VUD

Vac-U-Dry Vacuum Dehydrators

The optimized balance between heat, vacuum, process design and an easy, user friendly operating system for removal of water and particulate from hydraulic and high viscosity lubricating oils.
Equipped with generously sized, high efficiency filtration, the VUD is the ultimate oil purifier.

Keeping fluids clean and dry extends component and bearing life, increases productivity, minimizes downtime and extends useful fluid life. The VUD is ideal for removal of all forms of water, including free, emulsified and dissolved water and gas from hydraulic and lubricating oils.

Donaldson.
HY-PRO™

Contamination is complicated. Removing it is easy.

With features including viscosity specific dispersal element designs, fin tube low watt density heaters, oversized particulate filter, adjustable recirculation line, auto phase detection and reversal, programmable thermostat, proprietary vacuum chamber level control, foam sensor and auto-drain, VUD is the ultimate contamination removal system.

Results you can see.

Clear covers on the vacuum chamber and condensate collection tanks let you see what is really happening inside the VUD. You will know when you start removing water or when you are almost below saturation point with just a glance.

Never stops working.

VUD is a workhorse designed for 24/7 unattended operation. With a dual condensate collection tank design, auto water level sensors and automatic drain valves, there is no need to stop to drain water. The oversized condenser and dual condensate collection tanks work together to keep the water out of the vacuum pump.

Integrated intelligence.

The VUD smart relay enabled control panel makes start-up and shut-down safe and operator friendly so that everything is controlled with the simple push of a button. To take it even further, the optional PLC Touch Screen provides operating controls and data right at your fingertips.

Filtration starts with the filter(s).

Particulate media options down to $\beta 2.5_{[c]} = 1000$ and viscosity specific dispersal elements provide you with the best filtration and water removal capabilities in the world, period.

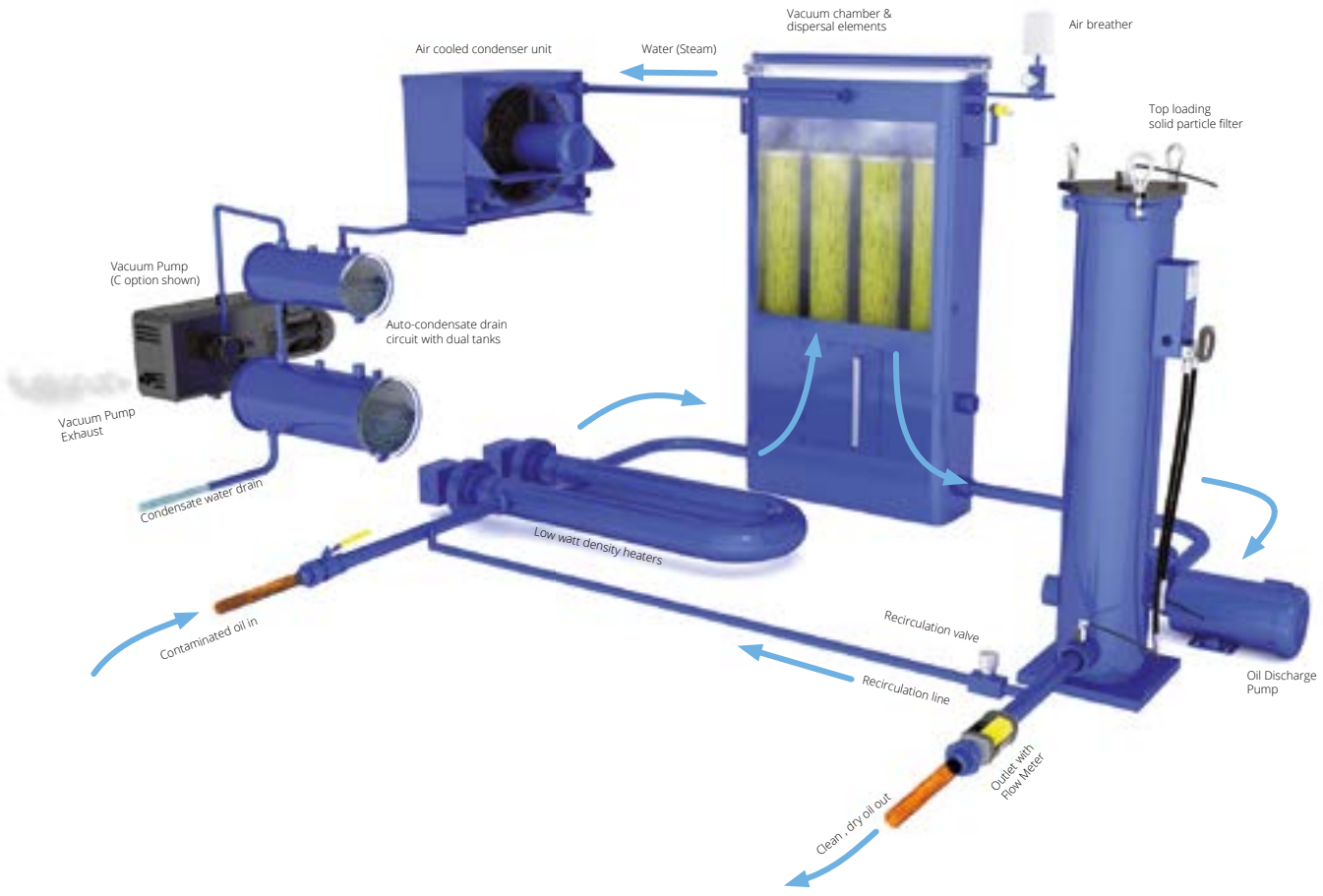
Completely, entirely, totally, all inclusive.

When it comes to comprehensive filtration and water removal, the buck stops here. VUD customization takes on many forms such as unique size requirements, combining VUD with other technologies such as FRF acid or turbine lube oil varnish removal, ATEX electrical standards, all to deliver the perfect oil purification system to meet your exact needs.

The Unmatched Purification Process

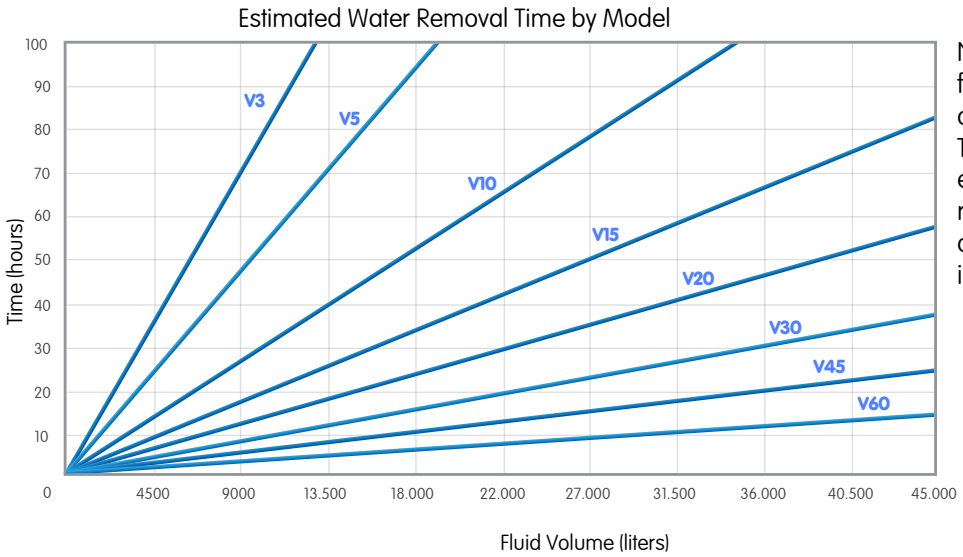
How it works.

Contaminated oil is drawn into the Vac-U-Dry purifier by a high output vacuum pump. The oil passes through the low watt density heater where heated to optimum temperature for the dehydration process (150°F, 66°C). The oil enters the vacuum chamber passing through specially designed dispersal elements which create a thin film of oil that is exposed to the vacuum. The water is vaporized and then drawn into the condenser where it liquefies and drains into the condensate tank.
The dehydrated oil flows to the bottom of the vacuum chamber and is removed by the discharge pump where it is pumped through the high efficiency particulate filter assembly (βx[c] >1000) and returned to the system. The recirculating line helps the Vac-U-Dry reach optimum temperature in cold start situations and can be used to throttle machine inlet and outlet flow. From here, your oil can either be recirculated for additional temperature and contamination control or returned to your reservoir or equipment where it will operate more efficiently than ever.



VUD - Vac-U-Dry Vacuum Dehydrators

The Proven Performer



No other technology removes water faster or more safely with less chance of foaming than the Hy-Pro VUD.
The graph here represents the estimated time required per model to remove water from 5000 ppm (0.5%) down to 150 ppm (0.015%) for increasing reservoir sizes.

Vacuum Pump Options

VUDs come standard with several vacuum pump options to best suit your application needs. Options C and D offer maximum portability to use your VUD in almost any location. Whether you're using your VUD to service multiple systems or for service work, you'll have unmatched filtration everywhere you need it.

C – Dry Seal (Dry Rotary Claw)

Long maintenance interval (10,000 hour synchronizing gear oil change) and great for portability. With excellent corrosion resistance to condensate exposure, this offers our lowest cost of ownership vacuum pump option.

D – Dry Seal (Lubricated Rotary Vane)

500-750 hour maintenance interval (lubricating oil and filter change), excellent for portability, compact size and low weight. The D option vacuum pump offers our lowest initial cost of ownership.

L – Liquid Ring

Ideal for dedicated VUD applications where ambient conditions are hot and humid and portability is not required. Minimum 3 gpm (11 lpm) external process water is required.
Maintenance includes maintaining clean process water and balancing compound pressure gauge.

Vacuum power that doesn't suck.

Pulled by the vacuum pump, oil passes through the heater housing and vacuum chamber dispersal elements, providing smooth flow for optimum water removal without foam.

The tall vertical vacuum chamber achieves maximum oil film surface area on the dispersal elements, aided by proprietary variable flow level control, to remove water from your oil incredibly fast with unmatched consistency.

Dispersal elements.

Inside every VUD's vacuum chamber is the secret to its high efficiency water removal success. Viscosity range specific dispersal elements configured properly means faster water removal without the foaming issues that come with a one size fits all dispersal media for hydraulic and lube oils.

Take control of your system, automatically.

The Inlet Control Valve (N/C Solenoid) automatically closes when the VUD is not in operation, preventing the unit from siphoning fluid from a reservoir or flooding from a positive head inlet situation.

Synced to your system.

Achieve optimum VUD process temperature faster and ease start-up on high viscosity oils, especially when they're cold. Also ideal for adjusting overall VUD return flow down when using VUD on a small reservoir or gearbox. Simple and effective, the recirculation line adds incredible flexibility to fine tune the VUD to your system.

You can't beat the heat.

With no direct contact with the heating element, your turbine oil will safely and quickly get up to temperature without the risk of burning. The programmable temperature control with integral no-flow switch prevents oil damage and allows you to heat your fluids at your own pace. And what's more: all this comes standard on every VUD.

VUD Specifications

VUD

Model	V3D	V5C	V10C	V15C	V20C	V30C	V45C	V60C	V100C
Height [1]	152 cm	191 cm	191 cm	191 cm	191 cm	226 cm	191 cm	226 cm	226 cm
Length [1]	122 cm	142 cm	142 cm	142 cm	183 cm	213 cm	213 cm	244 cm	305 cm
Width [1]	82 cm	82 cm	82 cm	82 cm	91 cm	102 cm	122 cm	153 cm	244 cm
Weight [1]	386 kg	908 kg	1089 kg	1134 kg	1270 kg	1406 kg	1542 kg	1678 kg	2087 kg
Dispersal Element Quantity	2 x 28 cm	2 x 56 cm	3 x 56 cm	3 x 56 cm	4 x 56 cm	4 x 91 cm	8 x 56 cm	8 x 91 cm	16 x 91 cm
Replacement Elements	Dispersal Elements – use Dispersal Element code from your equipment part number in place of *:								
	HP*EL11	HP*EL22	HP*EL22	HP*EL22	HP*EL22	HP*EL36	HP*EL22	HP*EL36	HP*EL36

Filter Elements – use corresponding codes from your equipment part number:

Filter Element Part Number
HP107L36 – [Media Selection Code][Seal Code]

Example
HP107L36–10MV

Operating Temperature

Fluid Temperature
30°F to 180°F
(0°C to 82°C)

Ambient Temperature
-4°F to 104°F
(-20C to 40C)

Materials of Construction

Frame
Painted steel & 304 stainless

Filter assembly
Carbon steel

Condensate tanks
Stainless steel

Element bypass valve
Nylon

Media Description

M
G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[C]} = 1000$ ($\beta x = 200$)

A
G8 Dualglass high performance media combined with water removal scrim. $\beta x_{[C]} = 1000$ ($\beta x = 200$)

W
Stainless steel wire mesh media $\beta x_{[C]} = 2$ ($\beta x = 2$)

[1] Dimensions are approximations taken from base model and will vary according to options chosen.

VUD Part Number Builder

VUD									-		-	
	Flow Rate	Vacuum Pump	Power Options	Dispersal Element	Media	Seals	Heaters	Condenser		Special Options		Multi Function Unit

Flow Rate [1]

3	11 l/min	**30**	120 l/min
5	20 l/min	**45**	180 l/min
10	40 l/min	**60**	240 l/min
15	60 l/min	**100**	400 l/min
20	75 l/min		

Vacuum Pump Type

C	Dry seal (rotary claw)
D	Dry seal (lubricated rotary vane)
L	Liquid ring (external water supply required)

Power Options

50 Hz		60 Hz	
38	380 V AC, 3P	**23**	208-230 V AC, 3P
41	415 V AC, 3P	**46**	460-480 V AC, 3P
52	525 V AC, 3P	**57**	575 V AC, 3P

Dispersal Element

D	Pleated dispersal element - all synthetic media (viscosity ≤ ISO VG 220)
W	Metallic packed dispersal element - not for use in phosphate ester systems (viscosity ≥ ISO VG 460)
P*	Pleated stainless steel dispersal element (ISO VG 150-320)

Media Selection

G8 Dualglass		Stainless wire mesh	
1M	$\beta 2.5_{[C]} = 1000$, $\beta 1 = 200$	**25W**	25µ nominal
3M	$\beta 5_{[C]} = 1000$, $\beta 3 = 200$	**40W**	40µ nominal
6M	$\beta 7_{[C]} = 1000$, $\beta 6 = 200$	**74W**	74µ nominal
10M	$\beta 12_{[C]} = 1000$, $\beta 12 = 200$	**149W**	149µ nominal
16M	$\beta 17_{[C]} = 1000$, $\beta 17 = 200$		
25M	$\beta 22_{[C]} = 1000$, $\beta 25 = 200$		

Sealss

V	Fluorocarbon
E [2]	EPR seals (for Skydrol use)

Heaters

9	9 kW	**48**	48 kW (4 x 12 kW)
12	12 kW	**64**	64 kW (4 x 16 kW)
24	24 kW (2 x 12 kW)	**80**	80 kW (5 x 16 kW)
36	36 kW (3 x 12 kW)	**96**	96 kW (6 x 16 kW)

Condenser

A	Air cooled
B	Air & liquid cooled
L	Liquid cooled

Speciales Options

8	8" solid wheel upgrade	**P**	PLC touch screen operation & data
A [3]	Auto condensate drain	**Q** [4,5]	Maintenance spares & repair kit
B	Pre-filter bag filter housing	**P9** [6]	Phosphate ester fluid compatibility modification
C	CE marked + international crating (V5-V60)	**R** [3]	Electrical phase reversal switch
D	Dirty filter indicator alarm light	**S**	Inlet line basket strainer
E	Carbon vacuum pump exhaust filter	**S9** [7]	Skydrol fluid compatibility modification
F	Vacuum chamber foaming sensor	**T** [4]	Hose kit (suction & return hoses + wands)
G	316 stainless condensate wet parts (304 standard)	**U**	50' (15 m) electrical cord without plug
H	Manual reset hour meter (in addition to std. non-reset)	**V** [4]	Inlet control valve (for positive head inlet)
J	Individual heater selector switches	**W**	Water sensor and indicator
K	Sight flow indicator (wheel type)	**X** [8]	Explosion proof - Class 1, Div 2 Group C+D
L	Lifting eye kit	**Y**	VFD variable speed motor frequency control
M	Discharge line flow meter	**Z**	On site start-up training (1 x 10 hour shift)
O	On-board PM-1 particle monitor		

Multi Function Units

omit	Standard VUD capabilities
COT	COT coalesce vessel adder + auto water drain function (sized to handle 100% of VUD flow)
ICBPE [9]	Phosphate ester acid & dissolved metal removal (contact factory for alternate fluids)
SVR1200CT [9]	Varnish removal & prevention side loop (5 gpm continuous element flow up to 8000 gal/30,000 liter reservoir)

[1] 1Nominal flow rates at 60 Hz motor speeds.
[2] Contact factory for other fluid option compatibility.
[3] Standard supplied options, must be included in part number.
[4] Recommended option.
[5] Repair & spares kit includes common consumable and select critical spares such as flow switches, fuses, and tank lids.
[6] When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[7] When selected, must be paired with Seal option "E." Contact factory for more information or assistance in fluid compatibility.
[8] Consult factory for other explosion proof options.
[9] Varnish and ICB add-on technologies condition a portion of maximum VUD flow. Standard SVR1200CT flow rate ≤ 5 gpm. ICB add-on will be sized to reservoir volume.

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