



858-300-EHC Smart-VAC™ Phosphate Ester Conditioning System

The Model 858-300-EHC Smart-VAC™ phosphate ester fluid conditioning system removes water, acids, and particulate from phosphate ester fluids. Separation of water from fluids by removing it in the form of water vapor, rather than removing it in the liquid state, is the principle used in Smart-VAC™ technology. In this way, water can be removed from fluids without regard to the degree of emulsification. Even the most stubborn, stable fluid/water emulsions can be separated. Smart-VAC™ vacuum distillation is different than other dehydration processes, as it takes water from the liquid state and transforms it into water vapor so it can easily be removed. Kaydon Filtration Model 858-300-EHC Smart-VAC™ system delivers less than 1,000 ppm water content, acid level to .1 KOH or less, and ISO 16/14/12 cleanliness level.

Benefits:
Acid Removal - Acid removal elements bring fluid acid level to less than .1 KOH.

Water Removal with DYNA-SAV® Vacuum Distillation Process
-Most efficient water removal process with unique water condensing process. Water removal to less than 1,000 ppm.
-Water promotes acid production, so effective water removal equipment helps to maintain the acid level to less than .1 KOH.
-Lower water levels also help to eliminate low resistivity, which can lead to electro-kinetic wear of the servo valves.

Particulate Removal
-Low particle contamination helps system reliability. Small abrasive particles are damaging to the system.
-Cleanliness levels of less than ISO 16/14/12 provide high oil quality.

SPECIFICATIONS & DETAILS	
System Flow	5 GPM/19 LPM (maximum flow)
Sizing	Up to 900 gallons/3,400 liters
System Pressure	100 psig/7 BAR (maximum)
Environmental Parameters	NEMA 12/IP53 Minimum Temperature: 32F (0C) Maximum Temperature: 130F (54C)
Operating Voltage	460 VAC / 3PH / 60Hz / 26 AMPS
Materials of Construction	Metals: Carbon Steel, Stainless Steel Elastomers: Viton Paint: compatibl w with phosphate ester fluids
Pressure Vessel	Carbon Steel
Inlet/Outlet Connections	Type: NPT Inlet and Outlet: 1 inch (25.4 mm)
Oil Discharge Pump/Motor	Pump Type: Gear - positive displacement Motor: 1HP (.75 KW)
Vacuum Pump/Motor	Pump Type: Liquid Ring, Motor: 1.5 HP (1.12 KW) Requirement: .5 gpm (2 lpm) water flow
Fluid Compatibility	ISO 32, 46, and 68 Phospahte Ester fluids
Filter Stages	1st Stage: 30 mesh pump protection strainer 2nd Stage: water removal 3rd Stage: acid removal 4th Stage: particulate removal
Performance	Particulate: ISO Cleanliness Code 16/14/12 ⁽¹⁾ Water: removal to less than 1000 ppm ⁽²⁾ Acid: less than .1 mg KOH/g
Weight	1,000 lbs. (455 kg) approximate
Dimensions	48 L" x 28"W x 72"H (1220 mm x 712 mm x 1830 mm)

FEATURE AND BENEFITS:

SKID MOUNTING WITH PORTABILITY: All components are conveniently mounted on a single skid with four casters for easy system positioning. Inlet/outlet hoses are included.

DYNA-DRY™ VACUUM DISTILLATION PROCESS TOWER CHAMBERS:
The distillation process tower chamber-in-chamber design allows for internal water condensing, providing swifter and more efficient water removal than external water condensers. This water removal process is enhanced by utilizing Kaydon Filtration disperser elements in the interior chamber. The disperser elements receive the incoming oil/water emulsion and thinly distribute the emulsion over its broad area. Exposing thin layers of the oil/water emulsion to the combination of system induced heat and vacuum instantaneously vaporize (distill) water from oil to provide outlet water-in-oil concentrations of less than 1,000 ppm.



FEATURE AND BENEFITS (continued)

POLISHING FILTER: Polishing-filter removes damaging particulate and debris before the oil exits the system. The polishing filter vessel is equipped with a differential pressure gauge and manual air release valve. The filter element filtration is rated at Beta (4.2) = 1000. The polishing filter vessel is rugged, heavy-duty, and carbon steel constructed. Element change-out quick and simple. The element sealing design provides a positive and secure seal against fluid by-pass around the filter element.

VACUUM CHAMBER PORT HOLE VIEWING: Provides visual indication into the interior of the vacuum vessel. Serves as an fluid sight to view fluid clarity, plus is a tool for inspection of vacuum chamber fluid level.

FULL STATUS CONTROL PANEL: The control panel provides operators a simple and easy to understand view of operation of the system. System controls such as starting, stopping and setting desired heater temperature set point are available. In addition, important parameters of the system are easily viewed. The 858 control panel features include:

- ON/OFF Process Control - the simple control format makes operator training quick and easy.
- Heat ON Light - control panel gives a clear indication of when the heater is operating.
- Low Flow and High Level, and High Temperature Lights
If a low flow rate condition or high oil level in the internal vacuum chamber exists, the 858 system will automatically adjust and correct, providing continuous and reliable operation.
- Temperature Controller and High Temperature Switch
The 858 system controller allows the operator to set the desired distillation temperature (factory set at 135F / 57C). In addition, a safety high temperature switch set at 180F (82C) prevents overheating.

AUTOMATIC AIR RELEASE VALVES: Allows for the efficient removal of trapped air in the filter vessels. Elimination of air provides for complete fluid filling of vessels, which permits complete use of element surface area.

GAUGES: In addition to the control panel, a vacuum gauge is installed on the vacuum chamber to indicate vacuum level and the polishing filter vessel is installed with a differential pressure gauge to indicate when the polishing element needs replacement.

OIL HEATER: Quickly brings oil to the optimum temperature for distillation.

FLOW RATE MODULATION: The 858 system continuously and automatically balances incoming and outgoing oil flow. Self adjusting flow modulation prevents ongoing operator adjustment and involvement.

CONSUMABLES		
MODEL/DESCRIPTION	QTY	PART NUMBER
DISPERSER ELEMENT	1	A910626
ACID REMOVAL ELEMENT	2	A910XXX
POLISHING ELEMENT ⁽³⁾	1	A910648
FILTER VESSELS SEAL KIT ⁽⁴⁾ (includes vacuum, acid removal, and polishing vessel lid seals)	1	FSK-300-EHC

WATER VAPORIZATION CONTROL: In the distillation process, as water is vaporized from the fluid, a foam forms and is drawn into the vacuum pump. As the foam is transported through the condenser by the suction of the vacuum pump, the foam coats the inside of the condenser, reducing heat transfer. In addition, the foam is released through the system waste water discharge, requiring further waste-water treatment. Kaydon Filtration prevents the intrusion of the foam with the installation of a water vaporization control that retards the foam from growing. Other vacuum systems that do not provide effective foam control must be constantly monitored.

FILTER VESSELS: The filter vessels are carbon steel. The polishing pressure vessel is rated for 150 PSIG (10.5 kg/cm²) maximum working pressure at 250 F (121C).

SUCTION AND DISCHARGE HOSES: 10 foot (3 meter) suction and discharge hoses are included as standard equipment.

ISOLATION VALVES: Allow for convenient way to isolate the system for filter changes.

NEMA 4 / IP54 Enclosure (optional): Recommended for outdoor installations. Protects against dust, rain, and hose directed water.

NEMA 4X Enclosure (optional): Recommended for installations where corrosion (such as rust) is a potential. Protects against corrosion, dust, rain, and hose directed water.

380 VAC / 3 PH / 50 Hz or 575 VAC / 3 PH / 60 Hz (optional): 460 VAC is the standard operating voltage, but 380 VAC and 575 VAC are available.

Lifting Lugs (optional): Lifting lugs are added on the filter vessel cover and are designed to allow lifting of the assembly from above.

Export Crating (optional): Heavy duty and rugged crate for extra protection for overseas shipments.

OPTIONS
380VAC / 3PH / 50Hz
575VAC / 3PH / 60Hz
NEMA 4X Enclosure
NEMA 4 / IP54 Enclosure
Lifting Lugs
Export Crating

FOOTNOTES

- (1) As measured with inline automatic particle monitor calibrated to ISO 11171 and influent no greater than ISO 22/19/17
- (2) Total Water content (free, emulsified and dissolved) as measured by ASTM D6304-04 (Karl Fischer method)
- (3) Removes 99.9% of all particles 4.2 micron and larger per ISO 16889
- (4) Required for element change

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