

# ALSI LLS (Liquid to Liquid) Hydrocyclone Series



**ALSI LLS Series Hydrocyclones** are specifically designed for the paint finishing industry. The early wash stages often times have floating and partially emulsified oils from the stamping process. This contaminant leads to product defect and premature dumping of wash stage cleaner solutions.

Based on enhanced gravitational separation and free vortex action the hydrocyclone is an excellent device for oil removal.

The hydrocyclone has a cylindrical inlet followed by a tapered tube with solution entering the tangential tube opening. These forces combined with differential pressures up to 55 PSID across the LLS Series unit separate the heavy phase water to exit at the underflow while the lighter phase oil goes in reverse flow and exits the overflow at the opposite end.

## Operating Principle Features

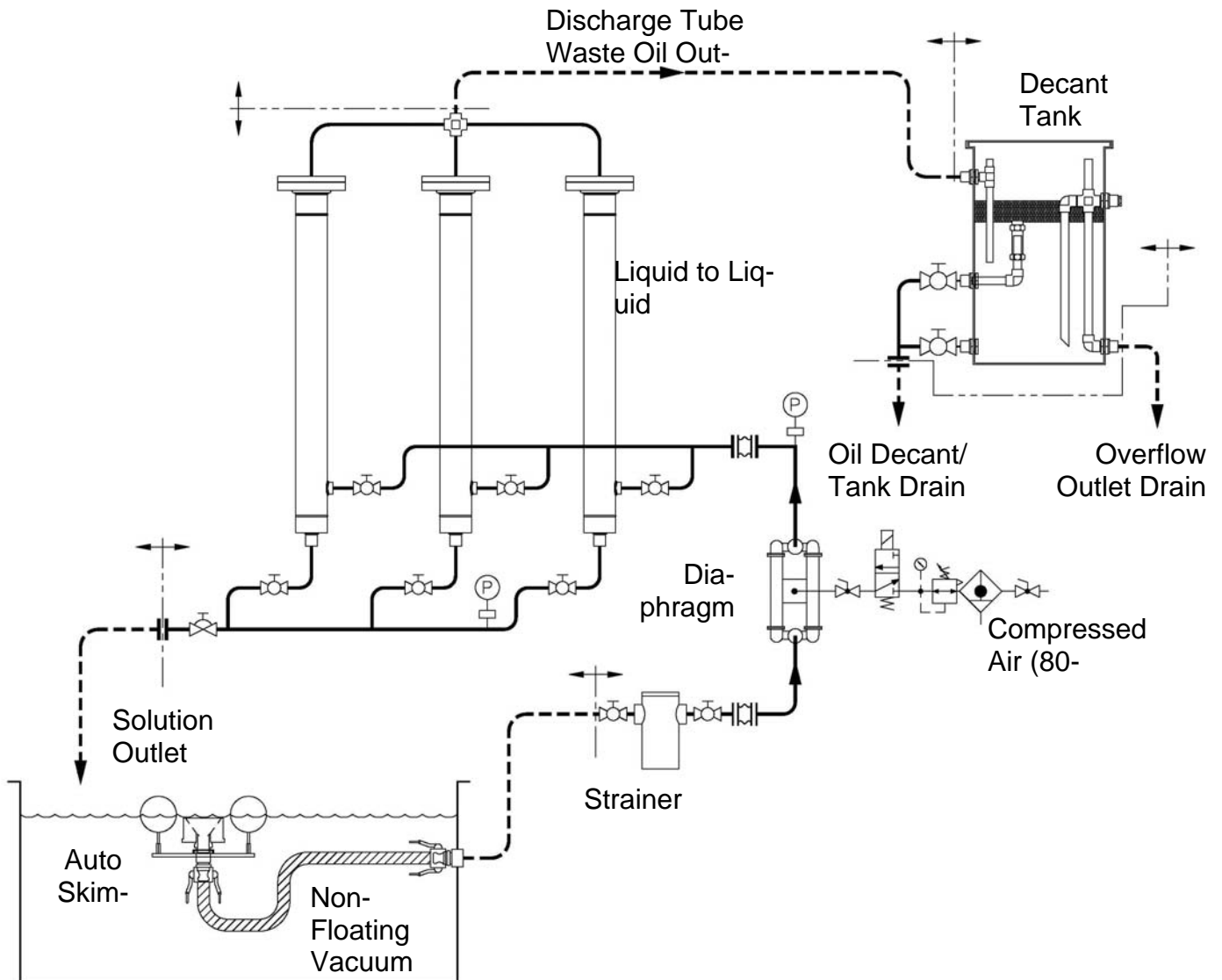
De-oiling liquid to liquid hydrocyclones are used to separate two liquids of differing densities, e.g. oil from water. Usually driven by process pressure, oily water enters the hydrocyclone vessel through the inlet to the oil cone and is directed to flow along the liner wall. Forced down the liner wall, the fluid accelerates in the narrowing cross-section, and forces required to separate the oil from the water are achieved. Centrifugal forces acting upon the heavier water phase cause it to migrate to the wall of the tapered section. The lighter oil phase is displaced as a result of this and forms a central, low-pressure core which is removed via the overflow oil reject port. The outer clean water vortex exits via the

## AIR and LIQUID SYSTEMS, Inc.

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# Product Design

The ALSI LLS Series is a completely self contained modular system which includes all the components required for operation. Each ALSI oil core is individually mounted in a separate stainless steel vessel. Inlet feed is accomplished by a special diaphragm pump protected by a stainless steel strainer. All required pump controls are included. Other optional components are offered to maximize oil concentration and minimize solution loss. A stainless steel floating weir arrangement with chemical resistant suction hose and quick disconnects provides for surface skimming of the solution. The manually adjustable automatic skimmer can be set to pull from different surface depths. A separate decant tank further concentrates the contaminated oil for disposal.



# Oil Core

# Benefits

- No moving parts; minimize maintenance
- Removable head and oil core allows easy disassembly and cleaning
- Stainless steel construction suited for corrosive environments

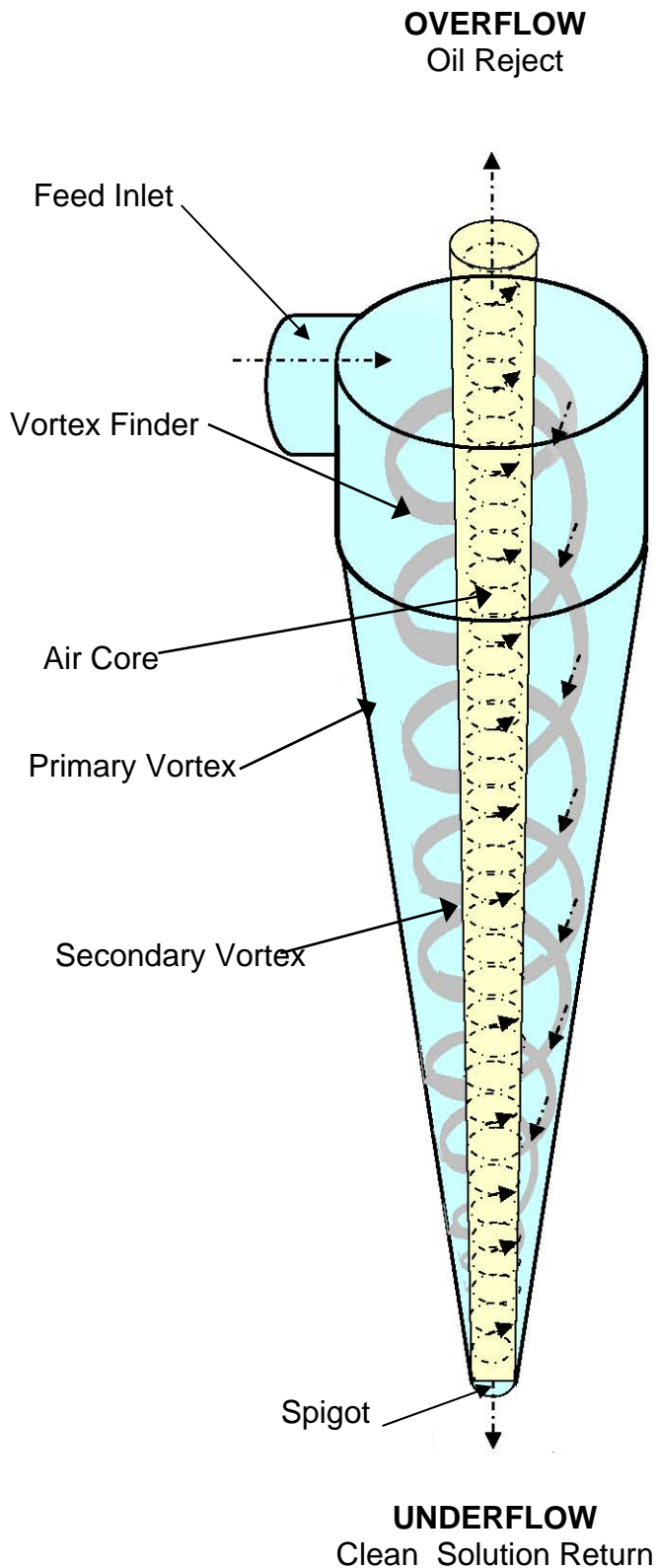
# Options

Higher capacity applications can be provided for utilizing a single vessel with up to 100 oil cores.

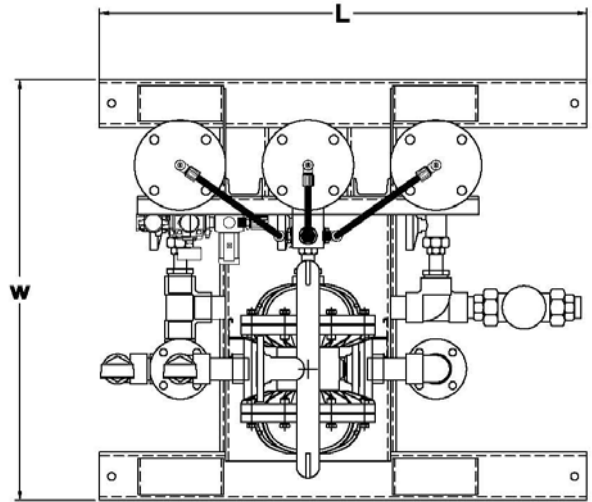
When turn down is required our modular design allows for isolation of individual vessels.

Self adjusting (with optional float assembly) for use during and after production based on system requirements.

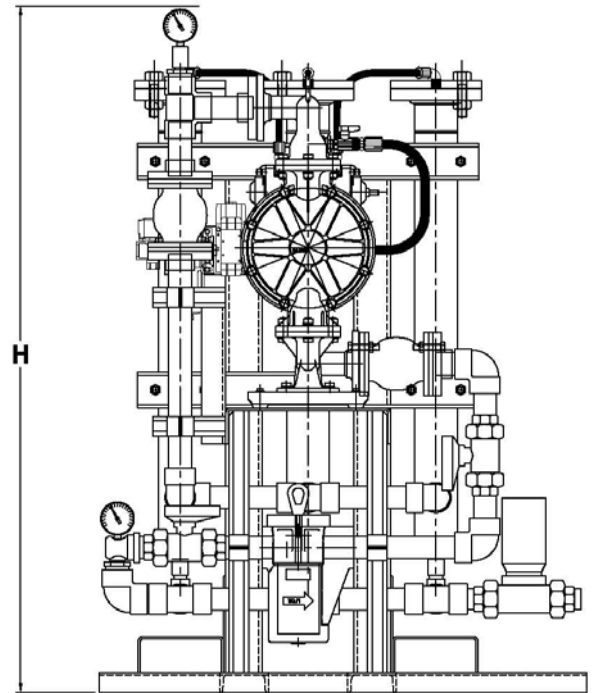
Manual or automatic decant tank option to further concentrate oil prior to removal.



# LLS Hydrocyclone Specifications



**PLAN VIEW**



**FRONT ELEVATION**

ALSI LLS MODEL	LENGTH	WIDTH	HEIGHT	Pipe Connections			FLOW RATE * (GPM)	
				INLET (Camlock)	OVERFLOW (O.D. Tube)	UNDERFLOW (FNPT)	MIN	MAX
AL-LLS-1	35" (889mm)	32" (813mm)	57" (1448mm)	1 1/2 " (40DN)	3/4" (20DN)	1 1/2" (40DN)	8	8.4
AL-LLS-2	35" (889mm)	32" (813mm)	57" (1448mm)	1 1/2 " (40DN)	3/4" (20DN)	1 1/2" (40DN)	16	16.8
AL-LLS-3	35" (889mm)	32" (813mm)	57" (1448mm)	1 1/2 " (40DN)	3/4" (20DN)	1 1/2" (40DN)	24	25.2

\*Based on 50-55 PSID

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