

VAULT WITH MSR HSD UNIT  
ELEVATION VIEW

MSR HSD High Solids Design Oil Water Separator for Equipment Maintenance and Other Services

**As Green, Green, Green as It Gets!**<sup>tm</sup>

**MSR COALESCING MEDIA HAS NO MOVING PARTS, NEEDS NO CONSUMABLES, AND THE RECOVERED OIL IS RECYCLABLE!**

MSR HSD Design separators are designed for use where large quantities of oil and solid particles may be present such as in equipment washing and maintenance facilities. They utilize MSR's special coalescing media for removing both oil and solid particles from the flow stream.

# MSR HSD Separators for Removing Oil from Water in the presence of Solid Particles

## TWO STAGE SOLIDS REMOVAL:

This design features a two-stage solids removal system, with large solids precipitating in the first chamber system, and smaller solids being removed in the coalescing pack. The coalescing media insert is provided both with oil ports for collected oil to rise and solid dump holes for solids to fall. The bottom of the insert is provided with supports designed so that the solids fall through the solids dump holes to the bottom of the vault

After the insert is installed and the legs installed under the insert between the insert and the concrete baffle, it is necessary to ensure that the area between the lip of the insert and the concrete baffle is well sealed so that no flow can go around the coalescing media.

The coalescing media insert can either be assembled outside the separator and installed as a single pack or the stainless surround can be installed and the media put in after the surround has been installed in the concrete vault. The insert is provided with two legs to support the cantilevered downstream end of the insert to avoid potential problems with the sealing between the insert and the concrete baffle.

When the insert and media are installed and the appropriate inlet and outlet piping is installed, the unit is ready for use.

MSR High Solids HSD units are a great way to conveniently install separation systems in any size concrete vault



Inlet end of Insert with sealant and showing inlet solids accumulation area

Outlet end of Insert with support leg showing outlet solids accumulation area

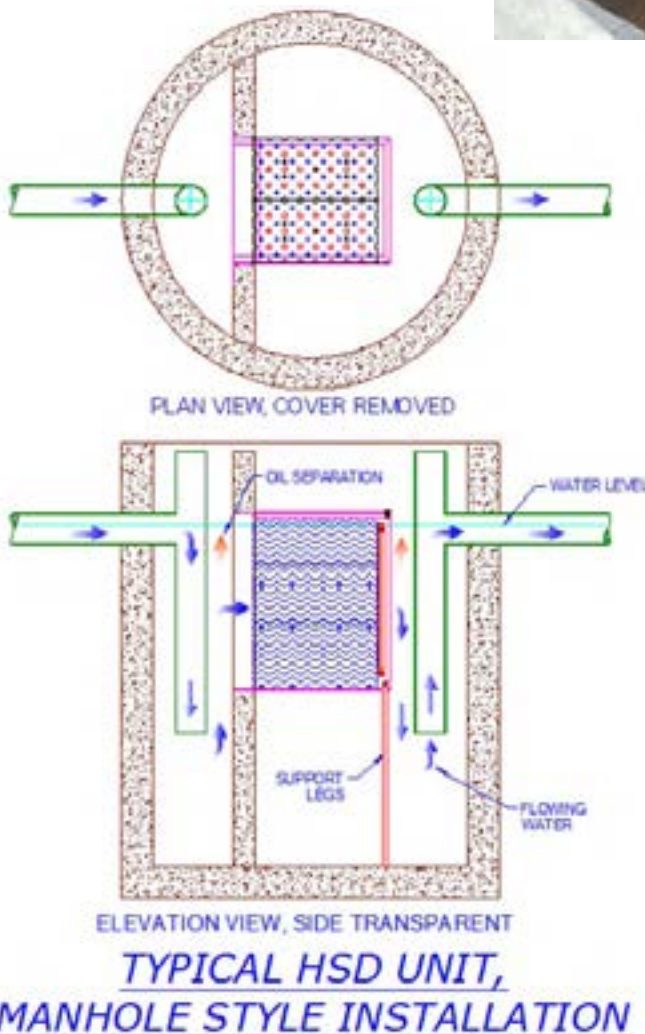


# MSR HSD Separators for Equipment Maintenance and Other Services

MSR HSD type separator systems can conveniently be used in rectangular precast vaults, cylindrical manholes, or cast in place vaults of any size sufficient. The smallest diameter that may be used is 60" (1524 mm). The figure below illustrates the use of a HSD 23 system



HSD Unit installed at a Canadian Solar Power facility parking lot



All MSR treatment systems utilize our high efficiency polypropylene coalescing media for best performance and long life.



Polypropylene coalescing media:  
Narrow Space (Nominal 8 mm) shown  
Wide Space (Nominal 16 mm) available

# Operating Principles

MSR Coalescing plate modules are designed to separate oil from water utilizing the buoyancy of the oil droplets. The droplets rise within the water flow according to Stokes's Law, a mathematical relationship that allows calculation of the rise velocity based on the droplet sizes and the difference in specific gravity between the water and the oil. In general, smaller droplets and/or droplets of greater specific gravity rise more slowly.

Because the droplets common in both industrial applications and stormwater are generally very small, and very small droplets rise *very* slowly. To facilitate good removal, the rise *distance* must be short.

Ordinary large empty tanks or API separator type vaults are not efficient at removing small oil droplets because the small droplets rise slowly and the rise distance required for separation is large. Separators equipped with MSR Media can therefore be much smaller and less expensive than API type systems.

MSR Coalescing Media plates are closely spaced to minimize rise distances and ensure capture of even very small droplets. The coalescing plates are made from an oleophilic "oil-loving" plastic that helps capture droplets and encourages coalescing. They are available in either nominal 8 mm or nominal 16 mm space

The water flow carries the droplets into the modules where they rise by buoyancy up to the underside of the coalescing plates where they are captured. As more droplets are captured they form a layer on the plates and eventually break loose as large drops and migrate to the surface thorough the oil ports designed for that purpose. The oil forms a layer on the surface of the water and is periodically removed for recycling.

## HSD Separator Dimensions and Flows

Note: Flows shown are for rainwater service in gravity flow at 15 mg/l effluent

HSD model	Design flow, gpm	Design flow, l/s	Insert Width, in	Insert Height, in	Insert Width, mm	Insert Height, mm	Number of Modules
12	44	3.15	13.07	23.2	332	589	2
22	88	6.31	24.88	23.2	632	589	4
23	137	9.46	24.88	34.2	632	869	6
33	205	14.19	36.69	34.2	932	869	9
34	274	18.93	36.69	45.2	932	1148	12
43	274	18.93	48.5	34.2	1232	869	12
44	365	25.23	48.5	45.2	1232	1148	16
45	460	31.54	48.5	56.2	1232	1427	20

Mohr Separations Research, Inc.  
1278 FM 407 Suite 109  
Lewisville, TX 75077

Email: [info@oilandwaterseparator.com](mailto:info@oilandwaterseparator.com)

© Mohr Separations Research, Inc. 2002-2014

Telephone: 918-299-9290  
Telefax: 866-910-5912

Website: [oilandwaterseparator.com](http://oilandwaterseparator.com)