WASH BAYS

MACTRAP

FUEL/OIL AND SEDIMENT SEPARATION FOR WASH BAYS

Separating Light Fuels and Oils from Wash Bay Wastewater with Stormwater Diversion.

The exterior vehicle Wash Bay is a quintessential conflict of interest. On the one hand, the vehicle wash bay process unleashes detergents, fuel, grease, oil, and coolants that need to be prevented from entering the stormwater system.

On the other hand, the sealed expanse of the wash bay is a high-volume collector of rainwater that needs to be kept away from the wastewater system.

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FUEL/OIL SEPARATORS

Functional Description

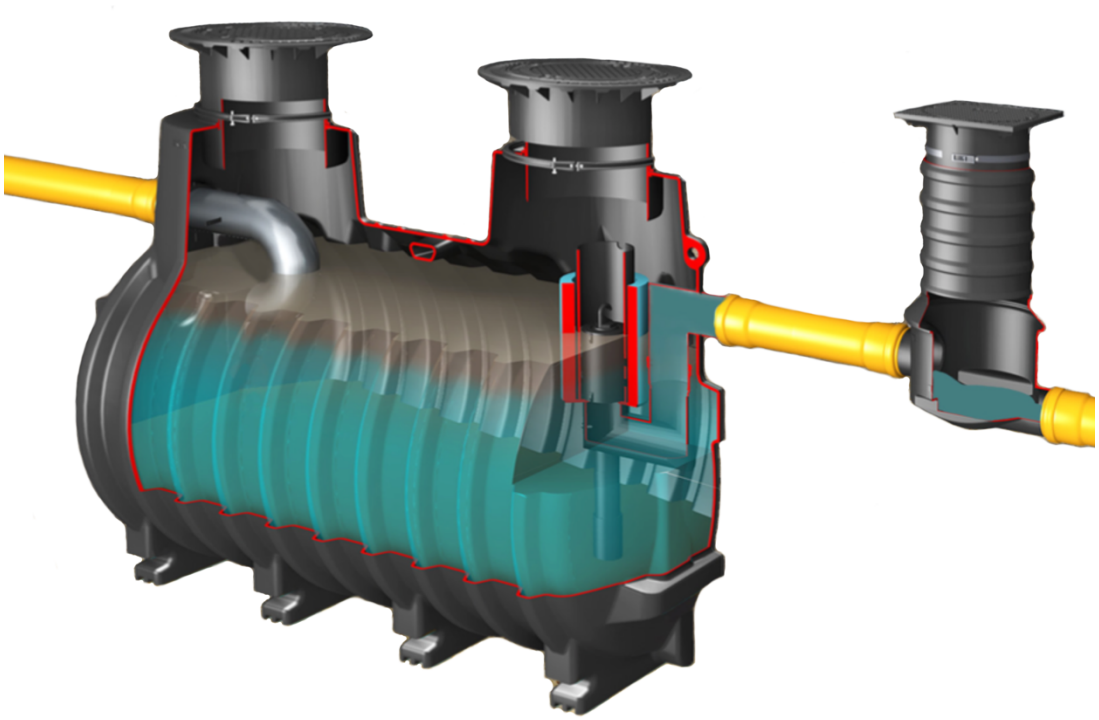
Mactrap Fuel/Oil separators separate light fluids[1] and sludge out of the wastewater by means of gravity. Light fluids float up in the separation chamber and collect at the surface. Sludges, which are heavier than water, sink to the bottom and form a sludge layer.

Coalescence separators, like oil-fuel separators, work on the principle of gravity. To increase the separation performance, the tank also contains a coalescence insert. This cylindrical insert has two functions. Firstly, it affects the flow in the separator, and secondly it “filters” all the wastewater through the coalescence material.

When wastewater containing oil flows through this filter fabric, very fine oil droplets that can no longer be separated out by gravity collect on the coalescence material and combine to form large oil droplets. When these reach a sufficient size to create buoyancy, they detach themselves from the filter material and rise to the surface.

Mactrap Fuel/Oil separators are equipped as standard with a self-actuating closure. When the maximum oil storage volume is exceeded, this device closes the outlet into the drainage system. This prevents the escape of light fluids into the drainage system. This safety device consists of a guide tube full of water, which houses a float.

The float is carefully designed for the specific gravity of the weight, so that it floats in water, and sinks in light fluid (up to a density of 0.95 g/cm3). When the maximum oil storage quantity is reached, oil flows through the lateral openings into the float guide tube. The float then sinks, reliably shutting off the outlet of the separator[2].



[1] Light fluids refer to fluids of mineral origin with a density of ≤ 0.95 g/cm3, which are insoluble or only slightly soluble in water.

[2] The self-actuating closure of a separator is an “emergency closure valve”. When actuated in an emergency, the separator must be taken out of service and maintained.

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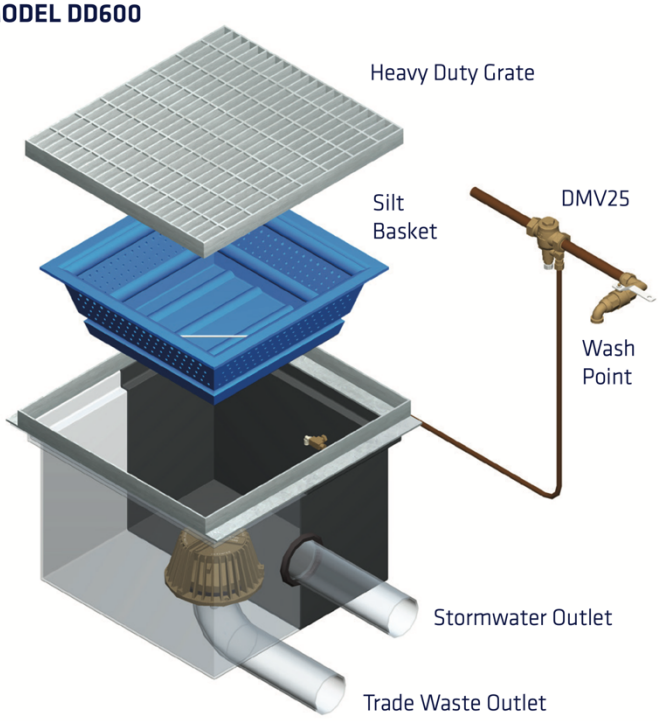
AUTOMATIC ACTUATED DIVERSION

Mactrap supplies the Fox Demand Driven Washdown Diversion System. The model DD600 is an effective control device for any unroofed washdown area automatically diverting wash water as well as the 'first flush' (if required) to sewer or treatment, whilst allowing unpolluted rainwater to enter the stormwater network.

MODEL DD600



At the heart of the Fox Diversion System is a Fox Demand valve which is fitted inline before the wash point and the Fox Diversion Valve, which comes fitted in a range of varied pit sizes or can be set up on 10mm marine grade aluminium plate to suit custom formed concrete pits.

How does it work?

A hydraulic signal is sent from the demand valve to the diversion valve when washdown commences, automatically opening the diversion valve protecting the environment from contaminated wash water.

At the end of the washdown operation the diversion valve will automatically close, allowing rainwater to exit through the stormwater outlet, avoiding flooding of the treatment system, which then leads to the subsequent local sewer network.

LIFT PUMPS AND PUMPING STATIONS

The powerful version for commercial, industrial, and communal applications.

The Aqualift F XL can cope with large quantities of wastewater and is suitable not only for typical residential buildings but also for commercial and industrial use. The pumping station has been designed as a modular system and can be combined variably with engineering and chamber modules.

The Aqualift F XL is available as a Mono or Duo system with pumps in different capacity classes. A wide selection of upper sections and covers ensure that the pumping station can be installed flexibly at different installation locations.

The pumps can be operated in potentially explosive areas, this means at locations where explosive gasses may occur due to wastewater and/or light fuel/oil liquids.

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DESIGN OPTIONS

Local Authorities have differing requirements for the management or wastewater from wash bays. These requirements are determined by the strengths and weaknesses of the wastewater and stormwater infrastructure, and the associated risk to the local environment.

Mactrap can supply different designs based upon the Local Authority objectives, for example:

Design 1

No risk to stormwater but allows surface water to flow into the wastewater system.

Washdown wastewater flows to a separator and on to the wastewater system. This is the lowest cost design and may be appropriate where rainwater volume has been reduced by a cover or partial cover over the wash pad.

Design 2

Protects stormwater but allows light oil contaminants into wastewater.

Washdown wastewater and rainwater flows to a separator. Washdown wastewater is pumped from the separator to the wastewater system. Rainwater flows through the separator and out to stormwater. This is a lower cost design and may be appropriate where the fuel/oil is considered of low risk, such as a washdown pad for new cars.

Design 3

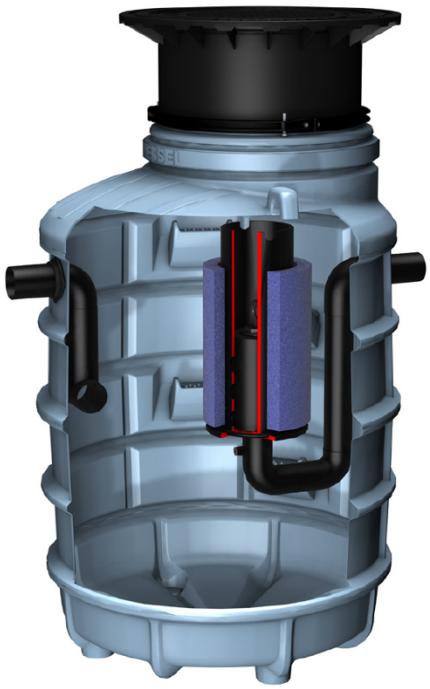
Protects wastewater from rainwater flow but some risk of residual contaminants in stormwater.

Washdown wastewater flows to a separator and on to the wastewater system. A diversion system redirects rainwater to stormwater. This mid-priced design ensures that the volume of wastewater entering the wastewater system is kept to a minimum and is useful for wastewater systems under stress. The risk of residual contaminants flowing to stormwater can be reduced by delaying the rainwater diversion until the system is flushed of contaminants.

Design 4

Best protection for stormwater and wastewater

Washdown wastewater flows to a separator and on to the wastewater system. A diversion system redirects rainwater to a second separator and out to stormwater. This is a higher cost design, but offers the best protection against contaminants in the stormwater, and minimises the volume of flow into the wastewater system.



Custom Design

Mactrap designs wastewater systems to meet the specific requirements of an installation, including:

- System capacity
- Auto mix and pump out
- Lift pumps and integrated pumping stations
- Level measurement and pump control systems
- Automatic actuated diversion

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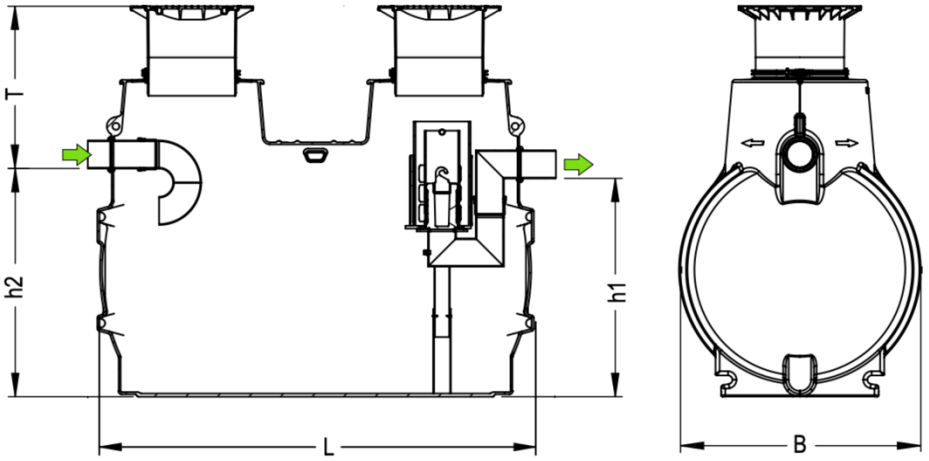
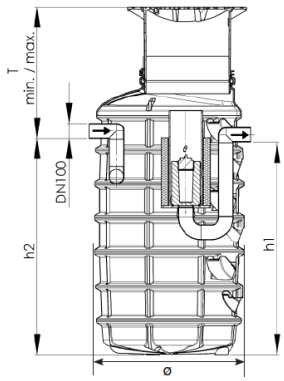
FUEL/OIL COALESCENCE SPECIFICATIONS

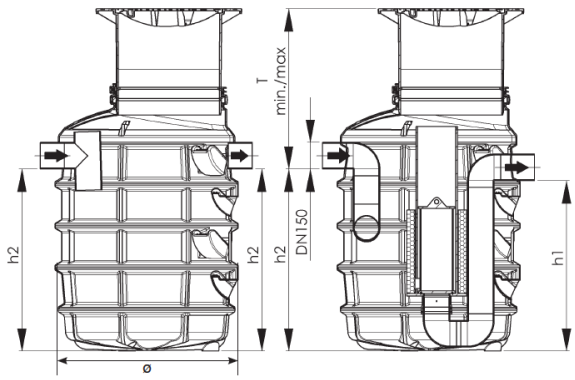


Coalescence Separator NS3-15

NS	Sludge trap	L (mm)	B (mm)	T min (mm)	T max (mm)	h2 (mm)	h1 (mm)	Oil storage	Total volume
NS 3	1000 l	2390	1200	840	1240	1100	1070	215 l	1800 l
NS 6	2500 l	2590	1760	850	1230	1630	1600	380 l	4300 l
NS 6	5000 l	3110	1760	870	1250	1630	1600	470 l	5800 l
NS 10	1500 l	2910	1200	840	1240	1100	1070	267 l	2600 l
NS 10	2500 l	2590	1760	850	1230	1630	1600	380 l	4300 l
NS 10	5000 l	3110	1760	870	1250	1630	1600	470 l	5800 l
NS 15	5000 l	3110	1760	870	1250	1630	1600	470 l	5800 l



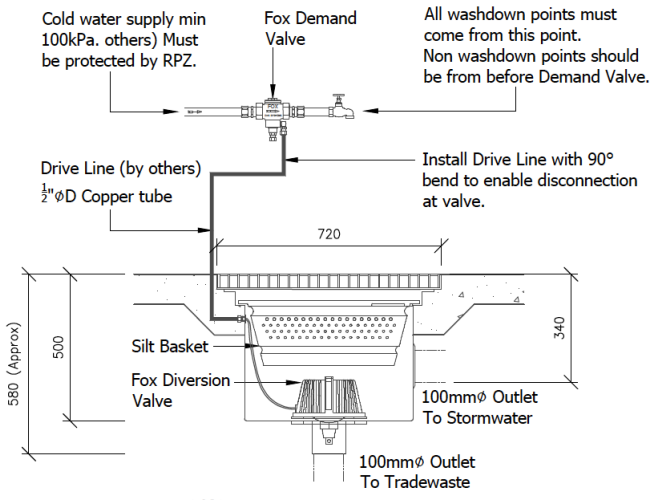
Coalescence Separator NS3

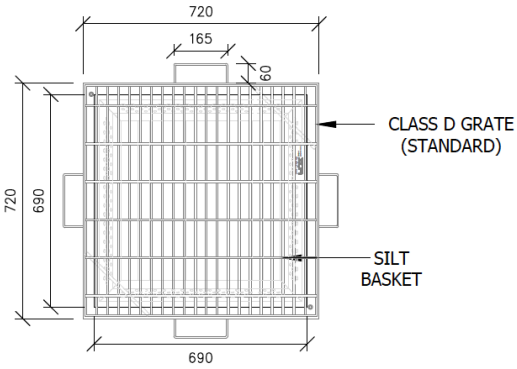


Coalescence Separator NS6

NS	Sludge trap	Diameter (mm)	T min (mm)	T max (mm)	h2 (mm)	h1 (mm)	Oil storage	Total volume
NS 3	800 l	1100	545	995	1105	1055	200 l	790 l
NS 3	1600 l	1100	545	995	1605	1555	200 l	1390 l
NS 6	1000 l	1100	560	1010	1090	1020	200 l	650 l
NS 6	1000 l	1100	560	1010	1090	1020	200 l	1580 l

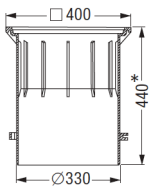
AUTOMATIC ACTUATED DIVERSION SPECIFICATIONS





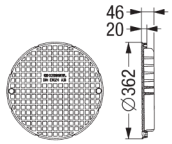
COVERS AND RISERS

Type	Class	Typical Use	Nominal Wheel Loading (kg)	Serviceability Design Load (kN)	Ultimate Limit State Design (kN)
	A	Areas accessible strictly by pedestrians. Not suited to vehicles. Purpose – residential backyards, walkways not accessible by vehicles.	330kg	6.7kN	10kN
	D	Major roads including freeway and motorway shoulders. Warehouse and loading docks. Purpose – major roads.	8,000kg	160kN	240kN

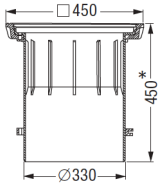


CLASS A / B RISER
Height adjustable with clamping ring

*When fitted to tank, height is 2mm less (448mm)

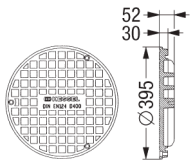


CLASS A COVER PLATE
In polymer



CLASS D RISER
Height adjustable with clamping ring

*When fitted to tank, height is 2mm less (448mm)



CLASS D COVER PLATE
In cast iron

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