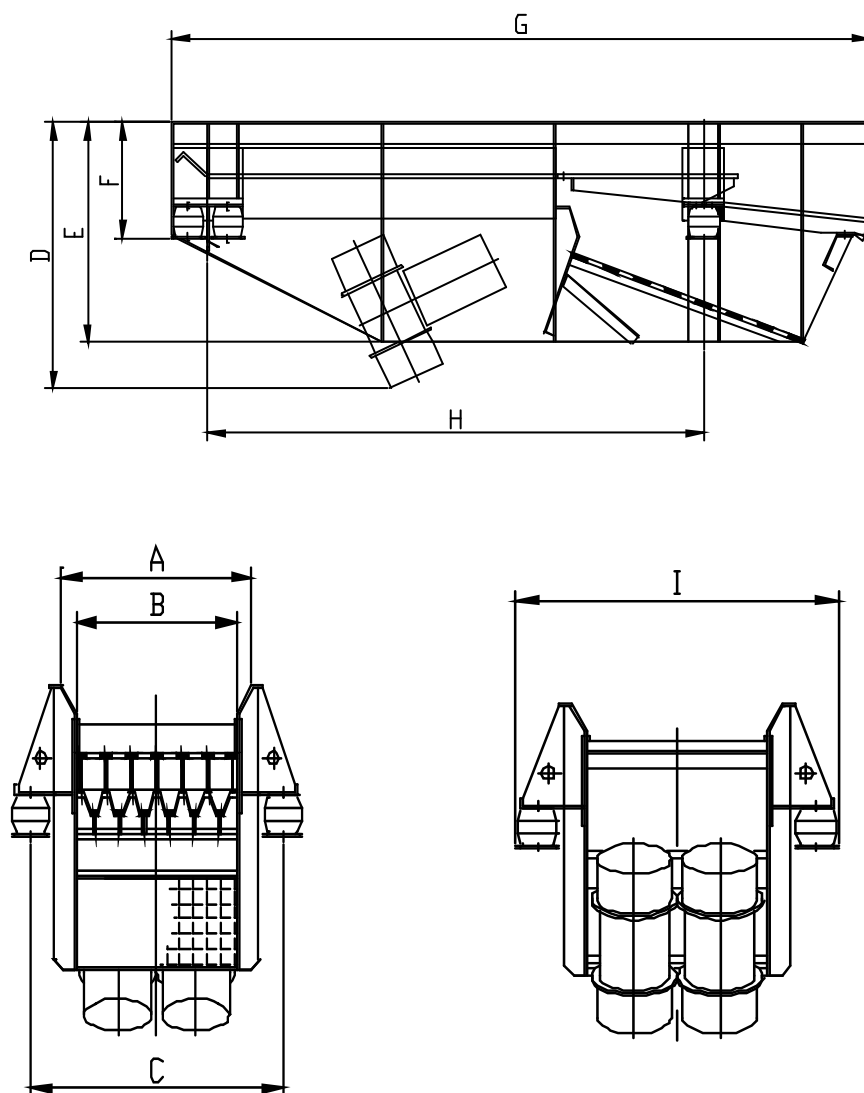
SW0732 – Only grizzly section
 SW0733 – Grizzly section and natural fines deck

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

DIMENSIONS - SW GRIZZLY FEEDERS (SW0842, SW0843, SW1042 AND SW1043)



Dimensions (mm)										Weight (kg)
Model	A	B	C	D	E	F	G	H	I	
SW0842/ 3	980	830	1300	1584	1310	688	4220	3000	1500	3300
SW1042/ 3	1140	1000	1500	1700	1470	490	4220	2907	1700	4800

SW0842 and SW1042 – Only grizzly section

SW0843 and SW1043 – Grizzly section and natural fines deck

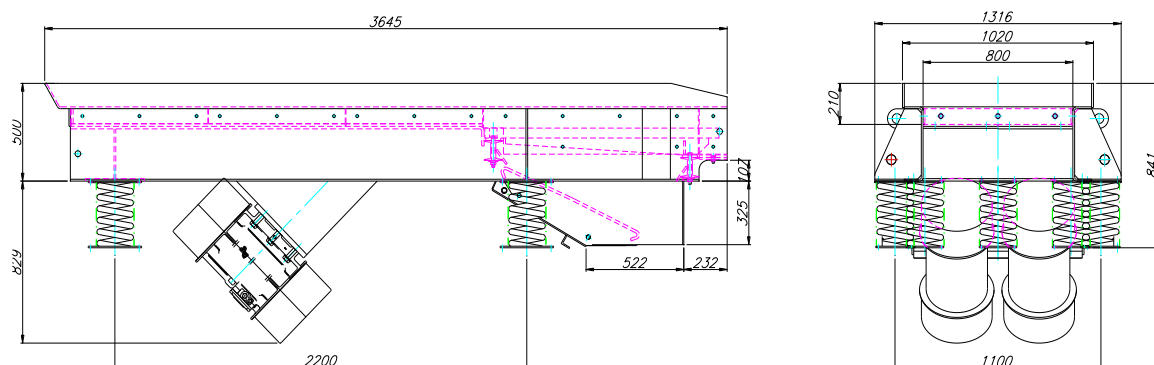
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Chapter O - FEEDERS

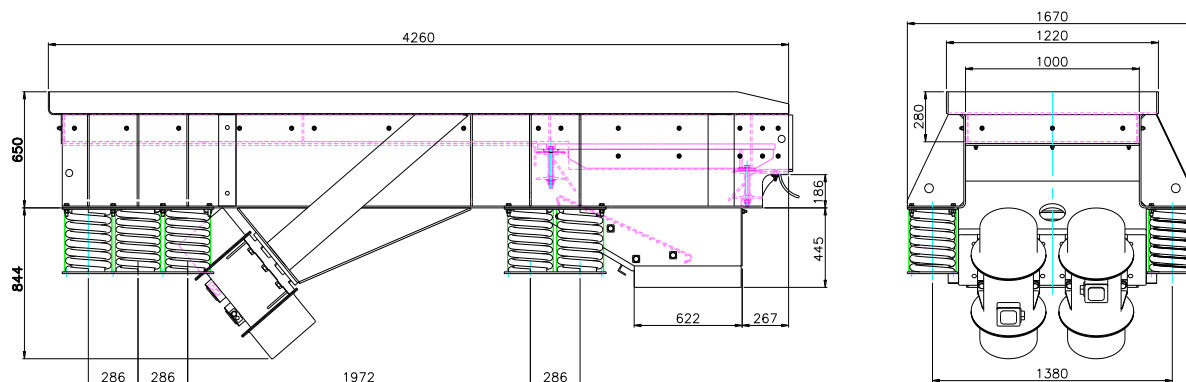
SW GRIZZLY FEEDERS 2016-01-01

DIMENSIONS - SW GRIZZLY FEEDERS (SW0843H AND SW1043H)

SW0843H



SW1043H



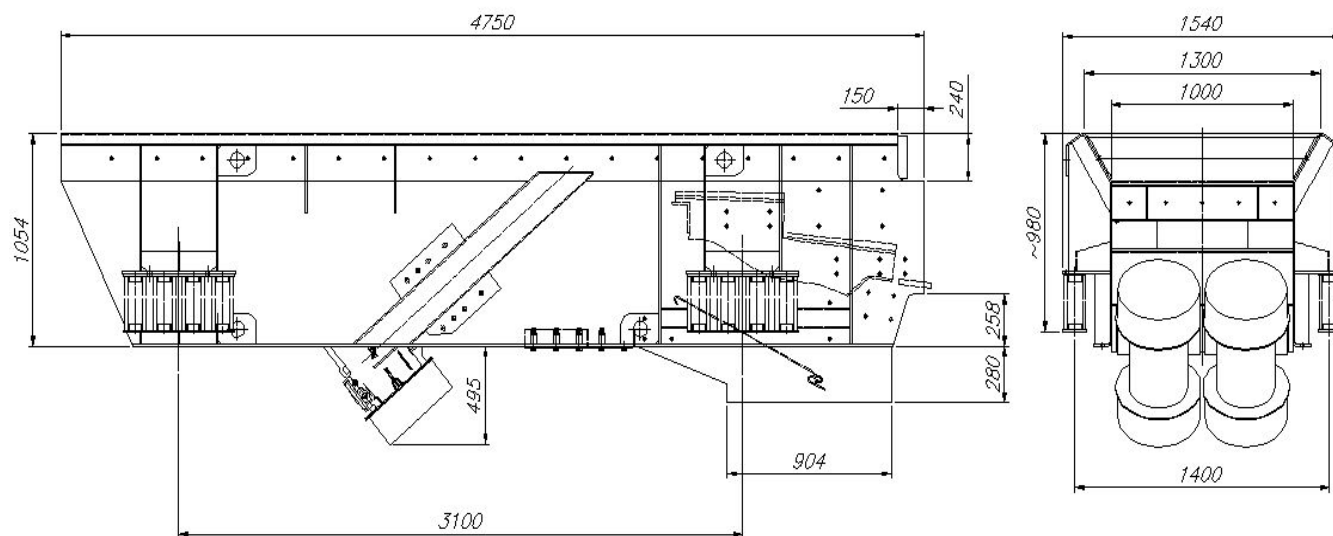
SW0843H and SW1043H – Grizzly section and natural fines deck

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

DIMENSIONS - SW GRIZZLY FEEDERS (SW1052H AND SW1053H)



SW1053H

SW1052H – Only grizzly section

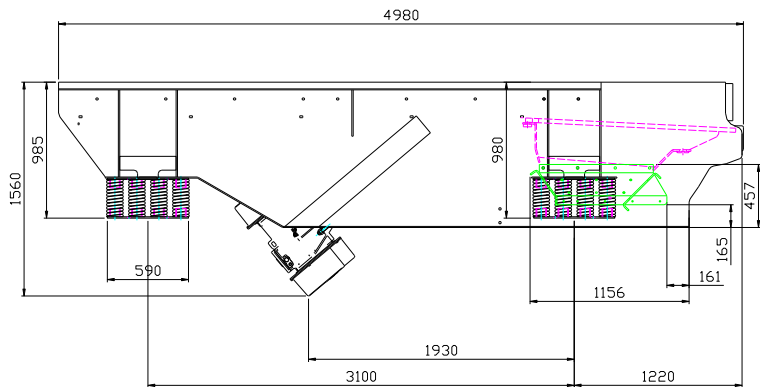
SW1053H – Grizzly section and natural fines deck

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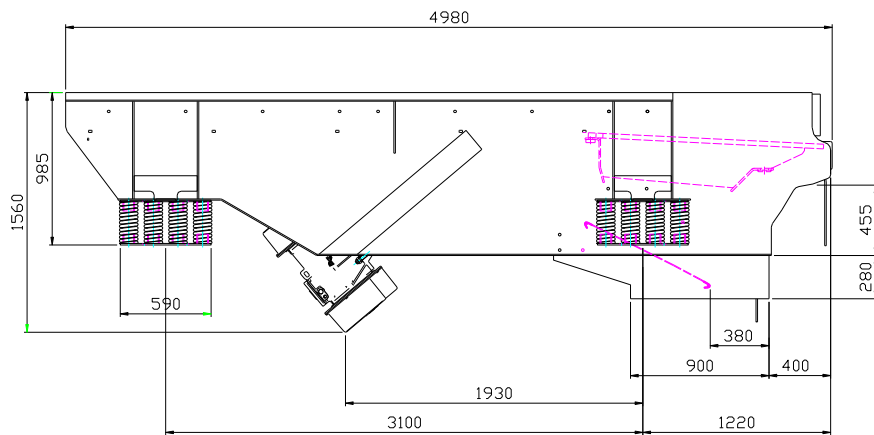
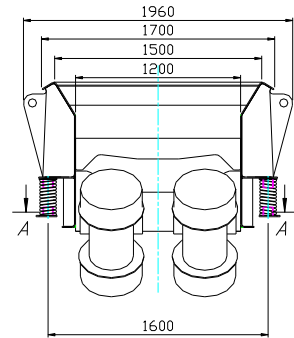
Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

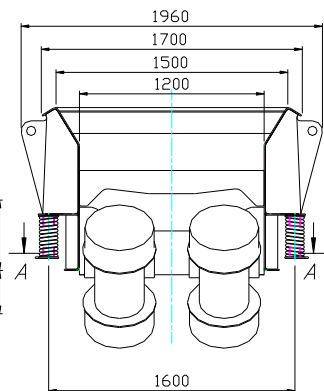
DIMENSIONS - SW GRIZZLY FEEDERS (SW1252H, SW1253H)



SW1252H (above)



SW1253H (above)



- SW1252H** – Only grizzly section
- SW1253H** – Grizzly section and natural fines deck

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SW GRIZZLY FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE - SW GRIZZLY FEEDERS

Feeder Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm) *	Volume (m ³)
SW 0732/0733	2800	3500	1500	1200	6,3
SW 0842/0843	3300	4250	1500	1600	10,2
SW0843H	2100	3650	1320	1330	6,4
SW 1042/1043	4800	4250	1710	1800	13,1
SW 1043H	3600	4270	1670	1500	10,7
SW 1052/1053H	4500	4800	1550	1600	11,9
SW 1252/1253H	5000	4900	1700	1600	13,3

Note: Feeders are normally delivered without a case with an exception for loose items, which are packed in a separate case.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

GENERAL - ST FEEDER AND SCREEN COMBINATIONS

The ST-unit is a combination of a separate pan feeder and a separate double-deck vibrating screen. This product range is especially designed for optimal fines removal in conjunction with a high degree of flow control, which consequently means better crusher performances. ST-units can significantly improve the total throughput of a primary station by its ability to keep a primary crusher fully fed even during varying feed conditions. In addition, the ST-unit decreases the total operation costs associated with a primary crusher as a result of the removal of fine material (i.e. limited amount of fine material that normally would have grinded down the crusher plates). If the total amount of jaw crusher plates is decreased it will result in less downtime corresponding to disassemble and assemble of those, hence an increased availability and higher throughput.

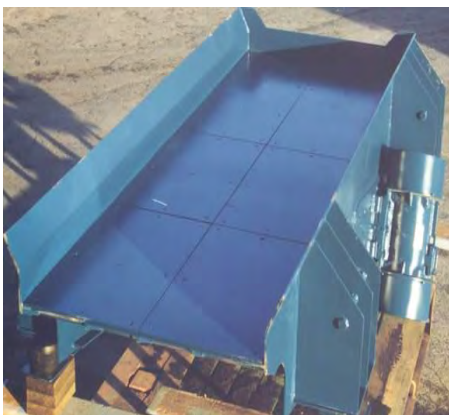
The separate feed unit provides a better flow control than vibrating grizzly feeders as it can be regulated based on the actual tonnage that reaches the subsequent crusher. The inclined side plates of the hopper allows for a maximized live volume as well as a moderate height. The ST-units are offered in four (4) different sizes as a standard version as well as one extra heavy version (H).

Efficient Scalping

- The screen offers very good separations since it runs independently of the feeder (i.e. the screen's stroke length, stroke angle and motor speed can thus be optimized for effective scalping and fines removal)
- The top deck has two grizzly sections with a step in between for efficient scalping and to keep the grizzly from pegging
- The second deck has tensioned screening media and a steeper inclination for better fines removal
- The linear motion as well as the size of the drive provides a sufficient acceleration (i.e. g-force) to keep the wire mesh from blinding

Nominal Operation Limits

- Maximum feed size range: 500-950 mm
- Standard inclination: Horizontal
- Bulk density 1,6 t/m³
- Nominal speed: 1000 rpm
- Capacity range: 100-800 MTPH
- Ambient temperature range: - 20 to + 40 °C
- Installation altitude 1000 masl



ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

SCOPE OF SUPPLY

Standard Delivery Includes

Feeder ST and ST...H

- All-welded feeder body made of high tensile steel side plates
- Heavy (I-type) crossbeams supporting the feeder's pan plate
- Heavy tube connecting the unbalanced electrical motors
- Lateral support brackets for the front and rear suspension
- Bolted AR400 wear liners (i.e. 10 or 20 mm thick for the pan bottom and sidewalls)
- Two unbalanced electrical motors (6-pole/1000 rpm, 400 V / 50 Hz)
- Front and rear suspension: rubber elements (ST-type) or steel coil springs with complete mounting plates (ST...H -type))
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals

Screen ST (together with ST -feeder)

- Bolted screen body
- High tensile steel plates for the sidewalls
- Support brackets for the suspension
- Front and rear suspension (i.e. rubber elements with complete mounting plates)
- Frame for the bottom deck
- Heavy tube connecting the unbalanced electrical motors (i.e. front and back plates)
- Two unbalanced electrical motors (6-pole/1000 rpm, 400 V / 50 Hz)
- Bolted AR400 wear plates (i.e. 12 mm thick for the grizzly section sidewalls)
- Top deck: Dual-stepped integral grizzly section
- Bottom deck: Side tensioned steel wire panel
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals

Screen ST...H (together with ST...H -feeder)

- Bolted screen body
- High tensile steel plates for the sidewalls
- Support brackets for the suspension
- Front and rear suspension (i.e. steel coil springs and complete mounting plates with integrated friction brakes)
- Two unbalanced electrical motors (6-pole/1000 rpm, 400 V / 50 Hz)
- Bolted AR400 wear plates
- Top deck: Triple-stepped grizzly bar section and integral frame with wear parts made of AR500 steel plate
- Bottom deck: Longitudinally tensioned media (i.e. steel wire or Crosscord)
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

DATA SHEETS - ST FEEDERS

Combinations:	ST0863	ST1063	ST1263	ST1363	ST1673H
Suitable Primary Crushers	CJ409	CJ409 CJ411 CI121 CI122	CJ411 CJ412 CI123	CJ412 CI124	CJ412 CJ612 CJ613 CJ615

DATA SHEETS – FEEDERS IN ST UNITS

Description	ST0841	ST1041	ST1241	ST1341	ST1541H
Pan Length (mm)	3500	3500	3500	3500	4200
Pan Width (mm)	690	950	1080	1230	1500
Maximum Capacity (MTPH)	240	300	400	550	800
Maximum Feed Size (mm)	500	600	750	850	950
AR Steel Liner (mm)	10	10	10	10	20/10
Suspension	Rubber Elements	Rubber Elements	Rubber Elements	Rubber Elements	Coil Springs
Maximum Hopper Volume	15	20	30	30	80
Power (kW, Input) @ 50 Hz	2 x 5.5	2 x 5.5	2 x 8.0	2 x 8.0	2 x 11.5
Weight (kg)	2350	2530	2680	2860	5500

* Figures correspond to material with bulk density 1,6 t/m³ and the minimum capacity is approximately 30% of the maximum capacity

** Figures correspond to material with bulk density 1,6 t/m³

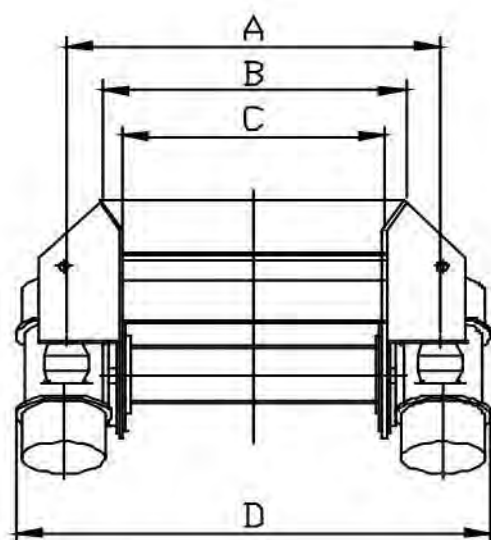
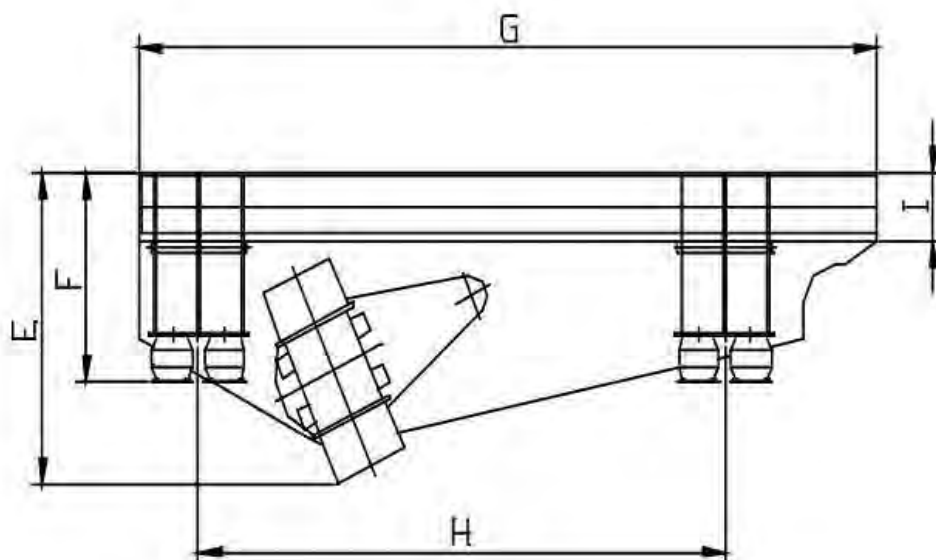
DATA SHEETS - GRIZZLY SCREENS IN ST UNITS

Description	ST0822	ST1022	ST1222	ST1322	ST1622H
Deck Length (mm)	2050	2050	2070	2070	2400
Deck Width (mm)	750	1020	1150	1300	1600
Maximum Feed Size (mm) *	500	600	750	850	950
Maximum Grizzly Gap (mm)	tba	110	110	110	75 / 125 **
Available Grizzly Gaps	tba	40 - 110	40 - 110	40 - 110	45 - 125
Max Separation 2 nd deck (mm)	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40
Top Deck	Stepped Grizzly	Stepped Grizzly	Stepped Grizzly	Stepped Grizzly	Stepped Grizzly
Bottom Deck	Wire	Wire	Wire	Wire	Wire / Crosscord
Suspensions	Rubber Elements	Rubber Elements	Rubber Elements	Rubber Elements	Coil Springs
Power (kW, Input) @ 50 Hz	2 x 5.5	2 x 5.5	2 x 8.0	2 x 8.0	2 x 11.5
Weight (kg)	2550	2800	3620	3930	6580

* Figures correspond to material with bulk density 1,6 t/m³

** Figure refers to: (First grizzly section) / (Second grizzly section)

DIMENSIONS - FEEDERS IN ST UNITS



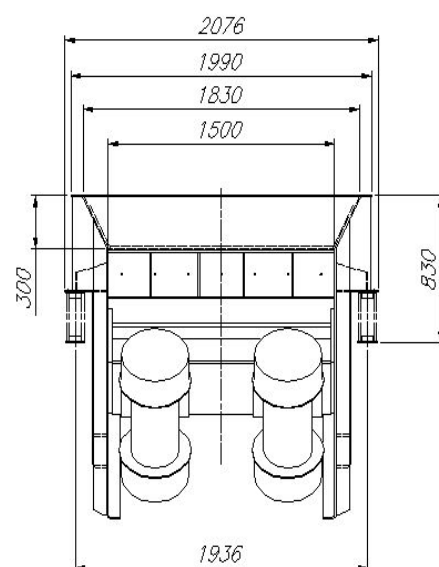
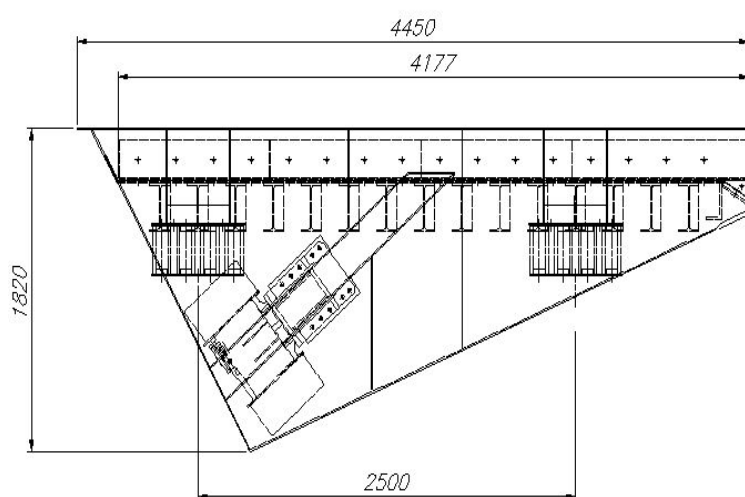
Model	Dimensions (mm)								
	A	B	C	D	E	F	G	H	I
ST0841	1120	850	690	1580	1257	726	3500	2500	270
ST1041	1380	1110	950	1840	1257	726	3500	2500	270
ST1241	1550	1260	1080	1970	1257	845	3500	2500	270
ST1341	1700	1390	1230	2130	1257	845	3500	2500	270

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

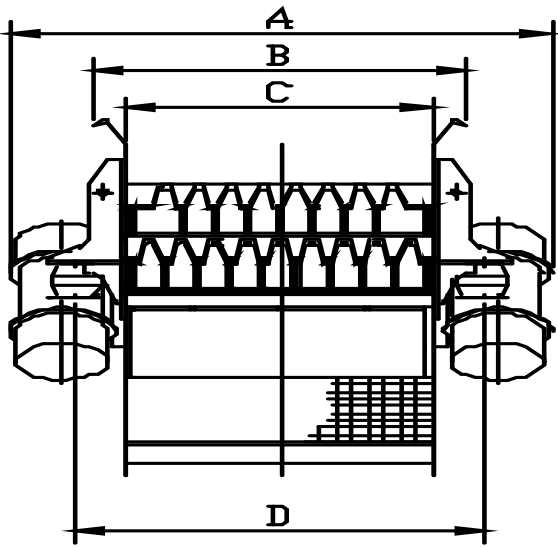
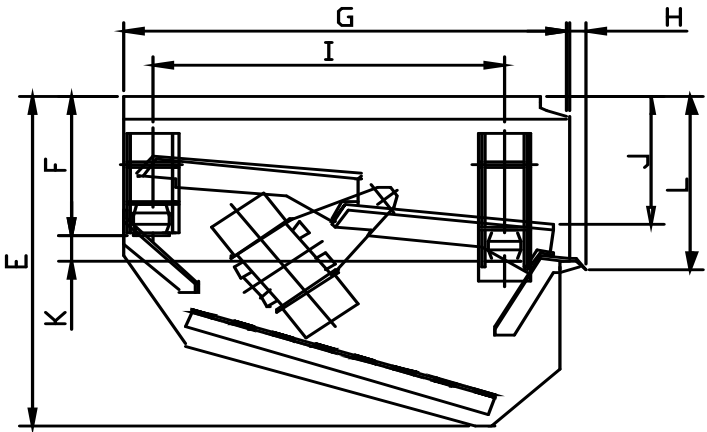
DIMENSIONS – FEEDERS IN ST UNITS



ST1541H

Weight (kg)	5500
Installed Power (kW, Input)	2 x 11.5

DIMENSIONS - SCREENS IN ST UNITS



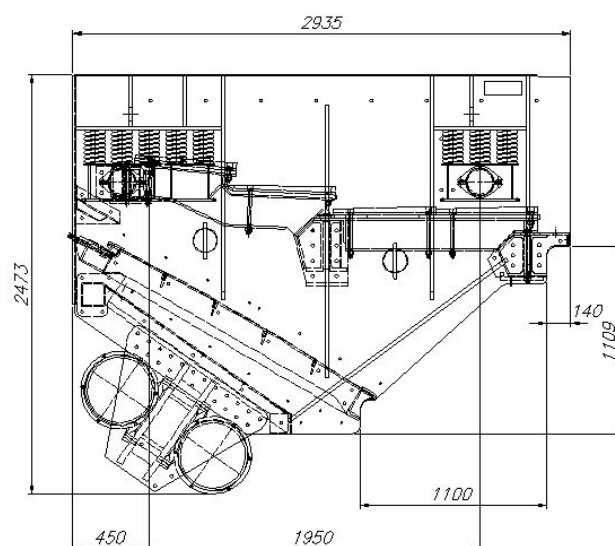
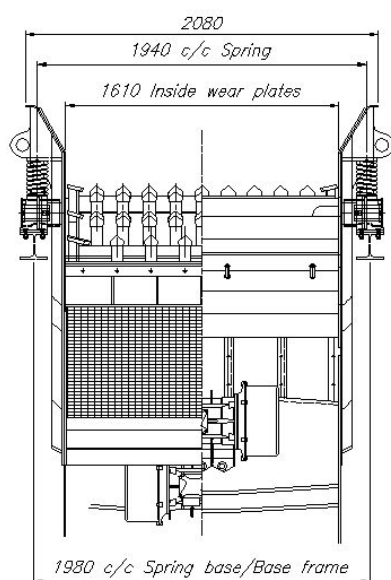
Model	Dimensions (mm)											
	A	B	C	D	E	F	G	H	I	J	K	L
ST0822	1648	1014	750	1110	1718	726	2050	133	1565	848	150	863
ST1022	1918	1284	1020	1380	1580	726	2050	133	1565	846	150	863
ST1222	2048	1414	1150	1540	2017	845	2070	102	1880	778	160	1060
ST1322	2198	1564	1300	1700	2017	845	2070	102	1880	778	160	1060

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

DIMENSIONS - SCREENS IN ST UNITS



ST1622H

Weight (kg)	6580
Installed Power (kW, Input)	2 x 11.5

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

ST FEEDER AND SCREEN COMBINATIONS 2016-01-01

GENERAL PACKING PROCEDURE - FEEDER AND SCREEN COMBINATIONS

Model	Approximate Net Shipping Dimensions				
	Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Volume (m ³)
ST0841 - Feeder	3500	1640	1220	2320	7
ST0822 - Screen	2050	1620	1720	2550	5,7
ST1041 – Feeder	3500	1850	1250	2530	8,1
ST1022 - Screen	2100	1900	1600	2800	6,4
ST1241 – Feeder	3500	2000	1250	2680	8,75
ST1222 - Screen	2100	2050	2050	3620	8,8
ST1341 - Feeder	3500	2150	1250	2860	9,4
ST1322 - Screen	2100	2200	2050	3930	9,5
ST1541H - Feeder	4450	2100	1850	5500	17,3
ST1622H - Screen	2950	2150	2500	6580	15,9

Note: Equipment are normally delivered without a case with an exception for loose items, which are packed in a separate box.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV...E HEAVY GRIZZLY FEEDERS 2016-01-01

GENERAL - SV...E HEAVY GRIZZLY FEEDER

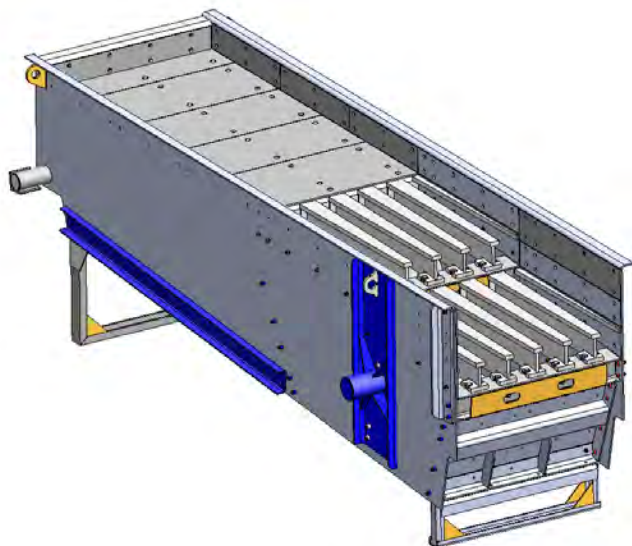
The Sandvik Heavy Grizzly Feeder is primarily designed for open pit applications, with coarse feed (i.e. up to 1000 mm) as well as large hopper volumes (i.e. up to 200 m³). The feeders within this product family are most suitable to serve our largest jaw and impact crushers. In addition to the actual feeding procedure, they also allow bypassing of material in order to relieve the crusher as well as to remove organic and low quality material from the feed. Sandvik offers this type of machine in four different sizes and two versions for each size with or without Natural Fines removal deck.

The SV...E feeder has an all welded feeder body of high tensile steel for maximum impact rigidity and replaceable AR-steel liners protects all wear-exposed areas. Transmission of dynamic loads into support structures and other surrounding areas is considerably low since they are suspended on coil springs. The mechanism consists of a heavy-duty double shaft with a built in shaft synchronizing gearbox (i.e. oil-bath lubricated) and a separate electrical motor with direct cardan shaft drive.

The feeder has two integral grizzly sections at the top deck (i.e. for separations between 65 and 225 mm). The grizzly deck is built up by using independent grizzly bars allowing easy setting and low maintenance costs. The standard step lengths of the grizzlies are 1200mm. Please contact Product Line Screens and Feeders if any inquiries regarding customised combinations are preferred. Depending on the feeder model, a second deck with tensioned steel wire media can be used for the removal of natural fines. The stroke is adjustable through additional counterweights to enable maximum flexibility in terms of a large capacity range.

Nominal Operating Limits

- Maximum feed size range: 700-1000 mm
- Inclination range: 0 - 10 degrees
- Stroke range: 6-9 mm
- Nominal speed of rotation: 550-1000 rpm
- Capacity range: 170-1560 MTPH @ BD 1,6 t/m³
- Ambient temperature range: -20 to + 40°C
- Installation altitude: 1000 masl



ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV...E HEAVY GRIZZLY FEEDERS 2016-01-01

SCOPE OF SUPPLY

Standard delivery includes

- Welded feeder body
- High tensile steel plates at the sidewalls
- Crossbeams supporting the heavy pan plate, lateral front suspension brackets and rear suspension beam
- Vibrating mechanism bolted to the feeder body and two unbalanced shafts internally connected with timing gears (i.e. gives the feeder a stable, load independent, linear vibrating motion)
- Electrical motors (6-pole/1000 rpm, 50 Hz, 400 V OR 8-pole/900 rpm, 60Hz 400 V)
- Direct drive unit including electrical motor, motor base and power transmission components
- Bolted AR steel liners (15/8 mm thick at the bottom/sides). AR400 as standard
- Steel coil springs with seats
- Grizzly decks with replaceable grizzly bars (top and bottom parts of the bars are AR400)
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals

Options

- Second deck for removal of organic materials or by-passing fines. Longitudinal or side tensioned wire media (depends on feeder size), including all tensioning devices. Standard separation 40 mm
- Other type of tensioned media for the second deck (i.e. rubber, stainless steel)
- Other separation than 40 mm for the second deck
- AR500 wear liners for pan bottom and sides
- Frequency converter
- Tool kit for mechanism bearing change
- Special surface treatment for corrosive atmosphere
- Specific components/design for special ambient conditions
- Preparation (in the factory before dispatch) for a long period storage

Note!

Feeder designation depends on the second deck as follows:

- without second deck: SVxx52E
- with second deck: SVxx53E

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV...E HEAVY GRIZZLY FEEDERS 2016-01-01

DATA SHEETS - SV...E HEAVY GRIZZLY FEEDERS

Only Grizzly deck	SV1152E	SV1252E	SV1652E	SV1852E
Incl Second deck	SV1153E	SV1253E	SV1653E	SV1853E
Overall Length (mm)	5 000	5 000	5 400	5 400
Inside Pan Length (mm)	4 872	4 872	5 272	5 272
Inside Pan Width (mm)	1 084	1 204	1 584	1 800
Grizzly Section (mm) (i.e. integral type)	2 x 1 200	2 x 1 200	2 x 1 200	2 x 1 200
Second Deck (Wire Mesh)	Optional 0,7 m ²	Optional 2,2 m ²	Optional 2,2 m ²	Optional 2,2 m ²
Second Deck Type	End tensioned	End tensioned	Side tensioned	Side tensioned
Wear liners (pan/sides, mm)	15/8	15/8	15/8	15/8
Maximum Capacity (MTPH) ***	560/710/850	720/900/1080	880/1110/1320	1040/1300/1560
Maximum Feed Size (mm) **	700	900	1200	1 500
Max. Grizzly Gap****	200	200	200	200
Max. Grizzly Gap with fines/second deck****	130	130	130	130
Suspension	Coil Springs	Coil Springs	Coil Springs	Coil Springs
Installed Power (kW)	1 x 22	1 x 22	1 x 37	1 x 37
Mechanism type/size	Dual 20	Dual 20	Dual 24	Dual 24
Total Weight, only Grizzly deck*	6 300	6 550	9 100	9 600
Total Weight, incl. Second deck*	6 250	6 500	8 950	9 650
Suitable Jaw Crusher	CJ411	CJ412 CJ612	CJ612 CJ613 CJ615	CJ615 CJ815
Standard Feeder Inclination (deg)	6°	6°	6°	6°

*Figures refer to the total weight of the feeder with grizzly bars at 65mm separation. Includes springs and motor

**Figures are based upon material with bulk density 1,6 t/m³

*** The maximum capacity corresponds to: 0 / 6 / 10 degrees, material with bulk density 1,6 t/m³.
The minimum capacity is approximately 30% of the maximum capacity

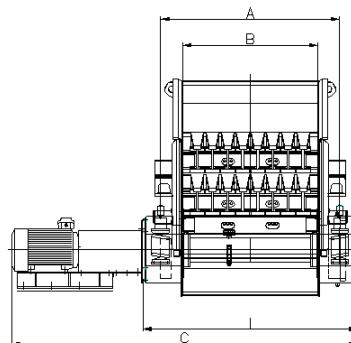
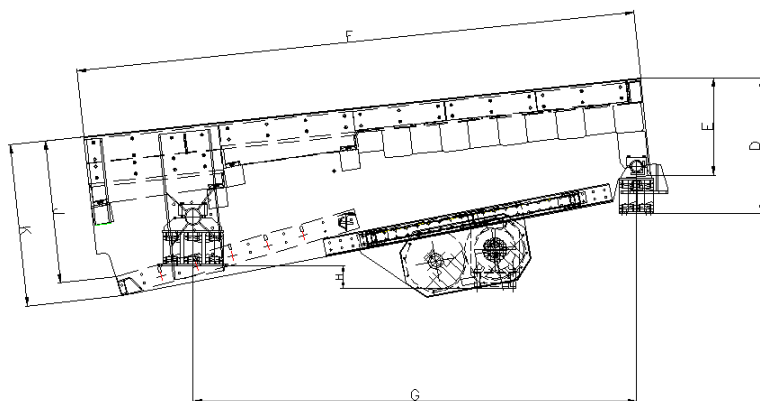
**** Other gaps on special request.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV...E HEAVY GRIZZLY FEEDERS 2016-01-01

DIMENSIONS – SV...E HEAVY GRIZZLY FEEDERS



Model	Grizzly	Second deck	Incl.	A	B	C	D	E
SV1152E	x		6°	1480	1084	2971	1200	865
SV1153E	x	x	6°	1480	1084	2971	1200	865
SV1252E	x		6°	1600	1204	3091	1207	865
SV1253E	x	x	6°	1600	1204	3091	1207	865
SV1652E	x		6°	1980	1584	3475	1252	909
SV1653E	x	x	6°	1980	1584	3475	1252	909
SV1852E	x		6°	2180	1804	3475	1252	909
SV1853E	x	x	6°	2180	1804	3475	1252	909

Model	F	G	H	I	J	K	Weight (kg)
SV1152E	5000	3961	176	1796	N/A	1445	6300
SV1153E	5000	3961	176	1796	1270	1445	6250
SV1252E	5000	3961	176	1916	N/A	1445	6550
SV1253E	5000	3961	176	1916	1246	1445	6500
SV1652E	5400	4400	124	2300	N/A	1480	9100
SV1653E	5400	4400	124	2300	1303	1480	8950
SV1852E	5400	4400	124	2520	N/A	1480	9600
SV1853E	5400	4400	124	2520	1283	1480	9650

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV...E HEAVY GRIZZLY FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE - SV...E HEAVY GRIZZLY FEEDER

Feeder Type	Approximate Net Shipping Dimensions				
	Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Volume (m ³)
SV1152E / 1153E	5 050	1 800	1 850	6 400 / 6 350	16,8
SV1252E / 1253E	5 050	1 920	1 850	6 650 / 6 600	17,9
SV1652E / 1653E	5 450	2 300	1 960	9 200 / 9 050	24,5
SV1852E / 1853E	5 450	2 500	1 960	9 750 / 9 800	26,7

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to possible options.

Feeder is shipped loose on fabricated transport supports/legs. The vibrating mechanism is assembled at the factory to the feeder body.

In all deliveries motor, motor base, cardan shaft parts, covers, support springs, lower spring support parts and possible extra counter weights are packed in a separate box or pallet, which is tied on top of the feeder deck, when applicable.

When export packing is required (wooden crate etc.), please consult with S&F Global Order Service Desk.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

GENERAL - SV MECHANISM GRIZZLY FEEDER

The SV feeder has a compact design and an extensive capacity range, 560-2040 MTPH. The maximum feed size is 700-1500 mm, depending on the width of the feeder. This feeder type is suitable also for mining duty.

This feeder model is equipped with grizzly sections (i.e. one or two sections depending on the size of the feeder), however the grizzly feature can be excluded upon request. The grizzly deck is built up by using independent grizzly bars allowing easy setting and low maintenance costs.

The standard step lengths of the grizzlies are 900 mm or 1 200 mm. Please contact the Product Line Screens and Feeders if any inquiries regarding customized combinations are preferred.

Integrated standard hoppers are available for several feeder sizes in the range of 26-65 m³. Possible to design larger, customized hoppers for specified cases.

The double shaft mechanism is synchronized by a gear wheel, which generates a linear stroke and therefore an appropriate material speed. The drive unit incorporates an electrical motor, which is connected to one of the aforementioned cardan shafts (i.e. eccentrically mounted shafts). The optional frequency converter can efficiently adjust the speed of rotation for optimal performance according to the present conditions.

Sandvik has also developed a special edition of the SV, which has a hydraulic drive and its own hydraulic power pack. This version provides a compact design and the speed of rotation is easily adjusted because of its hydraulic system. In addition, this machine is ideal for frequent start and stop cycles.

Adjustability

- Inclination (0-10 degrees)
- Stroke length
- Rotation speed
- Stroke angle
- Grizzly gap

Nominal Operating Limits

- Maximum feed size range: 700-1500 mm
- Inclination range: 0-10 degrees (std 0 deg)
- Separation range: 60-250 mm (60-160 mm as standard)
- Speed range: 550-1000 rpm
- Stroke range: 4-10 mm
- Acceleration: up to 4,5 x G
- Ambient temperature range: -20 to +40 °C
- Installation altitude 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

SCOPE OF SUPPLY – SV MECHANISM GRIZZLY FEEDER

Standard delivery includes

- Feeder body and vibrating mechanism bolted together
- Drive unit including electrical motor, motor base and power transmission components
- Support coil springs
- Wear liners for pan and sides (AR400 as standard)
- Spring seats (i.e. top and bottom parts)
- Grizzly bars
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting.
- Installation, operating and maintenance manuals

Options

- AR500 steel liners for pan and sides
 - Frequency converter
 - Tool kit for mechanism bearing change
 - Hydraulic drive (instead of direct cardan shaft driven by electrical motor)
 - Dump hoppers for feeders with nominal lengths 4,5 m and 6,0 m
 - Special grizzly bars for slag handling
 - The standard grizzly lengths as well as the number of steps can be customized according to the customer's preferences (Please consult with Product Line prior to any quoting)
 - Special grizzly bars with increased height for larger separations
 - Special surface treatment for corrosive atmosphere
 - Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.)
 - Preparation (in the factory before dispatch) for a long period storage
 - Feeder without grizzly section(s). (ie. with plain pan bottom)
- | | | |
|---------------------|--------|--------------------------|
| Sample designation: | SV1531 | Feeder without grizzlies |
| | SV1532 | Feeder with grizzlies |

General technical data

- Stroke range: 4-10 mm (i.e. adjustable by adding extra weights)
- Stroke angle: 25-45 degrees (i.e. adjustable by the gear wheel position)
- Inclination range: 0-10 degrees
- Base mounted
- Motor according to IEC standard, enclosure class IP55
- Power transmission through cardan shafts directly from motor
- Inbuilt gear wheel synchronizing of the shafts
- Spherical roller bearings
- Oil bath lubrication
- Mechanism is equipped with oil level gauge and breather
- AR400 wear liners
- Welded frame including heavy steel profiles
- Mechanism is fixed by special pre-tensioned bolts
- Standard gap range is selectable between grizzly bars: 60-160 mm (up to 250 mm with special (higher) grizzly bars), individual grizzly bars, i.e. gap can be changed afterwards
- Movement of feeder body limited by rubber buffers

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

DATA SHEETS - SV MECHANISM GRIZZLY FEEDERS



Model	SV1032	SV1232	SV1532
Inside Width (mm)	1 020	1 220	1 520
Inside Length (mm)	3 000	3 000	3 000
Grizzly Steps, amount x length (mm)	1 x 900	1 x 900	1 x 900
Scalping Area (m ²)	0.9	1.1	1.4
Total weight including grizzly bars (kg) *	3 650	3 950	4 450
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	12/8	12/8	12/8
Installed Power (kW)	1 x 15	1 x 15	1 x 15
Mechanism Type / size	Dual 16	Dual 16	Dual 16
Maximum Feed Size (mm) **	700	900	1 200
Maximum Capacity (MTPH) ***	560/705/840	720/895/1080	880/1105/1320

Model	SV1832	SV2132	SV2432
Inside Width (mm)	1 820	2 120	2 420
Inside Length (mm)	3 000	3 000	3 000
Grizzly Steps, amount x length (mm)	1 x 900	1 x 900	1 x 900
Scalping Area (m ²)	1.6	1.9	2.2
Total weight including grizzly bars (kg) *	5 700	6 100	6 700
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	12/8	12/8	12/8
Installed Power (kW)	1 x 22	1 x 22	1 x 22
Mechanism Type	Dual 20	Dual 20	Dual 20
Maximum Feed Size (mm) **	1500	1500	1500
Maximum Capacity (MTPH) ***	1040/1295/1560	1200/1505/1800	1360/1695/2040

* Figures refer to the total weight of the feeder with grizzly bars at 85 mm separation

** Figures are base upon material with bulk density 1,6 t/m³

*** The maximum capacity corresponds to: the following inclinations: 0/5/10 degrees, material with bulk density 1,6 t/m³. The minimum capacity is approximately 30% of the maximum capacity

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

DATA SHEETS - SV MECHANISM GRIZZLY FEEDER



Model	SV1052	SV1252	SV1552
Inside Width (mm)	1 020	1 220	1 520
Inside Length (mm)	4 500	4 500	4 500
Grizzly Steps, amount x length (mm)	1 x 1200	1 x 1200	1 x 1200
Scalping Area (m ²)	1.2	1.5	1.8
Total weight including grizzly bars (kg) *	4 650	5 900	6 300
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	12/8	12/8	16/8
Installed Power (kW)	1 x 15	1 x 22	1 x 22
Mechanism Type / size	Dual 16	Dual 20	Dual 20
Maximum Feed Size (mm) **	700	900	1 200
Maximum Capacity (MTPH) ***	560/705/840	720/895/1080	880/1105/1320
Optional Dump Hopper available	Yes	Yes	Yes

Model	SV1852	SV2152	SV2452
Inside Width (mm)	1 820	2 120	2 420
Inside Length (mm)	4 500	4 500	4 500
Grizzly Steps, amount x length (mm)	1 x 1200	1 x 1200	1 x 1200
Scalping Area (m ²)	2.1	2.5	2.9
Total weight including grizzly bars (kg) *	6 700	8 500	9 050
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	16/8	16/8	16/8
Installed Power (kW)	1 x 22	1 x 37	1 x 37
Mechanism Type	Dual 20	Dual 24	Dual 24
Maximum Feed Size (mm) **	1 500	1 500	1 500
Maximum Capacity (MTPH) ***	1040/1295/1560	1200/1505/1800	1360/1695/2040
Optional Dump Hopper available	-	-	-

* Figures refer to the total weight of the feeder with grizzly bars at 85 mm separation

** Figures are base upon material with bulk density 1,6 t/m³

*** The maximum capacity corresponds to: the following inclinations: 0/5/10 degrees, material with bulk density 1,6 t/m³. The minimum capacity is approximately 30% of the maximum capacity

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

DATA SHEETS - SV MECHANISM GRIZZLY FEEDER



Model	SV1062	SV1262	SV1562
Inside Width (mm)	1 020	1 220	1 520
Inside Length (mm)	6 000	6 000	6 000
Grizzly Steps, amount x length (mm)	2 x 900	2 x 900	2 x 900
Scalping Area (m ²)	1.8	2.2	2.7
Total weight incl. grizzly bars (kg) *	6 450	7 250	8 000
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	16/8	16/8	16/8
Installed Power (kW)	1 x 22	1 x 22	1 x 30
Mechanism Type / size	Dual 20	Dual 20	Dual 20
Maximum Feed Size (mm) **	700	900	1200
Maximum Capacity (MTPH) ***	560/705/840	720/895/1080	880/1105/1320
Optional Dump Hopper available	Yes	Yes	Yes

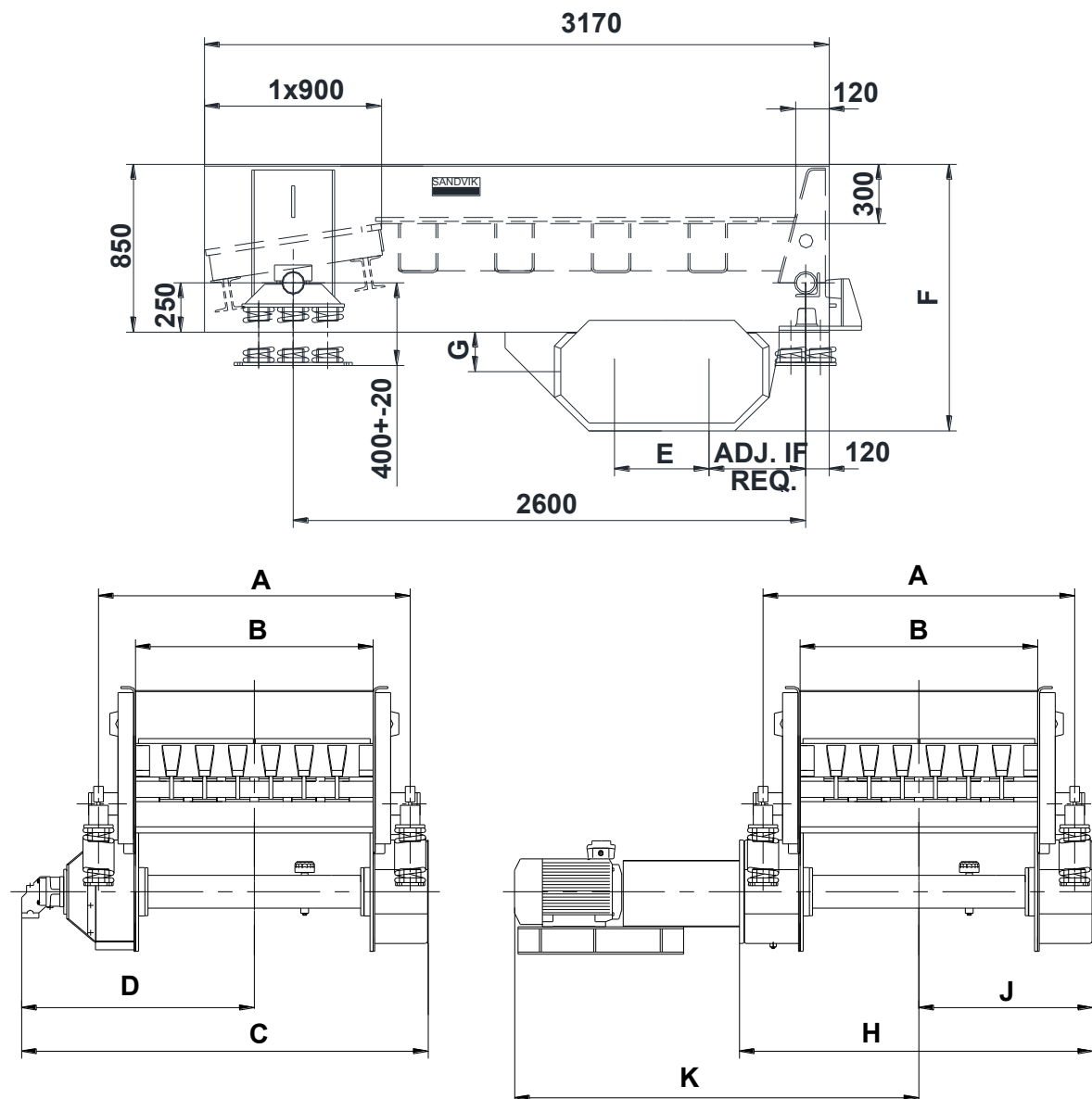
Model	SV1862	SV2162	SV2462
Inside Width (mm)	1 820	2120	2420
Inside Length (mm)	6 000	6000	6000
Grizzly Steps, amount x length (mm)	2 x 900	2 x 900	2 x 900
Scalping Area (m ²)	3.3	3.8	4.3
Total weight incl. grizzly bars (kg) *	9 800	10 700	17 700
Available Grizzly Gap (mm)	60 - 160	60 - 160	60 - 160
Max Grizzly Gap (mm) with special bars	250	250	250
Wear liners pan/sides (mm)	16/8	16/8	16/8
Installed Power (kW)	1 x 37	1 x 37	2 x 30
Mechanism Type	Dual 24	Dual 24	Dual 30
Maximum Feed Size (mm) **	1500	1500	1500
Maximum Capacity (MTPH) ***	1040/1295/1560	1200/1505/1800	1360/1700/2040
Optional Dump Hopper available	Yes	-	-

* Figures refer to the total weight of the feeder with grizzly bars at 85 mm separation

** Figures are base upon material with bulk density 1,6 t/m³

*** The maximum capacity corresponds to: the following inclinations: 0/5/10 degrees, material with bulk density 1,6 t/m³. The minimum capacity is approximately 30% of the maximum capacity

DIMENSIONS – SV MECHANISM GRIZZLY FEEDER



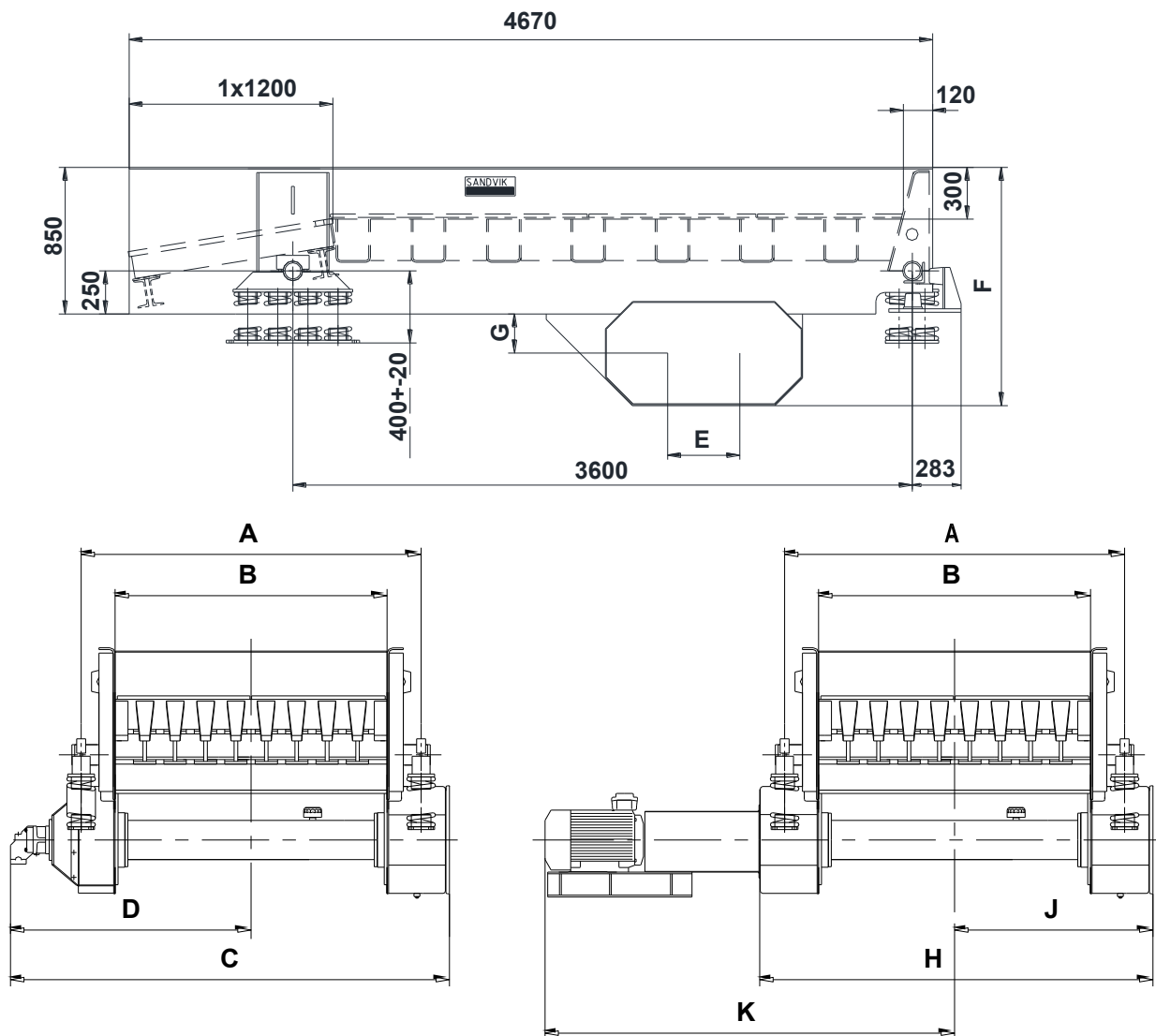
Feeder Type	Deck Area (m²)	Feeder Dimensions (mm)									
		A	B	C	D	E	F	G	H	J	K
SV1032	0,9	1400	1020	1855	1048	480	1310	160	1452	737	1970
SV1232	1,1	1600	1220	2055	1148	480	1310	160	1652	837	2070
SV1532	1,4	1900	1520	2355	1298	480	1310	160	1952	987	2220
SV1832	1,6	2200	1820	2785	1523	480	1325	170	2312	1167	2450
SV2132	1,9	2500	2120	3085	1673	480	1325	170	2612	1317	2600
SV2432	2,2	2800	2420	3385	1823	480	1325	170	2912	1467	2750

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

DIMENSIONS – SV MECHANISM GRIZZLY FEEDER



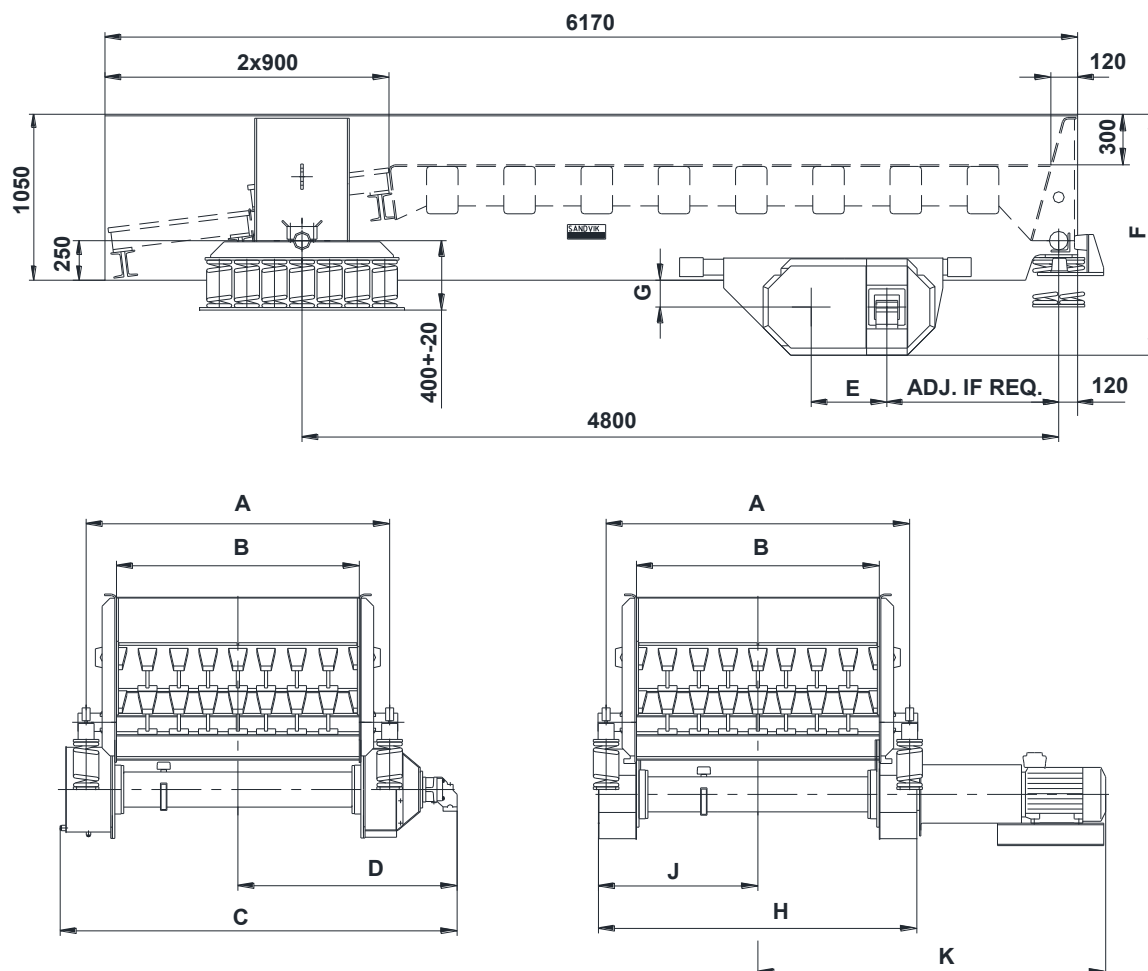
Feeder Type	Deck area (m²)	Feeder Dimensions (mm)									
		A	B	C	D	E	F	G	H	J	K
SV1052	1,2	1400	1020	1855	1048	480	1310	160	1452	737	1970
SV1252	1,5	1600	1220	2185	1223	480	1325	170	1712	867	2150
SV1552	1,8	1900	1520	2485	1373	480	1325	170	2012	1017	2300
SV1852	2,1	2200	1820	2785	1523	480	1325	170	2312	1167	2450
SV2152	2,5	2500	2120	3080	1674	600	1495	265	2642	1332	2655
SV2452	2,9	2800	2420	3380	1824	600	1495	265	2942	1482	2805

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

DIMENSIONS – SV MECHANISM GRIZZLY FEEDER



Feeder Type	Deck Area (m ²)	Feeder Dimensions (mm)									
		A	B	C	D	E	F	G	H	J	K
SV1062	1.8	1400	1020	1985	1123	480	1525	170	1512	767	2050
SV1262	2.2	1600	1220	2185	1223	480	1525	170	1712	867	2150
SV1562	2.7	1900	1520	2485	1373	480	1525	170	2012	1017	2400
SV1862	3.3	2200	1820	2780	1524	600	1695	265	2342	1182	2505
SV2162	3.8	2500	2120	3080	1660	600	1695	265	2826	1433	2800
SV2462	4.3	2860	2420	3400	1860	700	1990	330	3140	1614	2800

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SV MECHANISM GRIZZLY FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE - SV MECHANISM GRIZZLY FEEDERS

Feeder Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SV1032	3750	3120	1620	1400	7,1
SV1232	4100	3170	1820	1440	8,4
SV1532	4550	3170	2120	1440	9,7
SV1832	5850	3170	2520	1490	11,9
SV2132	6200	3170	2840	1640	14,8
SV2432	6800	3170	3140	1640	16,3
SV1052	4750	4670	1620	1440	11,0
SV1252	6000	4670	1920	1440	12,9
SV1552	6400	4670	2220	1440	15,0
SV1852	6800	4670	2500	1440	18,0
SV2152	8600	4670	2840	1640	21,8
SV2452	9200	4670	3140	1640	24,0
SV1062	6600	6170	1700	1640	17,2
SV1262	7400	6170	1930	1640	19,5
SV1562	8100	6170	2220	1640	22,5
SV1862	10000	6170	2540	1800	28,2
SV2162	10900	6170	2850	1800	31,7
SV2462	17700	6170	3155	1800	35,0

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Feeder is shipped loose and the vibrating mechanism is assembled on the feeder at the factory.

In all deliveries: motor, motor base, cardan shaft parts, covers, support springs, lower spring support parts and extra counter weights are packed in a separate box or on pallet, which is tied on top of the feeder deck, when applicable.

When hopper is included in the delivery, please consult with the Product Line regarding the required transport space.

When export packing is required (wooden crate etc.), please consult with Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

GENERAL - SH RECIPROCATING PLATE FEEDERS

The reciprocating plate feeder is designed especially for heavy duty feeding applications for the mining industry but also for mineral processes as well as quarries. This product family has a robust reciprocating plate powered by a hydraulic cylinder which causes no vibration.

These feeders can handle high head loads without any significant compromises, in terms of feed rate or strength parameters. The plate feeders can handle large lump sizes (i.e. up to 2400 mm) because of its heavy-duty construction and self-protecting feature. The maximum capacity range is 250-1250 m³/h, depending on the size of the feeder and feed hopper design.

The basic version includes base frame, moving plate, side skirts with sealing system, hydraulic cylinder and power pack. The power pack can be placed at a relatively far distance from the feeder, if necessary.

A complete primary Feed Unit (including a SH-feeder and an integrated heavy duty standard dump hopper with inclined walls) is also available for certain feeder models. The volume range of these standard hoppers is 15-100 m³ depending on the feeder size. Also special feeders with for instance Safety Gate at discharge end are available for truck loading applications (e.g. commonly used in underground mines).

The secondary range is primarily designed for tough secondary applications. These feeders are normally mounted underneath a silo or a bunker in order to discharge material to a belt conveyor. Secondary feeders are suspended type (bolting from the upper flange).

Sandvik Reciprocating Feeders are easily implemented in automatic processes. The power pack includes a connection box for control cables, which enables capacity adjustments by plant's existing PLC/SCADA system.

Plate Feeders can efficiently handle moist material. Optional heating elements can be supplied if the production has to be carried out during ambient temperatures below 0 °C.

The feed rate can be adjusted by the following parameters:

- Stroke length (working length 150-450 mm, depending on the size and type of feeder)
- Stroke frequency (strokes per minute)
- Frequency of start and stop cycles (i.e. hydraulically operated plate feeders can start and stop without any delays, on account of electrical motors and vibrating processes)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

GENERAL - SH RECIPROCATING PLATE FEEDERS

Sandvik has plate feeders for both “normal” duty and heavier models for mining duties. Mining duty models are designated in this RPG with “M” at the end of the model type (SH2071M).

Note 1: Capacity and required power calculations are based on 1.6 t/m³ bulk density for basic feeders. For mining duty models the calculations are based on 2.2 t/m³ bulk density. For other bulk densities, please contact the Product Line S&F.

Note 2: Please contact Product Line S&F if more constant (non-cyclical) material flow is required.

Note 3: Max. capacity for primary feeders have been calculated using the standard hoppers of Sandvik (inclined side walls) and by the following material bed depths:

- Basic feeders @ BD 1,6 t/m³: 1500 mm (average, varying between 1000-2000 mm)
- Mining feeders @ BD 2,2 t/m³: 1800 mm (average)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

SCOPE OF SUPPLY / BASIC FEEDER

Standard delivery / Basic feeders

- Feeder body, including the frame and the moving plate
- Hydraulic cylinder
- Hydraulic power pack
- Feed rate adjustment: "On / Off" (i.e. by stopping and starting the plate movement)
- Hydraulic hoses between power pack and feeder (standard length 6 m)
- Side and back sealing system
- Proximity switches (2 pcs) to turn the direction of movement of the reciprocating plate.
- Surface treatment according to Sandvik S&F Standard, components according to supplier's std
- Replaceable wear liners for pan and feeder sides, made of mild steel AR100
- Following accessories for the first start up: flushing plate (for oil piping flushing), oil filter cartridge
- Installation, operating and maintenance manuals

Options / Basic feeders

- For primary feeders: feed hopper with inclined side walls (see availability from Data Sheet Tables)
- AR steel liners on pan and sides (hopper / chute), hardness HB360-440 or HB450-540
- Centralised automatic lubrication for support wheel bearings and cylinder pins
- Electrical feed rate adjustment (i.e. the power pack is equipped with a proportional directional valve and IFM Controller with display, remote speed control by 4-20 mA signals)
- Overflow barriers/chains for the hopper
- Heating elements for pan (i.e. prevents the material from freezing on the pan surface)
- Noise protection enclosure for main pump + motor
- Off-Line filter for hydraulic oil tank (extra fine filtering of oil)
- Special surface treatment for corrosive atmosphere
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.) and requests

SCOPE OF SUPPLY / MINING DUTY FEEDERS

Standard delivery / Mining duty feeders

- Feeder body, including the frame and the moving plate
- Hydraulic cylinder(s)
- Hydraulic power pack
- Feed rate adjustment: Electrical (i.e. the power pack is equipped with a proportional directional valve and IFM Controller with display, remote speed control by 4-20 mA signals)
- Hydraulic hoses between power pack and feeder (standard length 6 m)
- Side and back sealing system
- Proximity switches (2 pcs) to turn the direction of movement of the reciprocating plate.
- Surface treatment: for Corrosive Category C4(M) (min.200µm), components acc. to supplier's std
- Replaceable wear liners for pan and feeder sides, made of AR400

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

Standard delivery / Mining duty feeders cont.

- Noise protection enclosure for main pump + motor
- Following accessories for the first start up: oil filter cartridges
- Installation, operating and maintenance manuals

Options / Mining duty feeders

- Harder AR steel liners on pan and sides (hopper/chute), HB450-540
- Centralised automatic lubrication for support wheel bearings and cylinder pins
- Overflow barriers/chains for the hopper
- Heating elements for pan (i.e. prevents the material from freezing at the surface)
- Off-Line filter for hydraulic oil tank (extra fine filtering of oil)
-
- Special components (motors etc.) for special circumstances (temperature, altitude, tropical etc.) and requests
- Very special surface treatment for extreme corrosive atmosphere or according to customer's spec.
- For primary feeders: feed hopper with inclined side walls (see availability from Data Sheet Tables)

GENERAL TECHNICAL DATA

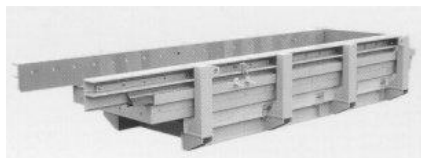
- Standard inclination (fixed, not adjustable afterwards):
 - Primary feeders: 0-3 degrees
 - Secondary feeders: 3-5 degrees
- Type of feeder support:
 - Primary feeders: base supported
 - Secondary feeders: suspended (from the upper flange)
- Proximity switches for adjustment of pan movement (stroke length and direction turn) included in delivery
- Hydraulic cylinder is mounted underneath the pan OR both sides of the frame (when 2 off cylinders used for some Mining duty models)
- Hydraulic Power Pack size to be verified according to the application case by case
- Motors according to IEC standard, enclosure class IP55
- Main components included in the power pack: motor(s), oil reservoir, load sensing axial open circuit piston pump(s), directional and pressure valves, oil temperature gauge, oil level gauge, oil pressure gauges, oil filter unit(s), oil cooler, internal wiring, junction box and local control panel
- Hydraulic hoses between power pack and cylinder are included (2 off / 6 meters long)
- Spherical roller bearings for the support wheels (2 pcs/wheel)
- Lubrication (grease) nipples for the support wheels and cylinder pins
- AR wear liners: HB100-130 for Basic, HB360-440 for Mining
- Feeder sides and back are sealed with rubber sealing elements to prevent material spillage
- Nominal Operating Limits:
 - Ambient temperature range: -20 to +40 °C
 - Installation altitude: 1000 masl

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

DATA SHEETS - PRIMARY SH RECIPROCATING PLATE FEEDERS



Basic **	SH1041	SH1351	SH1661	SH2571
Capacity, Max (m ³ /h) ****	300	450	600	1250
Maximum Feed Size (mm) *	700	1000	1300	2400
Inside Width (mm, nominal at discharge)	910	1210	1510	2350
Plate Length (mm)	3500	4500	5700	7000
Weight (kg)	3850	5250	10000	21000
Installed Power, main (kW)	11	30	45	2 x 55
Wear Liner Thickness, pan / side (mm)	20/20	20/20	20/20	30/30
Maximum Working Stroke Length (mm)	250	350	350	400
Cyl. Type (out.dia./rod dia./stroke length)	80/45/300	125/70/400	140/80/400	250/110/450
Hydraulic Oil Reservoir, volume (l)	250	400	400	1000
Number of Support Shafts	4	5	6	7
Standard Feed Hopper (inclined walls) available	Yes	Yes	Yes	Yes

Mining ***	SH1661M	SH2071M	SH2381M	SH2571M
Capacity, Max (m ³ /h) ****	700	1000	1100	1250
Maximum Feed Size (mm) *	1300	1800	2000	2400
Inside Width (mm, nominal at discharge)	1490	1870	2100	2350
Plate Length (mm)	5700	6500	8000	7000
Weight (kg)	11600	18400	23900	22700
Installed Power, main (kW)	55	2x55	3x55	3x75
Wear Liner Thickness, pan / side (mm)	40/30	40/30	40/30	40/30
Maximum Working Stroke Length (mm)	350	400	400	400
Cyl. Type (out.dia./rod dia./stroke length)	160/90/400	200/110/450	(200/110/450)x2	(200/110/450)x2
Hydraulic Oil Reservoir, volume (l)	600	1000	2 000	2 000
Number of Support Shafts	6	7	8	7
Standard Feed Hopper (inclined walls) available	Yes	Yes	Yes	Yes

* Only one dimension is allowed to reach up to the specified value (i.e. the other dimensions of the lump must be smaller than the Maximum Feed Size). Given value for Sandvik Standard hopper (inclined side walls). For other type of hopper the max. feed size and capacity may be smaller.

** BD 1,6 t/m³ used in calculations.

*** BD 2,2 t/m³ used in calculations.

**** Maximum achievable capacity strongly depends on the actual material bed depth height on the feeder pan and feed hopper design. Given value calculated with Sandvik Standard hopper (inclined walls).

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

DATA SHEETS - SECONDARY SH RECIPROCATING PLATE FEEDER



Basic **	SH0835	SH1035	SH1335	SH1645
Capacity, Max. (m ³ /h)	150	200	250	500
Maximum Feed Size (mm) *	250	300	400	500
Inside Width (mm, nominal at discharge)	750	950	1 250	1 500
Plate Length (mm)	2 500	2 500	2 500	3 500
Weight (kg)	3 200	3 500	3 700	8 850
Installed Power, main (kW)	7,5	11,0	15,0	30,0
Wear Liner Thickness, pan / hopper (mm)	12/12	12/12	12/12	20/16
Maximum Working Stroke Length (mm)	250	250	250	350
Cylinder Type (out. dia./rod. dia./stroke length)	80/45/300	80/45/300	80/45/300	125/70/400
Hydraulic Oil Reservoir, volume (l)	250	250	250	400
Number of Support Shafts	3	3	3	4
Hopper Volume (m ³)	1,5	1,5	2,5	4,0

Mining ***	SH1645M	SH1955M	SH2255M
Capacity, Max. (m ³ /h)	550	700	950
Maximum Feed Size (mm) *	700	900	1 200
Inside Width (mm, nominal at discharge)	1 500	1800	2 110
Plate Length (mm)	3 500	4 500	4 500
Weight (kg)	12 500	15 000	16 500
Installed Power, main (kW)	37	55	2x37
Wear Liner Thickness, pan / hopper (mm)	40/20	40/20	40/20
Maximum Working Stroke Length (mm)	350	350	350
Cylinder Type (out. dia./rod. dia./stroke length)	125/70/400	160/90/400	200/110/400
Hydraulic Oil Reservoir, volume (l)	400	600	1000
Number of Support Shafts	4	5	5
Hopper Volume (m ³)	7	12	15

* Only one dimension is allowed to reach up to the specified value (i.e. the other dimensions of the lump must be smaller than the Maximum Feed Size)

** BD 1,6 t/m³ in calculations

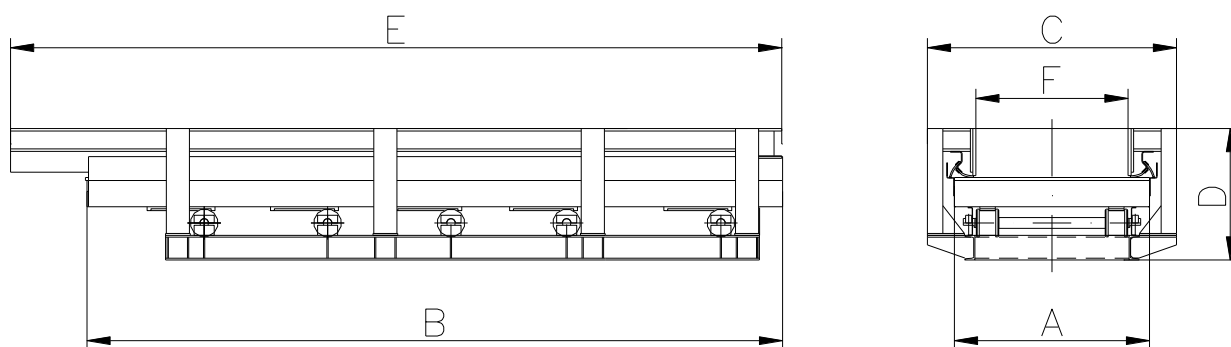
*** BD 2.2 t/m³ in calculations

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

DIMENSIONS - PRIMARY SH RECIPROCATING PLATE FEEDERS



Feeder Type	Dimensions (mm)						Total Weight (kg)
	A*	B	C ***	D	E	F**	
SH1041	1080	3500	1430	860	4000	910	3850
SH1351	1380	4500	1730	918	5000	1210	5250
SH1661	1680	5700	2050	1100	6200	1510	10000
SH1661M	1680	5700	2050	1100	6200	1490	11600
SH2071M	2080	6500	3440	1420	7050	1870	18400
SH2381M	2320	8000	3660	1420	8560	2100	23900
SH2571	2580	7000	3900	1450	7550	2350	21000
SH2571M	2580	7000	3900	1450	7550	2350	22700

* Maximum width of the feeder plate = A + 100 mm

** Dimension at discharge end

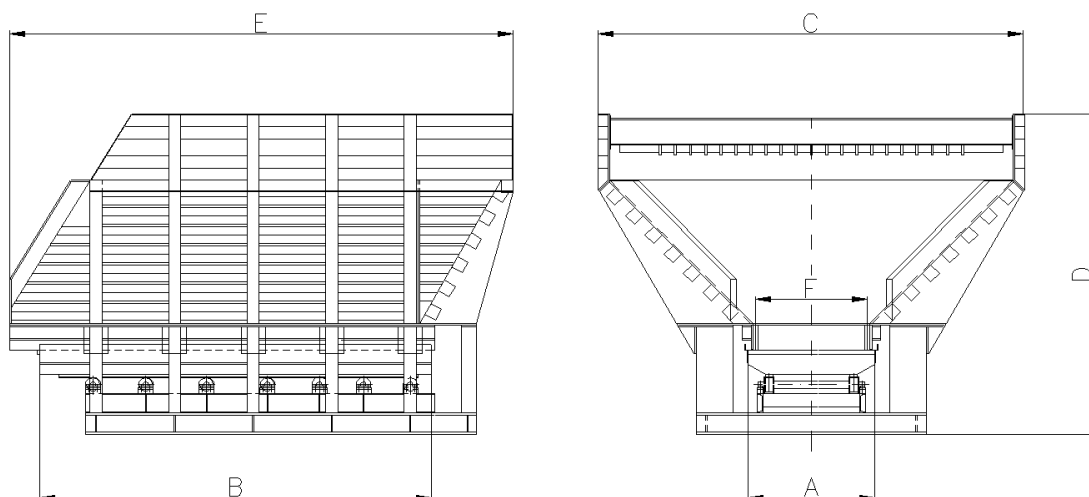
*** Refers to total max. width of the equipment including side guides for the long feeders

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

DIMENSIONS - PRIMARY SH RECIPROCATING PLATE FEEDER UNITS



Feeder Type	Dimensions (mm)						Total Weight (kg)	Hopper Volume (m³)
	A*	B	C	D	E	F**		
SH1041 Unit	1080	3500	4220	3110	4720	910	12900	15***
SH1351 Unit	1380	4500	4900	3650	5810	1210	21600	30***
SH1661 Unit	1680	5700	6500	5900	7560	1510	44300	80
SH2571 Unit	2580	7000	6850	5300	8800	2350	68000	80***
SH1661M Unit	1680	5700	6500	5900	7560	1490	46700	80
SH2071M Unit	2080	6500	6350	6400	8300	1870	58000	100
SH2381M Unit	2320	8000	6000	3600	9700	2100	73000	50***
SH2571M Unit	2580	7000	6850	5300	8950	2350	72000	80***

* Maximum width of the feeder plate = A + 100 mm

** Dimension in discharge end

*** Volume can be extended by using side extensions; more information from Product Line S&F

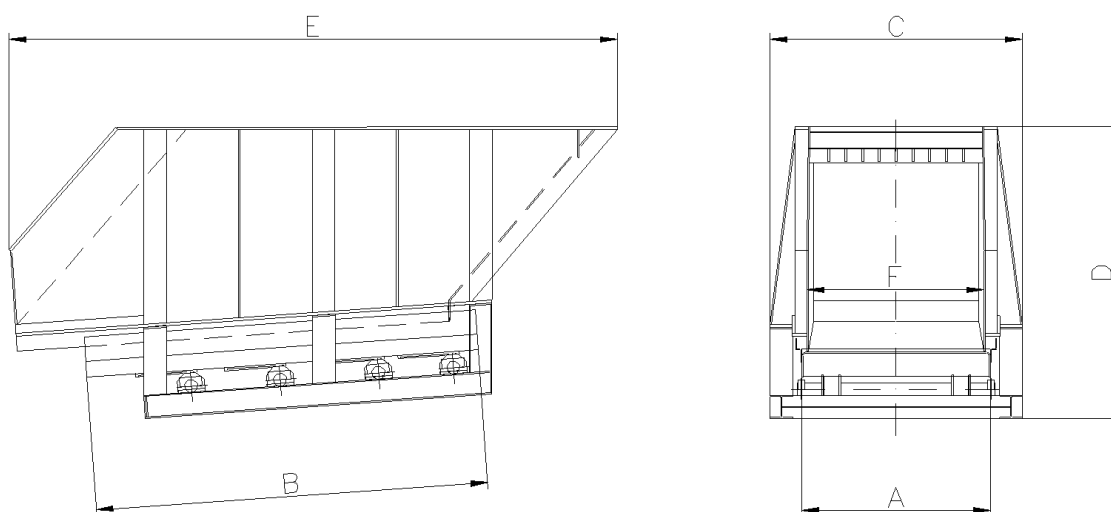
Note! Feeder Unit consists of a reciprocating plate feeder + dump hopper

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

DIMENSIONS - SECONDARY SH RECIPROCATING PLATE FEEDER



Feeder Type	Dimensions (mm)						Total Weight (kg)	Hopper Volume (m³)
	A*	B	C	D	E	F**		
SH0835	880	2500	1280	1460	3200	750	3200	1,5
SH1035	1080	2500	1480	1460	3200	950	3500	1,5
SH1335	1380	2500	1780	1460	3200	1250	3700	2,5
SH1645	1680	3500	2250	2015	5000	1500	8850	4,0
SH1645M	1680	3500	2250	2615	5490	1500	12500	7,0
SH1955M	1980	4500	2550	2710	6000	1800	15000	12
SH2255M	2280	4500	2850	2615	6000	2108	16500	15,0

* Maximum width of the feeder plate = A + 100 mm

** Dimension in discharge end

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SH RECIPROCATING PLATE FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE – SH RECIPROCATING PLATE FEEDERS

Feeder Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)*	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SH1041	3850	4000	1600	900	5,8
SH1351	5300	5000	1900	950	9,0
SH1661 / SH1661M	10000 / 11600	6200	2200	1150	15,7
SH2071M	18400	7100	2200	1420	22,2
SH2381M	23900	7300 + 8300	2320	1100	39,8
SH2571 / SH2571M	21000 / 22700	7550 + 7000	2680	1100	42,7
SH0835	3200	3200	1300	1500	6,2
SH1035	3500	3200	1500	1500	7,2
SH1335	3700	3200	1800	1500	8,6
SH1645	8850	5000	2300	2100	24,1
SH1645M	12500	5500	2300	2650	33,5
SH1955M	15000	6000	2550	2700	41,3
SH2255H	16500	6000	2900	2650	46,1

Feeder Type	Appr. Net Shipping Dim. for Hydraulic Unit				
	Weight (kg)*	Length (mm)	Width (mm)	Height (mm)	Volume (m ³)
SH1041	800	1500	1000	1800	2,7
SH1351	1100	2000	1300	2250	5,9
SH1661 / SH1661M / SH1955M	1400	2000	1300	2250	5,9
SH2071M / SH2571	1800	2000	1500	2250	6,8
SH2381M / SH2571M	2200	2200	1500	2250	7,4
SH0835 / SH1035 / SH1335	800	1500	1000	1800	2,7
SH1645 / SH1645M	1250	2000	1300	2250	5,9
SH2255M	1500	2000	1300	2250	5,9

This information is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Feeder is shipped on loose timber. Hydraulic power pack is packed as a separate unit. Other loose parts are packed into a separate case, which is tied on top of the feeder pan.

When dump hopper is included in the delivery, please consult with the factory or Product Line S&F regarding the required transport space.

When export packing (wooden crate etc.) is required for feeder, please consult with the Product Line.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

GENERAL - SP PAN FEEDERS

Sandvik Pan Feeders are designed for high capacity applications, especially for secondary and tertiary duties (i.e. unloading of stockpiles and bins). These feeders offer a simple interface and several options to facilitate installation. Both base mounted and suspended installations can be accommodated in order to suit the job.

The large drive units in conjunction with Sandvik's fully engineered feed chutes ensure a high feed rate and minimal spillage, even when the material is coarse. The feeders are driven by self-synchronized and reliable unbalanced motors, which are inducing a linear motion (stroke), in order to provide efficient and accurate operation as well as minimal liner wear. The feed rate can either be adjusted by repositioning weight segments in the drive or during operation (i.e. on-line adjustment), using a frequency converter.

Design

- All welded feeder body
- Driven by two unbalanced electrical motors, mounted underneath the body at a separate chassis
- Both base mounted and suspended versions for most of the sizes
- Large range of different sizes
- Easy feed rate adjustment

Nominal Operating Limits

- Maximum feed size: 600 mm
- Maximum capacity: 2200 MTPH (@ BD 1,6 t/m³)
- Ambient temperature range: -20 to +40 °C

Versions

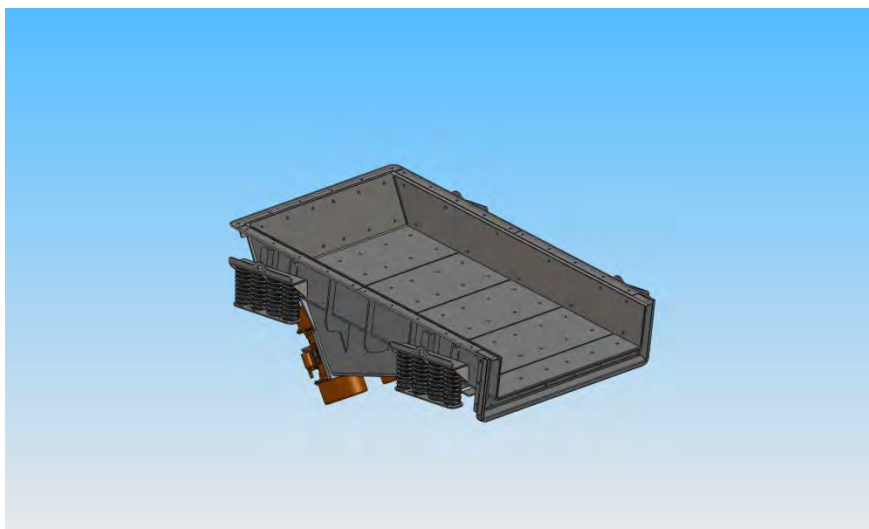
- SP-model with flat discharge end for unloading bins into crushers, onto screens and conveyors (i.e. loading from a position perpendicular to the conveyor belt)
- SP with u-lip has an u-shaped extension beak to centre the material better into a conveyor belt
- M (= Mining) -version for both models (i.e. heavy-duty version to enable feeding during large head loads, coarse material and high capacities). Construction calculated using Bulk Density 2.2 t/m³.
- Removable pan extensions are available for some models in order to suit different installations (e.g. where access for maintenance above a crusher is critical)

Sandvik Feed Chute as an Option

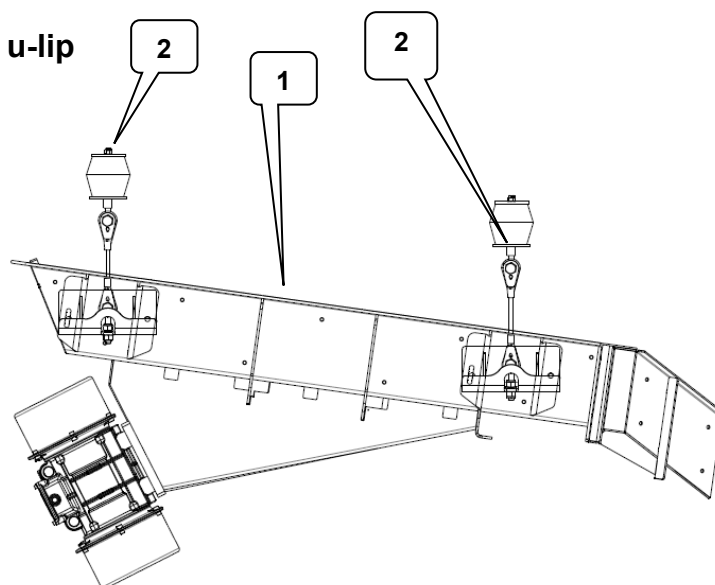
- Fully engineered feed chutes guarantee proper installation and reliable operation
- Prepared for simple dust encapsulation
- Adjustable inclination from 2-12 degrees to adapt to different materials and installation requirements. Inclination to be determined and fixed in order. Not possible to adjust afterwards.
- High sidewalls effectively prevent spillage and simply feed chute design
- See from page "Dimensions" the availability of the Feed Chute sizes



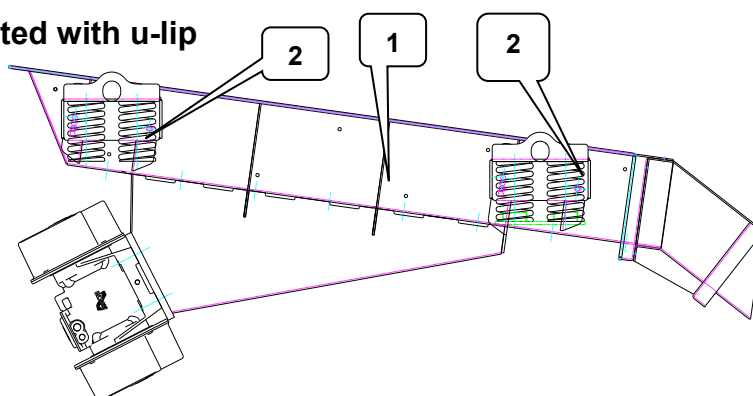
SCOPE OF SUPPLY - SP PAN FEEDERS



Suspended with u-lip



Base Mounted with u-lip



ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

SCOPE OF SUPPLY - SP PAN FEEDERS

Standard delivery includes

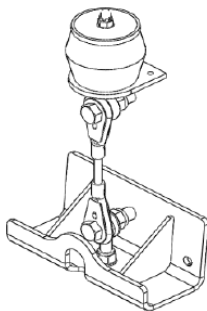
Item No. 1	Description
Pan Feeder	SP, available both base mounted and suspended feature
Pan Feeder	SP...M, available both base mounted and suspended feature *
Pan Feeder	SP with u-lip, available both base mounted and suspended feature **
Pan Feeder	SP...M with u-lip, available both base mounted and suspended feature

* M-version: Heavy-duty, for high head loads

** U-lip version: Troughing discharge extension, removable

Item No. 2	Description
Suspension	Base mounted, spring support brackets and coil springs
Suspension	Suspended (wire rope), support brackets and rubber elements (N/A for SP1423M, SP1428M, SP1623M, SP1630M, SP2030M, SP2430M)

- All-welded feeder body made of high tensile steel and stiffeners
- Heavy motor beam connecting the unbalanced electrical motors
- Two unbalanced electrical motors (6-pole, 960 rpm, 400V 50Hz), IP65
- Brackets for suspension. Adjustable between 2 to 12 deg (8 deg as standard)
- Suspension alternatives:
 - base mounted with steel coil springs
 - suspended with wire ropes and rubber spring elements
- Bolted AR400 wear liners on the pan bottom and sidewalls
- Round bar around the feeder body for dust encapsulation rubber fastening
- Surface treatment according to Sandvik S&F standard, components acc. to supplier's std painting
- Installation, operating and maintenance manuals



Sample of wire rope suspension assy

SCOPE OF SUPPLY - SP PAN FEEEDERS

Options



Item	Description
Feed Chute	Standard feed chute (i.e. according to the above picture) for the wire rope suspended version, including dust encapsulation rubber parts

Item	Description
Bottom Liners	Rubber lined pan bottom (50 mm / 60 Sh A) + wear plugs

Note! When Feed Chute option is ordered, the feeder slope need to be determined and fixed before ordering. Inclination is not possible to adjust afterwards. If no slope informed in the order, the Feeder Unit will be manufactured according to 8 degrees feeder inclination.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

DATA SHEETS - SP PAN FEEDERS

Model	Pan Width inside nominal, (mm)	Pan Length (nominal, mm)	Max. Cap. (MTPH) ①	Max. Feed Size (mm) ②	Wear Plates bottom/side (mm)	Power (kW) input @ 50 Hz	Power (kW) input @ 60 Hz	Acc. (G) ③	Weight (kg)
SP0715	650	1500	180	220	6/6	2 x 1,2	2 x 1,4	4,3	540
SP0725 ④	650	2500	160	220	6/6	2 x 1,2	2 x 1,4	4,1	760
SP0818	800	1750	250	265	6/6	2 x 1,2	2 x 1,4	4,2	620
SP0825 ④	800	2500	250	265	6/6	2 x 1,25	2 x 1,4	4,4	790
SP1020	1000	2000	420	330	10/6	2 x 1,25	2 x 1,4	4,3	885
SP1025	1000	2500	375	330	10/6	2 x 2,0	2 x 2,1	4,2	1220
SP1030 ④	1000	3000	400	330	10/6	2 x 2,6	2 x 3,0	4,4	1500
SP1320	1250	2000	550	415	10/6	2 x 1,25	2 x 1,4	4,1	1000
SP1325	1250	2500	500	415	10/10	2 x 2,6	2 x 3,0	4,6	1550
SP1423	1400	2260	600	460	15/10	2 x 2,6	2 x 3,0	4,0	2070
SP1623	1600	2250	820	500	15/10	2 x 5,5	2 x 5,0	4,4	2400
SP1630 ④	1600	3000	1250	500	15/10	2 x 5,5	2 x 5,0	4,2	3000
SP2030	2000	3000	1600	600	15/10	2 x 11,5	2 x 9,7	4,5	4900
SP0818M	800	1750	290	265	15/6	2 x 1,2	2 x 1,4	4,2	760
SP0825M ④	800	2500	300	265	15/6	2 x 1,25	2 x 1,4	4,2	920
SP1020M	1020	2000	480	330	20/6	2 x 2,0	2 x 2,1	4,6	1015
SP1025M	1020	2500	430	330	20/6	2 x 2,6	2 x 3,0	4,7	1570
SP1030M ④	1020	3000	480	330	20/6	2 x 3,0	2 x 3,0	4,4	1730
SP1320M	1250	2000	630	415	20/6	2 x 2,6	2 x 3,0	4,6	1525
SP1325M	1250	2500	580	415	20/10	2 x 3,0	2 x 3,0	4,3	1980
SP1423M	1400	2260	750	460	20/10	2 x 3,0	2 x 3,0	4,2	2150
SP1623M	1600	2250	950	500	20/10	2 x 5,5	2 x 5,0	4,5	2510
SP1630M ④	1600	3000	1500	500	20/10	2 x 8,5	2 x 7,0	4,5	3710
SP2030M	2000	3000	1800	600	20/10	2 x 11,5	2 x 9,7	4,5	5500
SP2430M	2400	3000	2200	600	20/10	2 x 13,0	2 x 11,5	4,5	6560

M-version: Heavy Duty, for high head loads. Suitable for mining applications.

① Maximum Capacity figures refer to both base mounted and suspended version (installed with Sandvik feed chute or equivalent), applies for bulk density 1,6 t/m³, fraction 20 – 60 mm and installation angle 8°. Minimum capacity is approximately 30% of maximum capacity for all SP feeders. Contact Product Line S&F for additional details.

② Maximum feed size refers to bulk density 1,6 t/m³

③ Refers to standard setting

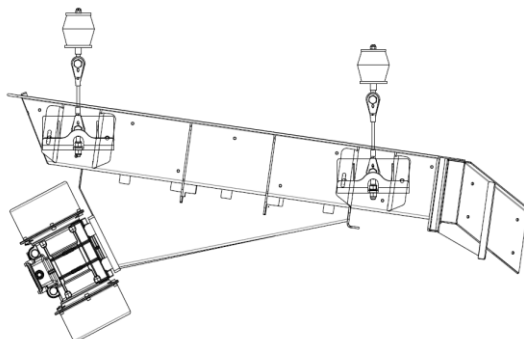
④ Equipped with a removable pan extension to facilitate crusher maintenance

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

DATA SHEETS - SP PAN FEEDERS WITH U-LIP (BOLTED EXTENSION)



Model	Pan Width (mm)	Pan Length (mm)	U-Shape Dimension (mm) ①	Max Capacity (MTPH) ②	Max Feed Size (mm) ③	Wear Plates bottom/side (mm)	Power (kW) input @ 50 Hz	Power (kW) input @ 60 Hz	Acc. (G) ④	Weight (kg)
SP1023 u-lip	1000	2000	300/600	420	330	10/6	2 x 1,25	2 x 1,4	4,1	990
SP1028 u-lip	1000	2500	300/600	375	330	10/6	2 x 2,6	2 x 3,0	4,4	1440
SP1323 u-lip	1250	2000	300/850	550	415	10/6	2 x 2,0	2 x 2,1	4,2	1210
SP1328 u-lip	1250	2500	300/850	500	415	10/10	2 x 2,6	2 x 3,0	4,4	1700
SP1426 u-lip	1400	2250	300/1000	600	460	15/10	2 x 3,0	2 x 3,0	4,6	2220
SP1630 u-lip	1600	2500	500/1000	1250	500	15/10	2 x 5,5	2 x 5,0	4,2	2990
SP1023M u-lip	1020	2000	300/600	480	330	20/6	2 x 2,6	2 x 3,0	4,9	1250
SP1028M u-lip	1020	2500	300/600	430	330	20/6	2 x 2,6	2 x 3,0	4,7	1655
SP1323M u-lip	1250	2000	300/850	630	415	20/6	2 x 2,6	2 x 3,0	4,6	1730
SP1328M u-lip	1250	2500	300/850	580	415	20/10	2 x 3,0	2 x 3,0	4,2	2050
SP1426M u-lip	1400	2260	300/1000	750	460	20/10	2 x 5,5	2 x 5,0	5,0	2490
SP1630M u-lip	1600	2500	500/1000	1500	500	20/10	2 x 8,5	2 x 7,0	4,7	3700
SP2035M u-lip	2000	3000	500/1350	1800	600	20/10	2 x 11,5	2 x 9,7	4,5	5500

M-version: Heavy Duty, for high head loads. Suitable for mining applications.

u-lip version: Troughing discharge extension, removable

① U-Shape refers to length / width

② Maximum Capacity refers to both base mounted and suspended version (installed with Sandvik feed chute or equivalent), applies for bulk density 1,6 t/m³, fraction 20 – 60 mm and installation angle 8°. Minimum capacity is approximately 30% of maximum capacity for all SP feeders. Contact Product Line S&F for additional details.

③ Maximum Feed Size refers to bulk density 1,6 t/m³

④ Acc. refers to standard setting

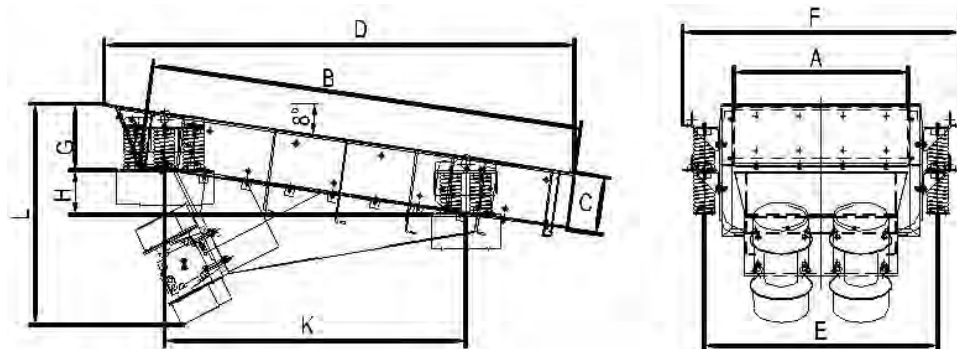
Note! The removable u-lip in all models above can be replaced with a bolted straight extension part by request. For more details contact Product Line S&F.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

DIMENSIONS - SP PAN FEEDERS



Model	Weight (kg)	Dimensions (mm)									
		A	B	C	D	E	F	G	H	K	L
SP0715	540	660	1500	300	1724	1000	1152	353	131	935	1026
SP0725	760	655	2500	300	2740	1000	1152	353	204	1450	1075
SP0818	620	808	1750	300	1971	1150	1302	353	166	1180	1042
SP0825	790	805	2500	300	2740	1150	1302	353	204	1450	1100
SP1020	885	1008	2000	300	2219	1350	1502	353	195	1430	1109
SP1025	1220	1008	2500	300	2722	1350	1602	371	245	1743	1228
SP1030	1500	1008	3000	300	3222	1350	1602	371	245	1743	1290
SP1320	1000	1258	2000	300	2219	1600	1752	353	195	1430	1110
SP1325	1550	1250	2500	300	2722	1600	1852	371	245	1743	1272
SP1423	2070	1400	2260	350	2520	1786	2039	446	238	1688	1331
SP1623	2400	1600	2250	350	2508	1986	2238	460	238	1692	1357
SP1630	3000	1600	3000	350	3260	1986	2200	466	264	1882	1480
SP2030	4900	2000	2935	350	3328	1700	2220	1039	232	1649	1655
SP0818M	760	808	1750	300	1971	1150	1302	353	166	1180	1050
SP0825M	920	805	2500	300	2710	1160	1315	342	205	1450	1100
SP1020M	1015	808	1750	300	2219	1350	1502	353	195	1430	1121
SP1025M	1570	1008	2500	300	2722	1350	1602	371	245	1743	1288
SP1030M	1730	1008	3000	300	3222	1350	1602	371	245	1743	1290
SP1320M	1525	1258	2000	300	2219	1600	1752	353	195	1430	1178
SP1325M	1980	1250	2500	300	2722	1600	1852	371	245	1743	1288
SP1423M	2150	1400	2260	350	2520	1786	2039	523	217	1546	1331
SP1623M	2510	1600	2250	350	2508	1986	2238	460	238	1692	1357
SP1630M	3710	1600	3000	350	3260	1986	2220	543	264	1882	1540
SP2030M	5500	2000	2935	350	3328	1700	2220	1039	232	1649	1655
SP2430M	6560	2400	2935	350	3150	2100	2622	1100	346	1629	1665

M-version: Heavy Duty, for high head loads. Suitable for mining applications.

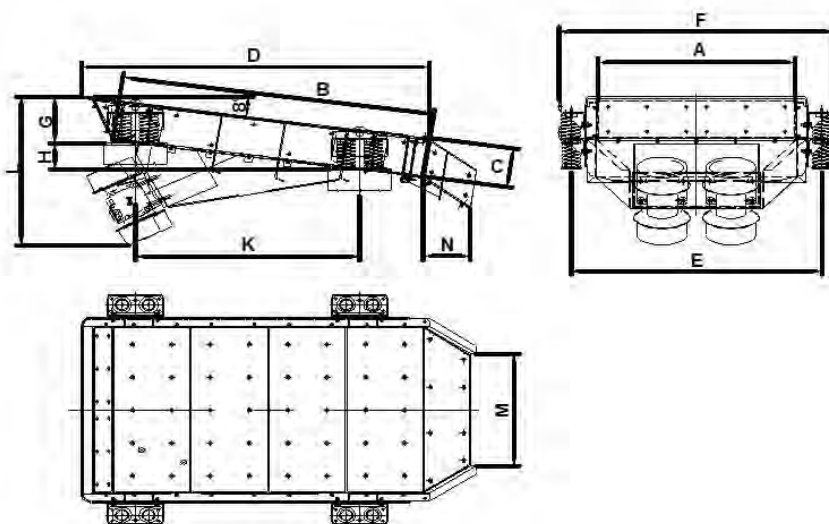
All dimensions are for base mounted versions at inclination 8°. Some deviations between base mounted and suspended version may exist. Always verify from valid General Arrangement drawing.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

DIMENSIONS - SP PAN FEEDERS WITH U-LIP



Model	Weight (kg)	Dimensions (mm)											
		A	B	C	D	E	F	G	H	K	L	M	N
SP1023 u-lip	990	1008	2000	300	2219	1350	1502	353	195	1430	1109	600	300
SP1028 u-lip	1440	1008	2500	300	2722	1350	1602	371	245	1743	1288	600	300
SP1323 u-lip	1220	1258	2000	300	2219	1600	1752	353	195	1430	1127	850	300
SP1328 u-lip	1700	1250	2500	300	2722	1600	1852	371	245	1743	1272	850	300
SP1426 u-lip	2220	1400	2250	350	2500	1786	2040	460	240	1690	1331	1000	300
SP1630 u-lip	2990	1600	2500	350	3250	1986	2238	460	258	1882	1478	1000	465
SP1023M u-lip	1250	1008	2000	300	2219	1350	1502	353	195	1430	1127	600	300
SP1028M u-lip	1655	1008	2500	300	2722	1350	1602	371	245	1743	1288	600	300
SP1323M u-lip	1730	1258	2000	300	2219	1600	1752	353	195	1430	1178	850	300
SP1328M u-lip	2050	1250	2500	300	2722	1600	1852	371	245	1743	1280	850	300
SP1426M u-lip	2490	1400	2264	350	2525	1786	2038	520	220	1546	1387	984	300
SP1630M u-lip	3700	1600	2500	350	2765	1986	2238	543	264	1882	1536	985	465
SP2035M u-lip	5500	2000	2935	350	3150	1700	2222	1057	232	1649	1654	1355	300

M-version: Heavy Duty, for high head loads. Suitable for mining applications.

U-lip-version: Troughing discharge extension

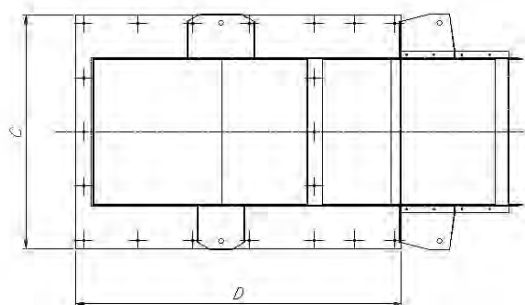
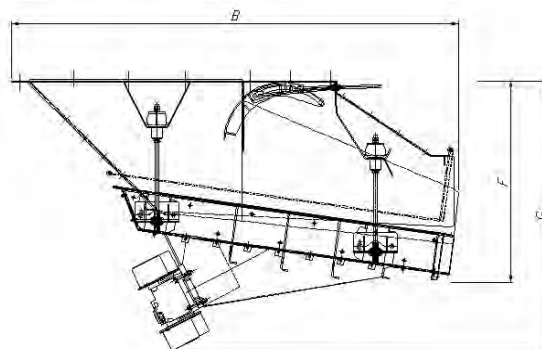
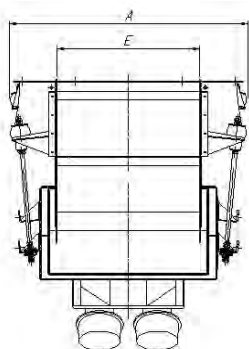
All dimensions are for base mounted versions at inclination 8°. Some deviations between base mounted and suspended version may exist. Always verify from valid General Arrangement drawing.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

DIMENSIONS - SP PAN FEEDER UNITS (WITH FEED CHUTE)



Model	Weight ¹⁾ (kg)	Dimensions (mm)						
		A	B	C	D	E	F ²⁾	G ²⁾
SP0715	900	1200	2070	1026	1615	538	910	1410
SP0818/SP0818M	1150/1335	1350	2385	1380	1875	688	1030	1520
SP1020/SP1020M	1500/1600	1570	2620	1500	2115	890	1035	1570
SP1320/SP1320M	1670/2150	1800	2620	1750	2115	1140	1060	1560
SP1325/SP1325M	2200/2720	1900	3560	1830	2590	1140	1580	2170
SP1630/SP1630M ⁴⁾	5440/6375	2276	4175	2195	2870	1456	TBA	TBA
SP1023 u-lip/SP1023M u-lip	1600/1800	1570	2905	1500	2115	890	1035+240 ³⁾	1570
SP1028 u-lip/SP1028M u-lip	2550/2750	1580	3830	1580	2590	890	TBA	TBA
SP1323 u-lip/SP1323M u-lip	1700/2200	1820	2920	1750	2115	1140	1040+240 ³⁾	1570
SP1328 u-lip/SP1328M u-lip	2350/2790	1900	3830	1830	2590	1140	1510+240 ³⁾	2120
SP1630 u-lip ⁴⁾	5600	2276	4147	2195	2870	1456	1949	2453
SP1630M u-lip ⁴⁾	6500	2276	4054	2195	2870	1456	1839	2407
SP2030M	9500	2780	3940	2780	2870	1856	TBA	TBA

M-version: Heavy Duty, for high head loads

u-lip-version: Troughing discharge extension

¹⁾ Weights are including both feeder and feed chute

²⁾ Loaded feeder, bulk density 1,6 t/m³, height dimensions measured at an inclination of 8 degrees

³⁾ u-lip

⁴⁾ with coil springs only, with sub frame (not suspended by wire ropes)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE - SP PAN FEEDERS

Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm) *	Volume (m ³)
SP0715	540	1800	1200	1100	2
SP0725	760	2800	1200	1200	4
SP0818	620	2000	1400	1100	3
SP0825	790	2800	1400	1200	5
SP1020	885	2300	1600	1100	4
SP1025	1220	2800	1700	1300	6
SP1030	1500	3300	1700	1300	7
SP1320	1000	2300	1800	1100	5
SP1325	1550	2800	1900	1300	7
SP1423	2070	2600	2100	1400	8
SP1623	2400	2600	2200	1300	8
SP1630	3010	3300	2200	1500	11
SP2030	4900	3350	2220	1720	13
SP0818M	760	2000	1400	1100	3
SP1020M	920	2300	1600	1200	4
SP1025M	1570	2800	1700	1300	6
SP1030M	1730	3300	1700	1300	7
SP1320M	1525	2300	1800	1200	5
SP1325M	1980	2800	1900	1300	7
SP1623M	2510	2600	2200	1400	8
SP1630M	3710	3300	2220	1500	11
SP2030M	5500	3350	2220	1720	13

GENERAL PACKING PROCEDURE - SP PAN FEEDERS WITH U-LIP

Model	Approximate Net Shipping Dimensions				
	Net Weight (kg)	Length (mm)	Width (mm)	Height (mm) *	Volume (m ³)
SP1023 u-lip / SP1023M u-lip	990/1250	2300	1600	1200	4
SP1028 u-lip / SP1028M u-lip	1440/1655	2800	1700	1300	6
SP1323 u-lip / SP1323M u-lip	1210/1730	2300	1800	1200	5
SP1328 u-lip / SP1328M u-lip	1700/2050	2800	1900	1300	7
SP1630 u-lip / SP1630M u-lip	2990/3690	3300	2300	1500	11
SP2035M u-lip	5500	3500	2230	1660	13

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

SP PAN FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE - SP PAN FEEDER UNITS (RESPECTIVE FEED CHUTE INCLUDED)

Model	Approximate Net Shipping Dimensions				
	Net Weight ¹⁾ (kg)	Length* (mm)	Width** (mm)	Height (mm) **	Volume** (m ³)
SP0715	900	2100	1300	1500	4
SP0818 / SP0818M	1150/1260	2400	1400	1600	5
SP1020 / SP1020M	1505/1660	2600	1600	1600	7
SP1325 / SP1325M	2200/2450	3600	2000	2200	16
SP1630 / SP1630M	5440/6370	4150	2280	2410	23
SP1023 u-lip / SP1023H u-lip	1550/1790	3000	1600	1600	8
SP1323 u-lip / SP1323H u-lip	1700/1950	3000	1900	1600	9
SP1328 u-lip / SP1328H u-lip	2350/2590	3900	2000	2200	17
SP1630 u-lip / SP1630H u-lip	5420/6340	4150	2280	2410	23
SP2030M	9500	4000	2780		

¹⁾ Weight including both feeder and feed chute

** Preliminary data. Feeder Units needs often be delivered in two separate packages (loose feed chute and loose feeder), then the values will be different than informed above.

The content in this chapter is meant to give a general guideline for our standard sizes. Some variations may exist due to options.

Applicable for all type of shipments.

The feeder is normally delivered uncased.

Accessories: Manuals and loose items are packed separately in a box fastened to the machine.

When export packing is required (wooden crate etc), please consult with GOSD of S

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HF BELT FEEDER 2016-01-01

GENERAL - HF BELT FEEDERS

The HF feeder has a compact design and an extensive capacity range, 30 – 4 000 MTPH. Capacity adjustment is wide and accurate. The maximum feed size is generally approx. 150 mm. Vibration free operation and smooth material flow, ideal for materials with fine grain size. HF feeder is able to carry heavy material loads and can be installed straight below the pile.

The HF feeder model is equipped with belt section as well as load skirt boards section. (i.e. one endless belt and loading skirt boards where equipment is fixed to structures above). Standard lengths and widths are available as per standard product range, please contact the HF-feeder department if any inquiries regarding customized applications are preferred.

Adjustable material height gate (i.e. for capacity adjusting) at the discharge point is fixed to integrated skirt board assembly. Integrated optional standard inlet closing gates (needle / plate) and standard load hoppers are available in the range of 12-18 m³ (i.e. other sizes can be arranged upon request). The drive unit incorporates an electrical motor and bevel hollow shaft or planetary gear, which is connected to the pulley shaft directly. (i.e. without coupling). The optional frequency converter can efficiently adjust the speed of belt for optimal performance according to the present conditions. Optional grizzly on top of the load hopper limits maximum lump size access to Belt Feeder to -300mm.

SMC has also extensive range of heavy duty HF for special applications. Such models are for extremely long loading length, high volume load hoppers and for very high&low capacities.

Adjustability

- Material height gate
- Belt speed

Nominal Operating Limits

- Maximum feed size range: approx. 70 - 150 mm
- Installation inclination: std horizontal, inclined types can be customized according to the customer's preferences
- Belt speed range: 0.01 – 0.6 m/s
- Belt width range: 0.65 – 2.0 m
- Ambient temperature range: -35 to +40 °C

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HF BELT FEEDER 2016-01-01

SCOPE OF SUPPLY

Standard Delivery Includes

- Feeder body and internal components
- Drive unit including electric motor, gear unit and torque arm
- Fixation flanges to support feeder from structures above (base supporting also available)
- Endless belting
- Belt cleaners, precleaner and belt-plough
- Surface treatment FeSa 2,5 E120, (Sandvik Grey & Orange), covers and components (e.g. motor(s)) according to supplier's standard painting
- Installation, operating and maintenance manuals on CD

Packing

See HF General Packing Procedure.

Options

- AR steel liners Hardox 400, AISI liners and RCH Plastic liners
- Frequency converter
- Loading hoppers (i.e. nominal lengths from 5,0 m to 7,0 m). Please consult with factory if others are needed.
- Grizzly on top of loading hopper
- Inlet closing gate (i.e. for feeder maintenance under material in silo)
- Discharge chute
- The standard feeder lengths as well as loading hopper dimensions can be customized according to the customer's preferences (Please consult with factory prior to any quoting)
- Heating and insulation (when handled sticky material in sub-zero temperatures)

General Technical Data

- Belt speed range: 0.01 – 0.6 m/s (i.e. adjusted when drive components selected)
- Belt speed adjustability range during operation: 1/4 std with inverter, also higher range possible with forced ventilation motor
- Material height adjusting gate range: selected based on handled material biggest lump size and can be adjusted typically 75 ... 120 mm from factory preset value.
- Installation inclination: std horizontal, inclined types can be customized according to the customer's preferences
- Mounted from structures above. Supporting from the base below is also possible on request.
- Motor according to IEC standard, enclosure class IP55
- Power transmission through bevel hollow shaft gear or planetary gear directly from motor
- Spherical roller bearings
- Oil bath lubrication on gears, idlers prelubricated for lifetime, pulleys with grease lubrication
- Standard Sandvik belt components are of heavy duty type
- AR wear liners on feeder sides: Hardox 400 as standard
- Welded frame
- Belt tightening is maintained by screw take-up device, larger models with additional manual hydraulic jacks

DATA SHEETS – HF100 BELT FEEDERS

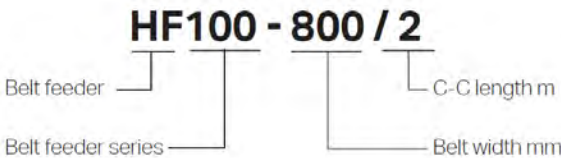
Sandvik Belt Feeder under bins and stockpiles (HF100)



SANDVIK HF100-		650/2	800/2	1000/2	1200/2
Capacity range	m ³ /h	30-300	50-500	70-750	100-1050
Belt width	mm	650	800	1000	1200
Max. feed top size	mm	100	150	150	150
Feeder length C-C	m	2	2	2	2
Outlet width (inside skirtboards)	mm	465	590	790	935
Inlet length x width	m	1.3 x 0.9	1.19 x 1.05	1.13 x 1.25	1.04 x 1.45
Belt speed, nominal maximum	m/s	0.6	0.6	0.6	0.6
Installed power range	kW	1.1 – 4.0	1.1 – 5.5	1.5 – 7.5	1.5 – 11.0
Weight (without options)	t	~2.3	~2.5	~3.0	~3.3

Other sizes are also available on request.

Nomination structure of SANDVIK HF100 Belt Feeder



DATA SHEETS – HF200 BELT FEEDERS

Sandvik Belt Feeder for receiving duties (HF200)



SANDVIK HF200-		800/5	800/7	1000/5	1000/7
Maximum capacity	m ³ /h	500	500	900	900
Belt width	mm	800	800	1000	1000
Feeder C-C length	m	5	7	5	7
Standard hopper volume	m ³	~12	~18	~12	~18
Max. feed top size	mm	150	150	150	150
Outlet width (skirtboards)	mm	~580	~580	~760	~760
Hopper feeding length x width	m	4.7 x 2.8	6.7 x 2.8	4.5 x 2.8	6.5 x 2.8
Belt speed, maximum	m/s	0.6	0.6	0.6	0.6
Installed power range	kW	3 - 22	3 - 22	3 - 30	3 - 30
Weight (without options)	kg	12600	16200	13000	17600

Other sizes are also available on request.

ROCK PROCESSING GUIDE 2016

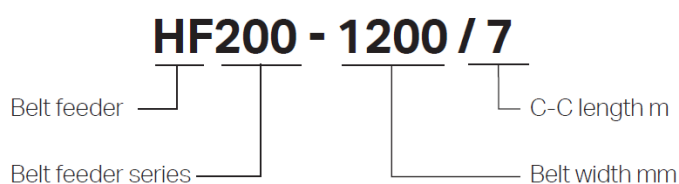
Chapter O - FEEDERS

HF BELT FEEDER 2016-01-01

SANDVIK HF200-		1200/5	1200/7	1400/5	1400/7
Maximum capacity	m ³ /h	1250	1250	1800	1800
Belt width	mm	1200	1200	1400	1400
Feeder C-C length	m	5	7	5	7
Standard hopper volume	m ³	~12	~18	~12	~18
Max. feed top size	mm	150	150	150	150
Outlet width (skirtboards)	mm	~900	~900	~1100	~1100
Hopper feeding length x width	m	4.3 x 2.8	6.3 x 2.8	4.1 x 2.8	6.1 x 2.8
Belt speed, maximum	m/s	0.6	0.6	0.6	0.6
Installed power range	kW	4 - 37	4 - 37	5.5 - 55	5.5 - 55
Weight (without options)	kg	13900	17900	15000	19300

Other sizes are also available on request.

Nomination structure of SANDVIK HF200 Belt Feeder



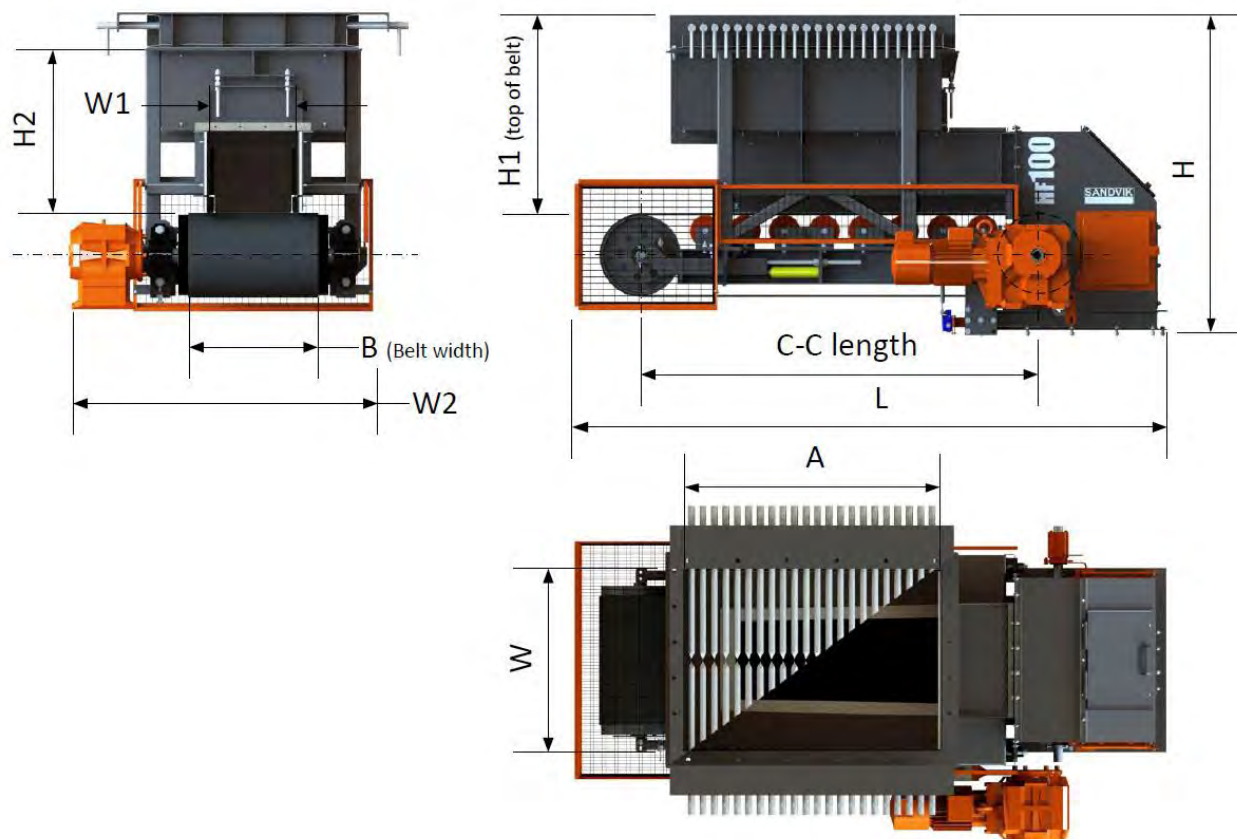
ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HF BELT FEEDER 2016-01-01

DIMENSIONS - HF BELT FEEDERS

Sandvik Belt Feeder (HF100 standard dimensions)



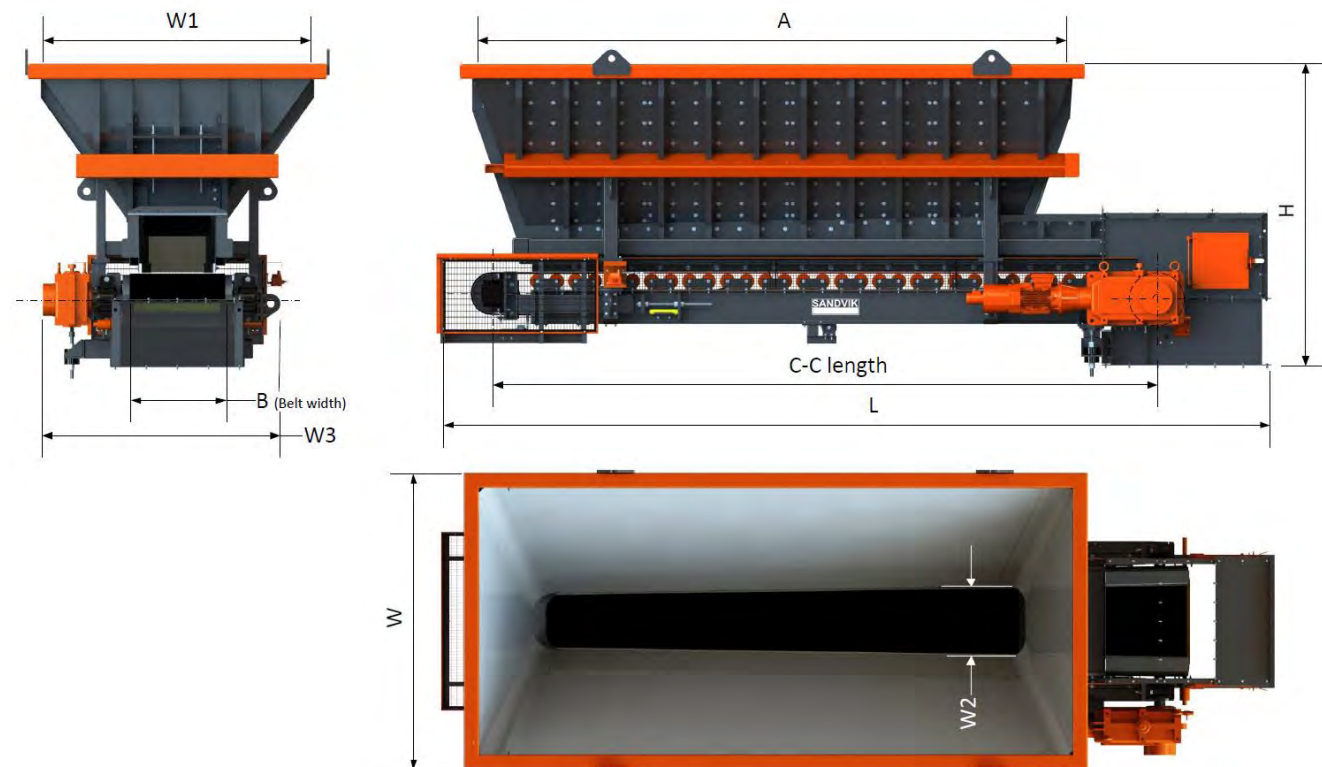
Feeder Type	Total Weight (kg) *	Feeder standard dimensions (mm)									
		C-C	L	B	H	H1	H2	A	W	W1	W2
HF100-650/2	~2300	2000	2500	650	1650	1000	820	1300	900	465	1650
HF100-800/2	~2500	2000	2500	800	1770	1130	950	1190	1050	590	1800
HF100-1000/2	~3000	2000	2500	1000	1900	1210	1030	1130	1250	790	2000
HF100-1200/2	~3300	2000	2500	1200	2000	1300	1120	1040	1450	935	2300

(* Weight without any options)

These dimensions are meant to give a general guideline for our standard sizes. Some variations may exist.

DIMENSIONS - HF BELT FEEDERS

Sandvik Belt Feeder (HF200 standard dimensions)



Feeder Type	Hopper Volume ~(m³)	Total Weight (kg) (*)	Feeder standard dimensions (mm)								
			C-C	L	B	H	A	W	W1	W2	W3
HF200-800/5	~12	~12600	5000	6800	800	3200	4850	3100	2800	580	(**)
HF200-800/7	~18	~16200	7000	8800	800	3200	6850	3100	2800	580	(**)
HF200-1000/5	~12	~13600	5000	800	1000	3200	4700	3100	2800	760	(**)
HF200-1000/7	~18	~17600	7000	800	1000	3200	6700	3100	2800	760	(**)
HF200-1200/5	~12	~13900	5000	1000	1200	3200	4450	3100	2800	900	(**)
HF200-1200/7	~18	~17900	7000	1000	1200	3200	6450	3100	2800	900	(**)
HF200-1400/5	~12	~15000	5000	1200	1400	3400	4250	3100	2800	1100	(**)
HF200-1400/7	~18	~19300	7000	1200	1400	3400	6250	3100	2800	1100	(**)

(*) Weight without any options

(**) Dimension W3 varies according to the selected drive unit(s)

These dimensions are meant to give a general guideline for our standard sizes. Some variations may exist.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HF BELT FEEDER 2016-01-01

GENERAL PACKING PROCEDURE - HF BELT FEEDERS

Feeder Type	Approximate Net Shipping Dimensions				
	Net Weight (kg)	L (mm)	W (mm)	H (mm)	Volume (m ³)
HF100-650/2	2300	2500	1650	1650	6,7
HF100-800/2	2500	2500	1800	1770	8,0
HF100-1000/2	3000	2500	2000	1900	9,5
HF100-1200/2	3300	2500	2300	2000	11,3
HF200-800/5	12600	5600	3100	3200	55,6
HF200-800/7	16200	7600	3100	3200	75,4
HF200-1000/5	13600	5600	3100	3200	55,6
HF200-1000/7	17600	7600	3100	3200	75,4
HF200-1200/5	13900	5600	3100	3200	55,6
HF200-1200/7	17900	7600	3100	3200	75,4
HF200-1400/5	15000	5800	3100	3400	61,1
HF200-1400/7	19300	7800	3100	3400	82,2

This information is meant to give a general guideline for our standard sizes. Some variations may exist.

Feeder is shipped on loose timber. Other loose parts are packed into a separate case, which is tied on top of the feeder pan.

When loading hopper is included in the delivery, please consult with the factory regarding the required transport space.

When export packing (i.e. wooden crate) is required, please consult with the factory.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HD100 APRON FEEDERS 2016-01-01

GENERAL – HD100 APRON FEEDERS

Sandvik HD100 Apron Feeder is standardized for heavy duty feeding applications. It is usually arranged below hopper or stockpile to feed bulk material to a following belt conveyor. Typical feed materials include different types of ores, coal, limestone and similar raw materials. Reliable and continuous operation with high capacities and large lump sizes is ensured by sturdy and robust design. Further advantages result from the simple, compact machine design and the extensive capacity range.

HD100 Apron Feeder is delivered with high standard mesh guards covering the whole machine and still enabling the visibility for maintenance. Pull wire emergency stop system and rotation detector sensor are also provided as standard.

Non-closed structure ensures easier maintenance access and visibility. Chains and chain rollers are lubricated for life and centralized lubrication for drive shaft and tail shaft bearings and sealings is available as an option.

EQUIPMENT DESCRIPTION

HD100-series Apron Feeder is for heavy duty feeding applications after primary crushing

- Suitable applications: unloading bins, under stockpiles, under feed hoppers
- Available in many sizes and with several drive sizes in order to handle a wide range of capacities, bulk densities and material sizes
- Maximum capacity is 5000 t/h (2.0 t/m³)
- Nominal feed size is $P_{99}=300\ldots520$ mm and the maximum feed side length is 500...1000 mm depending on the size of the feeder
- Chain speed range: 0.05 – 0.25 m/s
- Pan width range: 1200 – 2200 mm
- Ambient temperature range: -35 to +40 °C
- Standard crawler under-carriage parts
- Driven by planetary gear and an electric motor as standard and is able to carry heavy material loads
- The feed rate adjustments can be conducted by the use of an optional frequency converter

Standard lengths and widths are available as per standard product range; please contact the HD100 department if any inquiries regarding customized applications are preferred.

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HD100 APRON FEEDERS 2016-01-01

SCOPE OF SUPPLY – HD100 APRON FEEDERS

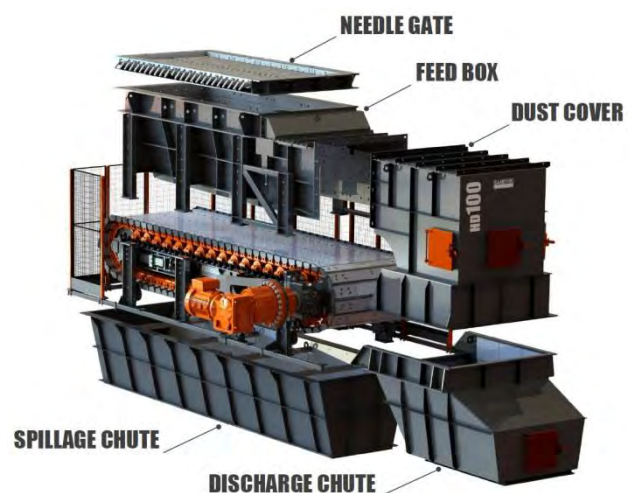
Standard Delivery Includes

- Feeder base frame with support legs
- Heavy duty undercarriage chains and chain components, lubricated for life
- Welded pans, structural steel
- Drive unit including electrical motor, planetary gear and torque arm
- Mesh guards
- Chain tensioning unit (screw take-up device with additional manual hydraulic jacks)
- Pull wire emergency stop system
- Rotation detector
- Surface treatment FeSa 2,5 E120 (Sandvik Grey & Sandvik Orange), covers and components (e.g. motor(s)) according to supplier's standard painting
- Test assembly and test run on workshop
- Installation, operating and maintenance manuals in English on CD



Options

- Feed box with side skirting
- Needle gate
- Dust cover for drive end
- Discharge chute
- Spillage chute
- Centralized lubrication, manual or automatic
- Hydraulic drive with hydraulic motor and power unit
- Pans equipped with bolted Manganese steel wear liners
- Pans equipped with bolted Hardox steel wear liners
- Instrument cabling and junction box
- Heavy duty frequency converter



Packing

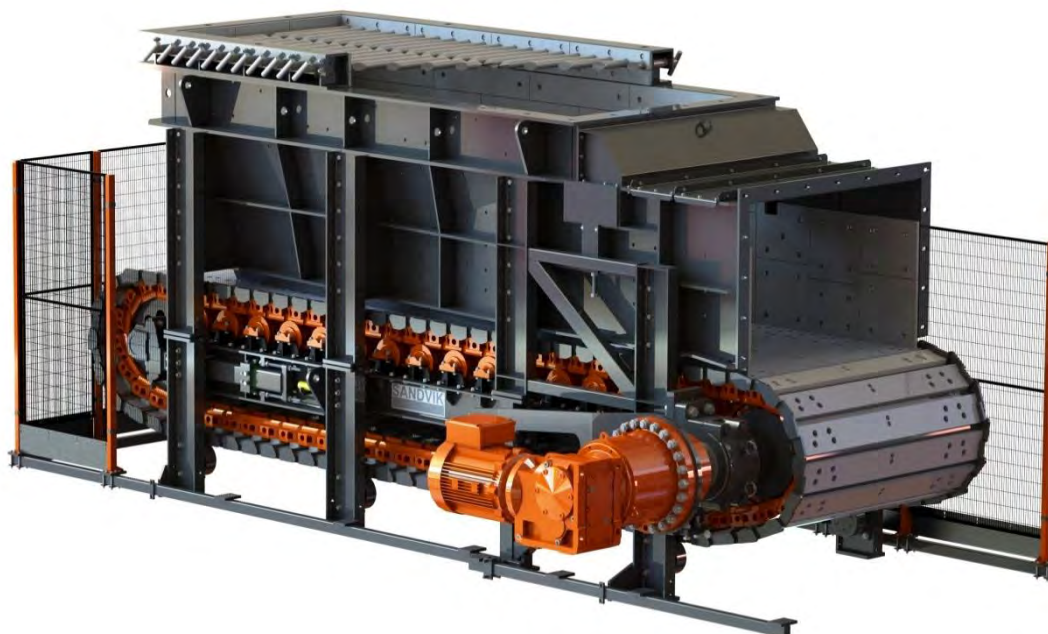
- See HD General Packing Procedure

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HD100 APRON FEEDERS 2016-01-01

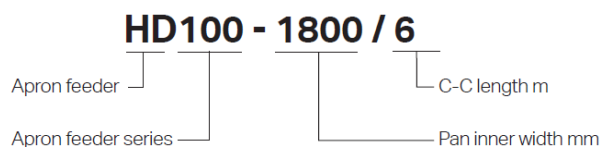
DATA SHEETS – HD100 APRON FEEDERS



		Standard Apron Feeders					
SANDVIK HD100-		1200/5	1400/5	1600/5	1800/6	2000/6	2200/6
Maximum capacity (2.0 t/m ³)	t/h	up to 1400	up to 1900	up to 2600	up to 3500	up to 4400	up to 5000
Nominal P ₉₉ feed size	mm	300	340	380	420	460	520
Recommended max. lump side length	mm	500	600	700	800	900	1000
Feeder C-C length	m	5	5	5	6	6	6
Pan width	m	1.2	1.4	1.6	1.8	2.0	2.2
Feed opening length x width	m	3.0 x 1.0	3.0 x 1.2	3.0 x 1.4	4.0 x 1.6	4.0 x 1.8	4.0 x 2.0
Chain size rating	-	D4	D4	D6	D6	D8	D8
Chain speed, nominal maximum	m/s	0.25	0.25	0.25	0.25	0.25	0.25
Maximum installed power	kW	55	55	75	110	2 x 75	2 x 90
Weight (without options)	kg	14600	16500	19500	24500	30500	32500

Other sizes are also available on request.

Nomination structure of SANDVIK HD100 Apron Feeder

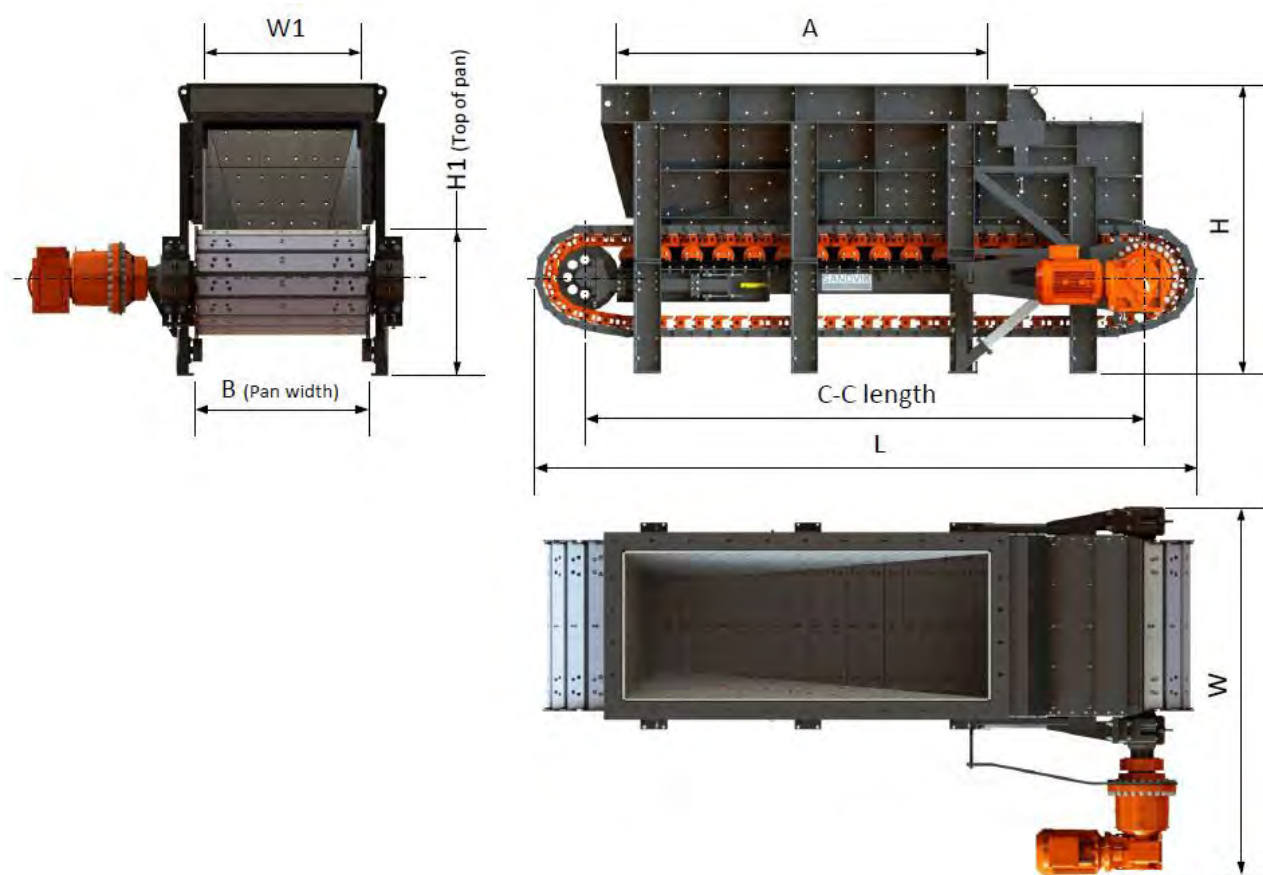


ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

HD100 APRON FEEDERS 2016-01-01

DIMENSIONS – HD100 APRON FEEDERS



FEEDER TYPE	Total weight (kg) (*)	Feeder standard dimensions (mm)							
		C-C	L	B	W1	A	H1	H	W
HD100-1200/5	14600	5000	6200	1200	1000	3000	1500	2750	(**)
HD100-1400/5	16500	5000	6200	1400	1200	3000	1500	3200	(**)
HD100-1600/5	19500	5000	6200	1600	1400	3000	1560	3400	(**)
HD100-1800/6	24500	6000	7200	1800	1600	4000	1560	3650	(**)
HD100-2000/6	30500	6000	7300	2000	1800	4000	1700	3900	(**)
HD100-2200/6	32500	6000	7300	2200	2000	4000	1700	4050	(**)

(*) Weight without any options

(**) Dimension W varies according to the selected drive unit(s)

ROCK PROCESSING GUIDE 2016

Chapter O - FEEDERS

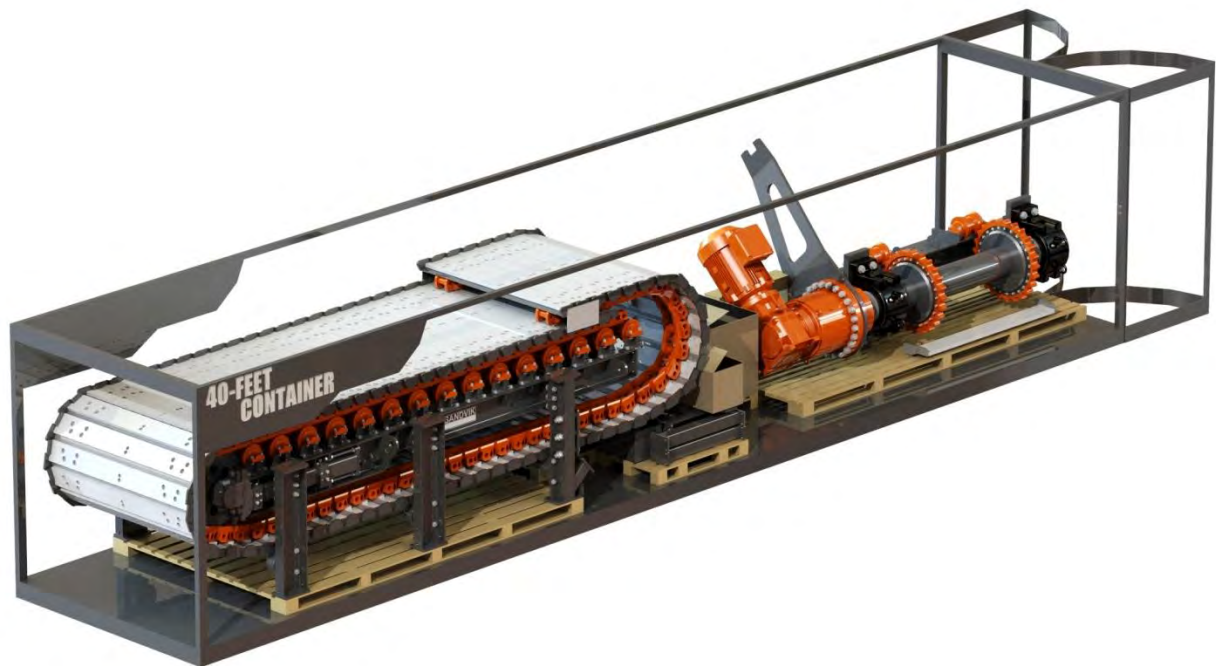
HD100 APRON FEEDERS 2016-01-01

GENERAL PACKING PROCEDURE – HD100 APRON FEEDERS

Fully assembled HD100 Apron Feeder is packed on a loose timber as a standard. Some loose parts are also included inside a wooden box. Fully assembled Apron Feeder can be packed inside a wooden crate. Dimensions of the wooden crate can be estimated from the apron feeder dimensions table.

HD100 Apron Feeder (standard scope of supply and pan width ≤ 1800 mm) can also be packed inside a standard OT container if the drive shaft assembly is removed. Wider machines (pan width > 1800 mm) must be dismantled more if packing inside a container is required.

Please consult with the factory if more detailed packing information is required.
In the picture below is shown an example of HD100-1800/6 packed inside 40' OT container.





ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

CONTENTS 2016-01-01



PRIMARY CRUSHERS

SECONDARY CRUSHERS

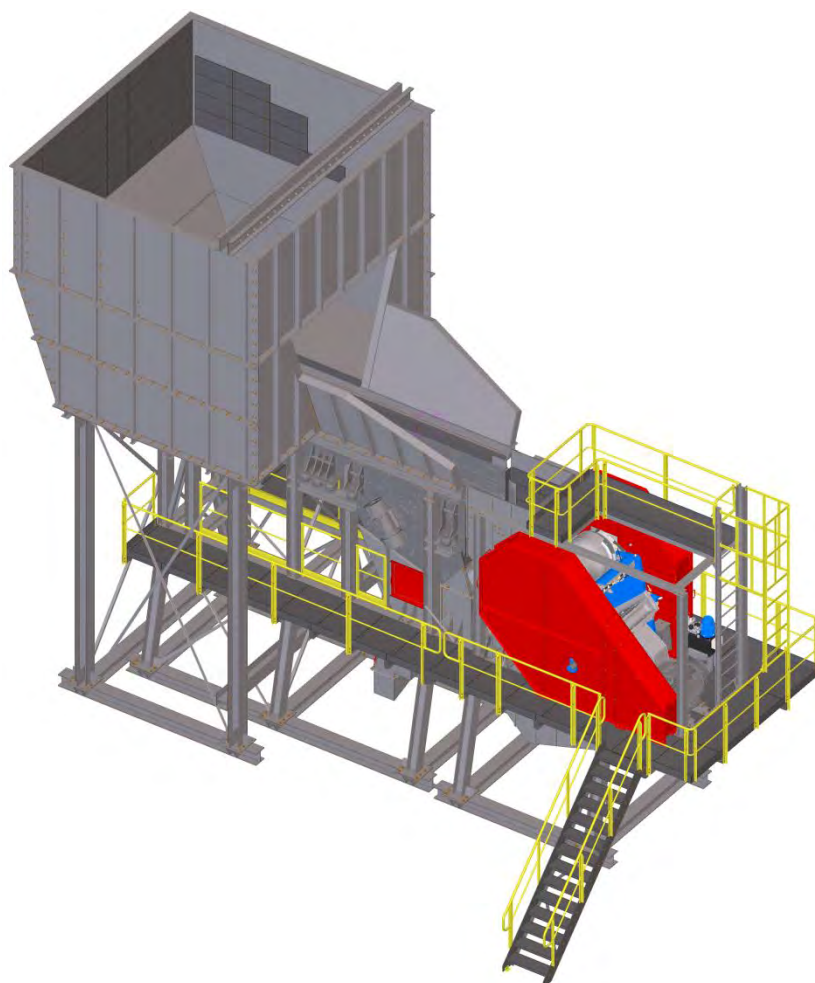
SCREENS

STANDARD MODULAR PLANTS SMP

ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

PRIMARY CRUSHERS 2016-01-01



The range of Heavy-duty primary crushing stations consist of total 22 different hopper/feeder and crusher combinations for most Sandvik crushers.

FEATURES

- The feed hoppers are large and can be of rock-box type which reduces the wear in the hopper to a minimum. The primary stations are equipped with stone splash guards on top, chain curtains (option), bypass chutes, walkways around the crusher and at the crusher feed point and v-belt guards.
- Stations for CJ612 and bigger can have a pan feeder below the crusher to protect the belt conveyor.
- Feed hopper live volumes between 15 m³ and 150 m³.
- Manufacturing drawings for all status 1 units are available (15 units).
- Encourage the use of Sandvik standard (cheaper, faster and proven solution)

GA-drawings in pdf format are available on request on CD or by mail.

GA-drawings in AutoCAD format available on request on CD or by mail.

Please contact Construction Sub-PA Systems Sales Support (patrick.bouvier@sandvik.com) or Project Engineering (raphael.pion@sandvik.com) or PTC (bengt-olle.persson@sandvik.com) in Clichy (France) or Svedala (Sweden).

ROCK PROCESSING GUIDE 2016

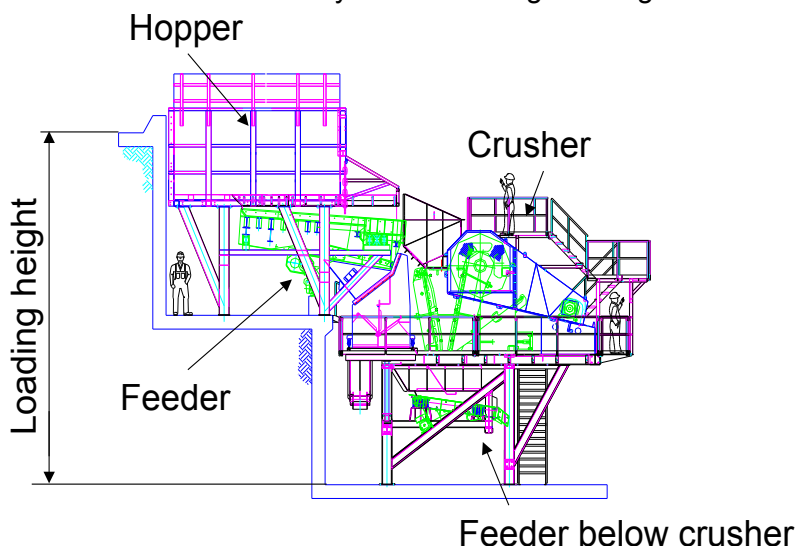
Chapter P – STATIONARY & PORTABLE STATIONS

PRIMARY CRUSHERS 2016-01-01

JAW CRUSHERS

Status	Model	Hopper live volume	Crusher	Feeder	Truck / loader	Average Capacity (MTPH)	Max Feed Size
1	CJ409-20-NF	20 m3 Width= 4,8 m	CJ409	ST1063H	Small truck 10-15 m3 Width= 3 m	100-200	600 mm
1	CJ411-25-NF	25 m3 Width= 5 m	CJ411	ST1263H	Small truck 10-15 m3 Width= 3 m	150-250	750 mm
1	CJ409-30	30 m3 Width= 5 m	CJ409	SW1053H	Small truck 10-15 m3 Width= 3 m	100-200	600 mm
1	CJ411-30		CJ411			150-250	600 mm
1	CJ211-30		CJ211			100-250	600 mm
1	CJ411-30-NF	30 m3 Width= 5 m	CJ411	ST1263H	Small truck 10-15 m3 Width= 3 m	150-250	750 mm
1	CJ412-30-NF		CJ412			200-400	750 mm
1	CJ411-40-NF	40 m3 Width= 5 m	CJ411	ST1263H	Medium truck 20 m3 Width= 3,5 m	150-250	750 mm
1	CJ412-40-NF		CJ412			200-400	750 mm
2	CJ612-60H	60 m3 Width=6 m	CJ612	SH1661 / SG1842	Medium truck 25 m3 Width= 4 m	300-500	990 mm
2	CJ613-60H		CJ613			350-550	1070 mm
2	CJ615-60H		CJ615			400-600	960 mm
2	CJ815-60H		CJ815			500-700	1170 mm
1	CJ412-80S	80 m3 Width= 7 m	CJ412	ST1673	Medium truck 40 m3 Width 5 m	200-400	750 mm
1	CJ612-80S		CJ612			300-500	950 mm
1	CJ613-80S		CJ613			350-550	950 mm
1	CJ615-80S		CJ615			400-600	950 mm
1	CJ615-150-BP	150 m3 Width= 8,5 m	CJ615	SV1862 5 deg incl	Big truck 80 m3 Width= 6,5 m	400-600	960 mm

Status 1 Manufacturing drawings available
Status 2 Preliminary manufacturing drawings available.



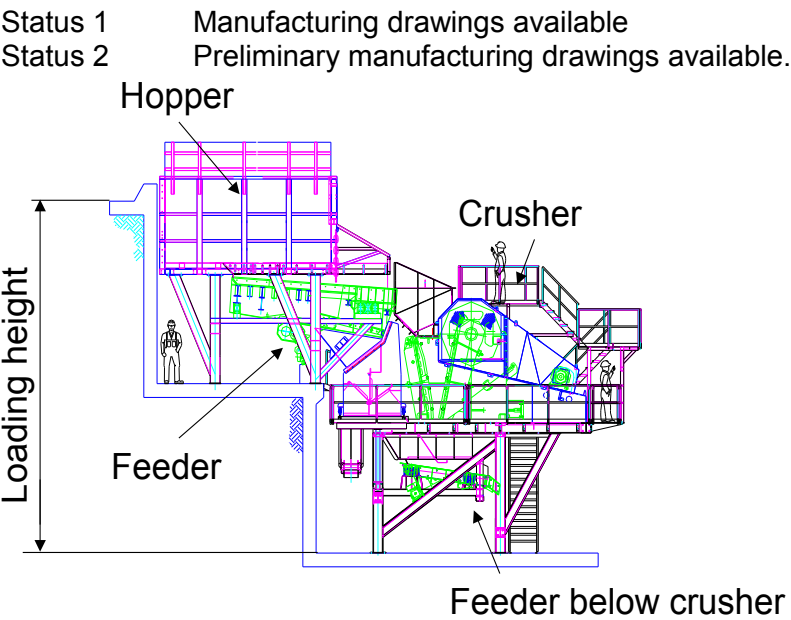
ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

PRIMARY CRUSHERS 2016-01-01

PRIMARY IMPACT CRUSHERS

Status	Model	Hopper live volume	Crusher	Feeder	Truck / loader	Average Capacity (MTPH)	Max Feed Size
1	CI511-20-NF	20 m3 Width= 4,8 m	CI511	ST1063H	Small truck 10-15 m3 Width= 3 m	100-200	600 mm
2	CI521-25-NF	25 m3 Width= 5 m	CI521	ST1363H	Small truck 10-15 m3 Width= 3 m	150-250	850 mm
2	CI521-30-NF	30 m3 Width= 5 m	CI521	ST1363H	Small truck 10-15 m3 Width= 3 m	150-250	850 mm
2	CI521-40-NF	40 m3 Width= 5 m	CI521	ST1363H	Medium truck 20 m3 Width= 3,5 m	150-250	850 mm



ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

PRIMARY CRUSHERS 2016-01-01

WEIGHT AND HEIGHT - JAW CRUSHERS

Model	Feeder below crusher	Min belt width (mm)**	Total Weight (tons)*	Steel Weight (tons)*	Loading height (mm)
CJ409-20-NF		800	43,0-46,4	24,2-27,6	7270
CJ411-25-NF		800	52,9-56,4	25,7-29,2	8970
CJ409-30		800	55,0-56,8	36,6-38,4	8600
CJ411-30		800	65,3-67,3	39,2-41,2	8910
CJ211-30		800	57,5-59,4	38,0-39,9	8910
CJ411-30-NF		800	54,8-58,3	27,6-31,1	9670
CJ412-30-NF		800	60,0-63,5	27,6-31,1	9670
CJ411-40-NF		800	58,4-62,3	31,2-35,1	10450
CJ412-40-NF		800	63,6-67,5	31,2-35,1	10450
CJ612-60H		1000	143,7-148,2	89,2-93,6	14375
CJ613-60H		1200	153,0-157,6	91,5-96,1	14375
CJ615-60H		1200	166,8-171,5	93,8-98,5	14375
CJ815-60H		1200	183,6-188,5	100,1-105,0	15635
CJ412-80S		1000	101,0-104,1	62,0-65,1	10650
CJ612-80S	SP1323H	1000	114,2-117,5	65,0-68,3	11410
CJ613-80S	SP1323H	1200	122,9-126,2	66,7-70,0	11585
CJ615-80S	SP1630H	1200	140,3-143,8	70,7-74,2	11440
CJ815-150-BP	SP1630H	1400			

WEIGHT AND HEIGHT - PRIMARY IMPACT CRUSHER

Model	Feeder below crusher	Min belt width (mm)**	Total Weight (tons)*	Steel Weight (tons)*	Loading height (mm)
CI511-20-NF		650	39,2-42,6	22,9-26,3	6770
CI521-25-NF		800	31,1-34,6	24,3-27,8	8470
CI521-30-NF		800	33,0-36,5	26,2-29,7	9170
CI521-40-NF		800	36,6-40,5	29,8-33,7	9950

* The weight of steel is depending on steel profile tolerances. Bad tolerance is equal to high weight.

** Product conveyor. Recommended minimum belt width.

ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

SECONDARY CRUSHERS 2016-01-01

CONE CRUSHERS

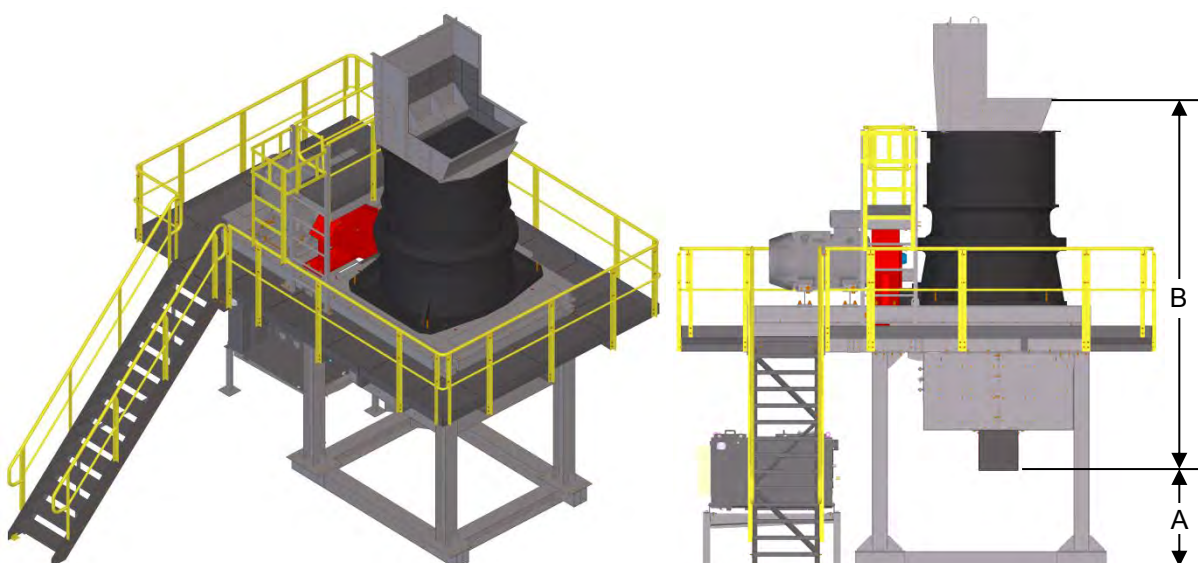
Status	Model	Peak Capacity (MTPH)	Total Weight (tons)*	Steel Weight (tons)	A (mm)**	B (mm)
1	CH420		8,8-9,7	3,5-4,4	1190	3880
1	CH430		13,9-14,9	4,7-5,7	1190	4240
1	CH440		19,4-20,8***	5,7-7,1***	1190	4510
1	CH540		17,3-18,5	4,8-6,0	1370	4410
1	CH550		21,2-22,9***	5,7-7,4***	1120	4880
2	CH660		35,9-37,7***	10,1-11,9***	1525	5310
1	CS420		10,3-12,2	3,5-4,4	1190	4110
1	CS430		16,7-17,7	4,7-5,7	1190	4520
1	CS440		25,0-26,4***	5,7-7,1***	1190	4860
2	CS660		45,1-46,9***	10,1-11,9***	1525	5650

Status 1 Manufacturing drawings available
 Status 2 Preliminary manufacturing drawings available.

* C Type crushing chamber used as reference

** Alternative lengths are available

*** Include walkway above the crusher drive



ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

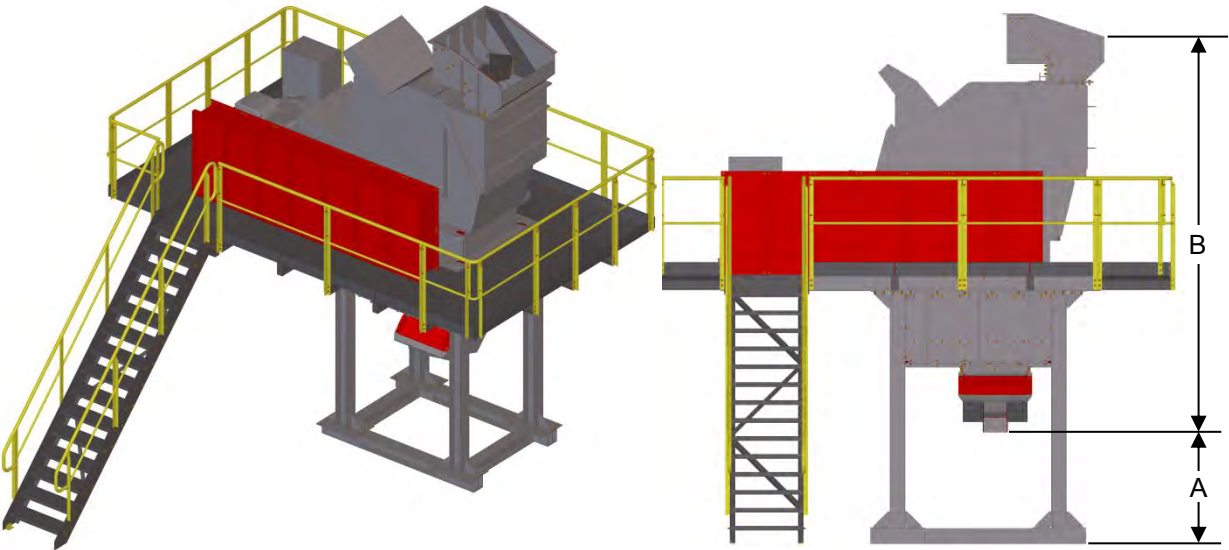
SECONDARY CRUSHERS 2016-01-01

IMPACT CRUSHERS

Status	Model	Peak Capacity	Total Weight (tons)	Steel Weight (tons)	A (mm)*	B (mm)
1	CI512		16,1-17,1	4,9-5,9	1240	4320
1	CI522		22,2-23,2	5,9-6,9	1240	4540

Status 1 Manufacturing drawings available
 Status 2 Preliminary manufacturing drawings available.

* Alternative lengths are available



ROCK PROCESSING GUIDE 2016

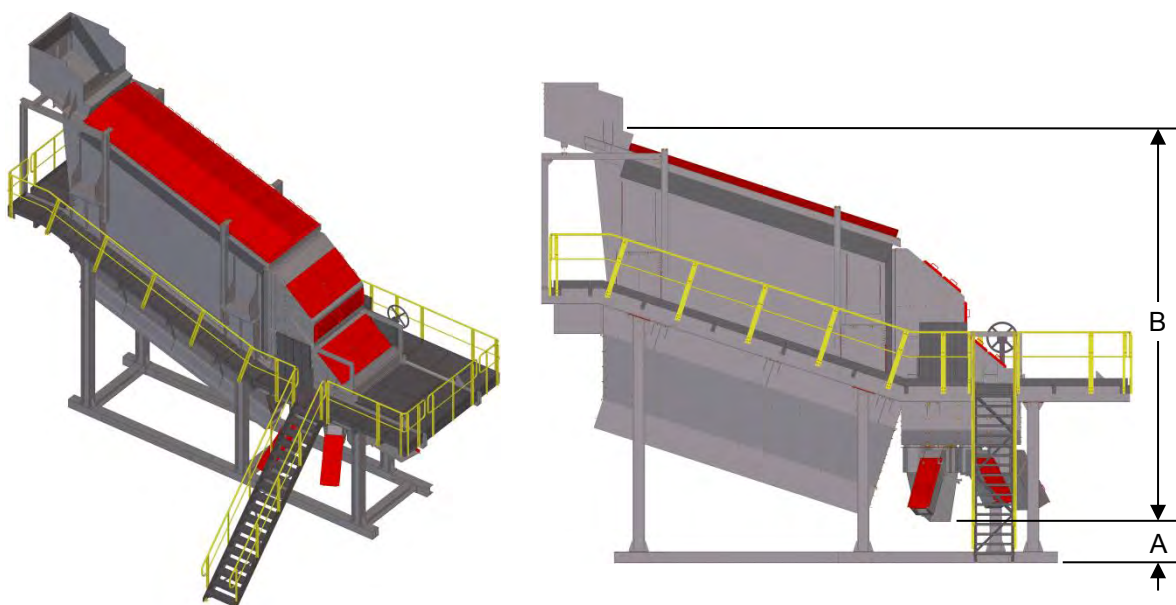
Chapter P – STATIONARY & PORTABLE STATIONS

SCREENS 2016-01-01

SCREENS – DIMENSIONS AND WEIGHT

Model	Steel Weight (tons)*	A (mm)*	B (mm)
SC1852		750	8230
SC1853		750	8230
SC1854		750	8230
SC1862		750	8540
SC1863		750	8540
SC1864	19,4-21	750	8540
SC2162		750	8740
SC2163	17,7-19	750	8740
SC2164		750	8740
SK1852		750	7600
SK1853		750	7600
SK1854		750	7600
SK1862		750	7910
SK1863		750	7910
SK1864	15,6-18,9	750	7910
SK2162	14,0-16,3	750	8110
SK2163		750	8110
SK2164		750	8110

* Alternative lengths are available

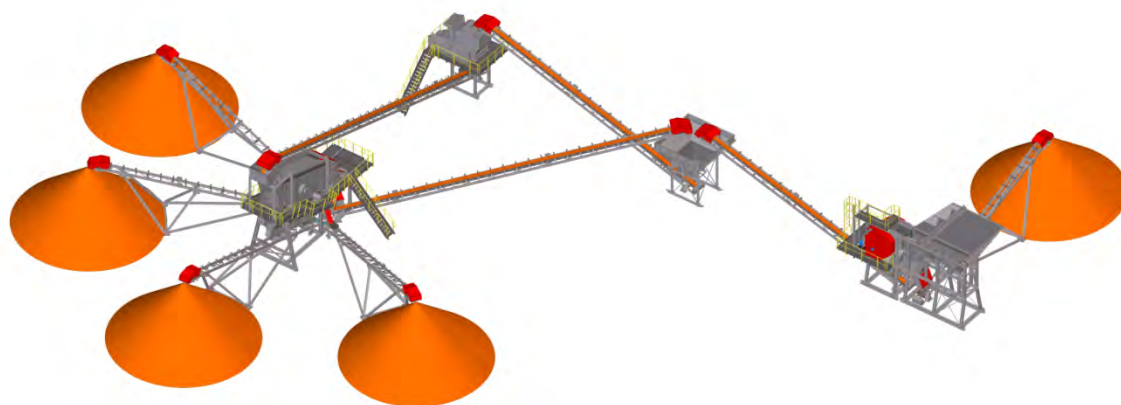


ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

STANDARD MODULAR PLANTS SMP - GENERAL 2016-01-01

GENERAL



Sandvik has developed three sets of Standard Modular Plants based on Modular Stations. Each range consists of 2-7 plants with capacities ranging from 100 up to 320 MTPH. We have a complete sales kit ready for each plant, including flow sheet, layout drawing and commercial offer.

The idea is to use the standard plants concept as a sales tool in the market organization. We believe that it is easier to get the customer interested when we can show examples of what we can do, rather than just filling in an inquiry form. The flow sheets, and layouts make in-depth discussions possible at an earlier stage in the project.

Selling plants is also an efficient way to generate after-market opportunities due to the high number of Sandvik equipment installed on customer site.

Standard Modular Plants (SMP) are designed in three sets as follow:

- SMP Hard Rock: plants designed for hard and/or abrasive rock crushing (jaw and cone crushers solution). The set is designed in three sizes based on crushing capacities, each one designed in one to three final product qualities (i.e. number of crushing stages).
- SMP Mid Rock: plants designed for hard and low abrasive rock crushing (jaw and HSI crushers solution). The set is designed in two sizes based on crushing capacities, with two crushing stages.
- SMP Soft Rock: plants designed for soft and low abrasive rock crushing (HSI and HSI crushers solution). The set is designed in three sizes of plants (i.e. crushing capacities) with one or two crushing stages and screening stages

Selection tables can be found on following pages.

GA-drawings in pdf format are available on request on CD or by mail.

GA-drawings in AutoCAD format available on request on CD or by mail.

Please contact Construction Sub-PA Systems Sales Support (patrick.bouvier@sandvik.com) or Project Engineering (raphael.pion@sandvik.com) or PTC (bengt-olle.persson@sandvik.com) in Clichy (France) or Svedala (Sweden).

ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

STANDARD MODULAR PLANTS SMP - GENERAL 2016-01-01



GENERAL FEATURES

Standard Modular Plants are:

- Requesting few engineering
- Simple to erect on site by customer workforces
- Simple to commission
- Delivered with a fast lead time (usually 4-5 months EXW)
- Requesting few concrete basement

OPTIONAL FEATURES

- Cold weather package
- Premium access package
- Environmental package(s)
- Wear parts package

Other plant configurations can be proposed from Sandvik Modular Stations offering.

ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

STANDARD MODULAR PLANTS SMP - GENERAL 2016-01-01

SMP HARD ROCK SELECTION TABLE

PLANT	MAX. FEED SIZE	QUALITY	FINAL PRODUCTS CAPACITY (mtp/h) (*) Round Holes				MODULAR STATIONS CONFIGURATION			TOTAL POWER	TOTAL WEIGHT	GENERAL DIMENSION
			0/14	0/16 (20*)	0/25	0/32 (40*)	PRIMARY	CRUSHING	SCREENING			
SMPH 1	600 mm	INITIAL	-	-	150	160	MPR CJ409	MCR CH430 EC	MSC CS86IV	298 kW	126 T	60 * 70 m
		EVOLUTIVE	110	140	150	160		MCR CH430 EC	MSC CS86IV	415 kW	149 T	
								MCR CH420 M				
SMPH 2	700 mm	INITIAL	-	-	230	250	MPR CJ411	MCR CH440 EC	MSC CS126IV	446 kW	151 T	60 * 70 m
		EVOLUTIVE	160	210	250	290		MCR CH440 EC	MSC CS126IV	614 kW	181 T	
								MCR CH430 MF				
		EXCLUSIVE	130	140	170	220		MCR CH440 EC	MSC CS108IV	673 kW	222 T	
								MCR CH430 MF	MSC CS126IV			
		EXCLUSIVE DIRECT	130	140	170	220		MCR CH440 EC	MSC CS108IV	641 kW	218 T	
								MCR CH430 MF	MSC CS108IV			
SMPH 3	750 mm	EXCLUSIVE	200	230	290	320	MPR CJ412	MCR CH440 EC	MSC CS108IV	786 kW	234 T	60 * 70 m
								MCR CH440 MF	MSC CS126IV			

Note: Initial and Evolutive plants will produce four products from one screen or a subbase. Exclusive plants will additionally produce a secondary product from the additional secondary screen

ROCK PROCESSING GUIDE 2016

Chapter P – STATIONARY & PORTABLE STATIONS

STANDARD MODULAR PLANTS SMP - GENERAL 2016-01-01

SMP MID ROCK AND SOFT ROCK SELECTION TABLE

PLANT	MAX. FEED SIZE	QUALITY	FINAL PRODUCTS CAPACITY (mtph)		MODULAR STATIONS CONFIGURATION			TOTAL POWER	TOTAL WEIGHT	GENERAL DIMENSION
			0/32	0/25	PRIMARY	CRUSHING	SCREENING			
SMPM 1 (Mid Rock)	600 mm	Initial	-	110	MPR CI409	MCR CI512	MSC 8.6 m ²	340 kW	115 T	45 * 45 m
SMPM 2 (Mid Rock)	700 mm	Initial	-	210	MPR CI411	MCR CI522	MSC 12.6 m ²	400 kW	132 T	
SMPS (Soft Rock)	600 mm	Initial	100	-	MPR CI511	-	MSC 10.8 m ²	260 kW	95 T	60 * 40 m
	600 mm	Evolutionary	-	200		MCR CI512	MSC 10.8 m ²	480 kW	117 T	60 * 40 m
	600 mm	Exclusive	65	135		MCR CI512	MSC SS1223 MSC 10.8 m ²	500 kW	132 T	70 * 60 m

Note: Initial and Evolutionary plants will produce four products from one screen or a subbase. Exclusive plants will produce a secondary subbase from the additional secondary screen and four products

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONTENTS 2016-01-01



JAW CRUSHERS

UJ440i Classic/Comfort/Trend with CJ212 Jaw crusher	HD
UJ440E Comfort with CJ412 Jaw crusher	XHD
UJ540 Classic with CJ612 Jaw crusher	XHD
UJ640 Comfort/Direct with CJ615 Jaw crusher	XHD

CONE CRUSHERS

US440i Direct with CS440 Cone crusher	HD
US440E Classic with CS440 Cone crusher	XHD
US440E Swift with CS440 Cone crusher	XHD
UH440i Direct with CH440 Cone crusher	HD
UH440E Classic with CH440 Cone crusher	XHD
UH450E Classic with CH440 Cone crusher	XHD
UH550E Classic with CH550 Cone crusher	XHD
UH640 Classic with CH660 Cone crusher	XHD

CRUSHER COMBINATIONS AND OPTIONS

UD440E with CJ412 Jaw crusher and CH440 Cone crusher	XHD
Hanging Screen System with Screen 1.5 x 3.0 m	HD

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ440i WITH CJ412 JAW CRUSHER

The UJ440i is a heavy-duty jaw crusher built using the latest technology which has proven capable of operating in the toughest climatic conditions. Featuring the market leading Sandvik CJ412 jaw with a feed opening of 1200 x 830 mm / 47 1/4" x 32 3/4" it has a hydraulically adjustable CSS setting with wedges and a choice of jaw plates making it suitable for a wide range of different applications.

Trouble free and optimal production is ensured by an onboard high level Intelligence system as standard. The UJ440i comes in 3 basic types:

- **Comfort:** Feeder with grizzly, by-pass chute and an optional natural fines conveyor.
- **Classic:** Feeder with grizzly, by-pass chute, natural fines screen and optional natural fines conveyor.
- **Trend:** Separate feeder, separate screen with stepped grizzly on top.

KEY BENEFITS

- Rubber lined impact zones to reduce wear and noise
- Step less speed regulation of the feeder.
- The discharge conveyors are fitted with belt scales, steering rolls, and impact bars under the crusher. Dimensions are: width 1400 mm / 52", discharge height 3.3 – 3.8 m / 10' 10" – 12' 5".
- Platforms are located around the crusher and powerpack to provide easy access for service and maintenance.
- Radio remote control fitted as standard.
- Sensors are situated at strategic locations to ensure trouble free operation and safe guard against costly breakdowns.
- The unit is easily transported in one piece with all components remaining on board.
- Emergency stop buttons are located throughout the machine.
- Optional Natural Fines conveyor: dimensions are width - 500 mm / 20", discharge height - 3m / 9' 10"
- No oil spillage during filter changes due to vacuumised hydraulic system and dust suppression systems.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ440i WITH CJ412 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS	UJ440i COMFORT	UJ440i CLASSIC	UJ440i TREND
Hopper			
Type	Hyd Folding - side and rear	Hyd Folding - side and rear	Manual Folding - side and rear
Width	3130 mm / 10' 3 1/4"	3130 mm / 10' 3 1/4"	3678 mm / 12' 1"
Length	5105 mm / 16' 9"	5105 mm / 16' 9"	5574 mm / 18' 3 1/2"
Level capacity	6 m³ / 7.85 yds³	6 m³ / 7.85 yds³	10 m³ / 13.1 yds³
Rear loading height	3825 mm / 12' 7"	3825 mm / 12' 7"	4657 mm / 15' 3"
Feeder			
Type	SW1253H - Hyd var speed grizzly	SW1252H - Hyd var speed grizzly feeder	ST1241 - Hyd var speed pan feeder
Width	1200 mm / 47 1/4"	1200 mm / 47 1/4"	1080mm / 42 1/2"
Total length	4850 mm / 15' 11"	4850 mm / 15' 11"	3500mm / 11' 5 3/4"
Grizzly length	1550 mm / 61"	1550 mm / 61"	-
Standard aperture	90 mm max / 3 1/2"	90 mm max / 3 1/2"	-
Crusher			
Type	Single Toggle - CJ412	Single Toggle - CJ412	Single Toggle - CJ412
Feed opening	1200 x 830 mm / 47 1/4" x 32 3/4"	1200 x 830 mm / 47 1/4" x 32 3/4"	1200 x 830 mm / 47 1/4" x 32 3/4"
Speed	240 rpm	240 rpm	240 rpm
Adjustment type	Hyd wedge	Hyd wedge	Hyd Wedge
Drive	Direct via V Belts	Direct via V Belts	Direct via V Belts
CSS range	100 - 275 mm / 4" - 11"	100 - 275 mm / 4" - 11"	100 - 275 mm / 4" - 11"
Main conveyor			
Belt width	1400 mm / 4' 7"	1400 mm / 4' 7"	1400 mm / 4' 7"
Length	23,550 mm / 77' 3"	23,550 mm / 77' 3"	23,550 mm / 77' 3"
Discharge height	4045 mm / 13' 3"	4045 mm / 13' 3"	4045 mm / 13' 3"
Raise / lower	Yes - manually	Yes - manually	Yes - manually
Drive	Hyd motor	Hyd motor	Hyd motor
Motor CC	750 cc / 45.7 cu inch	750 cc / 45.7 cu inch	750 cc / 45.7 cu inch
Tracks			
Length (centres)	4170 mm / 13' 8"	4170 mm / 13' 8"	4170 mm / 13' 8"
Width (shoe)	500 mm / 19 3/4"	500 mm / 19 3/4"	500 mm / 19 3/4"
Drive	Hyd / Gearbox	Hyd / Gearbox	Hyd / Gearbox
Control	Umbilical (Radio optional)	Umbilical (Radio optional)	Umbilical (Radio optional)
Power pack			
Type	Volvo D13	Volvo D13	Volvo D13
Stage / Tier	Stage 3B / Tier 4i	Stage 3B / Tier 4i	Stage 3B / Tier 4i
Engine power	315 kW / 422 hp	315 kW / 422 hp	315 kW / 422 hp
Diesel tank capacity	1125 litres / 297 USG	1125 litres / 297 USG	1125 litres / 297 USG
Hyd tank capacity	415 litres / 110 USG	415 litres / 110 USG	415 litres / 110 USG
Transport Dimensions			
Length	16.58 m / 54' 5"	16.58 m / 54' 5"	17.93 / 58' 10"
Width	3.0 m / 9' 10"	3.0 m / 9' 10"	3.0 m / 9' 10"
Height	3.92 m / 12' 10"	3.92 m / 12' 10"	3.92 m / 12' 10"
Transport weight	62,500 kg / 137,790 lbs	63,000 kg / 138,890 lbs	74,000 kg / 163,142 lbs
Operating Dimensions			
Length	16.41m / 53' 10"	16.41 m / 53' 10"	17.75 m / 58' 3"
Width	3.13 m / 10' 3"	3.13 m / 10' 3"	3.70 m / 12' 2"
Height	4.26 m / 14' 0"	4.26 m / 14' 0"	4.95 m / 16' 3"
Operating weight	62,500 kg / 137,790 lbs	63,000 kg / 138,890 lbs	74,000 kg / 163,142 lbs
Performance			
Max feed size	760 mm / 2' 6"	760 mm / 2' 6"	760 mm / 2' 6"
Capacity (up to)	700 tph / 772 stph	700 tph / 772 stph	700 tph / 772 stph

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ440i WITH CJ412 JAW CRUSHER – TECHNICAL DATA

OPTIONS

Preparation for Hydraulic Hammer
Overband Magnet
Belt Scale on Main Conveyor
King Pin for Dolly
Pressure Gauges and O-Ring set
Fines Conveyor Stockpile Level Sensor
Stockpile Conveyor Level Sensor (CM36 only)
Lifting Arrangement for Shipping
Sandvik High Impact Rubber Liners for Hopper
Hanging Screen System (Open Circuit)
Dust Filter System
Support Frame for Feeder Station Transport
Volvo D13 Stage 2 / Tier 2 Engine
CAT 3A C13 Engine (UJ specific)
Auto Lube for Jaw Crusher Bearings
Hydraulic Hammer and Boom
Spray Nozzles on Crusher and Discharge Conveyor

Webasto Engine Coolant Heater
Block Heating for Engine (Extended Lead time)
Overband Magnet for HS Option - Open Circuit
Adaption for UK Mines and Quarries (Extended lead time)
Jaw Plate Shims
NF Conveyor
Hot Ambient Package (-5 to 45°C)
Cold Ambient Package (-25 to 25°C)
Extreme Cold Package (-35 to 15°C)
Environmental Package (-15 to 35°C)
Complete First Service Filter Kit - VOLVO 2
Complete First Service Filter Kit - CAT 3A
High Pressure Water Pump - Dust Suppression (Extended Lead time)
Volvo Tier 4 Final Engine

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ440E COMFORT WITH CJ412 JAW CRUSHER

The UJ440E is a heavy-duty jaw crusher built using the latest technology which is highly productive and easy to operate thanks to its comprehensive automation system. Featuring the market leading Sandvik CJ412 jaw with a feed opening of 1200 x 830 / 47 x 33" it has a hydraulically adjustable CSS setting and a choice of jaw plates making it suitable for a wide range of different applications.

The unit is self-propelled with a chassis frame, crawlers and a diesel generator. All equipment on board is powered by electricity except the crawlers and the support legs, which are operated hydraulically.

KEY BENEFITS

- The feed layout consists of a feeder with grizzly and screen deck, by pass chute and optional natural fines conveyor.
- A by-pass chute directs undersize material from the grizzly to the discharge conveyor.
- Sandvik Roxon discharge conveyor with belt scale, steering rollers and impact bars under the crusher.
- Impressive discharge height for superior stockpiling capacity.
- A level monitoring system above the crusher regulates the feeder speed.
- The feeder pan is equipped with a rubber protection in order to reduce impact, noise and wear.
- Unit is ready for electrical connection to the main supply.
- Platforms are situated on top of the crusher, and around the generator set to provide access for service and maintenance.
- Eight 24V floodlights are fitted on mast for illumination for night time and conditions of poor visibility.
- Electrically driven pump with automatic shut off for refilling of diesel.
- The feed hopper is removable in order to reduce unit transportation height.
- The UJ440E is manoeuvred by cable remote control with radio remote control available as an option.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ440E COMFORT WITH CJ412 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Crawler tracks	
Feeder type	SW1253H	Length c/c	4040mm / 159"
Grizzly length	1.2 m / 3.9'	Track shoe width	500mm / 19.5"
Hopper	8 m ³ / 295 ft ³	Hydraulic pumps driven by	2 x 75 kW electric motors
Crusher		Operation	
Type	CJ412	Height	4.7 m / 15.4'
Feed opening	1200 x 830mm / 47" x 33"	Width	3.3 m / 10.8'
Drive	From electric motor. 132 kW, 50 Hz, squirrel cage type	Length	20.6 m / 67.6'
Discharge conveyor		Transport	
Belt width	1400mm / 56"	Height	3.9 m / 12.7'
Length	17.0 m / 55.8'	Width	3.3 m / 10.8'
Drive	2 x 11,0 kW electrical motors	Length	20.2 m / 66.3'
Approx. discharge height under drum	4.0 m / 13.1'		
On-board power pack		Weight *1	
Diesel engine	Volvo 1241 TAD	Part 1	67.5 mton / 73.5 ston
Rated output	375 kVA	Part 2	3.8 mton / 4.4 ston
Generator	Stamford	*1 excluding options	
Fuel tank volume	2400 dm ³ / 635 US gallons		
Main voltage	400 V/50 Hz / 3-phase a.c.		
Control voltage	230 V/50 HZ / 1-phase a.c.		
Hydraulic system		Performance	
System	Hydraulics for crawlers, crusher setting regulation and support legs	Max.feed size	760mm / 30"
		Capacity (up to)	600 mtpd
		Travelling speed	25m / min AM
		Max.slope-climbing capability	Approx. 20°

Note. All weights and dimensions are for standard units only

OPTIONS

Over band magnet
Dust filter
NF conveyor incl. Support (8m x 500mm)
Auto lube for Jaw crushers bearing
Complete rockbreaker including boom and hammer BR999
Preparation for rockbreaker package (excl. Boom and Hammer BR999)
Water spray system (Spray nozzles both on crusher and discharge conveyor).
Belt scale on discharge conveyor
Radio remote system

Floodlights on crawlers
Diesel driven heater for the engine
Removable sidewalls extension
Sandvik High Impact Rubber Liners for hopper
Shim plates behind the jaw plates CJ412

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ540 CLASSIC WITH CJ612 JAW CRUSHER

The intelligent UJ540 tracked jaw crusher mounts the highly productive Sandvik CJ612 jaw, on a full tracked chassis but with an electric crusher drive. The CJ612 crusher is a single toggle 1200 x 1100 mm / 48 x 44" jaw crusher, which has been designed for high productivity, low energy consumption and automated process control.

The feed arrangement consists of feeder with grizzly, by-pass chute, fines screen and optional fines conveyor. It has a level monitoring system within the crusher which regulates the feeder for optimal crusher performance.

KEY BENEFITS

- Discharge conveyor comes complete with belt scale, steering rolls and impact bars fitted underneath the crusher.
- Discharge conveyor width of 1400mm / 56" and adjustable discharge height 4.1-4,4m / 13'8"-14'8" to enable massive stockpiling capacity.
- Automatic hydraulic CSS operation with wedges.
- Easily adapted for connection to mains electrical supply.
- The feeder pan is faced with rubber to absorb both impact and noise.
- Platforms are located around the crusher and power pack on top of the crusher and around the generator set provide easy access for service and maintenance.
- Two 24V floodlights are fitted on a mast for night time working, with additional floodlights placed at the screen, conveyor, generator set and electrical cabinet.
- The UJ540 is manoeuvred by radio remote control and has a cable remote control for back-up.
- Emergency stop buttons are located throughout the machine.
- For ease of transport the UJ540 is split into two parts that are easily separated with the aid of the four hydraulic legs.
- The design and manufacture of the Sandvik UJ540 complies with all the directives required for CE marking. The diesel engine complies with EU and US Emission regulation norms.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ540 CLASSIC WITH CJ612 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Crawler tracks	
Feeder type	SW1252H	Type	Track One
Grizzly length	Stepped 2 x 800mm / 2 x 2' 2"	Track shoe width	500mm / 19.5"
Hopper	7 m ³ / 347 ft ³	Hydraulic pumps driven by	1 x 110 kW electric motor
Screen type	SS1012 2 decks	Operation	
Crusher	CJ612		
Type	1200 x 1100mm / 48 x 44"	Height	5.8m / 19'
Feed opening	From electric motor. 160 kW,	Width	3.5m / 11.5'
Drive	50 Hz, squirrel cage type with frequency inverter	Length	19,8m / 65'
Discharge conveyor		Transport (in two parts)	
Belt width	1400mm / 4.6'	Part no.1 height	3.9m / 12.8'
Length	15m / 49.2'	Part no.1 width	3.5m / 11.5'
Drive	2 x 15 kW electrical motors	Part no.1 length	15.1m / 49.5'
Approx. discharge height under drum	4.1 - 4.55m / 13' 8" - 14' 12" (adjustable)	Part no.1 weight *1	46 mton/ 51 ston
		Part no.2 height	3.8m / 12.5'
		Part no.2 width	3.4m / 11.2'
		Part no.2 length	8.9m / 29.2'
		Part no.2 weight *1	60 mton/ 66 ston
		*1 Excluding options	
On-board power pack		Performance	
Diesel engine	Volvo TAD 1355GE 409 kVA	Max.feed size	975mm / 38.4"
Rated output	CAT 3406 365 kVA	Capacity (up to)	800 mtp
Generator	Stamford	Travelling speed	17m / min (50 Hz)
Fuel tank volume	2400 dm ³ / 635 US gallons	Max.slope-climbing capability	20m / min (60 Hz)
Main voltage	400 V/50 Hz / 3-phase a.c.		Approx. 20°
Control voltage	230 V/50 HZ / 1-phase a.c.		
Hydraulic system			
System	Hydraulics for crawlers, crusher setting regulation and support legs		

Note. All weights and dimensions are for standard units only

OPTIONS

Overband magnet
Dust Filter System
NF Conveyor incl. support (8m x 500 mm)
Belt Scale for natural fines Conveyor
Autolube for jaw crushers bearing
Complete rockbreaker including boom and hammer
Water spray system
Belt scale on product conveyor
Floodlights on tracks
Diesel driven heater for the engine
Lifting arrangement for shipping
Stockpile Conveyor Level Sensor

Preparation for connection to main supply
Oil bath cleaner for filter
Intermediate plate CJ612 (+50mm plate behind stationary jaw)
Extra platform from jaw to feeder
Preparation for camera supervision above crusher
Air compressor For maintenance. Including canopy

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ640 COMFORT/DIRECT WITH CJ615 JAW CRUSHER

The UJ640 tracked jaw crusher mounts the highly productive Sandvik CJ615 jaw, on a full tracked chassis but with an electric crusher drive. The CJ615 crusher is a single toggle 1500 x 1100 mm / 60 x 44" jaw crusher, which has been designed and manufactured with customer's real requirements in mind.

The UJ640 comes in 2 basic types:

- **Comfort** - Complete with feeder and grizzly, fitted screen deck underneath, by-pass chute and optional fines conveyor.
- **Direct** – Identical configuration to above, but feed arrangement consists of a 10 m³ fixed feed hopper. Should oversized rock enter, the hopper can be hydraulically tilted backwards.

KEY BENEFITS

- For clean, trouble free operation, the discharge conveyor comes complete with belt scale, steering rolls and impact bars situated under the crusher.
- Feed is adjusted in the crusher depending on material level through a level monitoring system. (Available with the Comfort version only).
- Main power is 400V AC, Control voltage is 230V AC and 24V DC.
- Easily adapted for connection to mains electrical supply.
- A number of sensors are situated at strategic locations to ensure a trouble free operation, and prevent against costly breakdowns.
- In order to protect the main conveyor a material bed is situated directly under the crusher.
- Platforms around crusher, screen and generator, provide excellent access for service and maintenance.
- Floodlights are fitted for night time and conditions of poor visibility.
- The entire machine may be manoeuvred by radio remote control and / or umbilical cord.
- For flexible operation between sites and to meet transport regulations the UJ640 is transported in parts. These are easily separated with the aid of the four hydraulic legs with reassembly time being minimised through this "kit" construction.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ640 COMFORT/DIRECT WITH CJ615 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS	UJ640 COMFORT	UJ640 DIRECT
Feed station		
Feeder type	SW1453	-
Grizzly length	2x1200mm / 2x47.2"	-
Hopper	14m ³ / 425 cu'	10m ³ / 353 cu'
Crusher		
Type	CJ615	CJ615
Feed opening	1500x1100mm	1500x1100mm
Drive	From electric motor. 200 kW, 6 pole, 50 Hz, slip-ring type	From electric motor. 200 kW, 6 pole, 50 Hz, slip-ring type
Discharge conveyor		
Belt width	1600mm / 63"	1600mm / 63"
Length	15.2m / 50'8"	15.2m / 50'8"
Drive	2x18.5 kW electrical motors	2x18.5 kW electrical motors
Approx. discharge height under drum	4.1-4.5m / 14-15' (adjustable)	4.1-4.5m / 14-15' (adjustable)
On-board power pack		
Diesel engine	CAT C15 - 455 kVA	CAT C15 - 455 kVA
Generator	Stamford	Stamford
Fuel tank volume	2400 dm ³ / 635 US gallons	2400 dm ³ / 635 US gallons
Main voltage	400 V/50 Hz/3-phase a.c.	400 V/50 Hz/3-phase a.c.
Control voltage	230 V/50 Hz/1-phase a.c.	230 V/50 Hz/1-phase a.c.
Hydraulic system		
System	Hydraulics for crawlers and support legs	
Tracks		
Type	CAT 350 HD	CAT 350 HD
Track shoe width	600mm / 24"	600mm / 24"
Hydraulic pumps driven by	1 x 110kW electric motor	1 x 110kW electric motor
Operation		
Height	6.58m / 21.59'	5.70m / 18.70'
Width	4.80m / 15.75'	4.80m / 15.75'
Length	20.5m / 68.8'	18.0m / 59.1'
Transport (in 2 parts)		
Part no.1 height	3.9m / 12.8'	3.9m / 12.8'
Part no.1 width	3.8m / 12.18'	3.7m / 12.14'
Part no.1 length	10.6m / 34.78'	6.4m / 20'
Part no.1 weight	68.5mton/ 75ston	68mton/ 75ston
Part no.2 height	4.1m / 13.45'	4.1m / 13.45'
Part no.2 width	4.0m / 12.98'	3.95m / 12.96'
Part no.2 length	15.5m / 50.85'	14.6m / 47.9'
Part no.2 weight	62mton/ 68ston	56mton/ 62ston
Performance		
Max.feed size	975mm / 38.4"	975mm / 38.4"
Capacity (up to)	1100mtph / 1210stph	1100mtph / 1210stph
Travelling speed	17m/min (50 Hz) 20m/min (60 Hz)	17m/min (50 Hz) 20m/min (60 Hz)
Max.slope-climbing capability	Approx. 20°	Approx. 20°

Note. All weights and dimensions are for standard units only

COMFORT OPTIONS

Overband magnet
 Belt scale on discharge conveyor
 Level indicator for stock pile at discharge end
 Level indicator for stockpile discharge conveyor
 Dust filter
 Oil bath cleaner for filter
 NF conveyor incl. support
 Belt scale for NF conveyor
 Water spray system (spray nozzles both on crusher and discharge conveyor) 2008
 Floodlights on crawlers
 Diesel driven heater for engine
 Extra lifting arrangement for shipping
 Removable side wall extension feed hopper
 Preparation for connection to main supply
 Automatic lubrication system
 Hydraulic hammer set

DIRECT OPTIONS

Overband magnet
 Belt scale on discharge conveyor
 Level indicator for stock pile at discharge end
 Level indicator for stockpile discharge conveyor
 Dust filter
 Oil bath cleaner for filter
 Water spray system (spray nozzles both on crusher and discharge conveyor)
 Floodlights on crawlers
 Diesel driven heater for engine
 Extra lifting arrangement for shipping
 Preparation for connection to main supply
 Automatic lubrication system

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440i DIRECT WITH CS440 CONE CRUSHER

The US440i is a heavy-duty cone crusher built using the latest technology which has proven capable of operating in the toughest climatic conditions. Featuring the market leading Sandvik CS440 cone crusher it comes with a choice of mantles and settings which make it suitable for a wide range of applications worldwide.

Trouble free and optimal production is ensured by on board high level Intelligence together with ASRi which comes as standard.

KEY BENEFITS

- Material level in the crusher is optimized at all times by an inbuilt monitoring system. This adjusts the feed conveyor speed and feed from the primary unit.
- Feed conveyor is hydraulically manoeuvred to and from its working position. The input area of the feed conveyor has a 6m³ (212 cubic feet) large rubber lined (with Sandvik modular wear protection) feed hopper and is designed for feeding directly from a front loader, or from a primary crusher. The conveyor belt is protected by a steel structure in the hopper, which is enhanced by impact bars that absorb the shock from loading and extends belt life.
- Wireless communication with Sandvik UJ440i primary unit in combination with optional sonar at the unit's discharge conveyor.
- Metal detector located before crusher.
- It is possible to position the material drop point from the feed conveyor into the crusher via (radio) remote.
- Water spray units situated at discharge conveyor and over the crusher.
- Unit is fitted with an engine and crusher lubrication oil pre-heater as standard
- Platforms are located around the crusher and power pack in order to provide easy access for service and maintenance.
- Radio remote control fitted as standard.
- Sensors are located at strategic locations to ensure a trouble free operation and safe guard against costly breakdowns.
- The US440i is easily transported in one piece, with all components remaining on board
- No oil spillage during filter changes due to vacuumized hydraulic system and dust suppression systems.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440i DIRECT WITH CS440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed Hopper			
Nominal capacity	6 m ³ / 7.85 yds ³	Length (Centres)	4170 mm / 13' 8"
Rear loading height	3330 mm / 10' 11"	Width (Shoe)	500 mm / 19 3/4"
Rear loading height (door lowered)	3136 mm / 10' 3 1/2"	Drive	Hyd / Gearbox
Rear loading width	2930 mm / 9' 7 1/2"	Control	Umbilical (Radio optional)
Feed Conveyor		Power Pack	
Hopper wall thickness	6 mm / 1/4"	Type	Volvo D13
Sandvik high impact rubber	Std	Stage / Tier	Stage 3B / Tier 4i
Liners	1200 mm / 47"	Engine power	315 kW / 422 hp
Belt width	14,220 mm / 46' 8"	Diesel tank capacity	1125 litres / 297 USG
Belt length	20°	Hyd tank capacity	415 litres / 110 USG
Conveyor incline angle		Transport Dimensions	
Drive type	Hyd - variable speed	Length	16.58 m / 54' 5"
Gearbox ratio	65.7:1	Width	3.0 m / 9' 10"
Drive torque	9700 Nm (max) / 7154 lbs ft	Height	3.92 m / 12' 10"
Head drum diameter	410 mm / 16"	Transport weight	62,500 kg / 137,790 lbs
Tail drum diameter	400 mm / 15 1/2"		
Motor size	44.3 cc / 2.70 cu inch		
Metal detector type	Bridge coil		
Crusher		Operating Dimensions	
Type	Sandvik CS440 Cone	Length	16.41m / 53' 10"
Speed	285 rpm	Width	3.13 m / 10' 3"
Feed opening	450 mm / 18"	Height	4.26 m / 14' 0"
CSS range	25 - 54 mm / 1" - 2"	Operating weight	62,500 kg / 137,790 lbs
Chamber control	Sandvik Hydroset System (ASRi)		
Std chamber kit	C		
Chamber options	EC-MC		
Std bush settings	20, 25, 30, 36 mm / 3/4", 1", 1 1/4", 1 1/2"		
Drive	21 KPTO Fluid Coupling		
Drive belts	8 off SPC 7500		
Crusher weight	19,300 kg / 42,550 lbs		
Main conveyor		Performance	
Belt width	1400 mm / 4' 7"	Max feed size	450mm / 18"
Belt length	23,550 mm / 77' 3"	Capacity (up to)	600 tph / 661 stph
Discharge height	4046 mm / 13' 3"	Travel speed	1.2 km/h / 0.75 mph
Head drum dia	340 mm / 13 1/2"	Max Incline / Side to side	20° / 10°
Tail drum dia	250 mm / 10"		
Drive	Hyd		
Motor cc	750 cc / 45.7 cu inch		

Note. All weights and dimensions are for standard units only

OPTIONS

18% Coarse Chamber Kit
 18% Medium Coarse Chamber Kit
 Belt Scale on Main Conveyor
 King Pin for Dolly
 Pressure Gauges and O-Ring set
 Main Conveyor Stockpile Level Sensor
 Fines Conveyor Stockpile Level Sensor
 Stockpile Conveyor Level Sensor (CM36 only)
 Lifting Arrangement for Shipping
 Hanging Screen System (Open Circuit)
 Return Conveyor (B5) for Coarse Fraction
 Dust Filter System
 CAT 3A C13 Engine
 Volvo D13 Stage 2 / Tier 2 Engine
 Volvo Tier 4 Final Engine

Belt Scale on Fines Conveyor (HS only)
 Block Heating for Engine
 Adaption for UK Mines and
 Hanging Screen System (Closed Circuit)
 Hot Ambient Package (-5 to 45°C)
 Cold Ambient Package (-25 to 25°C)
 Extreme Cold Package (-35 to 15°C)
 Environmental Package (-15 to 35°C)
 Complete first service filter kit - Volvo 2
 Complete first service kit - CAT 3A

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440E CLASSIC WITH CS440 CONE CRUSHER

The US440E is an electrically powered tracked mounted cone crusher aimed at the demanding quarry operator, construction company or contractor working with hard and abrasive applications. It features the Sandvik CS440 cone crusher, the SS1443 triple deck screener and the SS1013H pre-screen. The cone crusher can take a feed size of 450 mm and produce up to 500 tph. This makes it the perfect mobile cone crusher for secondary crushing applications where high capacity and high size reduction are desired.

The US440E is available with a product screen and return conveyor, for enhanced product quality. The machine is also available in a simplified version, the US440E Swift, with no screening station and featuring an extended stockpiler.

The Sandvik US440E is powered by electricity (tracks and support legs are hydraulically driven), which results in an environmentally friendly and cost effective solution. It is equipped with a powerful diesel driven generator, which provides an alternative to the mains grid connection, whenever high mobility and multi-site duty is required.

KEY BENEFITS

- Sandvik CS440 cone crusher, available with a choice of three mantles (EC, C and MC) and 4 different eccentric throw settings spanning from 20 to 36, specifically designed for secondary crushing.
- The Sandvik SS1443 product screen can be configured to separate undersize into either one or two fractions, and is available with a choice of screen media.
- Sandvik SP1020H heavy duty pan feeder designed for efficient, high capacity feeding with low liner wear.
- Sandvik SS1013H triple deck pre-screen, available with a choice of screen media
- Radio remote control as standard
- The crusher is fitted with an intelligent ASRi system, which monitors and automatically regulates CSS
- ASRi is integrated with the PLC control screen which is easy to operate and available in several languages
- The US440E is transported in three separate sections which are easily assembled on site
- Metal detector on feed conveyor for the protection of the crusher
- The unit is fully automated and is easily interlocked with other crushing units



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440E CLASSIC WITH CS440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Equipment		Part 1	
Crusher	Sandvik CS440		
Feeder	Sandvik SP 1020 H	Length	14.8 m / 48.6'
Pre screen	Sandvik SS 1013 H	Width	3.5 m / 11.5'
Screen	SS 1443	Height	3.85 m / 12.6'
Capacity	500 mtph / 551 stph	Weight	62 mton / 68 ston
Electric motor	200 kW / 268 hp		
Generating set	600 kVA		
Engine	Volvo 1642 GE diesel generator		
Operation		Part 2	
Length	31.4 m / 103' 0"	Length	4.5 m / 14.8'
Width	4.5 m / 14.8'	Width	3.05 m / 10'
Height	6.2 m / 20' 4"	Height	3.0 m / 9.8'
		Weight	8 mton / 9 ston
		Part 3	
		Length	7.9 m / 25.1'
		Width	3.05 m / 10'
		Height	2.8 m / 9.2'
		Weight	8 mton / 9 ston

Note. All weights and dimensions are for standard units only

OPTIONS

Dustfilter
 NF conveyor incl Support (8mx650mm)
 Beltscale for NF conveyor
 Belt scale on discharge conveyor
 Electrical power outlet 125A
 Diesel driven heater for the engine
 Diesel driven heating for engine and lubrication oil
 Syntetic oil for CS 440 (extra cost ,std mineral oil)
 Removable sidewall extension on feed hopper (Width 4,0 m.
 Volume 12 m3)
 Rubber lined feedhopper extension
 Extra mast with flood lights
 Electrical conveyor heating
 Product conveyor no 2 (800mmx8m)
 Beltscale for CM 40
 Preparation for connection to main supply
 Oil bath cleaner for filter

Electrical heating in feeder pan SP 1020
 Product screen SS 1823 instead of SS 1443 (std)
 Preparation for camera supervision above crusher
 Air compressor For maintenance. Including canopy
 Bigger Genset (CAT C18 625kVA)
 Service Genset Isuzu 16kVA
 800mmx 5m Conveyor for stock piling coarse fraction
 Small hopper with quick connection when feeding directly from
 UJ440E
 Dust protection of feed conveyor (canvas)
 Diesel refilling from ground level, including electric pump.

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440E SWIFT WITH CS440 CONE CRUSHER

The US440E is an electrically powered tracked mounted cone crusher which features the Sandvik CS440 cone crusher, the SS1443 triple deck screener and the SS1013H pre-screen. The cone crusher can take a feed size of 450 mm and produce up to 700 tph.

Sandvik US440E Swift has a maximised capacity of one end product, plus one optional natural fines product. The feeding part consists of one feeder SP1020H, a 1200mm / 48" wide feed conveyor (automatically variable speed according to the level in the crusher) and a natural fines removal screen type SS1013H with by-pass chute and optional NF conveyor. The complete feed package is removable and hydraulically foldable for road transport.

KEY BENEFITS

- Metal detector on feed conveyor
- Discharge conveyor with impact bars under the crusher, belt scraper and rollers.
- Well known Sandvik CS440 crusher with a wide range of chambers and settings.
- ASRi as standard
- On board genset can be optionally switched off and external power used instead.
- Process and tracking is manoeuvred by radio remote control and has an umbilical connected remote control as back-up.
- Platforms around the crusher, screen and power pack provide excellent access for inspections and maintenance.
- Beacon and siren provide warning of movement and process alarms.
- Dual on board interlocking and intelligence system via PLC. Relays as back up.
- A level monitoring system in the crusher adjusts the feeder speed depending on material level.
- A number of sensors at different key locations to ensure a trouble free operation and prevent against costly breakdowns.
- Floodlights are fitted for illumination at night
- Automatically adjusted stabilizing legs
- Main power is 400V AC, control voltage is 230V AC and 24V DC.
- Advanced process automation by interlocking
- Emergency stop buttons are provided at appropriate places.
- The design and manufacture of the Sandvik Swift complies with all the directives required for CE-certification. The diesel engine complies with EU and US Emission regulation norms.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US440E SWIFT WITH CS440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Equipment		Part 1	
Crusher	Sandvik CS440	Length	14.8 m / 48.6'
Feeder	Sandvik SP 1020 H	Width	3.5 m / 11.5'
Pre screen	Sandvik SS 1013 H	Height	3.85 m / 12.6'
Screen	SS 1443	Weight	62 mton / 68 ston
Capacity	500 mtph / 551 stph		
Electric motor	200 kW / 268 hp		
Generating set	600 kVA		
Engine	Volvo 1642 GE diesel generator		
Operation		Part 2	
Length	31.4 m / 103' 0"	Length	4.5 m / 14.8'
Width	4.5 m / 14.8'	Width	3.05 m / 10'
Height	6.2 m / 20' 4"	Height	3.0 m / 9.8'
		Weight	8 mton / 9 ston
		Part 3	
		Length	7.9 m / 25.1'
		Width	3.05 m / 10'
		Height	2.8 m / 9.2'
		Weight	8 mton / 9 ston

Note. All weights and dimensions are for standard units only

OPTIONS

Dustfilter
 NF conveyor incl Support (8mx650mm)
 Beltscale for NF conveyor
 Belt scale on discharge conveyor
 Electrical power outlet 125A
 Diesel driven heater for the engine
 Diesel driven heating for engine and lubrication oil
 Syntetic oil for CS 440 (extra cost ,std mineral oil)
 Removable sidewall extension on feed hopper (Width 4,0 m.
 Volume 12 m3)
 Rubber lined feedhopper extension
 Extra mast with flood lights
 Electrical conveyor heating
 Preparation for connection to main supply
 Oil bath cleaner for filter

Electrical heating in feeder pan SP 1020
 Preparation for camera supervision above crusher
 Air compressor For maintenance. Including canopy
 Bigger Genset (CAT C18 625kVA) Service Genset Isuzu 16kVA
 800mmx 5m Conveyor for stock piling coarse fraction
 Small hopper with quick connection when feeding directly from
 UJ440E
 Dust protection of feed conveyor (canvas)
 Diesel refilling from ground level, including electric pump.

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH440i DIRECT WITH CH440 CONE CRUSHER

The UH440i is a heavy-duty cone crusher built using the latest technology which has proven capable of operating in the toughest climatic conditions. Featuring the market leading Sandvik CH440 cone crusher it comes with a choice of mantles and settings which make it suitable for a wide range of applications worldwide.

Trouble free and optimal production is ensured by on board high level Intelligence together with ASRI which comes as standard.

KEY BENEFITS

- Material level in the crusher is optimised at all times by an inbuilt monitoring system. This adjusts the feed conveyor speed and feed from the primary unit.
- Feed conveyor is hydraulically manoeuvred to and from its working position. The input area of the feed conveyor has a 6m³ (212 cubic feet) large rubber lined (with Sandvik modular wear protection) feed hopper and is designed for feeding directly from a front loader, or from a primary crusher. The conveyor belt is protected by a steel structure in the hopper, which is enhanced by impact bars that absorb the shock from loading and extends belt life.
- Wireless communication with Sandvik UJ440i primary unit in combination with optional sonar at the unit's discharge conveyor.
- Metal detector located before crusher.
- It is possible to position the material drop point from the feed conveyor into the crusher via (radio) remote.
- Water spray units situated at discharge conveyor and over the crusher.
- Unit is fitted with an engine and crusher lubrication oil pre-heater as standard.
- Platforms are located around the crusher and power pack in order to provide easy access for service and maintenance.
- Radio remote control fitted as standard.
- Sensors are located at strategic locations to ensure a trouble free operation and safe guard against costly breakdowns.
- The UH440i is easily transported in one piece, with all components remaining on board.
- No oil spillage during filter changes due to vacuumised hydraulic system and dust suppression systems.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH440i DIRECT WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed Hopper		Main conveyor	
Nominal capacity	6 m³ / 7.85 yds³	Belt width	1400mm / 4' 7"
Rear loading height	3334 mm / 10' 11"	Belt length	23,550mm / 77' 3"
Rear loading height (door lowered)	3136 mm / 10' 3½"	Discharge height	4046mm / 13' 3"
Rear loading width	2930 mm / 9' 7½"	Head drum diameter	340mm / 13 ½"
		Tail drum diameter	250mm / 10"
		Drive	Hyd
		Motor cc	750 cc / 45.7 cu inch
Feed conveyor		Power pack	
Hopper thickness	6 mm / ¼"	Engine	Stage 3A / Tier 3 CAT C9 Acert / Stage 3B / Tier 4i CAT C9.3 Acert / Stage 4 / Tier 4 Final Cat 9.3 Acert
Wear resistant hopper liners	Std		
Belt width	1200 mm / 47"		
Belt length	14,220 mm / 46' 8"		
Incline angle	20°	Engine power	261 kW / 350 hp
Drive type	Hyd - variable speed	Diesel tank capacity	660 litres / 174 USG
Gearbox ratio	65.7:1	Hyd tank capacity	660 litres / 174 USG
Drive torque	9700 Nm (max) / 7154 lbs ft		
Head drum diameter	410 mm / 16"		
Tail drum diameter	400 mm / 15 ½"		
Motor size	44.3 cc / 2.70 cu inch		
Metal detector type	Bridge coil		
Crusher		Transport dimensions	
Cone	Sandvik CH440 Cone	Length	14.56 m / 47' 9 ¼"
Speed	320 rpm	Width	2.80 m / 9' 2 ¼"
Feed opening	215 mm / 8½"	Height	3.40 m / 11' 1 ¼"
CSS range	8 - 48 mm / 5/16" - 1½"	Operating dimensions	
Chamber control	Sandvik Hydroset System (ASRi)	Length	13.50 m / 44' 3 ½"
Std chamber kit	EC	Width	3.14 m / 10' 3 ½"
		Height	4.38 m / 14' 4 ¼"
Chamber options	F-MF-M-MC-C	Standard weight	32,800 kg / 72,312 lbs
Chamber options		Performance	
Std bush settings	32, 36, 40, 44 mm / 1¼, 1½, 1½, 1¾"	Maximum feed size	185 mm / 7 ¼"
		Capacity (up to)	220 tph / 242 stph
		Travel speed	0 - 1 kph / 0 - 0.62 mph
		Max incline / Side to side	16° / 10°
		Tracks	
Drive	21 KPTO fluid coupling	Length (centres)	4170mm / 13' 8"
Drive belts	8 off SPC 7500	Width (shoe)	500mm / 19 ¾"
Crusher weight	13,700 kg / 30,203 lbs	Drive	Hyd/Gearbox
		Control	Umbilical (Radio Optional)
Lubrication tank			
Capacity	245 litres / 64.7 USG		
Fixed displacement flow meter	Yes		
Hyd driven oil cooler	Yes		

Note. All weights and dimensions are for standard units only

OPTIONS

Preparation for Hydraulic Hammer
Overband Magnet
Belt Scale on Main Conveyor
King Pin for Dolly
Pressure Gauges and O-Ring set
Main Conveyor Stockpile Level Sensor
Fines Conveyor Stockpile Level Sensor
Stockpile Conveyor Level Sensor (CM36 only)
Lifting Arrangement for Shipping
Sandvik High Impact Rubber Liners for Hopper
Hanging Screen System (Open Circuit)
Dust Filter System
Support Frame for Feeder Station Transport
Volvo D13 Stage 2 / Tier 2 Engine
CAT 3A C13 Engine (UJ specific)
Auto Lube for Jaw Crusher Bearings
Hydraulic Hammer and Boom
Spray Nozzles on Crusher and Discharge Conveyor

Webasto Engine Coolant Heater
Block Heating for Engine (Extended Lead time)
Overband Magnet for HS Option - Open Circuit
Adaption for UK Mines and Quarries
Jaw Plate Shims
NF Conveyor
Hot Ambient Package (-5 to 45°C)
Cold Ambient Package (-25 to 25°C)
Extreme Cold Package (-35 to 15°C)
Environmental Package (-15 to 35°C)
Complete First Service Filter Kit - VOLVO 2
Complete First Service Filter Kit -CAT 3A
High Pressure Water Pump - Dust Suppression
Volvo Tier 4 Final Engine

UH440E CLASSIC WITH CONE CRUSHER CH440

The Sandvik UH440E is an electrically powered track-mounted complete process machine with a cone crusher and screens onboard. Aimed at the demanding quarry operator, construction company or contractor working with highly abrasive secondary and tertiary applications, the UH440E features the Sandvik CH440 cone crusher, renowned for its strength and reliability, and is capable of achieving high productivity at an excellent reduction ratio and cubicity with high capacity due to its advanced pre-separation system.

KEY BENEFITS

- Sandvik CH440 cone crusher, available with a choice of six mantles (F, MF, M, MC, E, EC) and 8 different eccentric throw settings spanning from 16mm to 44mm, makes this a highly versatile machine.
- Sandvik SS1443 Free Flow screen with optional triple deck product screen SS1823. It can be configured to separate undersize into either one or two fractions and is available with a choice of screen media.
- Sandvik SP1020H heavy duty pan feeder designed for efficient, high capacity feeding with low liner wear.
- Sandvik pre-screen SS1013H with triple deck, available with a choice of screen media.
- Radio remote control for starting, stopping and tracking the equipment.
- The crusher is fitted with an intelligent ASRi system, which monitors and automatically regulates the close side setting.
- ASRi is integrated with the PLC control screen which is easy to operate and available in several languages.
- The UH440E is transported in three separate sections which are easily put together on site and tracked via radio remote control.
- Metal detector on feed conveyor for the protection of the crusher.
- The unit is fully automated and is easily interlocked with other crushing units.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – CRAWLER HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH440E CLASSIC WITH CONE CRUSHER CH440 – TECHNICAL DATA

KEY SPECIFICATIONS

Equipment		Part 1	
Crusher	Sandvik CH440	Length	14.8 m / 48.6'
Feeder	Sandvik SP 1020 H	Width	3.5 m / 11.5'
Pre screen	Sandvik SS 1013 H	Height	3.85 m / 12' 5½"
Screen	SS1443	Weight	57 mton / 63 ston
Capacity	350 mtph / 385 stph		
Electric motor	200 kW / 268 hp		
Generating set	600 kVA		
Engine	Volvo TAD 1642 GE diesel generator		
Operation		Part 2	
Length	31.4 m / 103'	Length	4.5 m / 14.8'
Width	4.5 m / 14.8'	Width	3.05 m / 10'
Height	6.2 m / 20' 4"	Height	3.0 m / 9.8'
		Weight	8 mton / 9 ston
		Part 3	
		Length	7.9 m / 25.1'
		Width	3.05 m / 10'
		Height	2.8 m / 9' 2"
		Weight	12 mton / 13 ston

Note. All weights and dimensions are for standard units only

OPTIONS

Dust filter	Oil bath cleaner for filter
NF conveyor incl Support (8mx650mm)	Electrical heating in feeder pan SP 1020
Belt scale for natural fines conveyor	Product screen SS 1823 instead of SS 1443 (std)
Belt scale on discharge conveyor	Preparation for camera supervision above crusher
Electrical power outlet 125A	Air compressor For maintenance. Including canopy
Diesel driven heater for the engine	Bigger Genset (CAT C18 625kVA)
Diesel driven heating for engine and lubrication oil	Service Genset Isuzu 16kVA
Synthetic oil for CH 440 (extra cost ,std mineral oil)	800mmx 5m Conveyor for stock piling coarse fraction instead of recirculating material
Removable sidewall extension on feed hopper (Width 4,0 m. Volume 12 m3)	Small hopper with quick connection when feeding directly from UJ440E
Rubber lined feed hopper extension	Dust protection of feed conveyor (canvas)
Extra mast with flood lights	Diesel refilling from ground level, including electric pump.
Electrical conveyor heating	
Product conveyor no 2 (800mmx8m)	
Belt scale for CM 40	
Preparation for connection to main supply	

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – CRAWLER HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH450E CLASSIC WITH CONE CRUSHER CH440

The Sandvik UH450E is a revolutionary track-mounted end product crushing and screening unit which has been designed in response to customer demands. Its innovative design combines the renowned CH440 Cone with a banana-styled main screen for high capacity accurate screening together with a recirculating conveyor.

This unit is the ideal choice for the production of the highest quality end products. Both the cone and screen have many alternative settings and optional crushing chambers and screening media, which makes the unit extremely flexible and useful in many applications even as a secondary and tertiary unit. Due to the advanced automation controls this unit is capable of very high capacities of fine fractions e.g. 300tph of calibrated asphalt fractions conforming to shape requirements.

KEY BENEFITS

- High production capacity of excellent shaped end product
- The complete process is fully automated, well- balanced and with a high level of “intelligence” on board to maximise production, quality of material and minimise downtime.
- Sandvik CH440 cone crusher, available with a choice of six concaves and eight different bush settings, making this a highly versatile machine
- Fitted with intelligent ASRi system, which monitors and automatically regulates the close side setting.
- Sandvik pre-screen SS1221 with Sandvik modular screening media fitted as standard
- Optional heavy duty pan feeder available for efficient, high capacity feeding with low liner wear
- Diesel-electric drive for powerful, extremely economical and environmentally friendly operation
- Excellent fuel economy with a Volvo power pack
- Innovative compact design in operation , transport and quick set-up
- Unique loop conveying system providing direct feed to the product screen
- Highly efficient double deck banana-shaped LF1850 screen with unique Sandvik modular screening media as standard
- Full radio remote control fitted as standard
- Versatile and capable of working as part of a “process train” or stand-alone unit.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – CRAWLER HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH450E CLASSIC WITH CONE CRUSHER CH440 – TECHNICAL DATA

KEY SPECIFICATIONS

Pre-screen		Product conveyors (x 2)	
Screen	SS1221 single-deck free-fall screen	Transverse conveyor	1000 mm / 39 3/8"
Screen deck	1200 mm x 1200 mm / 47" x 47"	Width	3000 mm / 9' 10 1/8"
Screening media	Sandvik Modular WM6000 system, rubber, stepped deck	Length	11 kW / 15 hp
Feed conveyor (pre-screen overflow conveyor)		Longitudinal conveyor	
Width	1000 mm / 39 3/8"	Width	1000 mm / 39 3/8"
Length	6900 mm / 22' 7 5/8"	Length	9550 mm / 31' 4"
Drum motor	11 kW / 15 hp		
Closed-circuit conveyor (two sections)		Natural fines conveyor	
Conveyor with a drum motor		(detachable for transport)	
Width	1200 mm / 47"	Width	650 mm / 25 5/8"
Length	21000 mm / 68' 10 3/4"	Length	6500 mm / 21' 4"
Drum motor	30 kW / 40 hp	Drum motor	7.5 kW / 10 hp
		Discharge height	3700 mm / 12' 1 3/4"
Friction conveyor		Power pack and electrics	
Width	1300 mm / 51 1/4"	Diesel generator package	Volvo TAD1641 GE
		Generator	Stamford 500 kVA
		Onboard electrical power	400/240V 50Hz
		Fuel tank volume	950 litres / 250 US Gal
		Electrics	Canbus control
Product screen		Transport dimensions	
Screen	LF1850 Double-deck linear-motion screen	Length	19.50 m / 63' 11 3/4"
Decks	1800 mm x 4800 mm / 71" x 189"	Width	3.50 m / 11' 5 7/8"
		Height	4.45 m / 14' 7 1/4" (dolly)
		Standard weight	70,500 kg / 155,426 lbs
Screening media, top deck	Sandvik Modular WM6000 system, rubber, stepped deck		
Screening media, bottom deck	Longitudinally tensioned wire mesh		
Feed box	Replaceable rubber liner		
Crusher		Operating dimensions	
Crusher	Sandvik CH440	Length	20.00 m / 65' 7 1/2"
Max. feed opening	215 mm / 8 1/2"	Width	4.50 m / 14' 9 1/8"
CSS Range	8 - 48 mm / 5/16" - 1 7/8"	Height	6.60 m / 21' 7 7/8"
Drive	Squirrel cage motor		
	200 kW / 1500 rpm		
Tracks		Note. All weights and dimensions are for standard units only	
Length (centres)	3800 mm / 12' 5 5/8"		
Width (shoe)	500 mm / 19 3/4"		
Drive	Hydraulic / Gearbox		
Control	Radio / Umbilical		

OPTIONS

Overband magnet
 Natural fines conveyor 500mm x 8m (only available in combination with complete feed station)
 Complete feed station incl 12m3 hopper ,feeder SP 1328M, and mechanical support legs. SS 1222M screen
 Belt scale for NF conveyor
 Extra illumination including lighting mast and crawler lights
 High pressure water spray system
 Belt scale for 0-fraction stockpile conveyor
 Dolly transportation kit incl four hydraulic legs, king pins, position lights and brake lines (Dolly not incl)

Webasto pre-heater with timer for engine coolant and crusher lubrication oil
 Synthetic oil for CH440
 Complete filter set for diesel engine , crusher and hydraulic oils
 Level indicator for stock pile conveyor
 Coarse fraction stock pile conveyor 650mm x 7,5m
 Belt scale for coarse fraction stock pile conveyor
 Preparation for connection to mains power supply
 Oil bath air pre-cleaner for diesel engine
 Electrical heater for feed hopper

UH550E CLASSIC WITH CONE CRUSHER CH550

The Sandvik UH550E is a pioneering track-mounted end product crushing and screening unit, which has been designed to meet customer demands. The innovative design combines the new CH550 cone crusher with a banana-styled main screen for high capacity accurate screening together with a recirculating conveyor.

This unit is the ideal choice for the production of the highest quality end products, capable of one or two end products plus one natural fines product. Both the cone and screen have many alternative settings, optional crushing chambers and screening media, making the UH550E an extremely flexible and useful in many applications even as a secondary and tertiary unit.

KEY BENEFITS

- The complete process is fully automated, well- balanced and with a high level of “intelligence” on board to maximise production, quality of material and minimise downtime
- Versatile and capable of working as part of a train or as a standalone unit
- Sandvik CH550 cone crusher, available with a wide range of chambers and settings
- Fitted with intelligent ASRi system, which monitors and automatically regulates the closed side setting
- Equipped with Sandvik SS1221M single deck pre- screen with Sandvik modular screening media fitted as standard or optional Sandvik SS1222M double deck screen and SP1328M feeder including 12m³ feed hopper for feeding directly from loader
- Unique loop conveying system providing direct feed to the product screen
- Highly efficient double deck banana-shaped LF1850 screen with unique Sandvik modular screening media as standard
- Diesel-electric drive for powerful, extremely economical and environmentally friendly operation
- Excellent fuel economy with a Volvo power pack
- Innovative compact design in operation, transport and quick set up
- Full radio remote control fitted as standard
- Platforms around the crusher, screen and power pack provide excellent access for inspections and maintenance



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – CRAWLER HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH550E CLASSIC WITH CONE CRUSHER CH550 – TECHNICAL DATA

KEY SPECIFICATIONS

Pre-screen		Product conveyors (x 2)	
Screen	SS1221 single-deck free-fall screen	Transverse conveyor	1000 mm / 39 3/8"
Screen deck	1200 mm x 1200 mm / 47" x 47"	Width	3000 mm / 9' 10 1/8"
Screening media	Sandvik Modular WM6000 system, rubber, stepped deck	Length	11 kW / 15 hp
Feed conveyor (pre-screen overflow conveyor)		Longitudinal conveyor	
Width	1000 mm / 39 3/8"	Width	1000 mm / 39 3/8"
Length	6900 mm / 22' 7 5/8"	Length	9550 mm / 31' 4"
Drum motor	11 kW / 15 hp	Natural fines conveyor	
Closed-circuit conveyor (two sections)		(detachable for transport)	
Conveyor with a drum motor		Width	650 mm / 25 5/8"
Width	1200 mm / 47"	Length	6500 mm / 21' 4"
Length	21000 mm / 68' 10 3/4"	Drum motor	7.5 kW / 10 hp
Drum motor	33 kW / 44 hp	Discharge height	3700 mm / 12' 1 3/4"
Friction conveyor		Power pack and electrics	
Width		Diesel generator package	Volvo TAD1642 GE
1300 mm / 51 1/4"		Generator	Stamford 670 kVA
Width		Onboard electrical power	400/240V 50Hz
		Fuel tank volume	885 litres / 234 US Gal
		Electrics	Canbus control
Product screen		Tracks	
Screen	LF1850 Double-deck linear-motion screen	Length	3910 mm / 12' 10"
Decks	1800 mm x 4800 mm / 71" x 189"	Track shoe width	500 mm / 19 3/4"
	Sandvik Modular WM6000 system, rubber, stepped deck	Travel speed	0.6 / 1.2 km / h
	Longitudinally tensioned wire mesh		
	Replaceable rubber liner		
Crusher		Transport dimensions	
Crusher	Sandvik CH550	Length	19.50 m / 63' 11 3/4"
Max. feed opening	215mm / 8"	Width	4.5 m / 14' 8"
CSS Range	6-44mm / 0.2 – 1.73"	Height	4.45 m / 14' 7 1/4" (dolly)
Drive	315 kW / 50 Hz, Squirrel cage motor	Standard weight	72,574 kg / 159,998 lbs
Tracks		Operating dimensions	
Length (centres)	3910 mm / 12' 10"	Length	20.00 m / 65' 7 1/2"
Width (shoe)	500 mm / 19 3/4"	Width	4.50 m / 14' 9 1/8"
Travel speed	0.6 / 1.2 km / h	Height	6.60 m / 21' 7 7/8"

Note. All weights and dimensions are for standard units only

OPTIONS

Overband magnet
 Natural fines conveyor 500mm x 8m (only available in combination with complete feed station)
 Complete feed station incl 12m3 hopper ,feeder SP 1328M, and mechanical support legs. SS 1222M screen
 Belt scale for NF conveyor
 Extra illumination including lighting mast and crawler lights
 High pressure water spray system
 Belt scale for 0-fraction stockpile conveyor
 Dolly transportation kit incl four hydraulic legs, king pins, position lights and brake lines (Dolly not incl)

Webasto pre-heater with timer for engine coolant and crusher lubrication oil
 Synthetic oil for CH440
 Complete filter set for diesel engine , crusher and hydraulic oils
 Level indicator for stock pile conveyor
 Coarse fraction stock pile conveyor 650mm x 7,5m
 Belt scale for coarse fraction stock pile conveyor
 Preparation for connection to mains power supply
 Oil bath air pre-cleaner for diesel engine
 Electrical heater for feed hopper

UH640 CLASSIC WITH CONE CRUSHER CH660

The UH640 is a flexible, highly productive secondary cone crusher that is able to produce finished sized products thanks to an integral product screen and closed circuit operation.

Designed to function in open or closed circuit for flexible and productive operation, it features the market leading Sandvik CH660 cone crusher which comes with a choice of mantles and settings making it suitable for a wide range of applications worldwide.

KEY BENEFITS

- The CH660 cone crusher is ideal for secondary and tertiary crushing, yet is compact, and possesses an easy to service design that is ideal for use as a fully tracked crushing system.
- The CH660 cone possesses a hydraulically adjusted Closed Side Setting and has a choice of several different crushing chambers and many other high performance features.
- ASRi allows for the full utilisation of the crusher liners and accurately scheduled liner replacements to coincide with planned maintenance stops.
- ASRi also assists in keeping the crusher choke fed for maximum “rock-on-rock” crushing in order to optimise the quality of the final product.
- The design of the machine results in the ability to produce two products, plus one fines product (second product conveyor and N.F.-conveyor is optional equipment).
- Metal detector fitted on the feeding conveyor.
- Manoeuvred by radio remote control and has a cable remote control for back-up.
- Discharge conveyor fitted with impact bars situated under the crusher together with belt scale and rollers.
- Advanced process automation is facilitated by an interlocking process.
- Easily adapted for connection to mains electrical supply.
- Platforms around crusher, screen and power pack provide excellent access for inspections service and maintenance.
- The design and manufacture of the Sandvik UH640 complies with all the directives required for CE-marking. The diesel engine complies with EU and US Emission regulation norms.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – CRAWLER HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH640 CLASSIC WITH CONE CRUSHER CH660 – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Crawler tracks	
Feeder	SP1020H	Type	Track One
Feeder conveyor	1200mm x 7.7m / 48" x 25'8"	Length c/c	4040mm / 13' 4"
Hopper volume	3 m ³	Track shoe width	500mm / 19.5"
NF screen	SS1013H	Hydraulic pumps driven by	1 x 110kW electric motor
Crusher		Operation	
Type	Sandvik CH660	Height	6.2 m / 20.3'
Drive	From electric motor 315kW, 50 Hz squirrel cage type	Width	4.5 m / 14.8'
		Length	31.4 m / 103'
Discharge conveyor		Transport (in 3 parts)	
Belt length	13.9 m / 45.6'	Part no.1 height	3.85 m / 12.6'
Belt width	1200 mm / 3.9'	Part no.1 width	3.5 m / 11.5'
		Part no.1 length	14.8 m / 48.6'
		Part no.1 weight *1	64 mton / 71 ston
Screen unit (closed circuit)		Part no.2 height (excl trailer)	3 m / 9.8'
Screen	SS1443	Part no.2 width	3.05 m / 10'
Product conveyor 1	1000mm x 8,5 m / 40" x 28'4"	Part no.2 length	4.5 m / 14.8'
Product conveyor 2	800mm x 8m / 32" x 26'8"	Part no.2 weight	8 mton / 9 ston
Return conveyor	(option) 800mm x 10m / 32" x 33'4"	Part no.3 height	2.8 m / 9.2'
On-board power pack		Part no.3 height (excl trailer)	2.8 m / 9.2'
Diesel engine	Volvo TAD 1642 GE 600 kVA	Part no.3 width	3.05 m / 10'
Alternative	CAT C18 594 kVA	Part no.3 length	7.9 m / 25.1'
Generator	Stamford	Part no.3 weight	12 mton / 13 ston
Fuel tank volume	3100 dm ³ / 666 US gallons		
Main voltage	detachable fuel tank		
Control voltage	400V / 50Hz / 3-phase a.c.		
	230V / 50Hz / 1-phase a.c.		
Hydraulic system		Performance	
System	Hydraulics for crawlers and support legs	Max.feed size	975mm / 38.4"
		Capacity (up to)	800 mtph
		Travelling speed	17m / min (50 Hz)
		Max.slope-climbing capability	20m / min (60 Hz)
			Approx. 20°

Note. All weights and dimensions are for standard units only

OPTIONS

Dust filter
 Natural fines conveyor incl Support (8mx650mm)
 Belt scale for natural fines conveyor
 Belt scale on discharge conveyor
 Electrical power outlet 125A
 Diesel driven heater for the engine
 Diesel driven heating for engine and lubrication oil
 Synthetic oil for CH 660 (extra cost, std mineral oil)
 Removable sidewall extension on feed hopper (Width 4,0 m.
 Volume 12 m³)
 Rubber lined feed hopper extension
 Extra mast with flood lights
 Electrical conveyor heating
 Product conveyor no 2 (800mmx8m)
 Belt scale for CM 40

Preparation for connection to main supply
 Oil bath cleaner for filter
 Electrical heating in feeder pan SP 1020
 Product screen SS 1823 instead of SS 1443 (std)
 Preparation for camera supervision above crusher
 Air compressor For maintenance. Including canopy
 Bigger Genset (CAT C18 625kVA)
 Service Genset Isuzu 16kVA
 800mmx 5m Conveyor for stock piling course fraction instead of recirculating material
 Small hopper with quick connection when feeding directly from UJ440E
 Dust protection of feed conveyor. Canvas.
 Diesel refilling from ground level, including electric pump.

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CRUSHER COMBINATIONS AND OPTIONS - 2016-01-01

UD440E WITH CJ412 JAW CRUSHER AND CH440 CONE CRUSHER

The UD440E is a self-propelled tracked primary and secondary crushing and screening unit in one. It is aimed at the demanding quarry operator, construction company or contractor in need of high productivity. Fitted with the Sandvik CJ412 jaw crusher, CH440 cone crusher and the SS1443 triple deck product screen, it can produce up to 500 tph. The machine is mostly powered by electricity (tracks and support legs are hydraulically driven), which results in an environmentally friendly and cost effective solution.

The machine can be ideally fed by an excavator or alternatively, by a wheel loader. The fines are initially separated by means of a pre-screen below the grizzly, and then fed into the jaw crusher. The crushed material is then sized by the SS1443 screener, with the oversize subsequently crushed by the CH440 cone crusher, which operates in closed circuit with the screen. The UD440E is a very versatile plant, in that it can also operate without the cone crusher, should the end product specification not need a secondary crushing step.

KEY BENEFITS

- Sandvik CH440 cone crusher, available with a choice of six different crushing chambers (F, MF, M, MC, E, EC), together with eight different bush settings, ranging from 16mm to 44mm, which make it one of the most versatile cone crushers in the market today.
- Sandvik CJ412 33" x 48" jaw crusher. Hydraulically adjustable closed side setting, from 75 - 225 mm.
- Sandvik SS1443 product screen. It can be configured to separate undersize into either one or two fractions, and is available with a choice of screen media.
- Radio remote control for starting, stopping and tracking the equipment
- The cone crusher is fitted with an intelligent ASRi system, which monitors and automatically regulates the close side setting
- The UD440E is transported in three separate sections which are easily put together on site and tracked via radio remote control
- Metal detector on feed conveyor for the protection of the crusher.



ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CRUSHER COMBINATIONS AND OPTIONS - 2016-01-01

UD440E WITH CJ412 JAW CRUSHER AND CH440 CONE CRUSHER - TECHNICAL DATA

KEY SPECIFICATIONS

Equipment		Transport Dimensions	
Crusher	Sandvik CJ412 jaw and CH440	Part 1	
Feeder	Sandvik SW 1053	Length	16.9 m / 55' 5"
Pre screen	PJ 10/10	Width	3.5 m / 11' 6"
Screen	Sandvik SS 1443	Height	4.05 m / 13' 3"
Capacity	500 mtph / 551 stph	Weight	56 mton / 68 ston
Electric motor	132 / 200 kW		
Generating set	176 / 268 hp 591 kVA		
Power pack		Part 2	
Engine	Volvo TAD 1642 diesel generator	Length	8.8 m / 28' 9"
		Width	3.5 m / 11' 6"
		Height	3.9 m / 12' 9"
		Weight	52 mton / 57 ston
Crusher		Part 3	
Primary	CJ412	Length	5.2 m / 17'
Feed opening	895 x 660 mm / 33" x 48"	Width	3.1 m / 10' 2"
Drive	From electric motor, 32 kW, squirrel cage type	Height	3.54 m / 11' 6"
Secondary	CH440	Weight	8 mton / 9 ston
Drive	Drive From electric motor, 200 kW, squirrel cage type.	Total weight	116 mton / 134 ston
Operating Dimensions		Note. All weights and dimensions are for standard units only.	
Length	26.8 m / 88'		
Width	4.5 m / 14' 8"		
Height	6.2 m / 20' 3"		

OPTIONS

Dust filter
Natural fines conveyor incl Support (8mx650mm)
Belt scale for NF conveyor
Auto lube for Jaw crushers bearing
Belt scale on discharge conveyor
Electrical power outlet 125A
Diesel driven heater for the engine
Diesel driven heating for engine and lubrication oil
Synthetic oil for CH440
Extra mast with flood lights

Electrical conveyor heating
Product conveyor no 2 (800mm x 8m)
Belt scale for CM40
Shim plates behind the jaw plates CJ 412
Preparation for connection to main supply
Oil bath cleaner for filter

ROCK PROCESSING GUIDE 2016

Chapter Q – MOBILE UNITS – HD AND XHD RANGE

CRUSHER COMBINATIONS AND OPTIONS - 2016-01-01

HANGING SCREEN SYSTEM WITH SCREEN 1.5 x 3 M – TECHNICAL DATA

Hanging Screen Module (option CM36A)

- Single deck hanging screen SC1530 with one product conveyor out and one in return.
- Fits UH440i and US440i.
- Easy to mount/-dismount thanks to quick couplings and adjustable support legs.
- Four legs support the hanging screen module when not in operation.
- Two hydraulic legs are supporting the module during operation.
- The hydraulic legs are automatically adjusting themselves.
- The “intelligence” is integrated, ensures a trouble free operation and safe guard against costly breakdowns.
- Belt scale on the product conveyor is optional.
- Sandvik tensioned rubber media and WT modules in rubber.
- The module stays attached while tracking the unit.
- The design and manufacture of the Sandvik HS station complies with ISO 9001 and all the directives required for CE marking.

Screen SC1530		Side conveyor coarse fraction	
Width	1500mm / 5'	Width	1000mm / 40"
Length	3000mm / 10'	Length	4000mm / 13'
No. of decks	1		
Product Conveyor 0-fraction		Return Conveyor	
Width	1200mm / 4'	Width	800mm / 32"
Length	8200mm / 27'	Length	12..6m / 41'
Approx. Discharge height under drum	3200mm / 10' 6"		
Total weight incl. conveyors and counterweight			
		tons	14
		short tons	15.5



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONTENTS 2016-01-01

JAW CRUSHERS

QJ241 with Jaw crusher 1000 x 650 mm / 40" x 26"

QJ341 with Jaw crusher 1200 x 750 mm / 47" x 29"

CONE CRUSHERS

QS331 with CS430 Cone crusher

QS441 with CS440 Cone crusher

QH331 with CH430 Cone crusher

QH441 with CH440 Cone crusher

IMPACT CRUSHERS

QI341 with CI411 HSI Impact crusher

QI341 HS with CI411 HSI Impact crusher with double deck hanging screen

QI441 with CI421 HSI Impact crusher

QI441 HS with CI421 HSI Impact crusher with double deck hanging screen

QI441 SDHS with CI421 HSI Impact crusher with single deck hanging screen

SCREENS

QA331 with 2 deck Screen 4.3 x 1.5 m (14' x 5')

QA335 with 2 deck Screen 4 x 1.5 m (13' x 5')

QA441 with 2 deck Screen 6 x 1.5 m (20' x 5')

QA451 with 3 deck Screen 6 x 1.5 m (20' x 5')

SCALPERS

QE141 with Vibrating grid

QE241 with Screen 3.35 x 1.24 m (11' x 4')

QE341 with Screen 4.7 x 1.45 m (16' x 5')

QE441 with Screen 5.5 x 1.75 m (18' x 6')

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

JAW CRUSHERS - 2016-01-01

QJ241 WITH JAW CRUSHER 1000 x 650 MM / 40" x 26"

Our QJ241 is the smallest compact tracked jaw crusher in the world leading series of Sandvik tracked crushers.

This highly productive yet self-propelled machine brings the revolutionary features of the Sandvik QJ341 to the smaller quarry or demolition site, where operating space is limited, yet high performance demanded.

Compact and mobile, the QJ241 is fitted with a hydraulic raise and lower facility on the main conveyor making it the ideal solution for recycling applications, yet it is equally productive for hard rock applications.

KEY BENEFITS

- Danfoss hydraulic control system for greater efficiency with all controls located at ground level for ease of access and maintenance
- Full PLC control system and Danfoss colour screen allowing visual data output of all plant operating parameters
- Hydraulic raise and lower facility on the main conveyor to give increased clearance for rebar discharge in recycling applications also extended for greater discharge height.
- Tunnel arrangement to reduce catchment points in recycled materials
- Improved load control system for feeder drive to ensure continuous, uninterrupted crushing
- Steel pipe work used extensively to give superior heat dissipation and to provide a maintenance free sealing solution
- Speed wheel fitted to main conveyor to stop the feeder, negating the need to dig out a heavily loaded conveyor
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

JAW CRUSHERS - 2016-01-01

QJ241 WITH JAW CRUSHER 1000 x 650 MM (40" x 26") – TECHNICAL DATA

KEY SPECIFICATIONS	QJ241	KEY SPECIFICATIONS	QJ241
Hopper		Power pack	
Type	Hyd Folding - side and rear	Engine	Stage 3A / Tier 3 CAT C7.1 Acert / Stage 3B / Tier 4i CAT C7.1 Acert / Stage 4 / Tier 4 Final CAT C7.1 Acert
Width	1840 mm / 6'	Engine power	168 kW / 225 hp
Length	3770 mm / 12' 4 1/2"	Diesel tank capacity	660 litres / 174 USG
Level capacity	2.8 m³ / 3.7 yds³	Hyd tank capacity	660 litres / 174 USG
Heaped capacity	4.95 m³ / 6.5 yds³		
Rear loading height	3568 mm / 11' 8 1/2"		
Feeder		Magnet (option)	
Type	Hyd - variable speed grizzly	Model	Eriez CP20 / 80 - SC2
Width	800 mm / 31 1/2"	Weight	800 kg / 1764 lbs
Total length	3580 mm / 11' 9"	Belt width	750 mm / 29 1/2"
Grizzly length	1260 mm / 49 1/2"	Height from belt	Variable
Standard aperture	35 - 70 mm / 1 3/8" - 2 3/4"	Type	Self cleaning
Crusher		Natural fines conveyor (option)	
Type	Single Toggle - C10	Belt width	650 mm / 25 1/2"
Feed opening	1000 mm x 650 mm / 40" x 26"	Belt length (endless)	6370 mm / 20' 11"
Speed	320 rpm	Discharge height	1757 mm / 5' 9 1/8"
Adjustment type	Hyd wedge	Drive	Hyd Motor
Drive	Hyd via V Belts	Motor cc	395 cc / 24 cu inch
CSS range	50 - 150 mm / 2" - 6"		
Motor type	Danfoss		
Motor cc	250 cc / 15.25 cu inch		
Main conveyor		Transport dimensions	
Belt width	800 mm / 31 1/2"	Length	13.90 m / 45' 7 3/8"
Belt length (endless)	21,000 mm / 68' 11"	Width	2.64 m / 8' 7 7/8"
Discharge height	3444 mm / 11' 3 5/8"	Height	3.22 m / 10' 6 5/8"
Raise / lower	Yes - Hydraulic	Cubic volume	118.1 m³ / 4170.7 ft³
Head drum diameter	282 mm / 11"		
Tail drum diameter	270 mm / 10 1/2"		
Drive	Hyd Motor		
Motor CC	624 cc / 38.1 cu inch		
Tracks		Operating dimensions	
Length (centres)	3310 mm / 10' 10 1/2"	Length	13.74 m / 45' 1"
Width (shoe)	400 mm / 15 1/2"	Width	3.23 m / 10' 7 1/4"
Drive	Prop Hyd / Gearbox	Height	3.86 m / 12' 7 7/8"
Control	Radio / Umbilical	Standard weight	32,568 kg / 71,800 lbs
		Performance	
		Maximum feed size	520 mm³ / 21 inch³
		Capacity (up to)	225 tph / 248 stph
		Travel speed	0 - 1.10 km/h / 0 - 0.68 mph
		Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

Wear resistant hopper liner plates back and sides
Wear resistant feeder pan liner
Belt protection plate under jaw crusher discharge
Central auto lube (all bearings)
Pull stop cords on the main and natural fines conveyor
Main Conveyor canvas covers
Remote diesel pump (electric)
Water pump (hydraulic)
Arctic package -20°C (-4°F) (32 Grade oil and engine oil)
Arctic package -30°C (-22°F) (arctic hydraulic oil, engine oil, webasto coolant heater and grease)
Overband magnet
Natural fines conveyor

Intelligent line multi-machine communication
Main conveyor level sensor (stockpile monitor)
Lighting mast and cabinet lights
Engine filter kit - 250 hours (Air and oil filters - for 3A engines only)
Plant and engine filter kit - 500 hours
Head drum guard main conveyor
Head drum guard natural fines conveyor
Radio remote control
Jaw crusher level sensor

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

JAW CRUSHERS - 2016-01-01

QJ341 WITH JAW CRUSHER 1200 x 750 MM / 47" x 29"

Our QJ341 is the largest in the Sandvik Premium range of tracked jaw crushers. Utilising Sandvik's unrivalled design and manufacturing expertise, it is one of the best-selling track mounted mobile jaw crushers in the world today.

Featuring a powerful 1200 x 750 / 47 x 29" jaw, it is capable of delivering high outputs with excellent reduction ratios. It comes fitted with many user-friendly features, such as hydraulic adjustment and reversible jaw, and a PLC control system and colour screen for ease of operation. It is also fitted with a hydraulic raise and lower conveyor making it ideal for recycling applications, as well as quarrying applications.

KEY BENEFITS

- Danfoss hydraulic control system for greater efficiency with all controls located at ground level for ease of access and maintenance.
- Full PLC control system and Danfoss colour screen allowing visual data output of all plant operating parameters.
- Improved load control system for feeder drive to ensure continuous, uninterrupted crushing.
- Steel pipe work used extensively to give superior heat dissipation and to provide a maintenance free sealing solution.
- Speed wheel fitted to main conveyor to stop the feeder, negating the need to dig out a heavily loaded conveyor.
- Hydraulically driven cooling fan allows fan speed control to give increased efficiency, and auto reverse facility to periodically back flush any dust build up in the radiator.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.
- Hydraulic raise and lower facility fitted to the main conveyor for clearance of rebar in recycling applications.
- Tunnel arrangement to reduce catchment points in recycled materials.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

JAW CRUSHERS - 2016-01-01

QJ341 WITH JAW CRUSHER 1200 x 750 MM / 47" x 29" – TECHNICAL DATA

KEY SPECIFICATIONS	QJ341	KEY SPECIFICATIONS	QJ341
Hopper		Engine	
Type	Hyd folding - side and rear	Engine type	Stage 3A / Tier 3 CAT C9 Acert / Stage 3B / Tier 4i CAT C9.3 Acert / Stage 4 / Tier 4 Final CAT C9.3 Acert
Width	15 mm / ½" thick	Engine power	/ Stage 4 / Tier 4 Final Volvo D11 261 kW / 350 hp (CAT)
Length	2471 mm / 8' 1 ¼"	Diesel tank capacity	265 kW / 355 hp (Volvo)
Level capacity	4339 mm / 14' 2 ⅞"	Hyd tank capacity	660 litres / 174 USG
Heaped capacity	5.1 m³ / 6.8 yds³		
Rear loading height	9.4 m³ / 12.3 yds³		
	4041 mm / 13' 3 ⅝"		
Feeder		Magnet (option)	
Type	Hyd - variable speed grizzly	Model	Eriez CP 20 / 100 SC2
Width	1100 mm / 43"	Weight	1007 kg / 2220 lbs
Total length	4000 mm / 13' 1 ½"	Belt width	750 mm / 29 ½"
Grizzly length	1630 mm / 64"	Height from belt	Adjustable
Standard aperture	35 - 75 mm / 1 ⅝" - 3"	Type	Self cleaning
Crusher		Natural fines conveyor (option)	
Type	Single toggle - C12	Belt width	650 mm / 25 ½"
Feed opening	1200 mm x 750 mm / 47" x 29"	Belt length (endless)	6925 mm / 22' 8 ½"
Speed	283 rpm	Discharge height	1929 mm / 6' 4"
Adjustment type	Hydraulic wedge	Drive	Hyd motor
Drive	Hyd via V Belts	Motor CC	395 cc / 24 cu inch
CSS range	50 - 175 mm / 2" - 7"		
Motor type	Danfoss		
Motor cc	250 cc / 15.25 cu inch		
Hydraulically lowering main conveyor		Transport dimensions	
Belt width	1000 mm / 39 ½"	Length	14.15 m / 46' 5 ⅝"
Belt length (endless)	24500 mm / 80' 4 ½"	Width	2.86 m / 9' 4 ½"
Discharge height	3855 mm / 12' 7 ¾"	Height	3.44 m / 11' 3 ¼"
Drive	Hyd motor	Cubic volume	139 m³ / 4913 ft³
Motor CC	624 cc / 38.1 cu inch		
Tracks		Operating dimensions	
Length (centres)	3715 mm / 12' 2"	Length	15.81 m / 51' 10 ½"
Width (shoe)	500 mm / 19 ¾"	Width	3.50 m / 11' 6"
Drive	Prop hyd / Gearbox	Height	4.45 m / 14' 7 ¼"
Control	Radio / Umbilical	Standard weight	48,194 kg / 106,250 lbs
		Performance	
		Maximum feed size	650 mm³ / 25.6 inch³
		Capacity (up to)	400 tph / 440 stph
		Travel speed	0 - 1.3 km/h / 0 - 0.811 mph
		Max incline / Side to side	20° / 10°
		Note. All weights and dimensions are for standard units only	

OPTIONS

Wear resistant hopper liner plates back and sides
 One piece 15 mm / ½" thick extended wear resistant hopper side walls for rear loading
 Belt protection plate under jaw crusher discharge
 Central auto lube (all bearings)
 Pull stop cords on the main and natural fines conveyor
 Hydraulic breaker arm complete with hammer
 Main Conveyor canvas covers
 Remote diesel pump (electric)
 Water pump (Hydraulic)
 Arctic package -20°C (-4°F) (32 Grade hydraulic oil and engine oil)
 Arctic package -30°C (-22°F) (Arctic hydraulic oil, engine oil, webasto coolant heater and grease)
 Heavy duty twin pole overband magnet Arctic package -20°C (-4°F) (32 Grade oil and engine oil)
 Arctic package -30°C (-22°F) (arctic hydraulic oil, engine oil, webasto coolant heater and grease)
 Overband magnet
 Natural fines conveyor

Overband magnet
 Natural fines conveyor
 Intelligent line multi-machine communication
 Main conveyor level sensor (stockpile monitor)
 Lighting mast and cabinet lights
 Engine filter kit - 250 hours (Air and oil filters - for 3A engines only)
 Plant and engine filter kit - 500 hours
 Head drum guard main conveyor
 Head drum guard natural fines conveyor
 Radio remote control
 Jaw crusher level sensor
 Jacking legs

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QS331 WITH CS430 CONE CRUSHER

Our QS331 is a compact, self contained mobile cone crusher with an on board diesel engine. Featuring the CS430 Sandvik cone crusher the QS331 is capable of accepting large feed sizes and achieving high production capacities.

The advanced CS430 cone is equipped with a hydroset CSS regulation system that provides overload protection, optimises production and keeps track of liner wear. The unit is also fitted with an automatic level sensor above the crushing chamber to control the feed rate and minimise operator intervention for maximum production and reduction.

KEY BENEFITS

- The chassis is constructed from heavy duty 'I' beam to ensure maximum durability
- Heavy duty, hydraulically positioned feed conveyor
- Up and over metal detector to provide ultimate cone protection from tramp metal
- Automated variable speed feed conveyor via a level sensor to ensure maximum production and reduction of the material
- Direct drive through a PT Tech wet clutch with eight SPC drive belts to ensure maximum fuel efficiency and power delivery
- Hydraulically driven, variable speed cooling fan for maximum efficiency and auto reverse facility to back flush dust from the radiator
- The machine is designed for ease of mobility, for rapid set up time and transportation
- The CS430 cone has choice of three concaves and four bush settings from a single bush ranging from 16 mm to 30 mm
- The concave and bush settings give unrivalled flexibility regarding CSS ranges, production and material gradation
- Maximum feed size up to 360 mm and capable of up to 344 tph on the larger bush setting
- Can operate in the most hostile environments with a 50°C ambient capability with a lubrication oil change
- Superb access around the crusher for easy maintenance, especially during liner changes
- Remote camera viewing the crushing chamber enables the operator to set up and ensure a choke feed on the crusher from ground level
- Hydraulic driven hydraulic and lubrication coolers to deal with the most arduous conditions



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QS331 WITH CS430 CONE CRUSHER CS430 – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Main conveyor	
Nominal capacity	5 m ³ / 6.5 yds ³	Belt width	1000 mm / 39 1/2"
Nominal capacity with extensions	6.5 m ³ / 8.5 yds ³	Belt length	17,400 mm / 57' 1"
Rear loading height (std)	3455 mm / 11' 4"	Discharge height	3065 mm 10' 3/4"
Rear loading width (std)	2305 mm / 7' 6 3/4"	Head drum diameter	289 mm / 11 1/2"
Rear loading width with extensions	3600 mm / 11' 9 3/4"	Tail drum diameter	273 mm / 11"
Rear loading height with extensions	3815 mm / 12' 6 1/4"	Drive	Hydraulic
		Motor	490 cc / 29.9 cu inch
Feed conveyor		Tracks	
Hopper thickness	10 mm / 3/8"	Length (centres)	3800 mm / 12' 5 5/8"
Belt width	1000 mm / 39 1/2"	Width (shoe)	500 mm / 19 3/4"
Belt length	11,845 mm / 38' 10"	Drive	Hydraulic / Gearbox
Incline angle	20°	Control	Radio / Umbilical
Drive	Hydraulic variable speed		
Gearbox	22.2:1		
Torque	8850 Nm / 6527 lbs / ft		
Head drum diameter	340 mm / 13 3/8"		
Tail drum diameter	324 mm / 12 3/4"		
Motor	130.6 cc / 7.97 Cu Inch		
Metal detector type	Bridge coil		
Crusher		Power pack	
Cone	Sandvik CS430	Engine	Stage 3A / Tier 3 CAT C9 Acert / Stage 3B / Tier 4i CAT C9.3 Acert / Stage 4 / Tier 4 Final CAT 9.3 Acert
Speed	346 rpm to 366 rpm	Engine power	261 kW / 350 hp
Feed opening	up to 360 mm / 14 1/8"	Diesel tank capacity	660 litres / 174 USG
CSS range	19 mm - 51mm / 3/4"- 2"	Hyd tank capacity	660 litres / 174 USG
Std chamber kit	Coarse		
Std bush settings	16, 20, 25*, 30 / 5/8, 3/4, 1*, 1 1/4		
Drive	PT Tech 12" Wet Clutch		
Drive belts	8 off SPC Single belts		
Crusher weight	12,000 kg / 26,455 lbs		
Main conveyor		Transport dimensions	
Belt width	800 mm / 31 1/2"	Length	14.56 m / 47' 9 1/4"
Belt length (endless)	21,000 mm / 68' 11"	Width	2.8 m / 9' 2 1/4"
Discharge height	3444 mm / 11' 3 5/8"	Height	3.8 m / 12' 5 1/2"
Raise / lower	Yes - Hydraulic		
Head drum diameter	282 mm / 11"		
Tail drum diameter	270 mm / 10 1/2"		
Drive	Hyd Motor		
Motor CC	624 cc / 38.1 cu inch		
Lubrication tank		Operating dimensions	
Capacity	250 litres / 66 USG	Length	13.50 m / 44' 3 1/2"
Fixed displacement flow meter	Yes	Width	3.14 m / 10' 3 1/2"
Hyd driven oil cooler	Yes	Height	4.77 m / 15' 7 3/4"
		Standard weight	36,000 kg / 79,366 lbs
		Performance	
		Maximum feed size	360 mm / 14 1/8"
		Capacity (up to)	344 tph / 379 stph
		Travel speed	0-1 kph / 0-0.62 mph
		Max incline / Side to side	16° / 10°
		Note. All weights and dimensions are for standard units only	

OPTIONS

Medium coarse and extra coarse chamber kit
 Wear resistant hopper liner plates back and sides
 Hydraulic folding hopper extensions for rear loading
 Central autolube (all bearings)
 Arctic package -20°C (-4°F) (32 grade hydraulic oil, engine oil and 100 grade lubrication oil)
 Arctic package -30°C (-22°F) (Arctic hydraulic oil, engine oil, 100 grade lubrication oil and webasto coolant heater)
 Tropical package (220 grade lubrication oil for +30°C ambient)
 Main conveyor level sensor (stockpile monitor)
 Lighting mast and cabinet lights
 Remote diesel pump (electric)
 Pull stop cords on the main conveyor

Water pump (hydraulic)
 Overband magnet
 Engine filter kit 250 - hours (for 3A engines only)
 Plant and engine filter kit - 500 hours
 Intelligent line multi-Machine Communication
 Head drum guard on the main conveyor only
 Main conveyor underguards, head drum guard and additional side and rear guards (blue chip guarding)
 Tool box and contents
 Radio remote control
 1.75 m extended main conveyor

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QS441 WITH CS440 CONE CRUSHER

Our QS441 is a tracked, self contained cone crusher with an on board diesel engine. Featuring the world leading CS440 Sandvik cone crusher the QS441 is capable of accepting large feed sizes and achieving exceptional throughput combined with high product quality.

It is equipped with a hydroset system which provides both safety and setting adjustment functions. The automatic setting regulation system not only optimizes production, it also keeps track of liner wear, thus making it easy to plan liner changes and minimize interruptions in production. The QS441 represents the perfect combination of advanced cone crusher technology and tracked mobility.

KEY BENEFITS

- The chassis is constructed from heavy duty 'I' beam to ensure maximum durability
- The machine is designed for ease of mobility, for rapid set up time and transportation
- Heavy duty, hydraulically positioned feed conveyor with wear resistant liners
- Up and over metal detector to provide ultimate cone protection from tramp metal
- Automated variable speed feed conveyor via a level sensor to ensure maximum production and reduction of the material
- Hydraulically driven, variable speed cooling fan for maximum efficiency and auto reverse facility to back flush dust from the radiator
- Direct drive through a PT Tech wet clutch with ten SPC drive belts to ensure maximum fuel efficiency and power delivery
- Fitted with four jacking legs to provide a level operating platform and stability
- The CS440 cone has choice of three concaves and four eccentric settings from a single bush ranging from 20 mm to 36 mm
- The concave and bush settings give unrivalled flexibility regarding CSS ranges, production and material gradation
- Maximum feed size up to 450 mm and capable of up to 600 tph on the larger bush setting
- Superb access around the crusher for easy maintenance, especially during liner changes
- Remote camera viewing the crushing chamber enables the operator to set up and ensure a choke feed on the crusher from ground level
- Hydraulic driven hydraulic and lubrication coolers to deal with the most arduous conditions
- Can operate in the most hostile environments with a 50°C ambient capability



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QS441 WITH CONE CRUSHER CS440 – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Main conveyor	
Nominal capacity	6.3 m ³ / 8.25 yds ³	Belt width	1200 mm / 47"
Nominal capacity with extensions	10.2 m ³ / 13.3 yds ³	Belt length	21,600 mm / 70' 10"
Rear loading height	3547 mm / 11' 7 1/2"	Discharge height	3739 mm / 12' 3 1/4"
With rear door lowered	3162 mm / 10' 4 1/2"	Head drum diameter	371 mm / 14 1/2"
With extensions	3969 mm / 13' 0 1/2"	Tail drum diameter	265 mm / 10 1/2"
Rear loading width	2630 mm / 8' 7 1/2"	Drive	Hydraulic
Rear loading width with extensions	3822 mm / 12' 6 1/2"	Motor	624 cc / 38.1 cu inch
Feed conveyor		Power pack	
Hopper thickness	10 mm / 3/8"	Engine	Stage 3A / Tier 3 CAT C13 Acert /
Wear resistant hopper liners	10 mm / 3/8"	Engine power	Stage 3B / Tier 4i CAT C13 Acert
Belt width	1200 mm / 47"	Diesel tank capacity	Stage 4 / Tier 4 Final CAT C13
Belt length	13,150 mm / 43' 2"	Hyd tank capacity	Acert
Incline angle	22°		328 kW / 440 hp
Drive	Hydraulic variable speed		990 litres / 262 USG
Gearbox	31:1		990 litres / 262 USG
Torque	8000 Nm / 5900 lbs / ft		
Head drum diameter	371 mm / 14 1/2"		
Tail drum diameter	265 mm / 10 1/2"		
Motor	82.6 cc / 5.04 cu inch		
Metal detector type	Bridge coil		
Crusher		Transport dimensions	
Cone	Sandvik CS440	Length	17.47 m / 57' 4"
Speed	289 rpm to 305 rpm	Width	2.95 m / 9' 8 1/2"
Feed opening	up to 450 mm / 17 3/4"	Height	4.0 m / 13' 1 1/2"
CSS range	25 mm - 51mm / 1" - 2"		
Std chamber kit	Medium coarse		
Std bush settings	20, 25, 30*, 36 / 3/4, 1, 1 1/4*, 1 1/2		
Drive	PT Tech 14" wet Clutch with		
Drive belts	PTO		
Crusher weight	10 off SPC Single belts		
	19,300 kg / 42,549 lbs		
Lubrication tank		Operating dimensions	
Capacity	250 litres / 66 USG	Length	16.78 m / 55' 1/2"
Fixed displacement flow meter	Yes	Width	3.32 m / 10' 10 1/2"
Hyd driven oil cooler	Yes	Height	5.05 m / 16' 7"
		Standard weight	55,753 kg / 122,914 lbs
Tracks		Performance	
Length (centres)	3715 mm / 12' 2"	Maximum feed size	450 mm / 17 3/4"
Width (shoe)	500 mm / 19 3/4"	Capacity (up to)	600 tph / 661 stph
Drive	Hydraulic / Gearbox	Travel speed	0 - 1.3 km/h / 0 - 0.8 mph
Control	Radio / Umbilical	Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

Coarse and extra coarse chamber kit
 Hydraulic folding hopper extensions for rear loading
 Central autolube (all bearings)
 Arctic package -20°C (-4°F) (32 grade hydraulic oil, engine oil and 100 grade lubrication oil)
 Arctic package -30°C (-22°F) (Arctic hydraulic oil, engine oil, 100 grade lubrication oil and webasto coolant heater)
 Tropical package (220 grade lubrication oil for + 30°C ambient)
 Main conveyor level sensor (stockpile monitor)
 Lighting mast and cabinet lights
 Tool box and contents
 Remote diesel pump (electric)

Pull stop cords on the main conveyor
 Water pump (hydraulic)
 Overband magnet
 Engine filter kit 250 - hours (for 3A engines only)
 Plant and engine filter kit - 500 hours
 Intelligent line multi - machine communication
 Head drum guard on the main conveyor only
 Main conveyor underguards, head drum guard and additional side and rear guards (blue chip guarding)
 Radio remote control

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QH331 WITH CH430 CONE CRUSHER

Our QH331 mobile cone crusher has been designed to meet the most exacting aggregate product quality demands through the use of the Sandvik CH430 cone crusher on a tracked chassis. Through this cone the QH331 is able to take advantage of the Sandvik developed CSC (cubical shape crushing) techniques, producing material of excellent shape and high quality.

The CH430 cone is at the heart of the QH331; this world leading piece of crushing technology is equipped with a hydroset system which provides both safety and setting adjustment functions. The automatic setting regulation system not only optimizes production, it also keeps track of liner wear, thus making it easy to plan liner changes and minimize interruptions in production.

KEY BENEFITS

- Direct drive through a PT Tech wet clutch with eight SPC drive belts to ensure maximum fuel efficiency and power delivery
- Greatly improved efficiency and power transfer resulting in tighter close side settings, and larger bush variations for precision crushing
- Superb access around the crusher for easy maintenance, especially during liner changes
- The diesel and hydraulic tank are easily accessible from the front platform on the machine with inspection covers
- Steel pipe work used extensively for superior heat dissipation, and a maintenance free sealing solution
- For enhanced control and efficiency engine data outputs may be viewed via the colour PLC screen
- Hydraulically driven cooling fan allows speed control producing increased efficiency, and auto reverse facility to periodically back flush any dust build up in the radiator
- Hydroset facility incorporated into the plant hydraulic system for increased reliability and response time and reduced service requirements.
- Bridge Coil (up and over) metal detector fitted to the feed conveyor allowing improved stability and controlled detection.
- The lubrication tank has internal coupling drives, gear wheel flow meter and internal lubrication heater, and Bowman heater for rapid cold start up times.
- Remote camera viewing the crushing chamber enables the operator to ensure a choke feed without the need to access the machine.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QH331 WITH CONE CRUSHER CH430 – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Main conveyor	
Nominal capacity	5 m ³ / 6.5 yds ³	Belt width	1000 mm / 39 1/2"
Nominal capacity with extensions	6.5 m ³ / 8.5 yds ³	Belt length	17,400 mm / 57' 1"
Rear loading height	3055 mm / 10' 1/4"	Discharge height	3065 mm / 10' 3/4"
Rear loading height with extensions	3415 mm / 11' 2 1/2"	Head drum diameter	289 mm / 11 1/2"
Rear loading width	2305 mm / 7' 6 3/4"	Tail drum diameter	273 mm / 11"
Rear loading width with extensions	3600 mm / 11' 9 3/4"	Drive	Hydraulic
Feed conveyor		Motor cc	490 cc / 29.9 cu inch
Hopper thickness	10 mm / 3/8"	Power pack	
Wear resistant hopper liners	Option	Engine	Stage 3A / Tier 3 CAT C9 Acert / Stage 3B / Tier 4i CAT C9.3 Acert / Stage 4 / Tier 4 Final Cat 9.3 Acert
Belt width	1000 mm / 39 1/2"	Engine power	261 kW / 350 hp
Belt length	11,845 mm / 38' 10"	Diesel tank capacity	660 litres / 174 USG
Incline angle	20°	Hyd tank capacity	660 litres / 174 USG
Drive	Hydraulic variable speed		
Gearbox	22.2:1		
Torque	8850 Nm / 6527 lbs / ft		
Head drum diameter	340 mm / 13 3/8"		
Tail drum diameter	324 mm / 12 3/4"		
Motor	130.6 cc / 7.97 cu inch		
Metal detector type	Bridge coil		
Crusher		Transport dimensions	
Cone	Sandvik CH430 crusher	Length	14.56 m / 47' 9 1/4"
Speed	369 rpm to 390 rpm	Width	2.80 m / 9' 2 1/4"
Feed opening	185 mm / 7 1/4"	Height	3.40 m / 11' 1 3/4"
CSS range	6 - 41 mm / 1/4" - 1 5/8"		
Std chamber kit	EC		
Chamber options	F-MF-M-MC-C		
Std bush settings	22, 25*, 29 mm / 7/8, 1", 1 1/8"		
Drive	PT Tech 12" wet Clutch with PTO		
Drive belts	8 SPC Single Belts		
Crusher weight	8800 kg / 19,400 lbs		
Lubrication tank		Operating dimensions	
Capacity	250 litres / 66 USG	Length	13.50 m / 44' 3 1/2"
Fixed displacement flow meter	Yes	Width	3.14 m / 10' 3 1/2"
Hyd driven oil cooler	Yes	Height	4.38 m / 14' 4 1/4"
		Standard weight	32,800 kg / 72,312 lbs
Tracks		Performance	
Length (centres)	3800 mm / 12' 5 5/8"	Maximum feed size	185 mm / 7 1/4"
Width (shoe)	500 mm / 19 3/4"	Capacity (up to)	220 tph / 242 stph
Drive	Hydraulic / Gearbox	Travel speed	0 - 1 kph / 0 - 0.62 mph
Control	Radio / Umbilical	Max incline / Side to side	16° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

C chamber kit
 MC chamber kit
 M chamber kit
 MF chamber kit
 F chamber kit
 Wear resistant hopper liner plates back and sides
 Hydraulic folding hopper extensions for rear loading
 Pull stop cords on the main conveyor
 Overband magnet (not available with HS option)
 Central auto lube (all bearings)
 Water pump (hydraulic)
 Remote diesel pump (electric)
 Lighting mast and cabinet lights
 Main conveyor level sensor (stockpile monitor)
 Tropical package (220 grade lubrication oil) for +30°C ambient
 Arctic package -20°C (-4°F) (32 Grade hydraulic oil, engine oil and 100 Grade lubrication oil)

Arctic package -30°C (-22°F) (arctic hydraulic oil, engine oil, 100 Grade lubrication oil and webasto coolant heater)
 Engine filter kit - 250 hours (fuel, air and oil filter - for 3A engines only)
 Plant and engine filter kit - 500 hours
 Intelligent line multi-machine communication
 Tool box and contents
 Head drum guard on the main conveyor only (not available with HS option)
 Main conveyor underguards, head drum guard and additional side and rear guards (blue chip guarding) (not available with HS option)
 Radio remote control
 1.75 m extended main conveyor

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QH441 WITH CH440 CONE CRUSHER

Our QH441 features the world-leading CH440 Sandvik Hydrocone of which there are thousands of installed units worldwide. Designed for minimal operator intervention, the QH441 utilizes latest technology to ensure uninterrupted productivity. Although specifically aimed at the large operator, the QH441 is engineered for ease of mobility, with a rapid set-up time.

The cone comes with a wide choice of concaves and eccentric bush settings offering customers ultimate flexibility and making the Sandvik cone crusher one of the most versatile tracked cones on the market.

KEY BENEFITS

- The chassis is constructed from a heavy duty 'I' beam to ensure maximum durability
- Heavy duty, hydraulically positioned feed conveyor with wear resistant liners
- Up and over metal detector to provide ultimate cone protection from tramp material
- Automated variable speed feed conveyor to ensure maximum production, reduction and shape
- Remote camera viewing the crushing chamber ensures full visibility without the need to access the machine
- 13 litre diesel engine with direct drive to ensure maximum power delivery and fuel efficiency
- The machine is designed for ease of mobility, for rapid set up time and transportation.
- The QH441 is fitted with the CH440 Sandvik cone which has a choice of six concaves and a CSS range of 8 mm to 48 mm allowing a feed size of up to 215 mm
- Capable of up to 388 TPH
- 8 available bush settings to give an eccentric throw range from 16 mm to 44 mm.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability with just a lubrication oil change
- This flexibility makes the Sandvik cone crusher one of the most versatile tracked machines on the market to suit the most arduous application requirements



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

CONE CRUSHERS - 2016-01-01

QH441 WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Main conveyor	
Nominal capacity	6.3 m³ / 8.25 yds³	Belt width	1200 mm / 47"
Nominal capacity with extensions	10.2 m³ / 13.3 yds³	Belt length	21600 mm / 70' 10"
Rear loading height	3490 mm / 11' 5 ½"	Discharge height	3739 mm / 12' 3 ¼"
Rear loading height (door lowered)	3090 mm / 10' 1 ½"	Head drum diameter	371 mm / 14 ½"
Rear loading height with extensions	3884 mm / 12' 9"	Tail drum diameter	265 mm / 10 ½"
Rear loading width	2630 mm / 8' 7 ½"	Drive	Hydraulic
Rear loading width with extensions	3822 mm / 12' 6 ½"	Motor cc	624 cc / 38.1 cu inch
Feed conveyor		Power pack	
Hopper thickness	10 mm / ¾"	Engine	Stage 3A / Tier 3 CAT C13 Acert / Stage 3B / Tier 4i CAT C13 Acert / Stage 4 / Tier 4 Final CAT C13 Acert
Wear resistant hopper liners	10 mm / ¾"	Engine power	328 kW / 440 hp
Belt width	1200 mm / 47"	Diesel tank capacity	990 litres / 262 USG
Belt length	13150 mm / 43' 2"	Hyd tank capacity	990 litres / 262 USG
Incline angle	22°		
Drive	Hydraulic variable speed		
Gearbox	31:1		
Torque	8000 Nm / 5900 lbs / ft		
Head drum diameter	371 mm / 14 ½"		
Tail drum diameter	265 mm / 10 ½"		
Motor	82.6 cc / 5.04 cu inch		
Metal detector type	Bridge coil		
Crusher		Transport dimensions	
Cone	Sandvik CH440	Length	17.21 m / 56' 5 ⅝"
Speed	327 rpm to 346 rpm	Width	2.95 m / 9' 8 ½"
Feed opening	215 mm / 8 ½"	Height	3.8 m / 12' 5 ½"
CSS range	8 - 48 mm / 5/16" - 1 ⅞"		
Std chamber kit	EC		
Chamber options	F-MF-M-MC-C		
	32,36*,40,44 mm / 1¼, 1⅝*, 1½, 1¾"		
Std bush settings	PT Tech 14" Wet Clutch with		
Drive	PTO		
Drive belts	10 SPC Single Belts		
Crusher weight	14,300 kg / 31,526 lbs		
Lubrication tank		Operating dimensions	
Capacity	250 litres / 66 USG	Length	16.56 m / 54' 4"
Fixed displacement flow meter	Yes	Width	3.32 m / 10' 10 ½"
Hyd driven oil cooler	Yes	Height	4.91 m / 16' 1"
		Standard weight	50,488 kg / 111,307 lbs
Tracks		Performance	
Length (centres)	3715 mm / 12' 2"	Maximum feed size	215 mm / 8 ½"
Width (shoe)	500 mm / 19 ¾"	Capacity (up to)	388 tph / 435 stph
Drive	Hydraulic / Gearbox	Travel speed	0 - 1.3 km/h / 0 - 0.8 mph
Control	Radio / Umbilical	Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

C chamber kit
 MC chamber kit
 M chamber kit
 MF chamber kit
 F chamber kit
 Hydraulic folding hopper extensions for rear loading
 Central autolube (all bearings)
 Arctic package -20°C (-4°F) (32 Grade hydraulic oil, engine oil and 100 Grade lubrication oil)
 Arctic package -30°C (-22°F) (arctic hydraulic oil, engine oil, 100 Grade lubrication oil and webasto coolant heater)
 Tropical package (220 grade lubrication oil) for +30°C ambient
 Main conveyor level sensor (stockpile monitor)
 Lighting mast and cabinet lights
 Remote diesel pump (electric)

Pull stop cords on the main conveyor
 Water pump (hydraulic)
 Overband magnet (not available with HS option)
 Engine filter kit - 250 hours (air and oil filters - for 3A engines only)
 Plant and engine filter kit - 500 hours
 Intelligent line multi-machine communication
 Tool box and contents
 Head drum guard on the main conveyor only (not available with HS option)
 Main conveyor underguards, head drum guard and additional side and rear guards (blue chip guarding) (not available with HS option)
 Radio remote control

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 WITH CI411 HSI IMPACT CRUSHER

Built utilising Sandvik's market leading Prisec™ technology, our QI341 is the most versatile, compact mobile impactor in the market today. Capable of operating in primary and secondary applications, it has been designed with productivity, mobility, minimal environmental impact and user friendliness at its core.

The QI341 is available with an optional hanging screen system, which will allow customers an even greater return on investment through the facility to produce accurately sized products for immediate use.

KEY BENEFITS

- The Sandvik Prisec™ impactor is the most flexible impactor currently available on the market designed to meet tight end product specifications.
- The machine is fitted with a pre-screen to ensure maximum scalping capability in order to prevent any undersize material passing through the impactor, thereby maximising throughput and reducing wear costs. This also allows a specified sized product to be produced from the natural fines conveyor.
- The QI341 is fitted with an underpan feeder which drastically reduces any spillage issues generally associated with impact crushers. The underpan feeder eliminates the need for skirt rubbers that are normally situated in the severe impact zone of a feed boot.
- The underpan feeder also protects the conveyor belt from high velocity material from the rotor. This material is contained on the wear resistant underpan feeder liners and gently delivered onto the conveyor belt.
- Two hydraulically adjustable apron curtains can be positioned to facilitate the machine's operation as a Primary impactor, however they can also be repositioned to operate as a Secondary impactor to produce much smaller end products.
- All of the above combined with the variable engine speed which gives a tip speed range of 30 m/s to 37 m/s resulting in a wide range product gradations being achievable.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 WITH CI411 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Power pack	
Width	1800 mm / 5' 11"	Engine	Stage 3A / Tier 3 CAT C9 Acert / Stage 3B / Tier 4i CAT C9.3 Acert / Stage 4 / Tier 4 Final CAT C9.3 Acert
Length	3660 mm / 12' 0"	Engine Power	261 kW / 350 hp
Capacity (heaped)	3.6 m³ / 4.7 yd³	Diesel tank size	660 litres / 174 USG
		Hydraulic tank size	660 litres / 174 USG
Primary Feeder		Magnet	
Wear resistant lined feeder	910 mm x 2330 mm / 3' x 7' 8"	Model	Eriez CP20/80-SC2
Hydraulic drive variable speed	550 rpm to 1000 rpm	Weight	800 kg / 1764 lbs
Twin eccentric shaft	Oil lubrication	Belt width	750 mm / 29 ½"
Amplitude	Nominal 10 mm / ¾"	Length	2450 mm / 8'
		Type	Self cleaning suspended
Pre screen		Twin pole high power magnet (option)	
Type	2 bearing, high amplitude screen	Model	Eriez TP20/100-SC2
Top deck	2 screening decks	Belt width	750 mm / 29 ½"
Bottom deck mesh	1520 mm x 980 mm / 5' 0" x 3' 2 ½"	Height from belt	Adjustable
	1020 mm x 980 mm / 3' 4" x 3' 2 ½"	Type	Self cleaning
Amplitude	10 mm / ¾"	Weight	1434 kg / 3162 lbs
Speed	990 rpm		
Punch plate	40 mm / 1 ½"		
Underscreen mesh	20 mm / ¾"		
Impactor		Natural fines conveyor (option)	
Sandvik CI411 Prisec™			
Impactor	992 mm x 670 mm / 39" x 26 ½"		
Feed opening	992 mm x 830 mm / 39" x 32 ½"	Belt width	650 mm / 25 ½"
Hydraulic inlet opening	1005 mm / 39 ½"	Belt length (endless)	9720 mm / 31' 11"
4 Bar rotor	573 - 707 rpm	Discharge height	2630 mm / 8' 8"
Rotor speed (variable)	30 - 37 m/s / 98 - 121 ft/s	Hydraulic drive	400 cc / 24.4 cu inch
Tip speed (variable)	Hydraulic assist		
2 aprons	950 mm / 37 ½"		
Rotor width			
Main conveyor		Operating dimensions	
Belt width	1000 mm / 39 ½"	Length	14.72 m / 48' 3"
Belt length (endless)	18940 mm / 62' 2"	Width	2.91 m / 9' 7"
Discharge height	3762 mm / 12' 4"	Height	3.93 m / 12' 11"
Hydraulic drive	630 cc / 38.5 cu inch		
Underpan feeder		Transport dimensions	
Type	Spring mounted stepped vibrating feeder	Length	14.08 m / 46' 2"
Width	830 mm / 32 ½"	Width	2.50 m / 8' 2"
Length	2040 mm / 6' 8"	Height	3.40 m / 11' 2"
Hydraulic drive	2 x 32.9 cc / 2 x 2.0 cu inch	Weight	37,200 kg / 82,012 lbs
Feeder liner	Wear resistant steel		
Amplitude	9 mm / ⅜"		
Speed	960 rpm		
Tracks		Performance	
Length (centres)	3800 mm / 12' 6"	Max feed size	650 mm / 25 ½"
Width (shoe)	400 mm / 15 ¾"	Capacity (up to)	300 tph / 330 stph
Drive	Hydraulic motors / Gearbox	Travel speed	1.1 km/h / 0.68 mph
Control	Radio / Umbilical	Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 WITH CI411 HSI IMPACT CRUSHER – TECHNICAL DATA

OPTIONS

Hopper extensions for rear loading
Hopper extensions for rear loading with wear resistant liners
Hopper extensions for rear loading with rubber liners
Hopper wear resistant liner plates back and sides
Hopper high impact Sandvik rubber liners back and sides
Pre screen grizzly spacing option
Pre screen top deck punch plate - 60, 80, 100 mm
Pre screen open aperture bottom rubber to feed natural fines conveyor (high fines / sticky applications)
Mesh underscreen 30, 40, 50 mm
Central auto lube (crusher)
Central auto lube (conveyors)
Water pump (Hydraulic)
Arctic package - 20°C (-4°F) (32 grade hyd oil & engine oil)
Arctic package -30°C (-22°F) (arctic hyd oil, engine oil, webasto coolant heater)

Hanging screen system
Lighting mast and cabinet lights
Remote diesel pump (electric)
Pull stop cords on natural fines and main conveyor
Engine filter kit - 250 hours (air and oil filters - for 3A engines only)
Plant and engine filter kit - 500 hours
Intelligent line multi-machine communication
Main conveyor level sensor (stockpile monitor)
Natural fines conveyor
Jacking legs
Radio remote control
Heavy duty twin pole magnet
No overband magnet

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 HS WITH CI411 HSI IMPACT CRUSHER

Built utilising Sandvik's market leading Prisec™ technology, our QI341HS is the most versatile, compact mobile impactor in the market today. Capable of operating in primary and secondary applications, it has been designed with productivity, mobility, minimal environmental impact and user friendliness at its core.

The QI341HS is available with an optional hanging screen system, which will allow customers an even greater return on investment through the facility to produce accurately sized products for immediate use.

KEY BENEFITS

- The Sandvik Prisec™ impactor is the most flexible impactor currently available on the market designed to meet tight end product specifications.
- The machine is fitted with a pre-screen to ensure maximum scalping capability in order to prevent any undersize material passing through the impactor, thereby maximising throughput and reducing wear costs. This also allows a specified sized product to be produced from the natural fines conveyor.
- The QI341HS is fitted with an underpan feeder which drastically reduces any spillage issues generally associated with impact crushers. The underpan feeder eliminates the need for skirt rubbers that are normally situated in the severe impact zone of a feed boot.
- The underpan feeder also protects the conveyor belt from high velocity material from the rotor. This material is contained on the wear resistant underpan feeder liners and gently delivered onto the conveyor belt.
- Two hydraulically adjustable apron curtains can be positioned to facilitate the machine's operation as a Primary impactor, however they can also be repositioned to operate as a Secondary impactor to produce much smaller end products.
- All of the above combined with the variable engine speed which gives a tip speed range of 30 m/s to 37 m/s resulting in a wide range product gradations being achievable.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 HS WITH CI411 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Transfer conveyor(s)	
Width	1800 mm / 5' 11"	Belt width	500 mm / 19 3/4"
Length	3660 mm / 12' 0"	Belt length	5000 mm / 16' 5"
Capacity (heaped)	3.6 m³ / 4.7 yd³	Drive	Hyd
		Motor CC	315 cc / 19.2 cu inch
Primary Feeder		Recirculating conveyor	
Wear resistant lined feeder	910 mm x 2330 mm / 3' x 7' 8"	Belt width	500 mm (CH) / 19 3/4"
Hydraulic drive variable speed	550 rpm to 1000 rpm	Discharge height	4580 mm / 15'
Twin eccentric shaft	Oil lubrication	Belt length	18,050 mm / 59' 3"
Amplitude	Nominal 10 mm / 3/8"	Drive	Hyd
		Motor CC	500 cc / 30.5 cu inch
		Weight	1125 kg / 2480 lbs
Pre screen		Power pack	
Type	2 Bearing, high amplitude screen		
Top deck	2 screening decks		
Bottom deck mesh	1520 mm x 980 mm / 5' 0" x 3' 2 1/2"	Engine	Stage 3A / Tier 3 CAT C9 Acert /
	1020 mm x 980 mm / 3' 4" x 3' 2 1/2"	Engine power	Stage 3B / Tier 4i CAT C9.3 Acert
Amplitude	10 mm / 3/8"	Diesel tank size	/ Stage 4 / Tier 4 Final CAT C9.3 Acert
Speed	990 rpm	Hydraulic tank size	261 kW / 350 hp
Punch plate	40 mm / 1 1/2"		660 litres / 174 USG
Underscreen mesh	20 mm / 3/4"		660 litres / 174 USG
Impactor		Tracks	
Sandvik CI411 Prisec™ Impactor		Length (centres)	3800 mm / 12' 6"
Feed opening		Width (shoe)	400 mm / 15 3/4"
Hydraulic inlet opening	992 mm x 670 mm / 39" x 26 1/2"	Drive	Hydraulic motors / Gearbox
4 Bar rotor	992 mm x 830 mm / 39" x 32 1/2"	Control	Radio / Umbilical
Rotor speed (variable)	1005 mm / 39 1/2"		
Tip speed (variable)	573 - 707 rpm		
2 aprons	30 - 37 m/s / 98 - 121 ft/s		
Rotor width	Hydraulic assist		
	950 mm / 37 1/2"		
Main conveyor		Magnet	
Belt width	1000 mm / 39 1/2"	Model	Eriez CP20/80-SC2
Belt length (endless)	18940 mm / 62' 2"	Weight	800 kg / 1764 lbs
Discharge height	3762 mm / 12' 4"	Belt width	750 mm / 29 1/2"
Hydraulic drive	630 cc / 38.5 cu inch	Length	2450 mm / 8'
		Type	Self cleaning suspended
Underpan feeder		HS Operating dimensions	
Type	Spring mounted stepped vibrating feeder	Length HS	17.76 m / 58' 3"
Width	830 mm / 32 1/2"	Width HS	3.41 m / 11' 2"
Length	2040 mm / 6' 8"	Width HS (stockpile + NF conveyor)	10.55 m / 34' 7"
Hydraulic drive	2 x 32.9cc / 2 x 2.0 cu inch	Operation height HS	4.58 m / 15'
Feeder liner	Wear resistant steel		
Amplitude	9 mm / 3/8"		
Speed	960 rpm		
Screen box		HS Transport dimensions	
Type	2 Bearing, single deck screen box	Length HS	17.02 m / 55' 9"
Top deck (Screen box 1)	3962 x 1525 mm / 13' x 5'	Width (without stockpile conveyor)	3.0 m / 9' 10"
		Height HS	3.52 m / 11' 6"
		Weight HS	44,978 kg / 99,160 lbs
Fines Conveyor			
Belt width	1200 mm / 47 1/4"		
Discharge height	3460 mm / 11' 4"		
Belt length	12800 mm / 42' 0"		
Drive	Hyd		
Motor CC	800 cc / 48.8 cu inch		

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI341 HS WITH CI411 HSI IMPACT CRUSHER – TECHNICAL DATA

OPTIONS

Hopper extensions for rear loading	Hanging screen system
Hopper extensions for rear loading with wear resistant liners	Lighting mast and cabinet lights
Hopper extensions for rear loading with rubber liners	Remote diesel pump (electric)
Hopper wear resistant liner plates back and sides	Pull stop cords on natural fines and main conveyor
Hopper high impact Sandvik rubber liners back and sides	Engine filter kit - 250 hours (air and oil filters - for 3A engines only)
Pre screen grizzly spacing option	Plant and engine filter kit - 500 hours
Pre screen top deck punch plate - 60, 80, 100 mm	Intelligent line multi-machine communication
Pre screen open aperture bottom rubber to feed natural fines conveyor (high fines / sticky applications)	Main conveyor level sensor (stockpile monitor)
Mesh underscreen 30, 40, 50 mm	Natural fines conveyor
Central auto lube (crusher)	Jacking legs
Central auto lube (conveyors)	Radio remote control
Water pump (Hydraulic)	Heavy duty twin pole magnet
Arctic package - 20°C (-4°F) (32 grade hyd oil & engine oil)	No overband magnet
Arctic package -30°C (-22°F) (arctic hyd oil, engine oil, webasto coolant heater)	

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 WITH CI421 HSI IMPACT CRUSHER

Our QI441 is a heavy duty, tracked, self propelled impact crusher which features the unique Sandvik CI421 Prisec™ impact chamber, offering customers unparalleled flexibility through the ability to work in both primary and secondary applications.

It is available with an optional double deck hanging screen system, which will allow customers an even greater return on investment through the facility to produce accurately sized products for immediate use.

KEY BENEFITS

- The Sandvik Prisec™ impactor is the most flexible impactor currently available on the market designed to meet end product specifications.
- The machine is fitted with a pre-screen to ensure maximum scalping capability in order to prevent any undersize material passing through the impactor, thereby maximising throughput and reducing wear costs. This also allows a specified sized product to be produced from the natural fines conveyor.
- The pre-screen has a choice of grizzly or punch plate top deck and mesh bottom deck, providing the flexibility to suit any application.
- The QI441 is fitted with an underpan feeder which drastically reduces any spillage issues generally associated with impact crushers. The underpan feeder eliminates the need for skirt rubbers that are normally situated in the severe impact zone of a feed boot.
- The underpan feeder also protects the conveyor belt from high velocity material from the rotor. This material is contained on the wear resistant underpan feeder liners and gently delivered onto the conveyor belt.
- Two hydraulically adjustable apron curtains can be positioned to produce a wide range of material, product sizes and specifications.
- The above combined with the variable engine speed gives a tip speed range of 30 m/s to 37 m/s resulting in a wide range of product gradations being achievable.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Power pack	
Width	2540 mm / 8' 4"	Engine	Stage 3A / Tier 3 CAT C13 Acert / Stage 3B / Tier 4i CAT C13 Acert / Stage 4 / Tier 4 Final CAT C13 Acert
Length	4290 mm / 14' 1"	Engine power	328 kW / 440 hp
Capacity (heaped)	6 m ³ / 7.85 yd ³	Drive type	Direct / Hydraulic
		Fuel tank	660 litres / 174 USG
		Hydraulic tank	660 litres / 174 USG
Primary Feeder		Tracks	
Wear resistant lined feeder	1278 mm x 2365 mm / 4' 2" x 7' 9"	Length (centres)	3715 mm / 12' 2"
Speed	550 rpm to 1000 rpm	Width (shoe)	500 mm / 19 3/4"
		Drive	Hydraulic motors / Gearbox
		Control	Radio / Umbilical
Pre screen		Natural fines conveyor (option)	
Hardox top deck grizzly / punch plate	1360 mm x 2160 mm / 4' 6" x 7' 1"	Belt width	650 mm / 25 1/2"
Bottom deck mesh	1360 mm x 1730 mm / 4' 6" x 5' 8"	Belt length (endless)	12,063 mm / 39' 7"
Punch Plate	40 mm / 1 1/2"	Discharge height	3084 mm / 10' 1"
Underscreen mesh	20 mm / 3/4"	Hydraulic drive	400 cc / 24.4 cu inch
Impactor		Twin pole high power magnet (option)	
Sandvik CI421 Prisec™ Impactor		Model	Eriez TP20/100-SC2
Feed opening	1360 mm x 800 mm / 54" x 31 1/2"	Belt width	750 mm / 29 1/2"
Hydraulic inlet opening	1360 mm x 1000 mm / 54" x 39 1/2"	Height from belt	Adjustable
4 Bar rotor	1150 mm / 45 1/4" diameter	Type	Self cleaning
Speed	502 rpm to 620 rpm	Weight	1434 kg / 3162 lbs
Peripheral velocity	34 - 42 m/s / 108 - 138 ft/s		
2 aprons	Hydraulic assist		
Maximum feed size	800 mm / 31 1/2"		
Main conveyor		Operating dimensions	
Belt width	1200 mm / 47 1/4"	Length	16.57 m / 54' 4"
Belt length (endless)	20,700 mm / 67' 11"	Width	3.53 m / 11' 0"
Discharge height	4074 mm / 13' 4"	Height	4.32 m / 14' 2"
Hydraulic drive	Twin 500 cc / 30.5 cu inch x 2		
Underpan feeder		Transport dimensions	
Type	Spring mounted stepped vibrating feeder	Length	15.67 m / 51' 5"
Width	1022 mm / 40 1/4"	Width	3.00 m / 9' 10"
Length	2400 mm / 94 1/2"	Height	3.60 m / 11' 10"
Pan feeder amplitude	9 mm / 3/8"	Weight	49,205 kg / 108,478 lbs
Magnet		Performance	
Model	Eriez CP20/100-SC2	Max feed size	800 mm / 31 1/2"
Weight	998 kg / 2200 lbs	Capacity (up to)	500 tph / 551 stph
Type	Self cleaning suspended	Travel speed	1.4 km/h / 0.87 mph
		Max incline / Side to side	20° / 10°
		Note: All weights and dimensions are for standard units only	

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

OPTIONS

Hopper extensions for rear loading
Hopper extensions for rear loading with wear resistant liners
Hopper extensions for rear loading with rubber liners
Hopper wear resistant liner plates back and sides
Hopper high impact Sandvik rubber liners back and sides
Pre screen grizzly spacing option
Pre screen top deck punch plate - 30, 60, 80, 100 mm
Pre screen open aperture bottom rubber to feed natural fines conveyor (high fines / sticky applications)
Pre screen blanking deck
Mesh underscreen - 30, 40, 50 mm
Central auto lube (crusher)
Central auto lube (conveyors)
Water pump (Hydraulic)

Arctic package -20°C (-4°F) (32 grade hyd oil and engine oil)
Arctic package -30°C (-22°F) (arctic hyd oil, engine oil, lubrication oil and webasto coolant heater)
Lighting mast and cabinet lights
Remote diesel pump (electric)
Double deck hanging screen system
Pull stop cords for natural fines and main conveyor
Engine filter kit - 250 hours (air and oil filters - for 3A engines only)
Plant and engine filter kit - 500 hours
Intelligent line multi-machine communication
Main conveyor level sensor (stockpile monitor)
Natural fines conveyor
Radio remote control
Jacking legs
Heavy duty twin pole magnet
No overband magnet

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 HS WITH CI421 HSI IMPACT CRUSHER

Our QI441HS is a heavy duty, tracked, self propelled impact crusher which features the unique Sandvik CI421 Prisec™ impact chamber, offering customers unparalleled flexibility through the ability to work in both primary and secondary applications.

It is available with an optional double deck hanging screen system, which will allow customers an even greater return on investment through the facility to produce accurately sized products for immediate use.

KEY BENEFITS

- The Sandvik Prisec™ impactor is the most flexible impactor currently available on the market designed to meet end product specifications.
- The machine is fitted with a pre-screen to ensure maximum scalping capability in order to prevent any undersize material passing through the impactor, thereby maximising throughput and reducing wear costs. This also allows a specified sized product to be produced from the natural fines conveyor.
- The pre-screen has a choice of grizzly or punch plate top deck and mesh bottom deck, providing the flexibility to suit any application.
- The QI441 is fitted with an underpan feeder which drastically reduces any spillage issues generally associated with impact crushers. The underpan feeder eliminates the need for skirt rubbers that are normally situated in the severe impact zone of a feed boot.
- The underpan feeder also protects the conveyor belt from high velocity material from the rotor. This material is contained on the wear resistant underpan feeder liners and gently delivered onto the conveyor belt.
- Two hydraulically adjustable apron curtains can be positioned to produce a wide range of material, product sizes and specifications.
- The above combined with the variable engine speed gives a tip speed range of 30 m/s to 37 m/s resulting in a wide range of product gradations being achievable.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 HS WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Fines Conveyor	
Hopper width	2530 mm / 8' 4"	Belt width	1200 mm / 47 1/4"
Length	4090 mm / 13' 5"	Belt length (endless)	12800 mm / 42'
Capacity (heaped)	6 m ³ / 7.85 yd ³	Discharge height	3639 mm / 11' 11"
Primary feeder		Hydraulic drive	
Wear resistant lined feeder	1278 mm x 2365 mm / 4' 2" x 7' 9"	Transfer Conveyors x 2	800 cc / 48.8 cu inch
Speed	550 - 960 rpm	Belt width	500 mm / 19 3/4"
Pre screen		Belt length (endless)	5000 mm / 16' 5"
Wear resistant top deck grizzly / punch plate	1360 mm x 2160 mm / 4' 6" x 7' 1"	Hydraulic drive	315 cc / 19.2 cu inch
Bottom deck mesh	1360 mm x 1730 mm / 4' 6" x 5' 8"	Re-circulating Conveyor	
Punch plate	40 mm / 1 1/2"	Belt width	500 mm / 19 3/4"
Underscreen mesh	20 mm / 3/4"	Belt length (endless)	19300 mm / 63' 4"
Impactor		Discharge height	5104 mm / 16' 9"
Sandvik CI421 Prisec TM impactor	1360 mm x 800 mm / 54" x 31 1/2"	Hydraulic drive	630 cc / 38.4 cu inch
Feed opening	1360 mm x 1000 mm / 54" x 39 1/2"	Stockpile Conveyor	
Hydraulic inlet opening	1150 mm / 45 1/4" diameter	Belt width	500 mm / 19 3/4"
4 Bar rotor	502 rpm to 620 rpm	Belt length (endless)	12,020 mm / 39' 5"
Speed	30 - 37 m/s / 98 - 121 ft/s	Discharge height	3221 mm / 10' 7"
Peripheral velocity	Hydraulic assist	Hydraulic drive	630 cc / 38.4 cu inch
2 aprons	800 mm / 31 1/2"	Power pack	
Maximum feed size		Engine	Stage 3A / Tier 3 CAT C13 Acert / Stage 3B / Tier 4i CAT C13 Acert / Stage 4 / Tier 4 Final CAT C13 Acert
Main conveyor		Engine power	328 kW / 440 Hp
Belt width	1200 mm / 47 1/4"	Drive Type	Direct / Hydraulic
Belt length (endless)	20,700 mm / 67' 11"	Fuel tank	660 litres / 174 USG
Discharge height	4074 mm / 13' 4"	Hydraulic tank	660 litres / 174 USG
Hydraulic drive	Twin 500 cc / 30.5 cu inch x 2	Underpan feeder	
Underpan feeder		Tracks	
Type	Spring mounted stepped vibrating feeder	Tracking speed	0 - 1.4 kph / 0.87 mph
Width	1022 mm / 40 1/4"	Shoe width	500 mm / 19 3/4"
Length	2400 mm / 94 1/2"	Drive	Hydraulic motors / Gearbox
Pan feeder amplitude	10 mm / 3/8"	Control	Radio / Umbilical
Magnet		Operating Dimensions	
Model	Eriez CP20/100-SC2	Length HS	19.45 m / 63' 10"
Weight	1295 kg / 2855 lbs	Width HS	8.10 m / 26' 7"
Type	Self cleaning suspended	Width HS (stockpile and natural fines conveyor)	11.15 m / 36' 7"
Double Screen		Height HS	5.35 m / 17' 6"
Double Screen		Transport Dimensions	
Screen box 1 top deck	1525 mm x 1525 mm / 5' x 5'	Length HS	18.52 m / 60' 9"
Screen box 1 bottom deck	1525 mm x 1525 mm / 5' x 5'	Width HS	3.60 m / 11' 10"
Screen box 2 top deck	2440 mm x 1525 mm / 8' x 5'	Width HS (without stockpile conveyor)	3.36 m / 11' 1"
Screen box 2 bottom deck	2440 mm x 1525 mm / 8' x 5'	Height HS	3.75 m / 12' 3"
		Weight HS	60,645 kg / 133,700 lbs

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01



QI441 HS WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

OPTIONS

- | | |
|--|---|
| Hopper extensions for rear loading | Arctic package -20°C (-4°F) (32 grade hyd oil and engine oil) |
| Hopper extensions for rear loading with wear resistant liners | Arctic package -30°C (-22°F) (arctic hyd oil, engine oil, lubrication oil and webasto coolant heater) |
| Hopper extensions for rear loading with rubber liners | Lighting mast and cabinet lights |
| Hopper wear resistant liner plates back and sides | Remote diesel pump (electric) |
| Hopper high impact Sandvik rubber liners back and sides | Double deck hanging screen system |
| Pre screen grizzly spacing option | Pull stop cords for natural fines and main conveyor |
| Pre screen top deck punch plate - 30, 60, 80, 100 mm | Engine filter kit - 250 hours (air and oil filters - for 3A engines only) |
| Pre screen open aperture bottom rubber to feed natural fines conveyor (high fines / sticky applications) | Plant and engine filter kit - 500 hours |
| Pre screen blanking deck | Intelligent line multi-machine communication |
| Mesh underscreen - 30, 40, 50 mm | Main conveyor level sensor (stockpile monitor) |
| Central auto lube (crusher) | Natural fines conveyor |
| Central auto lube (conveyors) | Radio remote control |
| Water pump (Hydraulic) | Jacking legs |
| | Heavy duty twin pole magnet |
| | No overband magnet |

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 SDHS WITH CI421 HSI IMPACT CRUSHER

Our QI441 SDHS is a heavy duty, tracked, self propelled impact crusher which features the unique Sandvik CI421 Prisec™ impact chamber, offering customers unparalleled flexibility through the ability to work in both primary and secondary applications.

Fitted with two bearing 13" x 5" single deck hanging screen system, which will allow customers an even greater return on investment through the facility to produce accurately sized products for immediate use.

KEY BENEFITS

- The Sandvik Prisec™ impactor is the most flexible impactor currently available on the market designed to meet end product specifications.
- The machine is fitted with a pre-screen to ensure maximum scalping capability in order to prevent any undersize material passing through the impactor, thereby maximising throughput and reducing wear costs. This also allows a specified sized product to be produced from the natural fines conveyor.
- The pre-screen has a choice of grizzly or punch plate top deck and mesh bottom deck, providing the flexibility to suit any application.
- The QI441 SDHS is fitted with an underpan feeder which drastically reduces any spillage issues generally associated with impact crushers. The underpan feeder eliminates the need for skirt rubbers that are normally situated in the severe impact zone of a feed boot.
- The underpan feeder also protects the conveyor belt from high velocity material from the rotor. This material is contained on the wear resistant underpan feeder liners and gently delivered onto the conveyor belt.
- Two hydraulically adjustable apron curtains can be positioned to produce a wide range of material, product sizes and specifications.
- The above combined with the variable engine speed gives a tip speed range of 34 m/s to 42 m/s resulting in a wide range of product gradations being achievable.
- Capable of operating in the most hostile environments with a 50°C ambient temperature capability without any oil changes.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 SDHS WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Fines Conveyor	
Length	4200 mm / 13' 9"	Belt width	1200 mm / 47 1/4"
Rear loading width	2530 mm / 8' 4"	Belt length (endless)	12,800 mm / 42'
Rear loading width with extensions	4090 mm / 13' 5"	Discharge height	3930 mm / 12' 11"
Nominal capacity	6.0 m³ / 7.85 yds³	Hydraulic drive	395 cc / 24 cu inch
Nominal capacity with extensions	10.2 m³ / 13.3 yds³		
Rear loading height std	3975 mm / 13' 1"		
Primary feeder		Transfer Conveyor	
Drive	Hydraulic variable speed	Belt width	500 mm / 19 3/4"
Motor	Twin 40 cc / 2.44 cu inch	Belt length (endless)	4630 mm / 15' 2"
Length	2405 mm / 8' 4"	Hydraulic drive	315 cc / 19.2 cu inch
Width	1290 mm / 4' 3"		
Speed	550 - 960 rpm		
Hopper Liner Thickness	8 mm / 3/8"		
Amplitud	10mm / 3/8"		
Pre screen		Re-circulating Conveyor	
Type	Double Deck	Belt width	500 mm / 19 3/4"
Top deck	2160 mm x 1360 mm / 7' 1" x 4' 6"	Belt length (endless)	19,965 mm / 65' 6"
Bottom deck	1730 mm x 1360 mm / 5' 8" x 4' 6"	Discharge height	4730 mm / 15' 6"
Punch plate	40 mm / 1 1/2"	Hydraulic drive	500 cc / 30.5 cu inch
Underscreen mesh	20 mm / 3/4"		
Motor	49.2 cc / 3 cu inch		
Speed	990 rpm		
Impactor		Natural fines Conveyor (optional)	
Sandvik CI421 Prisec™ impactor		Belt width	650 mm / 25 1/2"
Feed opening	1360 mm x 800 mm / 54" x 31 1/2"	Belt length (endless)	12,063 mm / 39' 7"
Hydraulic inlet opening	1360 mm x 1000 mm / 54" x 39 1/2"	Discharge height	3084 mm / 10' 1"
4 Bar rotor	1150 mm / 45 1/4" diameter	Hydraulic drive	400 cc / 24.4 cu inch
Speed	563 rpm to 696 rpm		
Peripheral velocity	34 - 42 m/s / 112 - 138 ft/s		
2 aprons	Hydraulic assist		
Maximum feed size	800 mm / 31 1/2"		
Capacity (up to)	500 tph / 551 stph		
Crusher weight	13,857 kg / 30,549 lbs		
Main conveyor		Screen	
Belt width	1200 mm / 47 1/4"	Size (open area)	3962 x 1530 mm / 13' x 5'
Belt length (endless)	20,700 mm / 67' 11"	Number of decks	1
Discharge height	4074 mm / 13' 4"	Number of bearings	2
Hydraulic drive	Twin 500 cc / 30.5 cu inch	Operating angle	22°
		Minimum mesh size	34 mm / 1 1/4"
		Maximum mesh size	75 mm / 3"
		Motor size	32.9 cc / 2.00 cu inch
Underpan feeder		Tracks	
Type	Spring mounted stepped vibrating feeder	Length (centres)	4170 mm / 13' 8"
Width	1022 mm / 40 1/4"	Width (shoe)	500 mm / 19 3/4"
Length	2400 mm / 94 1/2"	Drive	Hydraulic / Gearbox
Hydraulic drive	Twin 32.9 cc / 2 cu inch	Control	Radio / Umbilical (proportional)
Speed	960 rpm	Tracking speed	1.4 km/h / 0.87 mph
Pan feeder amplitude	10 mm / 3/8"	Max incline	9°
		Max incline / Side to side	10°
Magnet		Operating Dimensions	
Model	Eriez CP20/100-SC2	Length	19.63 m / 64' 5"
Weight	1295 kg / 2855 lbs	Width (without NF conveyor)	3.61 m / 11' 10"
Type	Self cleaning suspended	Width (with NF conveyor)	6.72 m / 22'
Belt width	750 mm / 29 1/2"	Width (stockpile position)	12.19 m / 40'
		Height	4.73 m / 15' 6"
		Weight	61,280 kg / 135,099 lbs
Power pack		Transport Dimensions	
Engine	Stage 3A / Tier 3 CAT C13 Acert / Stage 3B / Tier 4i CAT C13 Acert / Stage 4 / Tier 4 Final CAT C13 Acert	Length	18.95 m / 62' 2"
Engine power	328 kW / 440 hp	Width	3.26 m / 10' 8"
Drive type	Direct 14" PT Tech wet clutch	Height	3.78 m / 12' 5"
Fuel tank	660 litres / 174 USG	Cubic volume	233 m³ / 8232 ft³
Hydraulic tank	660 litres / 174 USG	Weight	61,280 kg / 135,099 lbs
		Transport Dimensions HS removed	
		Length	15.74 m / 51' 8"
		Width	3.04 m / 10'
		Height	3.62 m / 11' 11"
		Cubic volume	173 m³ / 6109 ft³
		Weight	55,060 kg / 121,386 lbs

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

HSI IMPACT CRUSHERS - 2016-01-01

QI441 SDHS WITH CI421 HSI IMPACT CRUSHER – TECHNICAL DATA

OPTIONS

Hopper extensions for rear loading	Lighting mast and cabinet lights
Hopper extensions for rear loading with wear resistant liners	Remote diesel pump (electric)
Hopper extensions for rear loading with rubber liners	Pull stop cords for natural fines and main conveyor
Hopper wear resistant liner plates back and sides	Pull stop cords for re-circulating conveyor
Hopper high impact Sandvik rubber liners back and sides	Pull stop cords for fines conveyor
Pre screen grizzly spacing option	Engine filter kit - 250 hours (air and oil filters - for 3A engines only)
Pre screen top deck punch plate options 30, 60, 80, 100 mm	Plant and engine filter kit - 500 hours
Pre screen open aperture bottom rubber to feed natural fines conveyor (high fines / sticky applications)	Intelligent line multi-machine communication
Mesh underscreen options	Main conveyor level sensor (stockpile monitor)
Central auto lube (crusher bearings only)	Natural fines conveyor
Central auto lube (plant bearings excluding crusher and screen)	Radio remote control
Water pump (Hydraulic)	Single Deck Hanging Screen mesh options - 34, 42, 45, 50, 75 mm
Arctic package -20°C (-4°F) (32 grade hyd oil and engine oil)	Heavy duty twin pole magnet
Arctic package -30°C (-22°F) (arctic hyd oil, engine oil, lubrication oil and webasto coolant heater)	No overband magnet
Tail conveyor level sensor	

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA331 SINGLE SCREEN

Our QA331 tracked screen is a robust, highly durable machine, designed specifically for the recycling and contractor market. It incorporates a 4.25 x 1.5m / 14' x 5' two bearing screen box with an adjustable screening angle. The bottom deck has an extra 6 degree angle for ultimate screening performance. This feature coupled with the larger screening surface area, and increased throw on the screen box, enhances screening efficiency and capacity through the actual screen box itself.

The QA331 tracked screen has a unique user friendly folding access maintenance platform fitted as standard around the screen box, thus providing the operator with easy access for maintenance.

KEY BENEFITS

- High production rate through large 4.25 x 1.5 m / 14' x 5' screening area, high frequency adjustable angle, double deck screen and an additional 6 degree angle on the bottom deck to produce a “banana” effect to improve efficiency
- Fully capable of working at the quarry face, inner city development or recycling centre
- Modern chassis I beam design ensures maximum durability for arduous conditions
- Fully tracked for on-site mobility.
- Available with optional vibrating grid.
- Global aftermarket support, with standard stock parts to ensure maximum uptime
- Capable of operating in the most hostile environments
- Massive stockpiling capability through integrated hydraulic conveyors
- Easily transported from site to site
- Machine designed for optimum fuel economy and low operating costs.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA331 SINGLE SCREEN – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Fines conveyor	
Type	Hydraulic tipping grid	Discharge height	4034 mm / 13' 3"
Grid area with sides open	5000 x 1700 mm / 16' 5" x 5' 7"	Width	1200 mm / 47"
Standard aperture	100 mm / 4"	Drive	Hydraulic motor 400 cc
Maximum capacity	6.6 m ³ / 8.6 yd ³	Belt speed	170 m/min
Feed conveyor belt		Tracks	
Width	1050 mm / 3' 5"	Length	2960 mm sprocket centres / 9' 9"
Length	4000 mm / 13' 1"	Width	500 mm / 20"
Gearbox ratio	R 23:1		
Belt speed	18 m/min		
Main conveyor		Power pack	
Width	1050 mm / 41"	Engine type	CAT C4.4 74.5 kW / 100 hp
Length	9100 mm / 29' 10"	Diesel tank size	350 Litres / 93 USG
Motor	630 cc	Hydraulic tank size	630 Litres / 166 USG
Belt speed	128 m / min		
Screen box		Transport dimensions	
Type	Single screen 2 bearing 2 deck	Length	15343 mm / 50' 4"
Top deck:	4267 x 1524 mm / 14' x 5'	Width	3000 mm / 9' 10"
Bottom deck	3658 x 1524 mm / 12' x 5'	Height	3400 mm / 11' 2"
Tensioning system	Quick release wedges		
Speed	1140 rpm		
Throw	6-8 mm		
Motor	59 cc		
Side conveyors		Operating dimensions	
Discharge height	4700 mm / 15' 5"	Length	15995 mm / 52' 6"
Width	650 mm / 26"	Width	16332 mm / 53' 7"
Drive	Hydraulic motor 315 cc	Height	5734 mm / 18' 10"
Belt speed	138 m/min	Standard weight	27,050 kg / 59,635 lbs
		Performance	
		Maximum feed size	200 mm / 8"
		Capacity (up to)	300 MTPH / 331 STPH
		Travel speed	1 K/H / 0.62 MPH
		Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

- Double deck vibrating grid
- Hardox liners side conveyors and hopper
- Dust suppression
- Water pump
- Remote diesel pump
- Shredder unit
- Arctic package -20°C (-4°F)
- Arctic package -30°C (-22°F)
- Central autolube system
- Lighting mast
- E-stop conveyor pull cords
- Tip grid with crusher feedbox
- Radio remote control

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA335 DOUBLESCREEN

Our QA335 Doublescreen is a highly versatile mid-sized screening solution equipped with Sandvik's patented Doublescreen arrangement. This innovative technology features two high velocity, angle adjustable screens, where both the primary & secondary screening angles can be adjusted to optimise screening performance & accuracy.

Targeted specifically for our recycling and contractor customers, the QA335 Doublescreen is a highly durable machine designed for quick set-up times and ease of operation.

The QA335 features a user-friendly electrical control system with sequential start up and radio remote control as standard. It comes complete with wrap-around walkways to provide you with a safe working platform for service and maintenance. These are hydraulically operated enabling quick set-up times.

KEY BENEFITS

- Patented Doublescreen screenbox design 4 x 1.5 m / 13' x 5'
- Doublescreen advantages: greater adjustability, increased accuracy, higher screening efficiencies
- Versatile unit, capable of producing large volumes of high specification product
- Fitted with CAT 74.5 kW / 100 hp for optimum fuel efficiency
- Large volume hopper complete with remote control hydraulic tipping grid
- User friendly control panel with sequential start-up for ease of operation
- Massive stockpiling capability through integrated hydraulic conveyors
- Radio remote control and two-speed tracks as standard
- Capable of operating in the most hostile environments.
- Designed for optimum fuel economy and low operating costs.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA335 DOUBLESscreen– TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Fines conveyor	
Type	Hydraulic tipping grid	Discharge height	3900 mm / 12' 9"
Grid area with sides open	5000 x 1700 mm / 16' 5" x 5' 7"	Width	1200 mm / 47"
Standard aperture	100 mm / 4"	Drive	Hydraulic motor 395 cc
Maximum capacity	6.6 m ³ / 8.6 yd ³	Belt speed	137 m/min
Feed conveyor belt		Tracks	
Width	1050 mm / 42"	Length	2960 mm sprocket centres / 9' 9"
Length	4000 mm / 13' 1"	Width	500 mm / 20"
Gearbox ratio	R 23:1		
Belt speed	18 m/min		
Main conveyor		Power pack	
Width	1000 mm / 39"	Engine type	CAT C4.4 74.5 kW / 100 hp
Length	9100 mm / 29' 10"	Diesel tank size	350 Litres / 93 USG
Motor	490 cc	Hydraulic tank size	630 Litres / 166 USG
Belt speed	110 m/min		
Screen box		Transport dimensions	
Type	Doublescreen 2 bearing 2 deck	Length	15,300 mm / 50' 2"
Overall top deck	3963 x 1524 mm / 13' x 5'	Width	3000 mm / 9' 10"
Primary	1524 x 1524 mm / 5' x 5'	Height	3400 mm / 11' 2"
Secondary	2439 x 1524 mm / 8' x 5'		
Overall bottom deck	3963 x 1524 mm / 13' x 5'		
Primary	1524 x 1524 mm / 5' x 5'		
Secondary	2439 x 1524 mm / 8' x 5'		
Tensioning system	HD Ratchet		
Speed	1200 rpm		
Throw	7 mm		
Motor	33 cc x 2 off		
Side conveyors		Operating dimensions	
Discharge height	4700 mm / 15' 5"	Length	15,900 mm / 52' 2"
Width	650 mm / 26"	Width	16,350 mm / 53' 7"
Drive	Hydraulic Motor 395 cc	Height	5900 mm / 19' 4"
Belt speed	137 m/min	Standard weight	26,300 kg / 57,981 lbs
		Performance	
		Maximum feed size	200mm / 8"
		Capacity (up to)	400 mtp / 441 stph
		Travel speed	0.8 & 1.5 km/h / 0.49 & 0.93 mph
		Max incline / Side to side	25° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

- Double deck vibrating grid
- Hardox liners side conveyors and hopper
- Dust suppression
- Water pump
- Remote diesel pump
- Shredder unit
- 20°C (-4°F) Arctic package
- 30°C (-22°F) Arctic package
- Central autolube system
- Lighting mast
- E-Stop conveyor pull cords
- Tip grid with crusher feedbox

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA441 DOUBLESREEN

Our QA441 is the largest two deck tracked mobile screen equipped with Sandvik's patented, world class Doublescreen system. Two high velocity screens that work independently to each other, the primary screen works as a fines extractor, whilst the secondary screen operates as a grader. Two processes combined on one plant, both primary & secondary screening angles can be adjusted relative to each other, offering customers exceptional flexibility and massive throughput.

Designed for quick and easy set-up, the QA441 is built to withstand the rigours of a large quarry or recycling application. It incorporates a number of features for improved safety and control, including a user-friendly electrical control system with sequential start-up for ease of operation and remote control which comes as standard.

The QA441 lends itself to many applications including iron ore, aggregates, topsoil, recycling, minerals, coal, sand and gravel.

KEY BENEFITS

- Patented Doublescreen screen box design 6 x 1.5 m / 20' x 5' equivalent
- Doublescreen advantages: greater adjustability, increased accuracy, higher screening efficiencies
- Versatile unit, capable of producing large volumes of high specification products
- Large volume hopper complete with remote control hydraulic tipping grid
- User friendly control panel with sequential start-up for ease of operation
- Massive stockpiling capability through integrated hydraulic conveyors
- Radio controlled tracks fitted as standard
- Designed for optimum fuel economy and low operating costs.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA441 DOUBLESscreen – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Fines conveyor	
Type	Hydraulic tipping grid	Discharge height	4988 mm / 16' 4"
Grid open area	2200 x 4010 mm / 7' 2" x 13' 2"	Width	1200 mm / 47"
Grid area with sides open	2200 x 4735 mm / 7' 2" x 15' 6"	Drive	Hydraulic motor 395 cc
Tipping grid angle	96°	Head drum	228 mm / 9"
Vibrating grid angle	34°	Tail drum	216 mm / 8½"
Standard aperture	128 mm / 5"	Length	7976 mm / 26' 2"
Capacity	7.5 m ³ / 9.8 yd ³		
Maximum capacity	11.33 m ³ / 14.8 yd ³		
Length	4540 mm / 14' 11"		
Width	1926 mm / 6' 4"		
Feed conveyor belt		Tracks	
Width	1200 mm / 3' 11"	Length	3800 mm / 12' 5"
Length	3890 mm / 12' 9"	Width	500 mm / 20"
Motor	125 cc		
Gearbox ratio	R 23:1		
Head drum	325 mm / 12 ½"		
Tail drum	270 mm / 10 ½"		
Belt speed	18 m/min		
Main conveyor		Power pack	
Width	1000 mm / 3' 3"	Engine type	CAT C4.4 74.5 kW / 100 hp
Length	12,390 mm / 488"	Diesel tank size	290 litres / 76.5 USG
Drive drum	282 mm / 11"	Hydraulic tank size	370 litres / 98 USG
Tail drum	270 mm / 10 ½"		
Motor	490 cc		
Belt speed	127 m/min		
Screen box		Transport dimensions	
Type	2 bearing	Length	18,680 mm / 61' 3"
Decks	2 deck	Width	3000 mm / 9' 10"
First screen box size	3048 x 1524 mm / 10' x 5'	Height	3500 mm / 11' 6"
Second screen box size	3048 x 1524 mm / 10' x 5'		
Tensioning system	Ratchet		
Speed	1200 rpm		
Throw	7.24 mm		
Motor	49.1 cc x 2 off		
Side conveyors		Operating dimensions	
Discharge height	5090 mm / 16' 8"	Length	18,890 mm / 62'
Width	700 mm / 27.5"	Width	18,720 mm / 61' 5"
Drive	Hydraulic motor 395 cc	Height	6590 mm / 21' 7"
Head drum	228 mm / 9"	Standard weight	30,300 kg / 66,800 lbs
Tail drum	216 mm / 8 ½"		
Length	10,551 mm / 34' 7"		
Performance			
Maximum feed size		200 mm / 8"	
Capacity (up to)		600 MTPH / 661 STPH	
Travel speed		1.06 km/h / 0.66 mph	
Max incline / Side to side		20° / 10°	

Note. All weights and dimensions are for standard units only

OPTIONS

Double deck vibrating grid
 Hardox liners side conveyor and hopper
 Canvas covers
 Dust suppression spraybars complete with hosing
 Water pump (hydraulic) including spray bars
 Remote diesel pump
 -20°C / -4F Arctic package
 -30°C / -22F Arctic package
 Central autolube system
 Lighting mast
 E-Stop conveyor pull cords
 Tipping grid with crusher feedbox
 Vibrating grid wing extensions

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA451 TRIPLE DECK DOUBLESCREEN

Our QA451 represents the second generation product with numerous product refinements, whilst retaining the triple deck screen box that enables it to produce up to four different product types plus one oversize.

Designed with maximum productivity, the QA451 incorporates a large feed hopper, two large screen boxes and extended conveyors that afford massive stockpiling capabilities.

Our QA451 screenbox makes use of the tried and tested Doublescreen technology but with a unique triple deck design cementing Sandvik's position as a true world leader.

KEY BENEFITS

- Triple deck 6 x 1.5 m / 20' x 5' equivalent Doublescreen with four hydraulic folding product conveyors allowing four accurately sized products to be produced.
- Now with hydraulic folding oversize conveyor which features both hydraulic raise lower and hydraulic slew functions eliminating the need for a crane on site and minimising relocation time between sites.
- New heavy duty feeder conveyor drive system for increased machine throughput.
- New oversize chutework has a 40% larger cross section area to eliminate bottle necks and material restrictions.
- Capable of working alongside large jaw crushers, yet precise enough to produce accurate aggregate products.
- Massive stockpiling capability through integrated hydraulic conveyors.
- Fully tracked for on-site mobility, easily transported between sites.
- Available with optional vibrating grid.
- Global aftermarket support, with standard stock parts to ensure minimum loss of production.
- Capable of operating in the most hostile environments.
- Machine designed for optimum fuel economy and low operating costs.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCREENS - 2016-01-01

QA451 TRIPLE DECK DOUBLESscreen – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		4th Conveyor (oversize) LHS	
Capacity	7.5 m³ / 9.8 yd³	Discharge height	4897 mm / 16' 1"
Maximum capacity	11.33 m³ / 14.8 yd³	Width	650 mm / 25.5"
Type	Hydraulic tipping grid	Drive	Hydraulic motor 395 cc
Standard aperture	128mm / 5"	Length	9770 mm / 32' 1"
		Belt speed	111 m / min
		Raise lower facility	Yes hydraulic raise lower
		Hydraulic slew	Yes hydraulic slew
		Maximum slew angle	now 64° from hopper
Feed conveyor belt		Tracks	
Width	1200 mm / 3' 11"	Length	3800 mm / 12' 5"
Motor / Gearbox ratio	125 cc / R 23:1	Width	500 mm / 19.5"
Belt speed	18 m / min		
Screen		Power pack	
Type	2 bearing	Engine type	CAT C4.4 74.5 kw / 100 hp
Decks	3 deck	Diesel tank size	290 litres / 76.5 USG
First screen box size	3048 x 1524 mm / 10' x 5'	Hydraulic tank size	370 litres / 98 USG
Second screen box size	Top 3048 x 1524 mm / 10' x 5'		
	Mid 3048 x 1524 mm / 10' x 5'		
	Bottom 2439 x 1524 mm / 8' x 5'		
Tensioning system	Manual ratchet		
Speed	1200 rpm		
Throw	7.7 mm		
Motor	49 cc x 2 off		
Side conveyor (Mid overs) RHS		Transport dimensions	
Discharge height	5130 mm / 16' 10"	Length	18,370 mm / 60' 3"
Width	700 mm / 27.5"	Width	3200 mm / 10' 6"
Drive	Hydraulic motor 395 cc	Height	3550 mm / 11' 8"
Side conveyor (Mid fines) LHS		Operating dimensions	
Discharge height	4915 mm / 16' 9"	Length	18,802 mm / 61' 8"
Width	700 mm / 27.5"	Width	17,852 mm / 58' 7"
Drive	Hydraulic motor 395 cc	Height	6479 mm / 21' 3"
		Standard weight	34,000 kg / 74,957 lbs
Fines conveyor		Performance	
Discharge height	5030 mm / 16' 6"	Maximum feed size	200 mm / 8"
Width	1200 mm / 47"	Capacity (up to)	600 MTPH / 661 STPH
Drive	Hydraulic motor 395 cc	Travel speed	1.06 K/H / 0.66 MPH

Note. All weights and dimensions are for standard units only

OPTIONS

- | | |
|---|--------------------------------|
| Central auto lube | Lighting masts |
| Remote diesel pump | Overband magnet and frame |
| Water pump (hydraulic) inc spray bars | Vibrating grid wing extensions |
| -20°C (-4°F) Arctic package | |
| -30°C (-22°F) Arctic package | |
| Wear resistant liners, hopper, feed boots and spreader plate | |
| 13ft tipping grid and crusher feed box | |
| Crusher feed box to fit with vibrating grid | |
| Canvas covers and brackets only (all conveyors) | |
| Dust suppression spraybars complete with hosing | |
| Pull cords on the fines, midgrade, oversize and fourth conveyor | |
| Tail conveyor canvas covers | |
| Double deck vibrating grid | |
| Screening media | |

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE141

Our QE141 is the latest version of the world's first revolutionary track mounted scalper. Designed as a multipurpose machine, the QE141 can scalp large infeed materials, yet also double as a fine grading screen for a wide range of materials including topsoil, waste and crusher run.

Powered by a fuel efficient, low revving CAT engine it is fitted with a heavy duty double deck vibrating grid and can be fed easily by a wheel loader, excavator, grab or a crusher.

The QE141 is one of the most versatile, user-friendly mobile scalpers on the market and its multipurpose "bullet-proof" design makes it ideal for quarry operators or contractors in need of a compact, reliable and truly mobile solution to their screening requirements.

KEY BENEFITS

- Massive stockpiling capability
- Independent feeder and main conveyor drives
- User-friendly colour-coded control panel with sequential start up for ease of operation
- Hydraulically opening side doors and powerpack swing out facility for ease of maintenance
- Radio remote control tracking and tipping grid functions
- Easily transported and manoeuvred with minimal set-up time
- Fully compliant with the latest safety regulations



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE141– TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Power pack	
Width	2440 mm / 8'	Engine type	C4.4 74.5 kW / 100 hp
Length	3660 mm / 12'	Diesel tank size	150 litres / 40 USG
Grid open area	2200 x 3200 mm / 7' 2" x 10' 6"	Hydraulic tank size	450 litres / 119 USG
Grid area with sides raised	2200 x 4200 mm / 7' 2" x 13' 9"		
Vibrating grid max tipping angle	34°		
Feed conveyor belt		Transport dimensions	
Width	1200 mm / 47"	Length	8.78 m / 28' 10"
Type	Belt	Width	2.70 m / 8' 10"
Total length (crs)	3699 mm / 12' 1"	Height	3.10 m / 10' 2"
Motor	125 cc		
Gear box ratio	R 26:1		
Head drum Ø	332 mm / 13"		
Tail drum Ø	270 mm / 10.5"		
Main conveyor		Operating dimensions	
Width	1000 mm / 39"	Length	11.52 m / 37' 10"
Length (crs)	6634 mm / 21' 9"	Width	2.73 m / 8' 11"
Drive drum Ø	282 mm / 11"	Height	3.44 m / 11' 4"
Discharge Angle (adjustable)	22°	Standard weight	20,000 kg / 44,092 lbs
Motor	490 cc		
Discharge Height	3158 mm / 10' 4"		
Tail drum Ø	270 mm / 10.5"		
Belt Speed	140 m/min		
Tracks		Performance	
Length (crs)	2920 mm / 9' 7"	Max feed size	700 mm ³ / 28"
Width	500 mm / 20"	Capacity (up to)	400 mtp/h / 441 stph
		Travel speed	1 km/h / 0.62 mph
		Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

- Wear resistant hopper liners
- Vibrating grid wing extensions
- Pull cords on the main conveyor
- Water pump (hydraulic)
- Canvas covers inc spray nozzles
- Lighting mast
- Remote diesel pump
- Arctic package -20°C (-4°F)
- Arctic package -30°C (-22°F)
- 2m Extended main conveyor
- Track protection plate on discharge side

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE241 SCALPER

Our QE241 is the most compact model in the Sandvik heavy duty scalper range and is designed to meet the requirements of smaller operators who need a high performing, versatile unit with a smaller operating footprint that is easy to transport.

We have designed the QE241 to suit your requirements and key features include a highly aggressive, heavy duty scalping screen featuring two decks that measure 3.35 x 1.24 m / 11 x 4' (4.3 m² / 44 sq ft), a jack-up facility for ease of maintenance & integrated hydraulically folding conveyors for quick set-up. The unit comes complete with Sandvik's common push button control system with sequential start-up for ease of operation, two speed tracking for faster relocation between jobsites.

Capable of handling the toughest of applications and with a wide range of screening media available, our QE241 offers a versatile solution for screening quarry overburden, blasted rock, landfill mining, C&D waste, aggregates, slag heaps and topsoil.

KEY BENEFITS

- High performing, versatile scalper ideal for smaller operators.
- Class leading scalping area 4.3 m² / 44 sq ft.
- Easy-to-use control system with push buttons & sequential start-up.
- Reduced fuel consumption through optimized hydraulic system & reduced engine RPM
- Heavy duty crusher-type chassis designed to accommodate interchangeable side conveyors and compatible for 2-way or 3-way split configurations.
- Screen box jack-up facility with easy access to bottom deck media.
- Massive stockpiling capability through integrated hydraulic conveyors.
- Wide variety of screen media available: mesh, punched plate, tines or grizzly.
- Easily transported from site to site, requiring no transport permits.
- Two speed tracking for faster relocation between jobsites.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE241– TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Screen box	
Width	2360 mm / 7' 9"	Type	2 Bearing
Length	3800 mm / 12' 6"	Decks	2 Deck
Capacity	4.2 m³ / 5.5 yd³	Top deck	3352 x 1240 mm / 11' x 4'
Type	Rigid one-piece	Bottom deck	3090 x 1220 mm / 10' 1" x 4'
Feeder		Tracks	
Width	1000 mm / 39"	Length (crs)	2490 mm / 8' 2"
Type	Heavy duty plain belt	Width	400 mm / 16"
Oversize conveyor		Power pack	
Width	1200 mm / 47"	Engine type	CAT C3.4 55 kW / 74 hp Stage 3B
Length (crs)	4860 mm / 15' 11"	Diesel tank size	/ Tier 4 Final or CAT C4.4 74 kW /
Discharge height	3103 mm / 10' 2"	Hydraulic tank size	100 hp Stage 3A / Tier 3
Angle	22°		300 litres / 79 USG
Side conveyor (midsize)		Transport dimensions	
Width	650 mm / 26"	Length	9.98 m / 32' 9"
Length (crs)	8020 mm / 26' 3"	Width	2.50 m / 8' 2"
Discharge height	3645 mm / 11' 11"	Height	3.10 m / 10' 2"
Side conveyor (fines)		Operating dimensions	
Width	650 mm / 26"	Length	12.23 m / 40' 1"
Length (crs)	8015 mm / 26' 3"	Width	14.20 m / 46' 8"
Discharge height	3860 mm / 12' 8"	Height	3.90 m / 12' 10"
Transfer conveyor		Standard weight	17,500 kg / 38,580 lbs
		Performance	
Width	1050 mm / 41"	Max feed size	400 mm³ / 16"
Length (crs)	3000 mm / 9' 10"	Capacity (up to)	350 mtp/h / 386 stph
		Travel speed	0.8 km/h / 0.5 mph slow 1.5 km/h / 0.9 mph fast
		Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

Short hopper extensions for side loading
 Two full length hopper extensions for side loading
 Additional weld in hopper liners
 Screen box walkway platforms (left & right)
 Side conveyor feedboot wear liners
 Canvas covers and brackets (fines & mids)
 Side conveyor spray bar kit (fines & mids)
 Mesh, punched plate, tines or grizzly on top deck
 Mesh on bottom deck
 Water pump inc spray bars (mids and fines)
 Arctic package -20oC (-4°F)
 Arctic package -30oC (-22°F)
 Two way split configuration
 Remote diesel pump

Central autolube system
 Lighting mast assembly
 Pull cords on all conveyors
 Radio remote control

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE341 SCALPER

Our QE341 represents the most advanced and complete mobile scalper yet designed. Customer feedback has been an integral element in the development of this model and the most sought-after features have been incorporated into this unit.

Our goal of minimum user intervention means that we have focused on delivering huge stockpiling capacity, with ease of stockpile removal, uninhibited material flow and ability to handle the toughest of material with an apron feeder fitted as standard. The 16' x 5' / 4.7 x 1.5 m screen box is highly aggressive with 9 mm throw operating at over 1000 RPM. This ensures that even the most difficult materials can be handled effectively.

Whether it's working before or after a primary crusher or as a standalone unit, the QE341 is designed to deliver high production with clean separation, the exceptional on-board conveyors ensure that the delivery is in harmony with the throughput. Applications include screening quarry overburden, blasted rock, landfill mining, C&D waste, aggregates, slag heaps, environmental clean-ups and topsoil/subsoil.

KEY BENEFITS

- Highly efficient easy-to-use electrical control system with colour coded push buttons for ease of use.
- Optimised material flow with no bottle necks.
- Heavy duty crusher-type chassis designed to accommodate interchangeable side conveyors and compatible for 2-way or 3-way split configurations.
- Large capacity wear resistant hopper with one-piece hopper design to minimise set-up time.
- Optional hydraulically folding wing extensions for increased feed width.
- Spacious and easily accessible hydraulically folding maintenance platforms fitted for ease of service.
- Highly flexible with the choice of different Sandvik screening media.
- Massive stockpiling capability through integrated hydraulic conveyors.
- Continuity with previous models and compatibility with QE440 ensures maximum uptime and optimisation of spare and wear parts stock
- Radio controlled tracks fitted as standard.
- Machine designed for efficient fuel economy and lowest operating cost per tonne



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE341 SCALPER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Screen box	
Width	2574 mm / 8' 4"	Type	2 Bearing
Length	4160 mm / 13' 7"	Decks	2 Deck
Capacity	7.0 m³ / 9.1 yd³	Top deck	4700 x 1446 mm / 15' 5" x 4' 9"
Type	NEW rigid one-piece hopper	Bottom deck	4200 x 1426 mm / 13' 9" x 4' 8"
		Variable screen angles	11° - 17°
Feeder		Tracks	
Width	1364 mm / 54"	Length (crs)	3310 mm / 10' 10"
Type	Steel apron standard	Width	400 mm / 16"
Oversize conveyor		Power pack	
Width	1400 mm / 55"	Engine type	CAT C4.4 74.5 kW / 100 hp
Length (crs)	6270 mm / 27' 2"		CAT 4.4 83 kW / 111 hp
Discharge height	4000 mm / 13' 1"	Diesel tank size	230 Litres / 61 USG
Angle adjustable	16° to 24°	Hydraulic tank size	460 Litres / 122 USG
Side conveyor (midsize)		Transport dimensions	
Width	800 mm / 32"	Length	14.84 m / 48' 8"
Length (crs)	8400 mm / 27' 7"	Width	3.00 m / 9' 10"
Discharge height	4059 mm / 13' 4"	Height	3.40 m / 11' 2"
Side conveyor (fines)		Operating dimensions	
Width	800 mm / 32"	Length	15.44 m / 50' 7"
Length (crs)	8270 mm / 27' 2"	Width	14.51m / 47' 7"
Discharge height	4238 mm / 13' 11"	Height	4.49 m / 14' 7"
		Standard weight	29,770 kg / 65,631 lbs
Transfer conveyor		Performance	
Width	1200 mm / 47"	Max feed size	600 mm³ / 24"
Length (crs)	4300 mm / 14' 1"	Capacity (up to)	500 mtph / 551 stph
		Travel speed	1 km/h / 0.62 mph
		Max incline / Side to side	20° / 10°

Note. All weights and dimensions are for standard units only

OPTIONS

Central auto lube (conveyors / screen)
 Remote diesel pump
 Water pump inc spray bars (mids and fines)
 -20°C (-4°F) Arctic package
 -30°C (-22°F) Arctic package
 Mesh on top deck
 Mesh on bottom deck
 Punch plate onto top deck tines
 Wear resistant liners in hopper & side conveyor feed boots
 Pull cords on all conveyors
 Canvas covers and brackets (mids and fines)
 Dust suppression spray bars (mids and fines)
 Lighting masts
 Punch plate on top deck

Bofar steel grizzly on top deck
 Bofar steel grizzly and top deck punch plate
 Heavy duty tines on top deck
 Cascade fingers on bottom deck
 Belt feeder
 Two way split Configuration

ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE441 SCALPER

Our QE441 is the largest heavy duty scalper in the Premium range of equipment. Designed for the serious aggregate producer, it has a large crusher-style chassis and is capable of handling the toughest of material in the harshest of environments.

Our QE441 can accept the most robust of infeed material and is best suited to your large quarrying, mining or recycling applications. Whether it's working before or after a primary crusher or as a stand-alone unit, the QE441 is designed to deliver high production with clean separation.

This solution now offers the user-friendly features of the 1-Series screens including an electrical control system which improves both operational effectiveness and machine safety. The QE441 also comes equipped with an apron feeder, reinforced hopper doors and impact bar lined overs conveyor all as standard.

KEY BENEFITS

- Highly efficient and easy-to-use electrical control system with colour coded numerical push buttons for ease of operation.
- Class leading total scalping area of 5.5 x 1.75 m / 5 x 1.75 m (18 x 6' / 16.5 x 6') allows for enormous rates of production
- Capable of being fed by large crushers, yet precise enough to produce accurate aggregates, and tough enough to recycle mixed materials
- Heavy duty crusher-type chassis designed to accommodate interchangeable side conveyors and compatible for 2-way or 3-way split configurations
- Feeder load sensing facility to prevent blockages and unnecessary downtime
- Different applications catered for through Sandvik screening media
- Massive stockpiling capability through integrated hydraulic conveyors
- Spacious and easily accessible hydraulically folding maintenance platforms fitted for ease of service
- Easily transported from site to site
- Radio controlled two speed tracks fitted as standard
- Provides efficient fuel economy and lowest operating cost per tonne.



ROCK PROCESSING GUIDE 2016

Chapter R – MOBILE UNITS – PREMIUM RANGE

SCALPERS - 2016-01-01

QE441 SCALPER – TECHNICAL DATA

KEY SPECIFICATIONS

Hopper		Screen box	
Capacity	8.5 m ³ / 11.1 yd ³	Top deck	5480 mm x 1750 mm / 18' x 6'
Type	One piece wear resistant construction	Bottom deck	5000 mm x 1750 mm / 16' 5" x 6'
Feeder apron conveyor		Variable screen angles	11° to 17°
Gearbox ratio		Tracks	
Belt speed (adjustable)	Gearbox ratio	Length (crs)	3800 mm / 12' 5"
Oversize conveyor		Width	500 mm / 20"
Width	1600 mm / 63"	Power pack	
Discharge angle (adjustable)	18o to 25o	Engine type	CAT C4.4 Acert 96 kw / 129 hp
Discharge height (adjustable)	3.60 m / 11' 10" - 4.30 m / 14' 1"	Diesel tank size	460 litres / 121.5 USG
Drive drum Ø	289 mm / 11.5"	Hydraulic tank size	800 litres / 211 USG
Tail drum Ø	273 mm / 10.5"	Transport dimensions	
Side conveyor (midsize)		Length	16.33 m / 53' 7"
Width	900 mm / 36"	Width	3.20 m / 10' 6"
Discharge angle (adjustable)	18o to 25o	Height	3.50 m / 11' 6"
Discharge height (adjustable)	4000 mm / 13' 1"	Operating dimensions	
Drive drum Ø	232 mm / 9.1"	Length	16.82 m / 55' 2"
Tail drum Ø	216 mm / 8.5"	Width	14.56 m / 47' 9"
Side conveyor (fines)		Height	4.68 m / 15' 4"
Width	1000 mm / 39"	Standard weight	37,070 kg / 81,725 lbs
Discharge angle (adjustable)	20o to 25o	Performance	
Discharge height (adjustable)	4286 mm / 14' 1"	Max feed size	800 mm ³ / 32"
Drive drum Ø	232 mm / 9.1"	Capacity (up to)	900 mtph / 992 stph
Tail drum Ø	216 mm / 8.5"	Travel speed	0.9 km/h / 0.55 mph slow 1.6 km/h / 1.0 mph fast
Transfer conveyor		Max incline / Side to side	20° / 10°
Width	1400 mm / 4' 7"		
Drive drum Ø	289 mm / 11.5"		
Tail drum Ø	273 mm / 10.5"		

Note. All weights and dimensions are for standard units only

OPTIONS

Hopper extensions for rear loading
 Central auto lube (conveyors / screen)
 Dust suppression spray bars complete with hosing (middle grade and fines conveyor)
 Remote diesel pump
 Water pump inc spray bars (middle grade and fines conveyor)
 -20°C (-4°F) Arctic package
 -30°C (-22°F) Arctic package
 Speed wheel option kit
 Wear resistant liners in both side conveyor feed boots
 Additional hopper wear resistant liners
 Canvas covers and brackets (middle grade conveyor)
 Canvas covers and brackets (fines conveyor)
 Pull cords on conveyors

Lighting mast
 Punch plate on top deck
 Heavy duty tines on top deck
 Cascade fingers on bottom deck
 Impact plate
 Bofar steel grizzly on top deck
 Mesh on top deck
 Mesh on bottom deck

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONTENTS 2016-01-01

JAW CRUSHERS

UJ210 with CJ409 Jaw crusher	HD
UJ300 with CJ211 Jaw crusher	HD
UJ310 with CJ411 Jaw crusher	HD

CONE CRUSHERS

US310 with CS430 Cone crusher	HD
UH310 with CH430 Cone crusher	HD
UH311 with CH430 Cone crusher	HD
UH312 with CH440 Cone crusher	HD
UH316 with CH430 Cone crusher	HD
UH320 Classic/Comfort/Flex with CH430 Cone crusher	XHD
UH412 with CH440 Cone crusher	HD
UH421 Classic with CH440 Cone crusher	XHD
UH430 Classic with CH440 Cone crusher	XHD

IMPACT CRUSHERS

UI210 with CI512 HSI Impact crusher	HD
UV210 with CV217 VSI Impact crusher	HD
UV311 with CV218 VSI Impact Crusher	HD
UV320 Direct/Flex/Sand with CV217 VSI Impact crusher	XHD

CRUSHER COMBINATIONS AND SCREENS

UD211 with CJ409 Jaw crusher and CH420 Cone crusher	XHD
UF320 Comfort/Classic/Direct with SF1843 screen	XHD

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ210 WITH CJ409 JAW CRUSHER

The UJ210 is a wheel mounted jaw crusher which incorporates the Sandvik CJ409 jaw crusher. It features an impressively large feed opening for its size, possessing an ideal nip angle providing smooth material flow, high reduction efficiency, single toggle operation with a deep crushing chamber and easy setting adjustment. All of these features are aimed at producing high capacity operation.

KEY BENEFITS

- The feeder has adjustable grizzly section formed by fabricated Hardox / Mn-Steel bars. The grizzly gap can be either 70,90 or 120 mm. It has a wire cloth screening element beneath the grizzly (950 mm wide x 850mm long) to remove the natural fines.
- The feed hopper sides and rear wall are foldable by mechanical means.
- The crusher by-pass chute collects material, which passes through the vibrating feeder's grizzly section.
- The operator's platform has handrails and access ladder from the ground. Safety guards are fitted to drives and around the crusher's flywheels.
- A manual flap allows two possibilities:
 - Permits the removal of fine fractions to a separate fines stockpiling conveyor.
 - Allows the intermediate fraction to follow with the crusher product on the delivery conveyor.
- Easy and quick displacement between job sites.
- Compact design with easy access to all equipment
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liner.
- Local control push button on the operator's platform for local control of the feeder.
- The UJ210 plant is designed to produce up to 235 MTPH of normal quarried stone at 125 mm C.S.S. (Close Side Setting).



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ210 WITH JAW CRUSHER CJ409 – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Operating Dimensions	
Feeder type	SW1043H with bar grizzly		
Grizzly length	1.35m / 4.4'	Height	5.0m / 16.4'
Grizzly gap	70, 90 or 120mm / 2.7, 3.5 or	Width	3.05m / 10.0'
Drive	4.7"	Length	12.60m / 41.3'
Hopper	Electric motors 2 x 4.53 kW, 50Hz		
	9m ³ / 320in ³		
Crusher		Transport Dimensions	
Type	CJ409	Height	4.10m / 13.4'
Feed opening	900mm x 660mm / 36" x 26"	Width	2.55m / 8.4'
Drive	Electric motor 75kW, 50Hz, squirrel cage type	Length	12.60m / 41.3'
		Weight	36.5mton / 40.8ston
Discharge conveyor		Performance	
Belt width	1000mm / 40"	Max feed size	600mm / 25"
Length	6.5m / 21.3'	Capacity (up to)	235mtph / 259stph at CSS
Drive	Electric motor 11kW, 50Hz		125mm
Approx discharge height under drum	1.9m / 6.2'		
Power pack		Note. All weights and dimensions are for standard units only	
Total power	95 kW		
Supply voltage	415V - 50 Hz / 440V - 60 Hz / 3-phase AC		
	220V / 50 Hz / 60 Hz 3-phase AC		
Control voltage	2" King-Pin, Double-axle bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply		
Running Gear			

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ300 WITH CJ211 JAW CRUSHER

Sandvik have more than a century of experience of designing and manufacturing jaw crushers. Sandvik also have a wealth of knowledge about customer's expectations and needs. Jaw crushers are manufactured in a factory which has been certified to ISO9001. This demonstrates our dedication to quality – the design and manufacture of all Jaw crushers meet the highest Quality Assurance standards.

KEY BENEFITS

- The feeder has adjustable grizzly section formed by fabricated Hardox / Mn-Steel bars. The grizzly gap could be either 70, 90 or 120 mm. It has a wire cloth screening element beneath the grizzly (900 mm wide x 850mm long), to remove the natural fines.
- The crusher by-pass chute collects material, which passes through the vibrating feeder's grizzly section.
- Directs the intermediate and fine fractions to the delivery conveyor beneath the crusher.
- Directs the intermediate and fine fractions to a separate fines stockpiling conveyor.
- Permits the removal of fine material (taken out by a separate stockpiling conveyor) and allows the intermediate fraction to follow with the crusher product on the delivery conveyor.
- The operator's platform has handrails and access ladder from the ground. Safety guards are fitted to drives and around the crusher's flywheels.
- Easy and quick displacement between job sites.
- Compact design & easy access to all equipment.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liner.
- A junction electrical box is wired on board.
- Local control push button on the operator's platform for local control of the feeder.
- The UJ300 Plant is designed to produce up to 310 MTPH of normal quarried stone at 125 mm C.S.S. (Close Side Setting).



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ300 WITH CJ211 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Operating Dimensions	
Feeder type	GF410100i with bar grizzly	Height	5.0m / 16.4'
Grizzly length	1.35m / 4.4'	Width	3.1m / 10.2'
Grizzly gap	70, 90 or 120mm / 2.7, 3.5 or 4.7"	Length	12.50m / 41.0'
Drive	Electric motors 2 x 4.53 kW, 50Hz		
Hopper	9m ³ / 320in ³		
Crusher		Transport Dimensions	
Type	CJ211	Height	4.00m / 13.1'
Feed opening	1100mm x 700mm / 43" x 28"	Width	2.6m / 8.5'
Drive	Electric motor 90kW, 50Hz, squirrel cage type	Length	12.10m / 39.7'
		Weight	38.0mton / 42.5ston
Discharge conveyor		Performance	
Belt width	1000mm / 40"	Max feed size	630mm / 25"
Length	6.5m / 21.3'	Capacity (up to)	310mtph / 342stph at CSS
Drive	Electric motor 11kW, 50Hz		125mm
Approx discharge height under drum	1.9m / 6.2'		
Power pack		Note. All weights and dimensions are for standard units only	
Total power	110 kW		
Supply voltage	415V / 50 Hz / 3-phase AC 220V / 50 Hz / 1-phase AC		
Control voltage	2" King-Pin, Leaf-spring bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply		
Running Gear			

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ310 WITH CJ411 JAW CRUSHER

The UJ310 is a primary crushing unit fully assembled on a single trailer frame and mounted on a triple axle bogie. Featuring the highly reliable and productive CJ411 jaw crusher it comes complete with feeder motors, starters, frequency drive and electrical control panel.

The UJ310 wheel mounted jaw crusher incorporates a Sandvik jaw crusher with an impressively large feed opening for its size. Possessing an ideal nip angle for smooth material flow, high reduction efficiency and single-toggle operation with a deep crushing chamber, it has an easy setting adjustment for simple and efficient operation. All of these features are aimed at high productivity and increased operator safety.

KEY BENEFITS

- The design and manufacture of all Jawmasters meets the highest Quality Assurance standards having been manufactured in a factory which has been certified to ISO9001.
- The feeder has adjustable grizzly section formed by fabricated Hardox / Mn-Steel bars. The grizzly gap could be either 70, 90 or 105 mm. It has a wire cloth screening element beneath the grizzly (900 mm wide x 1160mm long), to remove the natural fines.
- The crusher by-pass chute collects material, which passes through the vibrating feeder's grizzly section.
- Permits the removal of fine fractions to a separate fines stockpiling conveyor.
- Allows the intermediate fraction to follow with the crusher product on the delivery conveyor.
- The operator's platform has handrails and access ladder from the ground. Safety guards are fitted to drives and around the crusher's flywheels.
- Easy and quick displacement between job sites.
- Compact design & easy access to all equipment.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liner.
- A junction electrical box is wired on board.
- Local control push button on the operator's platform for local control of the feeder.
- The UJ310 Plant is designed to produce up to 325MTPH of normal quarried stone at 125 mm css (Close Side Setting).



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

JAW CRUSHERS - 2016-01-01

UJ310 WITH CJ411 JAW CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Operating Dimensions	
Feeder type	SW1252		
Grizzly length	1.5 m / 4.9'	Height	5.30 m / 17.4'
Grizzly gap	70, 90 or 105 mm /	Width	3.80 m / 12.5'
Drive	2.7, 3.5 or 4.1"	Length	15.20 m / 50'
Hopper	Electric motors 2 x 6,63 kW, 50Hz 15 m ³ / 530 ft ³		
Crusher		Transport Dimensions	
Type	CJ411	Height	4.00 m / 13.1'
Feed opening	1045x 840mm / 41" x 33"	Width	2.70 m / 8.9'
Drive	Electric motor 110kW, 50 Hz, squirrel cage type	Length	15.20 m / 50'
		Weight	52.5mton / 58.8ston
Discharge conveyor		Performance	
Belt width	1000mm / 40"	Max feed size	750mm / 30"
Length	8.1 m / 26.5'	Capacity (up to)	325mtph / 342stph at CSS
Drive	Electric motor 11kW, 50Hz		125mm
Approx discharge height under drum	2.1m / 6.9'		
Power pack		Note. All weights and dimensions are for standard units only	
Total power	134 kW		
Supply voltage	415 V / 50 Hz / 3-phase AC 220 V / 50 Hz / 1-phase AC		
Control voltage	2" King-Pin, Leaf-spring triple-axle bogie with air-brakes		
Running Gear	And running lights. Tyres 11" x 20" – 16 ply		

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US310 WITH CS430 CONE CRUSHER

Our US310 is a secondary crushing unit fully assembled on a single trailer frame consisting basically of CS86 triple deck vibrating screen and CS430 cone crusher.

The Sandvik Hydrocone crusher used on US310 is of an advanced design, capable of high capacity operation and high reduction efficiency. With hydraulically adjustable settings, a choice of different crushing chambers and throws, a large feed opening plus many high performance features, the US310 is versatile, user friendly and highly productive. The compact and easy- to-service design makes them perfect choice for mobile installations.

KEY BENEFITS

- Combined with the large screen the US310 has proved to be the ideal for secondary crushing.
- This unit has been designed to produce 1- 4 products depending on the customer's requirements.
- The operator's platform has handrails and access ladder from the ground.
- The cone crusher can be fed by three ways
- From the top and second deck of the screen
- From the top deck of the screen. Second deck material to by-pass the crusher, fully or partially, as product.
- From the crusher feed belt conveyor
- Compact design with easy access to all equipment.
- Safety guards are fitted over the crusher drive.
- Easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for smooth starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

US310 WITH CS430 CONE CRUSHER - TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CS430	Height	7.00 m / 22' 11½"
Feed opening	up to 360 mm / 14 ½"	Width	5.05 m / 16' 7"
CSS range	19 - 51 mm / ¾ - 2"	Length	11.85 m / 38' 10½"
Crusher weight	12,000 kg / 26,455 lbs		
Drive	Electric motor 160 kW, 50 Hz, squirrel cage type.		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	1800 x 4800mm / 5' 11" x 15' 9"	Height	4.15 m / 13' 7"
No of Decks	Triple Deck	Width	2.70 m / 8' 10"
Drive	Electric motor 15 kW, 50 Hz	Length	12.30 m / 40' 4"
		Weight	35 mton / 39.2 ston
Power pack		Performance	
	180.5 kW	Max.feed size to crusher	300 mm / 11.8"
Total power	415 V - 50 Hz / 440V - 60Hz /	Max feed size to screen (gravel)	150 mm / 5.9"
Supply voltage	3-phase AC	Max feed size to screen (crushed)	120 mm / 4.7"
Control voltage	220 V - 50 Hz / 60Hz / 3-phase AC	Capacity (up to)	300 mtph
		Running Gear	2" / 31' 2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply.

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH310 WITH CH430 CONE CRUSHER

Our UH310 is a Secondary/Tertiary Crushing Unit fully assembled on a single trailer frame consisting of a CS86 triple deck vibrating screen and a CH430 cone crusher

The Sandvik Hydrocone crusher used on the UH310 is of an advanced design, capable of high capacity operation and high reduction efficiency. With hydraulically adjusted settings, a choice of different crushing chambers and throws plus many high performance features ensures the UH310 is versatile, user friendly and highly productive. The compact and easy- to-service design makes it the perfect choice for mobile installations.

- Combined with the large screen the UH310 has proved to be the ideal for secondary or tertiary crushing.
- The Cone Crusher can be fed by three ways:
 - From the Top and Second Deck of the Screen
 - From the Top Deck of the Screen. Second deck material to by-pass the crusher, fully or partially, as product.
 - From the crusher feed belt conveyor
- This unit has been designed to produce 1- 4 products depending on the customer's requirement.
- The operator's platform has handrails and access ladder from the ground.
- Compact design & easy access to all equipment.
- Safety guards are fitted over the crusher drive.
- Easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft/Star Delta starter provided for smooth starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH310 WITH CH430 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CS430	Height	7.00 m / 22' 11½"
Feed opening	up to 360 mm / 14 ⅝"	Width	5.05 m / 16' 7"
CSS range	19 - 51 mm / ¾ - 2"	Length	11.85 m / 38' 10½"
Crusher weight	12,000 kg / 26,455 lbs		
Drive	Electric motor 160 kW, 50 Hz, squirrel cage type.		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	1800 x 4800mm / 5' 11" x 15' 9"	Height	4.15 m / 13' 7"
No of Decks	Triple Deck	Width	2.70 m / 8' 10"
Drive	Electric motor 15 kW, 50 Hz	Length	12.30 m / 40' 4"
		Weight	35 mton / 39.2 ston
Power pack		Performance	
	180.5 kW	Max.feed size to crusher	300 mm / 11.8"
Total power	415 V - 50 Hz / 440V - 60Hz /	Max feed size to screen (gravel)	150 mm / 5.9"
Supply voltage	3-phase AC	Max feed size to screen (crushed)	120 mm / 4.7"
Control voltage	220 V - 50 Hz / 60Hz / 3-phase AC	Capacity (up to)	300 mtph
		Running Gear	2" / 31' 2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply.

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH311 WITH CH430 CONE CRUSHER

Our UH311 is a secondary/tertiary crushing unit fully assembled on a single trailer frame consisting of a CS86 four deck vibrating screen and CH430 cone crusher. The Sandvik Hydrocone crusher used on the UH311 is of an advanced design, capable of high capacity operation and high reduction efficiency.

With hydraulically adjustable settings, a choice of different crushing chambers and throws plus many high performance features, the UH311 is versatile, user friendly and highly productive. The compact and easy-to-service design makes it the perfect choice for mobile installations.

KEY BENEFITS

- Combined with the large screen, the UH311 has proved to be ideal for secondary or tertiary crushing.
- This unit has been designed to produce 1- 4 products depending on the customer's requirements.
- The Cone Crusher can be fed by three ways:
 - From the Top and Second Deck of the Screen
 - From the Top Deck of the Screen. Second deck material to by-pass the crusher, fully or partially, as product.
 - From the previous crusher feed belt conveyor
- The operator's platform has handrails and an access ladder from the ground.
- Compact design with easy access to all equipment.
- Safety guards are fitted over the crusher drive.
- Easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for smooth starting of the crusher. A junction electrical box is wired on board.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH311 WITH CH430 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CH430	Height	7.35 m / 24' 1"
Feed opening	185 mm / 7 1/4"	Width	5.05 m / 16' 7"
CSS range	6 - 41 mm / 1/4 - 1 5/8"	Length	11.85 m / 38' 10 1/2"
Crusher weight	8880 kg / 19,400 lbs		
Drive	Electric motor 160 kW, 50 Hz, squirrel cage type.		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	1800 x 4800mm / 5' 11" x 15' 9"	Height	4.40 m / 14' 5"
No of Decks	Four Deck	Width	2.70 m / 8' 10"
Drive	Electric motor 18.5 kW, 50 Hz	Length	12.30 m / 40' 4"
		Weight	34 mton / 37.5 ston
Power pack		Performance	
Total power	156 kW	Max.feed size to crusher	185 mm / 7.3"
Supply voltage	415 V - 50 Hz / 440V - 60Hz / 3-phase AC	Max feed size to screen (gravel)	150 mm / 5.9"
Control voltage	220 V - 50 Hz / 60Hz / 3-phase AC	Max feed size to screen (crushed)	120 mm / 4.7"
		Capacity (up to)	180 mtpd
		Running Gear	2" / 31' 2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply.

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH312 WITH CONE CRUSHER CH440

Our UH312 is a secondary crushing unit fully assembled on a single trailer frame consisting of a CS86 four deck vibrating screen and CH440 cone crusher. The Sandvik Hydrocone crusher used on the UH312 is an advanced design, capable of high capacity operation and high reduction efficiency. The hydraulically adjustable settings, choice of different crushing chambers and throws plus many high performance features, the UH312 is versatile, user-friendly and highly productive. The compact and easy-to-service design makes it the perfect choice for mobile installations.

KEY BENEFITS

- Combined with the large screen the UH312 is ideal for secondary crushing.
- This unit has been designed to produce 1- 4 products depending on the customer's requirements.
- Compact design and easy access to all equipment.
- The Cone Crusher can be fed by three ways:
 - From the top and second deck of the screen
 - From the top deck of the screen. Second deck material to by-pass the crusher, fully or partially, as product.
 - From the previous crusher feed belt conveyor
- The operator's platform has handrails and an access ladder from the ground.
- Safety guards are fitted over the crusher drive.
- Easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors as well as the feed and product conveyors. Soft starter provided for starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH312 WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CH440	Height	7.45 m / 24' 4"
Feed opening	215 mm / 8 ½"	Width	5.40 m / 17' 7"
CSS range	8 - 48 mm / 5/16" - 1 7/8"	Length	11.85 m / 38' 8"
Crusher weight	14,300 kg / 31,526 lbs		
Drive	From electric motor 220 kW, 50 Hz, squirrel cage type		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	Sandvik CS86 IV circular motion	Height	4.60 m / 15' 0"
No of Decks	1800mm x 4800mm	Width	2.75 m / 9' 0"
Drive	Four deck	Length	12.30 m / 40' 3"
	Electric motor 18.5 kW	Weight	41.5 mton / 45.7 ston
Power pack		Performance	
Total power	249.5 kW	Max.feed size to crusher	215 mm / 8.4"
Supply voltage	415 V-50 Hz/ 3-phase AC	Max feed size to screen (gravel)	150 mm / 5.9"
Control voltage	220 V-50/ 3-phase AC	Max feed size to screen (crushed)	120 mm / 4.7"
		Capacity (up to)	300 mtph
		Running Gear	2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" – 16 ply.

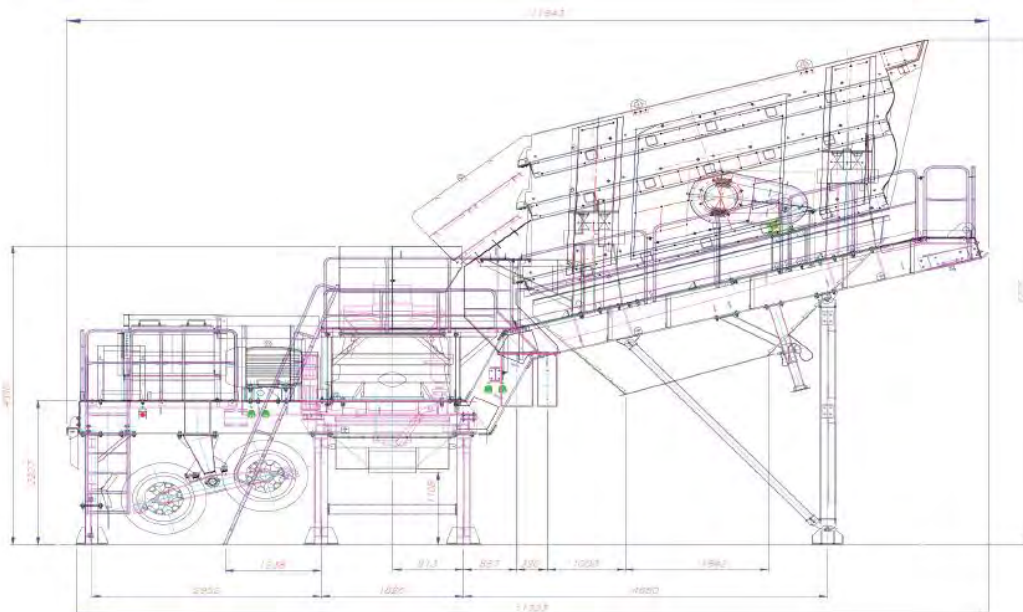
Note. All weights and dimensions are for standard units only

UH316 WITH CH430 CONE CRUSHER

Our UH316 is a secondary crushing unit fully assembled on a single trailer frame consisting of a XS86 three deck vibrating screen and CH430 cone crusher. The Sandvik Hydrocone crusher used on UH316 is of an advanced design, capable of high capacity operation and high reduction efficiency. With hydraulically adjustable settings, a choice of different crushing chambers and throws plus many high performance features, the UH316 is versatile, user friendly and highly productive. The compact and easy-to-service design makes it the perfect choice for mobile installations.

KEY BENEFITS

- With thicker side plates and a large mechanism provided with the XS screen, it makes the UH316 ideal for primary crushed material to be fed to the screen first
- This unit has been designed to produce 1- 4 products depending on the customer's requirements.
- The cone crusher can be fed by three ways:
 - From the top and second deck of the screen
 - From the top deck of the screen. Second deck material to by-pass the crusher, fully or partially, as product.
 - From the previous crusher feed belt conveyor
- The operator's platform has handrails and an access ladder from the ground.
- Compact design with easy access to all equipment.
- Safety guards are fitted over the crusher drive.
- Easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH316 WITH CONE CRUSHER CH430 – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CH430	Height	7.80 m / 25' 5"
Drive	132 kW electric motor 50 Hz, squirrel cage type	Width	5.05 m / 16' 5"
Feed opening	185 mm	Length	11.85 m / 38' 8"
CSS range	6 - 41 mm		
Crusher weight	8800 kg		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	1800 x 4800mm	Height	4.90 m / 16' 0"
No of Deck	Triple Deck	Width	2.75 m / 9' 0"
Drive	22 kW electric motor	Length	12.40 m / 40' 6"
		Weight	35.5 mton / 39 ston
Power pack		Performance	
Total power	159.5 kW	Max feed size	185 mm
Supply voltage	415 V-50 Hz/ 3-phase AC	Capacity (up to)	250 mtpd
Control voltage	220 V-50/ 3-phase AC	Running Gear	2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply

Note. All weights and dimensions are for standard units only

UH320 WITH CH430 CONE CRUSHER

Our UH320 is an integrated mobile cone crusher and triple deck screening system. Designed to function in open or closed circuit, it features the market leading Sandvik CH430 cone crusher, which comes with a choice of mantles and settings making it suitable for a wide range of applications worldwide.

The UH320 is available in 3 types:

- **Comfort:** Feeder with tippable grizzly, by-pass chute and optional natural fines conveyor.
- **Classic:** Feeder with tippable grizzly, by-pass chute, natural fines screen and optional natural fines conveyor.
- **Flex:** with tippable grizzly, by-pass chute, natural fines screen and optional natural fines conveyor. Beneath the feeder and the screen the chute possesses three flaps that enable it to divide the feed material so that 33%, 66% or 100% grading can either be transported to the crusher or to the screen by separate conveyors. This makes it possible to optimise the quality, and capacity with different raw materials. Open or closed circuit operation.

KEY BENEFITS

- Radio remote controlled tipping grid
- The Screen is a Sandvik SF1843 which can produce three calibrated fractions plus one oversize and one optional natural fine separation.
- Foldable hopper extensions on feed hopper provide wider loading area.
- Includes level monitor system that regulates feeder for optimal crushing performance including ASRi.
- Onboard process with interlocking for trouble free operation.
- A foldable flap on each side can be used as a back wall for a loading ramp, and as protection against oversize stones falling from the tipping grizzly.
- Rollaway discharge chute on screen provides easy access for service and maintenance.
- All conveyors are electrically driven and hydraulically foldable for transport. Return conveyor excluded.
- Dust encapsulated crusher, main conveyor and product screen for the finest fraction.
- Transport in one piece - everything stays onboard.
- Maintenance platforms (with stepladders) around the screen, to provide easy access for service.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH320 WITH CH430 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS	UH320 CLASSIC	UH320 COMFORT	UH320 FLEX
Crusher			
Type	Sandvik CH430	Sandvik CH430	Sandvik CH430
Feed opening	130mm (C)	130mm (C)	130mm (C)
Drive	132 kW electric motor	132 kW electric motor	132 kW electric motor
Screen			
Product screen	SF1843	SF1843	SF1843
Motor	2 x 11 kW electric motors	2 x 11 kW electric motors	2 x 11 kW electric motors
Hydraulic system	Coarse stone grizzly: Hydraulic power pack, 400V, 4kW Foldable conveyors, supporting legs, retractable screen: Hydraulic power pack, 24V / 400V	Coarse stone grizzly: Hydraulic power pack, 400V, 4kW Foldable conveyors, supporting legs, retractable screen: Hydraulic power pack, 24V / 400V	Coarse stone grizzly: Hydraulic power pack, 400V, 4kW Foldable conveyors, supporting legs, retractable screen: Hydraulic power pack, 24V / 400V
Feed station			
SP 0830	2 x 2,3 kW electric motor	2 x 2,3 kW electric motor	2 x 2,3 kW electric motor
NF-Screen	5 m3	5 m3	5 m3
PJ 10/10	2 x 1,8 kW vibrator motors	-	2 x 1,8 kW vibrator motors
Conveyors length/width/motor speed			
Feed conveyor belt	10.6m / 800mm / 1.3m/s (to screen)	10.6m / 800mm / 1.3m/s (to screen)	10.6m / 800mm / 1.3m/s (to the screen)
Rear conveyor	9.5m / 800mm / 1.25m/s	9.5m / 800mm / 1.25m/s	9.5m / 800mm / 1.25m/s
3 pro con	8m / 650mm / 1.1m/s	8m / 650mm / 1.1m/s	8m / 650mm / 1.1m/s
Natural fines conveyor (optional)	8m / 500 mm	-	8m / 500 mm
Feed conveyor	9m / 650 mm (external to crusher)	9m / 650 mm (external to crusher)	9m / 650 mm (external to crusher)
By-pass conveyor			4.7m / 800mm
Operating Dimensions			
Height	5.20m / 17.1'	5.20m / 17.1'	5.20m / 17.1'
Width	16.0m / 52.5'	16.0m / 52.5'	16.0m / 52.5'
Length	22.00m / 72.2'	22.00m / 72.2'	22.00m / 72.2'
Transport Dimensions			
Height	4.46m / 14.6'	4.46m / 14.6'	4.46m / 14.6'
Width	3.0m / 9.8'	3.0m / 9.8'	3.0m / 9.8'
Length	17.70m / 58.1'	17.70m / 58.1'	17.70m / 58.1'
Weight	47.5 mton / 52.2 ston	47.0 mton / 51.7 ston	48.5 mton / 53.5 ston
Required power			
Generator	325 kVA 400V	325 kVA 400V	325 kVA 400V
Running Gear	Type: King-pin 3.5" or 2". Leaf-sprung three-axle bogie, air brakes and running lights. 6 Tyres 385/65R/22.5		

OPTIONS

Belt scale for discharge conveyor
Start siren
Overband magnet for feed conveyor
Synthetic oil for CH430
Diesel heater for crusher oil
Ball deck beneath third deck in the SF1843 screen
King pin according to Norwegian standard
Extra hydraulic legs in rear (2 pcs)
Lifting lug for chassis for shipping available (Not necessary Roll on/off ship)

Electrical heating for feeder and feed hopper
Electrical heaters for conveyors
Dust filter for feed conveyor
Floodlights on illumination mast
Natural fines Conveyor 8m x 650 mm
Hopper extension volume 9,5m3 (Transport height increase)
3-axle air suspension with EBS brakes. 12x wheels incl. position lights

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

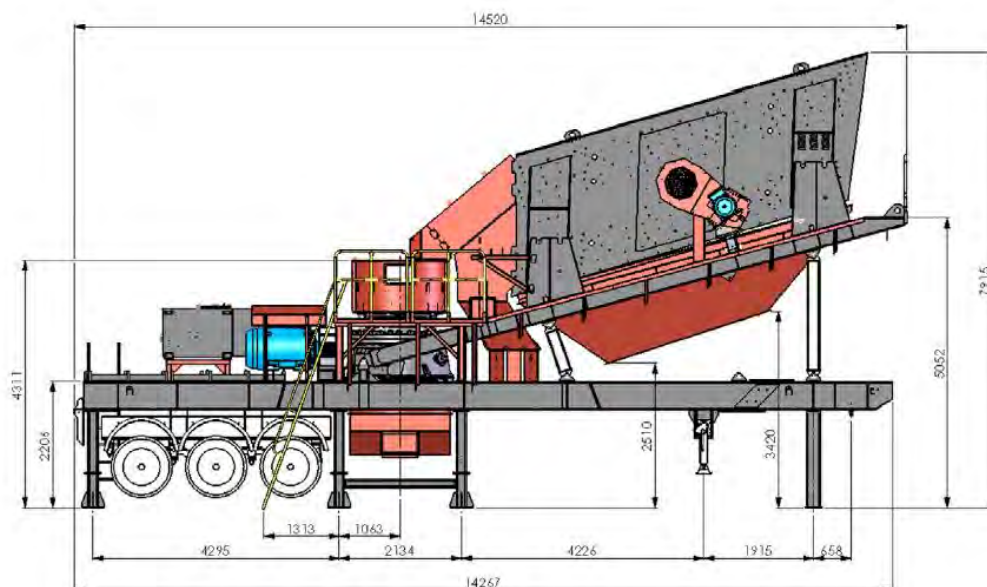
CONE CRUSHERS - 2016-01-01

UH412 WITH CH440 CONE CRUSHER

Our UH412 is a secondary crushing unit fully assembled on a single trailer frame consisting of a CS126 four deck vibrating screen and CH440 cone crusher. The Sandvik Hydrocone crusher used on UH412 is an advanced design, capable of high capacity operation and high reduction efficiency. The hydraulically-adjusted settings, choice of different crushing chambers and throws plus many high performance features ensure the UH412 is versatile, user friendly and highly productive. The compact and easy-to-service design makes it the perfect choice for mobile installations.

KEY BENEFITS

- Combined with the large screen the UH412 is ideal for secondary/tertiary crushing.
- The Cone Crusher can be fed by three ways:
 - From the Top and Second Deck of the Screen
 - From the Top Deck of the Screen. Second deck material to by-pass the crusher, fully or partially, as product.
 - From the previous crusher feed belt conveyor
- This unit has been designed to produce 1- 4 products depending on the customer's requirements.
- The operator's platform has handrails and access ladder from the ground.
- Compact design and easy access to all equipment.
- Safety guards are fitted over the crusher drive.
- Mechanical Landing Gear provided for easy and quick displacement between job sites.
- All the feed, discharge and connection chutes are robust constructions, made of steel plate with liners.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors as well as the feed and product conveyors. Soft starter provided for starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH412 WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CH440	Height	7.00 m / 22' 11½"
Feed opening	215 mm / 8 ½"	Width	5.05 m / 16' 7"
CSS range	8 - 48 mm / 5/16" - 1 ⅞"	Length	11.85 m / 38' 10½"
Crusher weight	14,300 kg / 31,526 lbs		
Drive	From electric motor 220 kW, 50 Hz, squirrel cage type..		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	Sandvik CS126 Q circular motion	Height	5.40 m / 17' 9"
No of Decks	2100mm x 6000mm	Width	3.20 m / 10' 6"
Drive	Four deck	Length	14.90 m / 48' 11"
	Electric motor 30 kW	Weight	51.0 tons / 56.0 st
Power pack		Performance	
Total power	261.5 kW	Max feed size to crusher	215 mm / 8 ½"
Supply voltage	415 V-50 Hz/ 3-phase AC	Max feed size to screen (gravel)	150 mm / 5.9"
Control voltage	220 V-50/ 3-phase AC	Max feed size to screen (crushed)	120 mm / 4.7"
If powered by a genset at least 750 KVA is required.		Capacity (up to)	300 mtph

Note. All weights and dimensions are for standard units only

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH421 CLASSIC WITH CH440 CONE CRUSHER

Our UH421 is an integrated mobile cone crusher and triple deck screening system. Designed to function in closed circuit, it features the market leading Sandvik CH440 cone crusher which comes with a choice of mantles and settings making it suitable for a wide range of applications worldwide.

KEY BENEFITS

- Can be used as a primary, secondary or tertiary crushing and screening unit.
- Fitted with ASRi – automatic setting regulation system as standard.
- On board intelligence ensures an optimal and trouble free operation.
- A foldable flap on each side can be used as a back wall for a loading ramp, and as protection against oversize stones falling from the tipping grizzly.
- Radio remote controlled tipping grid.
- Electric heating for feed hopper.
- Step less regulation of feed rate.
- Metal detector situated before crusher.
- Complete dust encapsulation that includes filters.
- Control box has a user friendly display that provides optimal control over the process.
- Transportation of the unit is in one piece, as all components remain on board with the exception of product conveyors.
- Air suspension triple axle bogie with ABS brakes and third axle self steering provides safe and stable transportation.
- Hydraulic supporting legs at the front end make connection with semi trailer easier



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH421 CLASSIC WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Running gear	
Feeder	SP0830	Type	King-pin 3.5" or 2"
Volume	6 m ³	Air suspension 3 axle bogie, with air-brakes and running lights	
Motor	2 x 4 kW	12 tyres	
		Third self-steering axle	11" x 22.5"
Crusher		Operating Dimensions	
Type	Sandvik cone crusher CH440	Height	5.6m / 18.4'
Drive	200 kW 4-pole, squirrel-cage with soft starter	Width	3.0m / 9.8'
		Length	19.0m / 62.3'
Product screen		Transport Dimensions	
Motor	SS1433 2 x 4 kW	Height	4.4m / 14.4'
Decks	3	Width	3.0m / 9.8'
		Length	18.6m / 61' (excl. trailer)
		Weight	53 / 39 mton / 58 / 43 ston
Natural fines screen		Performance	
Motor	SS1013H 2 x 2.3 kW	Max.feed size	210mm / 8.3"
Decks	3	Capacity (up to)	300 mtph / 331 stph
		No of products	2 + Natural fines
Conveyors		Note. All weights and dimensions are for standard units only	
B3 crusher to prod.screen Width	1000mm / 39"		
B3 crusher to prod.screen Motor	18,5 kW		
B4 screen to crusher Width	800mm / 31.5"		
B4 screen to crusher Motor	2 x 7,5 kW		
Feeder - prod.screen to return conveyor	SP0820, 2 x 1,34 kW		
Power system			
Supply voltage	400V / 50Hz, 3-phase A.C		
Control voltage	230V / 50Hz, 1-phase A.C		
Recommended genset capacity	>450 KVA		
Hydraulic system	Supporting legs and conveyors extensions Hydraulic power pack, 24V		

OPTIONS

Diesel heater for CH440 lubrication oil
 Transformer Trafo 7 KVA for extra power 3 x 10A, 1 x 16A
 Adaption Mines and quarries for UK
 Alternative feed hopper without tippable grizzly
 Trestle for free standing feed station
 Welded lifting lugs on the chassis for shipping
 Trestle for separate transport of feed station
 Cable set, own natural fines conveyor
 Cable set, own product conveyor
 Walkway behind product screen

Product conveyor B5 12m x 800mm
 Product conveyor B6 12m X 800 mm
 Belt scale for optional product conveyor 2008
 Belt scale
 Conveyor, 18.5m x 800mm, to connect removable feeder with the Roadmaster unit. Metal detector included
 Natural fines conveyor 9m x 500mm
 Licensing for higher speed transport (SWE only)

UH430 CLASSIC WITH CH440 CONE CRUSHER

The Sandvik UH430 is an electrically powered mobile crushing and screening unit mounted on a wheeled chassis. Featuring the proven reliability of the CH440 cone crusher from Sandvik, it offers exceptional rates of throughput at a low cost per tonne. Aimed at the demanding quarry operator, construction company or contractor in need of high quality and productivity, this unit is ideal for tertiary crushing and screening but can also be used in secondary crushing and screening applications. Trouble free optimal production is made possible by on board high level Intelligence together with ASRi (Automatic Setting Regulation), which monitors and automatically regulates the closed side setting.

KEY BENEFITS

- Sandvik CH440 cone crusher, available with a choice of six different crushing chambers (F, MF, M, MC, E, EC), together with eight different bush settings, ranging from 16mm to 44mm, which make it one of the most versatile cone crushers in the market today.
- Sandvik SS1013H pre screen, available with a choice of screen media
- Sandvik SF1843 product screen, working under the “free classifying” principle, where the stroke is perpendicular to the flow. This results in maximum utilisation of surface and highly efficient screening.
- Radio remote control for starting, stopping and tracking the equipment
- The crusher is fitted with an intelligent ASRi system, which monitors and automatically regulates the closed side setting
- The UH430 is transported in two separate sections which are easily put together on site and tracked via radio remote control
- Metal detector on feed conveyor for the protection of the crusher
- The unit is fully automated and is easily interlocked with other crushing units



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CONE CRUSHERS - 2016-01-01

UH430 CLASSIC WITH CH440 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Running gear	
Feeder	SP 0830 -2 x 2.3 kW	Type	King-pin 3½" or 2"
Feeder conveyor	1200mm x 9.7m / 48" x 31.8'	Air brakes and running lights	
Hopper volume	5m ³ / 177 ft ³	Part no.1: Leaf-sprung 3-axle bogie, 6 tyres 385/65R/22,5	
Natural Fines screen	SS1013H	Part no.2: Leaf-sprung 2-axle bogie, 4 tyres 385/65R/22,5	
Crusher		Generator	
Type	Sandvik CH440	Required Power	400V/240V 50Hz
Drive	From electric motor 200kW, 50 Hz squirrel cage type		
Screen unit		Hydraulic system	
Screen	Sandvik SF1843 3D	Foldable grizzly	400V / 4kW
		Hydraulic power pack	
		Foldable conveyors, support legs	
		400V /4kW	
Conveyors		Operating Dimensions	
Feed conveyor belt		Length	32m / 105'
Rear conveyor		Width	16m / 52' 6"
Product conveyor (x3)	SS1013H 2 x 2.3 kW	Height	6.9m / 22' 8"
Feed conveyor	3		
Natural Fines conveyor			
Conveyors		Transport Dimensions	
Feed conveyor belt	10.6m / 800mm 34' 10" / 2' 8"	Part 1	
	9.5m / 800mm	Length	16.7m / 54' 10"
Rear conveyor	31' 2" / 2' 8" 8m / 650mm	Width	3.0m / 9' 10"
	26' 3" / 2' 2"	Height	4.46m / 14' 8"
Product conveyor (x3)	9m / 650 mm	Weight	49.7 mton / 54.7 ston
	29' 7" / 2' 2"		
Feed conveyor	(external to crusher)	Part 2	
	8m / 500 mm	Length	15m / 49' 3"
Natural Fines conveyor	26' 3" / 1' 8"	Width	3.0m / 9' 10"
		Height	4.46m / 14' 8"
		Weight	26.6 mton / 29.2 ston

Note. All weights and dimensions are for standard units only

OPTIONS

Belt scale for the feed conveyor
 Electrical heating for feeder and feed hopper
 Electric heaters under the feed conveyor and 0-fractions conveyor
 Dust filter for feed conveyor
 Flood lights on illumination mast
 Natural Fines conveyor 8m x 650mm
 Start siren
 Synthetic oil for CH440
 Electrical power outlet 125A
 Lifting lug on chassis for shipping

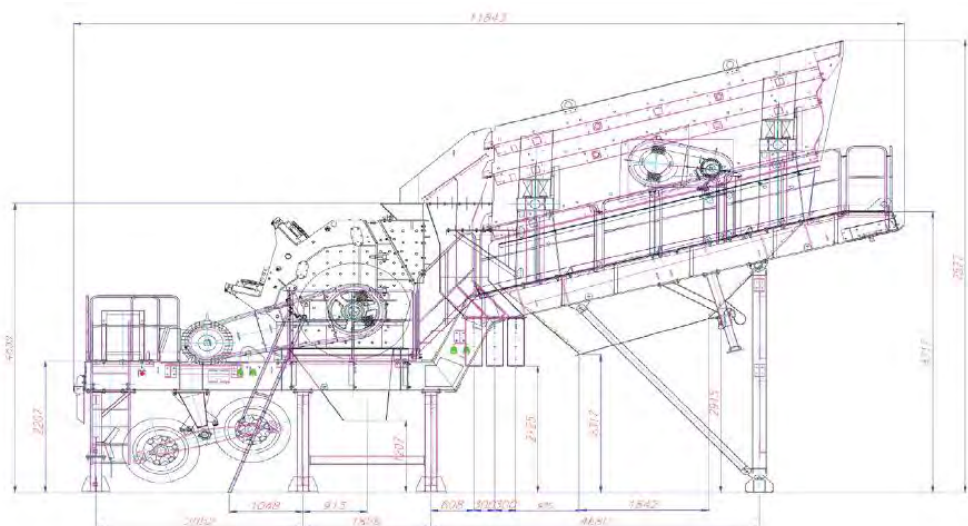
UI210 WITH CI512 HSI IMPACT CRUSHER

Our UI210 is a secondary crushing unit fully assembled on a single trailer frame consisting of CS86 triple deck vibrating screen and CI512 HSI (horizontal shaft impactor) crusher.

The all new patented and highly modularized Sandvik CI512 crusher combines the ability to configure one base crusher into either a primary or a secondary configuration. This makes it adaptable to customers ever-changing requirements.

KEY BENEFITS

- The revolutionary chamber design results in greater reduction ratios. The crusher can produce products with two curtains (greater breakage), which competitors require three curtain crushers to produce.
- An infinite hydraulic curtain adjustment combined with a brake positioning system relieves pressure and setting when un-crushable objects enter the crusher.
- No hydraulic power is required during normal operation reducing total power consumption.
- The modularized wear parts can be turned for maximum life/usage. The design of the hammer ensures maximum breakage, even as the hammer wears.
- The HSI crusher can be fed by two ways:
 - From the top deck of the screen. Top deck material can fully or partially by-pass the crusher, as product
 - From the previous crusher feed belt conveyor
- The operator's platform has handrails and access ladders from the ground.
- Safety guards are fitted to drives of the crusher and screen.
- All the feed, discharge and connection chutes are of robust construction, made of steel plate with liner
- Easy and quick transportation between job sites.
- Compact design with easy access to all equipment.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for starting of the crusher. A junction electrical box is wired on board.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

IMPACT CRUSHERS - 2016-01-01

UI210 WITH CI512 HSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CI512 HSI	Height	4.60 m / 15' 1"
Feed opening	980 x 434 mm / 39 x 17"	Width	7.60 m / 24' 11"
Max feed size	300 mm / 12"	Length	11.85 m / 38' 11"
Rotor diameter	1005 mm / 39.5"		
Weight	11,184 kg / 24,656 lbs		
Screen		Transport Dimensions	
Screen type	Sandvik CS86 III circular motion	Height	4.75 m / 15' 7"
Screen size	1800 mm x 4800 mm /	Width	2.75 m / 9' 0"
No of decks	5' 11" x 15' 9"	Length	12.30 m / 40' 4"
Drive	Triple deck	Weight	32 ton / 35.3 ston
	Electric motor 15 kW, squirrel cage type.		
Power pack		Performance	
Total power	200 kW	Capacity (up to)	200 mtp
Supply voltage	415 V- 50 Hz / 3-phase AC		
Control voltage	220 V-50 Hz / 3-phase AC		
Running gear	2" King-Pin, Double Axle bogie with air-brakes and running lights. Tyres 10" x 20" – 16 ply		

Note. All weights and dimensions are for standard units only

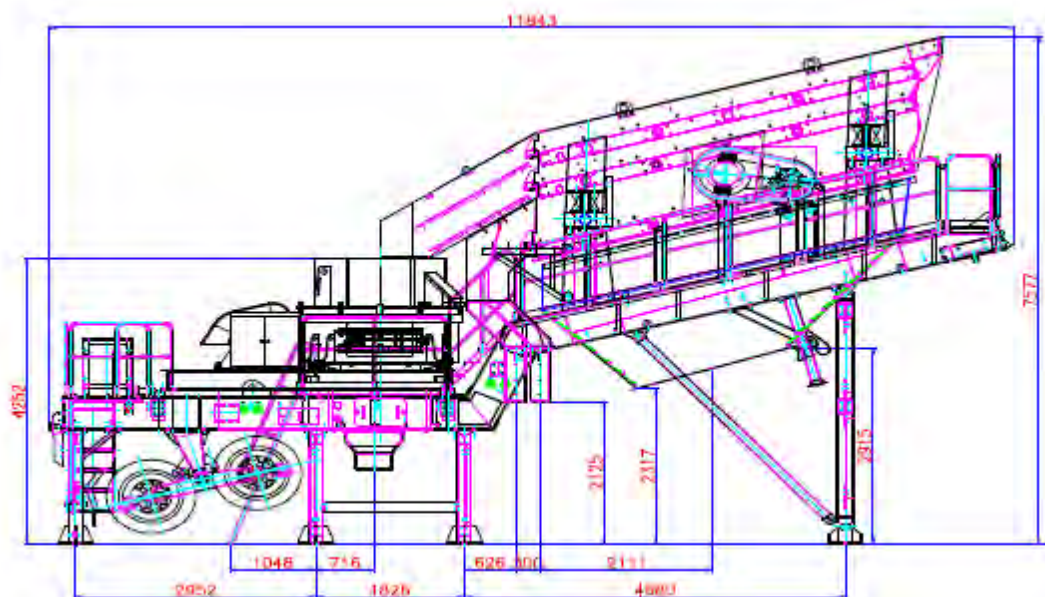
UV210 WITH CV217 VSI IMPACT CRUSHER

The UV210 is a tertiary crushing unit fully assembled on a single trailer frame consisting of a CS 86 triple deck vibrating screen and CV217 VSI (Vertical Shaft Impactor) crusher.

The Sandvik UV210 is a wheel mounted mobile unit that incorporates the highly productive CV217 vertical shaft impact crusher. Sandvik VSI crushers present customers with premier quality vertical shaft impact crusher technology. With many new and advanced design features, Sandvik VSI crushers enable customers to achieve maximum efficiency and reliability in their operations, combined with consistent high quality production.

KEY BENEFITS

- Sandvik VSI crushers are built to suit the requirements of all applications and possess the ability to handle hard, abrasive, fine, moist or sticky feed materials.
- Very low operational cost per tonne
- Produces sized aggregates and sand of a consistent high quality.
- Quick and simple replacement of wear parts.
- Combined with the large screen the UV210 has proved to be the ideal for tertiary crushing.
- The VSI Crusher can be fed two ways:
 - From the top deck of the screen. Top deck material is fully fed to the crusher. Second deck material may be split; either to the crusher or taken as product
 - From the crusher feed belt conveyor
- The operator's platform has handrails and access ladders from the ground.
- Safety guards are fitted to drives of the crusher and screen.
- Easy and quick transport between job sites.
- Compact design and easy access to all equipment.
- All the feed, discharge and connection chutes are of robust construction, made of steel plate with liner.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for starting the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

IMPACT CRUSHERS - 2016-01-01

UV210 WITH CV217 VSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS	UV210	KEY SPECIFICATIONS	UV210
Crusher		Operating Dimensions	
Type	Sandvik CV217	Height	7.60 m / 24.9'
Feed size	50 mm / 2"	Width	4.60 m / 15.1'
Drive	185 kW, 50 Hz electrical	Length	11.85 m / 38.9'
Rotor diameter	motor, squirrel cage type		
Weight	16,000 kg / 35,274 lbs		
Screen		Transport Dimensions	
Sandvik CS86 III circular motion	1800 x 4800 mm/5.9'x 15.8'	Height	4.75 m / 15.55'
No of Decks	Triple Deck	Width	2.75 m / 9'
Drive	15 kW, 50 Hz electric motor	Length	12.30 m / 40.4'
		Weight	31 mton / 35 ston
Power system		Performance	
Total power	200 kW	Max feed size	40 mm / 1 1/2"
Supply voltage	415V / 50 Hz	Capacity (up to)	180 mtph / 496 stph
	440V / 60 Hz 3-phase AC	Running Gear	2" King-Pin, Double Axle bogie with air brakes and running lights. Tyres 10"x20"- 16 ply
Control voltage	220V / 50 Hz / 60 Hz 3 phase AC		
All electrics are intended for connection to a mains supply		Note. All weights and dimensions are for standard units only	

If powered by a genset at least 750 KVA is required

UV311 WITH CV218 VSI IMPACT CRUSHER

Our Sandvik UV311 is a wheel mounted mobile unit that incorporates the CS 86 triple deck vibrating screen and the highly productive CV218 vertical shaft impact crusher. Sandvik VSI crushers present customers with premier quality vertical shaft impact crusher technology. With many new and advanced design features, Sandvik VSI crushers enable customers to achieve maximum efficiency and reliability in their operations, combined with consistent high quality production.

KEY BENEFITS

- Sandvik VSI crushers are built to suit the requirements of all applications and possess the ability to handle hard, abrasive, fine, moist or sticky feed materials.
- Very low operational cost per tonne.
- Produces sized aggregates and sand of a consistent high quality.
- Quick and simple replacement of wear parts.
- Combined with the large screen the UV311 has proved to be the ideal for tertiary crushing.
- The VSI crusher can be fed by two ways:
- From the top deck of the screen. Top deck material can fully or partially by-pass the crusher, as product.
- From the previous crusher feed belt conveyor.
- This unit has been designed to produce 1- 4 products depending on the customer's requirement.
- The operator's platform has handrails and access ladders from the ground.
- Safety guards are fitted to drives of the crusher and screen.
- Easy and quick transport between job sites.
- Compact design and easy access to all equipment.
- All the feed, discharge and connection chutes are of robust construction, made of steel plate with liner.
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit as well as the feed and product conveyors. Soft starter provided for starting of the crusher. A junction electrical box is wired on board.
- Emergency stop push buttons are provided at appropriate places.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

IMPACT CRUSHERS - 2016-01-01

UV311 WITH CV218 VSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Crusher		Operating Dimensions	
Type	Sandvik CV218	Height	7.58 m / 24' 10"
Feed size	55 mm / 2.2"	Width	4.70 m / 15' 5"
Drive	220 kW, 50 Hz electric motor, squirrel cage type	Length	11.85 m / 38' 10½"
Feed station		Transport Dimensions	
Type	Sandvik CV218	Height	4.60 m / 15' 1"
Feed size	55 mm / 2.2"	Width	2.70 m / 8' 10"
Drive	220 kW, 50 Hz electric motor, squirrel cage type	Length	12.30 m / 40' 4"
		Weight	33 mton / 36 ston
Screen		Performance	
Type	Sandvik CS86 III circular motion	Max feed size	55 mm / 2.2"
Size	1800 x 4800mm / 5' 11" x 15' 9"	Capacity (up to)	250 mtpd
No of Decks	Triple Deck	Running Gear	2" King-Pin, Leaf-spring bogie with air-brakes and running lights. Tyres 10" x 20" - 16 ply
Drive	Electric motor 15 kW		
Power system		Note. All weights and dimensions are for standard units only	
Total power	235 kW		
Supply voltage	415 V - 50 Hz / 3-phase AC		
Control voltage	220V - 50 Hz / 3-phase AC		

If powered by a genset at least 750 KVA is required

UV320 WITH CV217 VSI IMPACT CRUSHER

Our UV320 is an integrated Vertical Shaft Impactor and three-way split screening system, designed for the production of premium shaped aggregates for the concrete and asphalt industries.

Featuring the market leading Sandvik CV117 crusher it is an excellent unit for shaping materials and is able to produce three calibrated fractions, plus one oversize and one optional natural fine separation.

The UV320 is available in two types:

- **Direct:** Feed conveyor feeding directly into the VSI crusher without any pre-separation.
- **Flex:** with tippable grizzly, by-pass chute, natural fines screen and optional natural fines conveyor. Flexibility to direct all feed material after the feed station into the VSI crusher, or on the classifying screen, or as a mix to both.
- **Sand** - As "Flex" with the additional possibility to recirculate one or several individual fractions

KEY BENEFITS

- The Sandvik CV117 VSI crusher has been designed specifically to produce cubical products.
- Highly efficient on board Sandvik SF1843 classifying screen.
- Able to operate in open or closed circuit.
- Radio remote controlled tipping grid.
- A foldable flap on each side can be used as a back wall for a loading ramp, and as protection against oversize stones falling from the tipping grizzly.
- Roll way discharge chute on screen provides easy access for service and maintenance.
- Flap door inside the chute on the screen enables mixing fractions from the second and third deck.
- Onboard process with interlocking for trouble free operation.
- All conveyors are electrically driven and hydraulically foldable for transport. Return conveyor excluded.
- Transported in one piece - everything stays onboard.
- Dust encapsulated crusher, main conveyor and product screen for the finest product.
- Maintenance platforms (with stepladders) around the screen, to provide easy access for service and maintenance.
- Emergency stop buttons are located throughout the machine.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

IMPACT CRUSHERS - 2016-01-01

UV320 WITH CV217 VSI IMPACT CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS	UV320 DIRECT	UV320 FLEX
Crusher		
Type	Sandvik CV217 VSI	Sandvik CV217 VSI
Feed opening	50mm	50mm
Drive	185 kW electric motor	185 kW electric motor
Screen		
	SF1843	SF1843
	2 x 11 kW electric motors	2 x 11 kW electric motors
Product screen	-	Coarse stone grizzly: Hydraulic
Motor	Foldable conveyors, supporting legs,	power pack,
Hydraulic system	retractable screen: Hydraulic	400 V, 4 kW
Required power	power pack,	Foldable conveyors, supporting legs,
	24 V (alt.400 V), 3 kW (alt. 4kW)	retractable screen: Hydraulic power
	Generator 325 kVA 400V	pack,
		24 V (alt.400 V), 3 kW (alt. 4kW)
		Generator 325 kVA 400V
Feed station		
SP 0830	-	2 x 2,3 kW electric motors
Hopper volume	-	5 m3 / 177 ft3 with foldable grizzly
NF-Screen		
PJ 10/10	-	2 x 1,8 kW vibrator motors
Conveyors length/width/motor speed		
Feed con belt	6 m / 800mm / 1.25m/s (to	-
Feed con belt	crusher)	
Rear con	10.6 m / 800mm / 1.3m/s (to	10.6 m / 800mm / 1.3m/s (to screen)
3 pro con	screen)	9.5 m / 800mm / 1.25m/s
	9.5 m / 800mm / 1.25m/s	8 m / 650mm / 1.1m/s
	8 m / 650mm / 1.1m/s	4,7 m / 800mm
By-pass conv.	-	
Feed conv.	9 m / 650 mm (external to	9 m / 650 mm (external to crusher)
	crusher)	
NF-conv.	-	8 m / 500 mm
Operating Dimensions		
Height	5.2 m / 17.1'	5.2 m / 17.1'
Width	16.0 m / 52.5'	16.0 m / 52.5'
Length	24.0 m / 78.7'	22.0 m / 72.2'
Transport Dimensions		
Height	4.46 m / 14.6'	4.46 m / 14.6'
Width	3.0 m / 9.8'	3.0 m / 9.8'
Length	18.60 m / 61'	17.85 m / 58.6'
Weight	38.3 mton / 42.1 ston	46.3 mton / 50.9 ston
Running Gear	Type: King-pin 3.5" or 2". Leaf-sprung three-axle bogie, air brakes and running lights. 6 Tyres 385/65R/22.5	

Note. All weights and dimensions are for standard units only

OPTIONS

Belt scale for discharge conveyor
 Start siren
 Overband magnet for feed conveyor
 Ball deck beneath third deck in the SF1843 screen
 King pin according to Norwegian standard
 Extra hydraulic legs in rear (2 pcs)
 Lifting lug for chassis for shipping available (Not necessary Roll on/ off ship)

Electrical heating for feeder and feed hopper (Flex and Sand only)
 Electrical heaters for conveyors
 Dust filter for feed conveyor
 Floodlights on illumination mast
 Natural fines Conveyor 8m x 500 mm (Flex and Sand only)
 3-axle air suspension with EBS brakes. 12x wheels incl. position lights.

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CRUSHER COMBINATIONS AND SCREENS - 2016-01-01

UD211 WITH CJ409 JAW CRUSHER AND CH420 CONE CRUSHER

Our UD211 is a complete crushing unit (primary and secondary crushing with screening) fully assembled on a single trailer frame.

The UD211 consists of:

- SW0843H Vibrating feeder
- CJ 409 Jaw crusher
- CH 420 Cone crusher
- SB 1542 Vibrating screen
- Scorpion looping belt conveyor 900 mm x 15 m.

KEY BENEFITS

- An excellent feed to the screen is obtained by the patented Scorpion loop conveyor.
- It is possible to have two screen cloths with different separations at the bottom deck of the screen. Underneath the screen, there are two reversible conveyors allowing combining or separating fines.
- UD211 is designed to produce up to four different fractions.
- The feed hopper sides and end wall are foldable by mechanical means.
- The crusher by-pass chute collects material which passes through the vibrating feeder's grizzly section.
- Six legs and a rear support stabilise the plant in its working position.
- A platform with handrails and stepladder is provided above the jaw crusher.
- Foldable platforms with handrails and access ladders are fitted for easy access and service.
- Liners for discharge chutes (rubber in the natural fines and undersize chutes, steel in the rest).
- Self-contained electrical switchgear cabinet on board for power distribution to all of the motors on board the unit. Frequency inverter for feeder speed control, with remote control box included to provide step less regulation of the feed rate and local control of the feeder speed.
- The free-standing control panel cabinet is placed on the ground during operation (transported on board the unit).



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CRUSHER COMBINATIONS AND SCREENS - 2016-01-01

UD211 WITH CJ409 JAW CRUSHER AND CH420 CONE CRUSHER – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Operating Dimensions	
Feeder type	SW 0843H Vibrating feeder		
Grizzly length	1.2 m / 4'	Height	5.06 m / 16.7'
Grizzly Gap	70, 90 or 105 mm	Width	3.95 m / 13'
Drive	2.7" , 3.5" or 4.1"	Length	16.61 m / 54.7'
Hopper	2 x 2.7 kW Vibratory motor 12 m ³ / 424 ft ³		
Crusher		Transport Dimensions	
	CJ409		
Primary	895 x 660 mm / 35" x 26"	Height	4.00 m / 13.1'
Feed opening	From electric motor, 75 kW,	Width	2.50 m / 8.2'
Drive	squirrel cage type	Length	16.53 m / 52.4'
Secondary	CH420	Weight	49 ton / 54.9 ston
Drive	From electric motor, 90 kW, squirrel cage type.		
Product screen		Performance	
Screen type	SB1542	Max. feed size	600mm / 23.6"
Screen size	1500 mm x 3700 mm / 5' x 12.1'	- CJ409	130 mm / 5.1"
No of decks	Triple deck	- CH420	150 mtph
Drive	Electric motor 2 x 7.5 kW	Capacity (up to)	
Loop conveyor		Note. All weights and dimensions are for standard units only	
Belt width	900mm / 35"		
Length	15 m / 49.2'		
Drive	11.0 kW electrical motor.		
Power system			
Supply voltage	440V/50 Hz or 380V/60Hz /		
Control voltage	3-phase AC		
	220V/50 Hz or 110V/60Hz /		
	1-phase AC		
Running gear			
	2" King-Pin		
	Leaf-spring triple-axle		
	bogie with		
	air-brakes and running		
	lights.		
	Tyres 10" x 20" - 16 ply.		

If powered by a genset at least 400 KVA is required.

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CRUSHER COMBINATIONS AND SCREENS - 2016-01-01

UF320 WITH SF1843 SCREEN

Our Sandvik UF320 is a complete wheeled screening unit designed for maximum capacity in highly accurate screening operations. Powered by electricity it is fully mobile with hydraulically folding side conveyors and can be easily set-up and transported from site to site within a very short time.

There are three versions available:

- **Comfort:** feeder with tippable grizzly, by-pass chute and optional natural fine removal conveyor.
- **Classic:** feeder with tippable grizzly, by-pass chute, natural fines screen and optional natural fines conveyor.
- **Direct:** feed conveyor feeding directly onto the product screen only

KEY BENEFITS

- Sandvik UF320 is a complete screening unit and comes complete with the highly efficient Sandvik SF 1843 3-D classifying product screen.
- The Screening unit is able to produce three calibrated fractions, one oversize fraction, and one optional natural fine fraction.
- Remote controlled tipping static bar grizzly.
- Foldable hopper extensions on feed hopper provide a wider loading area.*
- A foldable flap on each side can be used as a back wall for a loading ramp, and as protection against oversize stones falling from the tipping grizzly.*
- Rollaway discharge chute on screen provides easy access for inspection and service.
- All conveyors are electrically driven and hydraulically foldable for transport.
- Dust encapsulated feed conveyor, screen and conveyor for the finest fraction.
- Hydraulic supporting legs at front end enable connection with semi trailer more easily.
- The whole unit can be transported in one piece.
- Maintenance platforms around the screen, to provide easy access for inspection and service.
- Onboard process with interlocking for trouble free operation.
- Frequency inverter for the feeder and conveyor of the coarsest product, to provide step less regulation of feed rate and conveyor speed.
 - Optional on board genset is available.



ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CRUSHER COMBINATIONS AND SCREENS - 2016-01-01

UF320 COMFORT/CLASSIC WITH SF1843 SCREEN – TECHNICAL DATA

KEY SPECIFICATIONS

Feed station		Diesel generator set (optional)	
Nom. feed hopper	5m ³	Diesel engine	Iveco GE 806 SI07
Coarse stone grizzly	Tippable static bar grizzly. Nom	Generator	Meccalte Typ ECO 34-25 / 4
Feeder type	sep. 100 alt 125 mm SP0830, with 2 x 2.3 kW vibrator motors. Pre Screen (Classic) PJ 10/10 with 2 x 1.8kW Vibrator Motors	Rated output	105 kVA at 50 Hz
		Fuel tank volume	Approx. 500dm ³
		Hydraulic system	Coarse stone grizzly: hydraulic power pack, 400 V, 4 kW
Product screen		Running gear	King-pin 3 1/2" or 2". Two-axle bogie, air brakes and running lights. 4 tyres 385 / 65R / 22.5
Type	SF1843	Foldable conveyors, supporting legs, retractable screen: Hydraulic	
Screening area	3 x 6.5 m ²		
Conveyors length / width / motor speed		Operating Dimensions	
Feed con belt	10.6m / 800mm / 11kW / 1.3m/s	Height	5.20m / 17.1'
Rear con	9.5m / 800mm / 7.5kW /	Width	14.20m / 46.6'
3 pro con	1.25m/s	Length	20.50m / 67.3'
	8m / 650mm / 4kW / 1.1m/s		
Power system		Transport Dimensions	
Belt width	900mm / 35"	Height	4.28m / 14.0'
Length	15 m / 49.2'	Width	3.00m / 9.8'
Drive	11.0 kW electrical motor.	Length	16.50m / 54.1'
		Weight	Comfort - 31 mton / 34 ston Classic - 34 mton / 37 ston
Power system			
Electric motors, with	400V / 50Hz / 3-phase a.c.		
on-board diesel generator set	230V / 50Hz / 1-phase a.c.		
Main voltage		Note. All weights and dimensions are for standard units only	
Control voltage			

OPTIONS

Belt scale for discharge conveyor
Start siren
Heating system for diesel generator
Genset 100 KVA
Ball deck beneath third deck screen SF1843
Extra hydraulic legs in rear 2 pcs
Lifting lug for chassis for shipping available (Not necessary Roll
on/off ship)
Electrical heating for feeder and feed hopper (Classic and Comfort
only)

Electrical heaters for conveyors
Dust filter for feed conveyor
Floodlights on illumination mast
Natural fines Conveyor 8m x 650 mm (Classic only)
3-axle air suspension with EBS brakes. 12x wheels incl.
position lights

ROCK PROCESSING GUIDE 2016

Chapter S – MOBILE UNITS – WHEELED HD AND XHD RANGE

CRUSHER COMBINATIONS AND SCREENS - 2016-01-01

UF320 DIRECT WITH SF1843 SCREEN – TECHNICAL DATA

KEY SPECIFICATIONS

Product screen		Diesel generator set (optional)	
Type	SF1843	Diesel engine	Iveco GE 806 SI07
Screening area	3 x 6.5 m ²	Generator	Meccalte Typ ECO 34-25 / 4
		Rated output	105 kVA at 50 Hz
		Fuel tank volume	Approx. 500dm ³
		Hydraulic system	Coarse stone grizzly: hydraulic power pack, 400 V, 4 kW
Conveyors length / width / motor speed		Running gear	King-pin 3 1/2" or 2". Two-axle bogie, air brakes and running lights. 4 tyres 385 / 65R / 22.5
Feed conveyor belt	10.6m / 800mm / 11kW / 1.3m/s	Foldable conveyors, supporting legs, retractable screen: Hydraulic	
Rear con	9.5m / 800mm / 7.5kW / .25m/s		
3 pro con	8m / 650mm / 4kW / 1.1m/s		
Power system		Operating Dimensions	
Belt width	900mm / 35"	Height	5.20m / 17.1'
Length	15 m / 49.2'	Width	14.20m / 46.6'
Drive	11.0 kW electrical motor	Length	20.50m / 67.3'
Power system		Transport Dimensions	
Electric motors, with on-board diesel generator set	400V / 50Hz / 3-phase a.c.	Height	4.28m / 14.0'
Main voltage	230V / 50Hz / 1-phase a.c.	Width	3.00m / 9.8'
Control voltage		Length	16.50m / 54.1'
		Weight	26.5 mton / 29 ston

Note. All weights and dimensions are for standard units only

OPTIONS

Belt scale for discharge conveyor
 Start siren
 Heating system for diesel generator
 Genset 100 KVA
 Ball deck beneath third deck screen SF1843
 Extra hydraulic legs in rear 2 pcs
 Lifting lug for chassis for shipping available (Not necessary for roll on/off ship)
 Electrical heating for feeder and feed hopper (Classic and Comfort only)

Electrical heaters for conveyors
 Dust filter for feed conveyor
 Floodlights on illumination mast
 3-axle air suspension with EBS brakes. 12x wheels incl. position lights



ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

CONTENTS 2016-01-01



HC100 BELT CONVEYORS

APPLICATION

STACKERS

MOVABLE OFFERING

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

HC100 BELT CONVEYORS - 2016-01-01

HC100 BELT CONVEYORS

Conventional conveyors are well proven and can be used to handle most kinds of bulk solids. They are to be found in applications ranging from light duty to extra-heavy duty, with a range of belt widths from 400 mm to 3000 mm and in almost unlimited lengths. Troughing angles are 30° as standard. Belt widths and the diameters and widths of pulleys and idlers are all according to EC1 & 3 -standards.

This part of the material-handling section is limited to Sandvik HC100 Belt Conveyors which range of belt widths is 500-1600 mm and lengths 5-80 meters. This is what is normally used in quarry installations. For other sizes and special installations, contact Sandvik Mining and Construction.

The normal type of rubber belt has a smooth surface, which limits the possible angle of inclination to 15-20° depending on friction and material-characteristics. For inclinations up to 30-35°, different kinds of ribbed-top belts are available for use on idler sets with 30° troughing angle, but as ribs make it much more difficult to clean the belt surface, the advantage and disadvantages of this type must be carefully studied in advance.

Conventional conveyors also have limitations on permissible deviation from straight lines. Vertical curves are used quite often but horizontal ones are uncommon. A convex curve is easiest to design and the radius needed is 10-20 m. A concave curve must be given a much greater radius, approx. 120 - 200 m, but all installations with curves must be carefully calculated in order to avoid problems.

Required data

In order to do an adequate calculation of a conveyor, the following data is needed:

- Length
- Peak capacity
- Max lump size
- Bulk density
- Lift height or inclination
- Safety requirements for the project in question. The level of safety regulations varies between countries. The following list is a guideline for safety equipment:
 - Access guarding
 - Lockable isolating switch
 - Emergency stop-wire system at full access area of conveyor
 - Speed monitor

Standard specification

The conveyors conform to the following standards unless otherwise specified:

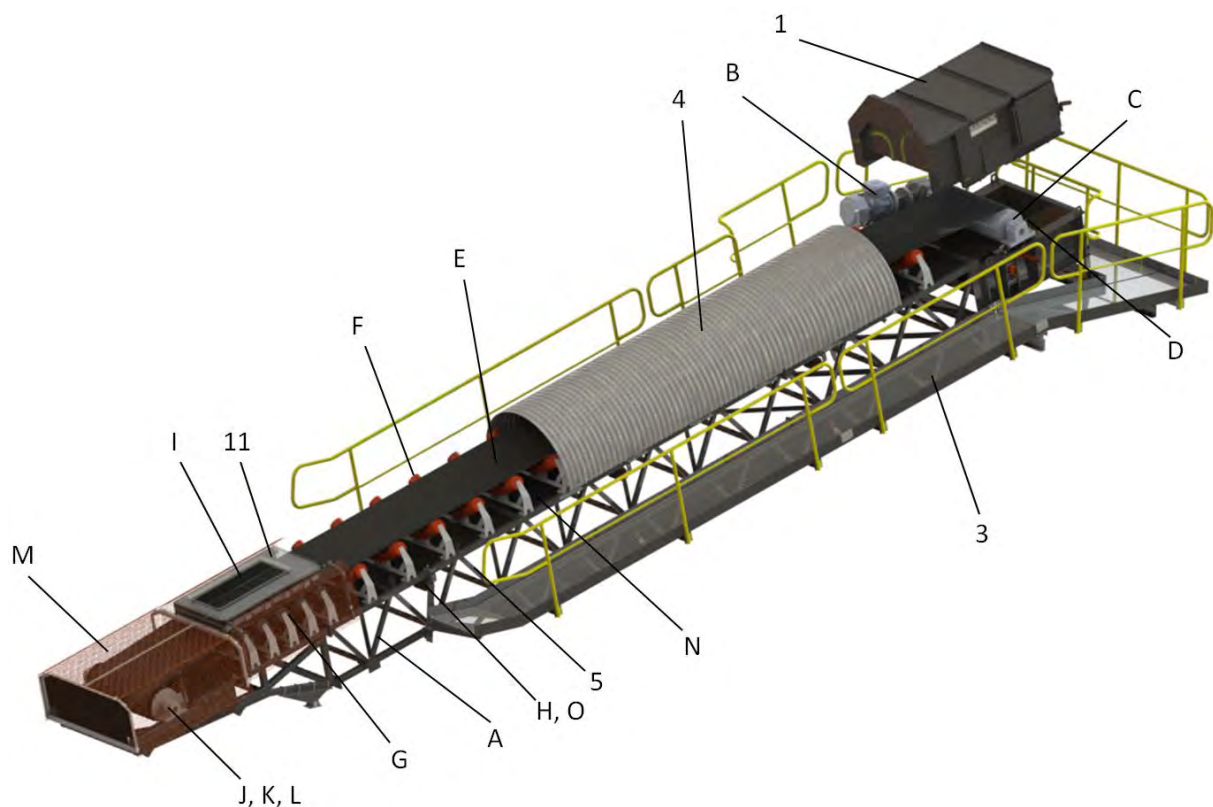
- Inclination 0 - 18°
- Troughing angle 30°
- Belt speed 1.6 or 1.25 m/s
- Bulk density of transported material 1.6 t/m³

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

HC100 BELT CONVEYORS - 2016-01-01

HC100 BELT CONVEYORS



Standard items

- A Frame and support legs
- B Shaft mounted geared drive
- C Drive pulley with bearings
- D Scarving belt cleaner
- E Rubber belt
- F Carrying idlers&brackets
- G Impact idlers or impact bars
- H Return idlers&brackets
- I Loading point, ND or HD
- J Belt tightening device, screw
- K Pulley&belt plough cleaner
- L Tail pulley
- M Safety net at tail end
- N Emergency stop wire
- O Belt rotation detector bracket
- P Installation instructions and O&M-manuals

Optional items

- 1 Discharge end dust hood
- 2 Discharge chute
- 3 Walkways & stairways
- 4 Roof for belt
- 5 Wind cover on side
- 6 Belt scale
- 7 Metal detector
- 8 Belt magnet
- 9 Secondary belt cleaner at discharge end
- 10 Dust collector at load and discharge end
- 11 Dust covers at loading end
- 12 Additional skirt boards, wooden&steel
- 13 HDG-treatment for steel structure

Conveyor code of Sandvik HC100-0800/25H

HC100 = standard belt conveyor
0800 = belt width 800mm

25 = conveyor length 25m
H = heavy duty

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CONVEYOR CALCULATION

The following basic information is needed in order to select dimensions, make calculations and sum-up the results in a specification giving the required description of quoted unit.

1. Calculation of peak capacity, conveyor design capacity

Conveyors directly after the grizzly in the primary station and from a natural fines screen must be able to transport **flowsheet calculation capacity x 1.5 – 2 MTPH**. This is due to variations in the raw material feed curve.

Example: If the flowsheet show 100 MTPH through the grizzly, the conveyor must be designed for at least 150-200 MTPH.

Conveyors in the remaining plant must be able to transport **flowsheet calculation capacity with crusher 100% loaded x 1.25 MTPH**.

Example: If the flowsheet show 100 MTPH through the crusher when the crusher load is 80%, the conveyor must be designed for at least $100 / 80\% \times 1.25 = 156$ MTPH.

NOTE: If a redistribution of the material between the crushers is done, it might imply a change of the throw in the crushers. This will result in a higher load on the conveyors if the throw is bigger. If possible should margin be added for this as well.

2. Material characteristics such as bulk density, material type, lump size, abrasion index etc.
3. Conveyor length (c/c end pulleys).
4. Lift height or inclination.
5. (If possible) a layout drawing indicating installation conditions and requested accessories (walkways, cover, encapsulation etc).

The lump size figure (sized or un-sized) will give the minimum belt width.

The lump size and abrasion index will indicate the minimum top-cover thickness of the rubber belt. The drop height will also affect the selection.

The bulk density and capacity together with belt speed and inclination will give a second minimum belt width to be compared with the dimension given by the lump size.

After selection of belt width and belt speed, the required belt strength, drive power and take-up force can be calculated. Finally all the mechanical parts and accessories can be selected to make a complete specification.

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

SANDVIK HC100 BELT CONVEYORS

DESIGNATION AND UNITS

Capacity, Qv	m ³ /h
Capacity, Qm	metric ton per hour (MTPH)
Bulk density	t/m ³
Belt width, Bw	mm
Belt speed, v	m/s
Inclination	°
Lump size, s	mm
Conv length, Lc	m

MAX LUMP SIZE – BELT CONVEYORS

Belt width (mm)	Screened material (mm)	Unscreened material (mm)	From Jaw Crusher with CSS (mm)*
Bw: 500 mm	85	150	75
Bw: 650 mm	120	200	100
Bw: 800 mm	175	300	150
Bw: 1000 mm	250	325	200
Bw: 1200 mm	325	375	250
Bw: 1400 mm	375	400	250
Bw: 1600 mm	400	400	250

*CSS is valid for raw material with bulk density 1.6 t/m³ and Work Index (WI) max 16. For harder material, use column “Screened material” alt “Unscreened material” depending on actual case.

MAX CAPACITY – BELT CONVEYORS

Peak capacity table for the most common combinations, with natural gravel or crushed stone.

Bulk density = 1.6 t/m³. Inclination = 18°. Troughing angle = 30°.

Belt speed	1.25 m/s		1.6 m/s	
Peak Capacity	m ³ /h	MTPH	m ³ /h	MTPH
Bw: 500 mm	N.A	N.A	115	180
Bw: 650 mm	155	250	210	330
Bw: 800 mm	250	400	325	520
Bw: 1000 mm	440	710	540	870
Bw: 1200 mm	625	1 000	770	1 230
Bw: 1400 mm	905	1 450	1 030	1 650
Bw: 1600 mm	1 190	1 900	1 600	2 300

NOTE! The capacities given above do not correspond to the capacities given in the standard conveyor specifications, which are calculated for a certain motor size.

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CAPACITY WITH DIFFERENT MOTOR SIZES – NORMAL DUTY CONVEYORS

HC100 Belt Width=500mm ND Inclination 18° , Belt speed 1.6 m/s						
	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-0500/05	N.A.	N.A.	3,0	140	4,0	180
HC100-0500/10	3,0	90	4,0	160	5,5	180
HC100-0500/12	3,0	80	4,0	140	5,5	180
HC100-0500/15	3,0	60	4,0	110	5,5	180
HC100-0500/17	3,0	60	4,0	100	5,5	170
HC100-0500/20	4,0	90	5,5	150	7,5	180
HC100-0500/25	4,0	70	5,5	120	7,5	180
HC100-0500/30	4,0	60	5,5	100	7,5	160
HC100-0500/35	5,5	90	7,5	140	11,0	180
HC100-0500/40	5,5	80	7,5	120	11,0	180
HC100-0500/45	5,5	70	7,5	110	11,0	180
HC100-0500/50	5,5	60	7,5	100	11,0	160

HC100 Belt Width=650mm ND Inclination 18° , Belt speed 1.6 m/s						
	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-0650/05	3,0	120	4,0	220	5,5	330
HC100-0650/10	4,0	140	5,5	240	7,5	330
HC100-0650/12	4,0	120	5,5	210	7,5	330
HC100-0650/15	5,5	180	7,5	280	11,0	330
HC100-0650/17	5,5	160	7,5	250	11,0	330
HC100-0650/20	5,5	140	7,5	220	11,0	330
HC100-0650/25	7,5	180	11,0	300	15,0	330
HC100-0650/30	7,5	150	11,0	250	15,0	330
HC100-0650/35	7,5	130	11,0	220	15,0	320
HC100-0650/40	7,5	120	11,0	200	15,0	280
HC100-0650/45	11,0	170	15,0	250	18,5	320
HC100-0650/50	11,0	160	15,0	230	18,5	290

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CAPACITY WITH DIFFERENT MOTOR SIZES – NORMAL DUTY CONVEYORS

HC100 Belt Width=800mm ND Inclination 18° , Belt speed 1.6 m/s						
	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-0800/05	5,5	360	7,5	520	N.A.	N.A.
HC100-0800/10	7,5	370	11,0	520	N.A.	N.A.
HC100-0800/12	7,5	320	11,0	520	N.A.	N.A.
HC100-0800/15	7,5	270	11,0	450	15,0	520
HC100-0800/17	7,5	240	11,0	400	15,0	520
HC100-0800/20	11,0	350	15,0	510	18,5	520
HC100-0800/25	11,0	290	15,0	430	18,5	520
HC100-0800/30	15,0	360	18,5	460	22,0	520
HC100-0800/35	15,0	320	18,5	400	22,0	490
HC100-0800/40	18,5	360	22,0	430	2x15	520
HC100-0800/45	18,5	320	22,0	400	2x15	520
HC100-0800/50	22,0	350	2x15	500	2x18,5	520

HC100 Belt Width=1000mm ND Inclination 18° , Belt speed 1.6 m/s						
	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1000/05	5,5	320	7,5	550	11,0	870
HC100-1000/10	7,5	340	11,0	580	15,0	850
HC100-1000/12	11,0	510	15,0	740	18,5	870
HC100-1000/15	11,0	430	15,0	630	18,5	800
HC100-1000/17	11,0	390	15,0	570	18,5	730
HC100-1000/20	15,0	500	18,5	640	22,0	790
HC100-1000/25	18,5	530	22,0	650	2x15	870
HC100-1000/30	18,5	450	22,0	550	2x15	780
HC100-1000/35	22,0	480	2x15	680	2x18,5	850
HC100-1000/40	22,0	430	2x15	600	2x18,5	760
HC100-1000/45	22,0	380	2x15	550	2x18,5	680
HC100-1000/50	2x15	490	2x 18,5	620	2x22	740

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CAPACITY WITH DIFFERENT MOTOR SIZES – NORMAL DUTY CONVEYORS

HC100 Belt Width=1200mm ND
Inclination 18° , Belt speed 1.6 m/s

	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1200/05	7,5	480	11,0	830	15,0	1230
HC100-1200/10	11,0	550	15,0	810	18,5	1050
HC100-1200/12	11,0	480	15,0	750	18,5	920
HC100-1200/15	15,0	600	18,5	780	22,0	950
HC100-1200/17	18,5	710	22,0	870	2x 15,0	1230
HC100-1200/20	18,5	620	22,0	760	2x 15,0	1080
HC100-1200/25	22,0	630	2x 15,0	890	2x 18,5	1120
HC100-1200/30	22,0	530	2x 15,0	760	2x 18,5	960
HC100-1200/35	2x 15,0	660	2x 18,5	840	2x 22,0	1010
HC100-1200/40	2x 15,0	590	2x 18,5	750	2x 22,0	900
HC100-1200/45	2x 18,5	650	2x 22,0	800	2x 30,0	1120
HC100-1200/50	2x 18,5	600	2x 22,0	730	2x 30,0	1020

Note!

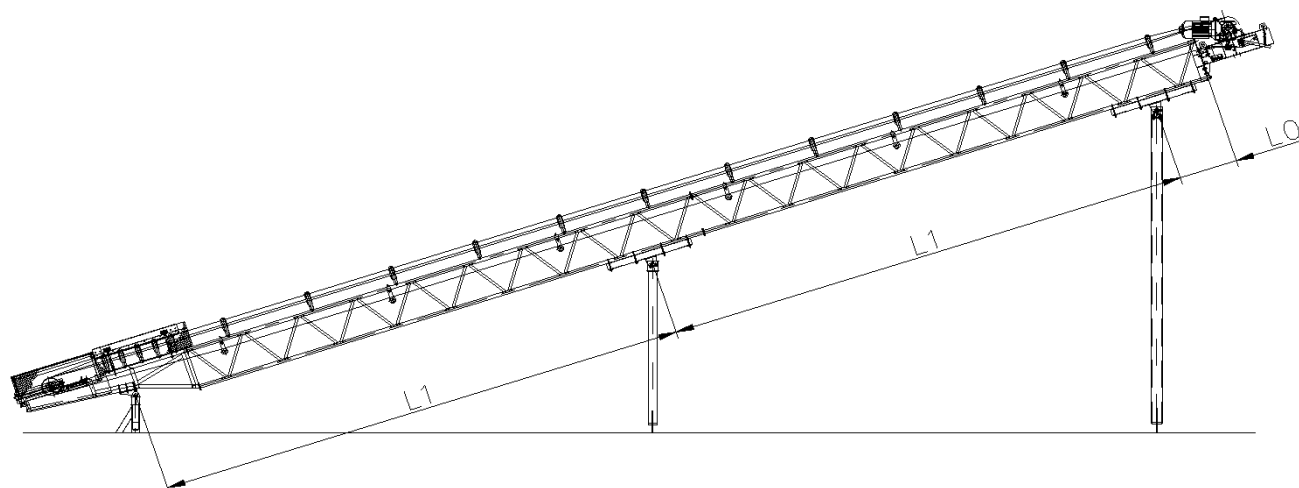
- * Skirt board length 1,5m
- * Values are calculated for ambient temperature 0 deg. Celsius
- * Decrease capacities approx. 10% if ambient temperature changes from 0 deg. to -30 deg. Celsius

SELECTION OF FREE SPAN – NORMAL DUTY CONVEYORS

Depending on the frame structure the free span can vary, but as an approximate distance can following be used:

L1 = 11 - 15 meter

L0 = 1.8 - 3.5 meter



ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CAPACITY WITH DIFFERENT MOTOR SIZES – HEAVY DUTY CONVEYORS

HC100 Belt Width=1000mm HD
Inclination 16° , Belt speed 1.25 m/s

	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1000/10	7,5	320	11,0	580	15,0	710
HC100-1000/11	7,5	300	11,0	550	15,0	710
HC100-1000/15	11,0	430	15,0	650	18,5	710
HC100-1000/17	11,0	390	15,0	590	18,5	710
HC100-1000/20	15,0	520	18,5	670	22,0	710
HC100-1000/22	15,0	480	18,5	620	22,0	710
HC100-1000/25	15,0	430	18,5	550	22,0	680
HC100-1000/30	18,5	470	22,0	580	2x15	710
HC100-1000/35	22,0	510	2x15	710	N.A.	N.A.
HC100-1000/40	22,0	450	2x15	640	2x 18,5	710
HC100-1000/45	22,0	400	2x15	580	2x 18,5	710
HC100-1000/50	2x15	520	2x 18,5	660	2x22	710
HC100-1000/55	2x18,5	610	2x22	710	N.A.	N.A.
HC100-1000/60	2x18,5	560	2x22	680	2x30	710
HC100-1000/65	2x22	630	2x30	710	N.A.	N.A.
HC100-1000/70	2x22	590	2x30	710	N.A.	N.A.
HC100-1000/75	2x22	550	2x30	710	N.A.	N.A.
HC100-1000/80	2x22	520	2x30	710	N.A.	N.A.

HC100 Belt Width=1200mm HD
Inclination 16° , Belt speed 1.25 m/s

	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1200/10	11,0	560	15,0	840	18,5	1000
HC100-1200/11	11,0	520	15,0	800	18,5	1000
HC100-1200/15	15,0	630	18,5	820	22,0	1000
HC100-1200/17	18,5	750	22,0	920	2x15	1000
HC100-1200/20	18,5	660	22,0	810	2x15	1000
HC100-1200/22	22,0	750	2x15	1000	N.A.	N.A.
HC100-1200/25	22,0	670	2x15	960	2x18,5	1000
HC100-1200/30	22,0	570	2x15	820	2x18,5	1000
HC100-1200/35	2x15	720	2x18,5	910	2x22	1000
HC100-1200/40	2x15	640	2x18,5	810	2x22	980
HC100-1200/45	2x 18,5	730	2x22	880	2x30	1000
HC100-1200/50	2x 18,5	660	2x22	800	2x30	1000
HC100-1200/55	2x22	730	2x30	1000	N.A.	N.A.
HC100-1200/60	2x30	940	2x37	1000	N.A.	N.A.
HC100-1200/65	2x30	870	2x37	1000	N.A.	N.A.
HC100-1200/70	2x30	810	2x37	1000	N.A.	N.A.
HC100-1200/75	2x37	950	2x45	1000	N.A.	N.A.
HC100-1200/80	2x37	900	2x45	1000	N.A.	N.A.

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

APPLICATION 2016-01-01

CAPACITY WITH DIFFERENT MOTOR SIZES – HEAVY DUTY CONVEYORS

HC100 Belt Width=1400mm HD
Inclination 16° , Belt speed 1.25 m/s

	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1400/10	18,5	1070	22,0	1310	2x15	1450
HC100-1400/15	22,0	980	2x15	1420	2x 18,5	1450
HC100-1400/20	22,0	790	2x15	1130	2x 18,5	1430
HC100-1400/30	2x18,5	1020	2x22	1240	2x30	1450
HC100-1400/40	2x22	970	2x30	1350	2x37	1450
HC100-1400/50	2x22	790	2x30	1100	2x37	1380

HC100 Belt Width=1600mm HD
Inclination 16° , Belt speed 1.25 m/s

	Small motor		Standard motor		Big motor	
	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)	Motor (kW)	Max Capacity (MTPH)
HC100-1600/10	22,0	1300	2x15	1840	2x18,5	1900
HC100-1600/15	2x15	1400	2x18,5	1780	2x22	1900
HC100-1600/20	2x 18,5	1430	2x22	1720	2x30	1900
HC100-1600/30	2x22	1230	2x30	1730	2x37	1900
HC100-1600/40	2x30	1350	2x37	1680	2x45	1900
HC100-1600/50	2x37	1380	2x45	1680	2x55	1900

Note!

- * Skirt board length 1,5m with one loading point (impact bars)
- * Values are calculated for ambient temperature 0 deg. Celsius
- * Decrease capacities approx. 10% if ambient temperature changes from 0 deg. to -30 deg. Celsius
- * Before quoting HC100 belt width 1400 or 1600 please contact with factory

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

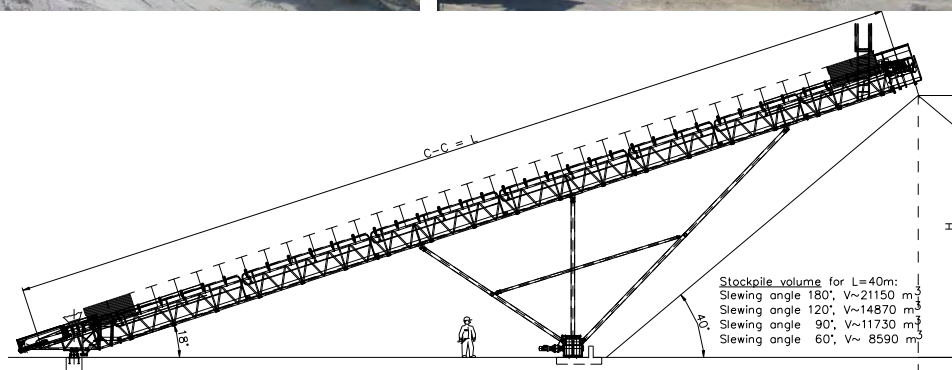
STACKERS 2016-01-01

HS100 STACKER

Standard Belt Conveyors includes different series of stacking conveyors. The standard range of Sandvik HS100 Stackers covers 4 belt widths (650, 800, 1000 and 1200 mm) each having 5 different lengths (20, 25, 30, 35 and 40 m). HS100 Stackers have a typical capacity range of 200...1200 t/h.

APPLICATIONS

The advantages of HS100 Stackers make it an ideal and cost-effective conveying solution for stockpiling of mining and bulk materials. Adopting of the HS100 Stacker allows stockpiles to be more strategically placed, more quickly processed and, when there is a series of stackers, it can work faster and more efficiently than fixed conveyors.



Sandvik HS100-		0650/20...40	0800/20...40	1000/20...40	1200/20...40
Capacity (1.6 T/m ³)	tph	200	400	550 - 800	750 - 1200
Length, L	m	20, 25, 30, 35 and 40			
Belt width	mm	650	800	1000	1200
Motor Power	kW	7.5 – 11	15 – 22	18.5 – 2 x 22	22 – 2 x 30
Belt Speed	m/s	1.6	1.6	1.6	1.6
Transfer machinery	kW	0.75 – 2.2	1.1 – 2.2	1.1 – 2.2	1.1 – 3-0
Travelling speed	m/min	~ 6			
Stock pile volume	m ³	2 300 – 21 300 (if slewing angle 180°)			
Weight	T	6 - 11	6 - 12	8 - 16	9 - 17

Optional items like cover over belt, walkways, slewing machineries are available on request. Higher capacities are available, please contact with factory before quoting

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

MOVABLE OFFERING 2016-01-01

HS300 MOVABLE STACKER

Standard Belt Conveyors includes different series of stacking conveyors. The range of Sandvik HS300 Movable Stackers covers belt widths (650, 800, 1000, 1200 and 1400 mm) each having different lengths up to 40 m. HS300 Stackers have a typical capacity range of 30...2 800 t/h.



Sandvik HS300-		1000/30	1000/40	1200/30	1200/40
Capacity (1.6 T/m ³)	tph	300-450	400-700	650-1000	950-1 500
Length, L *	m				
Belt width	mm	650	800	1000	1200
Lifting height *	m				
Motor Power *	kW	11 – 30	15 – 45	22 – 55	30 – 2 x 45
Belt Speed	m/s	1.6 – 2.3	1.25 - 2.3	1.25 - 2.3	1.25 - 2.3
Stock pile volume	m ³				
Weight	T	10 - 16	12 - 21	14 - 26	16 - 31

* All data preliminary, please contact with factory before any quoting

HS300 Movable Stacker lengths, hopper dimensions and movable actions can be customized according to the customer's preferences.

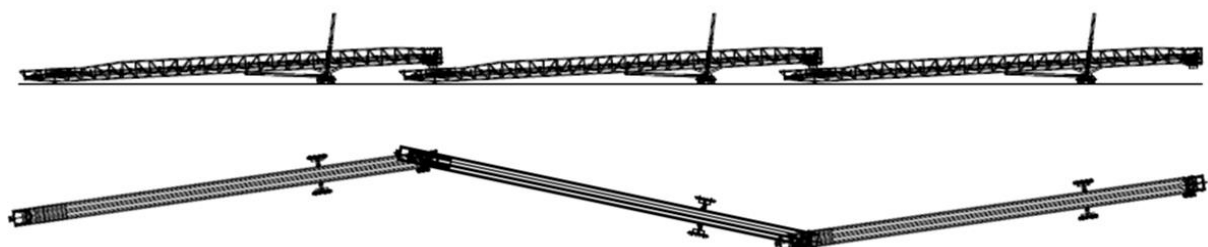
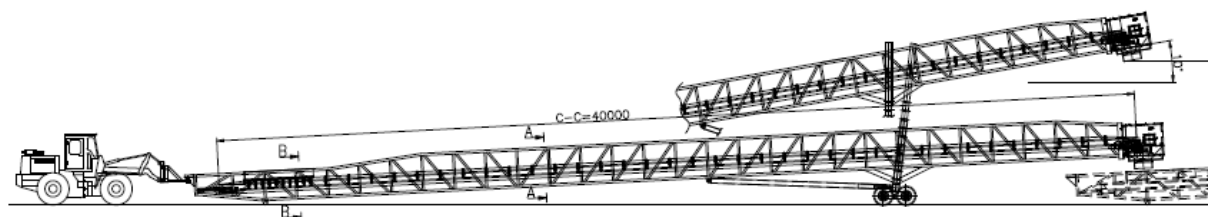
ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

MOVABLE OFFERING 2016-01-01

HC200 LINK CONVEYOR

The range of Sandvik HC200 Link Conveyors covers 2 belt widths (1000, 1200) each having two different standard lengths of 30 and 40 meters. HC200 Link Conveyor have a typical capacity range of 500...1500 t/h.



Sandvik HC200-		1000/30	1000/40	1200/30	1200/40
Capacity (1.6 t/m ³)	t/h	1000	1000	1500	1500
Conveyor C-C length	m	30	40	30	40
Belt width	mm	1000	1000	1200	1200
Drop height	m	4,5	6,2	4,5	6,2
Motor Power	kW	2 x 15	2 x 15	2 x 22	2 x 22
Belt Speed	m/s	1.7	1.7	1.7	1.7
Weight	kg	11 000	14 000	12 000	15 000

* All data preliminary, please contact with factory before any quoting

HC200 Link Conveyor capacities, lengths and lifting heights can be customized according to the customer's preferences.

ROCK PROCESSING GUIDE 2016

Chapter T – BELT CONVEYORS

MOVABLE OFFERING 2016-01-01

HF400 MOVABLE BELT FEEDER

Sandvik HF400 Movable Belt Feeders are used to reclaim material on to some other equipment for further handling, i.e. on belt conveyors. The range of the Sandvik HF400 Movable Belt Feeders covers belt widths of 1000 and 1400 mm each having standard length, load height and discharge heights. HF400 Movable Belt Feeder have a typical capacity range of 500...2000 t/h. Combination of HF400 Movable Feeder, HC200 Link Conveyor and HC300 Movable Stacker can be used in several different applications.



Sandvik HF400-		1000/10	1000/16	1400/10	1400/16
Capacity	m ³ /h	475	475	950	950
Capacity (2.1 t/m ³)	t/h	1000	1000	2000	2000
Hopper size	m ³	10	10	17	17
Inclination	deg	12	12	12	12
Feeder C-C length	m*	10.5	16.5	10.5	16.5
Belt width	mm	1000	1000	1400	1400
Motor power	kW	2x18.5	2x22	2x22	2x30
Loading height	mm	3500	3500	3850	3850
Discharge height	mm	1950	3150	1950	3150

* All data preliminary, please contact with factory before any quoting

HF400 Movable Belt Feeder lengths, hopper dimensions and movable actions can be customized according to the customer's preferences.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

CONTENTS 2016-01-01



PRODUCT RANGE

SELECTION GUIDE

WEAR PLATES

WEAR RESISTANT SHEETING

CERAMIC WEAR PROTECTION

CAST IN CARBIDE WEAR PRODUCTS

DUST ENCAPSULATION

TELESCOPIC CHUTE

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

PRODUCT RANGE 2016-01-01

PRODUCT RANGE

WT6000	(Wearthuff FF)	- Flat rubber wear plate with steel backing
WT6000	(Wearthuff CF)	- Corrugated rubber wear plate with steel backing
WT6000	(Wearthuff FX)	- Flat rubber wear plate with aluminum profiles
WT7000	(Wearthuff FR)	- Modular dual hardness rubber wear plate
WT8000	(Wearthuff FFU)	- Flat polyurethane wear plate with steel backing
WT6000	(Perfoback PB)	- Flat rubber wear plate with perforated steel reinforcement
WT8000	(Perfoback PBU)	- Flat polyurethane wear plate with perforated steel reinforcement
WT1000	(Impact Bar)	- Impact bar with top surface of low friction material
WT6000	(Wear Bar)	- Rubber wear bar with extruded aluminum profile
WG4000	(Wear Guard40)	- Rubber sheeting 40 Shore A hardness
WG6000	(Wear Guard60)	- Rubber sheeting 60 Shore A hardness
WG3500	(Wear Guard35)	- Rubber sheeting 35 Shore A hardness
WG8000	(Wearguard PU)	- Polyurethane sheeting 80 Shore A hardness
WG1000	(Duraglide Reclaim)	- Low friction sheets UHMW-PE reclaim material, Speckled
WG1000	(Duraglide Virgin)	- Low friction sheets in UHMW-PE virgin material, White
WG2000	(Duraglide HiGrade)	- Low friction sheets in UHMW-PE Higrade material, Black
WG9200	(Wearthuff FFC)	- Ceramic / rubber sheeting with contact layer
WT9200	(Wearthuff FFC)	- Flat ceramic / rubber wear plate with steel backing
HX900	(Sancic)	- Cast in carbide wear material

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

SELECTION GUIDE 2016-01-01

GENERAL MATERIAL SELECTION

40 Shore A rubber	- Good abrasion resistance. Dry applications.
60 Shore A rubber	- Good impact, wear and tear resistance.
Polyurethane	- Good abrasion resistance. Low friction. Wet applications.
Ceramics	- Very good abrasion resistance. Low friction. Brittle.
Polyethylene	- Very low friction.
Cast in carbide	- Very good abrasion and impact resistance. Heavy duty applications.

Factors that influence the wear life of wear resistant rubber

Material hardness	- Harder material, reduces wear life (less affect than on metals)
Particle size	- Larger particle size (max 1 m ³), reduces wear life
Particle shape	- Sharp particles, reduces wear life (cutting damage)
Drop height	- Higher drop height (max 3,5 m), reduces wear life
Impact speed	- Higher speed (max 8 m/s), reduces wear life
Impact angle	- Angles between 10°-50°, reduces wear life
Pressure	- Higher pressure, reduces wear life
Temperature	- Higher temperature (over 70° centigrade), reduces wear life
Chemicals	- Petroleum products make rubber swell / soft, reduces wear life
UV-light	- UV-light makes rubber crack, reduces wear life
Ozone	- Ozone makes rubber crack, reduces wear life

When should Sandvik wear resistant products be used?

Wear problems
Corrosion problems
Flow problems
High noise levels
High maintenance costs
Short service intervals
Too much downtime

Features and Benefits with Sandvik wear resistant products

Impact absorption
Long wear life
Noise reduction
Longer service intervals
Reduced need for maintenance
Lower operating cost
Low weight
Less risk for accidents
Quick and easy installation
Increased productivity

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

SELECTION GUIDE 2016-01-01

SANDVIK WEAR RESISTANT RUBBER THICKNESS SELECTION GUIDE

This selection guide is intended as a tool for making a rough selection of the correct wear resistant rubber thickness for a particular application based on material size and drop height. The values in this chart are valid for materials with a density of maximum 3 tons/ m³. Not valid for 35 and 40 Shore A rubber, polyurethane and polyethylene. If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.

Particle size (mm)	25	50	75	100	150	200	300	500	700	1000
Weight (kg)	0,1	0,3	1	3	10	30	100	300	1000	3000
Drop height (m)	Impact angle >50° - <90° WG6000 flat rubber sheeting / WT6000 wear plate thickness (mm)									
0,5	10	15	20	25	40	50	75	75	100	100
1,0	15	20	25	40	50	50	75	75	100	100
1,5	20	25	40	40	50	50	75	75	100	125
2,0	20	25	40	50	50	75	75	100	100	125
2,5	20	25	40	50	75	75	100	100	125	125
3,0	25	40	50	50	75	75	100	100	125	150
Drop height (m)	Impact angle >10° - 50° WT6000 corrugated rubber sheeting / WT6000 wear plate thickness (mm)									
0,5	15	40	40	50	50	75	100	Contact your Sandvik Mining or Sandvik Construction representative.		
1,0	15	40	50	50	75	100	125			
1,5	40	40	50	75	75	100	125			
2,0	40	50	50	75	75	100	125			
2,5	40	50	50	75	75	100	125			
3,0	40	50	50	75	75	100	125			
Capacity (tph)	Sliding wear, 0° - 10° angle WG6000 flat rubber sheeting / WT6000 wear plate thickness (mm)									
0 - 200	15	20	25	40	50	75	100	Contact your Sandvik Mining or Sandvik Construction representative.		
200 - 400	20	25	40	50	75	100	100			
400 -	25	40	50	75	100	100	100			
Capacity (tph)	Vertical walls (90°). WG6000 flat rubber sheeting / WT6000 wear plate thickness (mm)									
0 - 200	10	15	20	25	40	50	75	Contact your Sandvik Mining or Sandvik Construction representative.		
200 - 400	15	20	25	40	50	75	100			
400 -	20	25	40	50	75	100	100			

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

RUBBER WEAR PLATES

Sandvik WT6000 flat, long lasting rubber wear plates with full steel backing or extruded aluminum profiles is an all-around wear protection that can be tailor-made to fit most applications from light- to extra heavy-duty.



WT6000 - Flat with steel backing

The WT6000 rubber material has excellent wear and tear resistance making it the perfect choice for demanding applications. The full steel backing offers stability and allows for safe installation using through bolts or stud welding. It is available in a wide variety of thickness making it suitable for applications ranging from light to extra heavy duty.



WT6000- Flat with aluminum profiles

Sandvik WT6000 rubber wear plates with aluminum profiles are lightweight compared to steel linings, which makes handling liner parts easy and greatly reduces the risk of work place accidents. The T-bolt attachment system offers flexibility and makes installation quick, easy and safe.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

RUBBER WEAR PARTS - TECHNICAL DATA

Dimensions

Flat WT6000 with steel backing

Thickness: (incl. 3 mm steel backing):

15, 20, 25 and 30 mm

Thickness: (incl. 5 mm steel backing):

40, 50, 75, 100 and 125 mm

Thickness: (incl. 8 mm steel backing):

150 mm

Width: 500, 600, 750 mm

Length: 1000 and 1500 mm

Flat WT6000 with aluminum profiles

Thickness: 50, 75 and 100 mm

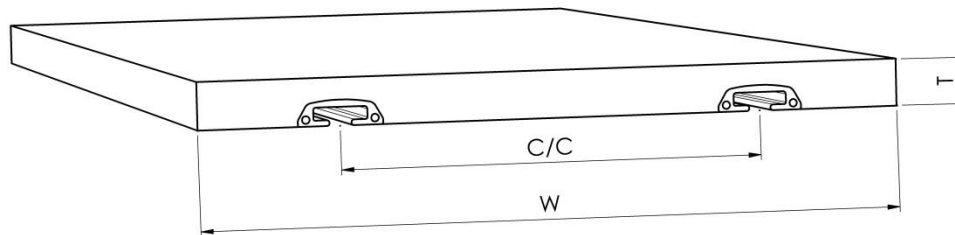
Width: 500, 600, 750 mm

c/c aluminum profiles:

300 mm (width 500 and 600 mm)

450 mm (width 750 mm)

Length: 1500 mm



Fastening methods

WT6000 with steel backing: Through bolts, stud welding ($t > 50$ mm), welded studs on steel backing.

WT6000 with aluminum profiles: T-bolts.

Materials

Wearing material: 60 Shore A rubber.

Reinforcement: Steel plate or Aluminum profiles.

Example of typical applications

Hoppers - Chutes - Feeders - Truck bodies - Skips - Transfer points - Bins - Silos - Spouts - Concrete mixers - Scrubbers - Screen feed boxes and discharge lips

Limitations

Do not install in applications with any amount of oil present.

Temperature: Max. 80°C. Min. -25°C

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

CORRUGATED RUBBER WEAR PLATES

Sandvik WT6000 corrugated, long lasting rubber wear plates with full steel backing have a profiled surface especially designed for medium- to heavy-duty applications with an unfavorable impact angle (10-50°).



Optimal impact angle or rock box effect

The WT6000 corrugated plates provides impact absorption in areas with an unfavorable impact angle (10-50°) thereby extending equipment life by reducing excessive wear. Due to the corrugated surface, an optimal impact angle (~90°) can be achieved, extending the wear life of the lining material. The liners can also be in-stalled turned upside down creating a rock box effect. Since rubber isn't affected by corrosion it has an additional benefit compared to steel linings.

Corrugated WT6000 rubber linings are lightweight compared to steel linings, which makes handling liner parts easy and greatly reduces the risk of injury.

Safe and easy installation

Replacing WT6000 liner parts is made easy by use of mechanical fastening systems. Through bolts or stud welding are two safe methods used to install Sandvik corrugated WT6000 liners. Installing rubber liners from Sandvik typically cut the noise level, as experienced by the human ear, in half compared to steel.

Less maintenance and reduced operating cost

Due to the long wear life and the impact absorbing properties of corrugated WT6000 liners less maintenance is required, service intervals are longer, and unscheduled breakdowns can be avoided. Sandvik corrugated WT6000 rubber liners increase plant profitability by reducing the operating cost.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

CORRUGATED RUBBER WEAR PLATES - TECHNICAL DATA

Standard sizes

Thickness (overall/valley):

50/12.5, 75/37.5, 100/25, 125/50 and 150/75 mm

Width: 750 mm

Length: 1500 mm

Fastening methods

Through bolts, stud welding

Materials

Wearing material: 60 Shore A rubber

Reinforcement: 5 mm steel plate

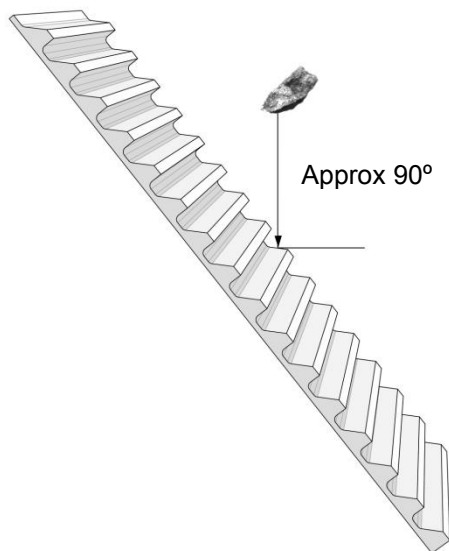
Example of typical applications

Hoppers - Chutes - Skips - Transfer points - Bins – Silos

Limitations

Do not install in applications with any amount of oil present.

Temperature: Max. 80°C. Min. -25°C.



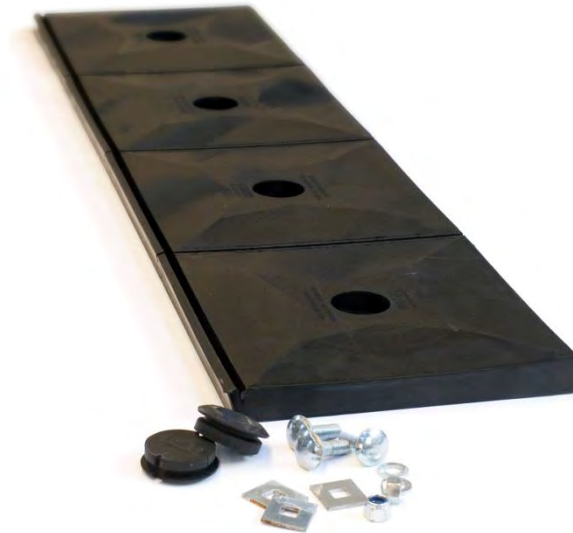
ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

MODULAR DUAL HARDNESS RUBBER WEAR PLATES

Sandvik WT7000 long lasting modular dual hardness rubber wear plate is a lightweight, all-around wear protection that can be easily tailor-made to fit most applications from light- to medium-duty.



Recyclable rubber makes WT7000 eco friendly

Sandvik's WT7000 modular wear protection made in dual hardness rubber offers a longer life of equipment by reducing vibrations and by dampening the impact forces that otherwise cause cracks to the superstructure. As no steel is used, worn out liners can easily be recycled making the product eco friendly.

Light weight and easy to install

Sandvik WT7000 modular wear protection is lightweight compared to other lining materials, which makes handling liner parts easy and greatly reduces the risk of work related injuries. It also makes it suitable for mobile equipment. Since rubber isn't affected by corrosion it has an additional benefit compared to steel linings. Installing and replacing WT7000 liner parts is made easy by use of mechanical fastening systems. Square neck bolts or stud welding are safe methods used to install these liners. The liners are user friendly and can easily be cut to fit on site by use of a knife or band saw.

Prevents fines penetration

The special lip eliminates gaps and prevents fines penetration. Sandvik rubber liners typically cut the noise level, as experienced by the human ear, in half compared to steel. WT7000 dual hardness liners provide longer service intervals and reduced the operating cost which increases plant profitability.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

MODULAR DUAL HARDNESS RUBBER WEAR PLATES TECHNICAL DATA

Dimensions

Thickness: 30, 40 and 50 mm

Width: 300 mm

Length: 1200 mm (4 x 300 mm)

Weight = 12, 16 and 20 kg

Fastening methods

Square neck bolt or stud welding

Materials

Wearing material: 70 Shore A rubber

Reinforcement: 90 Shore A rubber

Example of typical applications

Hoppers - Chutes - Feeders - Mobile units - Skips - Transfer points - Bins - Spouts - Screen feed boxes and discharge lips

Limitations

Do not install in applications with any amount of oil present

Temperature: Max. 80°C. Min. -25°C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

POLYURETHANE WEAR PLATES

Sandvik long lasting polyurethane wear plates with full steel backing is an all-around wear protection that can be tailor-made to fit most applications from light- to medium-duty. It is mainly used in wet applications.



WT8000 Polyurethane wear plates

This product offers a combination of very good wear resistance and low friction properties making it the best choice for many applications. It performs very well in wet applications with fine particles and sliding wear. WT8000 combines good resistance against impact and sliding wear.

Installing polyurethane liners from Sandvik typically cut the noise level, as experienced by the human ear, in half compared to steel. Two safe and easy methods of installing Sandvik polyurethane wear plates are by using through bolts or self tapping screws. Sandvik polyurethane linings are lightweight compared to steel linings, which makes handling liner parts easy and greatly reduces the risk of injury. Resistance against corrosion and most chemicals gives this product an additional benefit compared to steel linings.

The properties of Sandvik polyurethane wear liners reduce the need for heavy and expensive steel constructions and allow for open frame designs. Due to the long wear life of Sandvik polyurethane liners, service intervals are long and unscheduled breakdowns can be avoided. Sandvik polyurethane linings extend equipment life, lower operating cost and increase plant profitability.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

POLYURETHANE WEAR PLATES - TECHNICAL DATA

Dimensions

WT8000

Thickness (incl. 3 mm backing): 10, 12.5, 15, 20, 25 and 30 mm

Width: 1000 mm

Length: 2000 mm

WT8000-XL

Thickness (incl. 3 mm steel backing): 10, 12.5, 15, 20, 25 and 30 mm

Width: 1500 mm

Length: 3000 mm

Fastening methods

Through bolts, welded studs on steel backing, self-taping screws

Materials

Wearing material:

80 Shore A polyurethane

Reinforcement: 3 mm steel plate

Example of typical applications

Concrete mixers - Hoppers - Chutes - Skips - Bins – Silos - Spouts - Screens – Feeders

Limitations

Temperature: Max. 80° C. Min. -40° C.

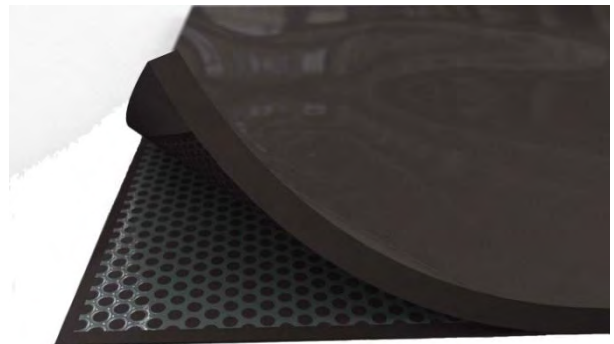
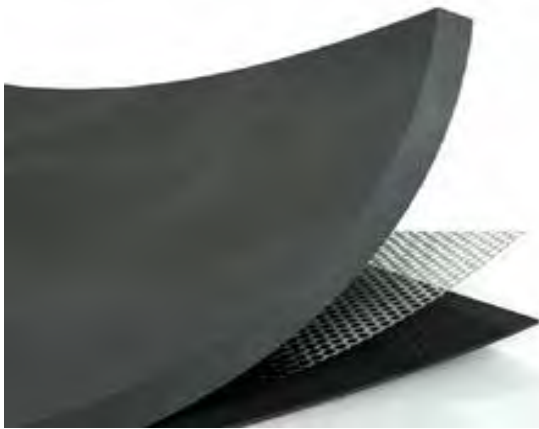
ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

FLEXIBLE WEAR PLATES

Sandvik flexible long lasting rubber and polyurethane wear plates with embedded perforated steel reinforcement. They can easily be shaped to fit most applications from light- to medium duty.



WT8000 Flexible polyurethane wear plates with perforated steel reinforcement

A high grade polyurethane material provides excellent wear life making it long lasting. WT8000 flat flexible wear plates is suitable especially for wet applications with fine materials. The flexible steel reinforcement gives it stability at the same time allowing it to be bent easily to fit various applications.

Long wear life and extended service intervals

Due to the long wear life of these liners service intervals are extended and unscheduled breakdowns are avoided. Since the completely embedded, flexible steel reinforcement isn't affected by corrosion it has an additional benefit compared to steel linings.

Lightweight and noise reducing

These lining materials are lightweight compared to steel linings, which makes handling liner parts simple and greatly reduces the risk of injury. Installing polymer liners from Sandvik typically cut the noise level, as experienced by the human ear, in half compared to steel.

Flexibility makes installation easy

Installation is made quick and easy by use of mechanical fastening systems. Through bolts, self-taping screws or Hilti-nails are three safe methods to install Sandvik flexible liners. These liners are easy to cut to fit various applications by using a whipsaw. The perforated reinforcement allows it to be bent to fit complex surfaces.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

FLEXIBLE WEAR PLATES - TECHNICAL DATA

Dimensions

WT8000

Thickness (incl. 0,7 mm perforated steel backing): 10, 12.5, 15, and 20 mm

Width: 1020 mm

Length: 2020 mm

Fastening methods

Through bolts, self tapping screws, Hilti-nail

Materials

Wearing material WT8000: 80 Shore A polyurethane

Reinforcement: 0,7 mm perforated steel plate

Example of typical applications

Hoppers - Chutes - Feeders - Transfer points - Bins - Silos - Spouts - Concrete discharge chutes - Agglomeration drums

Limitations

WT8000 temperature: Max. 80°C. Min. -40°C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

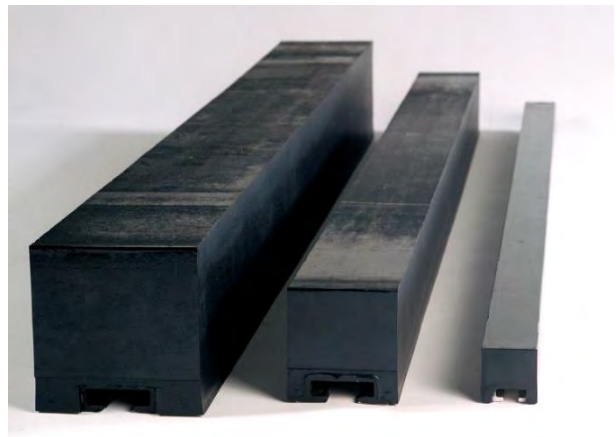
IMPACT AND WEAR BARS



SANDVIK IMPACT BARS

Sandvik WT1000 impact bar has a top surface of low friction material and a core of soft impact absorbing rubber. It has an extruded aluminum profile for quick and safe installation. It is ideal for loading zones and transfer points. Sandvik WT1000 impact bar has been developed to protect conveyor belts and conveyors in the loading area. The soft rubber absorbs the impact energy from the falling material thus preventing crushing and cutting damage to the belt and cracking of the conveyor structure.

The low friction top surface results in very little drag. The WT1000 impact bar also improves belt tracking and reduces belt sagging by supporting the belt edge thus preventing spillage. Since there are no moving parts it requires a minimum of maintenance. The top surface is resistant against oil, grease and most chemicals making it suitable for a wide range of applications. WT1000 impact bars are normally mounted on impact cradles with foldable sides for quick and easy installation and replacement.



SANDVIK WEAR BARS

Sandvik WT6000 Wear bar is made of long lasting rubber with an extruded aluminum profile for safe installation. They can be used in many different applications from light- to heavy-duty. Sandvik WT6000 wear bars extend equipment life by dampening the impact forces that otherwise cause cracks to the superstructure. Provided that the correct rubber thickness has been selected the flexibility of the rubber allows it to give, preventing cracking and surface deformation.

Rubber wear bars are lightweight, which makes handling easy and greatly reduces the risk of work related injury. Installing and replacing WT6000 wear bars is made easy by use of a T-bolt fastening system. It is a quick and safe method to install Sandvik WT6000 wear bars. Due to the long wear life and the impact absorbing properties of Sandvik WT6000 wear bars service intervals are long and unscheduled breakdowns are avoided. Installing wear bars from Sandvik in areas exposed to heavy impact lowers the noise level and the operating cost while increasing plant profitability.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR PLATES 2016-01-01

IMPACT AND WEAR BARS – TECHNICAL DATA

WT1000 IMPACT BAR

Dimensions

Width: 100 mm

Height: 50 mm and 75 mm

Length: 1220 and 1500 mm

Fastening methods

T-bolts

Materials

Top surface: 10 mm thick 1000 Virgin polyethylene (UHMW-PE)

Dampening material: 40 Shore A rubber

Reinforcement: Aluminum profile

Example of typical applications

Loading stations - Transfer points

Limitations

Temperature: Max. 80° C. Min. -25° C.

WT6000 WEAR BAR

Dimensions

Width: 50 and 75 mm. *Height:* 50, 75 and 100 mm

Width: 100 mm. *Height:* 50, 75, 100, 125 and 150 mm

Width: 125 and 150 mm. *Height:* 100, 125 and 150 mm

Length: 1500 mm

Fastening methods

T-bolts

Materials

Wearing material: 60 Shore A rubber

Reinforcement: Aluminum profile

Example of typical applications

Screen center hold down bar - Chutes - Feeders - Skips - Transfer points - Scrubbers (lifter bars) - Mill linings (lifter bars) – Rock boxes

Limitations

Do not install in applications with any amount of oil present.

Temperature: Max. 80°C. Min. -25°C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

BLACK RUBBER SHEETING

Sandvik black rubber sheeting is made of a high quality, long lasting materials. It is available in smooth, tear-off or with bonding layer in 40 and 60 Shore A. It is an all-around wear protective sheeting that can be tailor-made to fit most applications from light- to medium duty.



WG4000 Natural Rubber Sheeting

Sandvik WG4000 has a very high degree of elongation, which makes it suitable for applications where flexibility is needed. It is very good in wet and dry applications with fine particles and sliding wear. It can be used as skirting rubber, curtains and in many other applications.

WG6000 Synthetic Rubber Sheeting

Sandvik WG6000 has very good tensile strength, which makes it suitable for applications with sharp, crushed material. It has very good wear and tear resistance making it long lasting.

Light weight wear protection

WG4000 and WG6000 can easily be cut to size by using a regular knife or a rotating pneumatic knife. The flexibility of the rubber allows it to be bent to fit complex surfaces. Installation can be done by using glue, screws or it can be clamped in position. Also available with tear-off backing or bonding layer making installation quick and easy. Sandvik rubber sheeting is lightweight, which makes handling easy and greatly reduces the risk of work injury.

Long wear life increases plant profitability

Rubber sheeting from Sandvik typically cut the noise level, as experienced by the human ear, in half compared to using steel liners. Sandvik rubber sheeting extends equipment life by protecting it against wear thereby increasing plant profitability. Since rubber isn't affected by corrosion it has an additional benefit compared to metal linings.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

BLACK RUBBER SHEETING - TECHNICAL DATA

Dimensions

WG4000

Thickness: 5, 10, 15 and 20 mm

Width: 1500 mm

Length: 10 000 mm

WG4000 – bonding layer

Thickness: 5 and 10 mm

Width: 1500 mm

Length: 10 000 mm

WG6000

Thickness: 3, 5, 10, 15, 20, 25, 35, 40 and 50 mm

Width: 1500 mm

Length:

10 000 mm (thickness 3, 5, 10, 15, 20 and 25 mm)

3000 mm (thickness 35, 40 and 50 mm)

WG6000 – bonding layer

Thickness: 6, 10, 15 and 20 mm

Width: 1500 mm

Length:

10 000 mm (thickness 6 and 10 mm)

5000 mm (thickness 15 and 20 mm)

Fastening methods

Glue, clamping

Materials

Wearing material: 40 Shore A NR rubber (WG4000)

Wearing material: 60 Shore A SBR rubber (WG6000)

Example of typical applications

Curtains - Skirt board seals - Screens – Dust encapsulation - Hoppers - Chutes - Vibrating feeders – Transfer points - Bins - Silos - Spouts - General wear protection

Limitations

Do not install in applications with any amount of oil present.

Temperature: Max. 80° C. Min. -25° C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

RED RUBBER SHEETING

Sandvik WG3500 is a high quality, long lasting 35 Shore A natural rubber sheeting available smooth or with bonding layer. It is an all-around wear protective sheeting that can be tailor-made to fit most applications from light to medium duty.



WG3500 Natural rubber sheeting

The wear resistant properties of the WG3500 rubber sheeting makes it long lasting. Since rubber isn't affected by corrosion it has an additional benefit compared to steel linings. WG3500 is also lightweight compared to steel linings, which makes handling easy and greatly reduces the risk of work injury.

Easy to tailor-make and install

Red natural rubber (NR) sheeting normally supplied with one smooth side and one with a fabric impression. It is also available with bonding layer making it easy to glue. WG3500 sheeting is easy to cut to fit various applications by using a knife. The flexibility of the soft rubber allows it to be bent to fit complex surfaces.

Superior wear life in wet applications

WG3500 has a very high degree of elongation, which makes it suitable for applications where flexibility is needed. Very good in wet or dry applications with fine particles and sliding wear. Can be installed by using glue, bolts, screws and nails or clamped in position. Due to the long wear life of WG3500 sheeting service intervals are longer and unscheduled breakdowns are avoided.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

RED RUBBER SHEETING - TECHNICAL DATA

Dimensions

Thickness: 3, 5, 10, 15, 20, 25 and 30 mm

Thickness with bonding layer: 3, 5 and 10 mm

Width: 1400 mm

Length:

t= 3 and 5 mm 10 000 mm

t= 10, 15, 20, 25 and 30 mm 5000 mm

Fastening methods

Glue, clamping

Materials

Wearing material: 35 Shore A natural rubber

Example of typical applications

Curtains - Skirt board seals - Screens – Dust encapsulation - Hoppers - Chutes - Vibrating feeders - Transfer points - Bins - Silos - Spouts - Cyclones - Classifiers - General wear protection

Limitations

Do not install in applications with any amount of oil present.

Temperature: Max. 80° C. Min. -40° C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

POLYURETHANE SHEETING

Sandvik polyurethane sheeting is a high quality, long lasting product available in hardness's 80 Shore A. It provides excellent abrasion resistance in wet applications with fine to medium size material and it can be tailor-made to fit most applications.



WG8000 Polyurethane sheeting

This product offers a combination of very good wear resistance and low friction properties making it the best choice for many applications. Very good in wet applications with fine particles and sliding wear. Can be installed by using square neck bolts or clamped in position.

POLYURETHANE SHEETING - TECHNICAL DATA

Dimensions

Thickness: 5, 10, 15, 20, 25 and 30 mm

Width: 1000 mm

Length: 2000 mm

Fastening methods

Clamping, square neck bolts

Material

Wearing material: 80 Shore A polyurethane (WG8000)

Example of typical applications

Screens (wet) - Dust encapsulation - Hoppers - Chutes - Vibrating feeders - Transfer points - Bins - Silos - Spouts - Scraper blades - General wear protection

Limitations

Temperature: Max. 80° C. Min. -40° C.

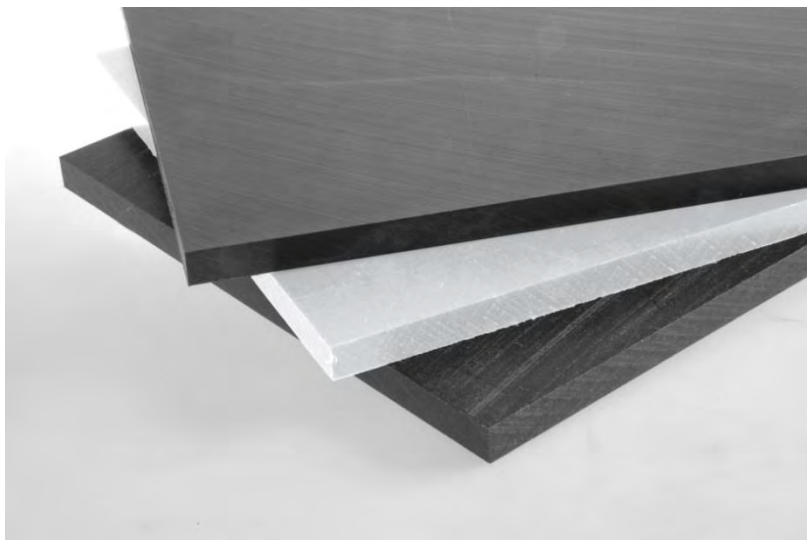
ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

POLYETHYLENE SHEETING

Sandvik UHMW-polyethylene sheeting is a high quality, flow promoting product available in various molecular weights. Its low friction makes it suitable for applications with fine size bulk materials.



WG1000 Reclaim polyethylene sheeting (speckled)

Sandvik WG1000 reclaim is made of a mix of virgin material and regenerated material. It makes it the ideal choice for the not so demanding applications. It is a low cost alternative to WG1000 Virgin with slightly poorer performance. It has a low coefficient of friction and should be used in applications with less abrasive materials and limited tonnage.

WG1000 Virgin polyethylene sheeting (white)

Sandvik WG1000 virgin has a low coefficient of friction, good impact and abrasion resistance making it suitable for a wide range of applications. It is the most commonly used low friction material in quarries and mines.

WG2000 Antistatic polyethylene sheeting (black)

Sandvik WG2000 virgin is a high performance polyethylene material with the best abrasion resistance of the three. It is intended for the most demanding applications. WG 2000 has self-lubricating properties and a very low coefficient of friction. It is UV stabilized and features antistatic properties.

This material is used for applications in which it is not allowed to build up static properties.

Sandvik polyethylene products feature a low coefficient of friction which makes them very suitable for bulk material applications where flow problems occur. The UHMW polyethylene lining material prevents arching and ratholing and unscheduled production stops. These materials should be selected for applications where low friction is a more important feature than wear resistance.

Since Sandvik polyethylene sheeting does not absorb any moisture it prevents material from freezing on the liner surface. It is also resistant against chemical attack and corrosion.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

WEAR RESISTANT SHEETING 2016-01-01

POLYETHYLENE SHEETING - TECHNICAL DATA

Dimensions polyethylene sheets.

WG1000 Reclaim: Sheets 3000 x 1000 mm thickness 6, 8, 10, 12, 15, 20, 25, 30 mm.

WG1000 Virgin: Sheets 2000 x 1000 mm thickness 6, 8, 10, 12, 15, 20, 25, 30 mm.

WG2000 Virgin: Sheets 2000 x 1000 mm thickness 6, 8, 10, 12, 15, 20, 25, 30 mm.

Fastening methods

Self-taping screws, through bolts, welded studs

Materials

Wearing material: Reclaimed 1000 grade polyethylene (WG1000 reclaim)

Wearing material: Virgin 1000 grade polyethylene (WG1000 virgin)

Wearing material: Virgin 2000 grade polyethylene (WG2000 virgin)

Electrical properties

WG 2000 Antistatic

Surface resistivity: (Method: IEC 60093) $\leq 10^9$ Ohm

Volume resistivity, (Method: IEC 60093) $\leq 10^6$ Ohm x cm

Example of typical applications

Normally used in applications where low friction is more important than wear resistance.

WG1000 reclaim, for the not so demanding applications.

WG1000 virgin, relatively good impact and abrasion resistance.

WG2000 virgin, antistatic with good abrasion resistance and very low coefficient of friction.

Hoppers - Chutes - Skips - Bins - Silos - Spouts – Screens fines chutes - Feeders (light duty)

Limitations

Temperature: Max. 80° C. Min. -50° C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

CERAMIC WEAR PROTECTION 2016-01-01

CERAMIC WEAR PROTECTION – PLATES AND SHEETING

- Extremely long wear life
- Lower production cost
- Fewer maintenance stops
- Increased production
- Easy to handle size and weight
- Fast and safe installation
- Lower maintenance cost
- Noise reduction
- Low friction



Light duty range WG9200 sheeting WT9200 plate

Sandvik's light duty ceramic sheeting and ceramic wear plates offer extremely long wear life in applications with sliding wear. The thickness and the low weight make these products ideal in applications where weight and space are limiting factors. The low friction, smooth surface prevents material build-up in low inclination installations. The square ceramic tiles make it possible to bend the sheeting which makes it the perfect protection for both concave and convex surfaces. The size of the ceramic sheeting can easily be adjusted by bending the sheeting and cutting it in between the ceramic tiles. The sheeting is supplied with a CN layer (i.e. bonding / contact layer) on the back side to simplify the gluing process and reduce the installation time needed. It results in a high bond strength which ensures that the product is securely attached throughout its wear life.

Medium duty range WT9200 plate

For tougher applications with larger material flow which contain some coarser material Sandvik has developed a brand new, pattern protected, ceramic wear plate. By embedding the ceramic tiles in rubber the properties of the two materials can be fully utilized. The ceramic tiles extreme hardness in combination with the dampening elasticity of the rubber provides an unsurpassed wear life. The triangular shaped tiles makes it possible to cut the wear plate, not only straight but also at an angle. It makes the installation of these ceramic wear plates simple and quick. This ceramic wear plate can easily be cut using an ordinary band saw instead of expensive diamond blades which is a needed for other brands of ceramic wear protection. As a result the installation time and cost is reduced.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

CERAMIC WEAR PROTECTION 2016-01-01

CERAMIC WEAR PROTECTION - TECHNICAL DATA

Light duty range:

The size and thereby the weight of the sheeting with contact layer and the wear plate with full steel backing has been selected to make them easy to handle by one person.

Product	WG9200 Sheeting	WG9200 Sheeting	WT9200 Plate
Width (mm)	500	500	500
Length (mm)	500	500	500
Thickness (mm)	5	8	12
Tile thickness (mm)	3	5	5
Steel backing (mm)	CL	CL	3
Weight (kg)	3	5.4	12

Medium duty range WT9200:

These wear plates are available either with an aluminum profile for adjustable and secure installation with T-bolts or with a full steel backing for installation with stud welding.

Product	Plate	Plate	Plate
Width (mm)	500	250	250
Length (mm)	500	500	500
Thickness (mm)	20	27	37
Tile thickness (mm)	10	10	20
Steel backing (mm)	5	AL	AL
Weight (kg)	15.3	6.5	10.4

Attachment methods

Light duty range: Gluing (sheeting). Stud welding M12 (plate).

Medium duty range: T-bolt M12 (thicknesses 27 and 37 mm). Stud welding M12 (thickness 20 mm).

Examples of typical applications

- Light duty range: Smaller feeders, screen discharge lips, chutes, hoppers and spouts with fine material and sliding wear.
- Medium duty range: Larger feeders, transfer points, screen feed boxes and discharge lips, chutes, hoppers and spouts with coarser material and limited impact forces.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

CAST IN CARBIDE 2016-01-01

CAST IN CARBIDE WEAR PRODUCTS



HX900 CAST IN CARBIDE - A UNIQUE WEAR MATERIAL

Sandvik HX900 is a unique wear material combining the wear resistance of cemented carbide with the shock resistance, ductility and forming capability of nodular iron. This is an ideal combination resulting in a wear resistant material that stands well in tough environments.

Various kind of carbide can be used depending on the specific application such as granules, tiles or solid segments. It's also possible to combine the different alternatives for optimized performance. Another parameter that can be adjusted is the choice of carbide grade that can have a great impact on performance of the final product.

Hard durable and flexible

HX900 has a wear resistance that is comparable with cemented carbide and a strength that is 80-90% of the strength of pure nodular iron. This makes HX900 a unique high performing wear protection material for applications with high abrasive wear as well as for applications with heavy impact, or a combination of both. The long wear life makes HX900 a wear material that opens up new possibilities through increased product quality, severe reduction of service- and maintenance stops and improved productivity. HX900 can be produced in many different shapes and sizes and can be used in various applications. HX900 is implemented in the mining and mineral handling industries, steel works, concrete plants and within road maintenance and bio energy applications.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

CAST IN CARBIDE 2016-01-01

CAST IN CARBIDE WEAR PRODUCTS - TECHNICAL DATA

Dimensions

HX900 Liners - Standard sizes.

Thickness: 20 and 30 mm.

Width: 200, 250, 300 and 500 mm

Length: 200, 250, 300 and 400 mm

In addition to the standard liners, many custom made dimensions are available.
Thicknesses up to 60 mm and lengths up to 900 mm.

Fastening methods

Cast in bolt, through hole, fastening integral casting (embedded easy weldable steel segment).

Materials

Wearing material: Cemented carbide 1600-2000 HV₃₀.

Matrix: Nodular Cast Iron.

Example of typical applications

Liners: Hoppers - Chutes - Transfer points – Bins – Rock boxes.

Road Maintenance: Snow plow blades, grader blades.

Concrete mixer paddles.

Crushing: Sinter crushing arms.

Grizzly bars

Limitations

Do not install in applications where the temperature of the cemented carbide exceeds 600 °C.

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

DUST ENCAPSULATION 2016-01-01

SANDVIK DUST-SEALING SYSTEM

Sandvik provides a complete range of modular dust-sealing components that can be fitted to feeders, screens and conveyors. New Sandvik screens can be ordered for this system.



Sandvik dust sealing cloths WE4000 (Dustflex™) are made of a soft and pliable grade of black rubber with extremely good flexibility and are able to absorb the stresses in a moving seal. Reinforced PVC fabrics should only be used in static (stationary) seals for dust proofing conveyors, etc. It is very important to select the correct grade of cloth or fabric for a particular installation.

The WE4000 (Dustflex™) cloths are fixed in position with Sandvik grip strip WE7000 on snap-on profiles, that are mounted on the equipment to be encapsulated.

WE4000 (Dustflex™) Cloths

Both standard and anti-flame dust sealing cloths are available in rolls. Dimension of roll. 2 x 1350 x 20000 mm (1/16" x 54" x 800").

Item

WE4000 Dustflex

WE4000 Dustflex Antiflame

Working Temperature

30 Deg C to +60 Deg C

20 Deg C to +100 Deg C

WE7000 Grip strips

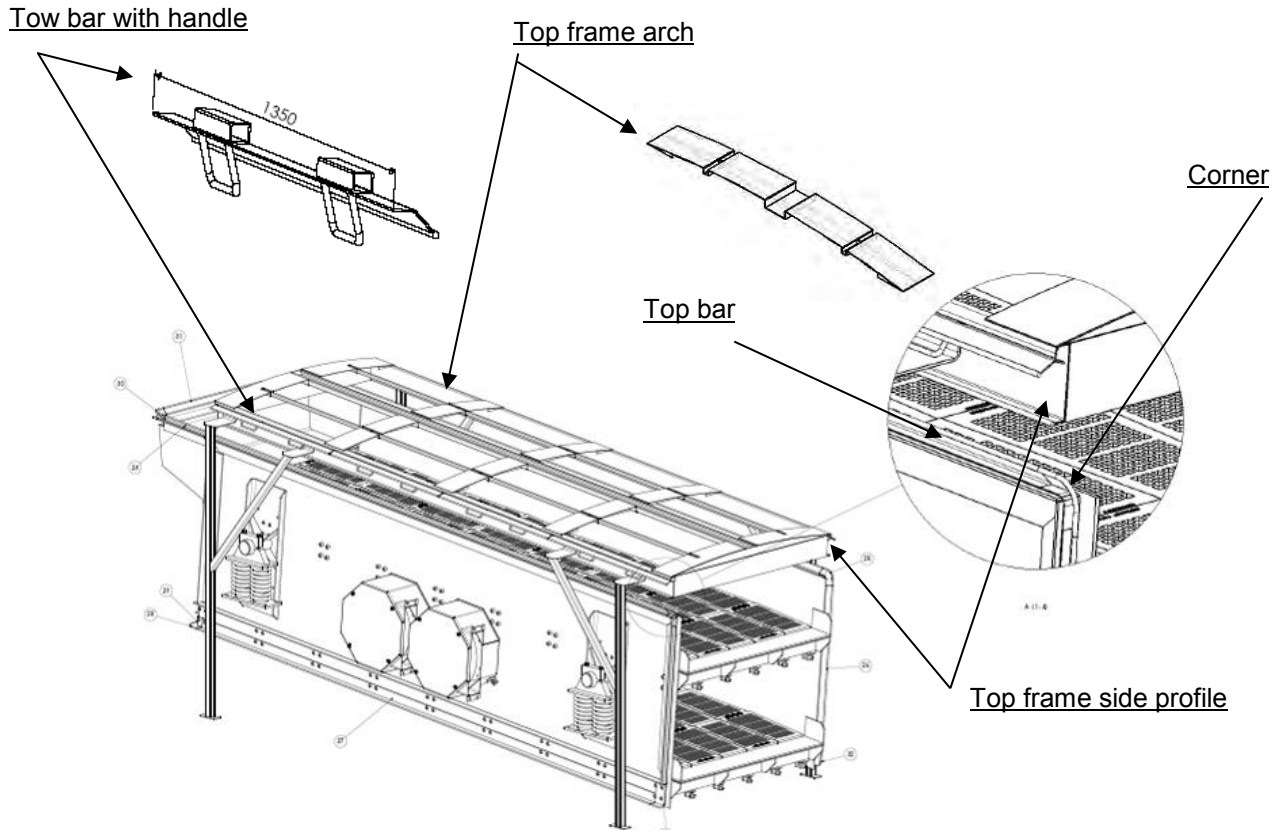
In the Sandvik system there are different types of grip strips, straight and corners. They have a groove diameter of 14 mm (9/16"). The corners have a length of 205 mm (8 3/16") and a radius to centre of groove of 55 mm (2 3/16").

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

DUST ENCAPSULATION 2016-01-01

DESCRIPTION OF DUST SEALING PARTS USED ON SCREENS

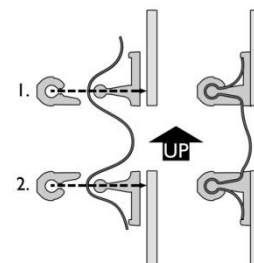


Rubber parts: WE4000 Sealing cloth and WE7000 Grip strips



WE4000 Dust sealing cloth

WE7000 Grip strip

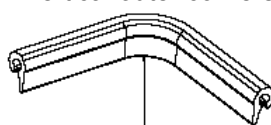


WE7000 Vertical and horizontal corners.

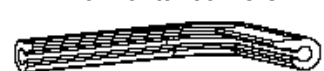
Vertical inner corners



Vertical outer corners



Horizontal corners



ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

TELESCOPIC CHUTE 2016-01-01

TELESCOPIC CHUTE

- Minimizes the risk of dust emission
- Improves employee working conditions
- Improves neighbouring environment
- Reduces material segregation and contamination
- Improves product quality
- Reduces maintenance and clean-up cost
- Improves work safety

Better environment Improved product quality

WE8000i telescopic chute prevents the emission of dust and loss of material. A vacuum is created inside the chute by the material flow, reducing the requirement for expensive, service demanding filtration systems. The user-friendly design enables easy maintenance. All in all, it gives great savings for operations.

Wide area of use

WE8000i telescopic chute has its rightful place within a great number of areas of use. The chute is of simple and rugged design. It has an extremely good ratio between minimum and maximum length. The number of conical chute segments can vary, depending on the height of the stockpile and that of the conveyor.

Automatic level adjustment

WE8000i telescopic chute can be operated from the control cabin, via a PLC with automatic level sensor or manually via remote control. The chute senses its height above the material stockpile and automatically adjusts, minimizing the risk of dust emissions. In addition, the electrical chain hoist is equipped with limit switches and overload protection.

Separate carrying collar

The tape loops are fixed to a rigid lightweight split carrying collar, which safely holds the replaceable conical chute segment in position. The carrying collar can be easily separated allowing the conical chute segment to be turned (if it is worn in one place) or be replaced.

Optimized conical chute segment design

The unique, modular design allows for a choice of materials in different parts of the telescopic chute. The construction of the chute segment is optimized for stiffness, long life and material flow.

Requested information for quotation

- Belt width and speed?
- Material to be handled type, max size and bulk density?
- Flow rate (tph) and Moisture content?
- Height from ground to attachment point?
- Sketch/drawings or photos?

Please refer to our brochure for additional information.

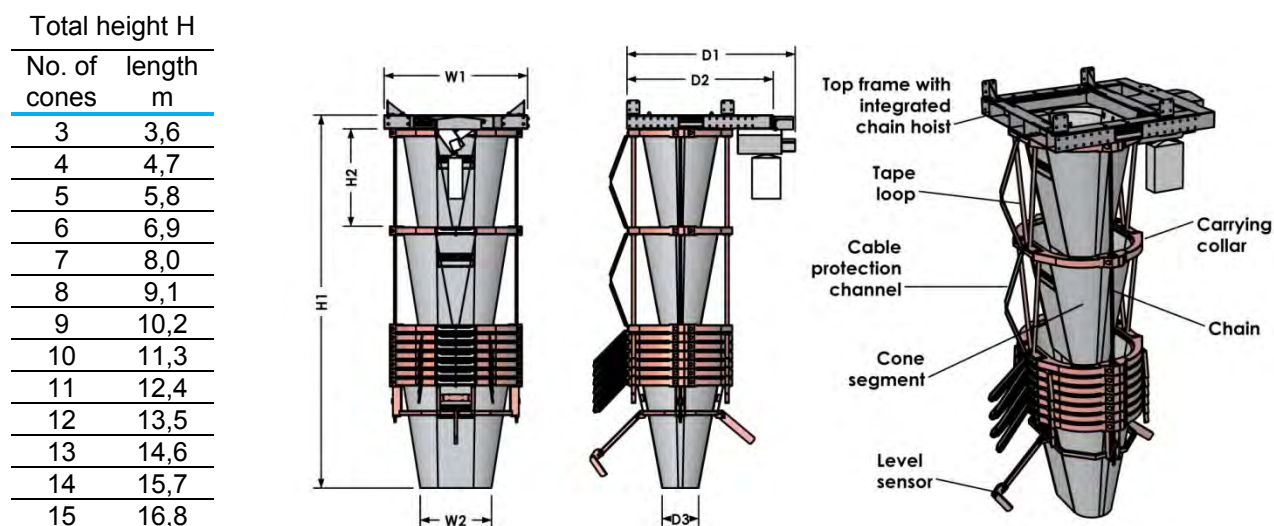
ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

TELESCOPIC CHUTE 2016-01-01

TELESCOPIC CHUTE – TECHNICAL DATA

The data presented below are general guidelines for the telescopic chute



Max capacity		WE8000i Small				WE8000i Medium				
Material type	Typical bulk density	Top size of material				Top size of material				
		<8 mm	8 mm	16 mm	25 mm	<8 mm	8 mm	16 mm	25 mm	32 mm
Crushed aggregate ¹	1,6 t/m ³	250 t/h	350 t/h	500 t/h	700 t/h	400 t/h	600 t/h	900 t/h	1450 t/h	2050 t/h
Sand and gravel ²	1,6 t/m ³	350 t/h	500 t/h	750 t/h	1000 t/h	600 t/h	900 t/h	1300 t/h	2100 t/h	2960 t/h
Ore ³	3,9 t/m ³	550 t/h	800 t/h	1150 t/h	1600 t/h	900 t/h	1350 t/h	2000 t/h	3300 t/h	4600 t/h

1) Reference material (such as granite or recycled concrete).

2) Primary factor for this type of material is low inter-particle friction (typical for natural sand and gravel).

3) Primary factor for this type of material is high inter-particle friction and high bulk density (typical for ore and co-aggregates).

ROCK PROCESSING GUIDE 2016

Chapter U – WEAR AND DUST PROTECTION

TELESCOPIC CHUTE 2016-01-01

TELESCOPIC CHUTE – TECHNICAL DATA

Application		WE8000i Small	WE8000i Medium
Suitable for material size	mm	0 – 25	0 – 32
Suitable for belt width	mm	500 – 800	800 – 1200
Suitable for belt speed	m/s	< 2.5	< 2.5
Maximum wind tolerance	m/s	10	10
Maximum moisture content	%	2	2

Information required: Belt width, belt speed, and drop height, max. material size, capacity and moisture content.

Note: In most cases it is not necessary to have a chute that extend all the way down to the ground since it is very seldom the whole stockpile is removed.

Dimensions		WE8000i Small	WE8000i Medium
Total frame assy. depth, D1	mm	1650	1890
Top frame depth, D2	mm	1430	1640
Top frame width, W1	mm	1100	1610
Cone outlet opening, D3 x W2	mm	230 x 450	350 x 750
Weight of each section	kg	60	100
Weight of top frame and chain hoist	kg	400	500

Information required: Customer or conveyor manufacturer must confirm that the conveyor can carry the weight of the telescopic chute.

Note: If more dimensional information is needed, please contact your Sandvik Mining and Construction representative.

Installation		WE8000i Small	WE8000i Medium
Chain hoist small (max 1.5 kW)	pcs	3 – 15 cones	3 – 7 cones
Chain hoist large (max 2.3 kW)	pcs	–	8 – 15 cones
Speed high	m/min.	8	8
Speed low (close to top and bottom)	m/min.	2	2

Information required: Automatic (with one or two level sensors) or manual (by remote control). Conveyor head design. Local power supply.

Note: Standard electrical motor 400 V / 3-phase / 50 Hz / IP55. Please specify if another motor is required. Depending on conveyor head design and inclination some additional conveyor to chute attachment brackets might be needed.

If your application falls outside the limits specified above, please contact your Sandvik Mining or Sandvik Construction representative.



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

CONTENTS 2016-01-01

RAW MATERIAL

TEST METHODS USED BY SANDVIK

TEST METHODS – EUROPEAN CEN STANDARDS

TEST METHODS USED IN OTHER COUNTRIES

- ASTM standards
- GOST norms
- British Standard BS
- Indian Standards IS
- Chinese Standards GB

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARDS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES

- ASTM standards
- GOST norms
- Indian Standards IS
- Chinese Standards GB
- Fineness modulus

SIEVE SERIES

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

GEOLOGY

Rocks are divided into three categories: igneous, sedimentary and metamorphic.

Igneous rocks form when molten rock material (magma) solidifies, either at the surface, as intrusions or in the deep earth.

The magma is a complex siliceous melt solidifying as follows: quartz, feldspars, pyroxenes, micas, amphiboles and olivine.

- **Surface rocks (volcanic, extrusive)** form when hot magma flows out on the Earth's surface. Volcanic rocks are very fine grained or glassy because of fast cooling when they reach the surface.
- **Intrusive rocks (dykes or masses)** form when the liquid magma is injected into cracks or caves in the above lying rocks. Intrusive rocks have medium to coarse grain size depending on the size of the intrusive body.
- **Deep-earth rocks** form deep in the earth when the molten magma slowly solidifies into coarse grained rocks.

Depending on the SiO₂ (quartz) content, acidic rocks with more than 62% SiO₂ (granite) are often light coloured, intermediate rocks with 52-62% SiO₂ (andesite) are somewhat darker and basic rocks with less than 52% SiO₂ (basalt) are often dark coloured.

Examples of igneous rocks:

SiO ₂ -content	Deep-earth rocks	Intrusive rocks	Surface rocks
Basic <52%	Gabbro	Diabase (Dolerite)	Basalt
Intermediate 52-62%	Diorite	Porphyry	Andesite
Acidic >62%	Granite	Quartz Porphyry	Rhyolite

Sedimentary rocks form from unconsolidated material derived from pre-existing rocks which are then gradually transformed into sedimentary rocks by compaction and cementation.

There are three distinguishable categories of sediment:

1. **Clastic sediment** is made of mechanically eroded material from pre-existing rocks (sandstone, greywacke, conglomerate, breccia).
2. **Organic sediment** has a biogene origin, i.e. calcareous animals and vegetables (limestone, shale, coal).
3. **Chemical sediment** forms where substances carried in solution are precipitated (salts, gypsum, limestone, dolomite, sedimentary ores).

Metamorphic rocks form from solid material exposed to high temperature and/or pressure.

Examples of rocks transforming into metamorphic rocks:

Original rock	Low-medium grade	High grade
Granite	Schist	Gneiss
Basalt	Schist	Amphibolite
Limestone	Marble	Marble
Sandstone	Schist	Quartzite

Original textures and/or mineral assemblages transform into new textures (ex. foliation, schistosity) and new mineral assemblages (ex. garnet, kyanite, serpentine, epidote).

ROCK PROCESSING GUIDE 2016

Chapter V – RAW MATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

GEOLOGY cont.

Metamorphic rocks are classified on the basis of texture and are often given a prefix, such as garnet amphibolite, in relation to the dominant mineral.

Ores are mineral/metallic deposits. The term ore is used to describe any rock containing metalliferous minerals from which the metal may be profitably extracted, and to rocks containing minerals which are potentially valuable.

Examples and characteristics of ores:

Hematite and magnetite are both Iron Ores distinguished by the red streak in hematite.

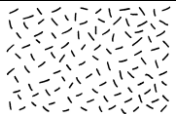

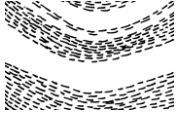
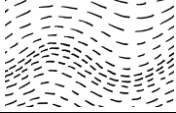
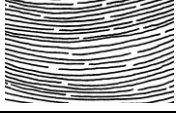

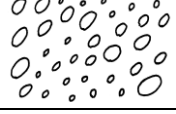
Copper Ores are separated into oxides and sulphides depending on their chemical contents.

Gold Ore is typically associated with quartz.

Factors affecting abrasion and hardness of a rock

Texture describes the microstructures in a rock, using terms such as grain size, grain form, massive, unconsolidate, foliation, banding, veins, porphyritic and alteration.

Examples of textures:

	Massive texture is very homogeneous and often dense.
	Veins are small bands or streaks of a different mineral cutting through the rock as secondary mineralizations in old cracks or cavities.
	Bands are larger concentrations of a different mineral or sometimes a result of distinct parallelism in areas of distinct mineral assemblages. Bands are found in metamorphic rocks.
	Foliation is distinct grain orientation or bonding of minerals found in a metamorphic rock.
	Schistose texture is tightly foliated with a platy appearance. This texture will probably result in a relatively lower WI and in a flaky crushed product.
	Porphyritic texture has a fine grained matrix scattered with coarser grains (phenocrysts). Often very tough and hard to crush.
	Vesicular texture contains many small circular cavities formed by escaping gas during the solidification of the rock (basalt).

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

GEOLOGY cont.

The texture of a rock is one of the most important factors affecting the hardness and crushability of this. For example, a basaltic rock with fine grained, homogeneous and massive texture would probably be very tough and difficult to crush and exhibit a high WI (>20). On the other hand, an unconsolidated limestone dominated by biogene debris will be easy to crush and exhibit a very low WI (<10).

Alteration happens when a rock is exposed to weathering (air, moisture, organic matter), either mechanical or chemical. Alteration results in dissolution and transformation of the mineralogical assemblages and/or mechanical disintegration. This will in most cases make the rock weaker and non-representative.

It is thus of highest importance when sampling stones for laboratory tests to collect as fresh samples as possible!

An altered rock sample is recognized by zones/surfaces of disintegration, cracks, dissolved minerals or differences in colour.

Moh's Scale of Hardness describes the relative surface hardness of typical minerals.

In Moh's scale, 10 reference minerals are listed with increasing hardness from 1-10 as follows:

Hardness	Reference mineral
1	Talc
2	Gypsum (can be scratched by a finger nail)
3	Calcite
4	Flourite
5	Apatite
6	Feldspar (can be scratched by a pocket knife)
7	Quartz
8	Topaz
9	Corundum
10	Diamond

Moh's Hardness does not inform about toughness or breakage but can give an indication of the abrasive qualities of the rock.

As such, a typical rock such as granite dominated by quartz and feldspars is quite abrasive in relation to mineralogy, whereas limestone consisting of calcite is much less abrasive.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

CHARACTERISTICS OF COMMON ROCKS

Values are only indicative

Name of rock	Type of rock	Impact Work Index (WI)	Compact Density (t/m ³)	Bulk Density (t/m ³)	Abrasion Index (AI)	Compressive Strength * (MPa)
Amphibolite	Metamorphic	16 ± 4	2,7-3,3	1,8	0,2-0,6	80-280
Andesite	Igneous	17 ± 3	2,4-3,0	1,6	0,1-0,6	100-300
Basalt	Igneous	20 ± 4	2,8-3,2	1,8	0,1-0,3	70-330
Diabase (Dolerite)	Igneous	18 ± 4	2,7-3,0	1,7	0,1-0,4	100-350
Diorite	Igneous	19 ± 4	2,7-2,9	1,7	0,1-0,4	150-300
Dolomite	Sedimentary	13 ± 3	2,4-2,9	1,6	0,01-0,04	80-300
Gabbro	Igneous	22 ± 3	2,8-3,1	1,8	0,4-0,6	100-300
Gneiss	Metamorphic	16 ± 4	2,6-2,9	1,7	0,3-0,6	100-300
Granite	Igneous	16 ± 6	2,6-2,8	1,6	0,3-0,7	100-300
Greywacke	Sedimentary	17 ± 2	2,6-2,8	1,6	0,1-0,4	70-360
Gritstone	Sedimentary	16 ± 3	2,6-2,8	1,8	0,1-0,3	
Hornfels	Metamorphic	18 ± 3	2,7-3,1	1,8	0,2-0,6	100-300
Limestone, massive	Sedimentary	13 ± 2	2,3-2,8	1,5	0,001-0,2	50-340
Limestone, unconsolidated	Sedimentary	7 ± 3	2,2-2,7	1,5	0,001-0,2	80-180
Marble	Metamorphic	12 ± 3	2,3-2,8	1,5	0,001-0,2	50-230
Porphyry	Igneous	18 ± 2	2,7-3,0	1,7	0,2-0,9	100-360
Quartzite	Metamorphic	15 ± 4	2,6-2,7	1,6	0,7-0,9	100-330
Sandstone	Sedimentary	11 ± 3	2,5-3,1	1,7	0,1-0,9	30-350
Magnetite	Iron Ore	8 ± 4	4,0-5,2	2,4-3,1	0,2-0,6	
Hematite	Iron Ore	11 ± 4	4,0-5,2	2,4-3,1	0,3-1,0	90-200

* UCS values from Sandvik Geotechnical consulting and engineering, Zeltweg, Austria, 2011

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

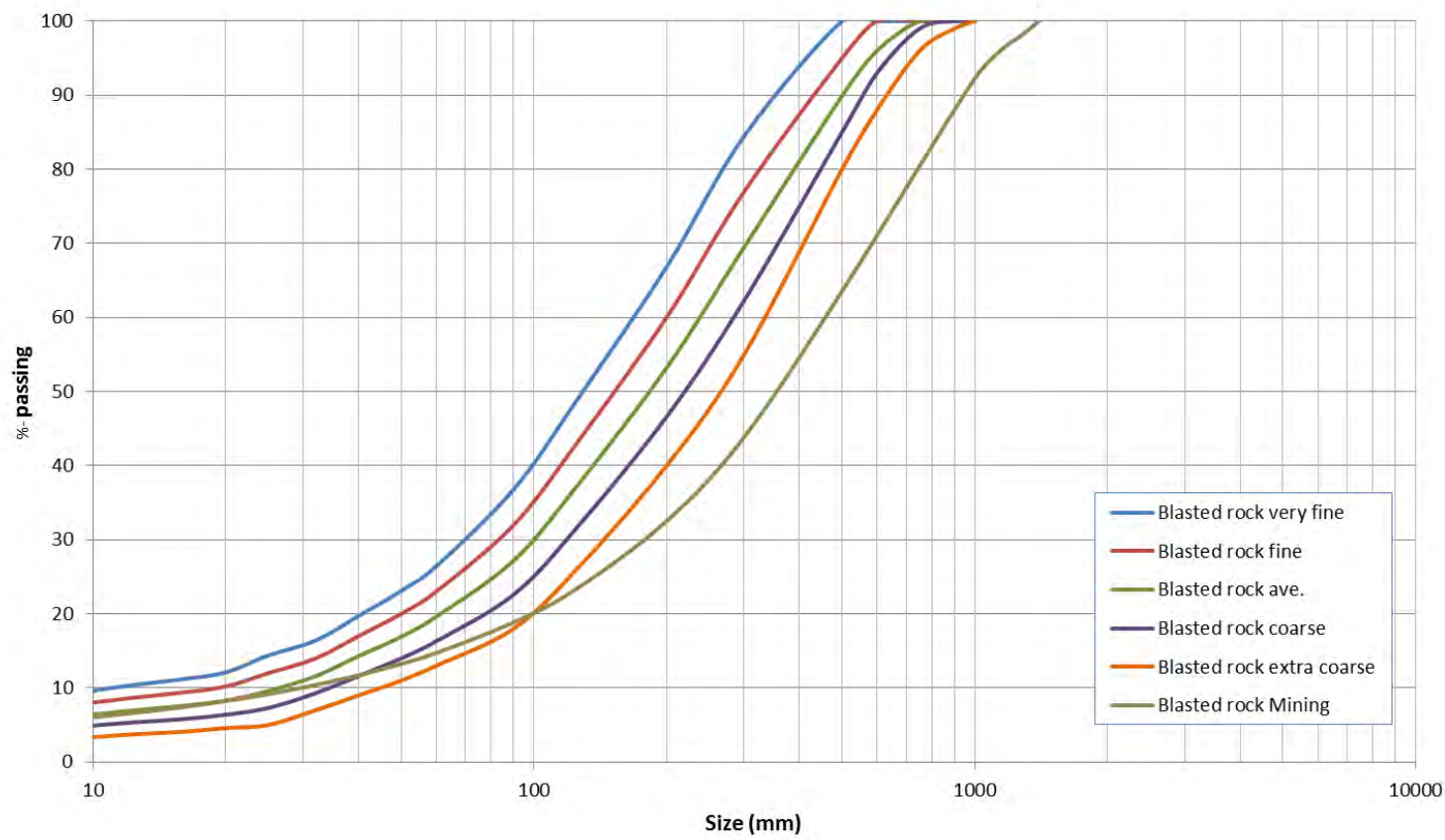
CHARACTERISTICS OF COMMON ROCKS cont.

Characteristics are only indicative

Name of rock	Color	Grain Size	Texture	Notes
Amphibolite	Dark green to black	Medium to coarse	Massive, slightly schistose. Often porphyritic (garnet)	
Andesite	Brown to greenish/purple	Fine to medium	Massive and markedly porphyritic (plagioclase, biotite)	
Basalt	Dark grey to black	Fine	Massive and compact, often porphyritic (olivine) or vesicular	Very tough
Diabase (Dolerite)	Dark grey, greenish	Fine to medium	Massive, often porphyritic (plagioclase)	
Diorite	Light to dark grey	Medium to coarse	Massive, granular to porphyritic (tabular plagioclase, hornblende)	Appears like granite but with less quartz
Dolomite	Light greyish, yellowish	Very fine to fine	Massive, homogeneous. Fossils frequent	Insoluble in hydrochloric acid
Gabbro	Grey. Green to blue luster	Medium to coarse	Massive, granular. Bands or gravitative setting may occur	Extremely tough
Gneiss	Light to almost black, red	Medium to coarse	Grain orientation, foliation, bands, sometimes porphyritic	Streaky appearance
Granite	White, grey, red, pink	Fine to coarse	Massive, granular. Veins common. Grain orientation occurs	Yellowish to greenish when altered
Greywacke	Grey to brown, greenish	Very fine to fine	Clastic, massive with frequent veins, stratification	
Gritstone	Brown, grey, yellowish	Fine to medium	Clastic, massive, homogeneous	
Hornfels	Dark grey to black, greenish	Fine	Massive, compact, sometimes porphyritic	Very tough
Limestone, massive	White, yellow, brown, blackish	Very fine to fine	Massive, compact, homogeneous. Frequently fossiliferous	Soluble in hydrochloric acid
Limestone, unconsolidated	White, yellow, brown, blackish	Fine to very coarse	Unconsolidated, pure cementation, frequently fossiliferous	Soluble in hydrochloric acid
Marble	White to black	Fine to coarse	Massive, granular. Patched or streaked with various minerals.	Soluble in hydrochloric acid
Porphyry	Reddish to violet, grey	Very fine to medium	Massive and compact, coarse phenocrysts (quartz, feldspars)	
Quartzite	White, grey, reddish	Fine to medium	Massive, homogeneous. Sometimes foliated, schistose.	
Sandstone	White, grey, red, yellow	Fine to medium	Clastic, homogeneous with stratification. Fossils may occur	Ex. Arkose (red), Arenite (grey)
Magnetite Iron Ore	Black	Fine to medium	Massive to schistose	Black streak, magnetic.
Hematite Iron Ore	Silver grey to black	Fine to medium	Massive to schistose	Red streak

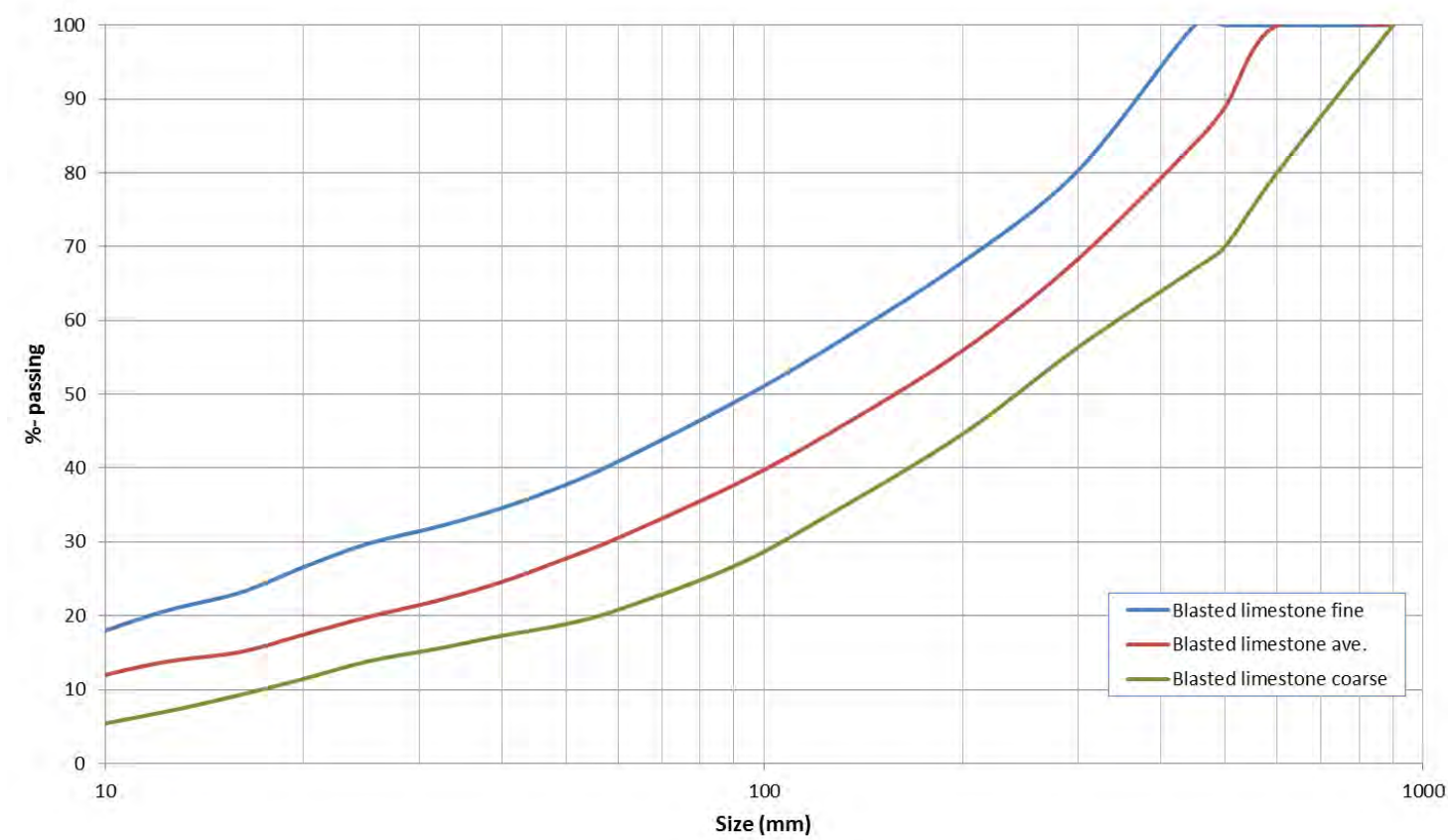
STANDARD RAW MATERIAL FEED DISTRIBUTION CURVES
 BLASTED ROCK

Blasted Rock

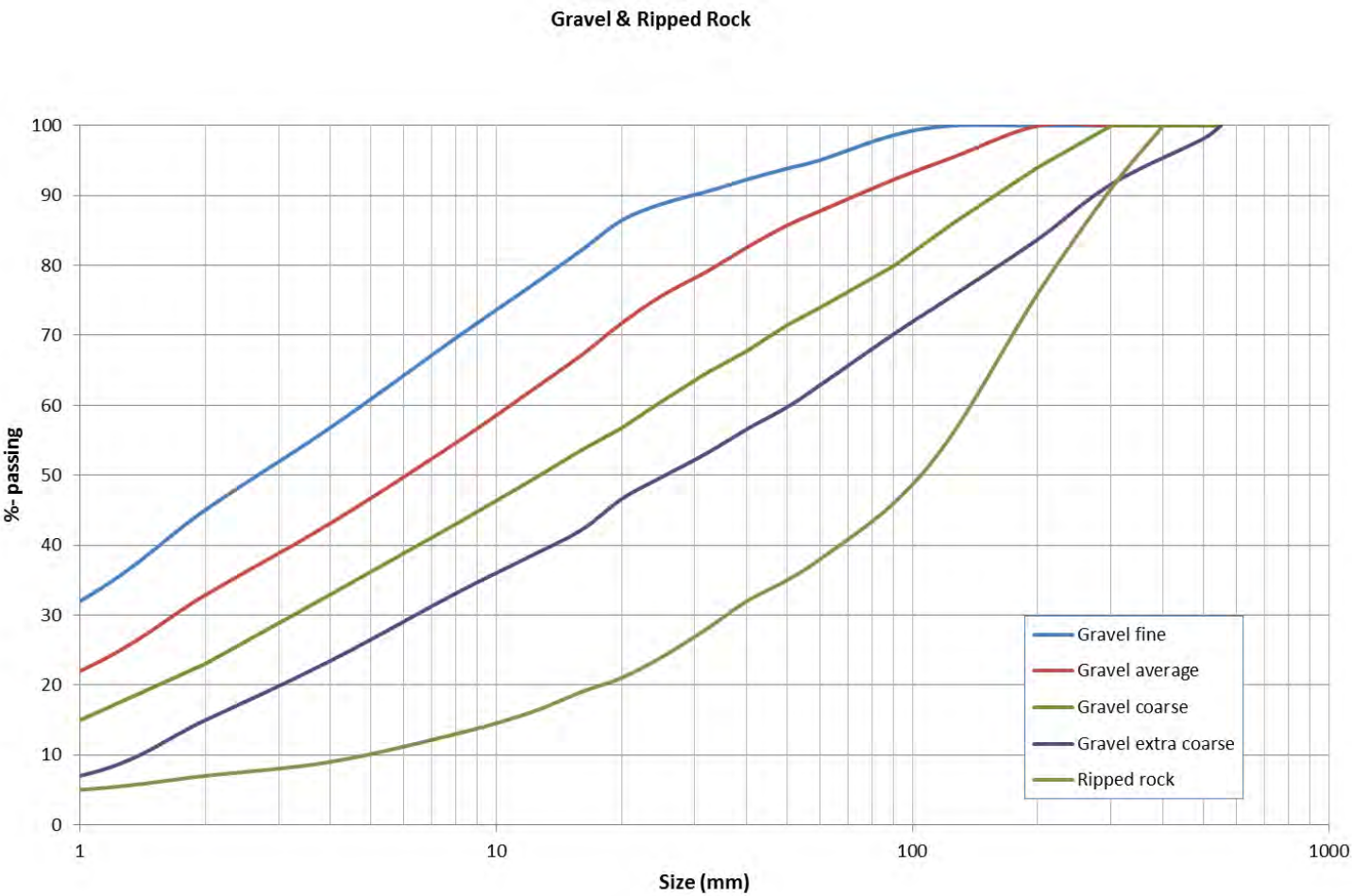


STANDARD RAW MATERIAL FEED DISTRIBUTION CURVES
 BLASTED LIMESTONE

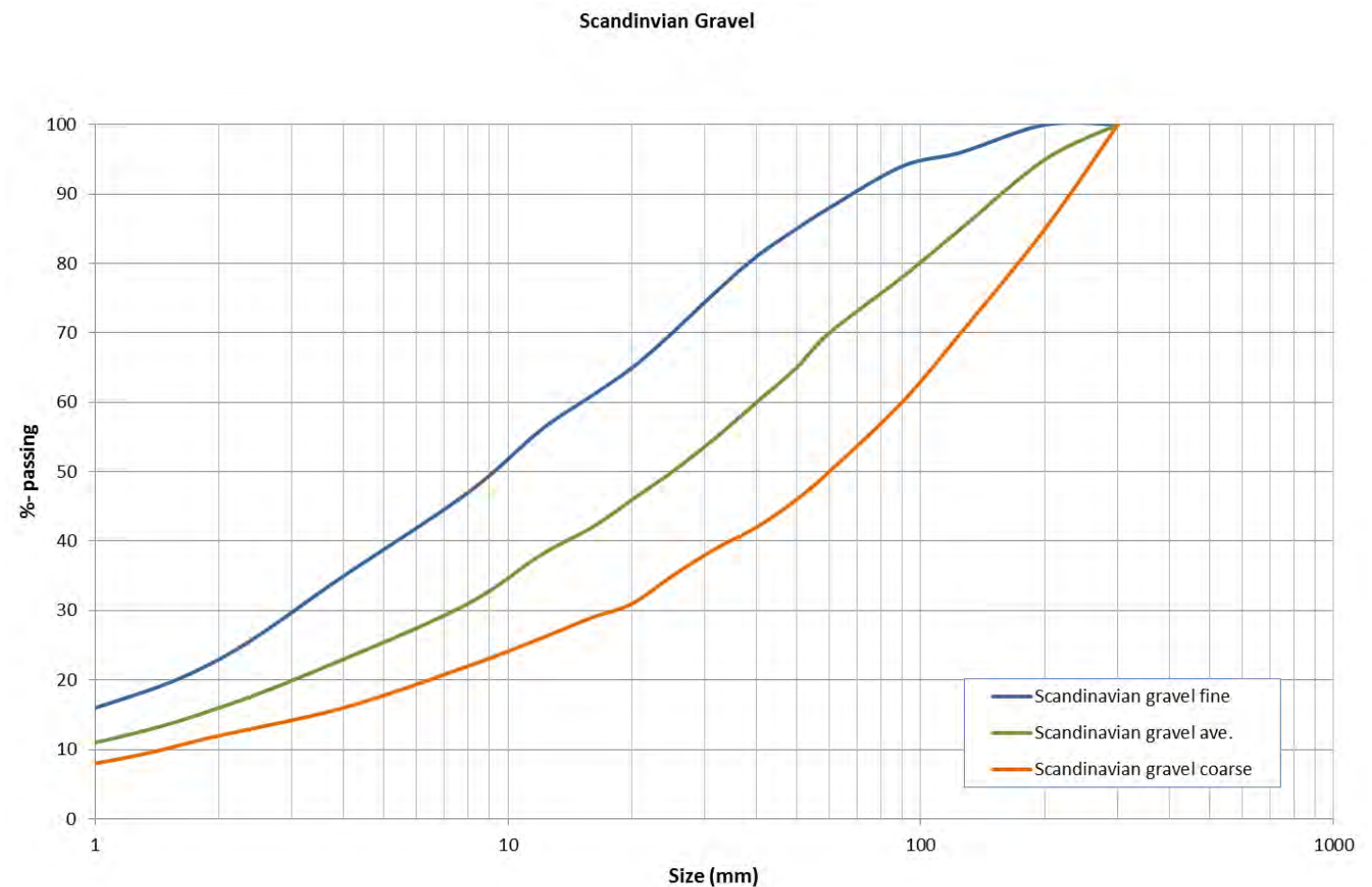
Blasted Limestone



STANDARD RAW MATERIAL FEED DISTRIBUTION CURVES
 GRAVEL AND RIPPED ROCK



STANDARD RAW MATERIAL FEED DISTRIBUTION CURVES
 SCANDINAVIAN GRAVEL

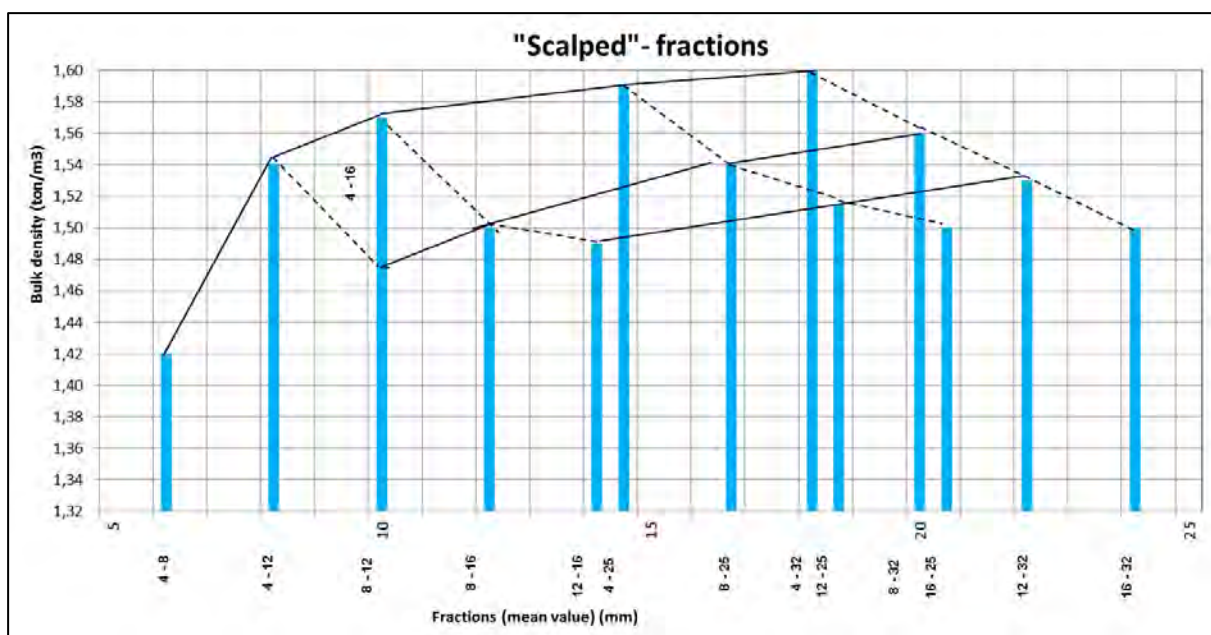
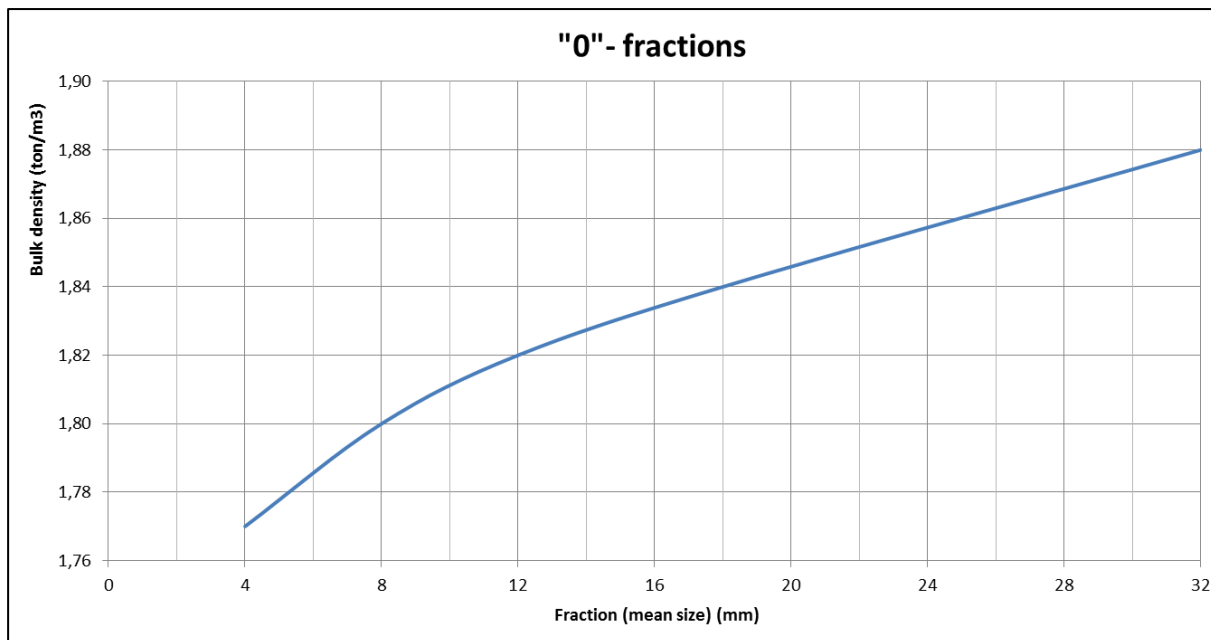


ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

RAW MATERIAL 2016-01-01

BULK DENSITIES FOR CRUSHED ROCK



Material: Gneiss with compact density 2,66 g/cm³

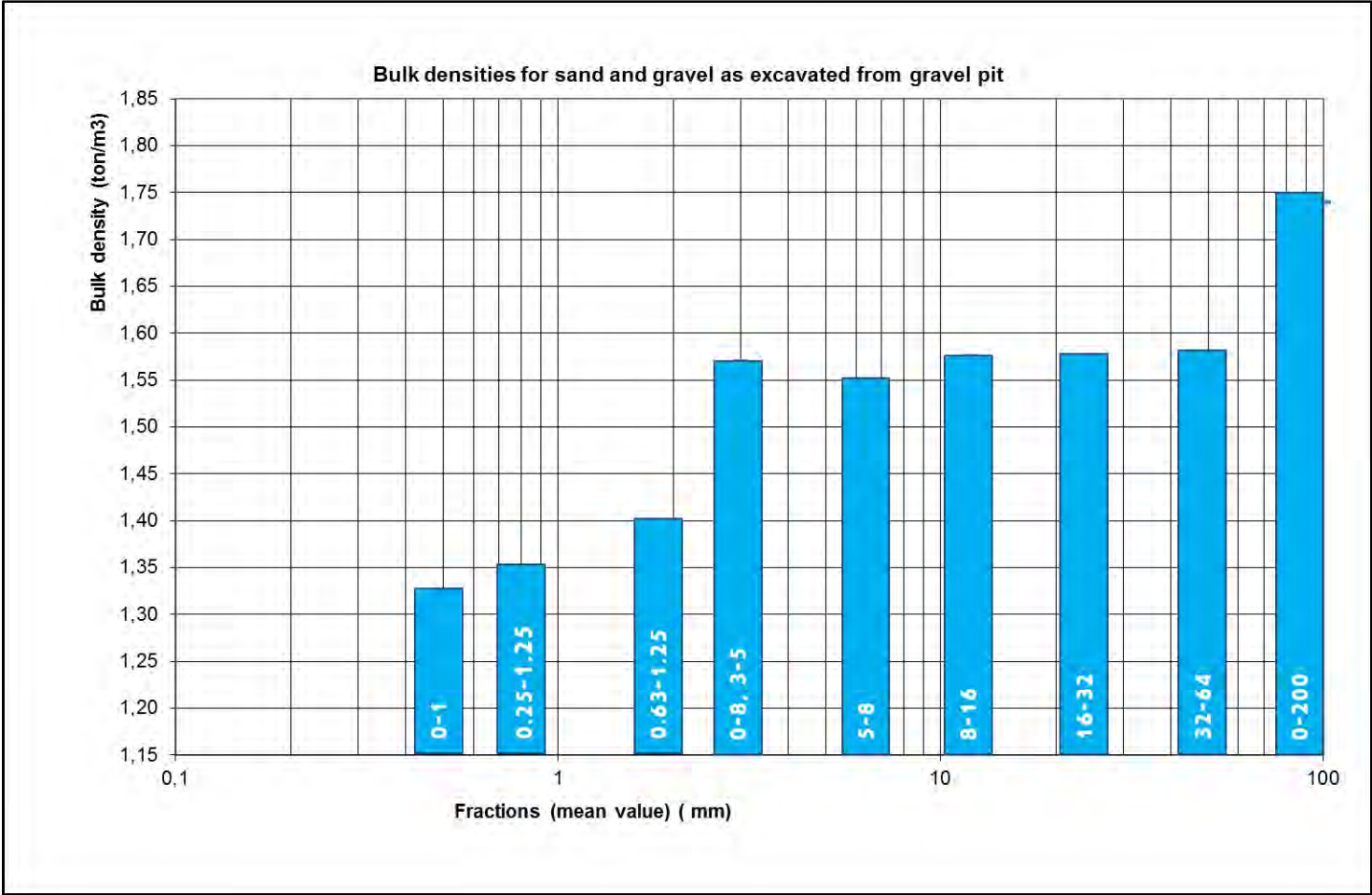
Fractions produced by jaw crusher in two crushing stages

Composite fractions composed of equal portions of discrete fractions.

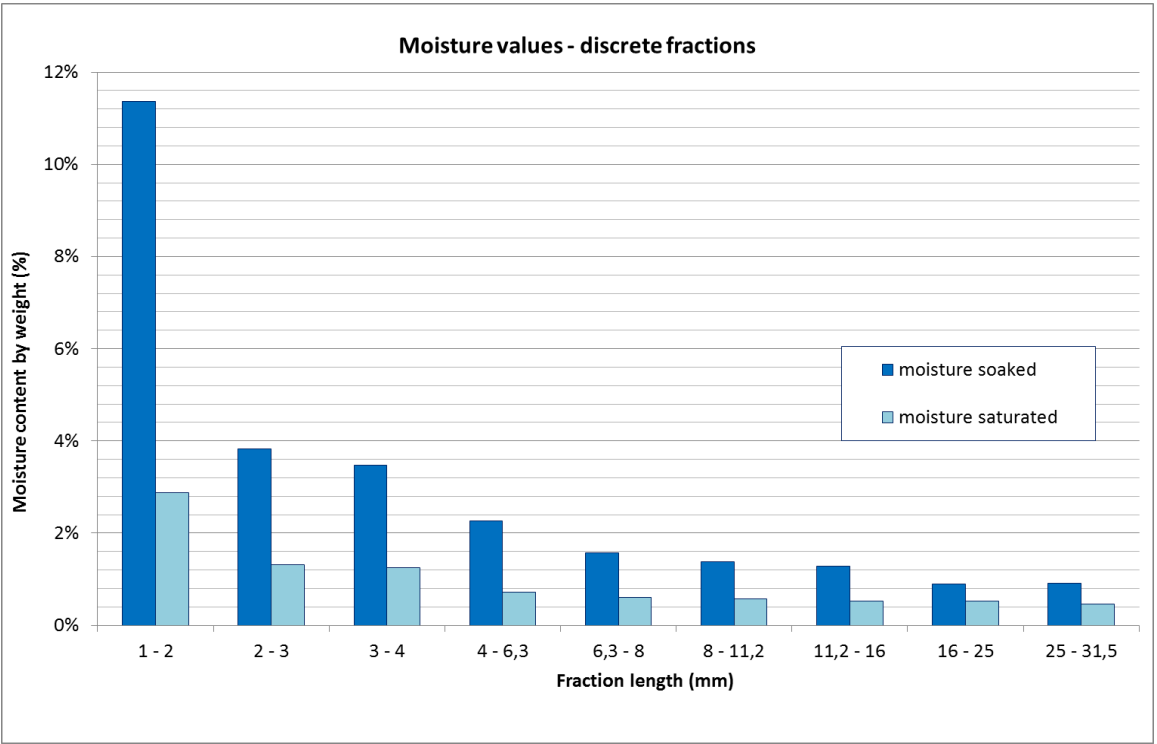
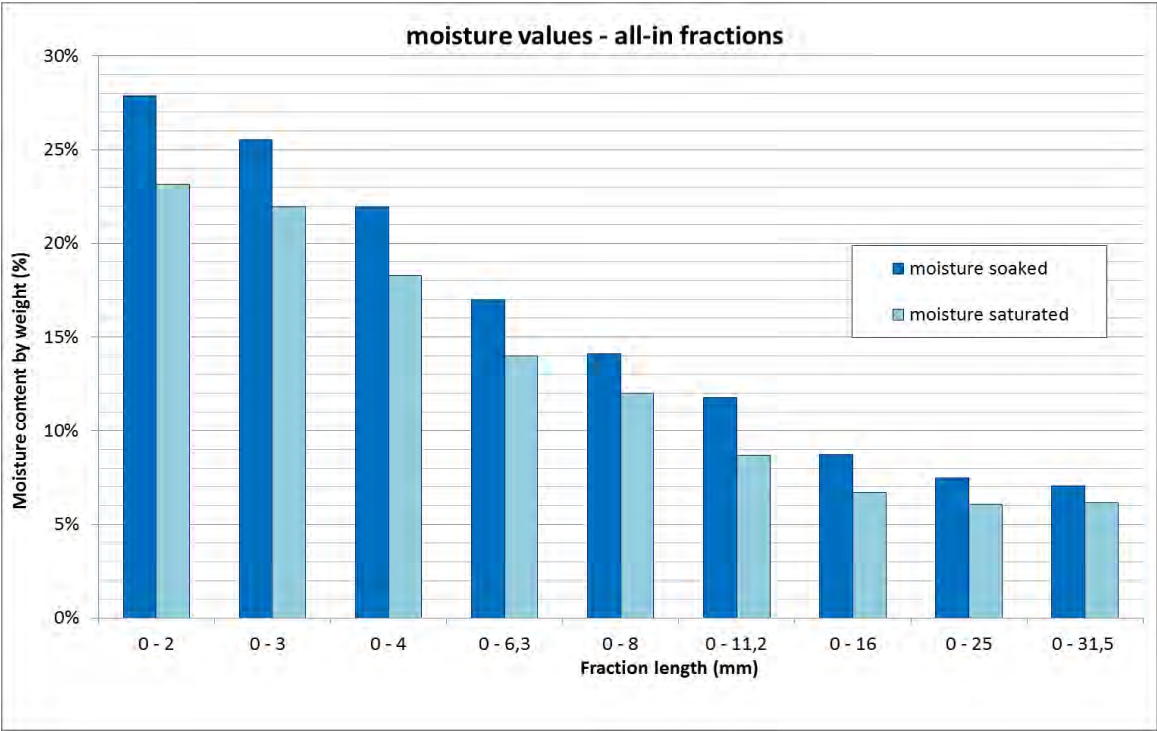
Sample size: 10 dm³

Vibrated gentle.

BULK DENSITIES FOR SAND AND GRAVEL



MOISTURE CONTENT IN CRUSHED ROCK



Saturated: Maximum amount water contained in the material without free water visible.
Soaked: Water added in such amount that free water can be seen.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

GENERAL

Properties for raw material and products is at least as important as the machine and process solution. Here will follow test methods used by Sandvik and methods used in different aggregate standards that will be affected by the process

Raw material intended for feeding into crushing & screening plants is tested by a well-defined procedure, developed by Sandvik, including Work index and Abrasion Index (Wi and Ai) tests, which is the Sandvik standard method to derive material data for crusher selection and performance calculation.

Products analysis is normally governed by *industrial standards*. Our expert group's keeps updated on the most common, but will take the responsibility to acquire knowledge of any standard used for C&S products. Test methods and specifications for different norms are found further on in this chapter.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

THE CRUSHING AND SCREENING TEST CENTER IN SVEDALA

The Sandvik Rock Processing test and research center, located in Svedala performs test for Process design and validation. Below is a list of standard test that is conducted on regular basis in the test center. If any other test is required contact the Test center for consultation.

Test	Standard	Required material*
Tests on Raw materials		
Mineralogical examination	-	5 kg >40 mm
Impact Work Index (WI)	SANDVIK SA1368	30 stones, □55 - □75 mm
Abrasion Index (AI)	SANDVIK SA1367	10 kg, > 20 mm or material from WI test
Tests for products		
Particle size distribution analysis	ASTM, CEN, GOST, BS,	See respective standard
Shape Index (SI), (LT)	CEN, GOST	See respective standard
Flakiness Index (FI)	ASTM, CEN, GOST, BS,	See respective standard
Elongation	ASTM, BS	See respective standard
Crushed and broken surface	CEN	See respective standard
Solid density	ASTM, CEN, GOST, BS,	2 kg
Bulk density	ASTM, CEN, GOST, BS,	7 dm ³
Moisture content	ASTM, CEN, GOST, BS,	2 kg
Laboratory crushing		
Jaw crusher		100 kg, < 100 mm
VSI		400 kg, < 20 mm
Cone		1000 kg, 5-30 mm
Full scale tests		
Dalby Pilot Plant		<i>Contact Process Technology Center</i>

* Material sample mass might differ depending on particle size see table 1 for advice on sample mass

The following data must be accompanied to the raw material sample

- Customer Name
- Plant Name
- Material description (e.g. granite)
- Country
- Date sent
- Send Test Certificate(s) to: (name)
- At E-mail or fax number:
- Test(s) required:
(e.g. Abrasion Index and/or Work Index)

Send the sample to:

Sandvik SRP AB
Attention: The Test Center / Krosslab
Stenbocksgatan 2
SE 233 42 Svedala
SWEDEN

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

SAMPLING AND TESTING

How to collect a representative sample from bulk material involves some obstacles since the sample must keep the properties from the total specimen. This is described in most standards relating to aggregates. Detailed description of taking aggregate sample is described in ex ASTM D75 or CEN 932-1

Following general guide lines can be given.

Belt cut samples from conveyors is preferred; avoid sampling from silos and stockpiles. Maximum particle size decides the sample mass. Note that specific gravity of the material affect the sample mass numbers in table 1 relates to S.G.: 2,65 g/cm³ and ρ_b : 1,6 g/cm³

Table 1 aggregate sample sizes

Size of samples according to ASTM D75		Size of sample according to CEN 932-1	
Maximum nominal size of aggregate	Approximate minimum mass of field sample, kg	Aggregate size D (maximum), mm	Test portion mass (minimum), kg
<i>fine aggregate</i>		figure below derived from the formula: $M = 6 \times \sqrt{D \times \rho_b}$	
2,36 mm	10		
4,75 mm	10		
<i>coarse aggregate</i>		≤ 4 mm	20
9,5 mm	10	8 mm	27
12,5 mm	15	11,2 mm	32
19 mm	25	16 mm	39
25 mm	50	22,4 mm	45
37,5 mm	75	31,5 mm	54
50 mm	100	45 mm	65
63 mm	125	63 mm	76
75 mm	150	90 mm	91
90 mm	175		

Size of samples according to GOST 8269.4.2

Maximum rated size of grains <i>D</i>	Sample mass, kg
10 mm	5.0
20 mm	10.0
40 mm	20.0
Over 40 mm	40.0

S.G. – Specific Gravity (g/cm³)

ρ_b – bulk density (g/cm³)

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

IMPACT WORK INDEX, WI – DETERMINED BY IMPACT STRENGTH (SA 1368)

This test method was developed in the 1950's by Fred C. Bond of Allis-Chalmers, Milwaukee and is used today by Sandvik Rock Processing.

An expression of a material's toughness is the energy required to accomplish a given crushing operation. The energy requirement is expressed as the Impact Work Index (WI) and can be determined by measuring the impact strength of a material sample.

30 representative stones are required. They must be of cubical shape

(Length/thickness ratio ≤ 3), passing a 75 x 75 mm opening but retained on a 55 x 55 mm opening. You can order a special pattern for checking the sizes of the sample, please contact our Test Center in Svedala, Sweden. These stones are tested individually by placing a stone between two pivoted hammers that are allowed to fall freely against the stone. The drop height is increased successively until the stone fractures. The energy required to fracture the stone is divided by the thickness of the sample to give the impact strength in Newton.



Impact Work Index testing machine

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Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

IMPACT WORK INDEX, WI cont...

The stone's impact strength (*a*) is defined as:

$$a = \frac{2 \times m \times g \times h}{c} \quad (\text{N})$$

Where

- m* = mass of each hammer (kg)
- g* = constant of gravity (9,81 m/s²)
- h* = hammer drop height when stone fractures (m)
- c* = smallest dimension of stone (m)

With the help of an empirical formula, the Impact Work Index (WI) can be calculated from the material's impact strength (*a*).

$$WI = \frac{0,0485 \times a}{d}$$

Where

- a* = impact strength (N)
- d* = solid density of stone (t/m³)

Required sample: 30 reasonably cubical stones, which pass through a 75x75 mm, hole but not a 55 x 55 mm hole.

Average values of Impact Work Index (*WI*) for various rocks are listed in pages 4-5.

Using impact work index results

Rock toughness as a function of Work Index:

Impact Work Index (WI)	Description of the toughness
< 10	Very soft
10 – 14	Soft
14 – 18	Medium
18 – 22	Hard
22 – 26	Very hard
> 26	Extremely hard

The Work Index figure as such gives an indication of the toughness of a material.

The WI figure can also be used to calculate approximate specific energy consumption according to Bond's formula:

$$W = 11 \times WI \times \left(\frac{1}{\sqrt{P}} - \frac{1}{\sqrt{F}} \right) \quad (\text{kWh/ton})$$

Where

WI = Compensated Work Index, for compression crushers and impact Work Index for impact crushers
P = size (in μm) of the square hole through which 80% of the product will pass.
F = size (in μm) of the square hole through which 80% of the feed will pass (assuming that fine material has not been removed from the feed).

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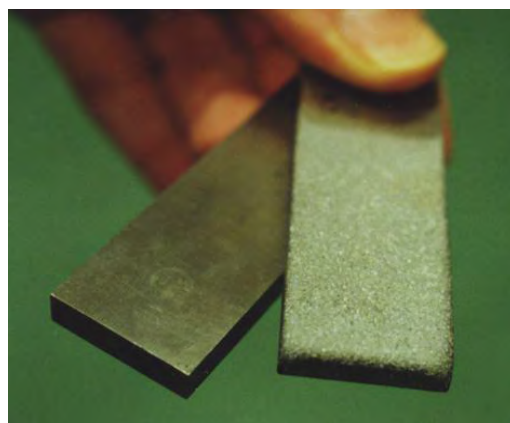
Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

ABRASION INDEX, AI (SA1367)

This test method was originally published by the Pennsylvania Crusher corp., U.S.A., and is used by Sandvik Rock Processing amongst others.

The Abrasion Index (AI) denotes the weight loss of a paddle made of clearly defined steel during one hour of rotation in a testing drum with material being investigated.



Test apparatus for determination of Abrasion Index (AI) along with test paddle before and after test.

A sample of the material to be tested is placed in the drum. The material size used is 12,5 - 19 mm and the quantity is 400 g (if the compact density is $2,65 \text{ g/cm}^3$). The drum and paddle rotate for 15 minutes. The paddle rotates ten times faster than the drum. The drum is emptied and the process is repeated three times so that the paddle is subjected to wear for one hour. The paddle is weighed before and after the test. The weight loss in grams is the Abrasion Index (AI) of the material tested.

Required sample

10 kg of stone larger than 20 mm. (If the Impact Work Index (WI) is also to be determined the debris from that test can be used for the Abrasion Index (AI) test).

Using Abrasion Index results

The Abrasion Index figure gives good information about the wear on manganese steel liners in jaw crushers and cone crushers

Abrasion Index (AI)	Description of the Wear
< 0.1	Very low wear
0.1 – 0.2	Low wear
0.2 – 0.4	Intermediate wear
0.4 – 0.6	Normal medium wear
0.6 – 0.8	High wear
> 0.8	Extremely high wear

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED BY SANDVIK 2016-01-01

THE FULL-SCALE TEST PLANT IN DALBY

The R&D department in Svedala owns a full scale crushing and screening plant. The test plant is used for the development of crushing and screening processes, tests of new components, prototypes, automation and control systems, for full-scale tests together with customers and for training. It is located 30 km north of Svedala, near the city of Dalby, in one of the major quarries in southern Sweden.

Major Equipment

- Two alternative Sandvik crushers: Cone crusher CH430 and VSI crusher CV216
- Sandvik screen CS 63 D
- Frequency converters for adjustable crusher and screen speeds
- Automatic sampling equipment

Arrangement of a test

The set-up and carry out of a test is depending on the actual conditions and expected results. Minimum quantity of feed material for a crusher performance test is usually 30 tons. Maximum feed size to the plant is 200 mm and maximum conveyor capacity is 200 t/h. We have access to resources for set-up of the plant for tests, to resources for plant operation and material handling and we have also access to the laboratory for product analysis.

Contact Michael Hybelius, R&D in Svedala or Bengt-Olle Persson, Process Sales Support in Svedala for details. Michael Hybelius, is responsible for the plant.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

THE EUROPEAN CEN STANDARD

The CEN standard for aggregates is valid from the 1st of June 2004. The standard are valid in the following countries; Austria, Belgium, Czech Rep., Denmark, Finland; France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

The CEN norms for aggregates stipulate the test methods and specifications for different types of aggregates. Below you find a table no. 1 with the summary of the authorized test methods and its notifications. The aggregate specification is described in section “Specification for aggregates”

In the end row of the table you can see the CEN test methods that are explained in this sector of RPG. If you need more information about the other test methods in the CEN standard, please contact Process Sales Support in Svedala, Sweden.

Test methods	EN
Methods for sampling,	932 – 1
Methods for reducing laboratory samples Procedure and	932 – 2
terminology for simplified petrographic description,	932 – 3
Common equipment and calibration	932 – 5
Definitions of repeatability and reproducibility	932 – 6
Determination of particle size distribution – Sieving method	933 – 1
Determination of particle size distribution – Test sieves,	933 – 2
nominal size of apertures	
Determination of particle shape – Flakiness index (FI)	933 – 3
Determination of particle shape – Shape index (SI)	933 – 4
Determination of percentage of crushed and broken	
surfaces in Coarse aggregate particles	933 – 5
Flow coefficient for coarse aggregates	933 – 6
Percentage of coarse aggregates	933 - 7
Sand equivalent test	933 – 8
Methylene blue test	933 – 9
Grading of fillers	933 – 10
micro-Deval test (M_{DE})	1097 – 1
Resistance to Impact test (SZ)	1097 – 2
Los Angeles test (LA)	1097 – 2

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

FLAKINESS INDEX TEST, FI (EN 933 – 3)

Appliance

Aggregates of natural or artificial origin, including lightweight aggregates with particle size fractions d_i/D_i , where $D_i \leq 80$ mm and $d_i \geq 4$ mm.

Method

The test consists of two sieving operations.

First using test sieves the sample is separated into various particle size fractions (square holes) d_i/D_i as shown in table 2.

Each of the particle size fractions d_i/D_i is then sieved using bar sieves, which have parallel slots of width $D_i/2$.

The overall Flakiness index is calculated as the total mass of particles passing the bar sieve expressed as a percentage of the total dry mass of particle tested.

If requirement the Flakiness Index of each particle size fraction d_i/D_i is calculated as the mass of particles passing the corresponding bar sieve, expressed as a percentage by mass of the particle size fraction.

Size fractions (square apertures) with corresponding bar sieves

Particle size fraction d_i/D_i , (mm)	Upper fraction limit (mm)	Lower fraction limit (mm)	Width of slot in bar sieve (mm)
63/80	80	63	40
50/63	63	50	31,5
40/50	50	40	25
31,5/40	40	31,5	20
25/31,5	31,5	25	16
20/25	25	20	12,5
16/20	20	16	10
12,5/16	16	12,5	8
10/12,5	12,5	10	6,3
8/10	10	8	5
6,3/8	8	6,3	4
5/6,3	6,3	5	3,15
4/5	5	4	2,5

Calculation

$$FI = \left(\frac{M_2}{M_1} \right) \times 100$$

Where:

M_1 is the sum of the masses of the particles in each of the particle size fractions d_i/D_i , in grams

M_2 is the sum of the masses of the particles in each of the particle size fraction passing the corresponding bar sieves of slot width $D_i/2$, in grams

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

SHAPE INDEX TEST, SI (EN 933 – 4)

Also referred as “LT-Test”

Appliance

Aggregates of natural or artificial origin, including lightweight aggregates with particle size fractions d_i/D_i , where $D_i \leq 63$ mm and $d_i \geq 4$ mm.

Definitions

Particle length L:

Maximum dimension of a particle as defined by the greatest distance apart of two parallel planes tangential to the particle surface.

Particle thickness T:

Minimum dimension of a particle as defined by the least distance apart of two parallel planes tangential to the particle surface.

Method

Individual particles in a sample of coarse aggregates are classified on the basis if the ratio of their length L to thickness T using a particle slide gauge where necessary.

The shape index is calculated as the mass of particles with a ratio of dimensions L/T more than 3 expressed as a percentage of the total dry mass of particles tested.



Measuring the length of the stone.



Measuring the thickness of the stone

Calculation

$$SI = \left(\frac{M_2}{M_1} \right) \times 100$$

Where: M_1 is the mass of the test portion in grams
 M_2 is the mass of the non-cubical particles, in grams

Mass of test portion

Upper aggregate size, D (mm)	Minimum test portion mass kg)
63	45
32	6
16	1
8	0,1

*Valid for aggregate density $>2,0$ but $<3,0$ t/m³

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

DETERMINATION OF PERCENTAGE OF CRUSHED AND BROKEN SURFACES IN COARSE AGGREGATE PARTICLES (EN 933 – 5)

Appliance

Natural gravel or mixed aggregate containing natural gravel with particle size fractions d/D , where $D \leq 63$ mm and $d \geq 4$ mm.

Definitions:

Totally crushed or broken particle (tc):	Particle with more than 90% of its surface crushed or broken.
Crushed or broken particle (c):	Particle with more than 50% of its surface crushed or broken.
Rounded particle (r):	Particle with 50% or less of its surface crushed or broken
Totally rounded particle (tr):	Particle with more than 90% of its surface rounded

Crushed or broken surfaces:

Facets of a particle of gravel produced by crushing or broken by natural forces and bounded by sharp edges. If the surface edges of a particle of crushed or broken gravel are worn or weathered then its surfaces shall be considered as rounded for the purposes of this test method.

Principle:

The test consists of visually selecting and sorting the particles by hand , from a test portion into:

- Crushed or broken particles, including totally crushed or broken particles
- Rounded particles, including totally rounded particles

The mass of each of these groups is determined and expressed as a percentage of the test portion mass. Totally crushed or broken particles and totally rounded particles are the sorted by hand from crushed or broken particles and rounded particles and the mass of these groups is determined and expressed as a percentage of the test portion mass.

Calculation:

$$C_{(c,r,tc \text{ or } tr)} = \left(\frac{M_{(c,r,tc \text{ or } tr)}}{M_1} \right) \times 100$$

Where:

$M_{(c,r,tc \text{ or } tr)}$ are the masses of crushed or broken, rounded, totally crushed or broken and totally rounded particles in the test portion, in grams

M_1 is the mass of the test portion in grams

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

DETERMINATION OF FLOW COEFFICIENT OF AGGREGATES (EN 933-6)

The flow coefficient of an aggregate is the time, expressed in seconds, for a specified volume of aggregate to flow through a given opening, under specified conditions using a standard apparatus.

Appliance

- The test can be carried out on both coarse (>4mm) and fine (<4mm) aggregates.
- For coarse aggregates is the test carried out on one of the following particle size fractions: 4/6,3 mm, 6,3/10 mm, 10/14 mm, 4/10 mm or 4/20 mm.
- For fine aggregates is the test carried out on one of the following particle size fractions: 0,063/2 mm or 0,063/4 mm.

Method

This is the method for testing flow coefficient for fine aggregates described

For the test shall a test portion calculated according to the following equation be used:

$$M_1 = \left(\frac{\rho_{rd}}{2,70} \pm 0,002 \right)$$

where: M_1 is the test portion of mass in kilograms

ρ_{rd} is the particle density of the aggregate to be tested, on an oven dried basis determined in accordance with EN 1097-6, in mega grams per cubic metre;

2,70 is a fixed value for the particle density of the reference material on an oven dried basis, in mega grams per cubic metre.

for 0/2 mm fine aggregates use a funnel with 12 mm opening or 16 mm opening for 0/4 mm fine aggregates.

Open the orifice and at the same time start the stopwatch; record the time E_{csi} , to 0,1 s for all the material to flow through the funnel. Repeat five times, using the same test portion, recording the time for each single determination.

Calculation and expression of results

The flow coefficient E_{cs} , expressed in seconds, of the fine aggregate being tested, is the average of the five single determinations of E_{csi} , rounded off to the nearest second.

$$E_{CS} = \frac{\sum_{i=1}^5 E_{CSi}}{5}$$

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

DETERMINATION OF THE RESISTANCE TO WEAR - MICRO-DEVAL (EN 1097-1)

The test determines the micro-Deval coefficient, which is the percentage of the original sample reduced to a size smaller than 1,6 mm during rolling.

The test consists of measuring the wear produced by friction between the aggregates and an abrasive charge in a rotating drum under defined conditions.

When rolling is complete the percentage retained on a 1.6 mm sieve is used to calculate the micro-Deval coefficient.

NOTE. A lower value of the micro-Deval coefficient indicates a better resistance to wear.

Test sample

The mass of the sample shall be 500g of particles between 10mm and 14 mm. In addition the grading shall comply one of the following requirements:

- Between 30% and 40% passing 11,2 mm sieve; or
- Between 60% and 70% passing 12,5 mm sieve.

Apparatus

The test apparatus consists of a hollow drum with the following specifications, see also picture below

Inside diameter:	200±1 mm
Internal length:	154±1 mm



The abrasive charge shall consist of steel balls complying with ISO 3290, 10±0,5 mm in diameter

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

DETERMINATION OF THE RESISTANCE TO WEAR - MICRO-DEVAL (EN 1097-1) cont.

Procedure

The test specimen is placed into the drum and 5000 ± 5 g of steel balls charge is added into the drum 2,5 l of water is also added.

The drum is rotated 12 000 revolutions at 100 rpm

After the test the aggregates is collected and the steel balls is separated by a screening procedure then the specimen is dried in an oven at 110 °C. When the specimen is dried the amount of material below 1,6 mm produced is determined by a screening procedure according to En 933-1

Calculation

For the test specimen the micro-Deval coefficient M_{DE} is calculated with the following formula:

$$M_{DE} = \frac{500 - m}{5}$$

Where

M_{DE} is the micro-Deval coefficient (In wet conditions)

m Is the mass of the oversize fraction retained on 1,6 mm sieve, in grams

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS - EUROPEAN CEN STANDARD 2016-01-01

DETERMINATION OF THE RESISTANCE TO FRAGMENTATION - LOS-ANGELES VALUE (EN 1097-2)

The test determines the LA coefficient, which is the percentage of the original sample reduced to a size smaller than 1,6 mm during rolling. The test is carried out in dry condition

Test sample

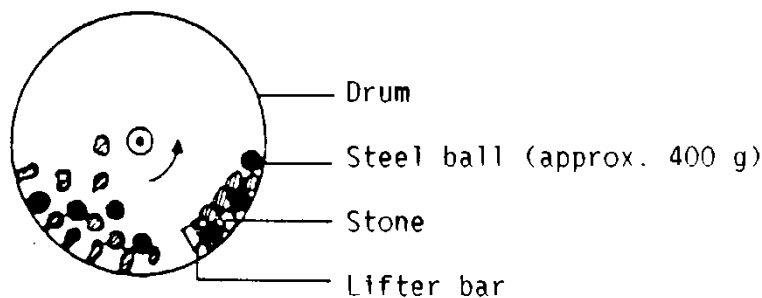
The mass of the sample shall be 5 kg of particles between 10 mm and 14 mm. In addition the grading shall comply one of the following requirements:

- Between 30% and 40% passing 11,2 mm sieve; or
- Between 60% and 70% passing 12,5 mm sieve.

Apparatus

The test apparatus consists of a hollow drum with the following specifications, see also picture below: Inside diameter 711±5 mm and Internal length 508±5 mm.

Principle of Los-Angeles testing machine:



The ball load shall consist of 11 spherical steel balls, each with a diameter of between 45 and 49 mm, each ball shall weigh between 400 and 445 g, and the total ball load shall weigh between 4690 g and 4860 g.

Procedure

The ball charge is placed inside the drum and then the test specimen is placed into the drum. The drum is rotated 500 revolutions at a constant speed between 31 r/min and 33 r/min

After the test the aggregates are collected and the steel balls is separated by a screening procedure then the specimen is dried in an oven at 110 °C. When the specimen is dried the amount of material below 1,6 mm produced is determined by a screening procedure according to En 933-1

Calculation

For the test specimen the Los Angeles coefficient, *LA* is calculated with the following formula:

$$LA = \frac{5000 - m}{50}$$

where: *LA* is the Los Angeles coefficient
m Is the mass

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

ASTM International (ASTM), former the American Society for Testing and Materials, is an international standards organization that develops and publishes voluntary technical standards for a wide range of materials, products, systems, and services. ASTM differs from other standards organizations since it is not a national standards organization.

ASTM standards are commonly used in US and Canada amongst others.

FLAT PARTICLES, ELONGATED PARTICLES OR FLAT AND ELONGATED PARTICLES IN COARSE AGGREGATE - ASTM D 4791

Individual aggregates of specific sieve sizes are tested for ratios of width to thickness, length to width, or length to thickness. The test is performed on a sample of coarse aggregate reduced from a representative field sample. The sample is sieved to separate each size larger than the 3/8 in. (9.5 mm) sieve. Each size is then tested in a proportional caliper device. Particles are weighed to determine a percentage of flat, elongated, or flat and elongated particles in a sample.

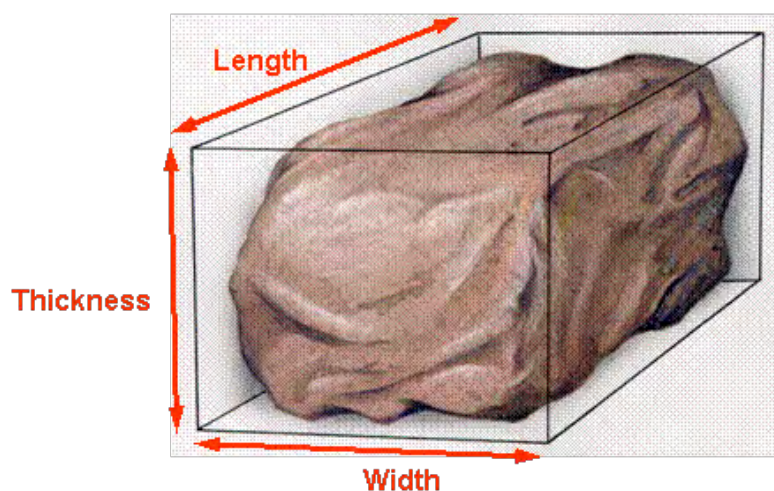
Superpave specifications require hot mix asphalt to have less than 10% flat and elongated particles using a 5:1 ratio.

Definitions

Flat and Elongated Particles of Aggregate

Particles having a ratio of length to thickness greater than a specified value.

Length	the maximum dimension.
Thickness	the maximum dimension perpendicular to the length and width.
Width	the maximum dimension in the plane perpendicular to the length.



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

Mass of test portion

Nominal Maximum Size	Minimum Weight
3/8 in. (9.5 mm)	2 lbm. (1 kg)
1/2 in. (12.5 mm)	4 lbm. (2 kg)
3/4 in. (19.0 mm)	11 lbm. (5 kg)
1 in. (25.0 mm)	22 lbm. (10 kg)
1 1/2 in. (37.5 mm)	33 lbm. (15 kg)

Note: This is the entire sample. If a fraction is smaller than 10 % of the entire sample it shall not be tested.

Method

Sieve the sample of coarse aggregate to be tested with the following sieve openings; 1 in. (25.0 mm), 3/4 in. (19.0 mm), 1/2 in. (12.5 mm), 3/8 in. (9.5 mm).

Reduce each size fraction larger than the 3/8 in. (9.5 mm) sieve that is present in the amount of 10% or more of the original sample until approximately 100 particles are obtained.

Use the proportional caliper device positioned at the 5:1 ratio.

Set the larger opening equal to the particles longest dimension. The particle is considered flat and elongated if the particles thinnest dimension passes through the smaller opening. (Figures 1 and 2)

Test each of the particles in each size fraction and place them into one of two groups: (1) Particles with longest to thinnest dimensions having ratios over 5:1 and (2) Particles with longest to thinnest dimensions having ratios less than 5:1

After the particles have been classified into the two groups, determine the proportion of the sample in each group by either count or by weight as required.

Calculation

Calculate the percentage of flat and elongated particles relative to the total sample to the nearest 1% for each sieve size greater than 3/8 in. (9.5 mm).

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

RESISTANCE TO DEGRADATION OF COARSE AGGREGATES BY LOS ANGELES TEST - ASTM C131-96 & ASTM C535-96

The Los Angeles tests are divided in two standards one for small size aggregates which are smaller than 37,5 mm (1½ in.), ASTM C131-96 and one large size aggregates >19 mm (¾ in.), ASTM C535-96. Here will follow a summary of the both methods.

Apparatus

The test apparatus consists of a hollow drum with the following specifications,

Inside diameter: 711±5 mm
Internal length: 508±5 mm

See also EN 1097-2

Sample preparations

The sample shall be separated and recombined according to table 1

Table 1 grading of test samples for small size aggregates C131-96

Sieve sizes		Sample Grading, g			
Passing	Retaining	A	B	C	D
1 1/2 in. (37.5 mm)	1 in. (25.0 mm)	1250	-	-	-
1 in. (25.0 mm)	3/4 in. (19.0 mm)	1250	-	-	-
3/4 in. (19.0 mm)	1/2 in. (12.5 mm)	1250	2500	-	-
1/2 in. (12.5 mm)	3/8 in. (9.5 mm)	1250	2500	-	-
3/8 in. (9.5 mm)	1/4 in. (6.3 mm)	-	-	2500	-
1/4 in. (6.3 mm)	No.4. (4,75 m)	-	-	2500	-
No.4. (4.75 m)	No.8. (2.36 m)	-	-	-	5000
TOTAL		5000	5000	5000	

Table 1:2 Ball charge grading for small size aggregates C131-96

Grading	Number of steel balls	Mass of charge, g
A	12	5000 ± 25
B	11	4584 ± 25
C	8	3330 ± 20
D	6	2500 ± 15

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

Table 2 grading of test samples for small size aggregates C535-96

Sieve sizes		Sample Grading, g		
Passing	Retaining	1	2	3
3 in. (75 mm)	2 1/2 in. (63 mm)	2500	-	-
2 1/2 in. (63 mm)	2 in. (50 mm)	2500	-	-
2 in. (50 mm)	1 1/2 in. (37.5 mm)	5000	5000	-
1 1/2 in. (37.5 mm)	1 in. (25.0 mm)	-	5000	5000
1 in. (25.0 mm)	3/4 in. (19.0 mm)	-	-	5000
TOTAL		10000	10000	10000

Note: For large size aggregates shall the steel charge always consist of 12 pcs. steel balls.

The steel ball charge shall consist of steel balls of approx. 47 mm diameter and weight between 390-445 g, the number of balls differ depending on sample size, see table 1:2 and 2 for amount of steel balls used.

Procedure

The ball charge is placed inside the drum and then the test specimen is placed into the drum. The drum is rotated 1000 revolutions at a constant speed between 31 r/min and 33 r/min

After the test, the aggregates are collected and the steel balls are separated.

The material below no12 sieve (1.7 mm) is screened off and the fine material loss is calculated according to below

Calculation

Calculate the loss (the difference between the original mass and the final mass of the test sample) as a percentage of the original mass of the test sample.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

Gost is the international standard set used in the CIS countries. The standards are used in the following countries as their national standard; Russia, Belarus, Ukraine, Moldova, Kazakhstan, Azerbaijan, Armenia, Kyrgyzstan, Uzbekistan, Tajikistan, Georgia, Turkmenistan.

The standards 8269 -97 are the standard for aggregate and gravel from dense rocks and industrial wastes for construction works, methods for physical-mechanical tests.

A selection of test methods within the Gost norm is presented here:

Test methods	GOST
Estimation of grain composition	8269.4.3
Determination of crushed grains content in the aggregate made of Gravel	8269.4.4
Determination of content of flake (plate) and needle-like grains	8269.4.7
Determination of abrasability in shelf drum	8269.4.10
Protodiakonov value	-

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

ESTIMATION OF GRAIN COMPOSITION - GOST 8269.4.1.6 AND 8269.4.3

To determine the grain composition of various fractions of aggregate (gravel), the standard set of sieves should include a sieve with 1.25-mm square holes and sieves with round holes; 2.5, 5(3), 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60, and 70(80) mm diameter.

To measure dimensions of grains larger than 70(80) mm, use wire rings-gauges of various diameters depending on the expected aggregate (gravel) size: 90, 100, 110, 120 mm and larger.

Recommended sieve series

Sieves and round wire gauges with holes appropriate for the rated sizes of grains of the given fraction: $1.25D$; D , $0.5(D+d)$, d , and also 2.5 and 1.25 mm.

While sifting fractions of 5(3) to 20 mm, use a sieve with 10-mm holes.

DETERMINATION OF CRUSHED GRAINS CONTENT IN THE AGGREGATE MADE OF GRAVEL - GOST 8269.4.4

Procedure

Take from the laboratory sample of each fraction of the tested aggregate analytic samples of masses not lower than:

Aggregate size	Mass of test portion
5(3) to 10 mm	0.25 kg
10 to 20 mm	1.0 kg
20 to 40 mm	5.0 kg
above 40 mm.	10.0 kg

Reveal visually (using, if necessary, the magnifier) crushed grains whose surfaces are chipped by more than a half

Test results

Weigh the crushed grains and calculate their content SH, %, accurately to 1% via the formula:

$$SH = \frac{m_1}{m} \times 100$$

Where:

m_1 is the crushed grain mass, g;

m is the mass of residue on the sieve with hole size d , g, (total sample)

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

DETERMINATION OF CONTENT OF FLAKE (PLATE) AND NEEDLE-LIKE GRAINS - GOST 8269.4.7

Method of analysis

The amount of flake (plate) and needle-like grains in the aggregate (gravel) is established through the amount of grains whose thickness is more than three times less than the length.

Measuring equipment and accessories

Movable gauge (Figure 3) or sliding caliper or Standard set of sieves as described on page 39.



Figure 3- Movable gauge

Pre-testing and testing procedure

Take from the laboratory sample of each fraction of aggregate (gravel) to be tested analytic samples with masses as specified in table.

Mass of test portion

Aggregate size	Mass of test portion
5(3) to 10 mm	0.25 kg
10 to 20 mm	1.0 kg
20 to 40 mm	5.0 kg
above 40 mm.	10.0 kg

Determine the content of flake (plate) and needle-like grains for each aggregate (gravel) fraction separately.

Weigh the analytic sample and pick out from it grains whose thickness is at least three times smaller than the length.

To determine the grain dimension ratio, use the movable gauge or sliding calipers.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

Test result processing

Calculate the content of flake and needle-like grains in each aggregate (gravel) fraction P_{lam} , % as

$$P_{lam} = \frac{m_1}{m} \times 100$$

where: m is the analytic sample mass, g;
 m_1 is the mass of flake and needle grains, g;

Calculate the content of flake (plate) and needle grains in the mixture of fractions according to the weighted mean value

Determination with slot sieves

The method is based on sifting aggregate (gravel) by using slot sieves.

Set of slot sieves made of rolled steel according to Table below on the round or square ferrules

Pre-testing and testing procedure

Take from each fraction of aggregate (gravel) under testing an analytic sample with mass of test portion according to table on previous page.

Sift the samples of each fraction through the slot sieves with holes as specified in Table below.

Rated size of aggregate (gravel) grains (mm)*		Slot sieve holes sizes (mm)	
Min	Max	Length	Width
5(3)	10	10	2,5
10	20	20	5,0
7.0	40	40	10,0
40	70	70	20,0
70(80)	120	120	35,0

Grains passed through the slot sieve should be attested as flake and needle-like.

Test result processing

Calculate the content of flake and needle grains in each aggregate (gravel) fraction P_{lam} , %, as described above

* **NOTE!** Particle size is measured on laboratory screen with round holes.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

4.10 DETERMINATION OF ABRADABILITY IN SHELF DRUM - GOST 8269.4.10

Note this is the GOST version of LA test described in both CEN norm and ASTM standards)

Estimate the aggregate (gravel) abrasability (wearability) through the grain mass loss in testing the sample in a shelf drum with balls.

Measuring equipment and accessories

Shelf drum 700 mm dia, 500 mm long, equipped, on its inner side, with a shelf 100 mm wide
Steel or cast-iron balls 48 mm in diameter and (405±10) g in mass each – 12 pcs.

Standard set of sieves

Sieve with screen No. 1.25 (sieve with 1,25 mm square apertures)

Testing procedure

Put the prepared sample into the shelf drum together with the cast-iron or steel balls, and make it rotating with the speed of 30 to 33 rpm.

The number of cast-iron or steel balls and total number of the drum revolutions in one test will be taken according to Table 4.

Table 4

Aggregate (gravel) fraction size, mm	Number of cast-iron or steel balls necessary for testing the sample,	Number of the shelf drum revolutions necessary for testing
5 to 10	8	500
Over 5 to 15	9	500
Over 10 to 20	11	500
Over 20 to 40	12	1000

On completion of the test, sift the drum contents through a sieve with 5-mm round holes and a control sieve with screen No. 1.25. Combine and weight the residues on the sieves.

Test result processing

Calculate the aggregate abrasability I , %, via the formula

$$I = \frac{m - m_1}{m} \times 100$$

Where:

m is the aggregate (gravel) sample mass, g;

m_1 is the total mass of residues on the sieve with 5-mm holes and control sieve, g.

As the test result, the arithmetic mean of results from two parallel tests will be taken.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

GOST NORM

PROTODIAKONOV VALUE

This is only a guide to compare different test methods of categorized rocks. There is really no correlation between the three methods. The table below gives only values of general nature. The individual material characteristics of each rock type must be taken in consideration when using this table.

Hardness	Example of Rock	Impact Work Index (dimensionless)	Protodiakonov value (dimensionless)	Compressive Strength (UCS) (Mpa)
Extremely soft	Hydraulically bound sediments	<6	2	<30
Very soft	Chalk, Calcite	6-10	4	80
Soft	Limestone, Dolomite, Sandstone	10-14	6	100
Medium	Granite , Gneiss	14-18	8	200
Hard	Basalt, Diabase	18-22	11	300
Very hard	Gabbro, Greywacke	22-26	16	400
Extremely hard	Hard Gabbro, Mill pebbles	26-30	20	450

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

BRITISH STANDARD BS

The British standards BS is no longer valid in Britain since it is replaced by the CEN norm in 2004, however the BS is still used as references to other standards such as Indian standards and standards used in Thailand, United Arab emirates, Oman etc...

FLAKINESS INDEX BS 812 - SECTION 105.2

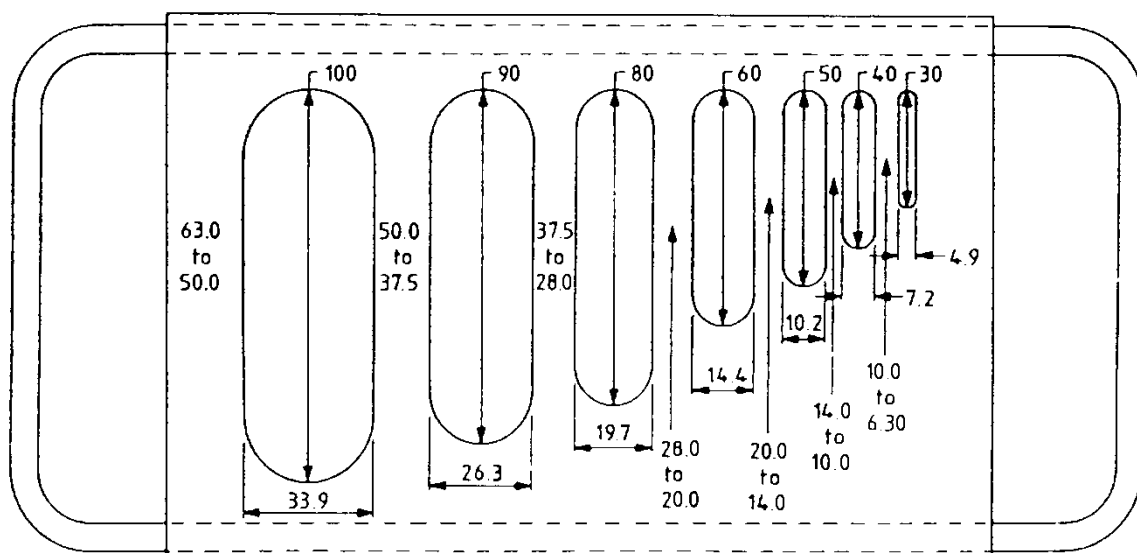
The test is not applicable to material passing a 6.30 mm BS test sieve or retained on a 63.0 mm BS test sieve.

Principle

Aggregate particles are classified as flaky when they have a thickness (smallest dimension) of less than 0.6 of their mean sieve size, this size being taken as the mean of the limiting sieve apertures used for determining the size fraction in which the particle occurs. The flakiness index of an aggregate sample is found by separating the flaky particles and expressing their mass as a percentage of the mass of the sample tested.

Apparatus

A metal thickness gauge, of the pattern shown below or similar, or special sieves having elongated apertures.



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

BRITISH STANDARD BS

Method

Each test portion is then tested by attempting to pass each individual stone through the appropriate hole in the thickness gauge.

Minimum mass of test portion

100% passing	100% retained	Minimum mass of test portion (kg)
63 mm	50 mm	50
50 mm	37,5 mm	35
37,5 mm	28 mm	15
28 mm	20 mm	5
20 mm	14 mm	2
14 mm	10 mm	1
10 mm	6,3 mm	0,5

Calculation

The value of the flakiness index is calculated from the expression:

$$Flakiness\ Index = \frac{M_3}{M_2} \times 100$$

Where:

M_2 is the individual percentage retained on each of the various sieves on mass tested

M_3 is the combined mass of all the particles passing each of the gauges.

Express the flakiness index to the nearest whole number.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

BRITISH STANDARD BS

FLAKINESS INDEX BS 812 - SECTION 105.1

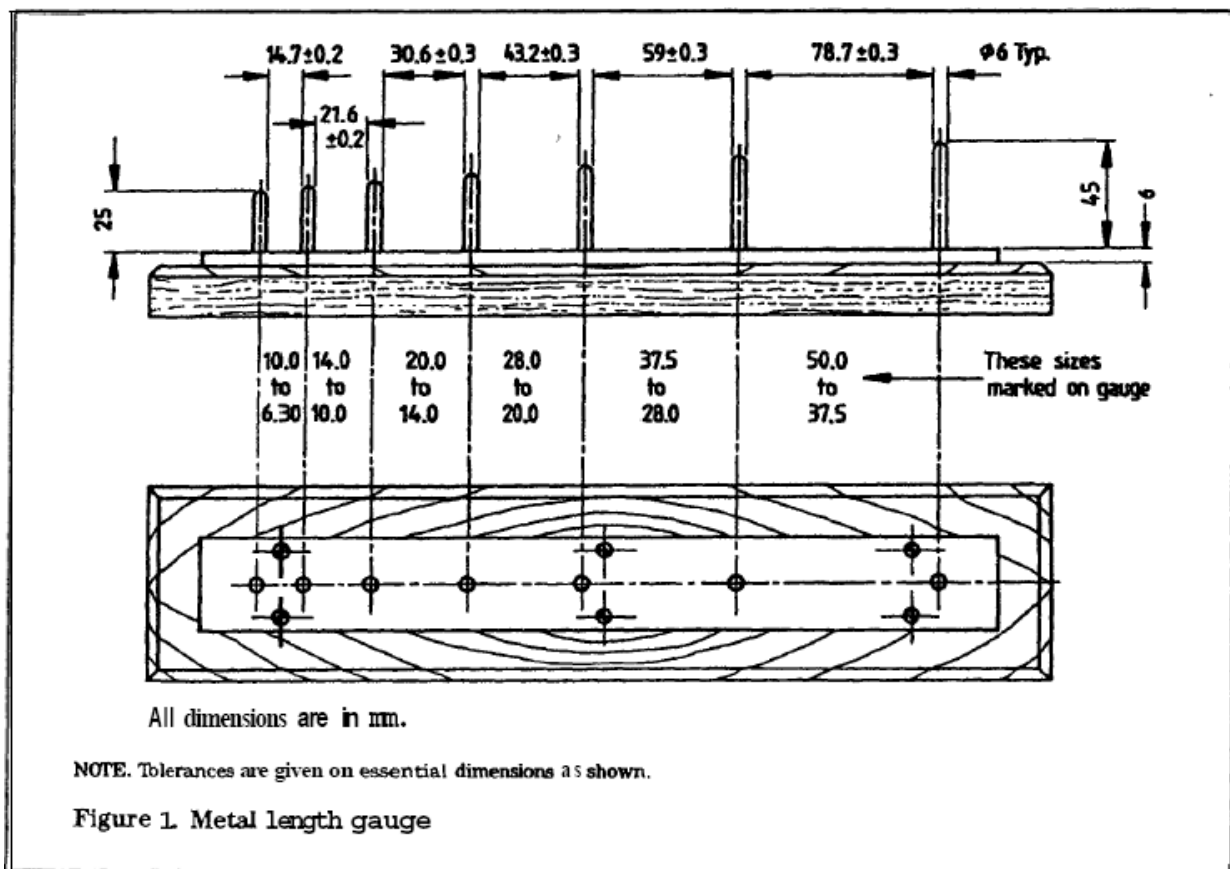
The test is not applicable to material passing a 6.30 mm test sieve or retained on a 50.0 mm test sieve.

Principle

Aggregate particles are classified as elongated when they have a length (greatest dimension) of more than 1.8 of their mean sieve size, this size being taken as the mean of the limiting sieve apertures used for determine the *size* fraction in which the particle occurs. The elongation index is found by separating the elongated particles and expressing their mass as a percentage of the mass of sample tested.

Apparatus

Metal length gauge according to picture below:



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

BRITISH STANDARD BS

Method

Gauge each fraction as follows. Select the length gauge appropriate to the size fraction under test and gauge each particle separately by hand. Elongated particles are *those* whose greatest dimension prevents them from passing through the gauge, and these are placed to one side.

Minimum mass of test portion

100% passing	100% retained	Minimum mass of test portion (kg)
40 mm	28 mm	15
28 mm	20 mm	5
20 mm	14 mm	2
14 mm	10 mm	1
10 mm	6,3 mm	0,5

Calculation

The value of the elongation index is calculated from the expression:

$$\text{Elongation Index} = \frac{M_3}{M_2} \times 100$$

Where:

M_2 is the sum of the masses of fractions that have a mass greater than 5 % of the total mass.

M_3 is the mass of all the elongated particles.

Express the elongation index to the nearest whole number.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARD IS

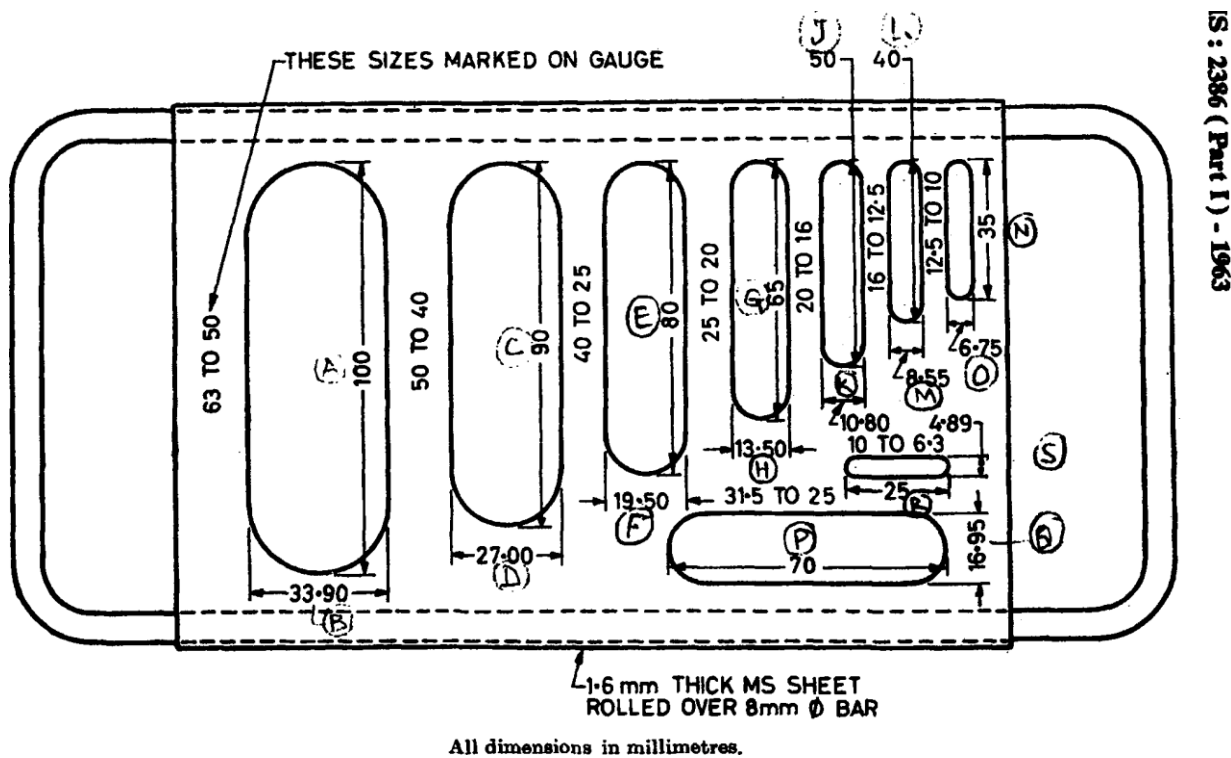
IS is the standard body used in India. Many of the standards are similar to BS used before 2004 but with minor or major differences

DETERMINATION OF FLAKINESS INDEX - IS 2386 PART 1.4

The flakiness index of an aggregate is the percentage by weight of particles where the least dimension (thickness) is less than three-fifths of their mean dimension. The test is not applicable to sizes smaller than 6.3 mm.

Apparatus

Metal Gauge - The metal gauge shall be of the pattern shown below.



Sample

A quantity of aggregate shall be taken sufficient to provide the minimum number of 200 pieces of any fraction to be tested.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARD IS

Procedure

The sample shall be sieved with the sieves specified in Table below

100% passing	100% retained	Min mass of test portion
63 mm	50 mm	50 kg
50 mm	40 mm	35 kg
40 mm	25 mm	15 kg
31,5 mm	25 mm	15 kg
25 mm	20 mm	5 kg
20 mm	16 mm	2 kg
16 mm	12,5 mm	2 kg
12,5 mm	10 mm	1 kg
10 mm	6,3 mm	0,5 kg

Each fraction shall be gauged in turn for thickness on a metal gauge of the pattern shown above.

The flakiness index is the total weight of the material passing the various thickness gauges or sieves, expressed as a percentage of the total weight of the sample gauged.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

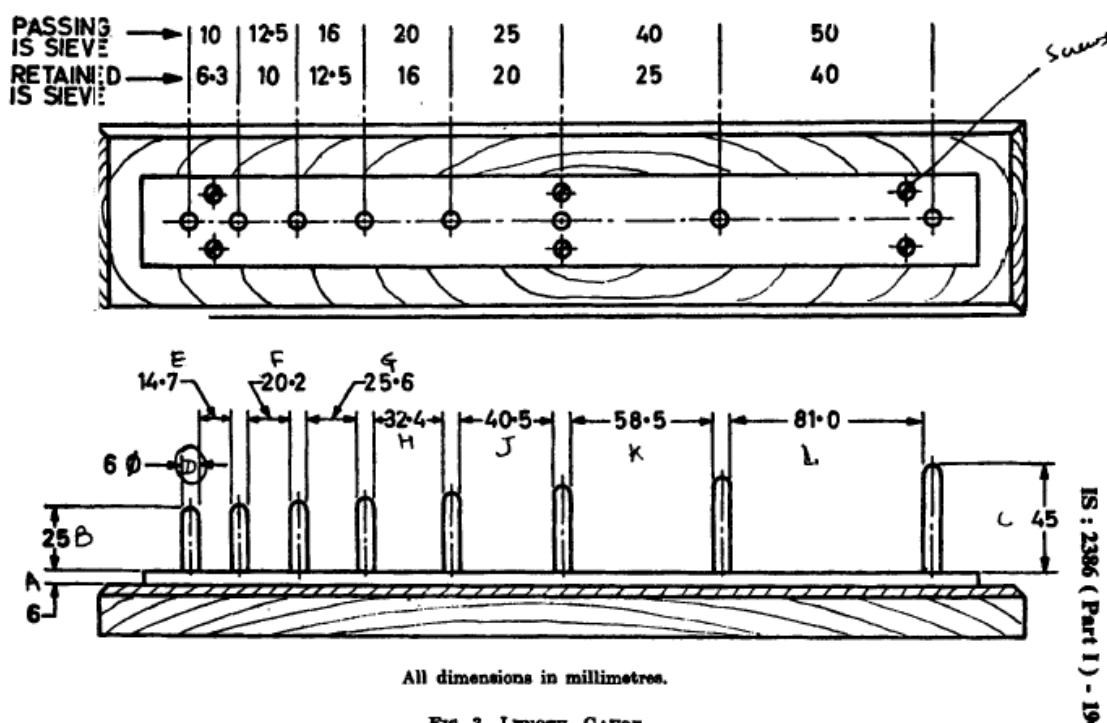
INDIAN STANDARD IS

DETERMINATION OF ELONGATION INDEX - IS 2386 PART 1.5

The elongation index of an aggregate is the percentage by Weight of particles whose - greatest dimension (length) is greater than one and four – fifths times (1,8) their mean dimension. The elongation test is not applicable to sizes smaller than 6.3 mm.

Apparatus

Metal Gauge - The metal gauge shall be of the pattern shown below.



Sample

A quantity of aggregate shall be taken sufficient to provide the minimum number of 200 pieces of any fraction to be tested.

Procedure

The sample shall be sieved with the sieves specified in section determination of flakiness index IS 2386 part 1.4

Each fraction shall be gauged individually for length on a metal gauge of the pattern shown above

The Elongation index is the total weight of the material retained on the various length gauges, expressed as a percentage of the total weight of the sample gauged.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

CHINESE STANDARD GB

PEBBLE AND CRUSHED STONE FOR BUILDING - GB/T14685-2001

Test Method for content of elongation and flakiness

Instrument and tools

Elongation Gauge and Flakiness Gauge (Fig. 1 and Fig. 2)

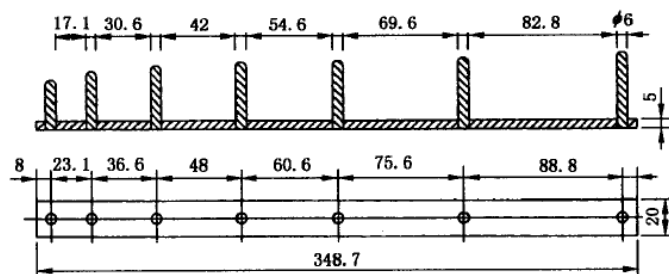


Fig. 1 Elongation Gauge

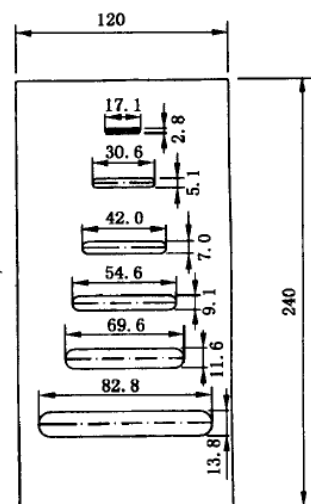


Fig. 2 Flakiness Gauge

The minimum sample weight should comply below regulation

Max. size, mm	9.5	16.0	19.0	26.5	31.5	37.5	63.0	75.0
Min. weight, kg	0.3	1.0	2.0	3.0	5.0	10.0	10.0	10.0

Weigh sample according to table with 1g precision. Sieve the sample to the fractions according to Table below

Fraction, mm	4.75 – 9.50	9.50 – 16.0	16.0 - 19	19.0 -26.5	26.5 – 31.5	31.5 – 37.5
Hole width on Flakiness Gauge, mm	2.8	5.1	7.0	9.1	11.6	13.8
Distance on Elongation Gauge, mm	17.1	30.6	42.0	54.6	69.6	82.8

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

CHINESE STANDARD GB

Use the gauge to check the articles one by one. The article which length is large than the corresponding distance on the elongation gauge should be collected as elongation. The article which thickness is less than the corresponding hole width on the flakiness gauge should be collected as flakiness. Balance the total weight of elongation and flakiness with 1g precision.

If the rock size is large than 37.5 mm, a caliper should be used to measure the length and thickness. The setting width of calipers should comply with below regulation.

Fraction, mm	37.5 – 53.0	53.0 – 63.0	63.0 – 75.0	75.0 – 90.0
Setting Width of Caliper for Flakiness checking, mm	18.1	23.2	27.6	33.0
Setting Width of Caliper for Elongation checking, mm	108.6	139.2	165.6	198.0

Result Calculation

The content of elongation and flakiness is calculated by below formula, the precision is remained to 1%.

Content of elongation and flakiness (%) = total weight of elongation and flakiness / total weight of the sample x 100%

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

TEST METHODS USED IN OTHER COUNTRIES 2016-01-01

CHINESE STANDARD GB

CONTENT OF ELONGATION AND FLAKINESS IN THE AGGREGATES FOR CEMENT CONCRETE - GB/T0311-2000)

Note! This standard mainly apply in road construction.

Instrument and tools

Flakiness Gauge and Elongation Gauge (Fig. 1 and Fig. 2)

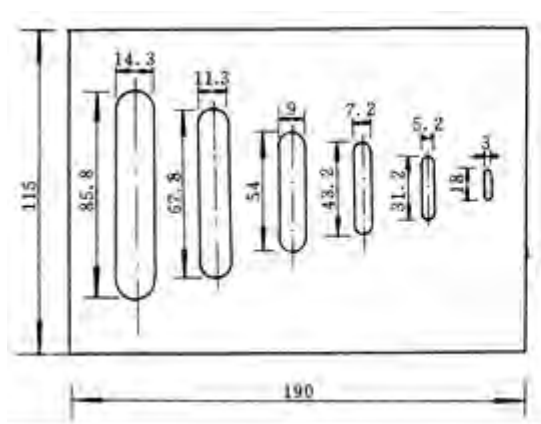


Fig. 1 Flakiness Gauge

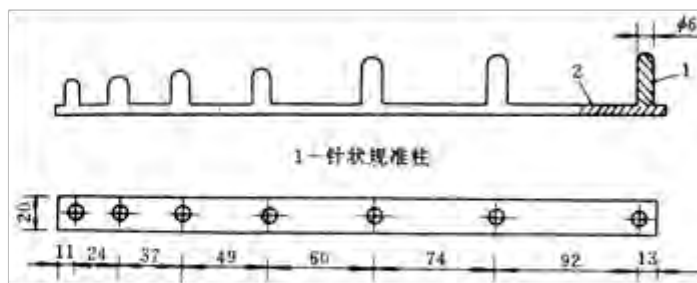


Fig. 2 Elongation Gauge

* The test sieve is round hole. The fraction is defined by the diameter of the hole.

Fraction (round hole sieve) mm	5 – 10	10 – 16	16 – 20	20 – 25	25 – 31.5	31.5 – 40
Hole width on Flakiness Guage, mm	3	5.2	7.2	9	11.3	14.3
Distance on Elongation Guage, mm	18	31.2	43.2	54	67.8	85.5

Result Calculation

The content of elongation and flakiness is calculated by below formula, the precision is remained to 1%.

Content of elongation and flakiness (%) = total weight of elongation and flakiness / total weight of the sample x 100%

CHINESE STANDARD GB

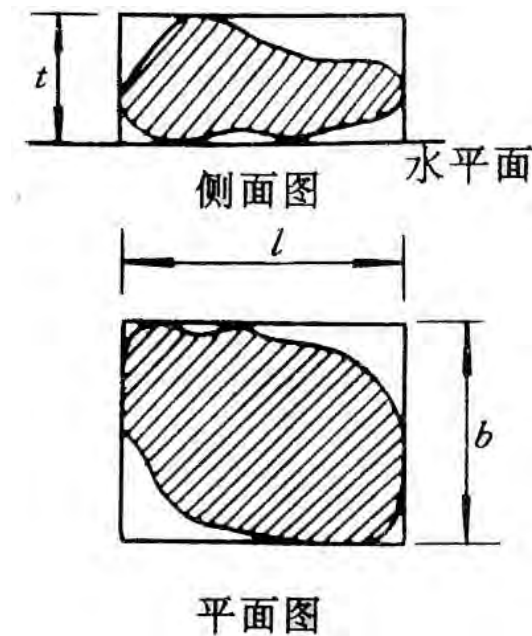
CONTENT OF ELONGATION AND FLAKINESS IN THE AGGREGATES FOR ASPHALT –
T 0312-2000

The test method applies on particles $>4,75$ mm

Min weight of sample is 800 g but not less than 100 particles.

Definition: a length/Thickness ratio >3 means bad shape.

Measuring tool Calliper with gauge relation 1:3.



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

GENERAL

The European Standards for aggregates will

- Form a single European Market.
- Harmonize the product standards.
- Make a system of Attestation of Conformity.

But it will not harmonize actual values of properties specified.

Each country that applies the CEN norms uses their own national standards prefix after the CEN nomenclature, ex SS-EN for Sweden, BS-EN For UK etc...

Following aggregates are specified by CEN / TC 154,

- **EN 12620** Aggregates for concrete.
- **EN 13043** Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas.
- **EN 13055** Lightweight aggregates.
- **EN 13139** Aggregates for Mortar.
- **EN 13242** Aggregates for unbound and hydraulic bound materials for use in civil engineering work and road construction.
- **EN 13383** Armour stone
- **EN 13450** Aggregates for railway ballast.

If you need the total specifications for the EU norms, please contact PSS, Process Sales Support, in Svedala, Sweden.

For accompanying test methods see RPG sections for test methods.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR CONCRETE - EN 12620

Sieve sizes for specifying aggregate sizes (square holes)

Basic Set (mm)	Basic Set plus set 1 (mm)	Basic Set plus set 2 (mm)
0	0	0
1	1	1
2	2	2
4	4	4
-	5.6	-
-	-	6.3
8	8	8
-	-	10
-	11.2	-
-	-	12.5
-	-	14
16	16	16
-	-	20
-	22.4	-
31,5	31,5	31,5
-	-	40
-	45	-
63	63	63

Product grading limitations

Aggregate	Size	Percentage passing by mass					Category G _d
		2 D	1.4 D	D	d	d/2	
Coarse	D/d ≤ 2 or	100	98 to 100	85 to 99	0 to 20	0 to 5	G _C 85/20
	D ≤ 11.2 mm	100	98 to 100	80 to 99	0 to 20	0 to 5	G _C 80/20
	D/d > 2 and D > 11.2 mm	100	98 to 100	90 to 99	0 to 15	0 to 5	G _C 90/15
Fine	D ≤ 4 mm and d = 0 mm	100	95 to 100	85 to 99	-	-	G _F 85
Natural Graded 0/8	D = 8 mm and d = 0 mm	100	98 to 100	90 to 99	-	-	G _{NG} 90
All-in	D ≤ 45 mm and d = 0 mm	100	98 to 100	90 to 99	-	-	G _A 90
		100	98 to 100	85 to 99	-	-	G _A 85
			100				

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR CONCRETE - EN 12620 cont.

D/d	Mid-size Sieve (mm)	Over all limits at mid-size sieves (percentage passing mass)		Category G _T
		Over all limits	Tolerance on producer's declared typical grading	
< 4	D/1.4	25 to 70	± 15	G _T 15
≥ 4	D/2	25 to 70	± 17.5	G _T 17.5

Tolerance Grading for Coarse aggregate

Tolerance Grading for Natural graded 0/8

Sieve size (mm)	Tolerance (Percentage passing by mass)
8	± 5
2	± 10
1	± 10
0.25	± 10
0.125	± 3
0.063	± 2

Tolerance Grading for All-in aggregate

Aggregate size (mm)		Overall limits of the sieves Indicated below (Percentage passing by mass)	
Basic set plus set 1	Basic set plus set 2	40 ± 20	70 ± 20
		For the sieve (mm)	
-	0/6.3	1	4
0/8	0/8	1	4
-	0/10	1	4
0/11.2	-	2	5.6
-	0/12.5	2	6.3
-	0/14	2	8
0/16	0/16	2	8
-	0/20	2	10
0/22.4	-	2	11.2
0/31.5	0/31.5	4	16
-	0/40	4	20
0/45	-	4	22.4

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR CONCRETE - EN 12620 cont.

Tolerance Grading for Filler aggregate

Sieve size (mm)	Percentage passing by mass	
	Overall range for individual results	Producer's maximum declared range
2	100	-
0.125	85 to 100	10
0.063	70 to 100	10

Fines content (f) in Coarse and Fine aggregate

Aggregate	0.063 mm sieve Percentage passing by mass	Category f
Coarse aggregate	≤ 1.5	$f_{1.5}$
	≤ 4	f_4
	> 4	f_{Declared}
	No requirement	f_{NR}
Fine aggregate	≤ 3	f_3
	≤ 10	f_{10}
	≤ 16	f_{16}
	≤ 22	f_{22}
	> 22	f_{Declared}
	No requirement	f_{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR CONCRETE - EN 12620 cont.

Fines content (f) in Natural graded 0/8 and All-in aggregate

Aggregate	0.063 mm sieve Percentage passing by mass	Category f
Natural graded 0/8	≤ 3	f_3
	≤ 10	f_{10}
	≤ 16	f_{16}
	> 16	f_{Declared}
	No requirement	f_{NR}
All-in aggregate	≤ 3	f_3
	≤ 11	f_{11}
	> 11	f_{Declared}
	No requirement	f_{NR}

Flakiness Index (FI) of Coarse aggregate (W/T > 1.6)

Flakiness Index	Category FI
≤ 15	FI_{15}
≤ 20	FI_{20}
≤ 35	FI_{35}
≤ 50	FI_{50}
> 50	FI_{Declared}
No requirement	FI_{NR}

Shape Index (SI) of Coarse aggregate (L/T > 3)

Shape Index	Category SI
≤ 15	SI_{15}
≤ 20	SI_{20}
≤ 40	SI_{40}
≤ 55	SI_{55}
> 55	SI_{Declared}
No requirement	SI_{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR CONCRETE - EN 12620 cont.

Shell content of Coarse aggregate

Shell content %	Category SC
≤ 10	SC ₁₀
> 10	SC _{Declared}
No requirement	SC _{NR}

Los Angles (LA) coefficients for Coarse aggregate

Los Angles coefficient	Category LA
≤ 15	LA ₁₅
≤ 20	LA ₂₀
≤ 25	LA ₂₅
≤ 30	LA ₃₀
≤ 35	LA ₃₅
≤ 40	LA ₄₀
≤ 50	LA ₅₀
> 50	LA _{Declared}
No requirement	LA _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR BITUMINOUS MIXTURES AND SURFACE TREATMENTS FOR ROADS, AIRFIELDS AND OTHER TRAFFICKED AREAS - EN 13043

Sieve sizes for specifying aggregate sizes (square holes)

Basic Set (mm)	Basic Set plus set 1 (mm)	Basic Set plus set 2 (mm)
0	0	0
1	1	1
2	2	2
4	4	4
-	5.6	-
-	-	6.3
8	8	8
-	-	10
-	11.2	-
-	-	12.5
-	-	14
16	16	16
-	-	20
-	22.4	-
31,5	31,5	31,5
-	-	40
-	45	-
63	63	63

Product grading limitations

Aggregate	Size	Percentage passing by mass					Category G _d
		2 D	1.4 D	D	d	d/2	
Coarse	D > 2 mm and d > 0 mm	100	100	90 to 99	0 to 10	0 to 2	G _C 90/10
		100	98 to 100	90 to 99	0 to 15	0 to 5	G _C 90/15
		100	98 to 100	90 to 99	0 to 20	0 to 5	G _C 90/20
		100	98 to 100	85 to 99	0 to 15	0 to 2	G _C 85/15
		100	98 to 100	85 to 99	0 to 20	0 to 5	G _C 85/20
		100	98 to 100	85 to 99	0 to 35	0 to 5	G _C 85/35
Fine	D ≤ 2 mm	100	-	85 to 99	-	-	G _F 85
All-in	D ≤ 45 mm and d = 0 mm	100	98 to 100	90 to 99	-	-	G _A 90
		100	98 to 100	85 to 99	-	-	G _A 85

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR BITUMINOUS MIXTURES - EN 13043 cont.

Tolerance Grading for Coarse aggregate

D/d	Mid-size sieve (mm)	Over all limits at mid-size sieves (percentage passing mass)		Category G
		Over all limits	Tolerance on producer's declared typical grading	
< 4	D/1.4	25 to 80	± 15	G _{25/15}
		20 to 70	± 15	G _{20/15}
≥ 4	D/2	20 to 70	± 17.5	G _{20/17.5}
		No requirement		G _{NR}

Tolerance Grading for Fine and All-in aggregate

Sieve size (mm)	D	D/2	0.063	Category G _{TC}
Tolerances	± 5	± 10	± 3	G _{TC} 10
Percentage passing by mass	± 5	± 20	± 3	G _{TC} 20
	No requirement			G _{TC} NR

Fines content in Coarse and Fine aggregate

Aggregate	Percentage passing 0.063 mm sieve	Category f
Coarse	≤ 0.5	f _{0.5}
	≤ 1	f ₁
	≤ 2	f ₂
	≤ 4	f ₄
	> 4	f _{Declared}
	No requirement	f _{NR}
Fine	≤ 3	f ₃
	≤ 10	f ₁₀
	≤ 16	f ₁₆
	≤ 22	f ₂₂
	> 22	f _{Declared}
	No requirement	f _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR BITUMINOUS MIXTURES - EN 13043 cont.

Flakiness Index (FI) of Coarse aggregate (W/T > 1.6)

Flakiness Index	Category FI
≤ 10	FI ₁₀
≤ 15	FI ₁₅
≤ 20	FI ₂₀
≤ 25	FI ₂₅
≤ 30	FI ₃₀
≤ 35	FI ₃₅
≤ 50	FI ₅₀
> 50	FI _{Declared}
No requirement	FI _{NR}

Shape Index (SI) of Coarse aggregate (L/T > 3)

Shape Index	Category SI
≤ 15	SI ₁₅
≤ 20	SI ₂₀
≤ 25	SI ₂₅
≤ 30	SI ₃₀
≤ 35	SI ₃₅
≤ 50	SI ⁵⁰
> 50	SI _{Declared}
No requirement	SI _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR BITUMINOUS MIXTURES - EN 13043 cont.

Angularity of Fine aggregate

Flow coefficient	Category ECS
≥ 38	ECS ₃₈
≥ 35	ECS ₃₅
≥ 30	ECS ₃₀
< 30	ECS _{Declared}
No requirement	ECS _{NR}

micro-Deval values MDE for Coarse aggregate

micro-Deval Coefficient	Category MDE
≤ 10	MDE ₁₀
≤ 15	MDE ₁₅
≤ 20	MDE ₂₀
≤ 25	MDE ₂₅
≤ 35	MDE ₃₅
> 35	MDE _{Declared}
No requirement	MDE _{NR}

Los Angles (LA) coefficients for Coarse aggregate

Los Angles coefficient	Category LA
≤ 15	LA ₁₅
≤ 20	LA ₂₀
≤ 25	LA ₂₅
≤ 30	LA ₃₀
≤ 40	LA ₄₀
≤ 50	LA ₅₀
> 50	LA _{Declared}
No requirement	LA _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR UNBOUND AND HYDRAULIC BOUND MATERIALS FOR USE IN CIVIL ENGINEERING WORK AND ROAD CONSTRUCTION - EN 13242

Sieve sizes for specifying aggregate sizes (square holes)

Basic Set (mm)	Basic Set plus set 1 (mm)	Basic Set plus set 2 (mm)
0	0	0
1	1	1
2	2	2
4	4	4
-	5.6	-
-	-	6.3
8	8	8
-	-	10
-	11.2	-
-	-	12.5
-	-	14
16	16	16
-	-	20
-	22.4	-
31,5	31,5	31,5
-	-	40
-	45	-
63	63	63
-	-	80
-	90	-

Product grading limitations

Aggregate	Size	Percentage passing by mass					Category G_d
		2 D	1.4 D	D	d	d/2	
Coarse	$d \geq 1 \text{ mm}$ and $D > 2 \text{ mm}$	100	98 to 100	85 to 99	0 to 15	0 to 5	G_C 85-15
		100	98 to 100	80 to 99	0 to 20	0 to 5	G_C 80-20
Fine	$d = 0 \text{ mm}$ and $D \leq 6.3 \text{ mm}$	100	95 to 100	85 to 99	-	-	G_F 85
All-in	$d = 0 \text{ mm}$ and $D > 6.3 \text{ mm}$	-	100	85 to 99	-	-	G_A 85
		100	98 to 100	80 to 99	-	-	G_A 80
		100	98 to 100	75 to 99	-	-	G_A 75

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR UNBOUND MATERIALS - EN 13242 cont.

Tolerance Grading for Coarse aggregate

D/d	Mid-size Sieve (mm)	Over all limits at mid-size sieves (percentage passing mass)		Category GT _C
		Over all limits	Tolerance on producer's declared typical grading	
< 4	D/1.4	25 to 80	± 15	GT _C 25/15
		20 to 70	± 15	GT _C 20/15
≥ 4	D/2	20 to 70	± 17.5	GT _C 20/17.5
No requirement				GT _{NR}

Tolerance Grading for Fine and All-in aggregate

Limit deviations Percentage passing by mass			Category GT _A	
D sieve	D/2 Sieve	0.63 mm sieve	Fine aggregate GT _F	All-in aggregate GT _A
± 5	± 10	± 3	GT _F 10	GT _A 10
± 5	± 20	± 4	GT _F 20	GT _A 20
± 7.5	± 25	± 5	GT _F 25	GT _A 25
No requirement			GT _F NR	GT _A NR

Fines content (f) in Coarse and Fine aggregate

Aggregate	0.063 mm sieve Percentage passing by mass	Category f
Coarse aggregate	≤ 2	f ₂
	≤ 4	f ₄
	> 4	f _{Declared}
	No requirement	f _{NR}
Fine aggregate	≤ 3	f ₃
	≤ 7	f ₇
	≤ 10	f ₁₀
	≤ 16	f ₁₆
	≤ 22	f ₂₂
	> 22	f _{Declared}
	No requirement	f _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR UNBOUND MATERIALS - EN 13242 cont.

Fines content (f) in All-in aggregate

Aggregate	0.063 mm sieve Percentage passing by mass	Category f
All-in aggregate	≤ 3	f_3
	≤ 5	f_5
	≤ 7	f_7
	≤ 9	f_9
	≤ 12	f_{12}
	≤ 15	f_{15}
	> 15	f_{Declared}
	No requirement	f_{NR}

Flakiness Index (FI) of Coarse aggregate (W/T > 1.6)

Flakiness Index	Category FI
≤ 20	FI_{20}
≤ 35	FI_{35}
≤ 50	FI_{50}
> 50	FI_{Declared}
No requirement	FI_{NR}

Shape Index (SI) of Coarse aggregate (L/T > 3)

Shape Index	Category SI
≤ 20	SI_{20}
≤ 40	SI_{40}
≤ 55	SI_{55}
> 55	SI_{Declared}
No requirement	SI_{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR UNBOUND MATERIALS - EN 13242 cont.

Crushed and broken surfaces in Coarse aggregate

Crushed or broken particles by mass percentage	Totally rounded particles by mass percentage	Category C
90 to 100	0 to 3	C _{90/3}
50 to 100	0 to 10	C _{50/10}
50 to 100	0 to 30	C _{50/30}
-	0 to 50	C _{NR/50}
-	0 to 70	C _{NR/70}
Declared value	Declared value	C _{Declared}
No requirement		C _{NR}

Micro-Deval values MDE for Coarse aggregate

micro-Deval Coefficient	Category M _{DE}
≤ 20	M _{DE20}
≤ 25	M _{DE25}
≤ 35	M _{DE35}
≤ 50	M _{DE50}
> 50	M _{DE} Declared
No requirement	M _{DE} NR

Los Angeles (LA) coefficients for Coarse aggregate

Los Angeles coefficient	Category LA
≤ 20	LA ₂₀
≤ 25	LA ₂₅
≤ 30	LA ₃₀
≤ 40	LA ₄₀
≤ 50	LA ₅₀
≤ 60	LA ₆₀
> 60	LA _{Declared}
No requirement	LA _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR RAILWAY BALLAST - EN 13450

Grading, (Sieve sizes square holes)

Sieve mm	Railway ballast 31.5 mm to 50 mm			Railway ballast 31.5 mm to 63 mm		
	Percent passing by mass					
	Grading category					
	A	B	C	D	E	F
80	100	100	100	100	100	100
63	100	97 to 100	95 to 100	97 to 99	95 to 99	93 to 99
50	70 to 99	70 to 99	70 to 99	65 to 99	55 to 99	45 to 70
40	30 to 65	30 to 70	25 to 75	30 to 65	25 to 75	15 to 40
31.5	1 to 25	1 to 25	1 to 25	1 to 25	1 to 25	0 to 7
22.4	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3
d to D	≥ 50	≥ 50	≥ 50	≥ 50	≥ 50	≥ 85

Fines content

Sieve mm	Maximum percentage passing by mass				
	Fine particle category				
	A	B	C	D	Declared
0.5	0.6	1.0	No requirement	<i>Not applicable</i>	> 1.0
0.063	0.5	1.0	1.5	No requirement	> 1.5

Flakiness Index (FI) of Coarse aggregate (W/T > 1.6)

Flakiness Index	Category FI
≤ 15	FI ₁₅
≤ 20	FI ₂₀
≤ 35	FI ₃₅
> 35	FI _{Declared}
No requirement	FI _{NR}

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES – EUROPEAN CEN STANDARD 2016-01-01

AGGREGATES FOR RAILWAY BALLAST - EN 13450 cont.

Shape Index (SI) of Coarse aggregate ($L/T > 3$)

Shape Index	Category SI
≤ 10	SI ₁₀
≤ 20	SI ₂₀
≤ 30	SI ₃₀
5 to 30	SI _{5/30}
> 30	SI _{Declared}
No requirement	SI _{NR}

Particle length

Percent by mass with length ≥ 100 mm in a Greater than 40 kg sample Particle length category

A	B	C	D	Declared	E
4	6	8	12	> 12	No requirement

micro-Deval values MDE for Coarse aggregate

micro-Deval Coefficient	Category MDE _{RB}
≤ 5	MDE _{RB} 5
≤ 7	MDE _{RB} 7
≤ 11	MDE _{RB} 11
≤ 15	MDE _{RB} 15
> 15	MDE _{RB} Declared
No requirement	MDE _{RB} NR

Los Angeles (LA) coefficients for Coarse aggregate

Los Angeles coefficient	Category LA _{RB}
≤ 12	LA _{RB} 12
≤ 14	LA _{RB} 14
≤ 16	LA _{RB} 16
≤ 20	LA _{RB} 20
≤ 24	LA _{RB} 24
> 24	LA _{RB} Declared
No requirement	LA _{RB} NR

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

MATERIAL FOR ROAD AND BRIDGE CONSTRUCTION - ASTM D 448-86, 1988

Percent by weight passing square hole	Nominal size				
	3½-1½ in (90-37,5 mm)	2½-1½ in (63-37,5 mm)	2½-¾ in (63-19 mm)	2-1 in (50-25 mm)	2 in-No. 4 (50-4,75 mm)
4 in (100 mm)	100				
3½ in (90 mm)	90 - 100				
3 in (75 mm)		100	100		
2½ in (63 mm)	25 - 60	90 - 100	90 - 100	100	100
2 in (50 mm)		35 - 70		90-100	95-100
1½ in (37,5 mm)	0 - 15	0 - 15	25 - 60	35-70	
1 in (25 mm)				0-15	35-70
¾ in (19 mm)	0 - 5	0 - 5	0 - 10		
½ in (12,5 mm)			0 - 5	0-5	10-30
No. 4 (4,75 mm)					0-5

Percent by weight passing square hole	Nominal size				
	1½-¾ in (37,5-19 mm)	1½ in-No. 4 (37,5-4,75 mm)	1-½ in (25-12,5 mm)	1-3/8 in (25-9,5 mm)	1 in-No. 4 (25-4,75 mm)
2 in (50 mm)	100	100			
1½ in (37,5 mm)	90-100	95-100	100	100	100
1 in (25 mm)	20-55		90-100	90-100	95-100
¾ in (19 mm)	0-15	35-70	20-55	40-85	
½ in (12,5 mm)			0-10	10-40	25-60
3/8 in (9,5 mm)	0-5	10-30	0-5	0-15	
No. 4 (4,75 mm)		0-5		0-5	0-10
No. 8 (2,36 mm)					0-5

Percent by weight passing square hole	Nominal size				
	¾-3/8 in (19-9,5 mm)	¾ in-No. 4 (19-4,75 mm)	¾ in-No. 8 (19-2,36 mm)	½ in-No. 4 (12,5-4,75 mm)	½ in-No. 8 (12,5-2,36 mm)
1 in (25 mm)	100	100	100		
¾ in (19 mm)	90-100	90-100	90-100	100	100
½ in (12,5 mm)	20-55			90-100	90-100
3/8 in (9,5 mm)	0-15	20-55	30-65	40-70	40-75
No. 4 (4,75 mm)	0-5	0-10	5-25	0-15	5-25
No. 8 (2,36 mm)		0-5	0-10	0-5	0-10
No. 16 (1,18 mm)			0-5		0-5

Percent by weight passing square hole	Nominal size			
	3/8 in-No. 8 (9,5-2,36 mm)	3/8 in-No. 16 (9,5-1,18 mm)	No. 4-No. 16 (4,75-1,18 mm)	No. 4-0 (4,75-0 mm)
½ in (12,5 mm)	100	100		
3/8 in (9,5 mm)	85-100	90-100	100	100
No. 4 (4,75 mm)	10-30	20-55	85-100	85-100
No. 8 (2,36 mm)	0-10	5-30	10-40	
No. 16 (1,18 mm)	0-5	0-10	0-10	
No. 50 (0,3 mm)		0-5	0-5	
No. 100 (0,15 mm)				10-30

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

MATERIAL INTENDED FOR CONCRETE AGGREGATES - ASTM C33-86, 1988

Fine aggregate

Material shall consist of natural sand, manufactured sand, or a combination thereof.

Particle size	%
3-8 in (9,5 mm)	100
No. 4 (4,75 mm)	95 - 100
No. 8 (2,36 mm)	80 - 100
No. 16 (1,18 mm)	50 - 85
No. 30 (0,6 mm)	25 - 60
No. 50 (0,3 mm)	10 - 30
No. 100 (0,15 mm)	2 - 10

No. 50 (0,3 mm) may be reduced to 5% for air-entrained concrete.

No. 100 (0,15 mm) may be reduced to 0% for air-entrained concrete.

Not more than 45% may pass any sieve and be retained on the next consecutive sieve.

Fine aggregate

Clay lumps and friable particles may be	max. 3%
Material finer than No. 200 (0,075 mm) may be:	
for concrete subject to abrasion, made of natural sand	max. 3%
for concrete subject to abrasion, made of manufactured sand	max. 5%
for all other concrete, made of natural sand	max. 5%
for all other concrete, made of manufactured sand	max. 7%

Coarse aggregate

Material shall consist of gravel, crushed gravel, crushed stone, air-cooled blast furnace slag or crushed hydraulic-cement concrete or a combination thereof.

Percent by weight passing square hole	Nominal size			
	3½-1½ in (90-37,5 mm)	2½-1½ in (63-37,5 mm)	2-1 in (50-25 mm)	2 in-No. 4 (50-4,75 mm)
4 in (100 mm)	100			
3½ in (90 mm)	90-100			
3 in (75 mm)		100		
2½ in (63 mm)	25-60	90-100	100	100
2 in (50 mm)		35-70	90-100	95-100
1½ in (37,5 mm)	0-15	0-15	35-70	
1 in (25 mm)			0-15	35-70
¾ in (19 mm)	0-5	0-5		
½ in (12,5 mm)			0-5	10-30
3/8 in (9,5 mm)				
No. 4 (4,75 mm)				0-5

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS

MATERIAL INTENDED FOR CONCRETE AGGREGATES - ASTM C33-86, 1988

Percent by weight passing square hole	Nominal size				
	1½-¾ in (37,5-19 mm)	1½ in-No. 4 (37,5-4,75 mm)	1-½ in (25-12,5 mm)	1-3/8 in (25-9,5 mm)	1 in-No. 4 (25-4,75 mm)
2 in (50 mm)	100	100			
1½ in (37,5 mm)	90-100	95-100	100	100	100
1 in (25 mm)	20-55		90-100	90-100	95-100
¾ in (19 mm)	0-15	35-70	20-55	40-85	
½ in (12,5 mm)			0-10	10-40	25-60
3/8 in (9,5 mm)	0-5	10-30	0-5	0-15	
No. 4 (4,75 mm)		0-5		0-5	0-10
No. 8 (2,36 mm)					0-5

Percent by weight passing square hole	Nominal size			
	¾-3/8 in (19-9,5 mm)	¾ in-No. 4 (19-4,75 mm)	½ in-No. 4 (12,5-4,75 mm)	3/8 in-No. 8 (9,5-2,36 mm)
1 in (25 mm)	100	100		
¾ in (19 mm)	90-100	90-100	100	
½ in (12,5 mm)	20-55		90-100	100
3/8 in (9,5 mm)	0-15	20-55	40-70	85-100
No. 4 (4,75 mm)	0-5	0-10	0-15	10-30
No. 8 (2,36 mm)		0-5	0-5	0-10
No. 16 (1,18 mm)				0-5

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS -SUPERPAVE

The Superpave is the acronym for Superior PERforming Asphalt PAVEments system. It was developed by Strategic Highway Research Program (SHRP) to give highway engineers and contractors the tools they need to design asphalt pavements that will perform better under extremes of temperature and heavy traffic loads. Using the Superpave system, materials and mixes can be designed to reliably perform under any conditions of load and environment.

Superpave is a complete system for specifying asphalt binders and mineral aggregates, developing asphalt mixture design, and analyzing and establishing pavement performance predictions.

Aggregates used in Superpave

Superpave -- Testing and Specifications

The federal government specified four main categories that the aggregate properties used in Superpave must meet or exceed. These properties include fine angularity, coarse angularity, elongation of particles, and clay content in addition to gradation standards. The exact requirements for these characteristics vary on the specific properties the mixture is being designed for and the governing agency setting the specifications.

Fine Particle Angularity

This requirement involves all aggregate smaller than 2.26mm to pass the National Aggregates Associations voids test. This test involves a sample of the material being poured into a cylinder of known volume. The volume of air in the uncompacted sample can then be computed using the formula:

$$\text{Percent Voids} = \frac{(\text{Volume of container}) - (\text{Weight of sample} / \text{Specific Gravity})}{\text{Volume of container}} * 100$$

The percent voids then must meet or exceed the current requirements listed. The greater the void percentage, the higher number of fractured sides. For many highway projects, the requirements change depending on the amount of estimated single axle loads (ESALs).

Superpave Fine Aggregate Requirements – percents' voids

Traffic, million ESALs	Depth from surface	
	Less than 100mm	Greater than 100mm
Less than 0.3	-	-
1	40	-
3	40	40
10	45	40
30	45	40
100	45	45
Greater than 100	45	45

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS - SUPERPAVE

Coarse Particle Angularity

The coarse particle angularity is based upon the same concepts as utilized for the fine particles. The particles considered large are 4.75mm and above. The method for testing these particles is currently done manually until a better method is determined. A sample of aggregate is counted and separated into fractured face categories. Requirements for the coarse material are currently as follows:

Coarse Material Requirements:

Traffic, million ESALs	DEPTH FROM SURFACE	
	Less than 100mm	Greater than 100mm
Less than 0.3	55/-	-
1	65/-	-
3	75/-	50/-
10	85/80	60/-
30	95/90	80/75
100	100/100	95/90
Greater than 100	100/100	100/100

The above fractions indicate the percentage of one fractured face to that of two fractured faces. A fractured face is a fractured surface on a particle that includes a 25 percent or greater area in one plane of the particle.

Material Shape or Elongation

The material shape must not be flat or elongated past a current 5 to 1 side ratio. This test applies to all particles larger than 4.75mm. The Arizona DOT references a test used to determine the ratio of particle sides. This test makes use of a device that is fixed to a pivot and restricted by two rods sticking out. The middle pivot is set to a defined setting which will allow length ratios to be measured.

The long side of a particle is then placed on one side and the device tightened. The same particle is taken to the other side and it is determined if any of the smaller sides would fit through the opening. If it does, the particle is considered elongated past the ratio the device was set to. The current specification is that no more than 10 percent of the material by weight can consist of elongated particles.

Superpave Flat and Elongated Particles Consensus Requirement

Traffic, million ESALs	Percent
Less than 0.3	-
1	-
3	10
10	10
30	10
100	10
Greater than 100	10

Note: Criteria are presented as maximum percent by weight of flat and elongated particles

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS - SUPERPAVE

Gradation

The specifications only apply to the final mixture, thus the gradations of each individual pile does not have to necessarily meet specs. The final mixture is the only one that matters. With this in mind, each stockpile of material can be mixed to obtain the final gradation. To meet the requirements, the gradation is looked at with set control points and restricted areas for each nominal value.

The curve must pass between the control points and stay out of the restricted area. The actual curve may pass above the restricted area, but it is preferred that it travels under it. The nominal size is that in which 10 percent of the material is retained. The specifications for each class of material along with an example of a passing gradation curve are as follows:

Material that must be removed based on Percent Passing (the restricted area):

Sieve (mm)	Mixture numbers			
	2	3	4	5
4.75 (4 mesh)	39.5			
2.36 (8 mesh)	26.8-30.8	34.6	39.1	47.2
1.18	18.1-24.1	22.3-28.3	25.6-31.6	31.6-37.6
0.6	13.6-17.6	16.7-20.7	19.1-23.1	23.5-27.5
0.3	11.4	13.7	15.5	18.7

Percent Passing Criteria:

Sieve (mm)	Mixture numbers			
	2	3	4	5
37.5	100			
25.0	90-100	100		
19.0		90-100	100	
12.5			90-100	100
9.5				90-100
2.36	19-45	23-49	28-58	32-67
0.075	1-7	2-8	2-10	2-10

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

ASTM STANDARDS - SUPERPAVE

Percentage of Clay

The sample is tested for the amount of clay mixed in the finer or 4.75mm minus material. The sample is placed in a cylinder with a solution where the clay is filtered out from the sand. The sand filters to the bottom followed with the clay on top. The ratio of heights is then taken to determine the sand equivalent. The restrictions are listed as follows:

Clay Content Restrictions

Traffic, million ESALs	Sand Equivalent, Minimum
Less than 0.3	40
1	40
3	40
10	45
30	45
100	50
Greater than 100	50

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

GOST NORMS

CRUSHED STONE AND GRAVEL FROM SOLID ROCK FOR CONSTRUCTION, TECHNICAL TERMS (GOST № 8267-93)

BASIC CHARACTERISTICS AND DIMENSIONS (GOST 8267.4.2)

Basic aggregate and gravel, single fractions	Basic mixed Fraction
5(3) – 10 mm	5(3) – 20 mm
10 – 20 mm	5(3) – 15 mm
20 – 40 mm	
40 - 80(70) mm	

According to the Manufacturer-Customer agreement, aggregate and gravel may be produced in the form of the fractions according to table below

Single fractions	Mixed Fraction
10 – 15 mm	5(3) – 15 mm
15 – 20 mm	5(3) – 40 mm
80(70) – 120 mm	40 - 80(70) mm
120 – 150 mm	

The total weight in percent retained on a laboratory screen cloth during the screening of crushed stone or gravel in the **fractions 5(3)-10 mm, 10-20 mm, 20-40 mm, 40-80(70) mm** as well as in the **mixed fractions 5(3)-20 mm and 5-15 mm** must comply with the following table, where d and D are respectively the minimum and the maximum percentages by weight of the nominal size particles.

Table 1

Weight in percent retained on a laboratory screen

Diameter of laboratory screen cloth, mm	d	$0,5(d+D)$	D	$1,25D$
Total retained on laboratory screen cloth, % by weight	90 - 100	30 - 80	Up to 10	Up to 0,5

Note – for crushed stone or gravel in the fraction 5(3) – 10 mm screen cloths with 2,5 mm and 1,25 mm round holes are used additionally, with a requirement that the percentages retained by weight must be at least 95 and 100% respectively.

For aggregate and gravel fractions of over **80 (70) to 120 mm** and over **120 to 150 mm**, as well as for mixture of fractions of **5 (3) to 40 mm** and over **20 to 80 (70) mm**, total residues on the control sieves with hole diameters of d , D , $1.25D$ should comply with values given in Table 1, and the fraction ratio in the mixtures will be set according to the Manufacturer-Customer agreement in compliance with normative documents for using those mixtures in construction.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

GOST NORMS

The total weight in percent retained on a laboratory screen cloth during the screening of the crushed stone or gravel in the fractions 10-15 mm, 15-20 mm must be:

Total weight in percent retained	On screen cloth with holes size:
From 85 to 100%	d
Up to 15%	D
Up to 0,75%	1.25D

CRUSHED GRAINS CONTENT IN AGGREGATE MADE OF GRAVEL AND GRAIN SHAPE (GOST 8267.4.3)

Crushed surface

Aggregate made of gravel should contain crushed grains in amounts no less than 80 mass %. According to the Manufacturer-Customer agreement, aggregate made of gravel may contain less than 60% of crushed grains

Grain Shape

The aggregate grain shape is characterized by the content of flake (plate) and needle-like grains. Depending on the content of flake (plate) and needle-like grains, aggregate can be subdivided into four groups according to Table below.

In mass percent	
Aggregate group	Content of flake (plate) and needle-like grains
1	Up to 10 including
2	Over 10 to 15
3	Over 15 to 25
4	Over 25 to 35
5	Over 35 to 50

Note – According to the Manufacturer-Customer agreement, aggregate can be produced from igneous rocks and contain over 50 % but no more than 65 % of flake (plate) or needle-like grains.

Gravel should not contain more than 35 mass % of flake (plate) and needle-like grains.

AGGREGATE STRENGTH GOST 8267.4.4

Abradability brands of aggregate and gravel should meet the requirements below

Abradability brands of aggregate and gravel	Mass loss in testing the aggregate, %	
	aggregate	gravel
Ė1	Up to 25 inclusive	Up to 20 inclusive
Ė2	Over 25 to 35	Over 20 to 30
Ė3	Over 35 to 45	Over 30 to 40
Ė4	Over 45 to 60	Over 40 to 50

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATIONS FOR ROAD AND BRIDGE WORKS, SECTION 400, SUB-BASES AND BASE COURSES

Table 400-1 Grading for close-graded granular sub-base materials

IS Sieve	Percent by weight passing the IS sieve		
Designation	Grading I	Grading II	Grading III
75.0 mm	100	-	-
63.0 mm	80-100	100	-
26.5 mm	55-90	70-100	100
9.50 mm	35-65	50-80	65-95
4.75 mm	25-55	40-65	50-80
2.36 mm	20-40	30-50	40-65
0.425 mm	10-25	15-25	20-35
0.075 mm	3-10	3-10	3-10
CBR Value (Minimum)	30	25	20

Table 400-2 Grading for coarse graded granular sub-base materials

IS Sieve	Percent by weight passing the IS sieve		
Designation	Grading I	Grading II	Grading III
75.0 mm	100	-	-
63.0 mm		100	-
26.5 mm	55-75	50-80	100.
9.50 mm			
4.75 mm	10-30	15-35	24-45
2.36 mm			
0.425 mm			
0.075 mm	<10	<10	<10
CBR Value (Minimum)	30	25	20

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATIONS FOR ROAD AND BRIDGE WORKS, SECTION 400, SUB-BASES AND BASE COURSES cont.

Table 400-6 Physical requirements of coarse aggregates for water bound macadam for sub-base/base courses

	Test	Test Method	Requirements
1.	*Los Angeles Abrasion value Or	IS:2386 (Part-4)	40 percent (Max)
	*Aggregate Impact value	IS: 2386 (Part-4) or 1S:5640**	30 percent (Max)
2.	Combined Flakiness and Elongation Indices (Total) ***	1S:2386 (Part- 1)	30 percent (Max)

* Aggregate may satisfy requirements of either of the two tests.

** Aggregates like brick metal, kankar, laterite etc. which get softened in presence of water shall be tested for Impact value under wet conditions in accordance with IS: 5640.

*** The requirement of flakiness index and elongation index shall be performed only in the case of crushed broken stone and crushed slag. (Not applicable for gravel)

Table 400-7 Grading requirements for coarse aggregates

Grading No.	Size Range	IS Sieve Designation	Percent by weight passing
1.	90 mm to 45 mm	125 mm	100
		90 mm	90 - 100
		63 mm	25 - 60
		45 mm	0 - 15
		22.4 mm	0 - 5
2.	63 mm to 45 mm	90 mm	100
		63 mm	90 - 100
		53 mm	25 - 75
		45 mm	0 - 15
		22.4 mm	0 - 5
3.	53 mm to 22.4 mm	63 mm	100
		53 mm	95 - 100
		45 mm	65 - 90
		22.4 mm	0 - 10
		11.2 mm	0 - 5

Note: The compacted thickness for a layer with Grading 1 shall be 100 mm while for layer with other Gradings. i.e. 2 & 3. it shall be 75 mm.

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATIONS FOR ROAD AND BRIDGE WORKS, SECTION 400, SUB-BASES AND BASE COURSES cont.

Table 400-8 Grading for screenings

Grading Classification	Size of Screenings	IS Sieve Designation	Percent by weight passing the IS Sieve
A	13.2 mm	13.2 mm	100
		11.2 mm	95-100
		5.6 mm	15-35
		180 micron	0-10
B	11.2 mm	11.2 mm	100
		5.6 mm	90-100
		180 micmn	15-35

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATIONS FOR ROAD AND BRIDGE WORKS, SECTION 500 BASE AND SURFACE COURSES

Table 500.8 Physical requirements of aggregates for dense bituminous macadam

S.No.	Test	Test Method	Requirement
1.	Los Angeles Abrasion Value*	IS:2386 (Part-4)	40 percent maximum
2.	Aggregate. Impact value*	IS:2386 (Part-4)	30 percent Maximum
3.	Flakiness and Elongation** Indices (Total)	IS:2386 (Part-I)	30 percent Maximum

* Aggregates may satisfy requirements of either of the two tests.

** To determine this combined proportion, the flaky stone from a representative sample should first be separated out. Flakiness index is weight of flaky stone metal divided by weight of stone sample. Only the elongated particles be separated out from the remaining (non-flaky) stone metal. Elongation index is weight of elongated particles divided by total non-flaky particles. The value of flakiness index and elongation index so found are added up.

Table 500-9 Aggregate gradation for dense bituminous macadam

Sieve Designation	Percentage passing the sieve by weight
37.5 mm	100
26.5 mm	90- 100
13.2 mm	56-80
4.75 mm	29-59
2.36 mm	19-45
300 micron	5-17
75 micron	1-7

The aggregate mix, as used in work, shall not vary from the low limit *on* one sieve to the high limit *on* the adjacent sieve but shall be well graded

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATION FOR COARSE AND FINE AGGREGATES FROM NATURAL RESOURCES FOR CONCRETE, IS:383-1970

Table 2 Coarse aggregates

IS sieve designation	Percentage passing for single sized aggregate of nominal size					
	63 mm	40 mm	20 mm	16 mm	12.5 mm	10 mm
1	2	3	4	5	6	7
80 mm	100	-	-	-	-	-
63 mm	85 to 100	100	-	-	-	-
40 mm	0 to 30	85 to 100	100	-	-	-
20 mm	0 to 5	0 to 30	85 to 100	100	-	-
16 mm	-	-	-	85 to 100	100	-
12.5 mm	-	-	-	-	85 to 100	100
10 mm	0 to 5	0 to 5	0 to 20	0 to 30	0 to 45	85 to 100
4.75 mm	-	-	0 to 5	0 to 5	0 to 10	0 to 20
2.36 mm	-	-	-	-	-	0 to 5

Table 2 Coarse aggregates continued

IS sieve designation	Percentage passing for graded aggregate of nominal size			
	40 mm	20 mm	16 mm	12.5 mm
1	8	9	10	11
80 mm	100	-	-	-
63 mm	-	-	-	-
40 mm	95 to 100	100	-	-
20 mm	30 to 70	95 to 100	100	100
16 mm	-	-	90 to 100	-
12.5 mm	-	-	-	-
10 mm	10 to 35	25 to 55	30 to 70	40 to 85
4.75 mm	0 to 5	0 to 10	0 to 10	0 to 10
2.36 mm	-	-	-	-

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

INDIAN STANDARDS IS

SPECIFICATION FOR COARSE AND FINE AGGREGATES FROM NATURAL RESOURCES FOR CONCRETE, IS:383-1970 cont.

Table 3 sizes of coarse aggregates for mass concrete

Class and size	IS sieve	Percentage passing
Very large, 150 to 80 mm	160 mm*	90 to 100
	80 mm	0 to 10
Large, 80 to 40 mm	80 mm	90 to 100
	40 mm	0 to 10
Medium, 40 to 20 mm	40 mm	90 to 100
	20 mm	0 to 10
Small 20 to 4.75 mm	20 mm	90 to 100
	4.75 mm	0 to 10
	2.36 mm	0 to 2

*There being no IS Sieve having an aperture larger than 100 mm a perforated plate complying with IS : 2405-1965 and having a square aperture of 160 mm may be used

Table 4 Fine aggregates

IS Sieve designation	Percentage passing for			
	Grading zone I	Grading zone II	Grading zone III	Grading zone IV
10 mm	100	100	100	100
4.75 mm	90 – 100	90 – 100	90 – 100	95 – 100
2.36 mm	60 – 95	75 – 100	85 – 100	95 – 100
1.18 mm	30 – 70	55 – 90	75 – 100	90 – 100
600 micron	15 – 34	35 – 59	60 – 79	80 – 100
300 micron	5 – 20	8 – 30	12 – 40	15 – 50
150 micron	0 – 10	0 – 10	0 – 10	0 – 15

Table 5 All- in aggregates

IS Sieve designation	Percentage passing for all-in aggregate of	
	40 mm nominal size	20 mm nominal size
80 mm	100	–
40 mm	95 – 100	100
20 mm	45 – 75	95 – 100
4.75 mm	25 – 45	30 – 50
600 micron	8 – 30	10 – 35
150 micron	0 – 6	0 – 6

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

CHINESE STANDARDS GB

PEBBLE AND CRUSHED STONE FOR BUILDING - GB/T14685-2001

Table 1 Shape of Aggregate for Building (Cement Concrete)

	Content of elongation and flakiness		
	Grade I aggregate	Grade II aggregate	Grade III aggregate
Content of elongation and flakiness (weight %)	< 5	< 15	< 20

Table 2 Grading for aggregate for Building (Cement Concrete)

GB Sieve	Size range	Mid size	Min weight for analysis
(mm)	(mm)	(mm)	(kg)
9.50	4.75 – 9.50	7.1	0.3
16.0	9.50 – 16.0	12.8	1.0
19.0	16.0 – 19.0	17.5	2.0
26.5	19.0 – 26.5	22.8	3.0
31.5	26.5 – 31.5	29	5.0
37.5	31.5 – 37.5	34.5	10.0

Table 3 Shape of Aggregate for Road (Cement Concrete)

	Content of elongation and flakiness		
	Grade I aggregate	Grade II aggregate	Grade III aggregate
Content of elongation and flakiness (weight %)	< 5	< 15	< 20

Table 4 Grading for aggregate for Road (Cement Concrete)

GB Sieve	Size range	Mid size	Min weight for analysis
(mm)	(mm)	(mm)	(kg)
9.50	5 – 10	7.5	0.3
16.0	10 – 16	13	1.0
19.0	16 – 20	18	2.0
26.5	20 – 25	22.5	3.0
31.5	25 – 31.5	29	5.0
37.5	31.5 – 40	35.5	10.0

Table 5 Shape of Aggregate for Road (Asphalt Concrete)

	Content of elongation and flakiness		
	Grade I aggregate	Grade II aggregate	Grade III aggregate
Content of elongation and flakiness (weight %)	< 5	< 15	< 20

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SPECIFICATIONS FOR AGGREGATES IN OTHER COUNTRIES 2016-01-01

FINENESS MODULUS

Fineness modulus is a measurement of the coarseness or fineness of a given aggregate.

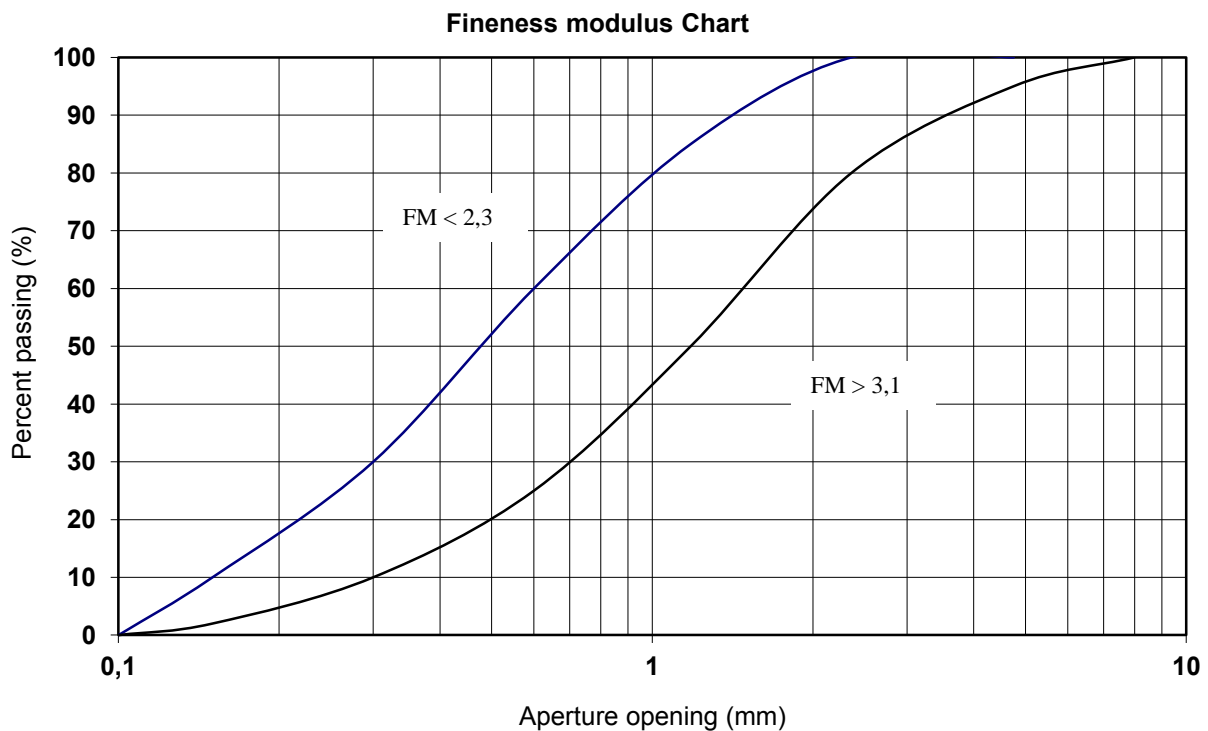
For a fine aggregate, FM is calculated from the sum of cumulative percentages of aggregate **retained** on sieves No.4, 8, 16, 30, 50, 100, divided by 100

The Fineness Modulus should be between 2.3 and 3.1.

FM is an index of the fineness of an aggregate-the higher the FM the coarser the aggregate. Different aggregate grading may have the same FM. FM of fine aggregate is useful in estimating proportions of fine and coarse aggregates in concrete mixtures.

Table 1 Sieves used for FM Calculation

Sieve No	Aperture opening, mm	% Passing, min	% Passing, max
4	4,75	95	100
8	2,36	80	100
16	1,18	50	85
30	0,6	25	60
50	0,3	10	30
100	0,15	2	10



ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SIEVE SERIES 2016-01-01

SIEVE SERIES USED IN VARIOUS NORMS

Using sieve series for particle size distribution can be done by using standard sieve series stipulated in different aggregate norms. These are almost always adjusted to common aggregate product sizes and when used giving good distribution of the material in the whole range. Scientific sieve series is also available and is often composed from natural fragmentation behaviour of rock and is often very narrow in their range

Table of common sieve series used in aggregate Norms

EN 933-2		Gost		ASTM		BS	IS
Basic +1	Basic +2						
mm, sq	mm, sq	mm, Ø	mm, sq*	mm, sq	inches/ mesh, sq	mm, sq	mm, sq
63	63	70	56	125	5	75	63
45		60	48	100	4	63	50
	40	40	32	90	3 1/2	50	40
31,5	31,5	30	24	75	3	37,5	31,5
22,4	20	25	20	63	2 1/2	28	25
16	16	20	16	50	2	20	20
11,2	14	10	8	37,5	1 1/2	14	16
8	12,5	5	4	25	1	10	10
5,6	10	4	3,2	19	3/4	6,3	6,3
4	8	2	1,6	12,5	1/2	5	4,75
2	6,3	1	0,8	9,5	3/8	3,35	3,35
1	4	0,25	0,2	4,75	No. 4	2,36	2,36
0,5	2	0,74	0,592	2,36	No. 8	1,7	1,18
0,25	1			1,18	No. 16	1,18	0,6
0,125	0,5			0,6	No. 30	0,85	0,3
0,063	0,25			0,3	No. 50	0,6	0,15
	0,125			0,15	No. 100	0,425	0,075
	0,063			0,075	No. 200	0,3	
						0,212	
						0,15	
						0,075	

* calculated as 80 % of the spherical diameter

ROCK PROCESSING GUIDE 2016

Chapter V – RAWMATERIAL, TEST METHODS & NORMS

SIEVE SERIES 2016-01-01

SIEVE SERIES USED IN VARIOUS NORMS

Table of scientific sieve series

R20 sieve series* mm, sq
90
80
71
63
56
50
45
40
35,5
31,5
28
25
22,4
20
18
16
14
12,5
11,2
10
9
8
7,1
6,3
5,6
5
4,5
4
3,55
3,15
2,8
2,5
2,24
2
1,8
1,6
1,4
1,25
1,12
1

Scientific sieve series is not often used as a complete series, but when additional analysis sieves is needed they denote what sieves is available as manufacturers offered range

*The R20 series have available sieve openings from 0,036 mm (36µm) to 125 mm but consist of a basic series from 1 to 9 mm. This basic series can then be extended in both larger and smaller sizes to above mention limits.

TYLER	
Mesh	mm, sq
2,5	7,925
3	6,68
3,5	5,613
4	4,699
5	3,962
6	3,35
7	2,81
8	2,51
9	2,06
10	1,68
16	1
20	0,853
24	0,699
28	0,589
32	0,495
35	0,417
42	0,351
48	0,295
60	0,246
65	0,208
80	0,175
100	0,147
115	0,124
150	0,104
170	0,088
200	0,074
250	0,061
270	0,053
325	0,043
400	0,038



ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

CONTENTS 2016-01-01



WET PROCESSING

VOLUME IN STOCKPILES

LOADING VEHICLES

UNITS AND CONVERSION FACTORS

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

WET PROCESSING 2016-01-01

WASHING

Washing is usually applied when removing mud or clay which is attached to the material. If washing is combined with a subsequent fine classifying process, it is not only a question of removing the fine contaminating particles but also of collecting the usable fine particles and including them in special fractions with tight demands on the product curve.

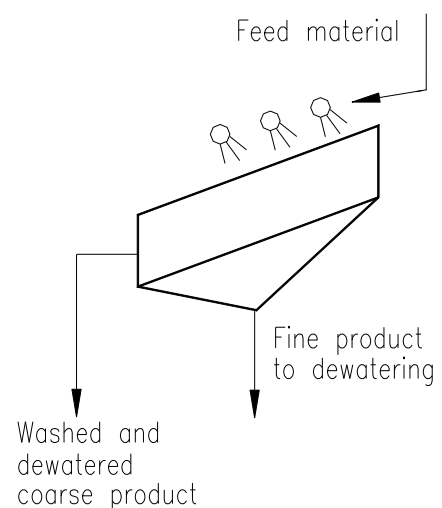
If the material is easily washed it is usually sprayed with water during its passage over a vibrating screen. It is called WET SCREENING.

When washing is more difficult and a more efficient washing action is necessary, a LOG WASHER or a SCRUBBER (WASHER BARREL) is used.

Wet Screening

Water spraying can be used to wash materials on a screen, whatever the hole size of the screening elements. If the hole size is 20 mm or less, water spraying increases the capacity. The capacity increase effect is inversely proportional to the hole size, when water spraying on the screen is used.

The amount of water used depends on the type of material being handled, on the total number of screen decks and by changing the spraying jet sizes. Wet screening gives a separation size at > 2.0 mm with sharp separation.



Log Washer

Single or doubleshaft log washers are used for washing of gravel. Contaminated material is fed at the bottom through end and transported upward in the inclined trough by blades, mounted on the shaft in a screw pattern way. Due to the friction between the stones, foreign material is dissolved in water and flushed out via an overflow.

The gravel is discharged for further rinsing and sizing on a screen.

Scrubbers

This is a high-speed rotary washing drum suitable for the scrubbing of gravel, stone and ores with high clay/dirt content. The drum is relatively short in relation to its diameter.

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

WET PROCESSING 2016-01-01

WASHING cont.

Washer Barrels

This is suitable for washing of assorted coarse gravel and macadam fractions with variable sand/silt content. Washer barrels operate at considerable lower speed than scrubbers. The length of the washer barrel is usually 3-4 times the diameter.

Aquamator

The Aquamator enables an efficient washing out of contaminants of lower specific weight from mineral granulates such as gravel, chippings and demolition rubble.

The Aquamator is suitable for handling material where fine material is screened off, e.g. 2-8 mm or 8-32 mm.

Water and material are fed to the separating bed on a rubber belt. The solid settle and follows the belt to the discharge end as a cleaned product. Fine particles and contaminants of lower specific weight will follow the water in the opposite direction forming a waste product.

Hydrobelt Separator

The Hydrobelt separator is working according to the same principle as the Aquamator but is specially designed to handle sand with a distribution curve all the way down to zero.

On the separator contaminated sand is washed. Fine sand particles, dispersed in the water, are washed out together with components of lower specific weight, e.g. wood and coal, as waste product. Sand settled onto the belt, is discharged as a cleaned product

Normally a dewatering screen is integrated in order to dewater the sand to a conveyable product.

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

WET PROCESSING 2016-01-01

WET CLASSIFYING

If it is desired to control the lower separation limit in a more effective way and also separate the fine product obtained into different fractions, special wet classifying equipment must be included in the plant.

Horizontal Thickeners

To avoid losses of valuable material when large quantities of water are handled a horizontal thickener can be installed ahead of the dewatering machine (usually a dewatering wheel or a dewatering screw). Some of the water can be diverted from the horizontal thickener without losing material so that there is optimal quantity of water for the dewatering machine to deal with.

The horizontal thickener gives a separation size at 0.06-0.1 mm with less accurate separation

The SAND TRAP, DEWATERING WHEEL AND DEWATERING SCREW have also a classifying effect - see below.

Settling Classifying Tank

In a Settling Classifier it is possible to produce two controlled sand products according to specifications and one uncontrolled sand fraction.

Due to different settling velocities the sand settles to the tank bottom in the water stream. The computerized control system rules the settled material through bottom valves to require product flume giving adjusted product curves with size distribution within the specifications.

Note: The Settling classifier is adjusting the product curve and not making sharp cuts at certain separation points.

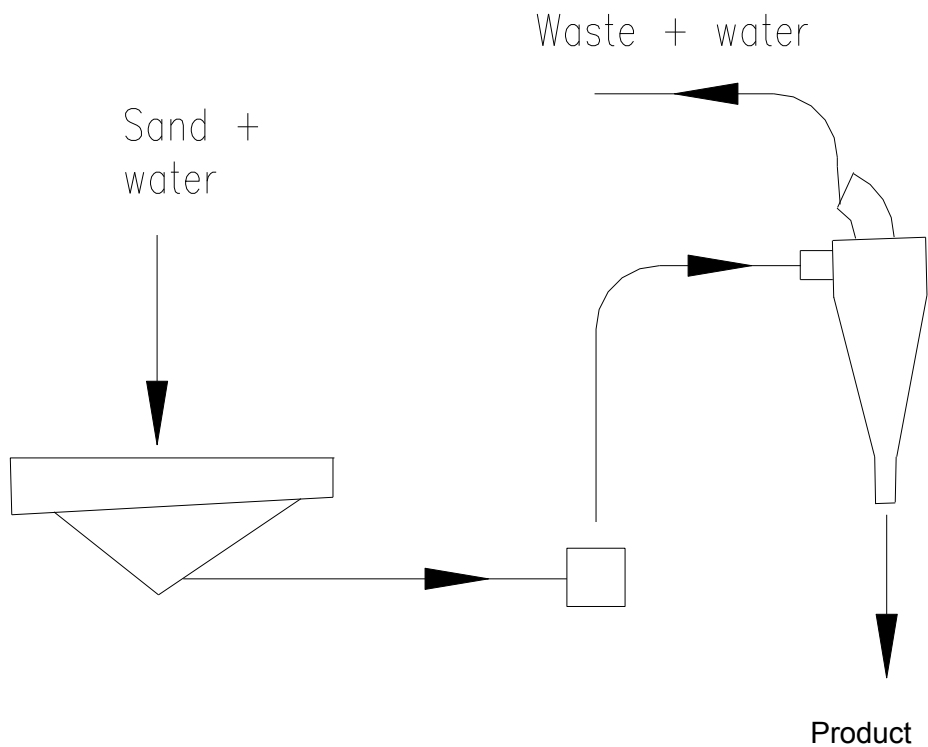
DEWATERING

If it is desired to make the required products drier and the mud to be removed, dewatering equipment have to be used.

Hydrocyclone

Hydrocyclones are suitable for dewatering if large quantities of slurry are to be handled.

The separation size is 0.01-0.1 mm with less accurate separation. The pulp must be fed to the hydrocyclone under pressure and therefore a pump sump and a pump must be included in the circuit.

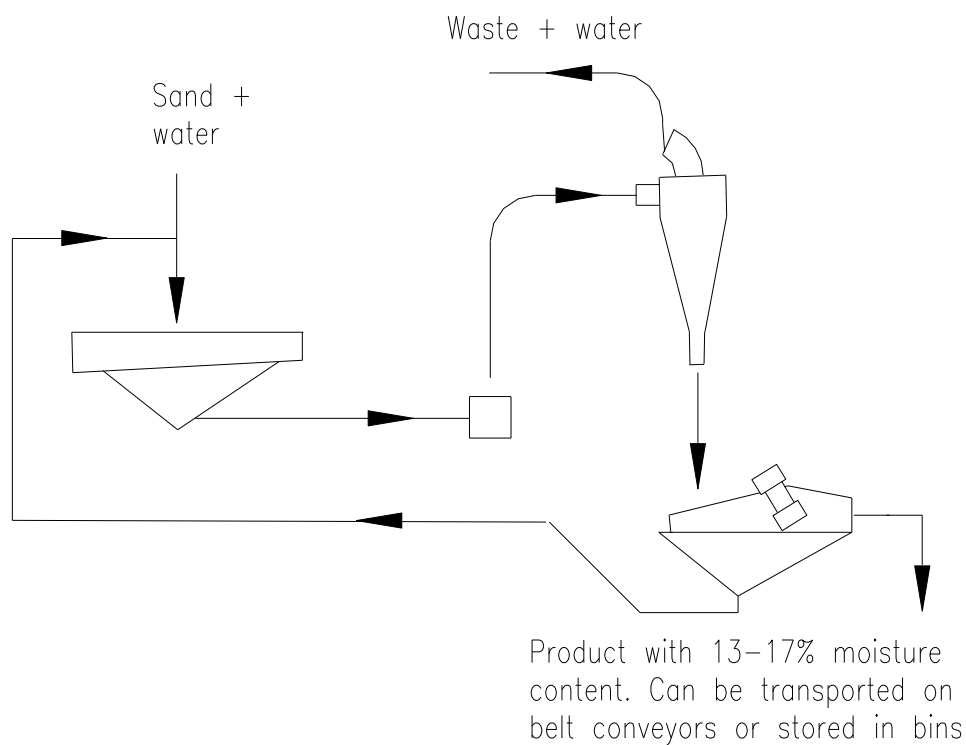


Dewatering product from the hydrocyclone contains 25-35% water and thus cannot be transported on a belt conveyor. This means that the material must be led direct to a stockpile where it can drain or to be further dewatered on a dewatering screen.

DEWATERING cont.

Dewatering Screens

The dewatering screen gives a final product with a water content of about 13-17% (by weight). It should not be fed with material containing high water content (max. 50% water). It can thus be advisable to use a hydrocyclone as a primary dewaterer ahead of the screen.



Dewatering Wheel

The dewatering wheel is not subjected to high wear, but it has a relatively small settling area, which results in material losses when larger amounts of water are fed to the machine. The moisture content in the product is reduced down to 15-18 % because of a vacuum arrangement at the buckets. The material can be transported on belt conveyors.

Applied predominantly in dredging with suction dredges, the dewatering wheel is used for separating material from transport water.

DEWATERING cont.

Sand Trap

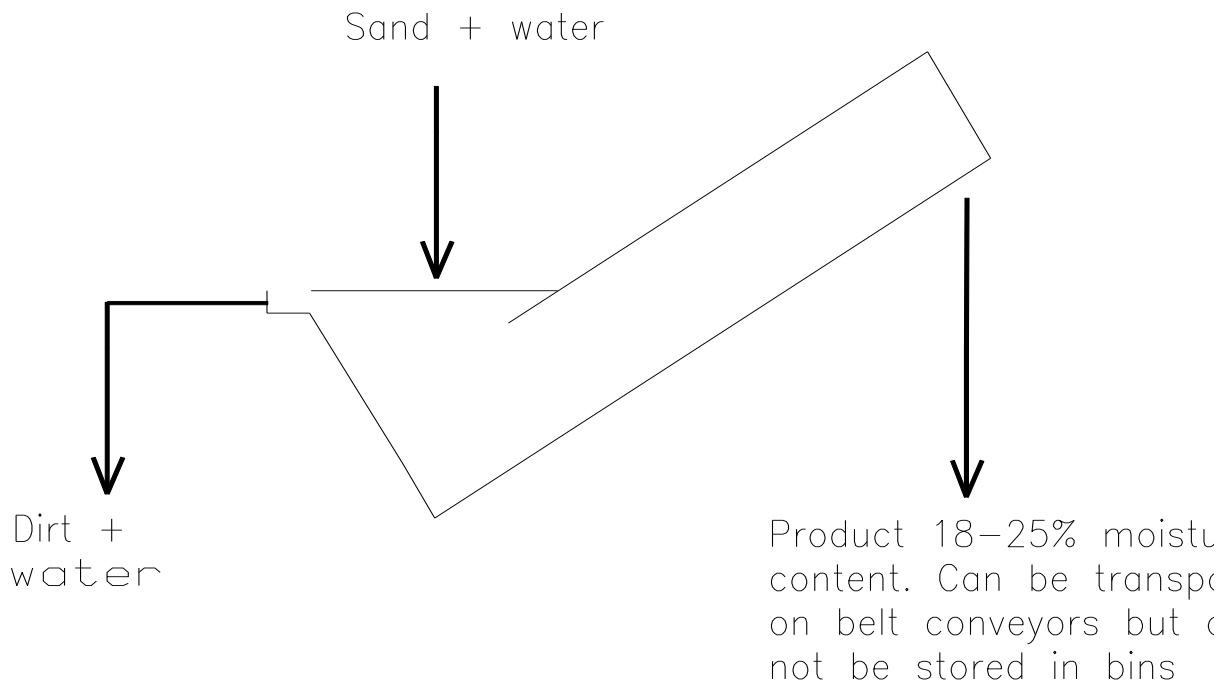
The Sand Trap is intended for sand recovery after washing screens and similar.

The sand-water mixture is fed into the trough where the sand settles and is transported to the dewatering wheel by a screw conveyor running extremely slowly. The dewatering wheel discharges the sand via a chute while the waste water with fine particles flows over a weir at the opposite end of the trough.

In order to achieve a higher dewatering effect, a dewatering screen is integrated into a Sand Trap. By utilising the dewatering screen a moisture content of 13-17 % will be achieved.

Dewatering Screw

The separation size is 0.06-0.15 mm with less accurate separation. The product contains about 18-25% water (by weight).



When a large amount of water is involved, a horizontal thickener can be positioned ahead of the screw and the water can be split between the two units in appropriate proportions.

Note!

If an even higher degree of dewatering is required, the simplest method is to allow the material from the screw to drain in a stockpile on the ground.

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

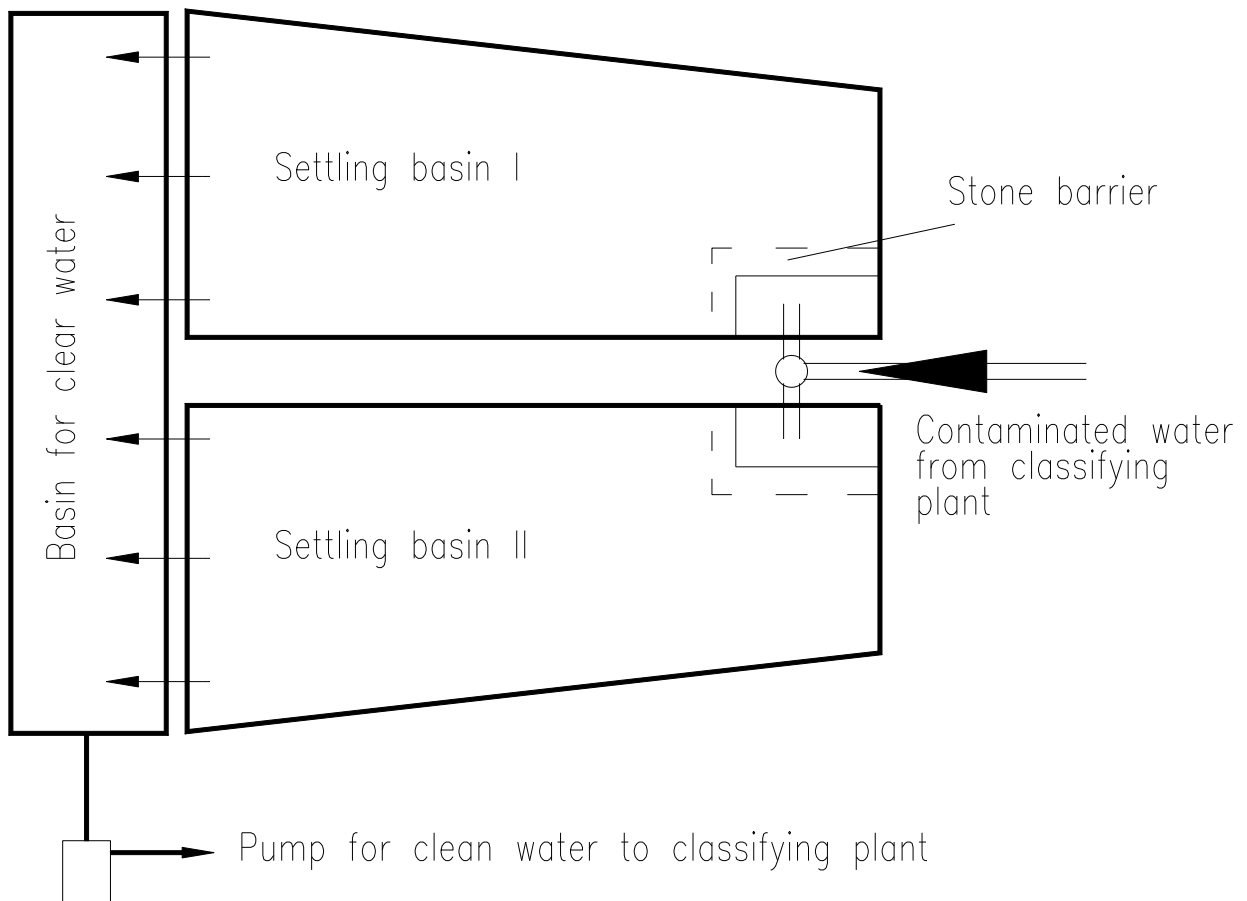
WET PROCESSING 2016-01-01

DEWATERING cont.

Water Recovery

If it is necessary - due to water being scarce, or for some other reason to recover the water, settling basins or thickeners (best result with lamella thickeners) can be used.

If even cleaner water is required, chemicals can be used to make the solid particles collect into flocks. These flocks are heavier than the individual particles and therefore sink to the bottom.



ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

WET PROCESSING 2016-01-01

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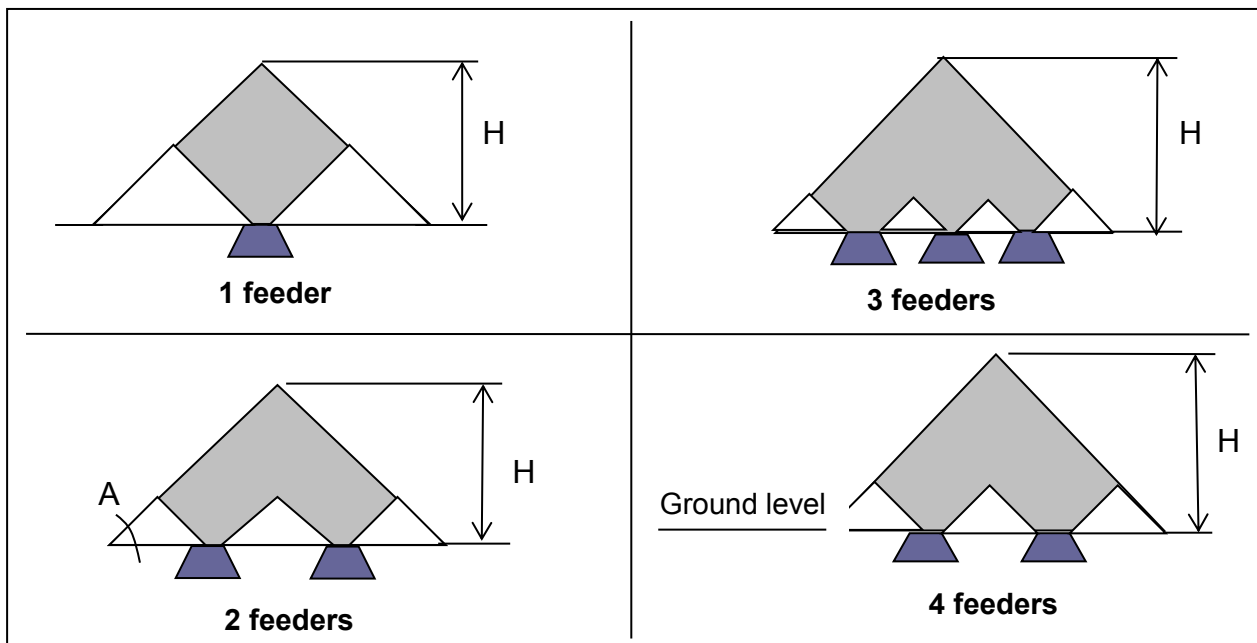
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ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

VOLUME IN STOCKPILES 2016-01-01

CONICAL STOCKPILES: TUNNEL BELOW GROUND LEVEL



Stockpile feed conveyor length(m)	Belt conveyor inclination (degrees)	H	Gross volume (m ³) 100%	Net volume with 1 feeder (m ³) appr 25%	Net volume with 2 feeders (m ³) appr 30%	Net volume with 3 feeders (m ³) appr 35%	Net volume with 4 feeders (m ³) appr 38%
18	18	5,6	256	64	77	89	97
20	18	6,2	351	88	105	123	133
22	18	6,8	467	117	140	163	177
25	18	7,7	685	171	205	240	260
28	18	8,6	962	241	289	337	366
30	18	9,3	1183	296	355	414	450
35	18	10,8	1879	470	564	658	714
40	18	12,4	2805	701	841	982	1066
45	18	13,9	3993	998	1198	1398	1517
50	18	15,4	5478	1369	1643	1917	2082
55	16	15,2	5174	1294	1552	1811	1966
60	16	16,5	6718	1679	2015	2351	2553
65	16	17,9	8541	2135	2562	2989	3246
70	16	19,3	10668	2667	3200	3734	4054
80	16	22,0	15924	3981	4777	5573	6051
90	16	24,8	22672	5668	6802	7935	8616
100	16	27,6	31101	7775	9330	10885	11818

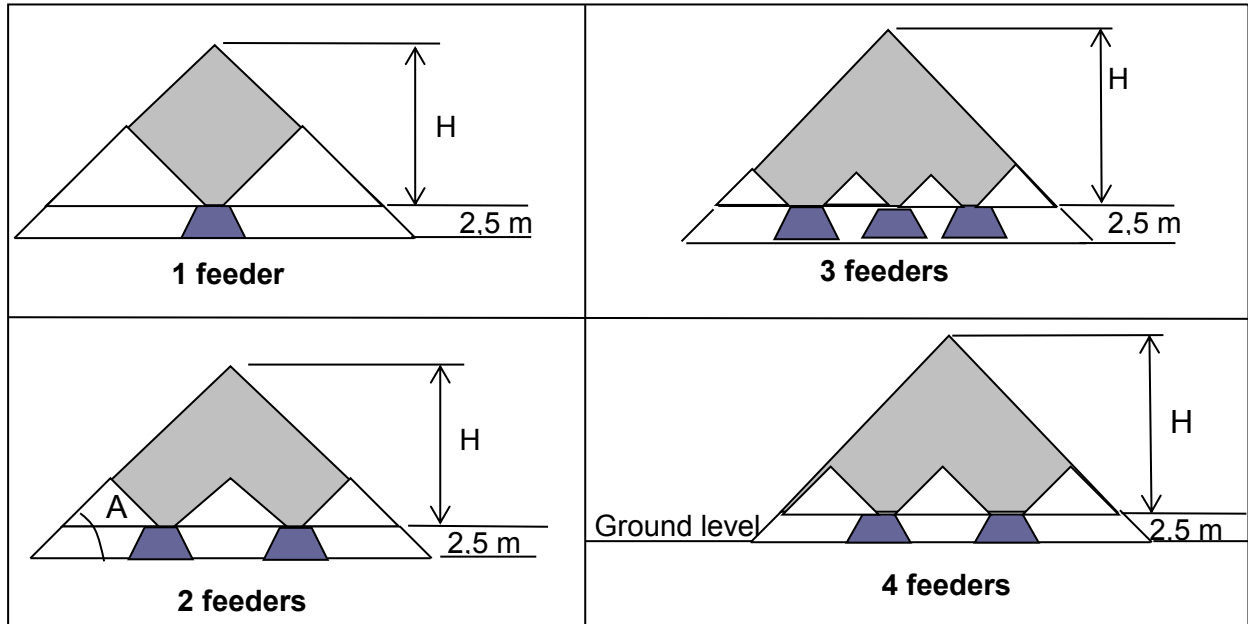
- Figures given above are for angle of repose A=40° and require optimal location of the feeders.
- Stockpile feed conveyor is starting from ground level. Lifting height = H.
- H= Height between ground level and the top of the storage pile (m).
- Gross volume = $H^3 \cdot 1,4873$ or $(\pi \cdot H^3 / 3 / \tan^2 A)$

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

VOLUME IN STOCKPILES 2016-01-01

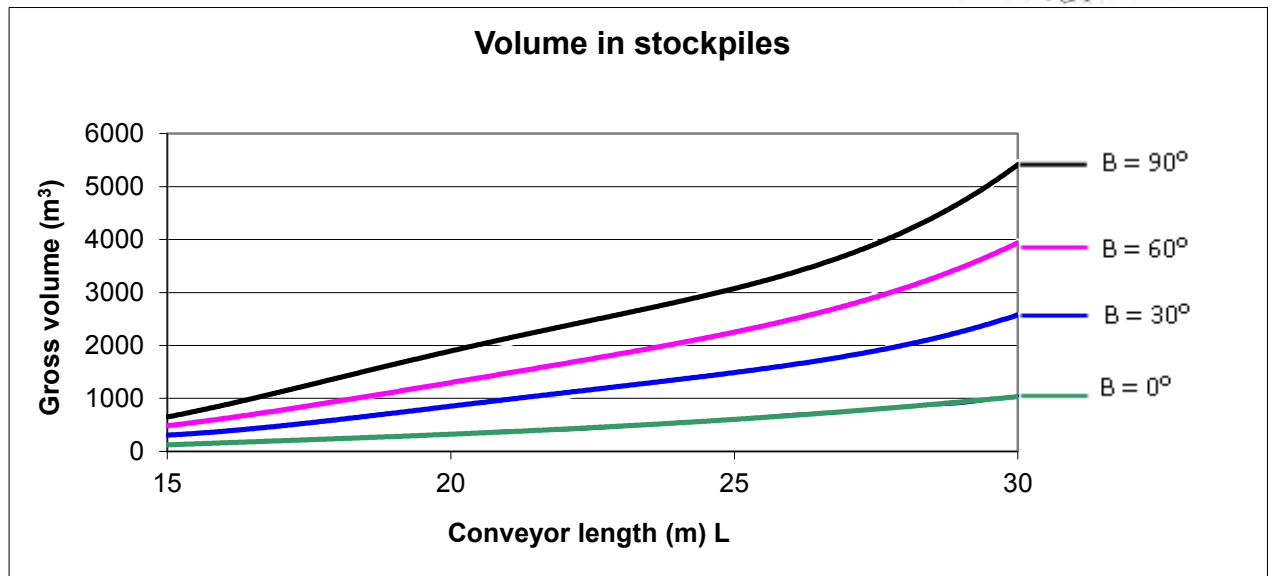
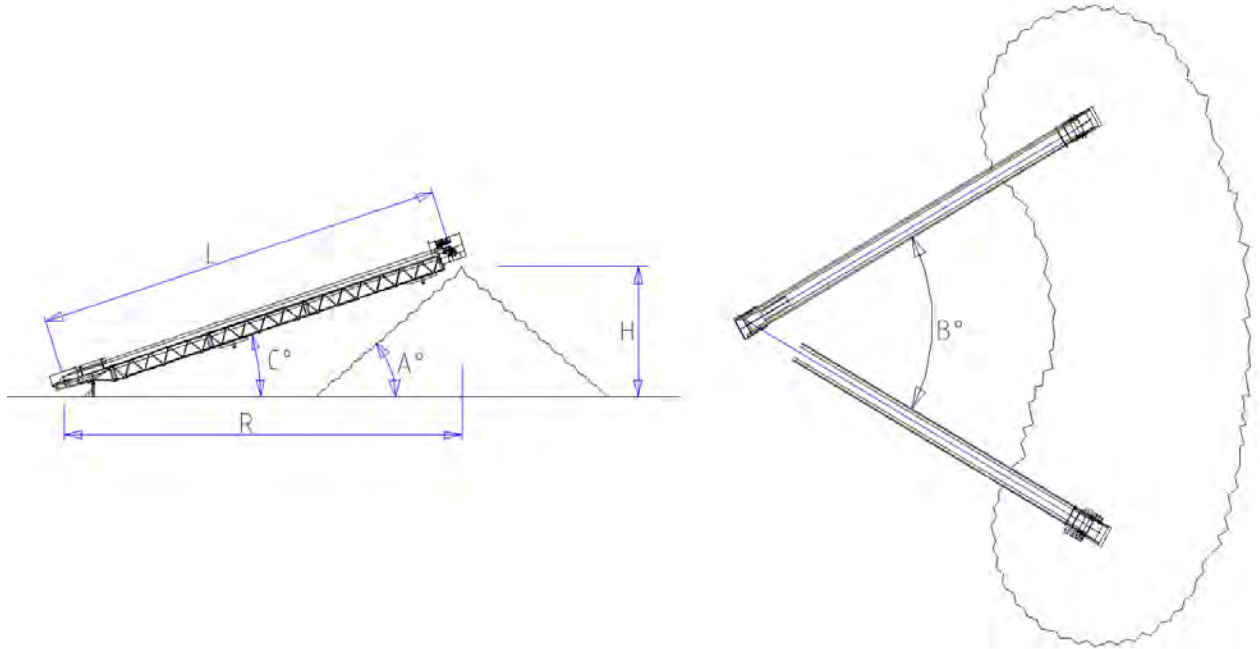
CONICAL STOCKPILES: TUNNEL ABOVE GROUND LEVEL



Stockpile feed conveyor length (m)	Belt conveyor inclination (degrees)	H	Gross volume (m ³) 100%	Gross volume above tunnel (m ³)	Net volume with 1 feeder (m ³) appr 25%	Net volume with 2 feeders (m ³) appr 30%	Net volume with 3 feeders (m ³) appr 35%	Net volume with 4 feeders (m ³) appr 38%
18	18	3,1	256	43	11	13	15	16
20	18	3,7	351	74	18	22	26	28
22	18	4,3	467	118	29	35	41	45
25	18	5,2	685	212	53	64	74	80
28	18	6,1	962	346	86	104	121	131
30	18	6,8	1183	461	115	138	161	175
35	18	8,3	1879	854	213	256	299	324
40	18	9,9	2805	1423	356	427	498	541
45	18	11,4	3993	2203	551	661	771	837
50	18	12,9	5478	3225	806	968	1129	1226
55	16	12,7	5174	3013	753	904	1054	1145
60	16	14,0	6718	4108	1027	1232	1438	1561
65	16	15,4	8541	5440	1360	1632	1904	2067
70	16	16,8	10668	7033	1758	2110	2462	2673
80	16	19,5	15924	11096	2774	3329	3884	4217
90	16	22,3	22672	16483	4121	4945	5769	6263
100	16	25,1	31101	23379	5845	7014	8183	8884

- Figures given above are for angle of repose $A=40^\circ$ and require optimal location of the feeders.
- Stockpile feed conveyor is starting from ground level. Lifting height = $H+2,5$ m (tunnel).
- H = Height between top of feed station and the top of the storage pile (m).
- Gross volume = $(H+2,5)^3 \cdot 1,4873$ or $(\pi \cdot (H+2,5)^3 / 3 / \tan^2 A)$

SLEWING STOCKPILES



The stockpile height is:

$H = L \times \sin C^\circ$. Example $H = 20 \text{ m} \times \sin 18^\circ = 6,18 \text{ meter}$.

The stockpile radius is:

$R = L \times \cos C^\circ$. Example $R = 20 \text{ m} \times \cos 18^\circ = 19,0 \text{ meter}$.

The total volume in the slewing stockpile is:

$(H^3 \times 1,4873) + (H/\tan A \times H \times R \times 2 \times 3,14 \times B^\circ / 360)$

Example for 60°: $(6,18^3 \times 1,4873) + (6,18/\tan 40^\circ \times 6,18 \times 19 \times 2 \times 3,14 \times 60^\circ / 360 = 1256 \text{ m}^3$

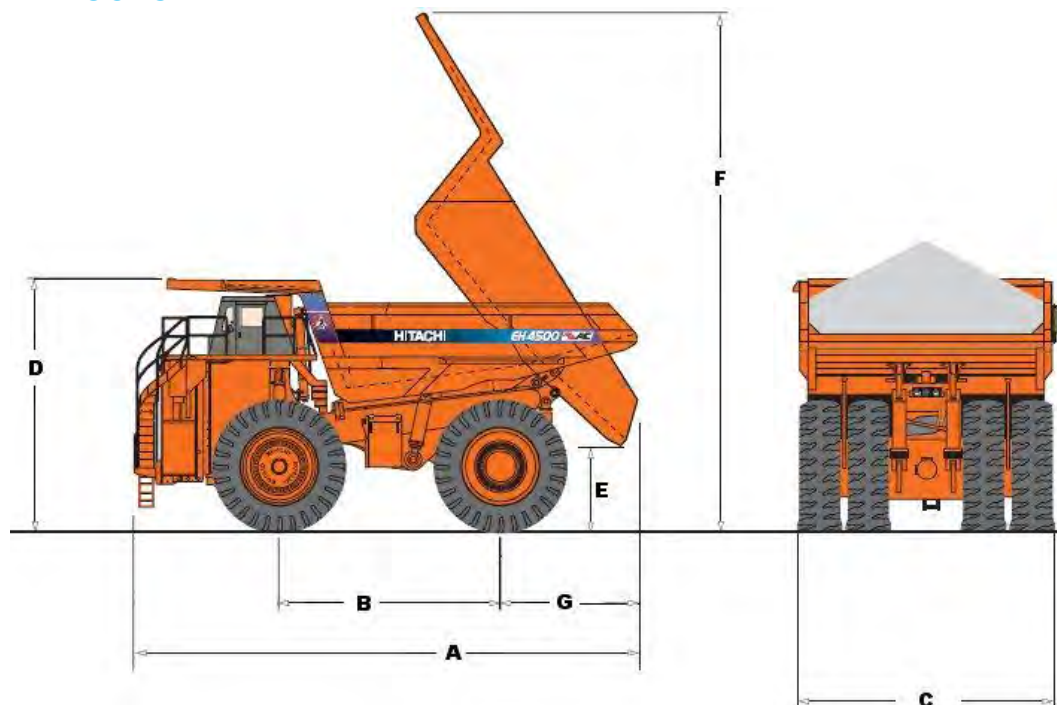
Figures given above apply for Angle of repose (A) = 40°

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

LOADING VEHICLES 2016-01-01

DUMP TRUCKS



Manufacturer	Model	Empty Weight (MT)	Load capacity		A	B	C	D	E	F	G
			m³	MT							
Caterpillar	770	32,6	23,9	38,2	8,74	3,96	3,69	3,12	0,46	8,28	2,59
	772	33,6	30,1	48,1	8,74	3,96	3,92	3,50	0,50	8,36	2,59
	773F	44,6	34,3	54,88	10,25	4,22	4,41	3,82	0,62	9,26	2,75
	775F	45,2	40	64,05	10,33	4,21	4,41	3,95	0,61	9,26	2,83
	777F	64,4	60	96,1	10,54	4,56	5,22	4,38	0,97	10,33	3,06
	797B	214,8	214,4	343	14,50	7,20	9,76	7,08	1,89	15,29	4,02
	785C	74,5	78	136	11,02	5,18	6,28	4,97	1,28	11,21	3,41
	789C	102,3	105	177	12,18	5,70	6,93	5,21	1,33	11,90	3,62
	793D	116,7	129	218	12,86	5,91	7,61	5,87	1,36	13,11	3,77
Euclid-Hitachi	EH600	23,8	21	30,1	8,04	3,65	3,60	2,86	0,46	7,73	2,32
	EH750-3	33,5	27,7	38,1	8,71	3,78	3,81	3,48	0,52	8,13	2,62
	EH1100-3	45,8	38,7	59	9,45	4,32	4,42	3,76	0,74	8,89	3,05
	EH1600	70,9	57,1	80,7	10,11	4,57	5,23	4,19	0,81	9,78	3,15
	EH1700	71,7	60,3	88,6	10,29	4,57	5,59	4,29	0,84	9,86	3,15
	EH3000	123,5	101,9	140	11,55	5,64	6,63	5,38	1,20	12,60	3,20
	EH3500	134,1	115,1	171	12,24	5,64	6,75	5,46	1,27	12,63	3,91
	EH4500-2	198,1	159	254	14,30	6,15	8,34	6,22	1,97	14,30	4,17
	EH5000	213,2	196,1	286	14,42	6,15	8,52	6,50	1,86	14,28	4,29
Liebherr	T282B	189	226,9	363	15,30	6,55	9,52	7,00	1,65	14,90	4,33
	TR35	23,7	19,5	32	7,95	3,61	3,37	3,03	0,45	6,85	2,13
	TR45	37,1	26	41	8,70	3,94	3,99	3,43	0,59	7,65	2,41
Terex	TR60	41,3	35	55	9,13	4,17	4,06	3,68	0,58	8,05	2,60
	TR70	47,7	41,5	65	9,91	4,47	4,42	3,79	0,46	8,38	2,95
	TR100	68	57	91	10,80	4,57	4,57	4,45	0,66	8,96	3,10

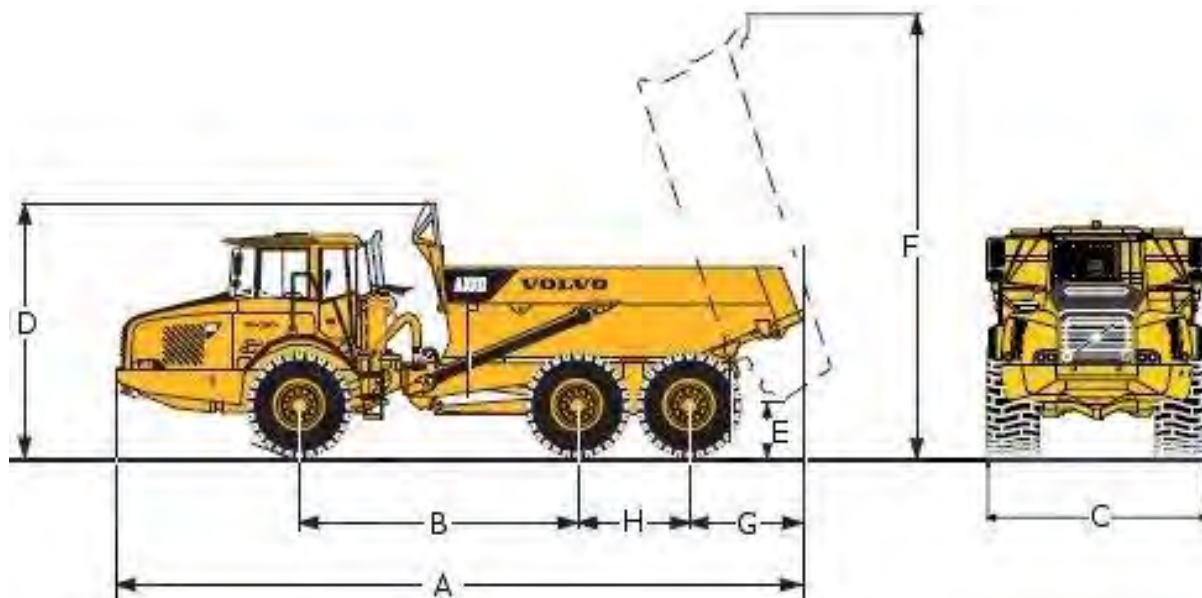
Dimensions are in meter. All figures are leaflet values and therefore approximate.

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

LOADING VEHICLES 2016-01-01

ARTICULATED TRUCKS



Manufacturer	Model	Empty Weight (MT)	Load capacity		A	B	C	D	E	F	G	H
			m³	MT								
Volvo	A25D	21,6	15	24	10,22	4,18	2,86	3,76	0,68	6,56	1,61	1,67
	A25D 4x4	19,47	13	24	8,94	4,25	3,12	3,47	0,77	5,18	1,92	N/A
	A30D	23,1	17,5	28	10,30	4,18	2,94	3,83	0,69	6,56	1,69	1,67
	A35D	28,3	20	32,5	11,18	4,50	3,21	3,68	0,92	7,24	1,75	1,82
	A40D	31,3	22,5	37	11,29	4,45	3,43	3,75	0,91	7,38	1,80	1,94
Caterpillar	725	22,3	17,5	23,6	9,92	3,82	2,88	3,44	0,56	6,41	1,68	1,7
	730	22,9	20,6	28,1	9,92	3,82	2,88	3,44	0,56	6,50	N/A	1,7
	730 Ejector	25,6	20	28,1	9,73	3,82	3,07	3,76	N/A	N/A	1,49	1,7
	735	30,3	24,4	32,7	10,89	4,24	3,35	3,70	0,64	6,81	1,46	1,97
	740	32,8	28	38	10,89	4,24	3,43	3,75	0,70	7,07	1,46	1,97
	740 Ejector	35,6	28,5	38	11,59	4,60	3,43	3,98	N/A	N/A	N/A	1,97
Euclid-Hitachi	AH250-D	18,3	13,8	23,2	9,50	4,18	2,88	3,43	0,59	6,13	1,32	1,67
	AH300-D	19,5	16,6	27,3	9,58	4,18	2,96	3,43	0,53	6,21	1,39	1,67
	AH350-D	28	20,1	32,5	10,27	4,47	3,22	3,77	0,81	7,16	1,37	1,95
	AH400-D	30	22,5	37	10,53	4,47	3,36	3,83	0,64	7,23	1,63	1,95
	AH500-D	36,1	28,2	45,4	10,82	4,47	3,90	4,09	0,80	7,37	1,56	1,95
Terex	TA25	21,2	13,5	23	9,76	4,26	2,90	3,45	0,73	6,00	1,41	1,69
	TA27	22,2	15,5	25	9,76	4,26	2,90	3,45	0,73	6,02	1,41	1,69
	TA30	22,5	17,5	28	9,76	4,26	2,90	3,45	0,73	6,11	1,41	1,69
	TA35	30,4	21	34	10,94	4,30	3,21	3,89	0,85	6,87	1,78	1,95
	TA40	30,8	23,3	38	10,94	4,30	3,36	3,94	0,91	6,93	1,78	1,95
Komatsu	HM300-2	24	16,6	27,3	10,44	4,10	2,90	3,52	0,61	6,43	1,70	1,71
	HM350-2	31,1	19,8	32,3	11,15	4,35	3,19	3,60	0,72	7,04	1,78	1,85
	HM400-2	32,5	22,3	36,5	11,31	4,35	3,45	3,72	0,72	7,14	1,82	1,97

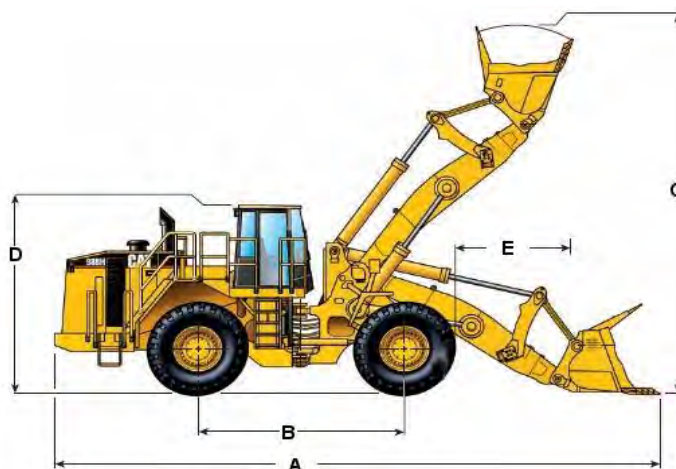
All dimensions are in meter. All figures are leaflet values and therefore approximate.

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

LOADING VEHICLES 2016-01-01

WHEEL LOADERS



Manufacturer	Model	Bucket Volume	A	B	Width over wheel base	C	D	E	Bucket Width
Volvo	L50E	1,50	6,59	2,75	2,20	4,86	3,03	1,05	2,30
	L70E	2,30	7,38	3,00	2,47	5,30	3,26	1,14	2,55
	L90E	2,70	7,47	3,00	2,49	5,42	3,26	1,13	2,75
	L120E	3,60	8,24	3,20	2,68	5,80	3,36	1,32	2,88
	L150E	4,40	8,67	3,70	2,95	5,99	3,58	1,26	3,20
	L180E	4,80	8,86	3,55	2,95	6,17	3,58	1,33	3,20
	L220E	6,00	9,19	3,70	3,17	6,62	3,73	1,35	3,40
	L330E	7,50	10,77	4,06	3,61	7,35	4,20	2,11	3,97
	L350F	7,70	11,27	4,30	3,63	7,55	4,18	1,98	3,97
Caterpillar	972H	max 5,5	9,29	3,45	3,00	6,26	3,58	N/A	3,22
	980H	max 6,1	9,53	3,70	3,20	6,36	3,77	N/A	3,60
	988H	max 7	12,22	4,55	3,50	7,70	4,13	N/A	3,81
	990H	max 9,2	12,53	4,60	4,07	8,07	5,07	N/A	4,45
	994F	max 3, 6	19,53	6,40	5,31	14,37	6,49	N/A	5,64
Terex	TL160	1,60	6,69	2,76	2,15	3,05	3,90	N/A	2,30
	TL260	2,60	7,23	3,10	2,35	3,26	4,04	N/A	2,50
	TL450	4,50	8,55	3,53	2,85	3,64	4,42	N/A	3,20
Komatsu	WA150PZ-5	1,60	6,55	2,60	2,22	4,89	3,07	0,89	2,42
	WA250PZ-5	2,30	7,22	2,90	2,47	2,96	3,24	0,93	2,54
	WA380-6	3,25	8,20	3,30	2,77	5,47	3,39	1,17	2,93
	WA470-6	4,65	9,07	3,45	2,98	5,98	3,47	1,32	3,17
	WA500-6	5,60	9,68	3,78	3,15	6,51	3,80	1,39	3,44
	WA600-6	7,00	N/A	4,50	3,54	5,89	4,46	N/A	3,69
	WA800-3	12,30	13,88	5,45	4,59	9,43	5,28	2,50	4,81
Case	621E	2,30	7,38	2,90	2,52	5,03	3,40	1,52	2,60
	721E	2,50	7,65	3,25	2,55	5,23	3,40	1,66	2,50
	821E	3,40	7,89	3,34	2,89	5,53	3,45	1,72	2,93
	921E	4,00	8,76	3,40	3,00	5,83	3,70	1,90	3,02

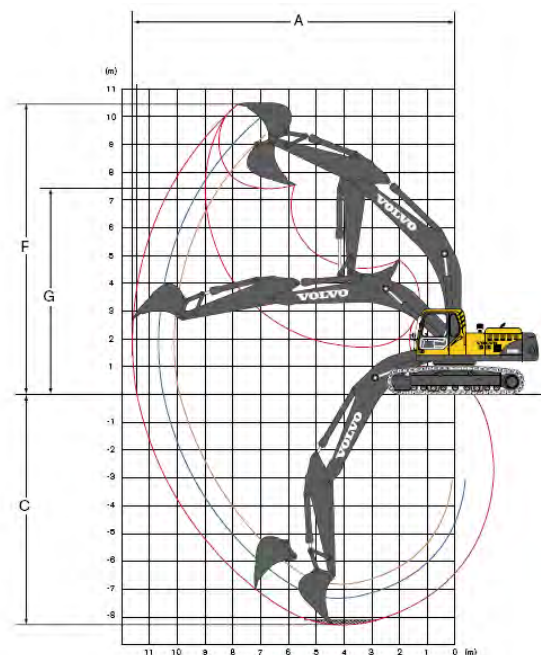
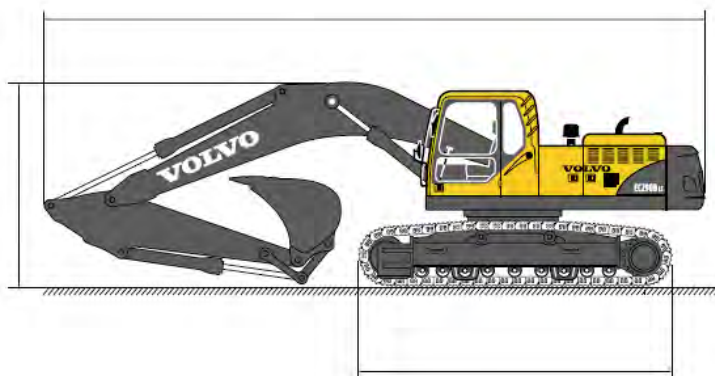
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ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

LOADING VEHICLES 2016-01-01

EXCAVATORS



Dimensions are in meter.
All figures are leaflet values and therefore approximate.
F= max dumping height

Manufacturer	Model	Empty weight (MT)	Bucket volume	A	B	C	Width over tracks	D	E	F	G
Caterpillar	345C L	50,6	2,6	3,99	11,59	5,33	3	10,76	10,41	6,73	-6,61
	365C L	71,6	4	4,63	12,2	5,86	3,4	11,04	10,73	6,78	-6,90
	385C L	88,3	5,2	4,78	13,47	5,84	3,4	12,28	12,54	8,06	-7,14
Komatsu	PC450-8	45,2	max 3,5	3,85	11,91	5,06	3,49	11,08	10,31	7,07	-6,85
	PC600-8	58,5	max 3,5	4,3	12,81	5,69	3,9	13,02	11,88	7,96	-8,49
	PC800-8	81,3	max 6,0	4,85	14	6,33	4,21	13,66	11,96	8,24	-8,45
	PC1250-8	108,81	max 6,7	6,99	15,84	6,43	4,97	17,45	13,91	9,44	-11,59
	PC2000-8	204,12	12	7,14	17,03	7,45	6,24	15,78	13,41	8,65	-9,24
	EC140B LC	15,17	0,98	3,21	7,51	3,74	2,59	8,82	8,77	6,32	-6,03
Volvo	EC160C LC	19,1	1,23	3,02	8,71	3,98	2,8	9,34	9,00	6,54	-6,44
	EC180C LC	19	1,23	3,03	8,71	4,17	2,8	9,34	9,03	6,57	-6,41
	EC210C LC	22,7	1,43	3,36	9,59	4,46	2,99	10,39	9,46	6,70	-7,33
	EC240B LC	25,8	1,98	3,22	10,1	4,65	3,19	10,73	9,66	6,82	-7,60
	EC290B LC	29,7	2,1	3,68	10,44	4,87	3,19	11,57	10,46	7,47	-8,28
	EC360B LC	38,4	3	3,59	11,12	5,18	3,34	11,82	10,60	7,52	-8,20
	EC460B LC	46,6	3,73	4,65	11,94	5,37	3,34	13,22	11,09	7,87	-9,15
	EC700B LC	70,3	4,5	4,95	13,17	5,99	4,29	13,78	12,94	8,93	-9,06
Hitachi	ZX470H-3	47,1	2,5	3,48	11,91	5,47	3,49	12,06	11,06	7,65	-7,77
	ZX670LCH-3	67,3	3,3	4,46	13,2	5,84	3,95	13,28	11,94	8,02	-8,58
	EX1200-5D	108	6,5	5,72	16,17	6,41	4,8	17,36	14,40	10,36	-11,42
	EX2500-6	248	15	N/A	N/A	7,87	6	17,08	16,06	10,33	-8,60

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

UNITS AND CONVERSION FACTORS 2016-01-01

UNITS OF MEASUREMENT – THE SI SYSTEM

Basic Units

for length	meter, m
for mass	kilogram, kg
for time	second, s
for electric current	ampere, A
for temperature	degree Kelvin, °K
for luminance	candela, cd
for quantity of substance	mol, mol

Supplementary units

for plane angle	radian, rad
for solid angle	steradian, sr

Derived units with own names

frequency	hertz, Hz	s^{-1}
force	newton, N	$kg \cdot m/s^2$
pressure, stress	pascal, Pa	N/m^2
energy, work	joule, J	$N \cdot m$
power	watt, W	J/s
electric charge	coulomb, C	$A \cdot s$
electric potential	volt, V	W/A
capacitance	farad, F	C/V
resistance	ohm, Ω	V/A
conductance	siemens, S	A/V
magnetic flux density	tesla, T	Wb/m^2
magnetic flux	weber, Wb	$V \cdot s$
inductance	henry, H	Wb/A
luminous flux	lumen, lm	$cd \cdot sr$
illuminance	lux, lx	lm/m^2

SI Prefixes

Multiplying prefixes may be used with any unit symbols to indicate decimal multiples or fractions

Multiplier	Prefix	Multiplier	Prefix
10^{12}	tera, T	10^{-1}	deci, d
10^9	giga, G	10^{-2}	centi, c
10^6	mega, M	10^{-3}	milli, m
10^3	kilo, k	10^{-6}	micro, μ
10^2	hecto, h	10^{-9}	nano, n
10^1	deca, da	10^{-12}	pico, p
		10^{-15}	femto, f
		10^{-18}	atto, a

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

UNITS AND CONVERSION FACTORS 2016-01-01

CONVERSION FACTORS

Length

m	in	ft
1	39,37	3,28
$25,4 \cdot 10^{-3}$	1	$83,8 \cdot 10^{-3}$
0,305	12	1

1 yard (yd) = 3 ft = 0,91 m

1 mile = 1.609 m

1 rad = 57.3°

Volume

m ³	in ³	ft ³	yd ³	gallon (UK)	gallon (US)
1	$61,0237 \cdot 10^3$	35,3147	1,30795	219,969	264,172
$16,3871 \cdot 10^{-6}$	1	$0,5787 \cdot 10^{-3}$	$21,4335 \cdot 10^{-6}$	$3,604 \cdot 10^{-3}$	$4,329 \cdot 10^{-3}$
$28,3168 \cdot 10^{-3}$	$1,728 \cdot 10^3$	1	$37,0370 \cdot 10^{-3}$	6,22884	7,48052
$4,54609 \cdot 10^{-3}$	277,420	0,160544	$5,94606 \cdot 10^{-3}$	1	1,20095
$3,78541 \cdot 10^{-3}$	231	0,133681	$4,95113 \cdot 10^{-3}$	0,832675	1

Temperature

	Kelvin scale	Celsius scale	Fahrenheit scale
	0 °K	-273,15 °C	-459,67 °F
Equivalent temperatures	255,37 °K	-17,78 °C	0 °F
	273,15 °K	0 °C	32 °F
	373,15 °K	100 °C	212 °F

Mass

Kg	lb (pound)	oz (ounce)	ton (UK)	sh tn (short ton) (US)
1	2,20462	35,2740	$0,984207 \cdot 10^{-3}$	$1,10231 \cdot 10^{-3}$
0,45359237	1	16	$0,446429 \cdot 10^{-3}$	$0,5 \cdot 10^{-3}$
$28,3495 \cdot 10^{-3}$	$62,5 \cdot 10^{-3}$	1	$27,9018 \cdot 10^{-6}$	$31,25 \cdot 10^{-6}$
$1,01605 \cdot 10^3$	$2,24 \cdot 10^3$	$35,84 \cdot 10^3$	1	1,12
907,185	$2 \cdot 10^3$	$32 \cdot 10^3$	0,892857	1

Pressure

Pa N/m ²	bar	kg/cm ²	mm Hg	lbf/in ²
1	$10 \cdot 10^{-6}$	$10,1972 \cdot 10^{-6}$	$7,50062 \cdot 10^{-3}$	$0,145038 \cdot 10^{-3}$
$100 \cdot 10^3$	1	1,01972	750,062	14,5038
$98,0665 \cdot 10^3$	0,980665	1	735,559	14,2233
133,322	$1,33322 \cdot 10^{-3}$	$1,35951 \cdot 10^{-3}$	1	$19,3368 \cdot 10^{-3}$
$6,89476 \cdot 10^3$	$68,9476 \cdot 10^{-3}$	$70,3070 \cdot 10^{-3}$	51,7149	1

Power

W	kpm/s	kcal/h	hk (metric)	hp (UK)
1	0,102	0,86	$1,36 \cdot 10^{-3}$	$1,34 \cdot 10^{-3}$
9,81	1	8,43	$13,3 \cdot 10^{-3}$	$13,2 \cdot 10^{-3}$
1,16	0,119	1	$1,58 \cdot 10^{-3}$	$1,56 \cdot 10^{-3}$
735,5	75	632	1	0,9863
745,7	76,04	641,2	1,0139	1

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

UNITS AND CONVERSION FACTORS 2016-01-01

CONVERSION FACTORS cont.

Moment of force

Nm	kpm	lbf*in	lbf*ft
1	0,101972	8,85075	0,737562
9,80665	1	86,7962	7,23301
0,112985	$11,5212 \cdot 10^{-3}$	1	$83,3333 \cdot 10^{-3}$
1,35582	0,138255	12	1

Density

kg/m ³	g/cm ³	lb/in ³	lb/ft ³
1	10^{-3}	$36,1273 \cdot 10^{-6}$	$62,4280 \cdot 10^{-3}$
10^3	1	$36,1273 \cdot 10^{-3}$	62,4280
$27,6799 \cdot 10^3$	27,6799	1	$1,728 \cdot 10^3$
16,0185	$16,0185 \cdot 10^{-3}$	$0578704 \cdot 10^{-3}$	1

Area

m ²	in ²	ft ²
1	1550	10,76
$0,65 \cdot 10^{-3}$	1	$6,94 \cdot 10^{-3}$
$92,9 \cdot 10^{-3}$	144	1

Force

N	kp	lbf
1	0,102	0,225
9,81	1	2,205
4,45	0,454	1

Energy

J, Nm, Ws	kWh	kpm	kcal
1	$2,778 \cdot 10^{-7}$	0,1020	$0,2388 \cdot 10^{-3}$
$3,6 \cdot 10^6$	1	$3,671 \cdot 10^5$	859,8
9,807	$2,724 \cdot 10^{-6}$	1	$2,342 \cdot 10^{-3}$
$4,187 \cdot 10^3$	$1,163 \cdot 10^{-3}$	426,9	1

Velocity

m/s	km/h	ft/s	mile/h
1	3,6	3,28	2,24
0,278	1	0,911	0,621
0,305	1,1	1	0,682
0,447	1,61	1,47	1

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

UNITS AND CONVERSION FACTORS 2016-01-01

COARSE STONE DIMENSIONS

Weight (kg)	L1 (mm) Sphere with diam	L2 (mm) Cube with length	Separation (mm)	Grizzly gap (mm)
1	90	72	81	58
2	113	91	102	77
3	129	104	117	90
4	142	115	129	101
5	153	124	138	110
7,5	176	141	158	128
10	193	156	174	142
15	221	178	200	165
20	243	196	220	183
25	262	211	237	198
30	279	225	252	211
35	293	236	265	223
40	307	247	277	234
50	330	266	298	253
75	378	305	341	292
100	416	335	376	323
125	448	361	405	349
150	476	384	430	372
200	524	423	473	411
250	565	455	510	444
300	600	484	542	473
400	661	532	597	522
500	712	573	643	563
750	815	656	736	647
1000	897	722	810	714
1250	966	778	872	770
1500	1026	827	927	819
2000	1130	910	1020	903
2500	1217	981	1099	974
3000	1293	1042	1168	1036
4000	1423	1147	1285	1142
5000	1533	1235	1384	1231

Assumptions:

Solid Density = 2.65 kg/dm³ & Stone volume in dm³ = weight (kg) / 2.65

$$L1 \text{ (mm)} = \text{Sphere with diameter} = 200 \times \sqrt[3]{\frac{\text{weight} \times 3}{4 \times \pi \times 2.65}}$$

$$L2 \text{ (mm)} = \text{Cube with length} = 100 \times \sqrt[3]{\frac{\text{weight}}{2.65}}$$

$$\text{Separation} = \text{"Median length"} = \frac{L1 + L2}{2}$$

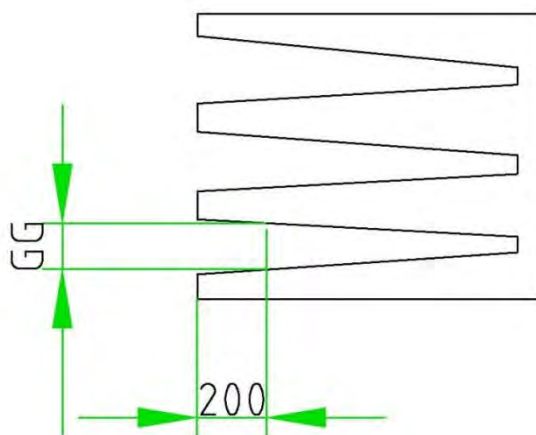
$$\text{Grizzly gap} = \text{Separation} \times 0.9 - 15 \text{ mm}$$

ROCK PROCESSING GUIDE 2016

Chapter X – OTHER INFO

UNITS AND CONVERSION FACTORS 2016-01-01

GRIZZLY GAP DEFINITION



Grizzly gap is measured 200 mm from discharge end of the bars according to drawing above.

Grizzly gap (GG) = Separation x 0.9 – 15 mm

$$\text{Separation} = \frac{\text{GG} + 15}{0.9}$$