

## Cross Stream Sampler (CSS)

## What does it do?



The Cross Stream Sampler (CSS) extracts a representative increment/cut of bulk material from a free-falling stream at the discharge point of a conveyor belt.

Representativity of the increment is ensured by extraction of a complete cross section of the material stream.

## What's the benefit?

### The Cross Stream Sampler (CSS)

- Theory of Sampling (TOS)-compliant which gives every particle in the stream an equal probability to be included in the extracted increment [which is the key to high quality, reliable sampling results].
- Enclosed in a cover housing to avoid cross-contamination between successive increments.
- Designed to be scalable, which makes it well suited for sampling from high-capacity Bulk Material Handling Systems (BMHS).
- Well suited for harsh environments and rough abrasive materials, which is often seen in the mining industry.
- Usable as a secondary or tertiary sampler as part of a multi-stage sampling/sub-sampling system.

## How does it do it?

The CSS consists of a railing system translating a suspended bucket cutter with a bottom-hinged discharge port. A robust drive (chain/wire) is connected to a gear motor on top of the rails. The motor control ensures that the cutter moves at a constant speed of up to 0.6 m/s when cutting a transverse increment from the falling material stream.

The CSS is enclosed in a cover housing to avoid incoming contamination.

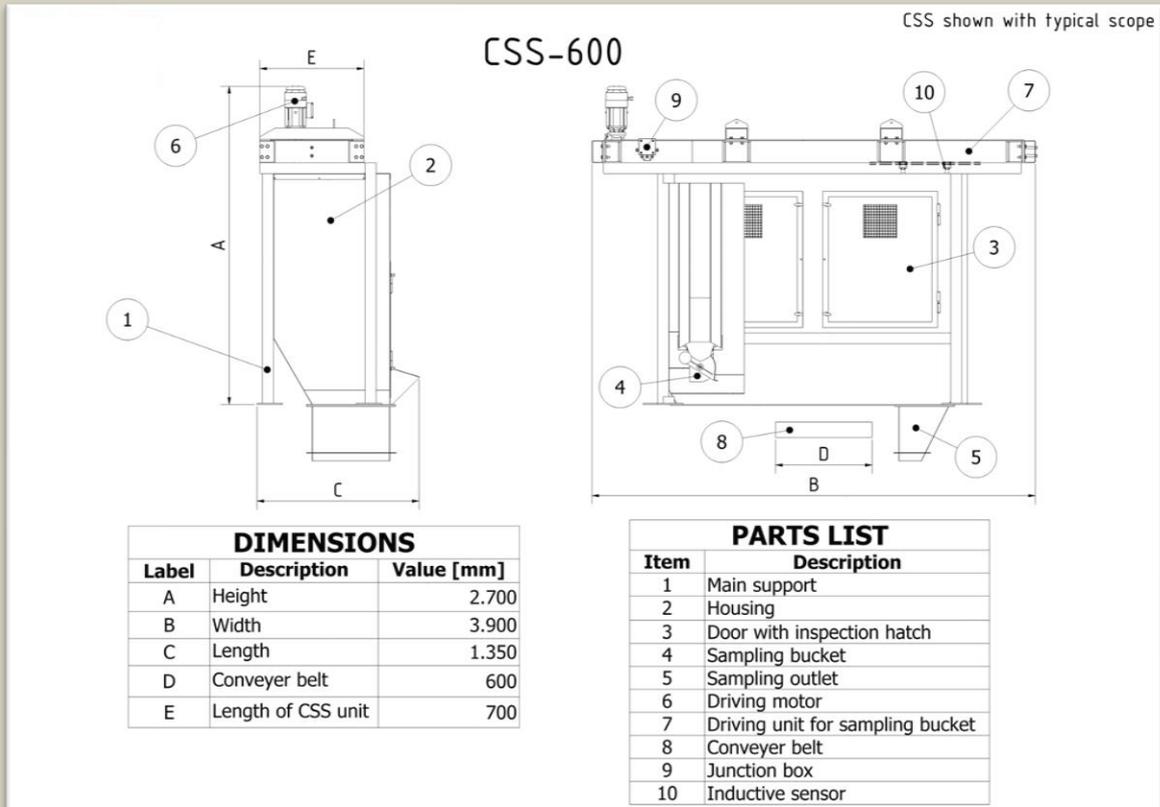
Hatches on top and on the side of the housing allow easy access for inspection and cleaning.

The cutter is parked above the sample discharge port to prevent entrance of non-sampled material. When an increment is requested, the carriage first moves through the material stream with the discharge port open, allowing the process stream material to pass through the cutter unaffected. At the turning point, the discharge port is closed, allowing the cutter to be filled on the return journey. The cutter is accelerated, and decelerated, to/from a constant cutting velocity well outside the active sampling zone. After the cutter is slowed down and parked above the parking position, an activator opens the discharge port which releases the extracted increment.

A typical increment volume is between 25 and 100 l.

## Specifications:

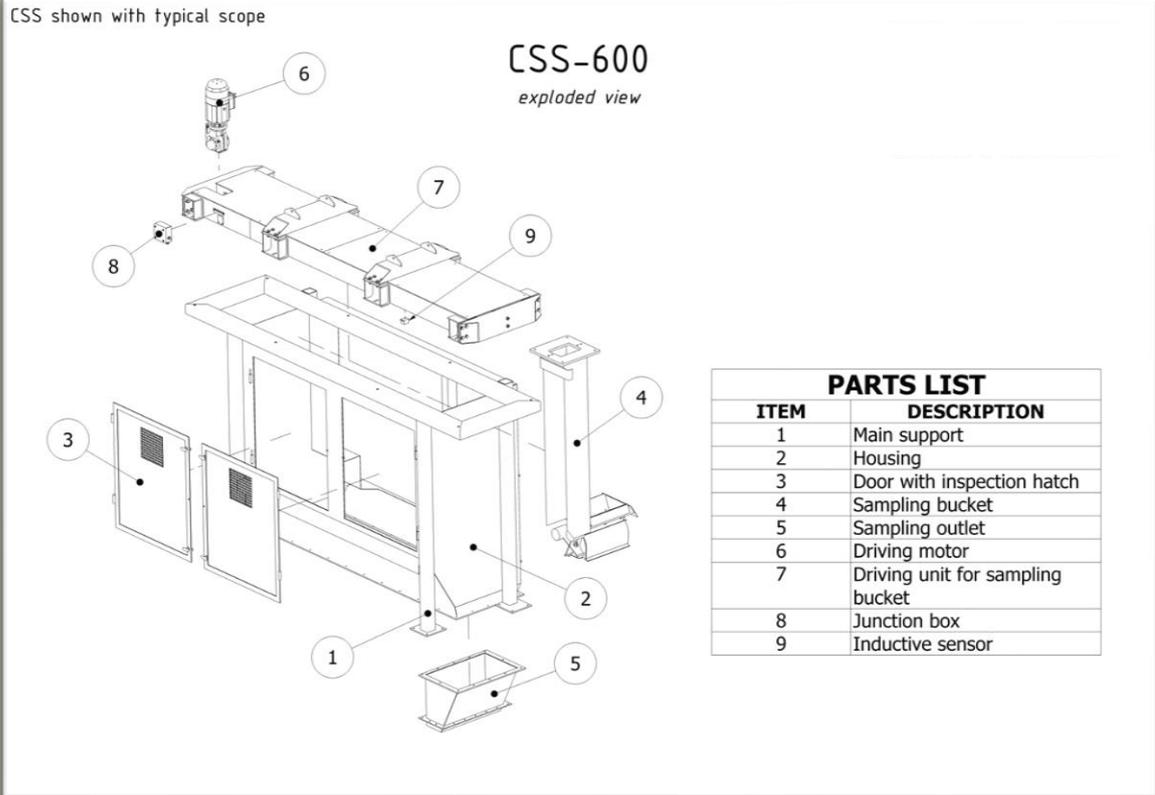
<b>Housing:</b>	Stainless Steel AISI 304/316 or painted carbon steel
<b>Railing system:</b>	Stainless Steel AISI 304/316 or painted carbon steel
<b>Power:</b>	Stainless Steel AISI 304/316 or painted carbon steel with Hardox impact plate
<b>Instruments:</b>	Inductive Position switches.
<b>Gear Motor:</b>	SEW or equivalent.
<b>Local control box:</b>	Stainless steel or painted steel, containing Motor feeder, frequency converter, PLC and interface for external communication.



Dimensional Drawing

CSS TYPES, DIMENSIONS AND WEIGHT								
Type	Height (A) [mm]	Width (B) [mm]	Length (C) [mm]	Conveyer belt (D) [mm]	CSS unit (E) [mm]	CSS [kg]	Housing [kg]	Total weight [kg]
600	2.700	3.900	1.350	600	700	900	700	1.600
800	1.750	3.200	1.150	800	700	1.050	750	1.800
1000	1.950	3.400	1.000	1.000	700	1.150	800	1.950
1200	2.950	4.100	1.250	1.200	700	1.250	900	2.150
1400	3.600	4.000	1.700	1.400	700	1.350	900	2.250
1600	2.550	4.700	1.100	1.600	700	1.400	900	2.300
1800	3.250	6.000	1.750	1.800	750	1.500	900	2.400
2000	4.100	7.250	2.750	2.000	1.350	2.000	1.100	3.100
2200	3.200	7.700	1.500	2.200	1.150	2.500	1.200	3.700

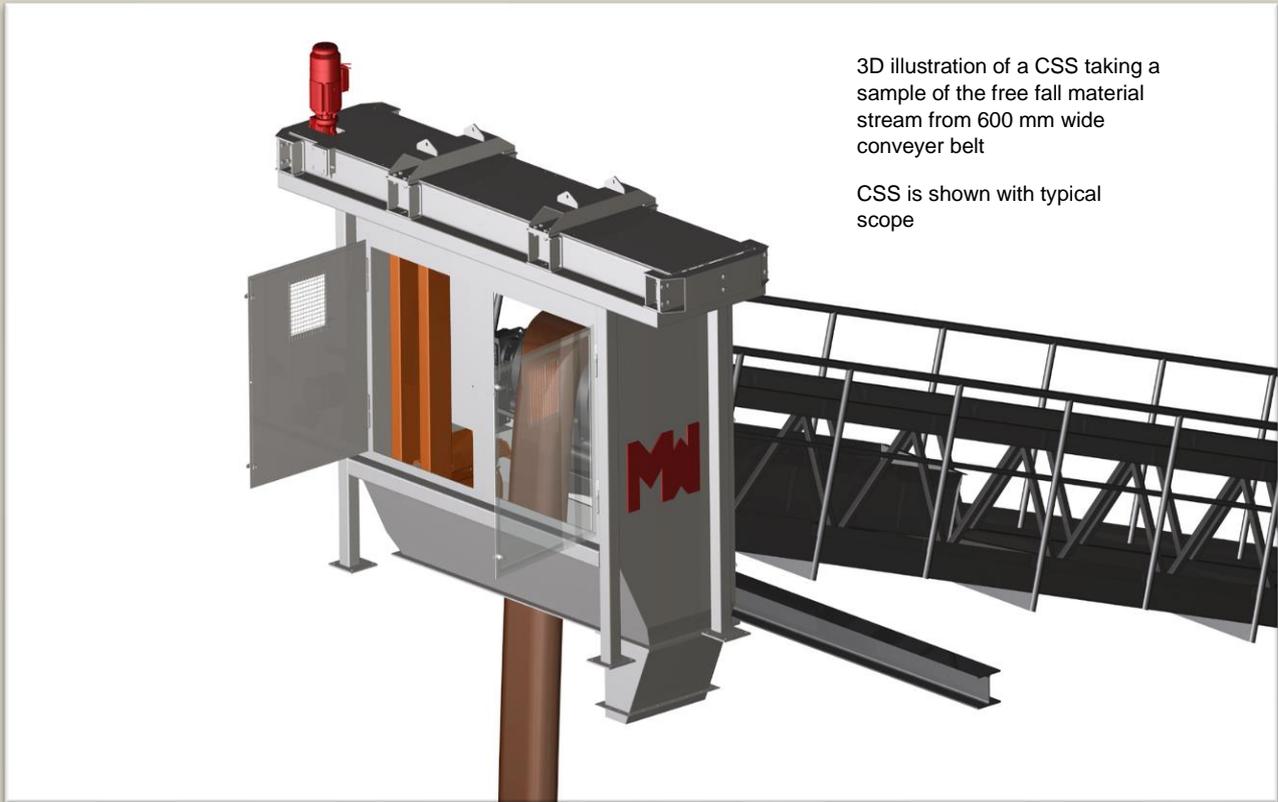
The table consist of indicative values from the previous projects.



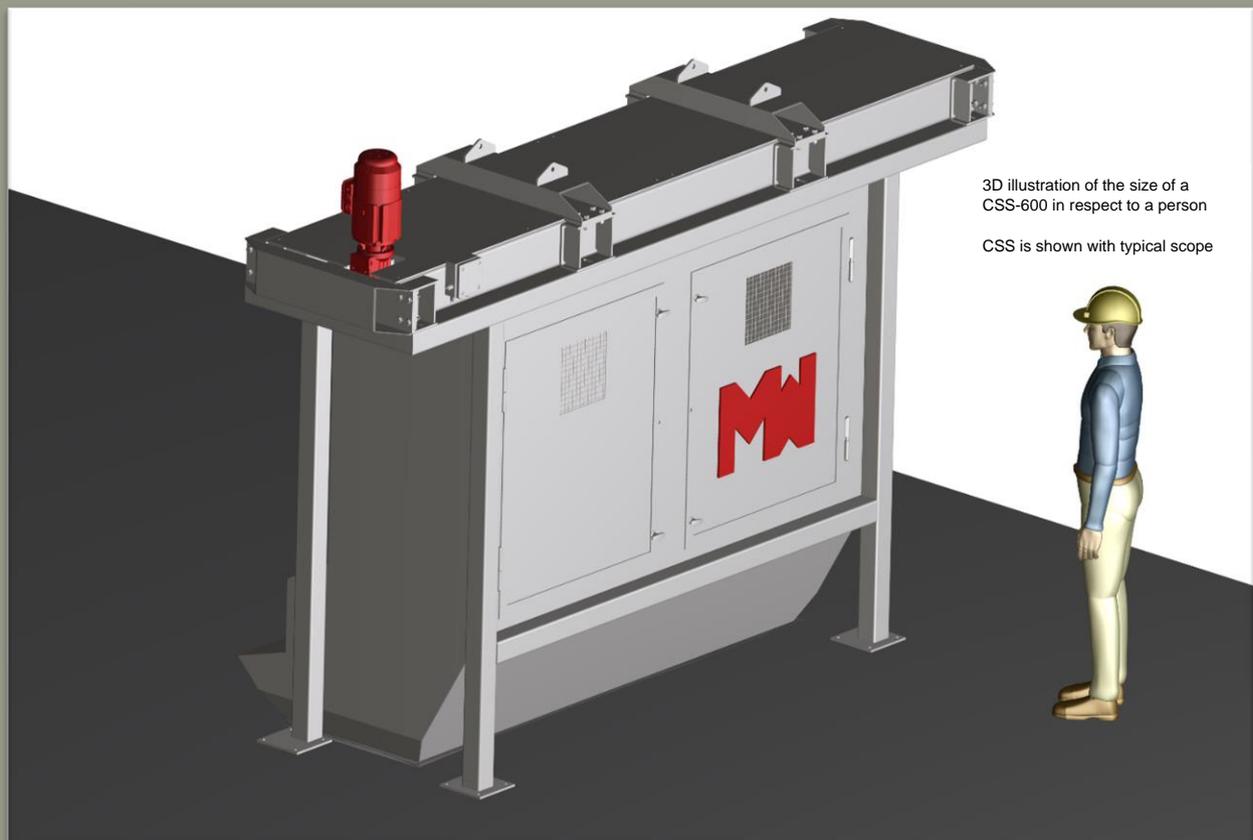
Exploded view



3D Drawing



3D Drawing with Material



Illustrative drawing

## Variants/Options.

### Variant 1:

The **Cross Stream Sampler Chain (CSS-C)** is driven by a robust chain system.

### Variant 2:

The **Cross Stream Sampler Wire (CSS-W)** is driven by a robust wire system. The CSS-W is preferable for material containing large amounts of dust or fine particles. The CSS-W is well suited for materials like biomass, limestone powder etc.

### Option 1.

The M&W central control cabinet can exchange signals with the client's control system.

### Option 2.

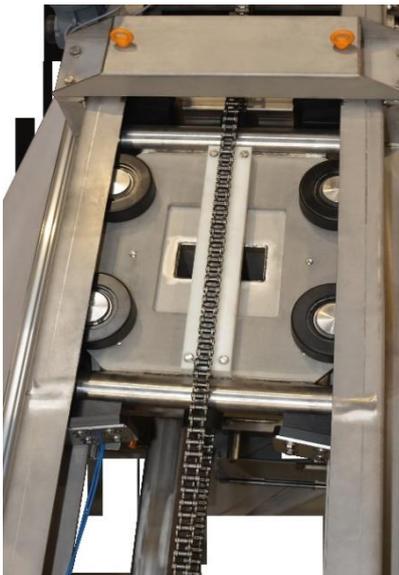
The CSS can be delivered with a vertical 90° tilted railing system if space constraints is an issue.

### Option 3.

As an option the CSS can be delivered with a complete housing-enclosure. A housing can be required if the material has to be contained inside the sampler, especially for dusty material.

### Nota Bene 1

Cross Stream samplers can be calibrated with respect to the client's material(s) and local sampling conditions. M&W offer clients a facility for quantitative assessment of the performance of CCS on the client's own material(s), following one or several types of tests, the Replication Experiment test, or variographic characterisation of process sampling performance.



Variant 1



Variant 2



*Option 1*



*Option 2*



*Option 3*

## What is the standard?

M&W JAWO Sampling equipment and sampling systems operate in accordance with approved international material standards such as ISO, ASME, GOST, EN as well as DS3077 (2013). All sampling equipment and solutions aim for compliance with the principles laid down in the Theory of Sampling (TOS) and gives our customers reliable knowledge of the material properties such as moisture content, particle size distribution, mineral proportions, and content grade essential for commercial, operational, and technical characterization.

## About M&W.



Mark & Wedell A/S (M&W) is a global mechanical/electrical engineering and manufacturing company. M&W serves a solid and growing international customer base within the global mining-, minerals-, metals-, power generation- and big science markets.

We develop, engineer, and produce high quality mechanical and electrical machines, instruments, and solutions. Our brand JAWO and unique know-how is well recognized in our markets and among our customers due to more than 40 years of experience.