



# 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](http://MyCleanDiesel.com).

MyClean**DIESEL**.com



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# DIESEL IS DIRTY.



# DIRT IS BAD.



# REMOVE THE DIRT. ACHIEVE MORE.

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.**

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

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

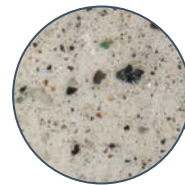
ISO 4406 contamination codes are a way to express fluid cleanliness. The three numbers correspond to the number of particles 4 microns and larger, 6 microns and larger, and 14 microns and larger present in the fluid. This page illustrates what it means to start with a contamination of ISO 22/21/18 and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

### ISO 4406 CONTAMINATION CODES

Range of number of particles per 100 milliliters

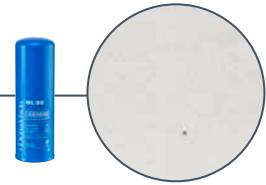
CODE	MORE THAN	UP TO & INCLUDING
24	8,000,000	16,000,000
23	4,000,000	8,000,000
22	2,000,000	4,000,000
21	1,000,000	2,000,000
20	500,000	1,000,000
19	250,000	500,000
18	130,000	250,000
17	64,000	130,000
16	32,000	64,000
15	16,000	32,000
14	8,000	16,000
13	4,000	8,000
12	2,000	4,000
11	1,000	2,000
10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

Typical cleanliness as fluid goes into your equipment



**ISO 14/13/11**

Target rating for diesel fuel



**ISO 16/14/11**

Target rating for hydraulic/transmission oils



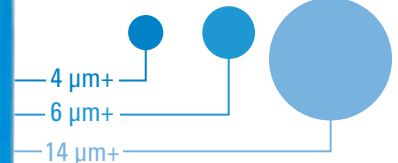
**ISO 18/16/13**

Target rating for heavy gear/engine oils

**ISO**  
**22 / 21 / 18**



**ISO**  
**14 / 13 / 11**







## SIZES OF FAMILIAR PARTICLES IN MICRONS

100 µm	Grain of Table Salt
80 µm	Human Hair
40 µm	Lower Limit of Visibility
25 µm	White Blood Cell
10 µm	Talcum Powder
8 µm	Red Blood Cell
2 µm	Bacteria
<.5 µm	Silt

## 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 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.

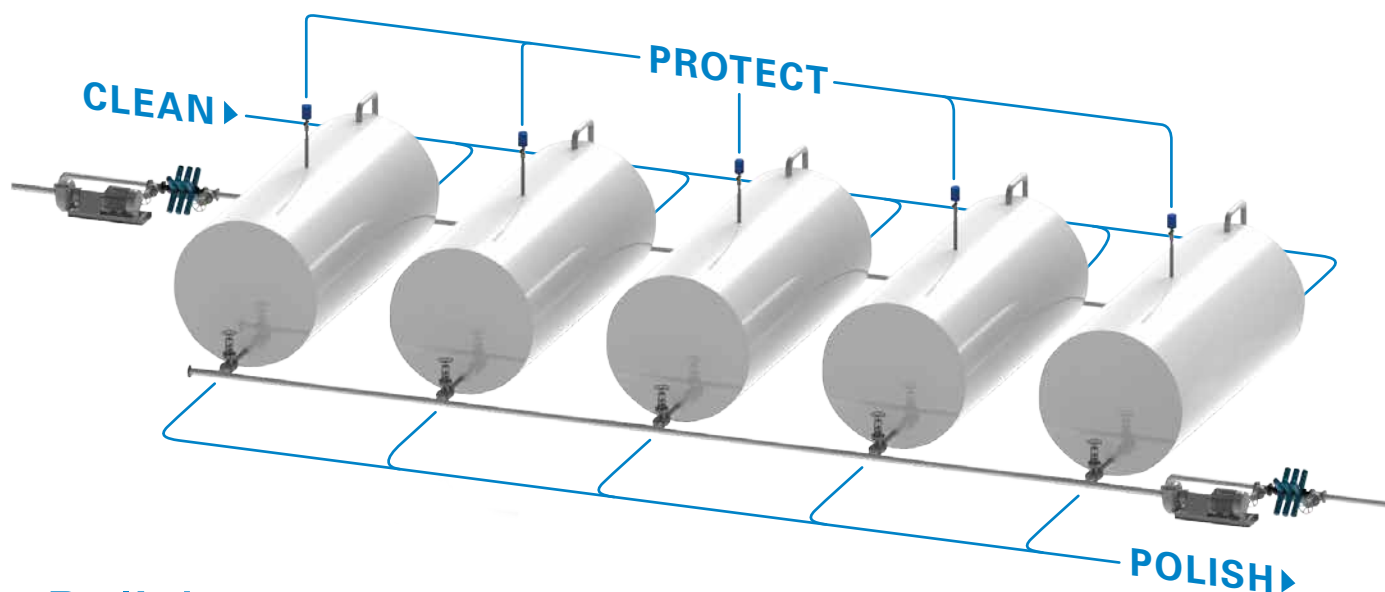
Compact and easy to replace, Donaldson filters are an important line of defense in maintaining fluid quality and can be configured for high flow rates while minimizing pressure drop.



## 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.**





## Clean Diesel Kits

Donaldson Clean Diesel Kits provide simple, effective outlet filtration on fuel dispensers to allow you to pump clean fuel into your vehicles and equipment.

These kits are easy to install on any fuel dispenser and come with everything needed to filter out even the finest contaminants before they can enter your equipment's fuel system. With the included easy-to-follow, step-by-step instructions, you'll have effective, efficient filtration in minutes.



### COMPACT X011745

#### Parallel Filtration

For flow rates up to  
32 GPM / 121 LPM

The Compact Clean Diesel Kit is designed for use on mobile service trucks, slip tanks, D-tanks, inside fuel dispensers and other tight locations.



### HIGH-CAPACITY X011450

#### Parallel Filtration

For flow rates up to  
125 GPM / 473 LPM

The High Capacity Clean Diesel Kit includes a dual head with two identical filters plumbed in parallel to accommodate higher flow rates and usage volumes.



### STANDARD X011448

#### Parallel Filtration

For flow rates up to  
65 GPM / 246 LPM

The Standard Clean Diesel Kit is perfect for smaller operations that need clean fuel delivered efficiently in any environment.



### CLEAN AND DRY X011449

#### Series Filtration

For flow rates up to  
50 GPM / 189 LPM

The Clean and Dry Diesel Kit removes fuel contamination, stops water and provides extra protection for your fuel in storage with the T.R.A.P.™ Breather.

See page 13 for Parallel and Series Filtration Flow Paths



## Clean Diesel Carts

Clean Diesel Carts are the perfect solution for fuel transfer and kidney loop applications. A high efficiency fuel filter and water absorber (included) work together to ensure that your diesel is both clean and dry.

The carts are powered by top quality pumps in your choice of AC 120V, DC 12V, or DC 24/12V. Maximum flow rates range from 15 gpm / 56 lpm to 21 gpm / 80 lpm, which makes short work of cleaning small to medium sized tanks. Easy to read, green to red service indicators on the two filters function independently, alerting the operator when one of the filters needs changing.



**AC  
Clean Fuel Cart**



**12-Volt DC  
Clean Fuel Cart**



**24-Volt DC  
Clean Fuel Cart**

Part Number	X011407	X011408	X011431
Replacement Filter Elements	DBB8666 Fuel Filter & DBB0248 Water Absorbing Filter		
Target ISO Cleanliness	14/13/11 or better		
Fluid Compatibility	All diesel fuels and up to B20 bio-diesel blends		
Efficiency	4 micron @ Beta 2000		
Water Absorbing Filter	Stops all free and emulsified water		
Service Interval	25 psi service indicator moves from green to red		
Pump Model	Piusi® Panther 56	Piusi® Panther DC 12V	Piusi® Panther DC 24/12V
Power Consumption	700 Watts	420 Watts (35 amps @ 12V)	600 Watts (25 amps @ 24V) 192 Watts (16 amps @ 12V)
Working Pressure	23 psi / 160 kPa / 1.6 bar	22 psi / 150 kPa / 1.5 bar	
Relief	Internal bypass valve		
Max. Flow Range	15 gpm / 56 lpm	15 gpm / 56 lpm	18 gpm / 70 lpm @ 24V 9 gpm / 35 lpm @12V
Duty Cycle	Continuous	30 minutes	30 minutes



## 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 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.

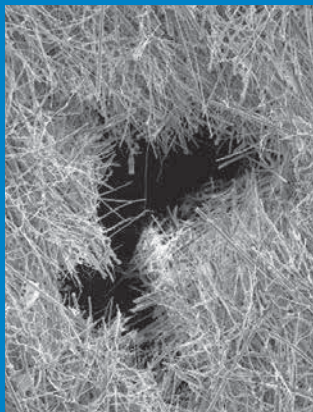


### FEATURES

- 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.



Part Number	DBB5333	DBB7733	DBB8666	DBB8777	DBB8665	DBB8664	DBB0248
Target ISO Cleanliness*	14/13/11 or better	16/14/11	14/13/11 or better	16/14/11	16/14/11	18/16/13	Not Applicable
Efficiency	4 micron @ Beta 2000	7 micron @ Beta 2000	4 micron @ Beta 2000	7 micron @ Beta 2000		25 micron @ Beta 2000	Not Applicable
Fluid Compatibility	All diesel fuels				Transmission and hydraulic oil	Engine and gear oil	Ethanol-free fluids
Recommended Viscosity Range	<100 cSt				<500 cSt	<6000 cSt	<1500 cSt
Working Pressure	350 psi / 2413 kPa / 24.1 bar						
Element Collapse Pressure	150 psi / 1034 kPa / 10.3 bar						
Rated Static Burst	800 psi / 5516 kPa / 55.2 bar						
Max. Flow Range**	32 gpm / 121 lpm		65 gpm / 246 lpm				
D.E.R.T.***	Yes				No		
Nominal Dimensions	5" x 7.5" / 12.7 cm x 19.1 cm		5" x 14.25" / 12.7 cm x 36.2 cm				
Operating Temperature	-40 to 245 °F / -40 to 118 °C				-40 to 190 °F / -40 to 88 °C	-40 to 245 °F / -40 to 118 °C	

\*Select the proper filter by fluid type and OE recommended ISO code. Do not over-filter fluids. Doing so may result in the stripping of beneficial additive.

\*\*Actual flow rate varies based on fluid viscosity, pumping pressure and filter loading.

\*\*\*DERT™ Donaldson Electrostatic Reduction Technology prevents media damage during high flow fuel applications.

See pressure drop/flow rate charts on page 30-31.



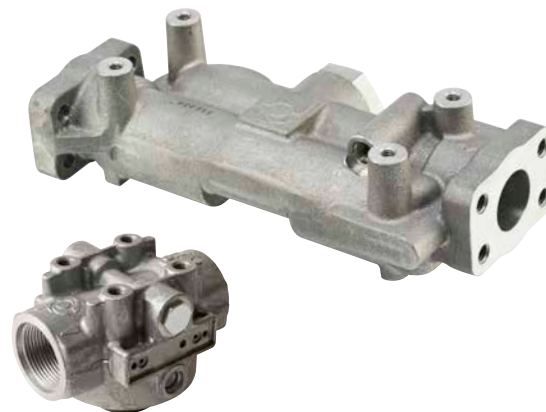
## Filter Heads

Clean Solutions filter heads feature robust, aluminum construction with steel inserts to minimize metal-to-metal galling between the head and the filter, even when used with diesel fuel.

The threaded insert contains an O-ring seal to completely seal the clean side of the filter from the dirty side for maximum protection. Viton® seals are compatible with a wide range of fluids and maintain their integrity in cold weather.

For maximum cleanliness, use Clean Solutions filter heads with Clean Solutions filters.

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



### FEATURES

- Steel inserts are safe to use with diesel fuel
- Threads contain an O-ring to completely seal the clean side from the dirty side of the filter
- Heads are pre-ported for optional pressure gauges and service indicators

### APPLICATIONS

- For use with Clean Solutions filters
- Compatible with all diesel fuels and lubricants



**Single  
Filter Head**



**Single Filter Head  
1 1/4" NPTF**



**Dual Filter  
Head**



Part Number	P570329	P570330	P568583
Connection	SAE-20 O-ring	1 1/4" NPTF	1 1/2" SAE 4-Bolt Code 61 Flange
Filter Quantity*	1	1	2
Max. Flow Range**	65 gpm / 246 lpm		125 gpm / 473 lpm
Fluid Compatibility	All diesel fuels and lubricants		
Working Pressure	350 psi / 2413 kPa / 24.1 bar		
Rated Static Burst	800 psi / 5516 kPa / 55.2 bar		
Operating Temperature	-40 to 245 °F / -40 to 118 °C		
Indicator Port	Use to adapt pressure gauges or sampling ports (sold separately)		
Materials	Aluminum head with threaded steel inserts and Viton® seals		
Compatible Filters	DBB8664, DBB8665, DBB8666, DBB5333, DBB0248, DBB8777, DBB7733		

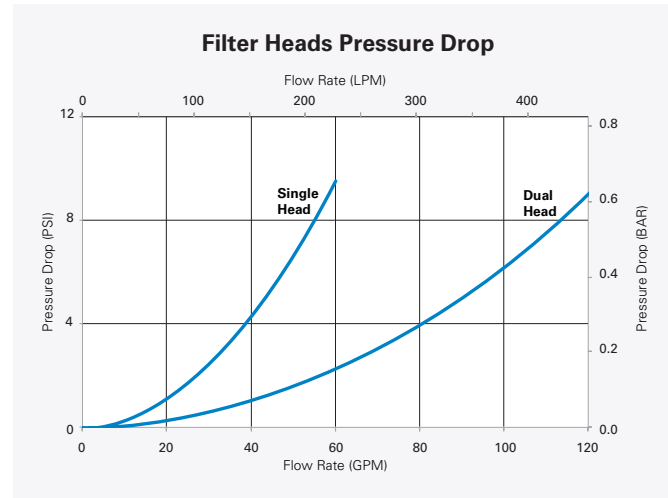
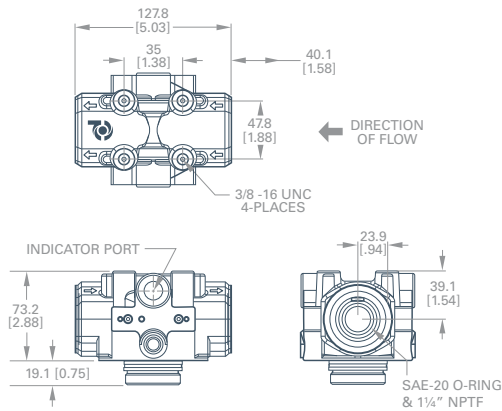
\*Filters sold separately

\*\*Actual flow rate varies based on fluid viscosity, pumping pressure and filter loading.

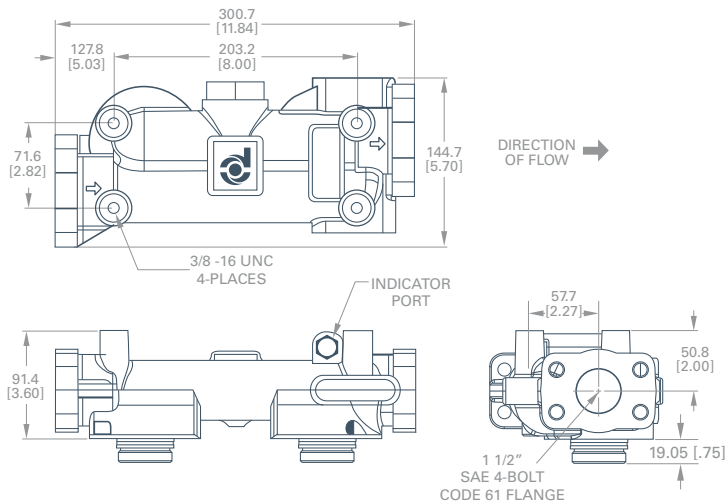




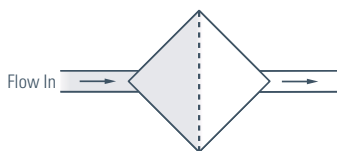
**Single Filter Head**  
P570329 | P570330



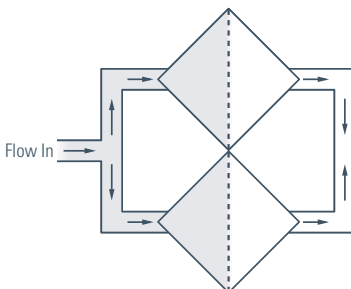
**Dual Filter Head**  
P568583



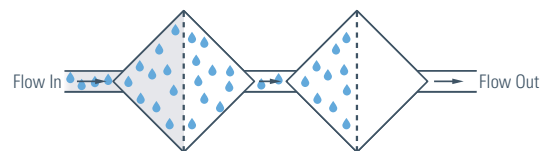
**Single Head Flow Path**



**Dual Head With Parallel Flow Path**



**2 Single Heads in Series Remove Dirt First, Then Water**



# Manifolds

Clean Solutions Filter Manifolds expand capacity or increase flow rate beyond the capability of a single or dual filter head. Two or more manifolds can be plumbed together to accommodate even larger flow rates.

Manifolds split flow evenly between the individual filters. Fluid passes through only one of the filters on its way across the manifold. Dividing the flow between multiple filters plumbed in parallel reduces the pressure drop through each filter.

The combination of Clean Solutions manifolds and filters ensure that your equipment receives the cleanest possible fuel and oil.



**4 Filter Manifold**



**8 Filter Manifold**



**10 Filter Manifold**



**Inline 12 Manifold\***



Part Number	P561880	P568932	P568933	DFF1012
Filter Quantity**	4	8	10	Up to 12
Mounting Connection	2" ANSI 150 Flange	4" ANSI 150 Flange		
Max. Flow Range***	250 gpm / 946 lpm	500 gpm / 1893 lpm	600 gpm / 2271 lpm	700 gpm / 2650 lpm
Shipping Weight	140 lbs / 64 kg	310 lbs / 141 kg	390 lbs / 177 kg	128 lbs / 58 kg
Pressure Gauges	2 pcs 0-160 psi / 0-11 bar gauges included			Accessories Sold Separately
Sampling	Includes up-stream and down-stream mini-mess sampling ports with M16 x 2 thread			
Fluid Compatibility	All diesel fuels and lubricants			
Working Pressure	ANSI B16.5 flange rating 290 psi / 1999 kPa / 20.0 bar up to 100 °F / 38 °C			150 psi / 1034 kPa / 10.3 bar
Construction	Painted carbon steel pipe with aluminum heads			No external aluminum
Compatible Filters	DBB8664, DBB8665, DBB8666, DBB8777, DBB0248			
Operating Temperature	-40 to 245 °F / -40 to 118 °C			

\*Inline 8 Manifolds are available upon request.

\*\*Filters sold separately

\*\*\*Actual flow rate varies based on fluid viscosity, pumping pressure and filter loading.

## FEATURES

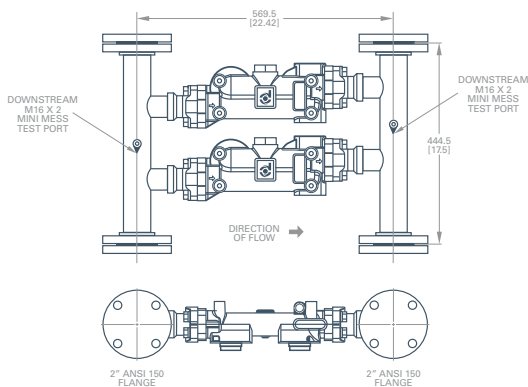
- Fast, easy and safe to service
- Requires no electrical or air hook-ups
- Large capacity in small footprint
- Flexible mounting options (horizontal or vertical)
- Cost effective high capacity system

## APPLICATIONS

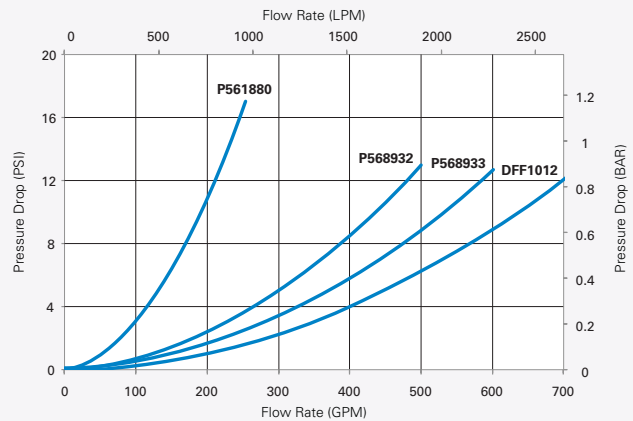
- Bulk fuel and lubricant filtration and water removal
- High flow transfer into or out of tanks and dispensing equipment
- Hard-to-filter high viscosity oils
- Inline industrial filtration of gear oils and lubricants
- Kidney loop applications



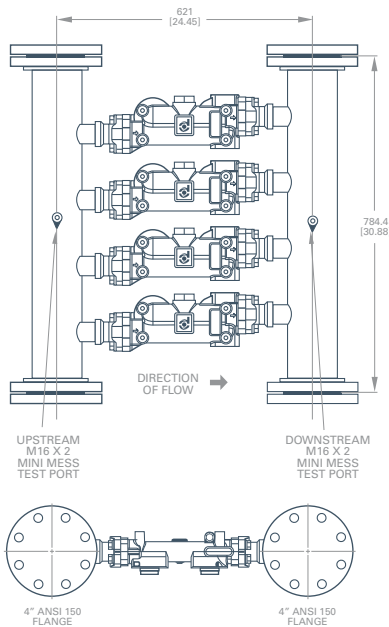
**4 Filter Manifold**  
**P561880**



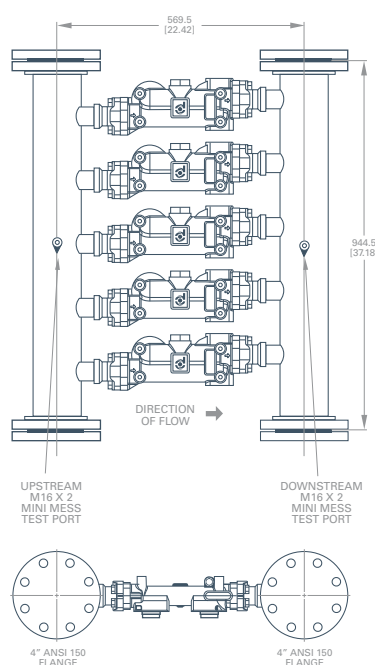
**Manifold Pressure Drop**



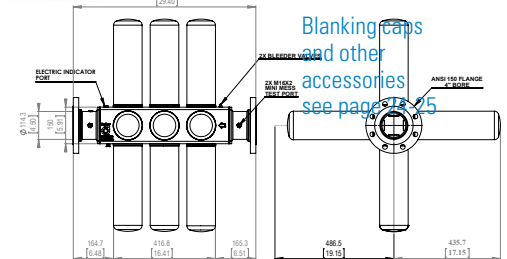
**8 Filter Manifold**  
**P568932**



**10 Filter Manifold**  
**P568933**



**Inline 12 Manifold**  
**DFF1012**





## 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		

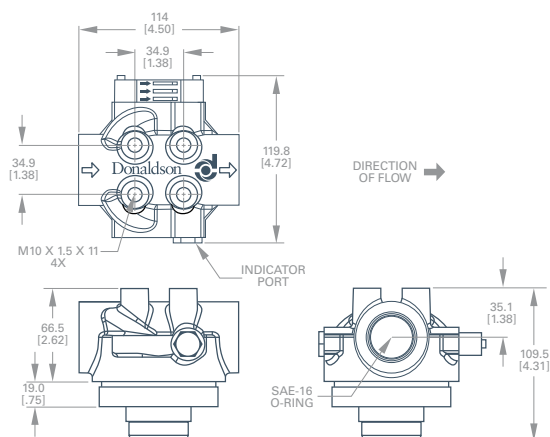


## FEATURES

- 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



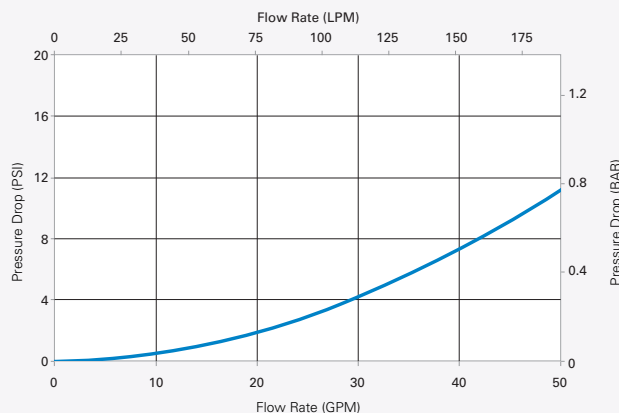
**Bulk hP Filter Heads**  
P566023 | P566024



## APPLICATIONS

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

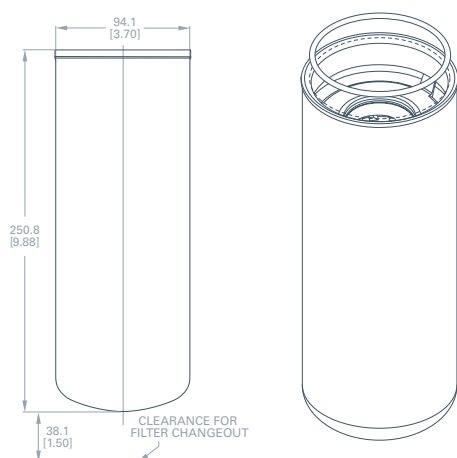
**hP Filter Head Pressure Drop**



See pressure drop / flow rate curves on page 31.



**Bulk hP Filters**  
P565184 | P565185 | P565183



## WARNING

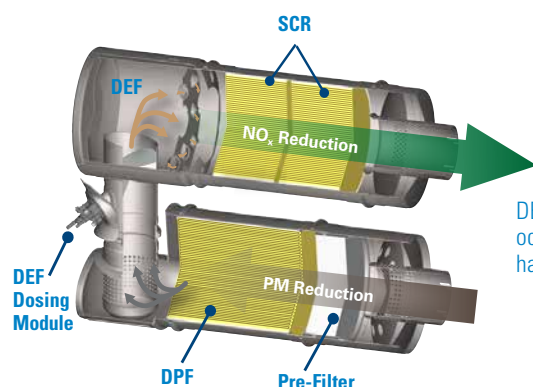
**THERMAL EXPANSION** Donaldson highly advises following the pump manufacturer's relief recommendations. Pump manufacturers offer relief valves to protect against over pressurization. A mere 10 °F / 5.5 °C increase in oil temp can add 450 psi / 3103 kPa / 31 bar to the system while the pump is shut off.



## Clean DEF Filter

Today's Selective Catalytic Reduction (SCR) emissions control systems require clean Diesel Exhaust Fluid (DEF) for precise dosing and complete atomization to occur. However, contamination from transfer and storage or corrosion from incompatible materials can prevent your SCR system from getting the clean DEF it needs for proper operation.

The Donaldson DEF filter catches contaminants before they reach your vehicle or equipment and the onboard DEF filter. Clean DEF ensures proper function of the SCR and extends the life of the onboard DEF filter.



DEF must be clean for proper dosing to occur and turn NO<sub>x</sub> from exhaust into harmless nitrogen and water vapor.



## FEATURES

- 1 micron at beta 5000 efficiency
- 316 stainless steel housing
- Precise knife edge internal seal
- Heavy duty construction
- Maximum working pressure of 300 psi
- Leak-free O-ring seal
- Integrated gauge/sample ports
- Replacement filters available individually

## APPLICATIONS

- DEF dispensers up to 10 GPM



**DEF Filter**

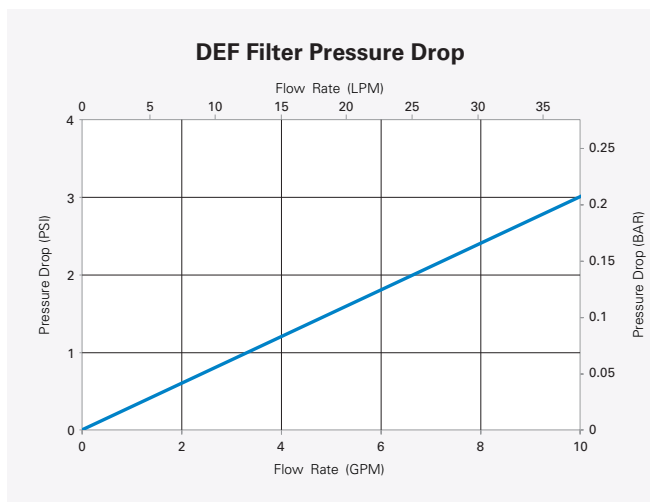
DEF Filter Housing (Choice of Connection)	P575057 1" NPT P575058 1" BSPT Both models include mounting bracket and filter wrench
DEF Filter Element	P575059 sold separately
DEF Housing O-ring	P575060 replacement part
Efficiency	1 micron @ Beta 5000 (99.98%)
Max. Flow Range	10 gpm / 38 lpm
Working Pressure	300 psi / 2068 kPa / 20.7 bar
Operating Temperature	12 to 122 °F / -11 to 50 C°
Housing Construction	316 stainless, EPR O-ring
Filter Material	Polypropylene, EPDM gaskets
Indicator Port	¼" NPT, upstream and downstream
Drain Plug	¼" NPT



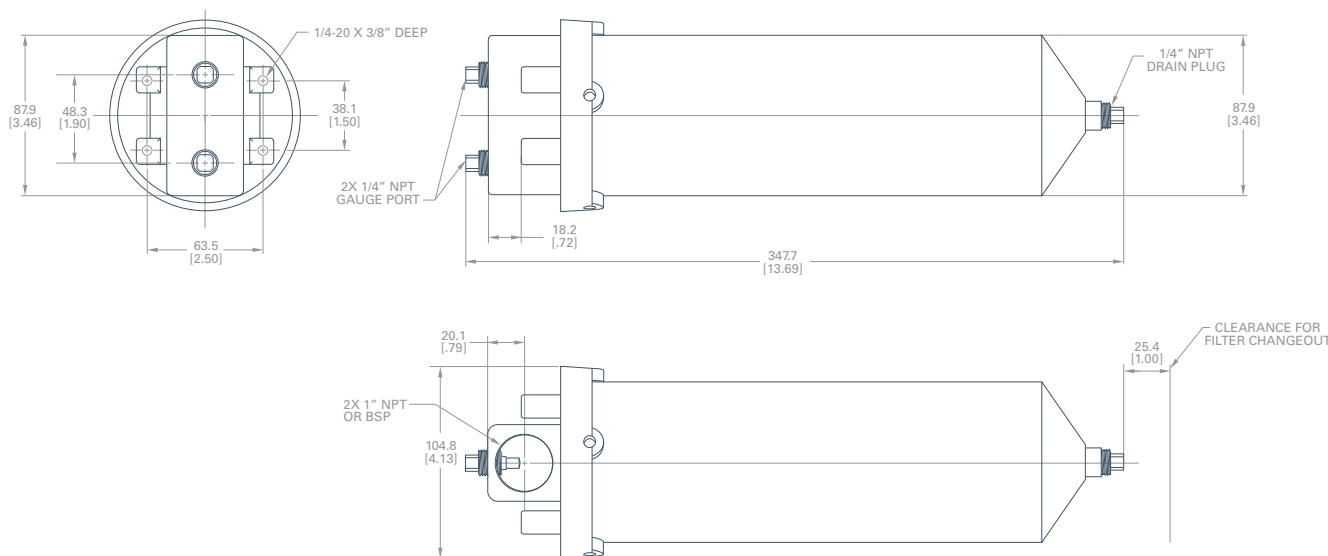
## PART NUMBERS

- P575057 DEF Filter Housing 1" NPT
- P575058 DEF Filter Housing 1" BSPT
- P575059 Clean DEF Filter
- P575060 DEF Housing Replacement O-ring

## MOUNTING BRACKET



**DEF Filter Housing**  
P575057 | P575058



Stainless steel pressure gauge not included – must be sourced separately.

## CAUTION

**DEF IS HIGHLY CORROSIVE.** All pipe fittings must be compatible with DEF. Most plastics as well as stainless steel are acceptable. Carbon steel, zinc, aluminum, brass, copper, etc. are not recommended due to undesirable chemical reactions. If any of these materials are used in your system they should be immediately replaced with a compatible material.



## T.R.A.P.™ Breather

The Thermally Reactive Advanced Protection (T.R.A.P.) Breather assembly protects the fluids in your storage tank from airborne particulate moisture contamination and ambient moisture.

It combines a high capacity 3 micron air filter with a deliquescent breather that dries itself when air is expelled from the tank. This self-regenerating capability of T.R.A.P. enables extended life and functionality.

Keep your fluids clean and dry with a Donaldson T.R.A.P. Breather.

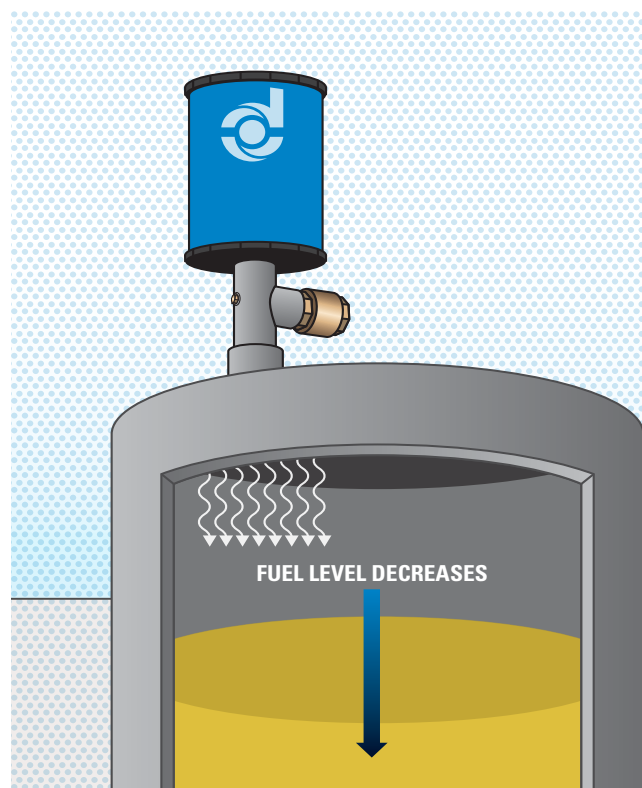


Tanks sizes above 10,000 gal. / 37,854 l. may require multiple units and pressure vacuum relief valves.

**Contact Donaldson for assistance.**



**T.R.A.P.  
Breather**



Assembly Part Number	X920006
Efficiency	97% efficient @ 3 microns
Max. Flow Range	Combined inlet and outlet flow up to 400 gpm / 1500 lpm maximum
Overflow Check Valve	Opens at 10 mbar / 4" H <sub>2</sub> O
Operating Temperature	-40 to 200 °F / -40 to 93 °C
Fluid Compatibility	Safe for use with all fuels and lubricants
Indicator	Standard mechanical
Height	16" / 410 mm
Construction	ABS housing, Urethane end caps
Connection	1 ½" NPT female
Replacement filter	P923075 spin on

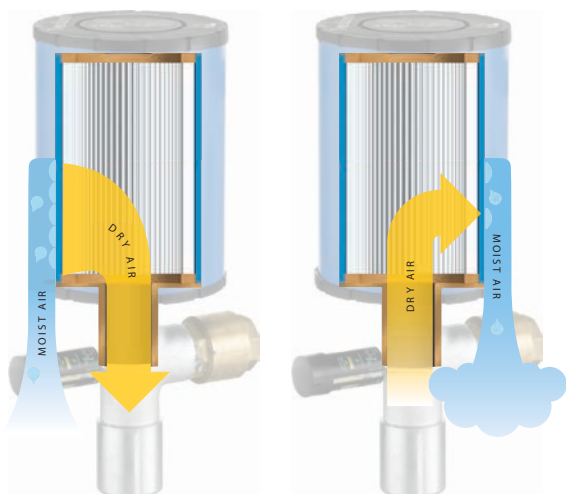
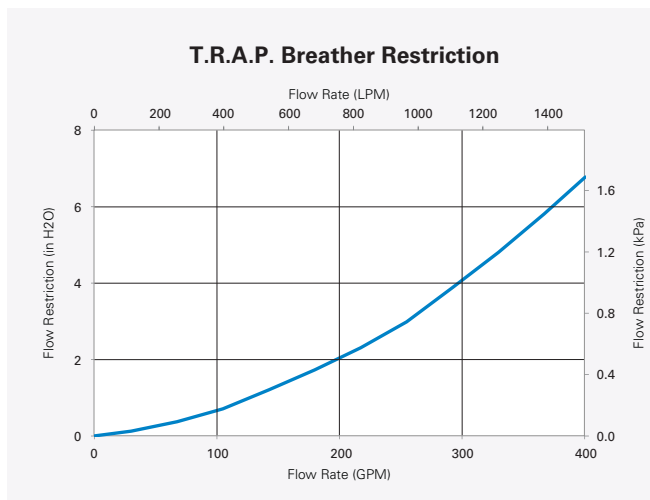


## FEATURES

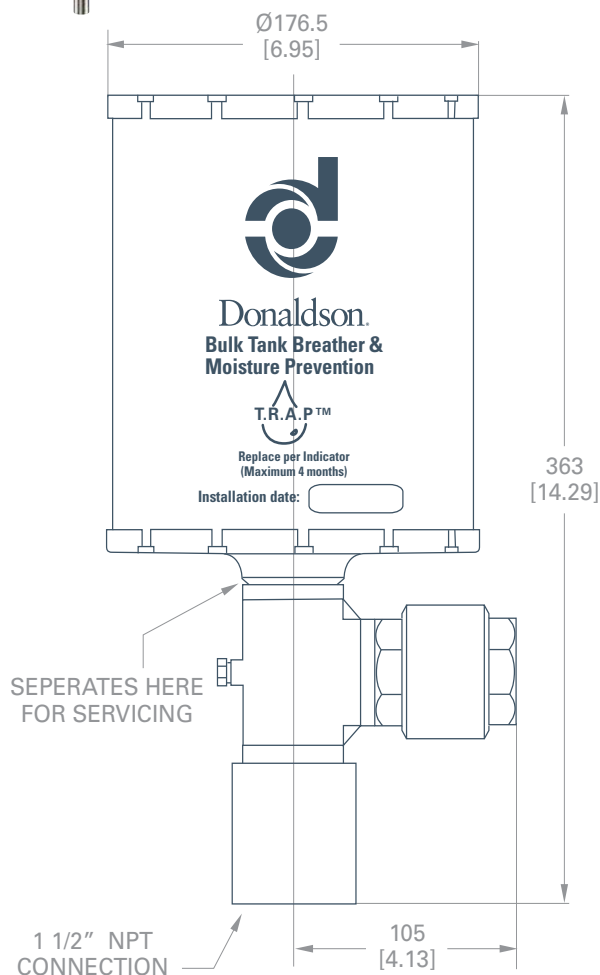
- High efficiency air filtration
- Longer life and lower airflow restriction than typical silica gel breathers
- Self-regenerating moisture adsorption
- Easy to service

## APPLICATIONS

- For use with all diesel fuels and lubricants
- Above and below ground tanks
- Mobile service trucks
- Indoor or outdoor applications
- Most tanks up to 10,000 gal. / 37,854 liters (large tanks may require multiple units)



**T.R.A.P. Breather**  
X920006



### ⚠ WARNING

Always locate your tank's name plate and cross check against the flow chart above to ensure safety. Use maximum flow INTO tank for validating pressure rating and flow OUT OF tank for vacuum ratings. **DO NOT EXCEED TANK PRESSURE OR VACUUM.**

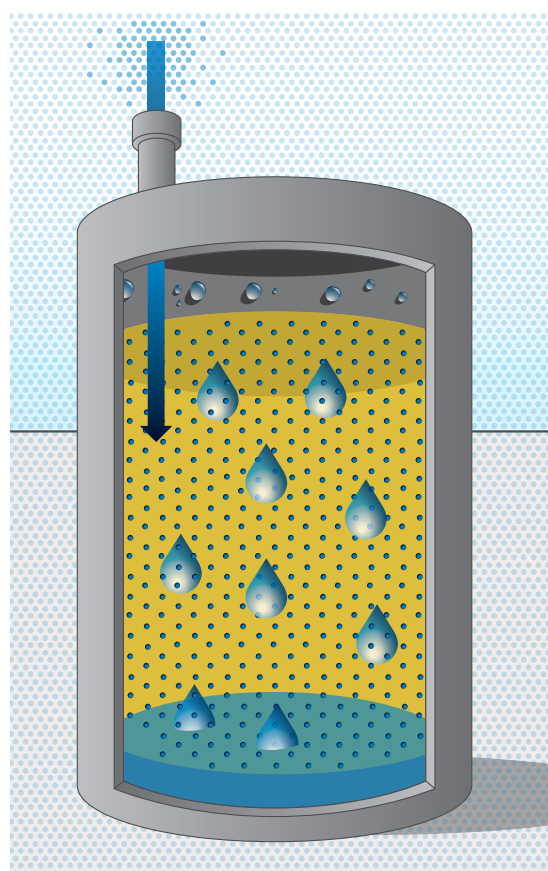


## Reservoir Air Dryer

The Donaldson Reservoir Air Dryer eliminates the need to continually replace conventional desiccant breathers, enhancing reservoir breathing systems by continuously purging and dehydrating reservoir headspace.

With no electrical requirements, the Donaldson Reservoir Air Dryer combats ambient ingress of moisture by introducing a steady stream of clean, dry air to the reservoir. This constant airflow helps sustain optimal conditions and prevents the formation of condensation and rust in the reservoir, minimizing the potential for particulate and water ingress through reservoir access points.

When combined with a T.R.A.P. Breather, the complete system keeps moisture and contamination out, even if fluid flow rate out of the tank surpasses the Reservoir Air Dryer flow rate into the tank.



**Reservoir Air Dryer**

Assembly Part Number	P575852
Efficiency	Reduces dew point as much as 150 °F (83 °C)
Outlet Flow Volume @100 psi and dew point suppression	0.5 scfm (14.2 slpm) maximum
Inlet Air required @ 100 psi	0.8 scfm (22.7 slpm) maximum
Pre-Filter Condition	Visual Indicator (Green/Red)
Pressure Regulator	Dial Gauge
Coalescer Drain	Automatic Float Type
Max Working Pressure	116 psi (800 kPa / 8.00 bar)
Max Operating Temperature	125°F (52°C)
Fluid Compatibility	Petroleum and Phosphate Ester Fluids, Diesel Fuels*
Inlet/Outlet Connection	¼" NPT
Mounting Bracket	3/8" - 16 UN Threaded Nut
Weight	<5 lbs (<3 kgs)
Replacement	Coalescing Pre-Filter

*\*The Reservoir Air Dryer is not recommended for use on gasoline holding tanks or for the head space of any flammable liquid (Flash Point of 100F/38C)*



## FEATURES

- The clean, dry air sweep dehydrates the reservoir headspace and removes dissolved moisture from exposed oils and fuels\*
- Operates with standard plant air; instrument quality air is not required.
- Submicron coalescing air filter collects oil and water droplets and fine particles from inlet air
- Automatic drain purges captured liquid with no intervention required
- Visual indicator monitors filter condition
- Membrane air dryer reduces plant air dew point by as much as 150 °F (83 °C)
- Pressure regulator depressurizes the air and ensures that the proper flow rate of air is introduced into the reservoir

## APPLICATIONS

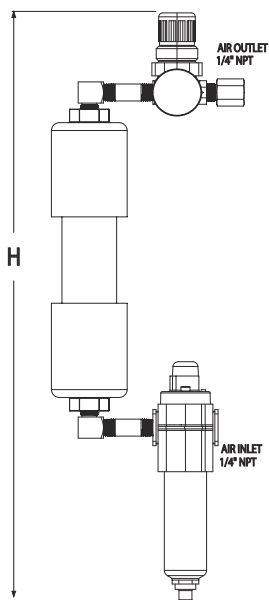
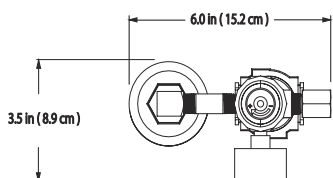
- Lubricant system reservoirs
- Diesel storage tanks
- Oil storage tanks
- Gear boxes
- Hydraulic system reservoirs



*\*The Reservoir Air Dryer is not recommended for use on gasoline holding tanks or for the head space of any flammable liquid (Flash Point of 100F/38C)*



**Reservoir Air Vent**  
P575852



# Accessories

## PARTS

Part Number	Description	Application
<b>DFF1005</b>	I-12 Blanking Cap	Blank off up to 6 orifices on I-12 manifold for flush mounting
<b>P563107</b>	4-Bolt Code 61 Flange to 1½" NPT Adapter	Adapts P568583 Dual Head to 1½" NPT
<b>P573642</b>	Threaded Pipe Nipple	1¼" NPT, for connecting two P570330 single heads in series
<b>P164050</b>	Threaded Insert O-rings	Replacement O-rings for heads and manifolds, Viton, not for use on hP
<b>P564669</b>	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
<b>P574967</b>	Electrical Service Indicator 50 psi / 345 kPa / 3.45 bar	Use with all Clean Solutions heads and manifolds, microprocessor compatible
<b>P574177</b>	Visual Service Indicator 50 psi / 345 kPa / 3.45 bar	For single heads and hP heads, industrial grade green to red
<b>P165965</b>	Visual Service Indicator 25 psi / 172 kPa / 1.72 bar	For single heads and hP heads, industrial grade green to red
<b>P573682</b>	Upstream Pressure Gauge Adapter	For single and dual heads, ⅛" NPT
<b>P573681</b>	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
<b>P563296</b>	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
<b>P563809</b>	Direct Gauge Adapter	For Clean Solutions manifolds, M16 x 2 to ¼" NPT adapter, use to mount pressure gauge to test point
<b>P562709</b>	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
<b>P573414</b>	Upstream Sampling Port Adapter	For single, dual heads, and hP heads, SAE-4, use with P563224 for sampling
<b>P573415</b>	Upstream Indicator Port Adapter	For single, dual heads, and hP heads, SAE-4, use with P563224 for sampling
<b>P563212</b>	Test Point Heads and Manifolds	For all Clean Solutions manifolds, 1/8" NPT to M16 x 2
<b>P563224</b>	Test Point	For all Clean Solutions heads and manifolds, SAE-4 to M16 x 2, use with P573414 and P573415 adapters
<b>P563250</b>	Test Point Hose Assembly, 12"	1620 series M16 x 2 thread, for use with P563212 and P563224 mini mess test points
<b>P563252</b>	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
<b>X009329</b>	Patch Test Kit	Test kit for measuring fluid cleanliness
<b>P567869</b>	0.8 Micron Membrane Filter	Spares for Patch Test Kit, purchase in multiples of 100
<b>P567868</b>	5.0 Micron Membrane Filter	Spares for Patch Test Kit, purchase in multiples of 100
<b>P567865</b>	Analysis Cards	Spares for Patch Test Kit, purchase in multiples of 50
<b>P567861</b>	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

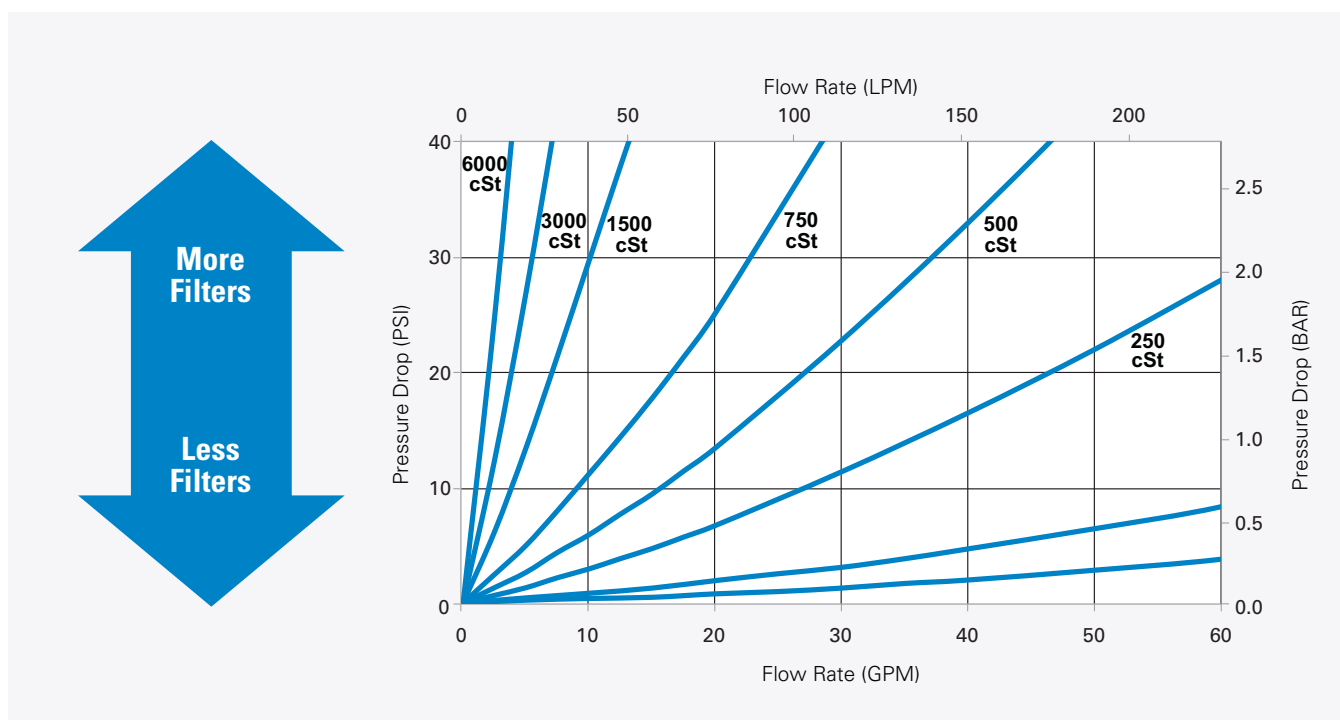
SAE Gear Oil			75W				80W		85W	90			140	
SAE Engine Oil			5W	10W		20			30	40	50			
ISO Grade			15	22	32	46	68	100	150	220	320	460	680	
°F	°C	Diesel												
248	120				4	4	6	7	9	12	13	18	23	
230	110				4	6	7	9	12	15	19	24	30	
212	100		1	5	5	7	9	11	15	19	25	32	41	
194	90		3	5	7	9	11	15	20	26	34	44	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.

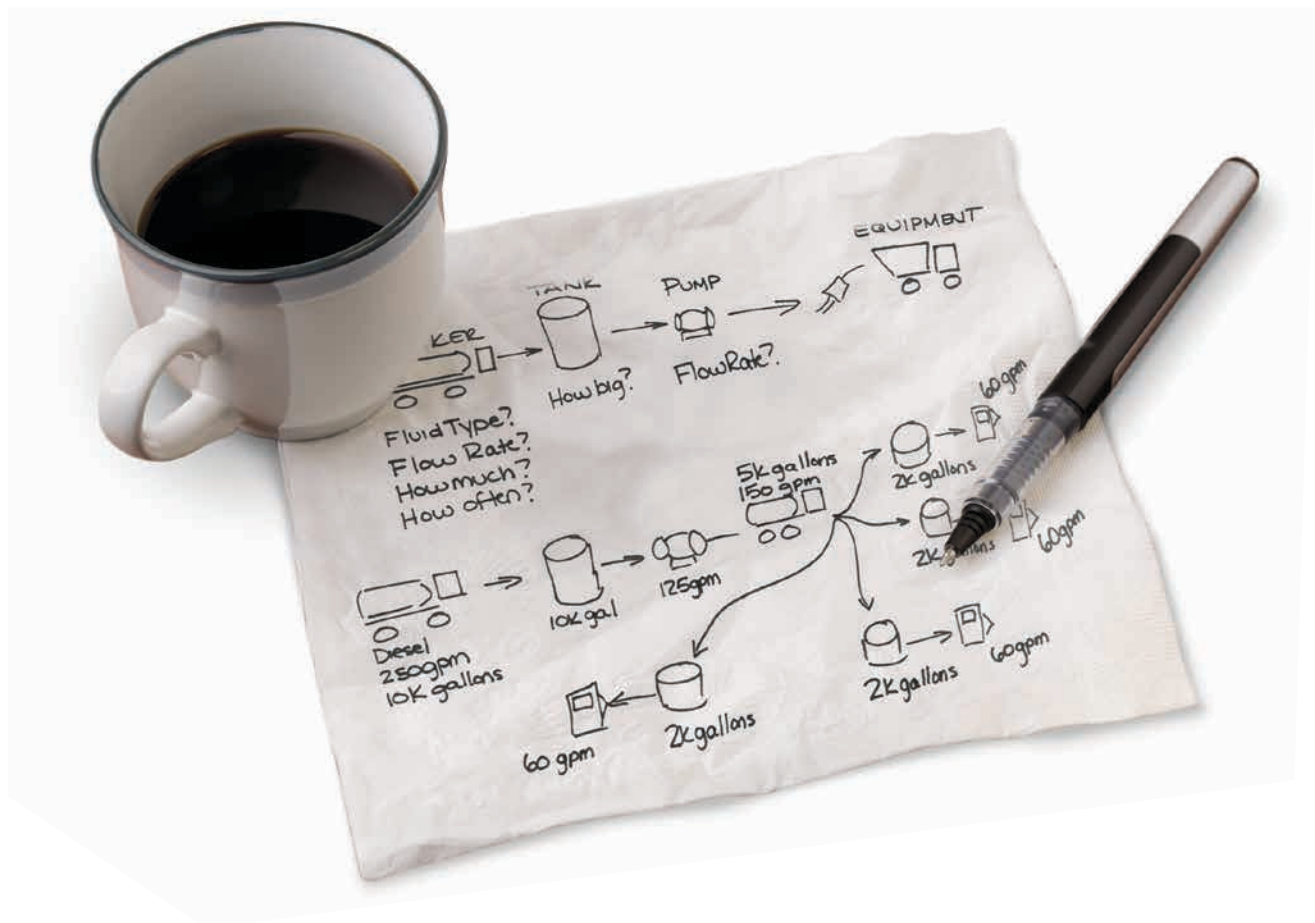
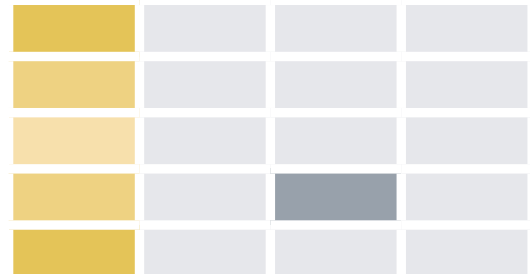
### INFORMATION GATHERING

**FLOW RATE:** \_\_\_\_\_

**FLUID TYPE:** \_\_\_\_\_

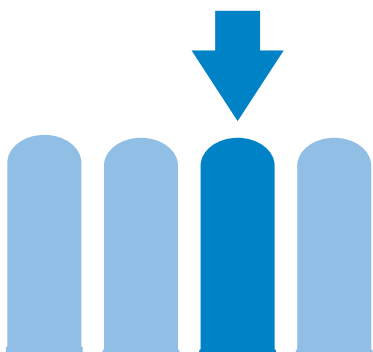
**PRESSURE DROP:** \_\_\_\_\_

**TEMPERATURE:** \_\_\_\_\_

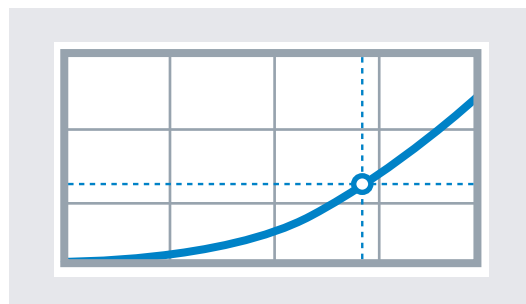




**3** Select the appropriate filter based on desired ISO cleanliness code and working pressure (see pages 10 and 11).



**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.



## 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.**

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.

$$\frac{\text{CALCULATED PRESSURE DROP}}{\text{DESIRED PRESSURE DROP}} = \text{2}$$

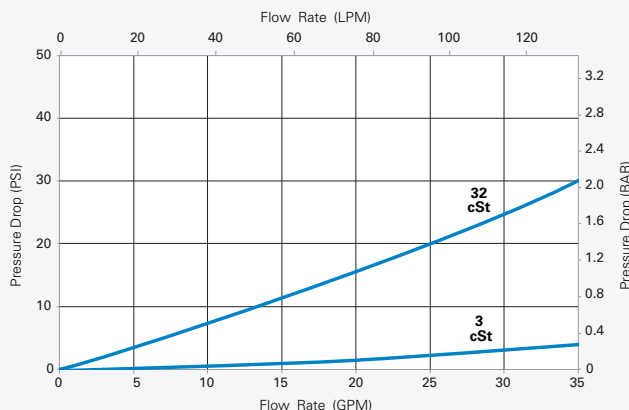




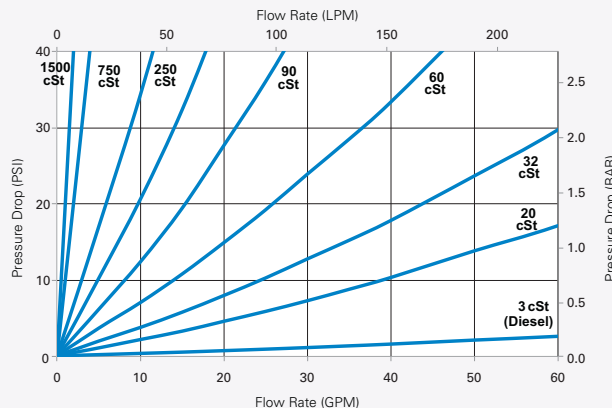

## Flow Rates and Pressure Drops

### FUEL AND WATER ABSORBING FILTERS

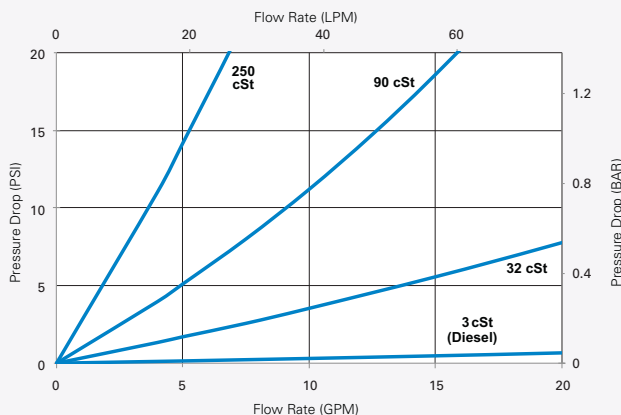
**DBB5333 - Compact Fuel Filter**



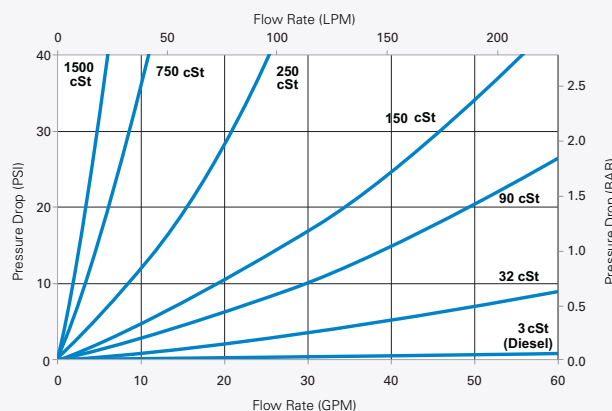
**DBB8666 - Fuel Filter**



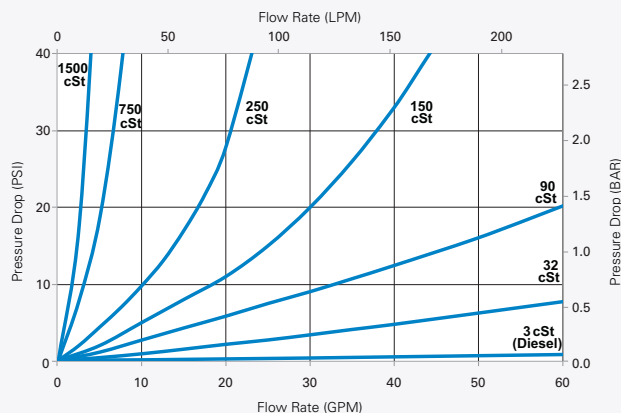
**DBB7733 - Compact Winter Fuel Filter**



**DBB8777 - Winter Fuel Filter**



**DBB0248 - Water Absorbing Filter**

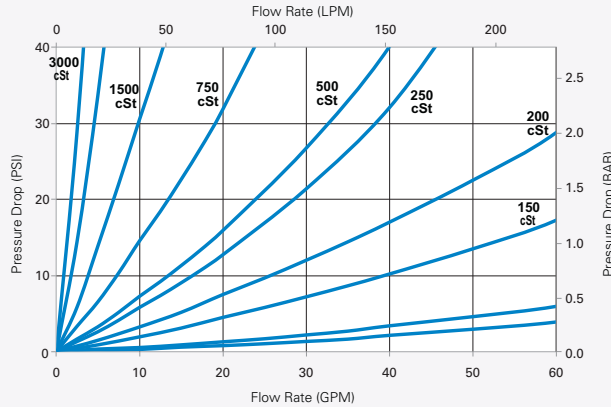




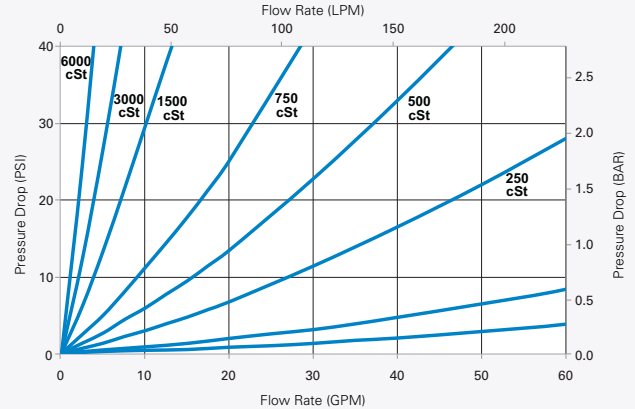
## Flow Rates and Pressure Drops

### LUBRICANT FILTERS

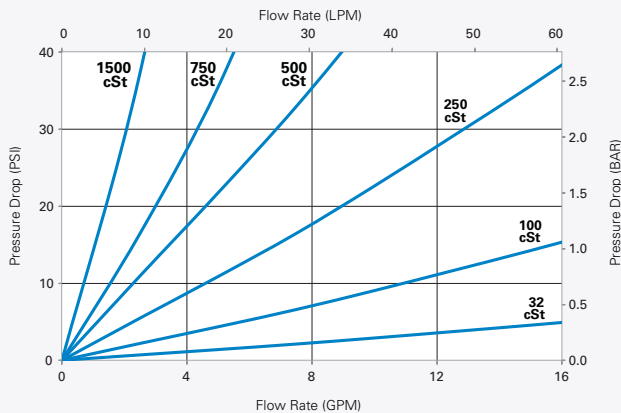
**DBB8665 - Light Oil Filter**



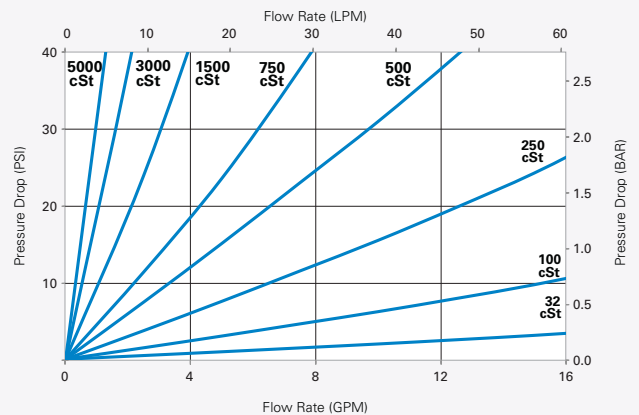
**DBB8664 - Heavy Oil Filter**



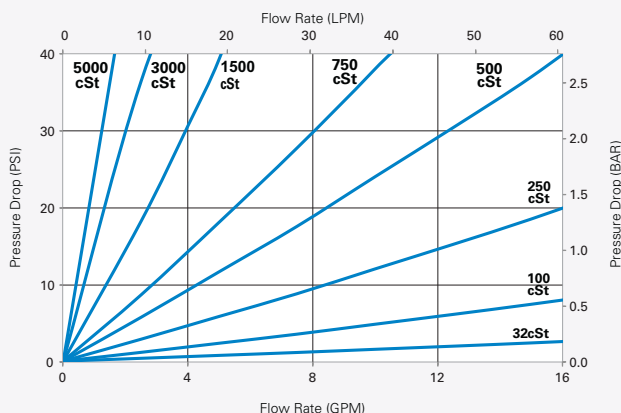
**P565184 - 4 Micron hP**



**P565185 - 8 Micron hP**



**P565183 - 14 Micron hP**





## Global Presence with a Local Touch

At Donaldson, we've built a strong, flexible and responsive distribution network to serve our customers around the world.

**Localized Manufacturing** – It starts with 30+ manufacturing locations around the world – producing most filters in the regions where they're used.

**Primary Distribution Centers** – Filters then move to our regional warehouses and distribution center hubs – meaning the filters you need are never far away.

**Logistics** – We work with a network of transportation and logistics companies, consolidators and cross-docking facilities to deliver products to distribution partners quickly and efficiently.

**Distribution Partners** – We've built one of the largest, strongest and most responsive distributor networks in the filter industry – meaning you can find the filters and support you need, nearly anywhere in the world.



Donaldson Company, Inc.  
Minneapolis, MN USA

855-518-7784 (USA/Canada)

[MyCleanDiesel.com](http://MyCleanDiesel.com)  
[donaldsonfilters.com](http://donaldsonfilters.com)

### Need a Clean Solution?

As a global organization, we have offices throughout the world. Please direct your inquiry to [clean.solutions@donaldson.com](mailto:clean.solutions@donaldson.com). This will enable us to address your inquiry in the shortest possible time.

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Latin America  
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Brazil  
Europe & Middle East  
South Africa

South East Asia  
Greater China  
Japan

Korea  
Australia  
India

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