



**Off-Line Filtration:**

**Where and Why Used**

The Donaldson Filter Cart, Filter Panel and Filter Buddy™ offer convenient off-line filtration, flushing and fluid transfer.\* Use them with your in-plant machinery and mobile hydraulic equipment to achieve and maintain proper ISO cleanliness levels.

\*Not for use with diesel fuel or gasoline.



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**New oil isn't clean oil.**

To optimize system performance and lengthen component life, new oil should be filtered before being transferred into a reservoir or gearbox.

Typical Fluid Applications	Viscosity	Target ISO Cleanliness & Photo Micropatch	
Hydraulic Oil Transmission Oil Glycols (<150°F) Hydraulic Based Water Emulsions	0-500 cSt	<b>16/14/11</b> 	<b>ISO 22/21/18</b> Typical Cleanliness of New, Delivered Fluids 
Gear Oils Glycols Phosphate Esters	0-6000 cSt	<b>18/16/13</b> 	

# Filter Cart

The Donaldson filter cart provides a convenient portable mode of off-line filtration, flushing and fluid transfer.\* Use it with your in-plant machinery and hydraulic equipment to achieve and maintain proper ISO cleanliness levels.

Two in-series pressure filters can provide coarse/fine particle removal or, install a water absorbing filter to obtain particulate and water removal. The powerful one horsepower motor won't bog down and when coupled with a 10 gpm/38 lpm pump it provides efficient fluid transfer and filtration. Convenience features include a rear mounted motor for better balance, a removable angled drip tray and clear braided hoses.

The Donaldson filter cart is designed with performance, convenience and safety in mind. Its value added features make it the best choice to protect your machinery and equipment from breakdowns caused by contamination.



\*Not for use with diesel fuel or gasoline.

Features	Benefits
<b>Rugged and durable frame</b>	Enables long service life
<b>High efficiency media</b>	Cost effective filtration
<b>Two pressure filters</b>	Two-stage filtration – coarse/fine or particulate/water
<b>Safety relief valve</b>	Prevents over pressurizing and damage to pump, hoses and filters
<b>Overload protected switch</b>	Prevents motor/pump from overheating

## Applications

<b>Filter new fluid</b>	New fluids are usually above the recommended ISO cleanliness levels
<b>Offline filtration</b>	Filter cart can be used to supplement existing filtration
<b>Water removal</b>	Using Donaldson water removal filters to remove free water from the system.
<b>Transferring fluid</b>	Fluid is transferred from a storage container (tote, drum, tank, etc.) to a machine's reservoir
<b>Flushing</b>	After repairs & builds machines need to be flushed thoroughly before returning to service. During equipment commissioning, new machines have original fabrication debris and dirt that has ingressed during transport and storage.

**Filter Cart Features**

**Stainless steel wands**

- Will not break, corrosion resistant

**Differential pressure indicators**

- Lets you know when to change filters

**Two pressure filters mounted in series**

- Allows for particulate/water removal or coarse/fine particle removal

**Removable angled drip tray**

- Easy clean up, fluid will not leak out when tipped back

**Clear braided hoses**

- Visually shows fluid flowing

**Suction filter**

- Protects pump



**Oil sampling valve**

- Monitors filter performance and cleanliness of oil

**Motor/Pump**

- Industrial brand  
10 gpm / 38 lpm flow

**Motor mounted on back**

- Better balance
- Fluid will not drip on motor when changing filters

**Overload protected switch**

- Protects motor and pump from overheating

**Integrated safety relief valve**

- Protects against over pressurizing

**Foam filled tires**

- Tires will not go flat

## Filter Cart Assembly Choices

### Assembly Notes

Pressure and Suction Filters must be ordered separately.

Fluid Viscosity Type & Part Number *	Low Viscosity X011297 Reference: DFC-10-P1-WM	High Viscosity X011298 Reference: DFC-HV-2-P1
Maximum Recommended Fluid Viscosity:	500 SUS or 108 cSt*	8000 SUS or 1700 cSt*
Filter Bypass Valve Settings:	Suction – 5 psid/0.34 bar Pressure – 25 psid/1.7 bar	Suction – Y strainer Pressure – 25 psid/1.7 bar
Dry Weight:	approx. 140 lbs. (63.5 kg)	approx. 175 lbs. (79.38 kg)
Electrical Service:	115 volts: 14 amp, single phase	
Cord Length:	7 ft. /2.1 m cord with storage for 50 ft./15 m	
Gear Pump:	60 Hz: 10.4 gpm/38 lpm*	60 Hz: 2 gpm/8 lpm*
Motor:	1 hp TEFC**	
Compatibility:	Mineral-based fluids, water glycols, polyol esters	
Operating Temperature:	-10° F to 150° F (-23° C to 65° C)	
Dimensions:	Height: 47" (1194 mm) Width: 24" (610 mm) Depth: 23" (585 mm) Hose/Wand assembly length: 10' (3.05 m)	
Notes:	Requires three filters	Requires six filters

## Pressure Filter Choices

Media Number	Media Type	B <sub>10</sub> = 1000 Rating	Length (in./mm)	Part No.
No. ½	Synteq™	<4 µm	14.2/361	P564468
No. 1	Synteq	5 µm	11.6/294	P170906
			11.6/294	P171273; Viton®, Epoxy
No. 2	Synteq	9 µm	11.6/294	P165675
			11.6/294	P171274; Viton, Epoxy
			14.2/361	P179763
No. 2½	Synteq	10 µm	11.6/294	P176567
No. 3	Synteq	10 µm	14.2/361	P170949
No. 4	Synteq	10 µm	7.6/193	P176207
			11.6/294	P165659
			11.6/294	P171275; Viton, Epoxy
No. 9	Synteq	23 µm	7.6/193	P176208
			11.6/294	P165569
			11.6/294	P171276; Viton, Epoxy
No. 20	Synteq	>50 µm	14.2/361	P173789
			11.6/294	P165672
N/A	Water Removal	N/A	14.2/361	P170546
			11.6/294	P179075

## Suction Filter Choices

Media Type	Beta <sub>0.1</sub> =200 Rating	Length (in./mm)	Part No.
Wire	150 µm	6.7/170	P550275
Mesh	nominal	10.7/271	P550276

\*Contact Donaldson for special order options

\*\*Totally Enclosed Fan-Cooled

\*\*\* Same filters applied to HMK05/25 Models

### Filter Notes

• Refer to table in the Technical Reference Guide for fluid compatibility with our filter media.

• Thread size is 1 3/4"-12 UNF-2B

<sup>1</sup> Filters with seals made of Buna-N® are appropriate for most applications involving petroleum oil. Filters with seals made of Viton® (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF (high water content fluids) over 150°F. Donaldson offers both types, as shown in the table above. Filters with seals made of Buna-N® are appropriate for most applications involving petroleum oil. Viton® and Buna-N® are registered trademarks of E. I. DuPont de Nemours and Company.

## Calculating the Time Required for Single-Pass Filtration

When using the filter cart for offline filtration the fluid will need to pass through the filter cart approximately seven times to achieve single-pass filtration. Use the following formula to calculate the amount of time needed to achieve single-pass filtration:

$$\text{(Reservoir Size x 7) / Filter Cart Flow Rate} = \text{Time}^{***}$$

**For example:** if you have a 50 gallon reservoir it will take approximately 35\* minutes to achieve single-pass filtration.  
(50 gallons x 7) / 10 gpm = 35 minutes

\*\*\*Times will vary depending on initial cleanliness of oil, system ingress, choice of media grades and other variables.



**Donaldson High Viscosity  
Filter Cart  
X011298**

## Filter Buddy

### Handheld Portable Filtration System

The Donaldson Filter Buddy™ is a 2 gpm (7.6 l/min) handheld portable system allowing you to kidney loop reservoirs that you normally cannot with larger filter carts.\* Its small size and light weight (approx. 45 lbs.) allows carrying up and down stairs and into tight or confined spaces. It also fits on top of a drum for convenient transferring and filtering from a drum to a reservoir.

The Filter Buddy features dual HMK04 filtration utilizing Donaldson's exclusive high efficiency Synteq™ media. The filters are plumbed in series giving you the option of coarse/fine particle removal or install a water absorbing filter for water/ particle removal.

There are two models available: a standard (low viscosity) version for fluids up to 900 SUS and a high viscosity version for fluids up to 8000 SUS.

\*Not for use with diesel fuel or gasoline.



Features	Benefits
Rugged and durable frame	Enables long service life
Compact size	Allows filtration in hard to reach locations
High efficiency media grades	Cost effective filtration
Dual stage filtration	Coarse/fine or water/particulate removal
Overload protected switch	Prevents motor/pump from overheating
Sample ports	Enables system cleanliness measurements

Applications	
Fluid transfer	Ensure that the fluid you are transferring from a drum or tote is clean.
Offline filtration	Supplement existing filtration to achieve target ISO cleanliness levels.
Water removal	Using Donaldson water removal filters to remove free water from the system.
Filter new fluid	Clean up new fluids because they are usually highly contaminated. Don't contaminate your equipment with new fluids. Protect your equipment with proper filtration.

## Filter Buddy™ Assembly Choices

### Assembly Notes

Filters must be ordered separately.

Fluid Viscosity Type & Part Number*	Low Viscosity X011303 Reference: DFB-2-P1	High Viscosity X011304 Reference: DFB-HV-2-P1
<b>Electrical Service:</b>	115 volts: 8.4 amp, single phase,	230 volts: 4.2 amp, single phase
<b>Pump:</b>	2 gpm (7.6 lpm)	1.8 gpm (6.8 lpm)
<b>Motor:</b>	½ hp TEFC**	¾ hp TEFC
<b>Maximum Recommended Viscosity:</b>	900 SUS (200 cSt)	8000 SUS (1700 cSt)
<b>Compatibility:</b>	Mineral-based fluids, Water glycols, Polyol esters	
<b>Hose:</b> terminated with male NPT connections	<b>Suction:</b> 4' (1.2m) Length, ¾" (1.9 cm) OD	<b>Suction:</b> 4' (1.2m) Length, 1" (2.5cm) OD
	<b>Discharge:</b> 7' (2.1m) Length, ½" (1.3 cm) OD	<b>Discharge:</b> 7' (2.1m) Length, ¾" (1.9 cm) OD
<b>P573154 Stainless Steel Wand Kit (optional):</b>	<b>Suction:</b> 40" (1.0 m) Length	<b>Discharge</b> 20" (.5 m) Length
<b>Dry Weight:</b>	Approx. 55 lbs. (25 kg)	Approx. 65 lbs. (29 kg)
<b>Dimensions:</b>	<b>Height:</b> 21" (533 mm)	<b>Height:</b> 25" (635 mm)
	<b>Width:</b> 13" (330 mm)	<b>Width:</b> 13" (330 mm)
	<b>Length:</b> 26" (660 mm)	<b>Length:</b> 26" (660 mm)
<b>Notes:</b>	Requires two filters	Requires two filters

## Pressure Filter Choices

Media	B <sub>50</sub> = 1000 Rating	Media Technology	Length (in.)		Part No.
No. ½	<4 µm	Synteq™	9.4	240	P165185; Viton® Seal
No. 1	5 µm	Synteq	9.4	240	P167590
No. 2	9 µm	Synteq	6	52	P165354
			9.4	240	P165332
No. 2½	10 µm	Synteq	6	152	P176565
			9.4	240	P176566
			9.4	240	P173737
			11.6	295	P179343
No. 3	10 µm	Synteq	9.4	240	P170950
					300 psi collapse
No. 4	10 µm	Synteq	6	152	P163542
			9.4	240	P163555
			6	152	P164375
			9.4	240	P164378
No. 6	13 µm	Synteq	9.4	240	P164056; Viton Seal
No. 7	33 µm	Synteq	6	152	P164381
			9.4	240	P164384
No. 9	23 µm	Synteq	6	152	P163315
			9.4	240	P163567
No. 16	22 µm	Synteq	9.4	240	P164059; Viton Seal
No. 20	>50 µm	Synteq	6	152	P165335
			9.4	240	P165338
WA	na	Water Removal	9.4	240	P560584

\*Contact Donaldson for special order options

\*\*Totally Enclosed Fan-Cooled

### Notes

- Refer to table in the Technical Reference Guide for fluid compatibility with our filter media.
- Standard filter collapse rating is 150 psi, except as noted.
- Thread size is 1 3/8"-12 UNF-2B

<sup>1</sup> Filters with seals made of Buna-N® are appropriate for most applications involving petroleum oil. Filters with seals made of Viton® (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions and HWC (high water content fluids) over 150°F. Donaldson offers both types.

Buna-N® Viton® are a registered trademarks of E. I. DuPont de Nemours and Company.

# Filter Panels

## Fixed-Mounted Off-Line Filtration

The Donaldson filter panels provide fixed-mount offline filtration and a turnkey approach to supplemental filtration.\* It isn't necessary for you to design and build a system, simply choose the desired flow rate and media grades, and let Donaldson build one for you.

Machinery and equipment are often designed with inadequate filtration, which will greatly decrease the life of your equipment and increase maintenance costs. Donaldson filter panels provide supplemental filtration for your in-plant machinery and hydraulic equipment helping to reduce costs and achieve and maintain proper ISO cleanliness levels.

Donaldson filter panels are offered in 3 gpm, 5 gpm and 10 gpm (11.4, 18.9 and 37.9 lpm) models. Reservoir size, fluid viscosity and fluid temperature will help determine the correct flow rate. Filter panels feature dual HMK05 filtration utilizing Donaldson's exclusive high efficiency Synteq™ media. The filters are plumbed in series giving you the option of coarse/fine particle removal or install a water absorbing filter for water/particle removal.



\*Not for use with diesel fuel or gasoline.

Features	Benefits
High efficiency media grades	Cost effective filtration
Dual-stage filtration	Coarse/Fine or Water/Particulate removal
Differential pressure indicators	Alerts you when to change filters
Optional overload protected switch	Prevents motor/pump from overheating
Sample port	Enables system cleanliness measurements

Applications	
Offline filtration	Supplement existing filtration to achieve target ISO cleanliness levels.
Water removal	Using Donaldson water removal filters to remove free water from the system.
Filter new fluid	Clean up new fluids because they are usually highly contaminated. Don't contaminate your equipment with new fluids. Protect your equipment with proper filtration.

## Filter Panel Assembly Choices

### Assembly Notes

Filters must be ordered separately.

Fluid Viscosity Type & Part Number*	Low Viscosity Maximum 500 SUS (108 cSt)			High Viscosity Maximum 8000 SUS (1700 cSt)
	X011299 Ref: DFP-3-P1	X011300 Ref: DFP-5-P1	X011301 Ref: DFP-10-P1	X011302 Ref: DFP-HV-2-P1
<b>Gear Pump Flow Rate:</b>	3 gpm (11.4 lpm)	5 gpm (18.9 lpm)	10 gpm (37.9 lpm)	2 gpm (7.57 lpm)
<b>TEFC** Motor:</b>	½ hp	¾ hp	1 hp	1 hp
<b>Compatibility:</b>	Mineral-based fluids, water glycols, polyol esters			
<b>Connections</b>	Inlet (pump) : SAE 12 O-Ring Outlet: SAE 20 O-Ring			Inlet (pump) : SAE 12 O-Ring Outlet: SAE 20 O-Ring
<b>Electrical Service: 115 volts</b>	8.4 amp	14 amp	14 amp	14 amp
<b>230 volts</b>	4.2 amp	7 amp	7 amp	7 amp
<b>Dry Weight:</b>	Approx. 95 lbs. (43 kg)			Approx. 120 lbs. (54 kg)
<b>Dimensions:</b>	<b>Height:</b> 20" (508 mm)		<b>Width:</b> 36" (915 mm)	<b>Depth:</b> 8" (203 mm)
<b>Notes:</b>	Requires 2 Filters			Requires 4 Filters

\*Contact Donaldson for special order options

\*\*Totally Enclosed Fan-Cooled

## Filter Choices

Media Number	Media Type	B <sub>et</sub> = 1000 Rating	Length (in./mm)	Part No.
No. ½	Synteq™	<4 µm	14.2/361	P564468
No. 1	Synteq	5 µm	11.6/294	P170906
			11.6/294	P171273 <sup>1</sup> Viton, Epoxy
No. 2	Synteq	9 µm	11.6/294	P165675
			11.6/294	P171274 <sup>1</sup> Viton, Epoxy
			14.2/361	P179763
No. 2½	Synteq	10 µm	11.6/294	P176567
No. 3	Synteq	10 µm	14.2/361	P170949
No. 4	Synteq	10 µm	7.6/193	P176207
			11.6/294	P165659
			11.6/294	P171275 <sup>1</sup> Viton, Epoxy
No. 9	Synteq	23 µm	7.6/193	P176208
			11.6/294	P165659
			11.6/294	P171276 <sup>1</sup> Viton, Epoxy
No. 20	Synteq	>50 µm	14.2/361	P173789
			11.6/294	P165672
	Water Removal	N/A	11.6/294	P170546
			11.6/294	P179075

### Filter Notes

- Refer to table in the Technical Reference Guide for fluid compatibility with our filter media.
- Thread size is 1 3/4"-12 UNF-2B

<sup>1</sup> Filters with seals made of Buna-N® are appropriate for most applications involving petroleum oil. Filters with seals made of Viton® (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF (high water content fluids) over 150°F. Donaldson offers both types, as shown in the table above. Filters with seals made of Buna-N® are appropriate for most applications involving petroleum oil. Viton® and Buna-N® are registered trademarks of E. I. DuPont de Nemours and Company.

## VDOPS Vacuum Dehydration Oil Purification System

### Features

- Variable frequency drive to improve inlet condition and performance
- Claw vacuum pump for superior performance and long life
- All controls and system function viewable from the front
- Alarm when filter is plugged and needs to be changed
- Upstream & downstream oil sample ports
- Custom options
- Space efficient
- High water extraction rates



### Example Model Number: VDOPS-50VFD-840X-64kW-AWD-480-N4-V

Classification	Code	Description
Product Type	VDOPS	Vacuum Dehydration Oil Purification System
Flow Rate	50VFD	50 GPM (189 lpm) Variable Frequency Drive (Variable Flow)
Housing Size and Style	840X	840X Carbon Steel Filter Housing
Heater Size	64kW	64 Kilowatt Heater
Optional Equipment	AWD	Auto Water Drain
Electrical Requirement	480	480 Volts
NEMA Rating	N4	NEMA 4
Seal Material	V	Viton

#### Installation Requirements

Input Voltage	480 V / 3 Phase / 60 Hz
Designed FLA (Full Load Amps)	98 AMPS
Inlet Connection Size	2" Female Camlock
Outlet Connection Size	2" Male Camlock

#### Electrical Operating Specifications

Oil Pump Motor	(Nameplate Rating)
Vacuum Pump Motor	(Nameplate Rating)

#### Mechanical Operating Specifications

Flow Rate	50 GPM (189 lpm)
Maximum Discharge Pressure	100 PSI (6.9 bar)
Normal Discharge Press	30 PSI (2.1 bar)
Maximum Vacuum Setting	27" Hg (686 mm Hg)
Minimum Vacuum Setting	15" Hg (381 mm Hg)
Normal Heater Set Point Setting	150° F (66° C)
Maximum Oil Viscosity	1500 SSU (323 cSt)
Seal Material	Viton

### IMPORTANT Product Restriction

The **Vacuum Dehydration Oil Purification System** should never be used to remove particulates from volatile fluids such as gasoline since the pump cannot be used for solvents with low lubricity. In addition, the unit should not be used on liquids with a flash point below 200°F (93°C).

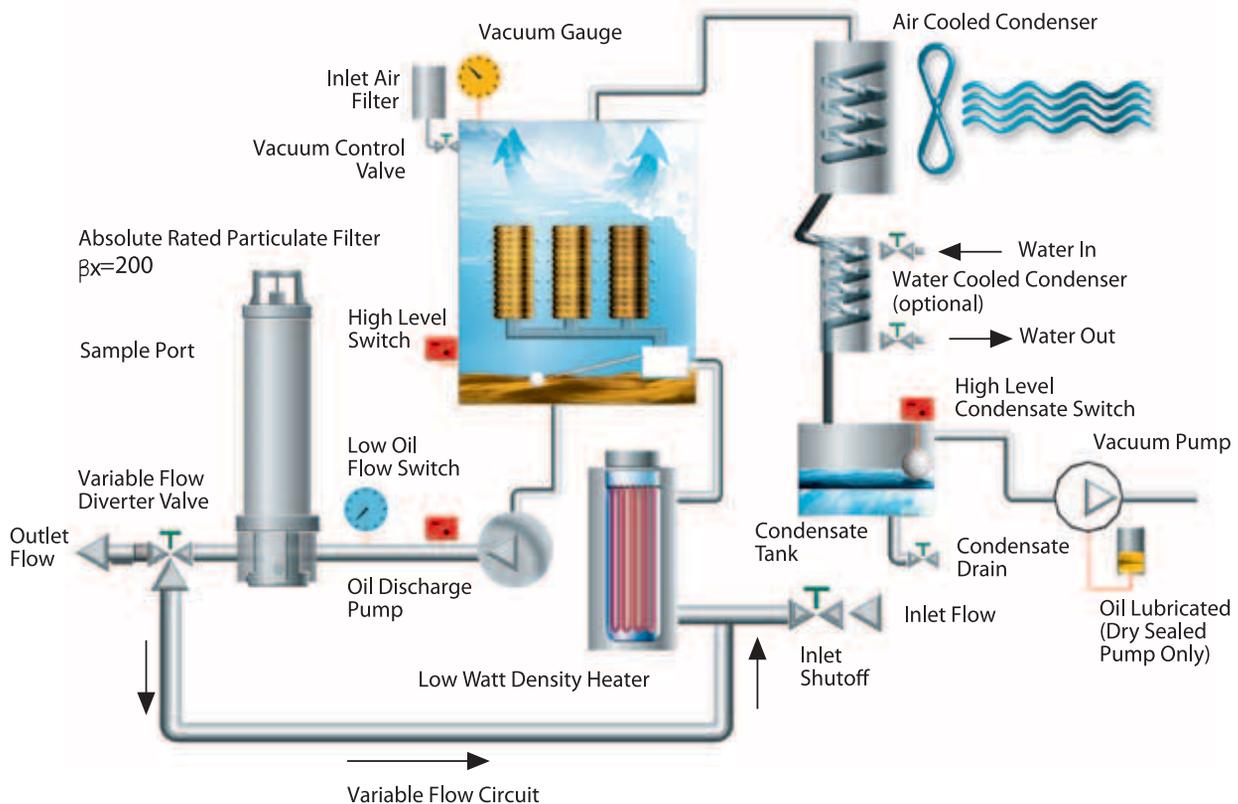
### LEAD TIME NOTE:

This product is configured with the specifications and features of your choice. Please contact your Donaldson sales representative for lead time details.

## Vacuum Dehydrators

The ultimate piece of equipment to effectively remove particulate, water and dissolved gases from petroleum and synthetically based fluids. This system removes 100% of free and emulsified water from oils, and 90% of dissolved water from oils to as low as 20 ppm. It also removes particulate to as low as ISO 12/10/9. In addition, this system removes 90% of dissolved gases. It is available in flow rates from 1-200 gpm (4-760 lpm), NEMA 4 and 7 Explosion Proof with custom options.

### VDOPS Schematic



The water removal principle used in the Vacuum Dehydrators dependably removes water well below the oil saturation point, even when tightly bound in an emulsion. A vacuum pump draws fluid into the unit where it is heated and then flows through dispersal filters inside the vacuum tower. Contaminated oil flows through the pores of these filters, is exposed to the vacuum and dehydrated. Dried oil is removed, filtered and pumped back into the reservoir.

## COPS Coalescer Oil Purification System

### Features

- Variable frequency drive to improve inlet condition and performance
- Positive displacement pump for superior performance
- All controls and system function viewable from the front
- Auto mode for auto water drain
- Upstream and downstream oil sample ports
- Custom options
- Space efficient
- High free water extraction rates



### Coalescers

Designed to rapidly remove free water and particulates from diesel fuel, fuel oil and most other hydraulic/lubricating oils. Coalescing technology outperforms centrifuges, are simpler to use, cost less to maintain and are lower in initial purchase price. Designed to run continuously in an outdoor environment, virtually no mechanical maintenance is needed. Flow rates available from 20-275 gpm (76-1041 lpm).

#### Example Model Number: COPS-20VFD-840X/2-24kW-480-TS-N4-B

Classification	Code	Description
Product Type	COPS	Coalescer Oil Purification System
Flow Rate	20VFD	20 GPM (76 lpm), Variable Flow Drive
Housing Size and Style	840X/2	Qty (2) 840X Housings in Series
Heater Size	24kW	24 kilowatts
Electrical Requirement	480	480 / 3 Phase / 60 Hz
Optional Equipment	TS	Touch Screen
NEMA Rating	N4	NEMA 4
Seal Material	B	Buna-N
<b>Installation Requirements</b>		
Input Voltage		480 / 3 Phase / 60 Hz
Designed FLA (Full Load Amps)		35 AMPS
Inlet Connection Size		2" Flanged
Outlet Connection Size		1-1/2" Flanged
<b>Mechanical Operating Specifications</b>		
Flow Rate		20 GPM (76 lpm)
Maximum Discharge Pressure		100 PSI (6.9 bar)
Maximum Oil Viscosity		1500 SSU (323 cSt)
Seal Material		Buna-N®

#### IMPORTANT Product Restriction

**The Coalescer Oil Purification System** should never be used to remove particulates from volatile fluids such as gasoline since the pump cannot be used for solvents with low lubricity.

#### LEAD TIME NOTE:

This product is configured with the specifications and features of your choice. Please contact your Donaldson sales representative for lead time details.

## Fluid Purification Systems

### LTC Transformer Filtration

Bolt this system onto a transformer and continuously remove particulate (carbon) and water contamination, maintaining high dielectric values. Ideally suited for kidney loop filtration applications.



### Bearing Lubrication

This system will remove particulate and heat from bearing lube oils to increase bearing life. It will achieve particulate removal from fluids to as low as ISO 12/10/9. It is available with optional flow and temperature monitoring devices.

### High Flow Filter Skids

This system is ideal for rapidly removing particulate contamination from large reservoirs. Furthermore, this system creates turbulent flows in piping for oil flushing and efficiently removes particulate contamination to as low as ISO 12/10/9 levels. Flow rates are available from 50–2000 gpm (190–7600 lpm) with many quality features and additional options to increase its capabilities.



### Common Fluid Purification Applications:

Turbine Lube Oil / Petro-Chemical Compressors / Diesel and Gas Fired Engines /  
Substation Maintenance Transformer Oil / EHC Speed Control Systems /  
Hydraulic Power Units for All Industries



The Donaldson Filter Buddy™ in use – cleaning up dirty oil in a small power unit.

Donaldson Delivers *any*  
**Performance Under Pressure**

