

## Copa® Raked Bar Screen

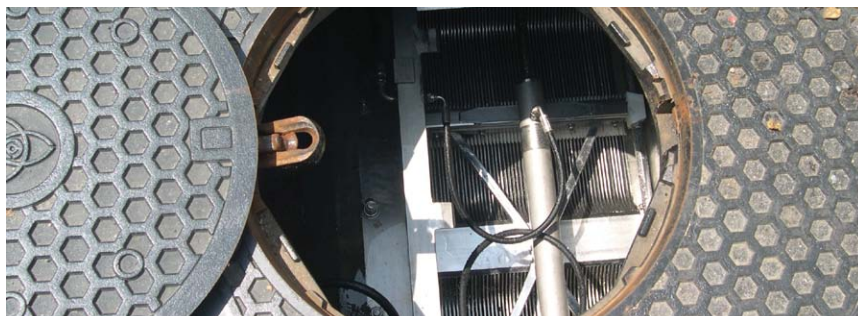
Mechanically Raked Combined Sewer Overflow (CSO) Screen

### Key features & benefits

- Stainless steel with Tivar® screen comb
- 10mm bar spacing
- Complete range up to 3000 l/sec per screen
- Flexible modular design

### How we create value

- Ideal for retro fit making cost savings in civil works
- Spare parts readily available (standardized across the range)
- Low energy requirement
- 100% utilization of screen



# Copa® Raked Bar Screen

## How it works

The Copa® raked bar screen is ideally suited to both new and existing Combined Sewer Overflow (CSO) chambers where high frequency spills can be expected. Its modular design is ideal for retro-fit installations (requiring little or no civil work to the existing CSO chamber) and allows the unit to be assembled below ground through just a 600mm diameter manhole.

Screen modules are mounted horizontally along the storm discharge weir (again, making the system ideal for single-sided retro-fit weir installation). Screen bars are set to the same level as the overflow weir. An ultrasonic control system monitors the upstream water level and signals the screen to start just before the water flows upward through the bars.

The Tivar® combs move back and forth on a continuous basis to keep the screen face clear. Screenings are prevented from passing over the weir, retained and transported to the wastewater treatment works for removal.

Once the water level drops below the overflow weir level, the sensor will signal the screen to stop after a 'run on' period, ensuring that the screen is clear for the next overflow event. Screen combs can also be set to start automatically on a variable time cycle if storm conditions have not been detected for a set period.

All screens are operated remotely by a 1.1kw motor hydraulic power pack, which may be located up to 100m from the CSO chamber. Hydraulic connection is by 3/8" hydraulic hose. Longer distances between the screen and power pack can be achieved by increasing the hydraulic hose to 1/2" and / or increasing the size of the hydraulic power pack.

Flow rates from 50 – 3000 litres / second can be catered for by a single screen, although multiple units may be used to increase flow capacity.



## Why Horizontal?

Our extensive research into CSO screens concludes that horizontal screens are far more efficient than their vertical counterparts.

In a vertical configuration, only the bottom section of the screen is used during periods of low flow, and flow velocity is significantly higher. With a horizontal configuration the entire screen is used, no matter how high or low the flow. Flow velocity is kept to a minimum and the need for secondary weirs is eliminated, preventing grit and heavy solids from becoming trapped and so reducing the screen's efficiency.

The bars of the horizontal screen are orientated vertically, making them stronger than the horizontal bars of the vertical screen which (particularly on longer screens) tend to sag. It is possible to walk on top of the horizontal screen's bars, making access to the installation simpler and more convenient.

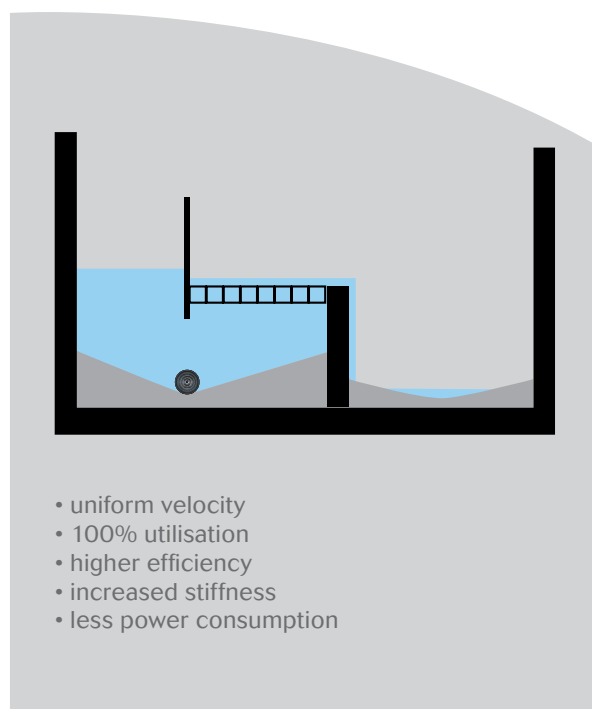


Figure 1. Ovivo Horizontal configured screen

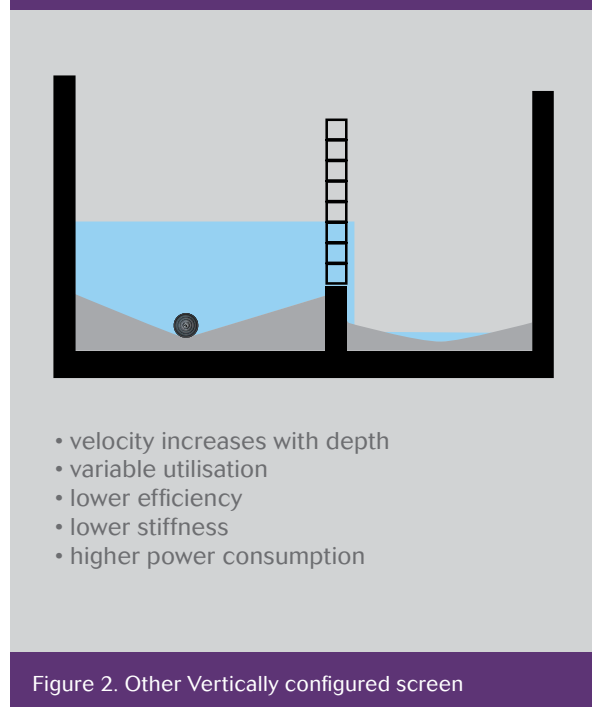


Figure 2. Other Vertically configured screen

# Copa® Raked Bar Screen

## Benefits and Features

### Key features & benefits

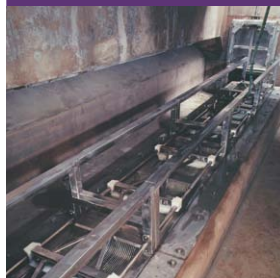
- Flexible and robust modular design (1)
- Remote hydraulic power pack and control system: can be mounted outside of any confined space (2)
- Single-sided weir installation requiring little or no work to existing CSO chambers (3)
- Double-sided weir installation for reduced head loss, reducing upstream hydraulic load if this is a problem. If this is not possible, screen length can be increased by adding another module – up to five per hydraulic power pack (4)
- Can be assembled below ground through a 600mm diameter manhole (5)
- Easily removable for installations where access to pumps may be required (6)
- No need for large or multiple access covers, making significant cost savings
- Simple frame structure houses drive mechanism, screen bars and rake mechanism
- Can be delivered either in complete sections or in modular form for ease of transportation and rapid installation
- Easily maintained from above without risk of damage to bar profile
- No need to pre-tension screen bars
- Bi-directional control via timer operated solenoid switches
- Flow capacity of 50 – 3000 liters per second per unit, or 500 – 700 liters per second per m<sup>2</sup>
- Half-module sections also available for maximum flow capacity in the available weir area
- 100mm headloss through the screen



1



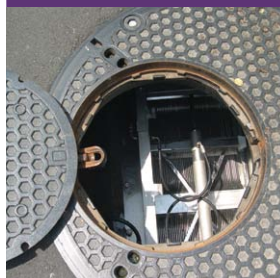
2



3



4



5



6

## Maintenance

The Copa raked bar screen has few maintenance requirements. All maintenance may be carried out from the top / clean water side of the screen. Both the guide rods and comb drive unit are easily removed for inspection or replacement. It is not necessary to remove the main framework or screening bars for normal maintenance, but should this be required, each module may be split from its partners and removed individually.

Vegetable based hydraulic fluid may be changed from within the remote control kiosk, eliminating the need to enter any confined spaces around the screen. Oil changes are required on an annual basis. Periodic visual inspections are recommended to ensure that there is no fouling or damage caused by debris during extreme storm conditions.

### Our Expertise

Acquiring and developing innovative, engineered solutions, Ovivo is now a market leader in stormwater management technologies. Today we supply not only simple CopaSac<sup>®</sup> screens, but also the highly efficient Copa raked bar screen and non-powered storm overflow screening such as the Copa<sup>®</sup> cyclone and CopaCurve<sup>™</sup> crosswave screens. Our wastewater treatment systems ensure the protection and improvement of inland and coastal waters now and in the future for generations to come.



Double sided weir installation



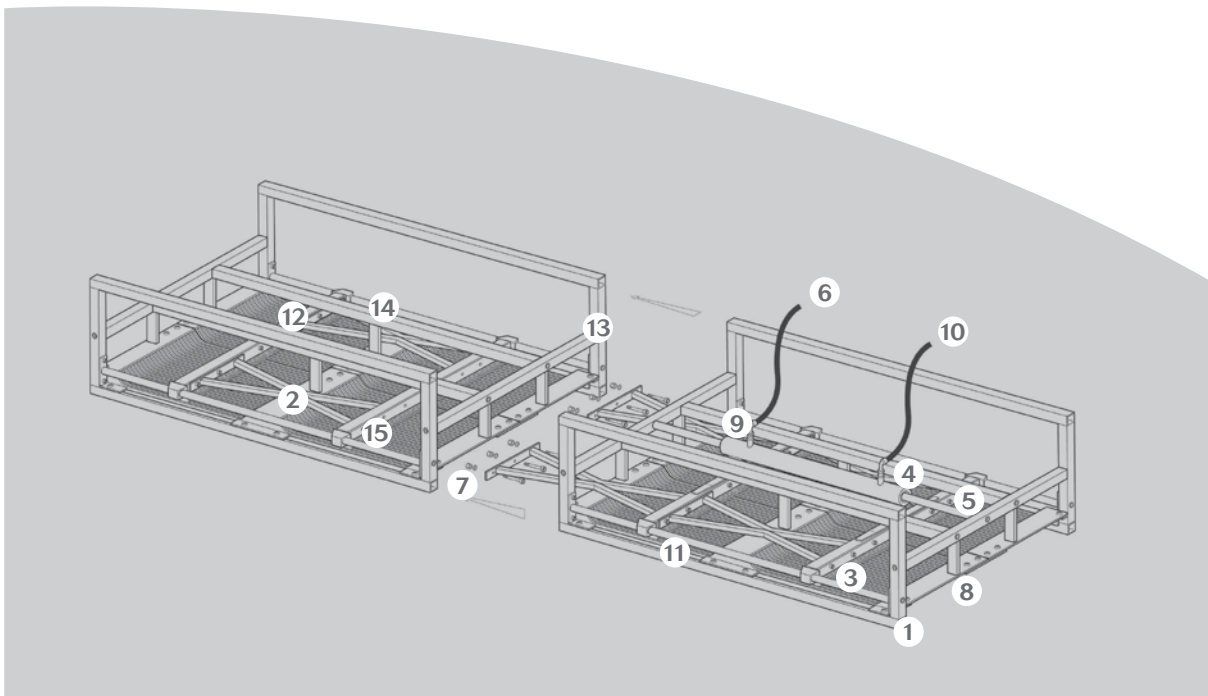
Single sided weir installation

# Copa® Raked Bar Screen

## Materials of Construction

Item	Description	Materials	Stainless Steel	
			304L	316L
1	Frame	St. St.*	•	•
2	Braces	St. St.*	•	•
3	Combs	Tivar		
4	Hydraulic Cylinder	St. St.*	•	•
5	Cylinder Rod	St. St.* electro-plated		
6	Hose	Rubber		
7	Bolt	St. St.*	•	•
8	Bar Section	St. St.*	•	•
9	Hydraulic hose connector-elbow	St. St.*	•	•
10	Hydraulic hose connector-straight	St. St.*	•	•
11	Comb guide rail	St. St.*	•	•
12	Comb bracket	St. St.*	•	•
13	End width bar assembly	St. St.*	•	•
14	Longitudinal brace bar assembly	St. St.*	•	•
15	Bar section strap plate	St. St.*	•	•

\* Indicates standard material of manufacture – i.e. 304L stainless steel. If grade 316L is required, please specify.



## Sizing Table

Model No.	No. of Modules	MAX FLOW		OVERALL SIZE (mm)		
		L/Sec	M3/Sec	(W)	(L)	(H)
CS3001	1	150	0.15	368	1290	420
CS3002	2	300	0.3	368	2580	420
CS3003	3	450	0.45	368	3870	420
CS3004	4	600	0.6	368	5160	420
CS3005	5	750	0.75	368	6450	420
CS4001	1	200	0.2	470	1290	420
CS4002	2	400	0.4	470	2580	420
CS4003	3	600	0.6	470	3870	420
CS4004	4	800	0.8	470	5160	420
CS4005	5	1000	1.0	470	6450	420
CS5001	1	250	0.25	572	1290	420
CS5002	2	500	0.5	572	2580	420
CS5003	3	750	0.75	572	3870	420
CS5004	4	1000	1.0	572	5160	420
CS5005	5	1250	1.25	572	6450	420
CS6001	1	300	0.3	674	1290	420
CS6002	2	600	0.6	674	2580	420
CS6003	3	900	0.9	674	3870	420
CS6004	4	1200	1.2	674	5160	420
CS6005	5	1500	1.5	674	6450	420
CS7001	1	350	0.35	776	1290	420
CS7002	2	700	0.7	776	2580	420
CS7003	3	1050	1.05	776	3870	420
CS7004	4	1400	1.4	776	5160	420
CS7005	5	1750	1.75	776	6450	420
CS8001	1	400	0.4	878	1290	420
CS8002	2	800	0.8	878	2580	420
CS8003	3	1200	1.2	878	3870	420
CS8004	4	1600	1.6	878	5160	420
CS8005	5	2000	2.0	878	6450	420
CS9001	1	450	0.45	980	1290	420
CS9002	2	900	0.9	980	2580	420
CS9003	3	1350	1.35	980	3870	420
CS9004	4	1800	1.8	980	5160	420
CS9005	5	2250	2.25	980	6450	420
CS10001	1	500	0.5	1082	1290	420
CS10002	2	1000	1.0	1082	2580	420
CS10003	3	1500	1.5	1082	3870	420
CS10004	4	2000	2.0	1082	5160	420
CS10005	5	2500	2.5	1082	6450	420
CS11001	1	550	0.55	1184	1290	420
CS11002	2	1100	1.1	1184	2580	420
CS11003	3	1650	1.65	1184	3870	420
CS11004	4	2200	2.2	1184	5160	420
CS11005	5	2750	2.75	1184	6450	420
CS12001	1	600	0.6	1268	1290	420
CS12002	2	1200	1.2	1268	2580	420
CS12003	3	1800	1.8	1268	3870	420
CS12004	4	2400	2.4	1268	5160	420
CS12005	5	3000	3.0	1268	6450	420

The screen models listed are all powered by one 1.1kw hydraulic power pack.

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