

Downstream Defender®

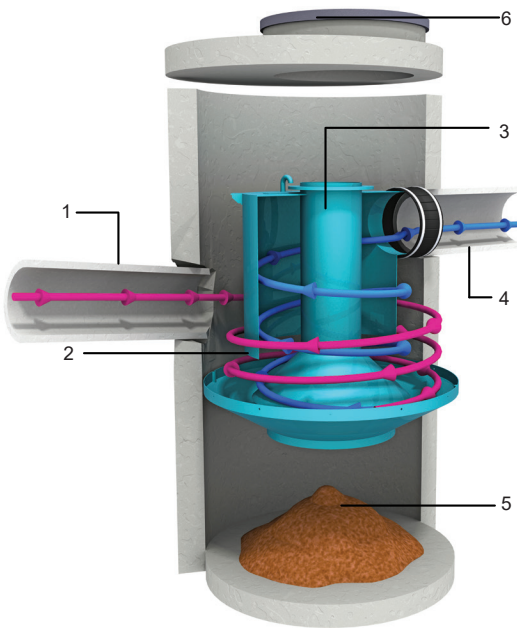
Advanced Hydrodynamic Separator

Product Summary

Exceptional Pollutant Capture in a Compact Profile

Downstream Defender is an advanced hydrodynamic vortex separator that provides impressive and reliable removal of fine and coarse particles, hydrocarbons, and floatable debris from surface water runoff, delivering high levels of stormwater treatment over a wide range of flow rates.

Available in a range of sizes, it can function as either pretreatment or as a stand-alone device, providing engineers and contractors with a flexible, cost-effective stormwater management option.



Product Profile

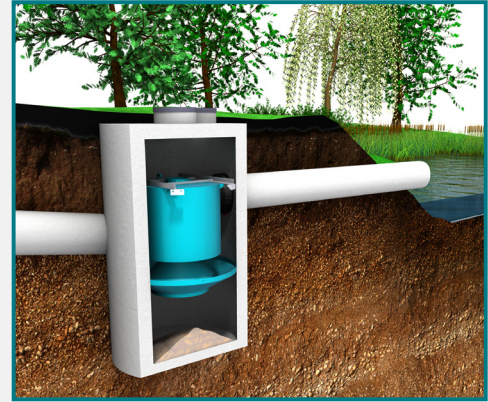
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|------------------------------------|--------------------------|
| 1. Inlet to Precast Vortex Chamber | 4. Outlet Pipe |
| 2. Cylindrical Baffle | 5. Sediment Storage Sump |
| 3. Center Shaft | 6. Access Lid |

Applications

- » Areas requiring a minimum of 50% TSS removal
- » Highways, parking lots, industrial areas and urban developments
- » Pre-treatment to ponds, storage systems, green infrastructure
- » Areas where high solids and trash capture are a must

How it Works

Tangential Inlet for Superior Vortex Action



Polluted stormwater is introduced tangentially into the side of the precast vortex chamber to establish rotational flow. A cylindrical baffle with an inner center shaft creates an outer (magenta arrow) and inner (blue arrow) spiraling column of flow and ensures maximum residence time for pollutant travel between the inlet and outlet.

Oil, trash and other floating pollutants are captured and stored on the surface of the outer spiraling column. Low energy vortex motion directs sediment into the protected sump region. Only after following a long three-dimensional flow path is the treated stormwater discharged from the outlet pipe.

Benefits

Tight & Mighty

- » Save space and money: treat high peak flows in as little as half of the footprint of other structural BMP systems.
- » Cut headloss: Low headloss means more site flexibility and provides engineers with design options for shallower sites.
- » Increase Pollutant Capture: Carefully designed internal components isolate the pollution storage areas, ensuring that what is captured is retained, even during high flows.
- » Adapt to Your Site: accommodate a change in outlet pipe direction to suit site-specific requirements.



Stormwater Solutions

→ hydro-int.com/downstreamdefender

Sizing & Design

The Downstream Defender can be used to meet a wide range of stormwater treatment objectives. It is available in 5 precast models that fit easily into the drainage network (**Table 1**). Selection and layout of the appropriate Downstream Defender model depends on site hydraulics, site constraints and local regulations. Both online (**Fig.3a**) and offline (**Fig.3b**) configurations are common.

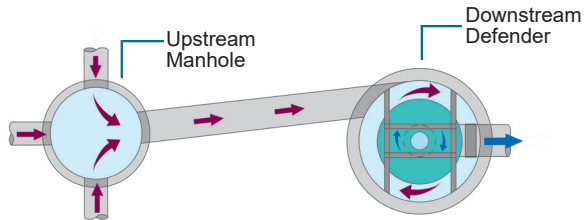


Fig.3a The Downstream Defender in an online configuration.

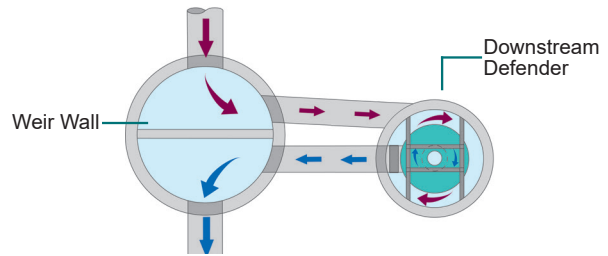


Fig.3b The Downstream Defender in an offline configuration.

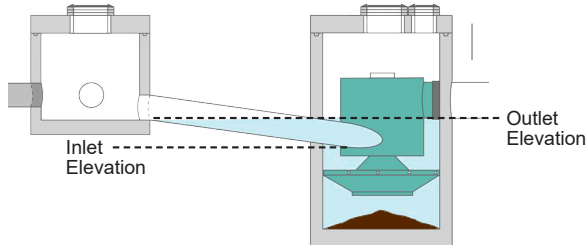


Fig.2 The Downstream Defender® has a submerged inlet that reduces headloss and improves efficiency of pollutant capture.

Online Sizing Tool



This simple online tool will recommend the best separator, model size and online or offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.

Model Number and Diameter		Peak Treatment Flow Rate		Maximum Pipe Diameter		Oil Storage Capacity		Sediment Storage Capacity		Minimum Distance from Outlet Invert to Top of Rim		Standard Height from Outlet Invert to Sump Floor	
(ft)	(m)	(cfs)	(L/s)	(in)	(mm)	(gal)	(L)	(yd ³)	(m ³)	(ft)	(m)	(ft)	(m)
4	1.2	3.0	85	12	300	70	265	0.70	0.53	2.8	0.85	4.1	1.25
6	1.8	8.0	227	18	450	216	818	2.10	1.61	3.2	0.98	5.9	1.80
8	2.4	15.0	425	24	600	540	2,044	4.65	3.56	4.2	1.28	7.7	2.35
10	3.0	25.0	708	30	750	1,050	3,975	8.70	6.65	5.0	1.52	9.4	2.85
12*	3.7	38.0	1,076	36	900	1,770	6,700	14.70	11.24	5.6	1.71	11.2	3.41

*Not available in all areas. Contact Hydro International for details.

Maintenance

The Downstream Defender® is designed with maintenance in mind. Floatable trash and debris can be removed from the surface with a net. Vactor hose access through the center shaft of the system makes for quick, simple sump cleanout. These design features expedite maintenance procedures, reducing long-term operational cost.



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Download Drawings!

→ hydro-int.com/dd-drawings

Access the Operation & Maintenance Manual

→ hydro-int.com/dd-om