

# 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.



[hyprofiltration.com/](http://hyprofiltration.com/)



## 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 PLCTouch Screen provides operating controls and data right at your fingertips.

## Filtration starts with the filter(s).

Particulate media options down to  $\beta_{3_{Cl}} \geq 4000$  and viscosity specific dispersal elements provide you with the best filtration and water removal capabilities in the world, period.



## Completely, entirely, totally, all inclusive.

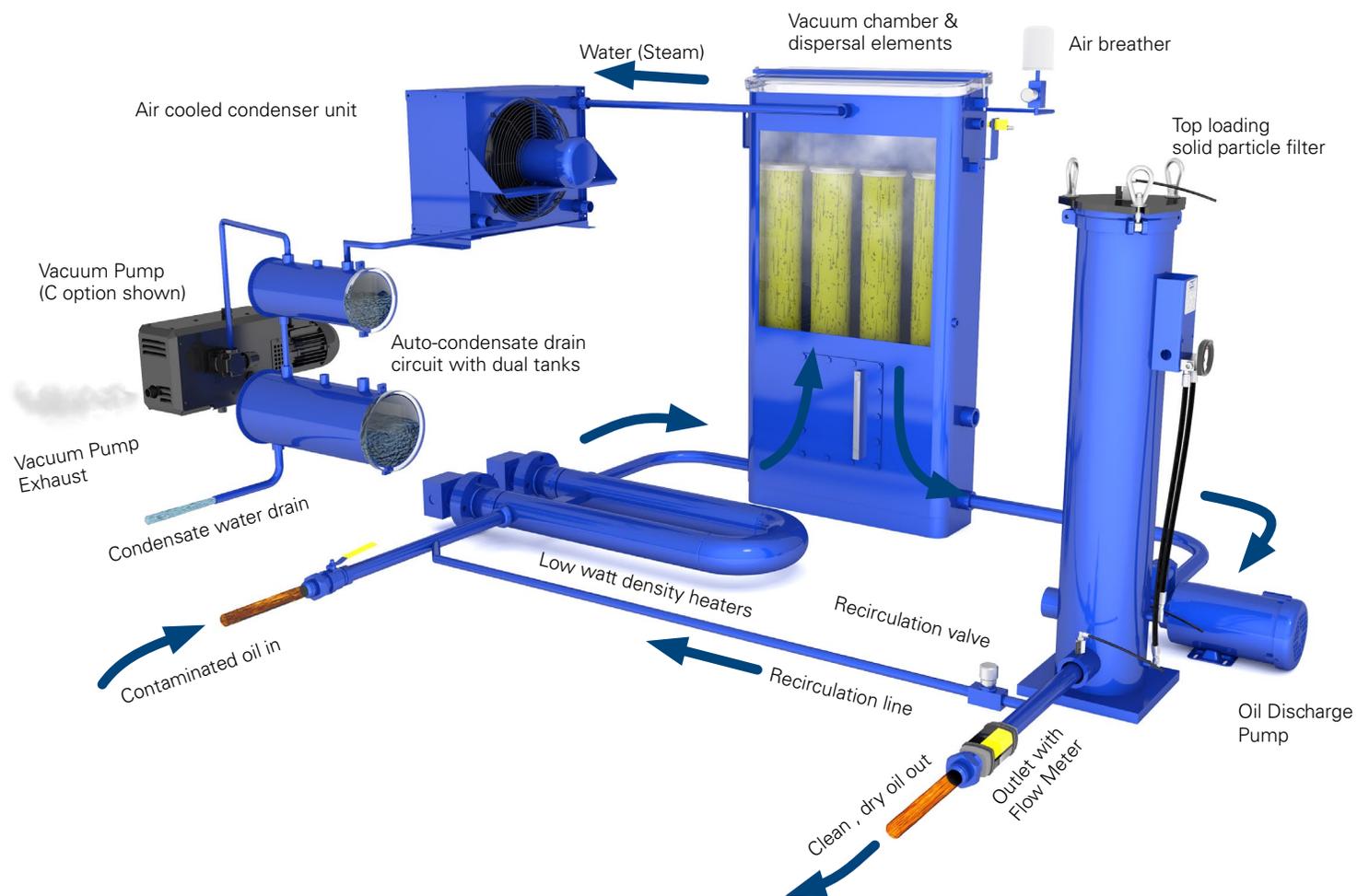
When it comes to comprehensive filtration and water removal, the buck stops here. VUD customization takes on many forms such as unique size requirements, combining VUD with other technologies such as FRF acid or turbine lube oil varnish removal, all to deliver the perfect oil purification system to meet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

# The Unmatched Purification Process

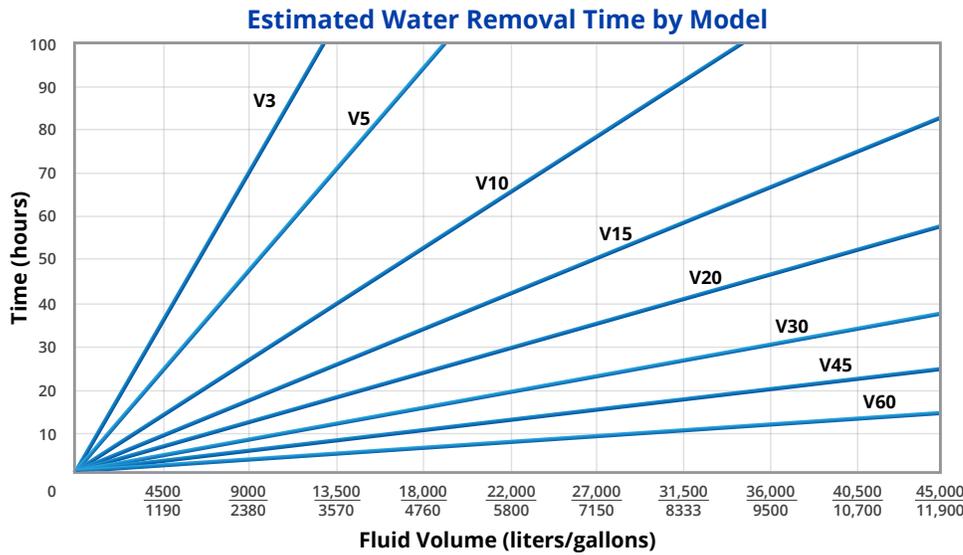
## How it works

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 ( $\beta_{x_{[c]}} > 4000$ ) 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.



# The Proven Performer



No other technology removes water faster or more safely with less chance of foaming than the Donaldson 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

Model	V3C	V5C	V10C	V15C	V20C	V30C	V45C	V60C	V100C
Height <sup>1</sup>	60" (152 cm)	75" (191 cm)	75" (191 cm)	75" (191 cm)	75" (191 cm)	89" (226 cm)	75" (191 cm)	89" (226 cm)	89" (226 cm)
Length <sup>1</sup>	48" (122 cm)	56" (142 cm)	56" (142 cm)	56" (142 cm)	72" (183 cm)	84" (213 cm)	84" (213 cm)	96" (244 cm)	120" (305 cm)
Width <sup>1</sup>	32" (82 cm)	32" (82 cm)	32" (82 cm)	32" (82 cm)	36" (91 cm)	40" (102 cm)	48" (122 cm)	60" (153 cm)	96" (244 cm)
Weight <sup>1</sup>	850 lbs (386 kg)	2000 lbs (908 kg)	2400 lbs (1089 kg)	2500 lbs (1134 kg)	2800 lbs (1270 kg)	3100 lbs (1406 kg)	3400 lbs (1542 kg)	3700 lbs (1678 kg)	4600 lbs (2087 kg)
Dispersal Element Quantity	2 x 11" (28 cm)	2 x 22" (56 cm)	3 x 22" (56 cm)	3 x 22" (56 cm)	4 x 22" (56 cm)	4 x 36" (91 cm)	8 x 22" (56 cm)	8 x 36" (91 cm)	12 x 36" (56 cm)
Operating Temperature	<b>Fluid Temperature</b> 30°F to 180°F (0°C to 82°C)				<b>Ambient Temperature</b> -4°F to 104°F (-20C to 40C)				
Materials of Construction	<b>Frame</b> Painted steel & 304 stainless		<b>Filter assembly</b> Carbon steel		<b>Condensate tanks</b> Stainless steel		<b>Element bypass valve</b> Nylon		
Media Description	<b>M</b> G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x_{[C]}} \geq 4000$			<b>A</b> G8 Dualglass high performance media combined with water removal scrim. $\beta_{x_{[C]}} \geq 4000$		<b>W</b> Stainless steel wire mesh media $\beta_{x_{[C]}} \geq 2$ ( $\beta_x \geq 2$ )			

<sup>1</sup>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

<b>Flow Rate<sup>1</sup></b>	<b>3</b>	3 gpm (11 lpm)	<b>30</b>	30 gpm (114 lpm)
	<b>5</b>	5 gpm (18.9 lpm)	<b>45</b>	45 gpm (170 lpm)
	<b>10</b>	10 gpm (37.9 lpm)	<b>60</b>	60 gpm (225 lpm)
	<b>15</b>	15 gpm (56.8 lpm)	<b>100</b>	100 gpm (379 lpm)
	<b>20</b>	20 gpm (75.7 lpm)		

<b>Vacuum Pump Type</b>	<b>C</b>	Dry seal (rotary claw)	<b>L</b>	Liquid ring (external water supply required)
	<b>D</b>	Dry seal (lubricated rotary vane)		

<b>Power Options</b>	<b>60 Hz</b>		<b>50 Hz</b>	
	<b>23</b>	208-230 V ac, 3P	<b>38</b>	380 V ac, 3P
	<b>46</b>	460-480 V ac, 3P	<b>41</b>	415 V ac, 3P
	<b>57</b>	575 V ac, 3P	<b>52</b>	525 V ac, 3P

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

<b>Media Selection</b>	<b>G8 Dualglass</b>		<b>Stainless wire mesh</b>	
	<b>1M</b>	$\beta_{3(c)} \geq 4000$	<b>25W</b>	25 $\mu$ nominal
	<b>3M</b>	$\beta_{4(c)} \geq 4000$	<b>40W</b>	40 $\mu$ nominal
	<b>6L</b>	$\beta_{6(c)} \geq 4000$	<b>74W</b>	74 $\mu$ nominal
	<b>10M</b>	$\beta_{11(c)} \geq 4000$	<b>149W</b>	149 $\mu$ nominal
	<b>16M</b>	$\beta_{16(c)} \geq 4000$		
	<b>25M</b>	$\beta_{22(c)} \geq 4000$		

<b>Seals</b>	<b>B</b>	Nitrile (Buna)
	<b>V</b>	Fluorocarbon
	<b>E<sup>2</sup></b>	EPR seals (for Skydrol use)

<b>Heaters</b>	<b>9</b>	9 kW	<b>56</b>	56 kW (2 x 12 kW) (2 x 16 kW)
	<b>12</b>	12 kW	<b>64</b>	64 kW (4 x 16 kW)
	<b>24</b>	24 kW (2 x 12 kW)	<b>80</b>	80 kW (5 x 16 kW)
	<b>36</b>	36 kW (3 x 12 kW)	<b>96</b>	96 kW (6 x 16 kW)
	<b>48</b>	48 kW (4 x 12 kW)		

<b>Condenser</b>	<b>A</b>	Air cooled	<b>L</b>	Liquid cooled
	<b>B</b>	Air & liquid cooled		

<b>Special Options</b>	<b>3</b>	LFM3 Filter Housing (3 particulate Elements)	<b>O</b>	On-board PM-1 particle monitor
	<b>4</b>	LFM4 Filter Housing (4 Particulate Elements)	<b>P</b>	PLC touch screen operation & data
	<b>8</b>	8" solid wheel upgrade	<b>P9<sup>6</sup></b>	Phosphate ester fluid compatibility modification
	<b>A<sup>3</sup></b>	Auto condensate drain	<b>R<sup>3</sup></b>	Electrical phase reversal switch
	<b>B</b>	Pre-filter bag filter housing	<b>S</b>	Inlet line basket strainer
	<b>C</b>	CE marked + international crating (V5-V60)	<b>S9<sup>7</sup></b>	Skydrol fluid compatibility modification
	<b>D</b>	Dirty filter indicator alarm light	<b>T<sup>4</sup></b>	Hose kit (suction & return hoses + wands)
	<b>E</b>	Vacuum pump exhaust filter	<b>U</b>	50' (15 m) electrical cord without plug
	<b>F</b>	Vacuum chamber foaming sensor	<b>V<sup>4</sup></b>	Inlet control valve (for positive head inlet)
	<b>G</b>	316 stainless condensate wet parts (304 standard)	<b>W</b>	Water sensor and indicator
	<b>J</b>	Individual heater selector switches	<b>X<sup>8</sup></b>	Explosion proof - Class 1, Div 2 Group C+D, Air Purge Panel
	<b>K</b>	Sight flow indicator (wheel type)	<b>X1</b>	Class 1, Div 1 Group C/D NEMA7 control panel
	<b>L</b>	Lifting eye kit	<b>X2</b>	Explosion proof class 1 div 2 group C/D NEMA7 control panel
	<b>M</b>	Discharge line flow meter	<b>Y</b>	VFD variable speed motor frequency control

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

<sup>1</sup>Nominal flow rates at 60 Hz motor speeds.  
<sup>2</sup>Contact factory for other fluid option compatibility.  
<sup>3</sup>Standard supplied options, must be included in part number.  
<sup>4</sup>Recommended option.  
<sup>5</sup>When selected, must be paired with Seal option "V". Contact factory for more information or assistance in fluid compatibility.  
<sup>6</sup>When selected, must be paired with Seal option "E". Contact factory for more information or assistance in fluid compatibility.  
<sup>7</sup>Consult factory for other explosion proof options.  
<sup>8</sup>Varnish and ICB add-on technologies condition a portion of maximum VUD flow. Standard ww flow rate ≤ 5 gpm. ICB add-on will be sized to reservoir volume. V3 uses single element housing (ICB600524)  
 For all up to date option details and compatibilities, please reference our Contamination Solutions Price List or contact customer service.



# Filtration starts with the filter.

## Lower ISO Codes: Lower Total Cost of Ownership

Donaldson Hy-Pro filter elements deliver lower operating ISO Codes so you know your fluids are always clean, meaning lower total cost of ownership and reducing element consumption, downtime, repairs, and efficiency losses.

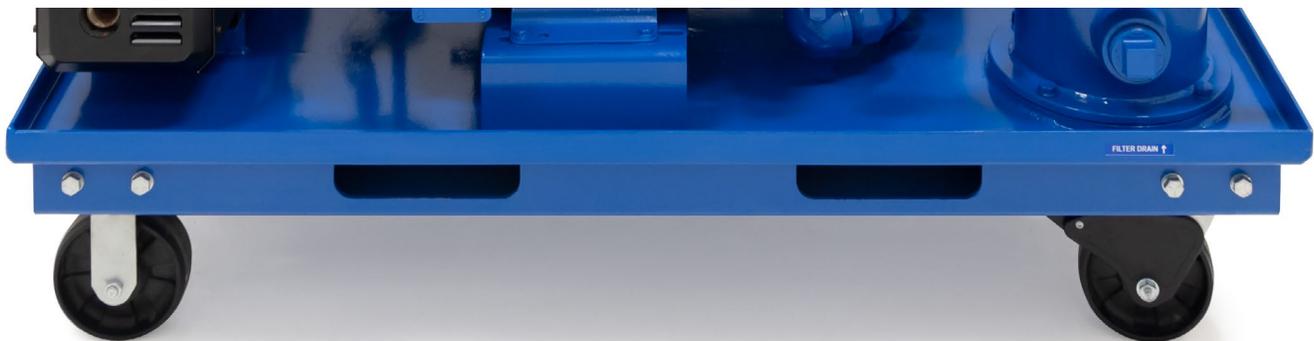
**DFE Rated Filter Elements** DFE is Donaldson Hy-Pro's proprietary testing process which extends ISO 16889 Multi Pass testing to include real world, dynamic conditions and ensures that our filter elements excel in your most demanding hydraulic and lube applications.

**Upgrade Your Filtration** Keeping fluids clean results in big reliability gains and upgrading to Donaldson Hy-Pro filter elements is the first step to clean oil and improved efficiency.

**Advanced Media Options** DFE glass media maintaining efficiency to  $\beta_{3[\text{c}]} > 4000$ , Dualglass + water removal media to remove free and emulsified water, stainless wire mesh for coarse filtration applications, and Dynafuzz stainless fiber media for EHC and aerospace applications.

**Delivery in days, not weeks** From a massive inventory of ready-to-ship filter elements to flexible manufacturing processes, Donaldson Hy-Pro is equipped for incredibly fast response time to ensure you get your filter elements and protect your uptime.

**More than just filtration** Purchasing Donaldson Hy-Pro filter elements means you not only get the best filters, you also get the unrivaled support, training, knowledge and expertise of the Donaldson Hy-Pro team working shoulder-to-shoulder with you to eliminate fluid contamination.



## Want to find out more? Get in touch.

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