Donaldson
FILTRATION SOLUTIONS

Clean Fuel & Lubricant Solutions

Filters • Filter Heads • Manifolds • Kits • Fuel Carts • hP Filters and Heads • DEF • TRAP • Accessories







Why Filter Fuels & Lubricants?

Today's sophisticated equipment, such as diesel engines with increased injection pressures, requires higher cleanliness levels than ever before. Donaldson bulk filtration systems save on costly component replacement, prevent unplanned downtime and prevent a decrease in fuel efficiency due to injector wear. In short, **Donaldson reduces your total cost of ownership.** Learn more about all things related to diesel fuel at MyCleanDiesel.com.

MyCleanDIESEL.com



Table of Contents

3 Why Do I Need Clean Fuel?
4 What is Clean Fuel?
6 How Do I Get Clean Fuel?
8 Fuel and Lubricants Filters
9 Filters & Filter Heads
11 X-Max Inline Manifold
12 Water Separator
13 Skids
14 Bulk hP Filters and Heads
16 T.R.A.P.™ Breather
18 Accessories
20 System and Sizing

DIESEL IS DIRTY.

As diesel travels from refinery to terminal locations to local bulk storage and finally to your bulk tank, it picks up contamination that is **deadly to today's engines.**

DIRT IS BAD.

Your local distributor likely delivers diesel that meets or exceeds fuel-industry standards for cleanliness. This is **not clean enough** for your equipment.

REMOVE THE DIRT. ACHIEVE MORE.

By filtering dirt, water and other contaminants before your fuel ever touches your equipment, you'll eliminate costly downtime, **Keep Running** and **Achieve More.**



GET A CLEAN SOLUTION.

To ensure that you're pumping clean, dry fuel into your equipment, call or email a Donaldson Clean Solutions expert. No matter where you are or the size of your operation, there's a Clean Solution that will help you Achieve More.

Achieving the Target Cleanliness of a Fluid

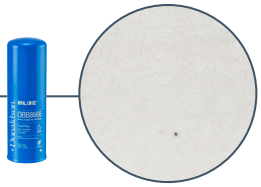
ISO 4406 contamination codes are a way to express fluid cleanliness. The three numbers correspond to the number of particles 4 microns and larger, 6 microns and larger, and 14 microns and larger present in the fluid. This page illustrates what it means to start with a contamination of ISO 22/21/18 and target a cleanliness of ISO 14/13/11.

ISO 4406 CONTAMINATION CODES

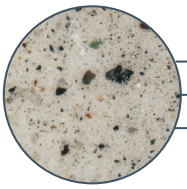
Range of number of particles per 100 milliliters

CODE	MORE THAN	UP TO & INCLUDING
24	8,000,000	16,000,000
23	4,000,000	8,000,000
22	2,000,000	4,000,000
21	1,000,000	2,000,000
20	500,000	1,000,000
19	250,000	500,000
18	130,000	250,000
17	64,000	130,000
16	32,000	64,000
15	16,000	32,000
14	8,000	16,000
13	4,000	8,000
12	2,000	4,000
11	1,000	2,000
10	500	1,000
9	250	500
8	130	250
7	64	130
6	32	64
5	16	32
4	8	16
3	4	8
2	2	4
1	1	2

RECOMMENDED ISO CLEANLINESS RATINGS



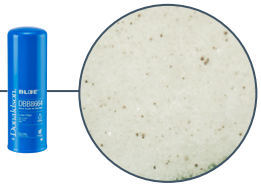
ISO 14/13/11
Target rating for diesel fuel



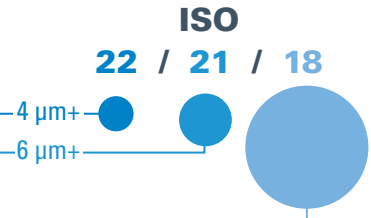
ISO 22/21/18
Typical cleanliness as fluid goes into your equipment



ISO 16/14/11
Target rating for hydraulic/ transmission oils

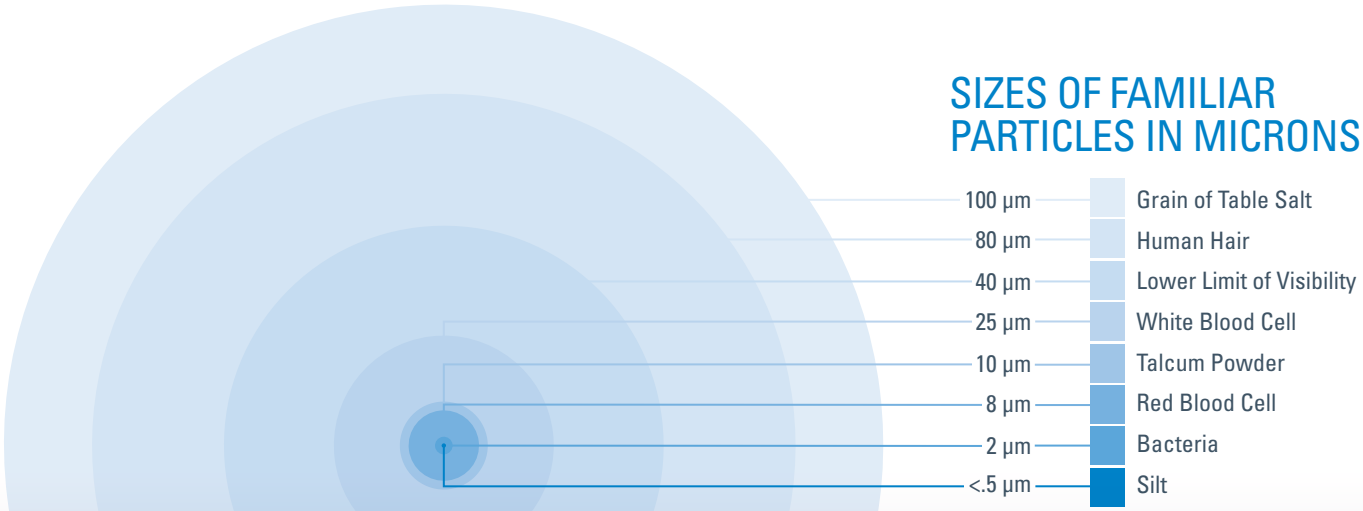


ISO 18/16/13
Target rating for heavy gear/engine oils





SIZES OF FAMILIAR PARTICLES IN MICRONS



Donaldson Delivers

Water Protection

Are your bulk fluids passing large amounts of free water downstream – contaminating vehicles and equipment?

Donaldson's water absorbing filter with super absorbent polymer media, DBB0248, will stop flow if large amounts of free water are detected in your ethanol-free fluids. Designing systems with water absorbing filters requires careful sizing considerations. A Donaldson specialist will assist in configuring a system that meets your specific needs for flow and pressure drop.



Choosing the Ideal Filters for Your System Doesn't Need to be Complicated

1. Select the right filter to achieve targeted ISO cleanliness. Proper design of the system will help avoid unnecessary costs.
2. Determine the working pressure of the system and select the filter line compatible with that pressure.
3. Different types of fluids have different properties. Fluid viscosity plays an important role in restricting the flow through filters. Select a filter that has compatible media-to-fluid properties and will maintain adequate flow and avoid excessive pressure drops. See pages 30-31 for filter flow rates and pressure drops.

Donaldson. FILTRATION SOLUTIONS

Donaldson Delivers

Superior Bulk Fluid Filtration

- Lower Total Cost of Ownership
- Avoid Unplanned Downtime
- Maximize Fuel Efficiency
- Low Installation Costs
- Custom Designs
- Modular Solutions
- Compact Installation
- Low Inventory Costs
- Easily Shipped
- Easily Serviced



Clean.

Donaldson single-pass filtration on the inlet removes contamination before it can enter your storage tank and contaminate it.

Compact and easy to replace, Donaldson filters are an important line of defense in maintaining fluid quality and can be configured for high flow rates while minimizing pressure drop.



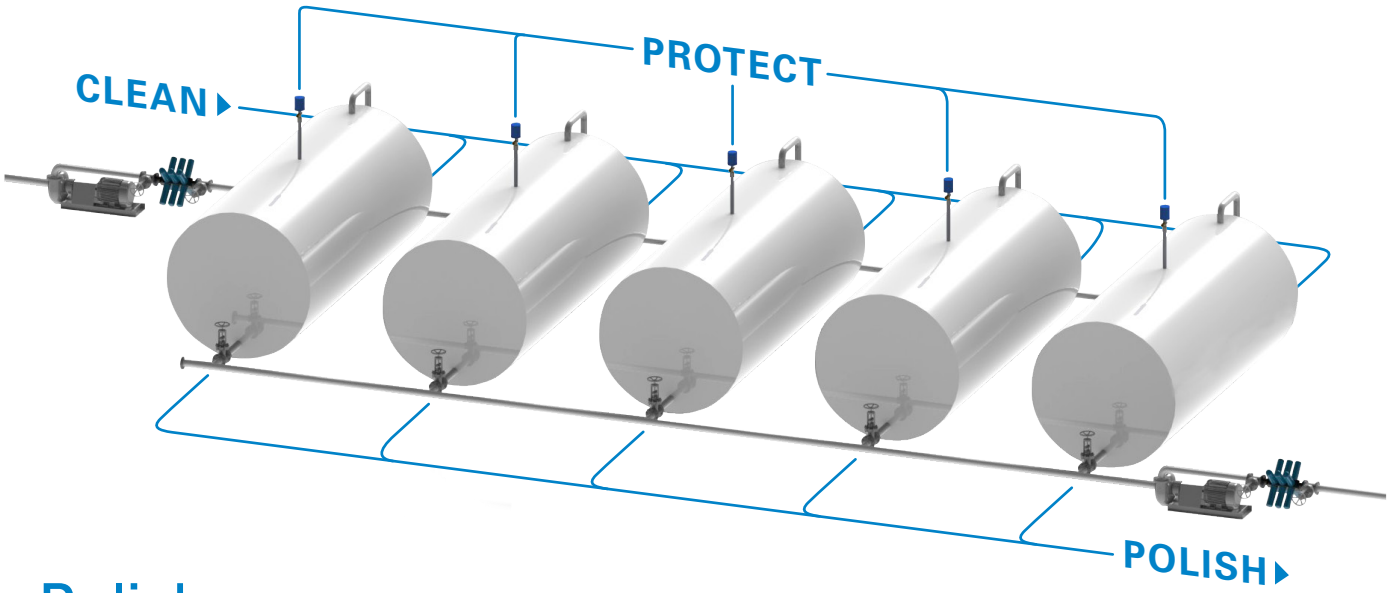
Protect.

Water absorbing filters, T.R.A.P.™ Breathers and Reservoir Air Dryers reduce the risk of moisture and contaminants entering a bulk storage tank so fluids are kept clean and dry. Used together, they'll help guard fluids from free water, airborne contamination and microbial growth for as long as they stay in storage.









Polish.

Unstable fluids and the tank itself can be a source of contamination. Final filtration on the outlet with Donaldson filters ensures that targeted ISO cleanliness levels are achieved before fluids are pumped into your system.

Achieve More.









Fuel and Lubricants Filters

Donaldson Clean Solutions filters provide unsurpassed cleanliness in a single pass. They are perfect for inlet and outlet filtration applications. Their spin-on design enables fast and simple filter changes without special tools and provides greater protection from contamination during service than traditional cartridge style filters.

These filters incorporate our best technology and construction to handle all fuels and lubricants in all as operating environments. Donaldson Electrostatic Reduction Technology (DERT) prevents filter media damage from electrostatic discharge. Epoxy is used in filter construction for increased fluid compatibility. E-coating provides maximum corrosion resistance and epoxy adhesion. Viton® O-rings provide reliable sealing and maximum fluid compatibility.

Viton® is a registered trademark of E.I. DuPont de Nemours and Company.

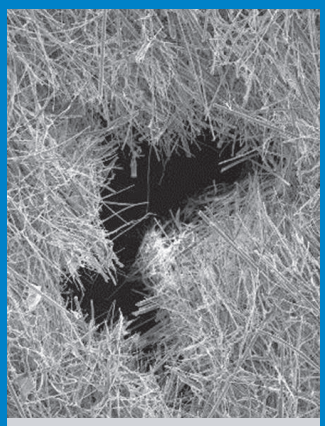


FEATURES

- Highly efficient, state-of-the-art filter media and design
- Unsurpassed filter efficiency
- Cleans to target ISO cleanliness in a single pass
- Modular design can be configured for virtually any flow rate or usage level
- Fast and easy to service

APPLICATIONS

- Single pass filtration for clean fluid transfers
- High efficiency kidney looping
- Inlet and outlet filtration at bulk storage tanks
- Dispenser “polishing” filtration on fuel pumps and hose reels
- Mobile and stationary applications



Filter media damage from Electrostatic Discharge (ESD).

D.E.R.T.™

Donaldson Electrostatic Reduction Technology

Electrostatic discharge can be created when diesel fuel or light oils pass through filter media at high flow rates.

The fluid being filtered may have inadequate conductivity to dissipate the charge generated by high flow filtration applications. The electrical charge can build-up in the fluid until it discharges or sparks across the filter, burning holes in the filter media and letting through harmful contaminants.

Donaldson’s proprietary Electrostatic Reduction Technology neutralizes electrical charge and prevents damage to the filter media. This enables efficient single pass fuel filtration in high flow applications.

Filters and Filter Heads

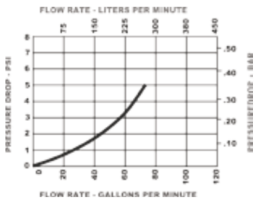
Clean fuels and oils on the inlet side to maintain cleanliness levels in bulk storage tanks. These products can also be used on the outlet side.

New Part No.	Old Part No.	Typical Fluid Applications	Max. Working Pressure	Rated Static Burst	Max. Flow Range	Operating Temperature	Target ISO Cleanliness	ISO Filter Efficiency
DBB8664	P568664	Engine Oil and Gear Oil	350 PSI/24.1 Bar	800 PSI/55.2 Bar	65 gpm/246 lpm	-40°F-190°F/-40°C -88°C	18/16/13	25 micron @Beta 2000
DBB8665	P568665	Transmission Oil and Hydraulic Oil					16/14/11	7 micron @Beta 2000
DBB8666	P568666	All Fuels					14/13/11	4 micron @Beta 2000
DBB5483	P575483	All Fuels					16/15/12	7 micron @Beta 2000
DBB0248	P570248	Water-Absorbing for Ethanol-Free Fluids						20 micron @Beta 2000

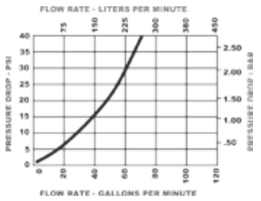
Designed with expanding media that prevents water from entering storage or equipment tanks. Not recommended for contamination removal.



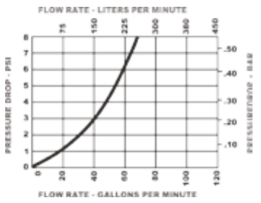
P568664



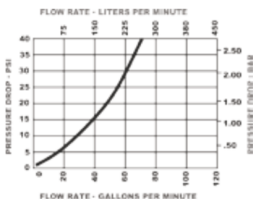
P568666

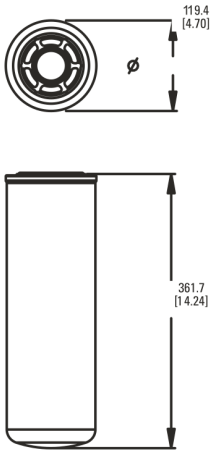


P568665



P570248

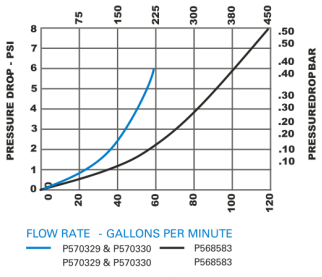




FILTER HEADS	Filter Quantity	Mounting Connection	Max. Working Pressure	Rated Static Burst	Max. Flow Range
P570329	1	SAE-20 O-Ring	350 PSI/24 Bar	800 PSI/55 Bar	65 gpm/246 lpm
P568583	2	1 1/2" SAE 4-Bolt			125 gpm/473 lpm

All Filter Heads

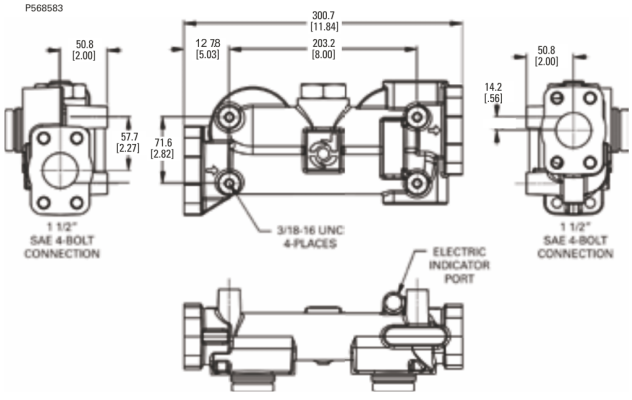
FLOW RATE - LITERS PER MINUTE



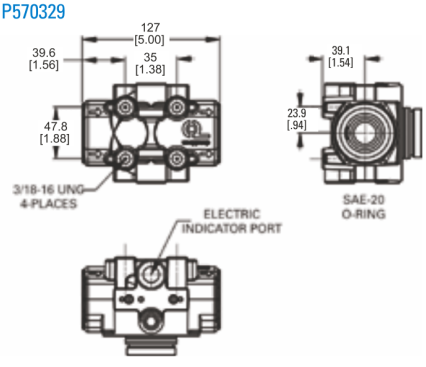


Rotate clockwise to install filter. 2" clearance necessary to change filter

P568583

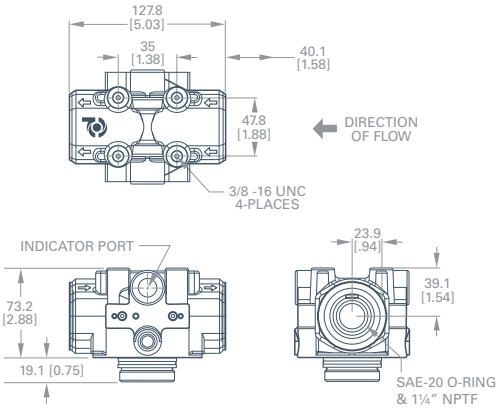


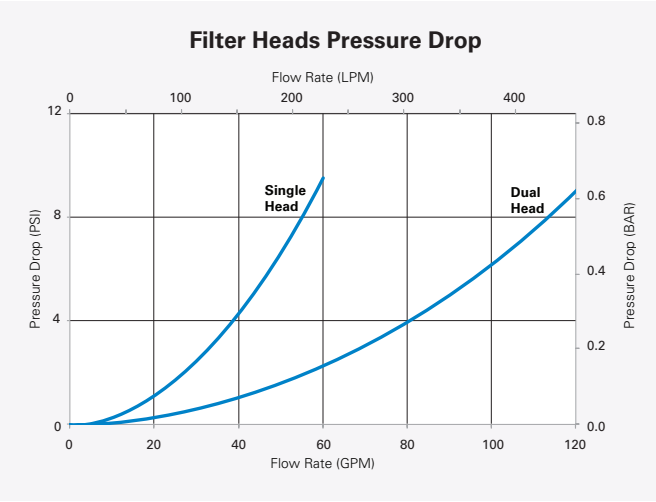
P570329





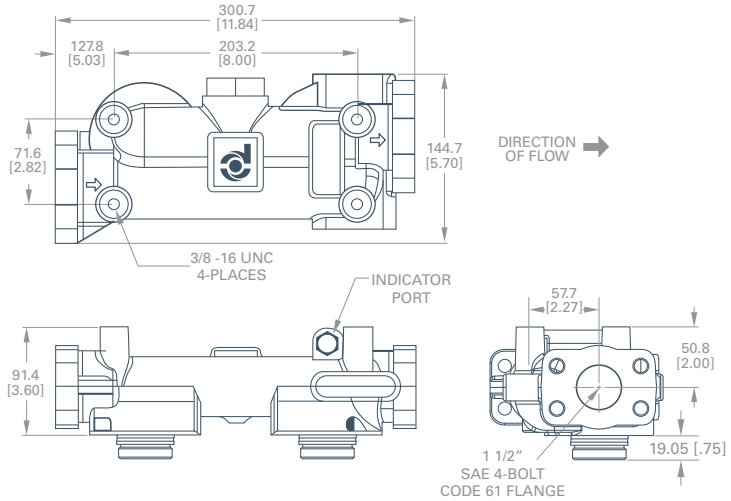
Single Filter Head
P570329 | P570330



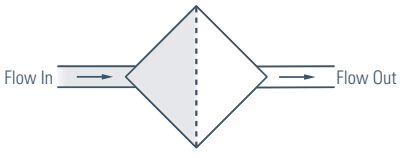




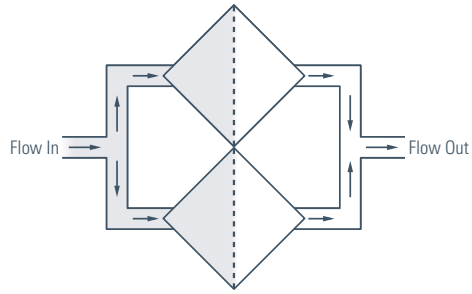
Dual Filter Head
P568583



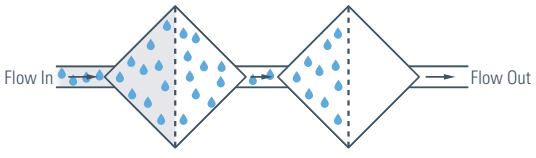
Single Head Flow Path



Dual Head With Parallel Flow Path



2 Single Heads in Series Remove Dirt First, Then Water



Clean Fuel and Lubricant Solutions

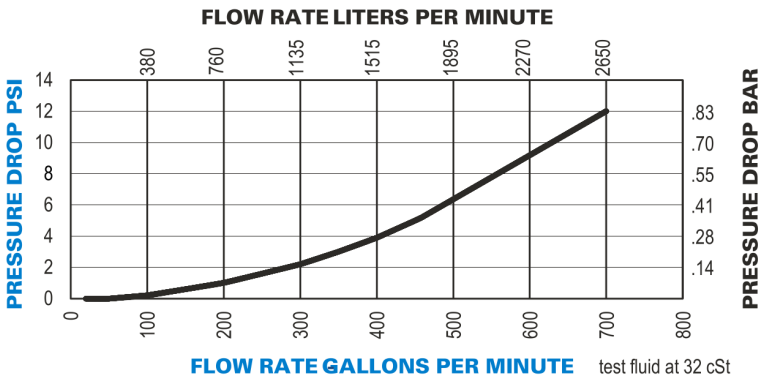
1KDFF1012 / 1KDFF1008

X-Max Inline Manifold

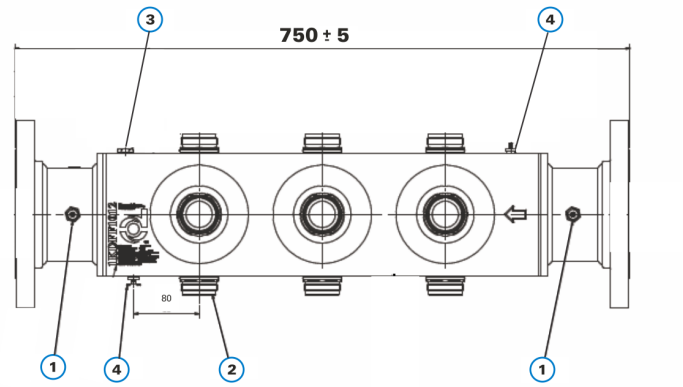
The Inline Manifold brings efficiency to a whole new level. A unique rectangular pipe reduces resistance to flow and mounts in line with existing piping. The result is an especially compact, flexible system that can be configured to install in tight or unusual spaces while providing exceptionally high flow and overall capacity



Specifications: 1KDFF1012	
Max Flow Rate	700 gpm / 2650lpm (Diesel & Fuel)
Working Pressure	150 psi / 10 bar / 1000 kPa Max
Mounting	ASA 150 4" flanges
Configuration	Mounts in any direction
Filter Quantity	Up to 12
Compatible Filters	P568664, P568665, P568666, P570248 (Sold Separately)
Accessories	P174396 Electrical Indicator AC/DC 1KDFF1005 Blanking Cap



1KDFF1012

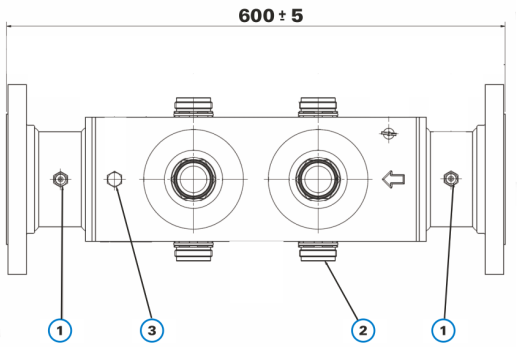


Construction

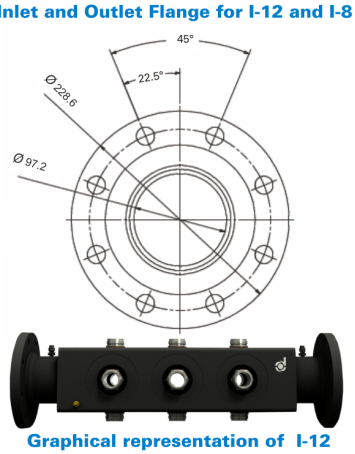
1. Mini test points (2)
2. Threaded insert assembly
3. Plug assembly (1)
4. 1/4" NPT bleeder
5. 400mm installation clearance to face for filters

No exposed aluminum reduces impact sparking
Weight +/ 121 pounds / 55 kg
Packing trunk repurposes as drip tray or toolbox

1KDFF1008



Inlet and Outlet Flange for I-12 and I-8



Graphical representation of I-12

1KDFF0005 Water Separator

Specifications

Ports:	- 1½ BSP inline ports
Flow rate:	- Suction: 60ℓ/min
	- Pressure: 150ℓ/min
Maximum pressure:	- 4 bar
Water drain port	- ½" BSP
Replacement element:	- P92-1319
Micron rating:	- 6µ nominal 15.5µ absolute
Dimensions:	- Length 550 mm
	- Ø 300mm
Dry mass:	- 25 Kg
Drain kit:	-1KDFF0058



Multi-stage filtration system

CF & LS: v20150205

1KDFF0065 Water Separator

Specifications

Flow rate:	600ℓ/min *(FFWS)*
Max Working Pressure:	150psi or 10bar
Replacement cartridge:	P568575 (FFWS)
Mass:	60kg
Volume:	950 x 600 x 335mm



Assembly comes complete with:

- 4"ASA 150 Flanges
- Pressure Gauge
- Minimess sampling points on inlet and outlet
- Water drain kit: 1KDFF0058
- *Cartridge as per application*

1KDFF1081 – Single Skid

Specifications

Description:	Single Fuel Filter Water Separator Skid
Flow rate:	150ℓ/min
Max Working Pressure:	4 bar
Replacement Filter Elements:	P921319 (DFF0005) FFWS / P568666 Particulate
Mass:	55kg
Volume:	1500 x 1000 x 610mm



Assembly comes complete with:

- 1 ½" BSP shut off valve inlet and outlet
- Pressure Gauge
- Minimess sampling points on inlet and outlet
- Water drain kit
- 1 x P921319
- 2 x P568666

1KDFF1082 – Double Skid

Specifications

Description:	Double Fuel Filter Water Separator Skid
Flow rate:	300ℓ/min
Max Working Pressure:	4 bar
Filter Replacement:	P921319 (DFF0005) FFWS
	P568666 Particulate
Mass:	136kg
Volume:	1600 x 920 x 1100mm



Assembly comes complete with:

- 2" BSP shut off valve inlet and outlet
- Pressure Gauge
- Minimess sampling points on inlet and outlet
- Water drain kit
- 2 x P921319
- 4 x P568666

Bulk hP Filters and Heads



Filtering oil prior to dispensing into equipment is critical to meet the ISO cleanliness specifications demanded by today's OEM's. Donaldson Bulk hP filters provide high efficiency filtration in a single pass.

Service shops use high pressure pumps to force oil through long lengths of piping and hose reels prior to dispensing into equipment. Donaldson Bulk hP filters remove contaminants delivered in oil and picked up in storage or delivery lines during final transfer. They ensure the required ISO cleanliness level is met every time.



	hP Single Head	hP Head with Bypass
Part Number	P566023	P566024
Working Pressure	1000 psi / 6894 kPa / 68.9 bar	
Indicator	Yes	
Bypass Valve	No	Yes - 50 psi / 345 kPa / 3.4 bar
Connections	SAE-16 O-ring	



	Bulk hP Filter	Bulk hP Filter	Bulk hP Filter
Part Number	P565184	P565185	P565183
Target ISO Cleanliness	14/13/11	16/14/11	18/16/13
Fluid Compatibility	Petroleum based oils		
Max. Flow Range	50 gpm / 189 lpm		
Efficiency	4 micron @ Beta 2000	8 micron @ Beta 2000	14 micron @ Beta 2000
Working Pressure	1000 psi / 6894 kPa / 68.9 bar		
Element Collapse Pressure	300 psi / 2068 kPa / 20.7 bar		
Application	Hydraulic, gear, transmission and engine oils		
Rated Static Burst	2200 psi / 15,168 kPa / 151.7 bar		

FEATURES

- Up to 1000 psi / 6894 kPa / 68.9 bar working pressure
- Extended life filters with high dirt holding capacity
- Easy disposal with recyclable can and incinerable element
- Compact design requires only 1.5" / 38 mm clearance for servicing

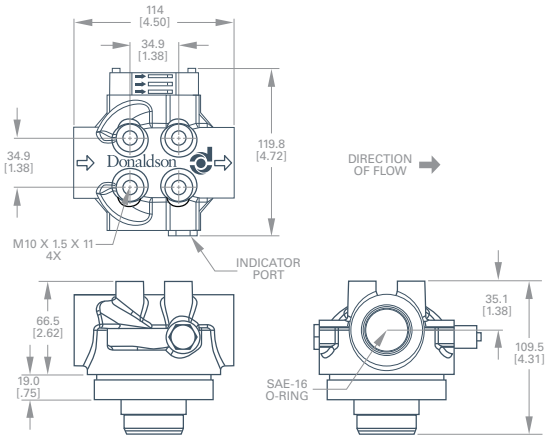
APPLICATIONS

- Lube shops
- Mobile service trucks
- Other higher pressure single pass applications



Bulk hP Filter Heads

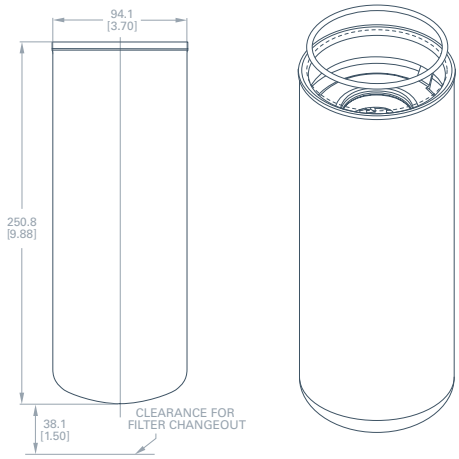
P566023 | P566024

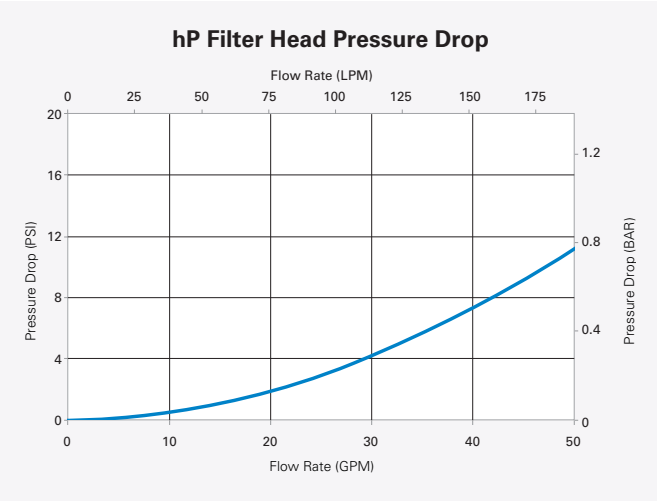




Bulk hP Filters

P565184 | P565185 | P565183





See pressure drop / flow rate curves on page 31.

WARNING

THERMAL EXPANSION Donaldson highly advises following the pump manufacturer's relief recommendations. Pump manufacturers offer relief valves to protect against over pressurization. A mere 10 °F / 5.5 °C increase in oil temp can add 450 psi / 3103 kPa / 31 bar to the system while the pump is shut off.

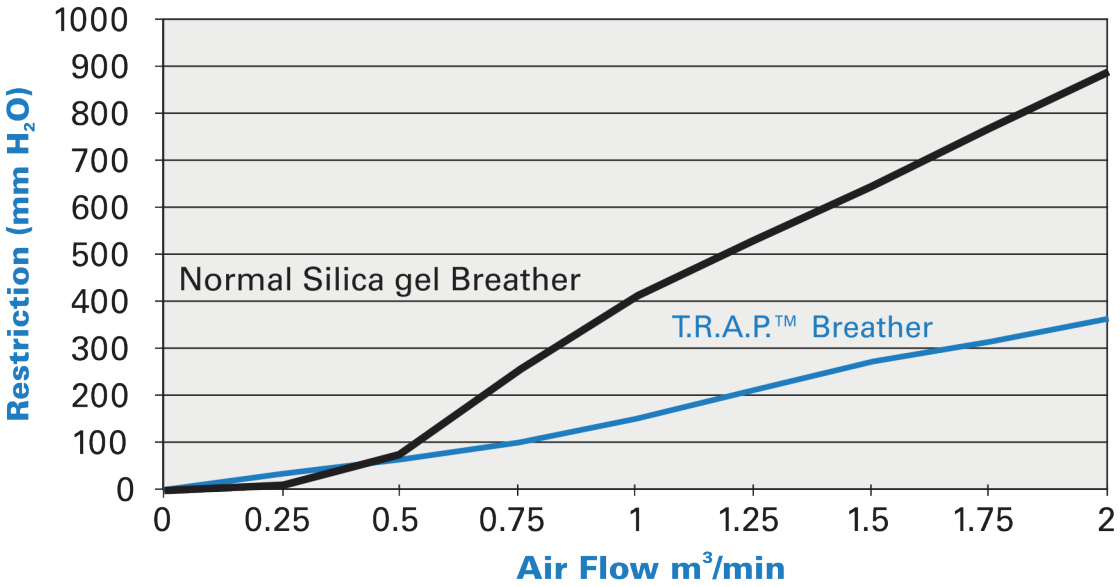
Bulk Tank Breather with T.R.A.P.™ Technology

T.R.A.P.™ - Thermally Reactive Advanced Protection

Features and benefits

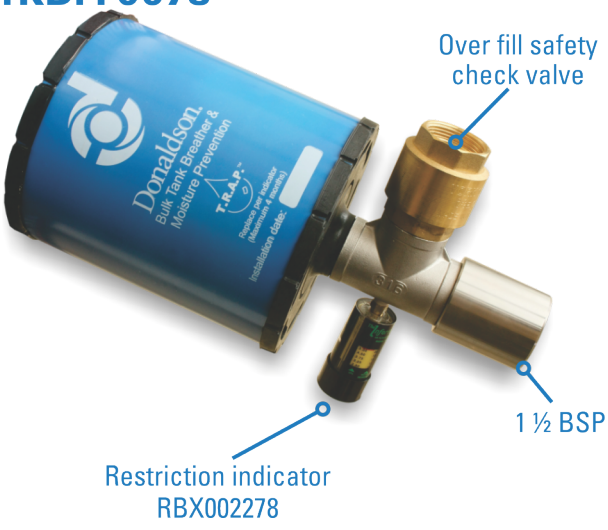
- Filter efficiency > 97% at 3µm abs
- Easy installation spin-on replacement Breather
- Service restriction indicator
- Air flow up to 500ℓ /min
- Efficient moisture removal
  - Retards microbial growth
  - Inhibits corrosion
- Safety overfilling valve
- To be used on bulk storage tanks containing diesel, lube, hydraulic, engine or transmission oil
- Temperature range -40°C to 66°C

Flow curve



Complete Bulk Tank Breather Kit

1KDFF0078



Installation instructions

- 1 unit recommended for tanks up to 40 000ℓ
- For tanks larger than 40 000ℓ use multiple units (if unsure contact a Donaldson representative)
- Donaldson replacement Breather element to be changed on restriction or every 4 months.
- Assembly Part no. 1KDFF0078 = Option A

Replacement Element

P923075



Compare T.R.A.P.™ Technology

		Desiccant Filters
Service life	Extended Life (exhales moisture and refreshes its holding capacity on each cycle).	Shorter life (due to saturation of filtering material), leading to frequent replacement.
Effectiveness	Reacts instantly to conditions in the application, creating a moisture barrier without impeding airflow.	Requires extended exposure to the air stream before absorption begins. Restricts airflow and increases pressure.
Maintenance costs	Reduced man-hours.	Increased man-hours.
Technology	Thermally reactive barrier that removes moisture at relative humidity levels as low as 15%.	Absorbent filtering material that loses holding capacity with each cycle. Only starts removing moisture at relative humidity at 80%.
Filtration	Superior moisture blocking and particulate filtration down to 3 microns at 97% efficiency.	Less effective moisture blocking and particulate filtration.
Other Advantages	Will not freeze in winter.	Subject to freezing in winter conditions.

How it Works

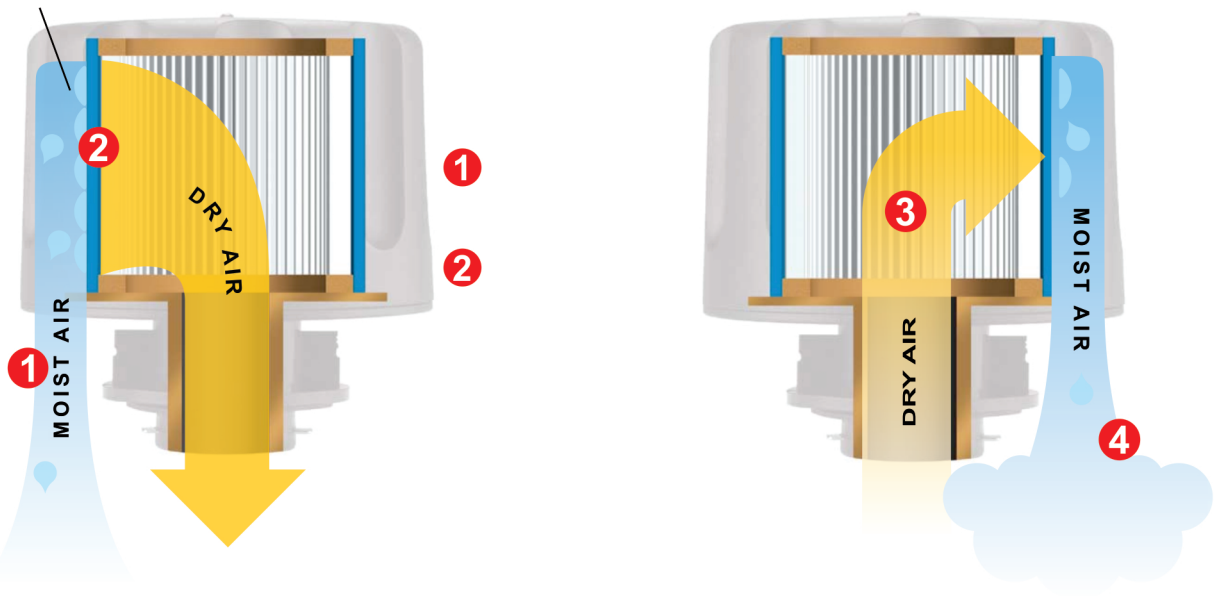
INTAKE CYCLE (INHALATION)

1. The circuit "breathes in" air containing moisture vapour.
2. The T.R.A.P.™ Breather strips moisture and particulate from the incoming air, allowing only clean, dry air to enter the circuit.

OUTFLOW CYCLE (EXHALATION)

3. During the "exhalation" cycle, the T.R.A.P.™ Breather allows unrestricted airflow outward.
4. The outflow of dry air picks up the moisture collected by the T.R.A.P.™ Breather during intake, and "blows it back out" - fully regenerating the Breather's water - holding capacity.

Trapped moisture



Accessories

PARTS

Part Number	Description	Application
DFF1005	I-12 Blanking Cap	Blank off up to 6 orifices on I-12 manifold for flush mounting
P563107	4-Bolt Code 61 Flange to 1½" NPT Adapter	Adapts P568583 Dual Head to 1½" NPT
P573642	Threaded Pipe Nipple	1¼" NPT, for connecting two P570330 single heads in series
P164050	Threaded Insert O-rings	Replacement O-rings for heads and manfiolds, Viton, not for use on hP
P564669	ABS Breather, 3 Micron	Small oil tanks under 250 gal. / 1000 liters, 1" NPT, splash containment for mobile applications

PRESSURE GAUGES AND SERVICE INDICATORS

Part Number	Description	Application
P574967	Electrical Service Indicator 50 psi / 345 kPa / 3.45 bar	Use with all Clean Solutions heads and manifolds, microprocessor compatible
P574177	Visual Service Indicator 50 psi / 345 kPa / 3.45 bar	For single heads and hP heads, industrial grade green to red
P165965	Visual Service Indicator 25 psi / 172 kPa / 1.72 bar	For single heads and hP heads, industrial grade green to red
P573682	Upstream Pressure Gauge Adapter	For single and dual heads, ⅛" NPT
P573681	Pressure Gauge, 0 – 60 psi / 414 kPa / 4.1 bar	For single and dual heads, ⅛" NPT, center back mount, 1½" diameter, use with P573682 adapter
P563296	Pressure Gauge, 0-100 psi / 689 kPa / 6.89 bar	For single and dual heads, ⅛" NPT, center back mount, 2" diameter, use with P573682 adapter
P563809	Direct Gauge Adapter	For Clean Solutions manifolds, M16 x 2 to ¼" NPT adapter, use to mount pressure gauge to test point
P562709	Pressure Gauge, 0-160 psi / 1103 kPa / 11.0 bar	For Clean Solutions manifolds, stem mount, 2½" diameter, use with P563809 adapter

SAMPLING TOOLS

Part Number	Description	Application
P573414	Upstream Sampling Port Adapter	For single, dual heads, and hP heads, SAE-4, use with P563224 for sampling
P573415	Upstream Indicator Port Adapter	For single, dual heads, and hP heads, SAE-4, use with P563224 for sampling
P563212	Test Point Heads and Manifolds	For all Clean Solutions manifolds, ⅛" NPT to M16 x 2
P563224	Test Point	For all Clean Solutions heads and manifolds, SAE-4 to M16 x 2, use with P573414 and P573415 adapters
P563250	Test Point Hose Assembly, 12"	1620 series M16 x 2 thread, for use with P563212 and P563224 mini mess test points
P563252	Test Point Hose Assembly, 24"	1620 series M16 x 2 thread, for use with P563212 and P563224 mini mess test points

TEST KIT

Part Number	Description	Application
X009329	Patch Test Kit	Test kit for measuring fluid cleanliness
P567969	0.8 Micron Membrane Filter	Spares for Patch Test Kit, purchase in multiples of 100
P567868	5.0 Micron Membrane Filter	Spares for Patch Test Kit, purchase in multiples of 100
P567865	Analysis Cards	Spares for Patch Test Kit, purchase in multiples of 50
P567861	120 ml Sample Bottle	Spare for Patch Test Kit

Accessories vary by geographical region. Consult your local Donaldson representative for more information.

The Importance of Temperature in Sizing Your Filtration System

Fluid viscosity, measured in centistokes (cSt) or Saybolt Seconds Universal (SSU or SUS), is the resistance of a fluid to flow (thickness of fluid). Low viscosity fluids pass through filters with less resistance than high viscosity fluids. Higher fluid viscosities have higher pressure drops due to higher resistance passing through the media.

The colder the fluid, the higher the viscosity, so the lowest potential temperature of the fluid during filtration is the best measure for sizing a bulk filtration system. Due to the high specific heat capacity of fluids, the lowest ambient temperature may not be an accurate reflection of the actual fluid temperature. Avoid oversizing your system by using the stored fluid temperature and not the lowest ambient temperature, which tends to be lower than the temperature of the fluid in storage or transport.



WATER



HONEY

Temperature greatly impacts fluid viscosity. Consider that ISO 32 oil at 104 °F / 40 °C has the same viscosity as diesel fuel (similar to water). When temperatures drop to -4 °F / -20 °C, the viscosity of that ISO 32 oil increases dramatically to over 2,000 centistokes, which is similar to honey at room temperature.

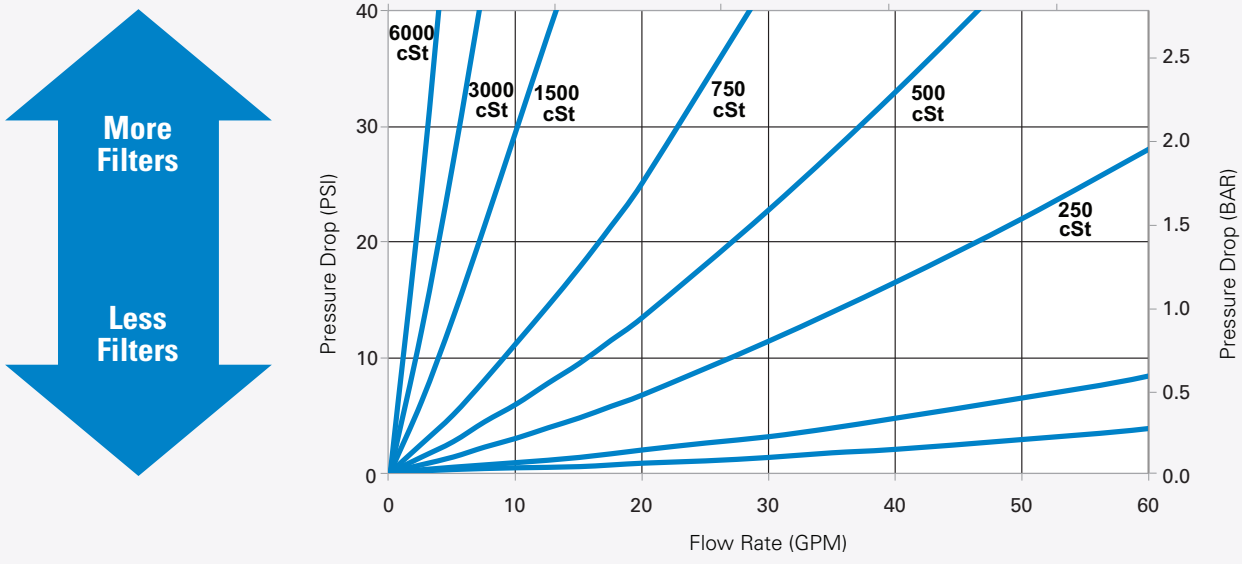
FUEL/OIL KINEMATIC VISCOSITY COMBINED WITH TEMPERATURE IN CENTISTOKES CST

SAE Gear Oil				75W		80W		85W	90		140		
SAE Engine Oil			5W	10W	20			30	40	50			
ISO Grade			15	22	32	46	68	100	150	220	320	460	680
°F	°C	Diesel											
248	120				4	4	6	7	9	12	13	18	23
230	110				4	6	7	9	12	15	19	24	30
212	100		1	5	5	7	9	11	15	19	25	32	41
194	90		3	5	7	9	11	15	20	26	34	44	58
176	80		5	7	9	11	15	20	27	36	48	63	85
158	70		6	9	11	15	20	28	39	52	71	95	130
140	60		8	12	15	21	29	40	57	80	110	151	211
122	50		11	15	22	30	43	62	99	128	181	254	365
104	40	1	15	22	32	46	68	100	150	220	320	460	680
86	30	2	21	32	51	76	116	175	271	409	613	907	1,380
68	20	3	33	51	87	135	214	334	536	838	1,290	1,980	3,130
50	10	4	52	87	162	264	438	711	1,190	1,920	3,070	4,870	8,020
32	0	5	85	180	340	585	1,020	1,720	2,990	5,060	8,400	13,900	23,900
14	-10	9	185	375	820	1,500	2,770	4,880	8,890	15,700	27,200	47,000	85,000
-4	-20	15	400	800	2,350	4,650	91,20	16,800	32,300	60,000			

Bulk filtration systems must be designed properly to meet the desired ISO cleanliness code while maintaining the existing flow rates. The filter type and quantity of filters varies based on the desired cleanliness, system pressure and flow rate.

Increasing the **flow rate** will increase the pressure drop across a filter. If the pressure drop is too high, system flow rate can be reduced or damage to the filter can occur. To reduce the pressure drop, increase the number of filters in the system.

The chart below demonstrates the **pressure drop** experienced by a filter with various viscosities and flow rates. The steeper the pressure drop curve, the more filters that must be added to the system. Additional filters plumbed in parallel will decrease the flow rate per filter, lowering the pressure drop and allowing existing flow rates to be maintained.



Steps to Sizing a Bulk Application

1 Define product flow rate, fluid type and pressure drop restriction. New systems should ideally have less than 15 psi / 1 bar pressure drop.

2 Use the table on the page 26 to determine fluid viscosity using the fluid type and temperature.

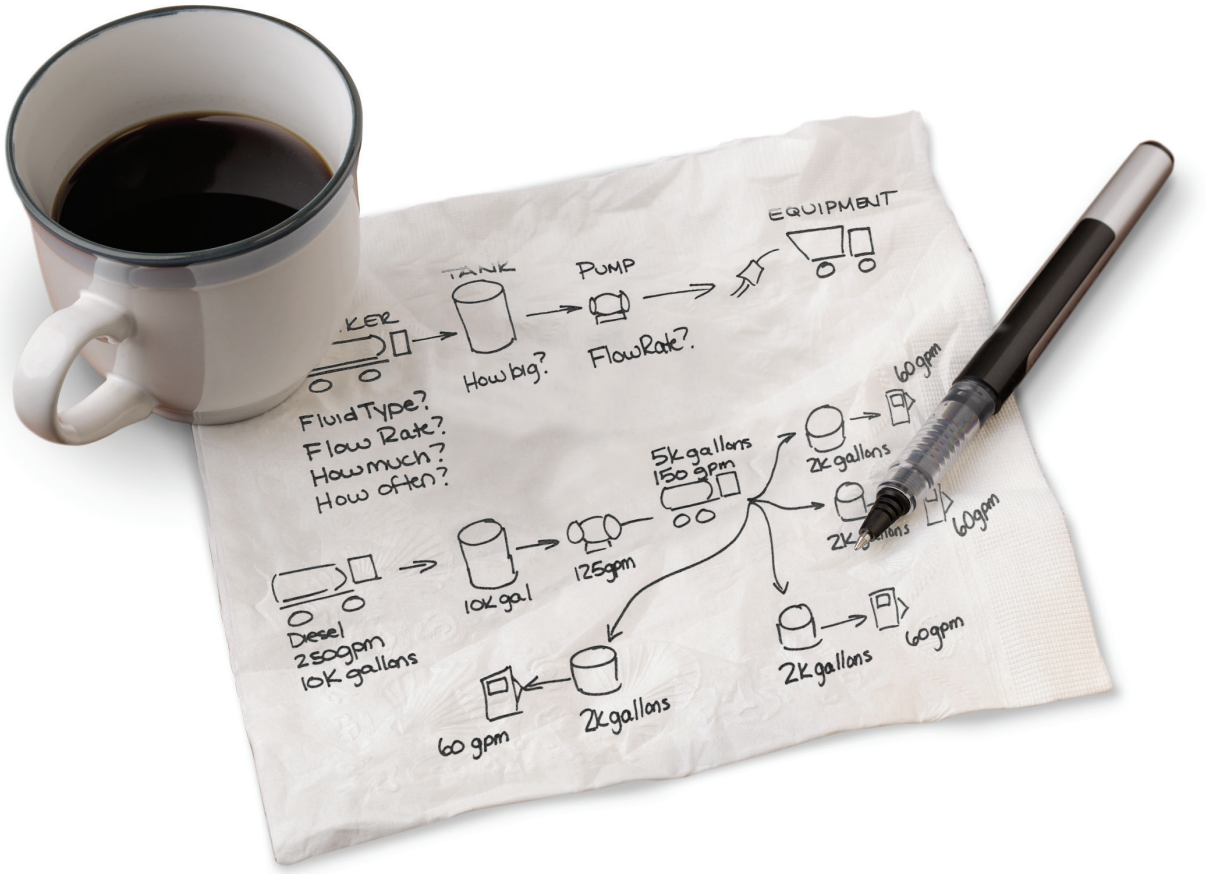
INFORMATION GATHERING

FLOW RATE: _____

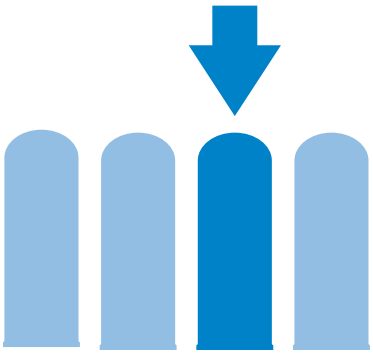
FLUID TYPE: _____

PRESSURE DROP: _____

TEMPERATURE: _____



3 Select the appropriate filter based on desired ISO cleanliness code and working pressure (see pages 10 and 11).



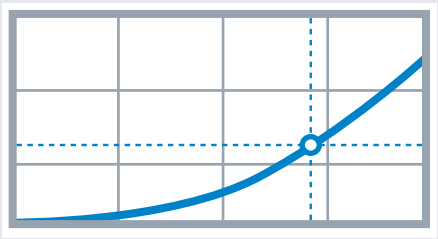
You Don't Need To Do It Alone.

Let a Donaldson specialist assist you by providing recommendations on sizing, selection and positioning of Donaldson filters. You can help us design your system by providing:

- Responses to steps 1-4 above.
- A schematic of your fluid transfer process (hand sketches work great), and/or
- Photographs of your site (tanks, inlets and outlets).

Just call 855-518-7784 to get started.

4 Determine the filter pressure drop using the flow rate and the fluid viscosity according to the appropriate chart on pages 30 – 31. Add the manifold pressure drop using the flow rate on page 15 to calculate total pressure drop.



Divide total pressure drop through one filter by the desired system pressure drop. This number is equal to the amount of filter required to clean the fluid properly at the determined flow rate. If the pressure drop is more than 15 psi / 1 bar, go up one size.

$$\frac{\text{CALCULATED PRESSURE DROP}}{\text{DESIRED PRESSURE DROP}} =$$





0860 FILTER (345837)
+27 (0) 11 997 6000
SAMarketing@donaldson.co.za
www.donaldson.co.za