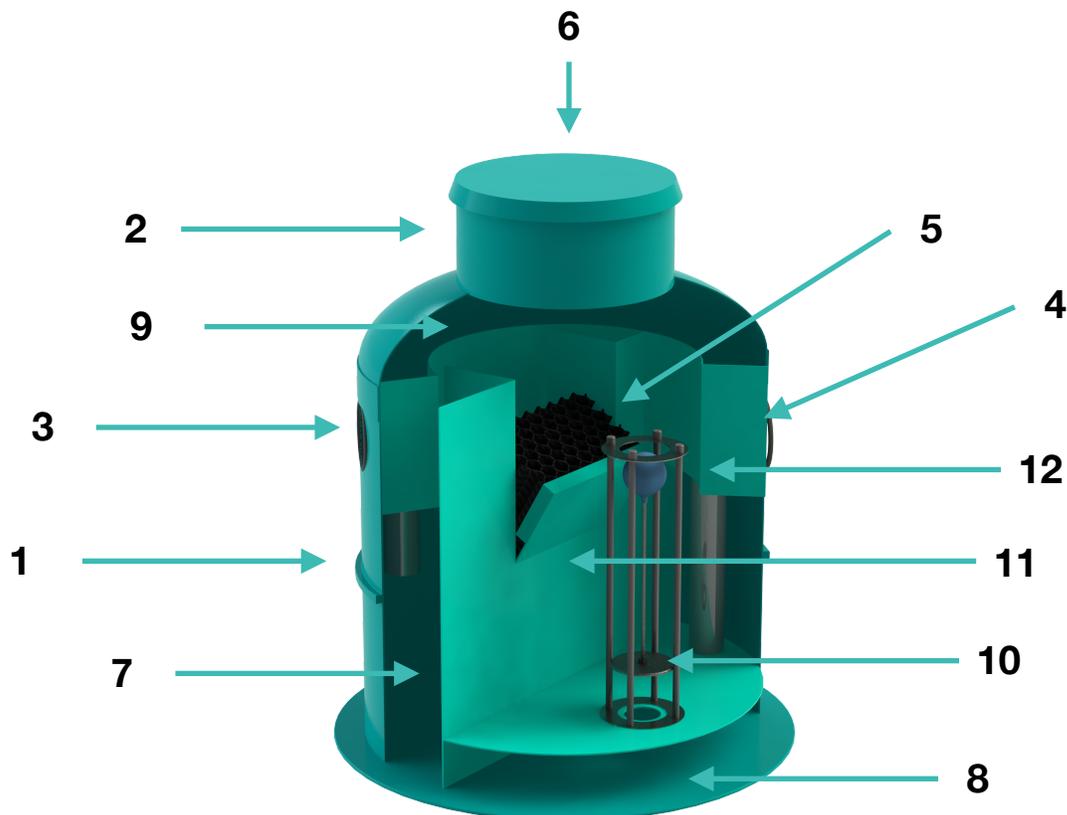


## Oil/Water Separator Technical Guide

### Component Identification

Item	Description	Item	Description
1	Body/tank	7	Inlet Chamber
2	Neck	8	Outlet Chamber
3	Inlet Pipe	9	Emergency Bypass
4	Outlet Pipe	10	Locking Valve
5	Coalescence Filter	11	Partition
6	Lid	12	Separation Compartment



## General Information

The Vodaland oil/water separator is a vertical cylindrical-shaped tank made from reinforced fibreglass in accordance to TU U 28.2-31276864-004:2016.

The separator functions as an autonomous modular cleaning system design for the capture and detention of oil and suspended solids from rain, snowmelt and industrial wastewater. The system can separate wastewater containing up to 5 mg / liter (Class-I, according to EN 858-1: 2002)

The separator can be used as a collection point for individual drain lines, or as a final filtering point for an entire property. This system is useful in parking lots, gas stations, auto shops, garage complexes, industrial plants, warehouses, and much more.

The lifetime of this system is dependent on the correct operation and maintenance. Following all recommendations in this guide will ensure you get the best use of your separator.

## Principle of Operation

The Vodaland oil/water separator is designed to treat wastewater through purification of non-dissolved impurities. The container is divided into 2 compartments by a fibreglass partition, with a coalescence filter fit between the partition to treat wastewater as it is directed through the system.

The system functions first by collecting wastewater in the first chamber of the separator. As the amount of wastewater intensifies, the water within the chamber will be directed through the filter in the partition.

The filter is made of coalescence blocks, which are inclined corrugated plates, fastened together, which have hydrophobic properties (particle repulsion of water). As the water passes through, oil particles become larger (coalescence effect) and due to the density difference of water ( $\rho_{\text{water}} \approx 1000 \text{ kg / m}^3$ ) and petroleum products ( $\rho_{\text{np}} \leq 950 \text{ kg / m}^3$ ), the oil floats to the surface and forms a film.

Coalescing Units are made of a durable polypropylene, which comes with a number of advantages:

1. Resistance to high temperatures (up to 80 ° C), which extends usage.
2. Erosion resistance (opening formation)
3. Low risk of breaks or demounting during installation
4. UV resistance
5. High chemical resistance
6. No negative environmental impact (absence of heavy metals in composition)
7. Durability

## **Filter Technological Advantages**

1. A large area of sedimentation (settling) ( $100-300 \text{ m}^2 / \text{m}^3$ ) thereby reducing the overall dimensions of the sediment box.
2. The same hydraulic characteristics in all directions of motion of the liquid.
3. Useful in many different container sizes.

## **Operating and Maintenance Guide**

Maintenance of the oil / water separator consists of regular removal of the sediment and petroleum products that collect, or of completely emptying the tank. Removal is performed by vacuuming out the unwanted products with either a shop vac or cesspool truck at least once every 6 months. Maintenance should be carried out in dry weather, to avoid unwanted water or chemicals being added to the tank through the rainwater.

### **During operation of the Separator, please follow these steps periodically:**

- Clean the channels and pipes that bring the wastewater into the separator. Heavy sediments and debris can build up deposits over time.
- Remove the cover (manhole) from the tank and leave it open for 1 hour for ventilation\*
- Regularly remove the collection of oil from the surface of the water (film); remove the collected sediment and sand from the bottom at least every 6 months.
  1. Oil Film: Lower the hose to the water surface, pump out this top layer which should contain mostly petroleum products. (Approx. 10% of total contents)
  2. Bottom Sediment: Lower the hose to the bottom of the tank (start in 1<sup>st</sup> chamber, proceed to 2<sup>nd</sup> once first is clean) and remove all sediment at the bottom (Approx. 20-30% of total contents)
- Monitor the filter to ensure it is functioning; same goes for automation equipment or any outside equipment added to the system.
- Complete these additional steps every 2 years:
  1. Pump out the entire contents of the tank.
  2. Rinse the inside walls of the separator and the coalescing units with a pressure washer.
  3. Check the condition of the tank body, inner surface, and components for damage.
- After maintenance, refill the water level within the tank to just below the bottom of the inlet and outlet piping. This is to prevent pressure pushing on the tank and for proper distribution of external loads.

## **Safety Engineering during the Operation**

- The person completing maintenance must have a firm understanding on how the separator operates.
- Do not use open flames and do not smoke near an open separator.
- Personnel cannot descent into the separator until the lid has been left open 1 hour for ventilation.

## **Recommendations for Installation**

Installation of the building is a dangerous step in terms of safety. Before installing the equipment, it is necessary to implement the following measures to ensure safety:

- Correct organization of the form of the pit, which excludes the possibility.
- Collapse of soil
- Fence organization of pits and surrounding roads
- The correct choice of lifting equipment and proper execution of lifting operation.

The installation of fibreglass products is carried out with the use of geodetic instruments with a particularly careful check of compliance with design marks and alignment along the axes.

Before performing the lifting of the body, it is necessary to inspect the mounting loops for the presence of defects or mechanical damage. It is necessary to conduct a visual inspection of the installation and to check the completeness of the product.

With the probability of flooding or groundwater collection, the facility must be installed on a reinforced concrete foundation, to which the separator should be attached.

Clean the pit surface / reinforced concrete base and the body of the product from foreign objects and construction debris. Check the horizontal surface of the pit / reinforced concrete foundation.

Installation of the tank on a reinforced concrete plate can only be performed after the concrete has cured. When installing horizontal separators on a reinforced concrete base, make the sand layer fill of thickness not less than 150-200 mm with subsequent stripping (see Figure 5). It is forbidden to mount a horizontal facility directly on the reinforced concrete base.

## **Installation:**

1. The body of the equipment is raised with the help of assembly loops and in the absence of such, use textile slings with even distribution of loads. It is forbidden to use steel ropes or chains.
2. Mount the tank to the concrete pad base.

3. Check the fit of the container to the sand base. The sand should encase the tank with an airtight seal. If not sealed, tamp the sand down so that it is firm.
4. Check that the height of the tank matches the planned height. The sand traps have an optional riser for additional height and an extended lid that can be cut for reduced height.
5. With risk of flooding or collecting of ground water, the horizontal separator tanks are required to be strapped down with a synthetic inelastic material. Detachable belts can be installed by fixing the tank to special inserts built into the concrete slab. For vertical tanks, they can be fastened to the concrete slab with the help of anchors.
6. Fill the tank with water at a level of 200-300 mm, and compact the space below and around the installed tank.
7. Start the backfill process
  - A. Backfill to the top of the pit with sand
  - B. It is forbidden to carry out a backfill if there is snow, ice in the pit, or using frozen materials.
  - C. It is recommended to carry out the backfill of the separator evenly along the perimeter of the sand in layers of 200-300 mm. During the backfill, the tank is gradually filled with water. The water level should not exceed the level of filling at 200-300 mm.
  - D. The installation of the tank without gradually filling water is prohibited. In this case, the manufacturer's guarantee on the system is voided.
8. The backfill must be carried out by excavators with special care, in order to prevent damage to the walls of the tank. It seals better when combined with a stream of water. (Also, the use of mechanical vibrators of more than 100 kg is prohibited)
9. After each layer of backfill, check the horizontal and vertical positions of the tank. Try your best to avoid moving the tank while backfilling.
10. After filling the pit to the level of the inlet/outlet pipes, connect the pipes and joints. Pay special attention to sealing the soil under the pipelines to eliminate the possibility of damage.
11. It is important to seal off around the lid prior to pouring the sand up to the neck of the tank. This will prevent the entry of soil, sand, or storm water into the tank.
12. Now you can install any additional equipment that goes with the tank (ventilation pipes, ladders, sensors)
13. To avoid vehicles driving over top of the tank, caution signs should be positioned at a distance of 1 meter from the edges of the tank body. A vehicle's approach to the tank

that is closer than 3 meters, must be done so on a concrete slab. Not following this step may cause the tank to break.

14. In grass areas, the tank cover (or manhole) must protrude above the ground at 150mm.
15. When installing the container under an area with vehicle traffic, a concrete plate must be mounted or poured otop to assist with load distribution.
16. If work is halted on installation, measures should be taken to prevent the entry of foreign objects to the construction site, and in particular to the tank internals.

Vodaland fully stands behind each and every one of our products. We always urge our customers to email or call us with any questions. If you ever have any issues or concerns, we would like to hear them, please send us an email at [info@vodaland.ca](mailto:info@vodaland.ca).

**Thank you again for your business!**

Please note: All the specifications, drawings, and installation schemes can be found and downloaded on our website. Go to the product page and you'll find tabs for all these options at the bottom of the page. Installation videos can also be found on YouTube at: **Vodaland Canada**

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