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Diesel Engine Fuel Filtration Requirements

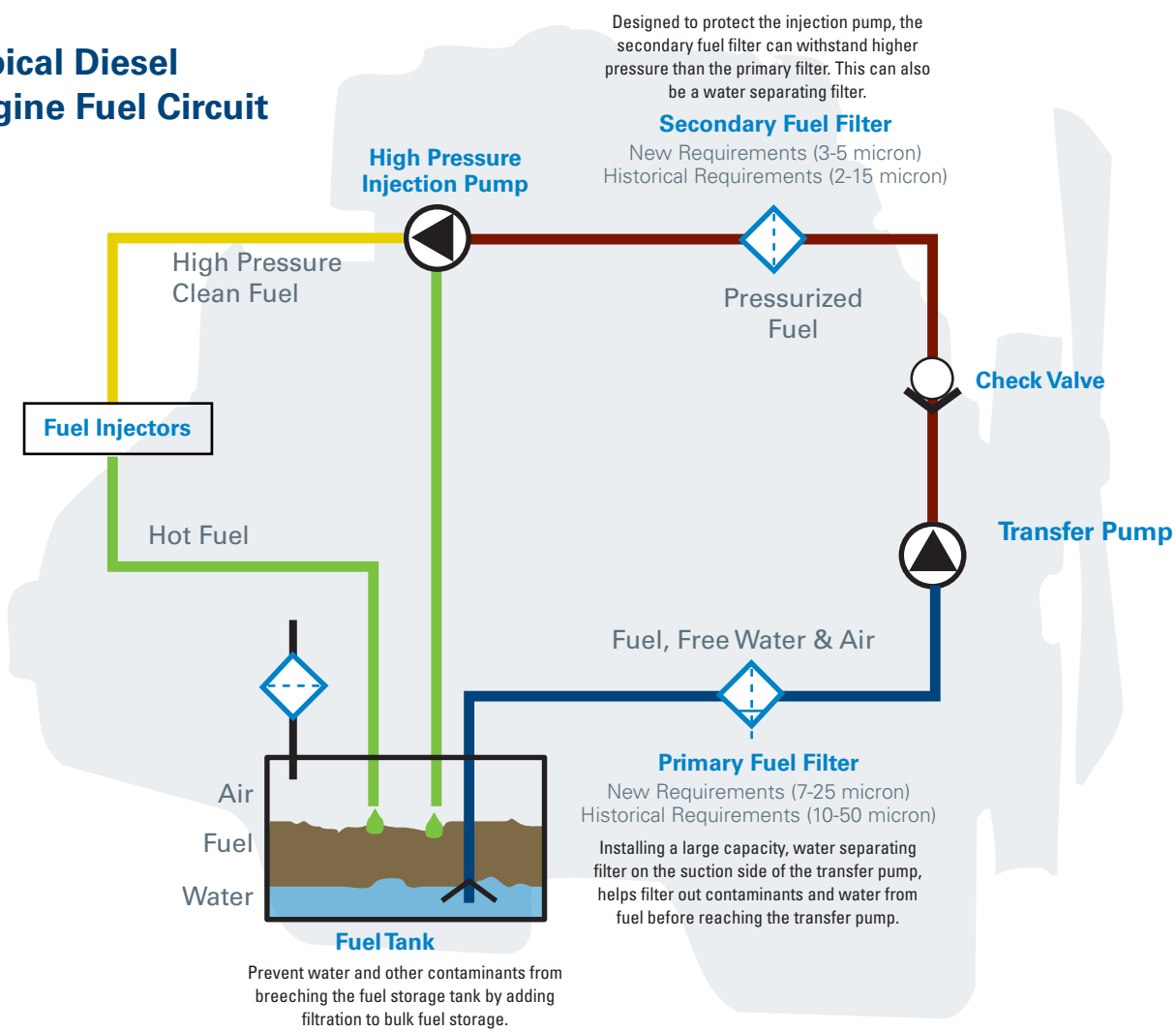
Diesel fuel and diesel fuel systems are ever-changing technologies. Over the past decade, numerous emission standards and engineering achievements provided some of the most advanced, clean, and flexible engine designs, yet the advancements have also included the acceptance of alternative forms of fuels such as biodiesel. The next decade is likely to see more change and improvements as diesel engines remain the work horse behind today's industrialized world.

Fuel filter performance and technology have also been challenged by these rapid changes. Today it is common to demand secondary filtration of 3-5 μm absolute efficiency, while matching with an upstream primary filter of 7-25 μm . These changes come with the expectation that water separation, filtration life, and packaging space remain constant or are improved upon. Donaldson engineers have proven to be up to this challenge through the advancement of media technologies.

Fuel filtration today is an integral part of the complete fuel system. A well designed fuel system takes contamination control into account from the beginning. Water separation, particulate and non-traditional contaminants need to be controlled. Engineers must be conscious of the relationship between the fuel circuit design and overall system cleanliness.

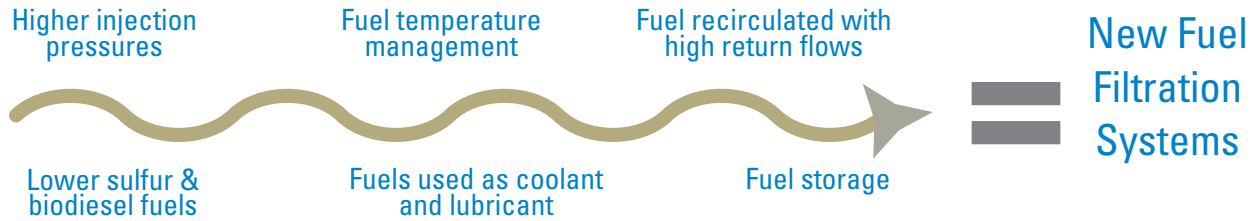
Finally, companies must understand global fuel quality concerns and end user needs. Documentation such as the World Wide Fuel Charter exists to promote convergence of various regional practices. Auxiliary user needs such as design type, preferred alternate fuel base stocks, and maintenance practices must be taken into account during the design process. Providing lasting, high quality fuel filtration solutions to our customers is our goal at Donaldson.

Typical Diesel Engine Fuel Circuit





Trends Driving Fuel System Technology Changes



Harmful Contaminants Found in Fuel Systems

Particulate & Debris

Enters when fuel is transferred between storage tanks. Particulates in fuel can disrupt engine combustion and cause wear to the injectors.



Water

Water in the fuel can cause corrosion and reduces the lubricity of fuel. It can negatively affect the combustion process and consequently damage system components. Water enters fuel from storage tanks.



Wax/Paraffin

Drop out of fuel in cold weather conditions.

Microbes (Bacteria)

Can grow in the water at the fuel interface.

Fuel Degradation Products (FDP)

Fuel by-products result from the thermal and oxidative instability of fuel prior to combustion.

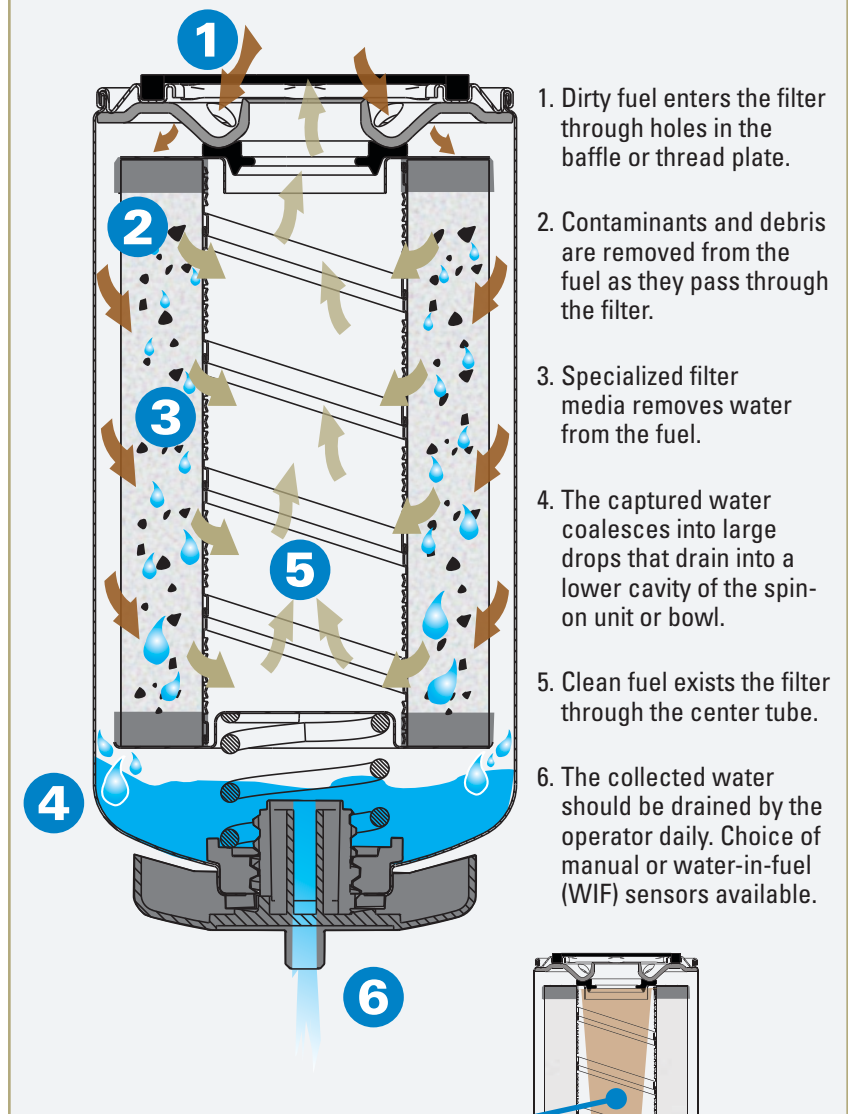
Asphaltenes

Found naturally in crude oil and can be found in refined fuel.

Air

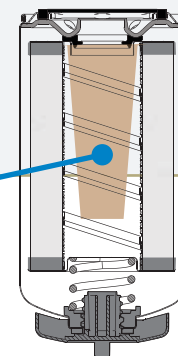
Enters the system from leaks in the fuel line or system connections.

How Particulates and Water are Removed



What is a Standpipe?

Found in some applications, a standpipe is built in to the filter to prevent loss of system prime – preventing air from reaching the fuel injection system.





Filter Media

Filtration media represents the foundation of any filter design. Mastering the science of media creation is a key focus at Donaldson. While our customers may not share this same level of understanding, some basics are always helpful. The media representations below highlight some of the more commonly used media types in this evolving industry.

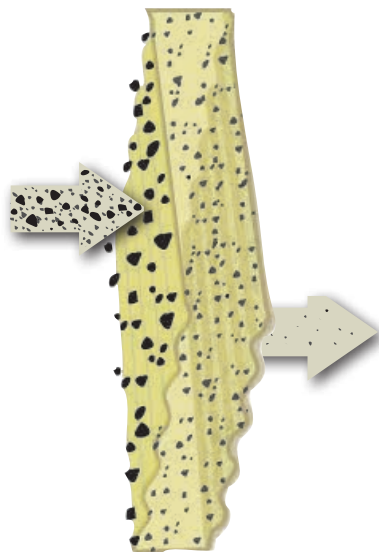
Today's engines are built with more stringent specifications and finer tolerances. Fuel systems, pumps and injectors require cleaner fuel to achieve better combustion and lower emissions. That's why the latest advances in filter media can make the difference between engine power and engine problems.

Cellulose (traditional media)

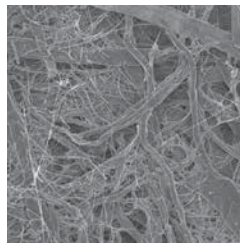
Fuel filter media is most commonly a pleated cellulose base material. This media is tested for compatibility with a variety of diesel fuels, including biodiesel and ULSD.

Larger particulates are trapped on outer layer, while finer particles are captured deeper in the media.

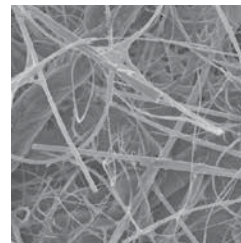
How it Works



SEM 100x



SEM 600x



Media Image



Treated Cellulose Media (Fuel Filter Water Separator)

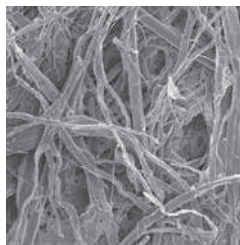
This fuel filter water separator media is a cellulose base material. Treating a cellulose media with a silicone based treatment allows for effective water separation. Typically, this media is used on the suction side of the fuel system to remove harmful water and coarse particulate contaminant.

Water coalesces on media and drains to bottom of can or water collection bowl. Particulate is trapped and held in media.

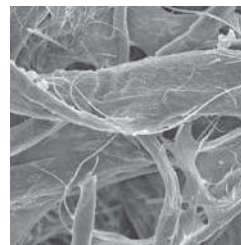
How it Works



SEM 100x



SEM 600x



Media Image

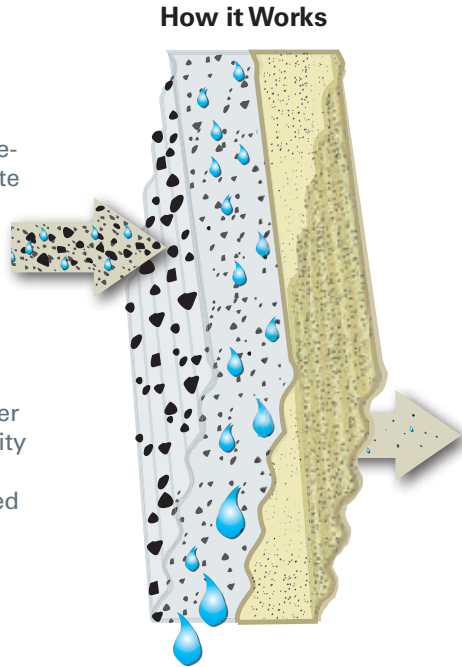




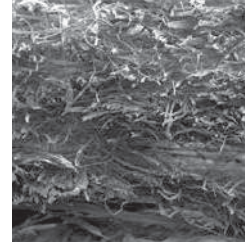
Synteq™ Fuel Water Separator Media (Meltblown & Cellulose)

Donaldson's third generation of Synteq fuel filter water separator media uses both cellulose and a meltblown synthetic layer to achieve the highest levels of fuel filtration performance. This double-layered media increases particulate holding capacity and is a high performance water separator. It has the ability for high efficiency emulsified water separation and can be used in both suction and pressure sides of fuel systems.

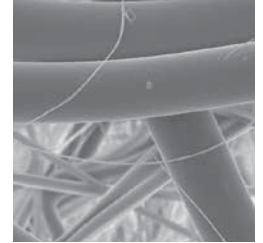
The polyester layer improves water separation and dirt holding capacity performance. This media is ideal for critical applications or extended service intervals.



SEM 100x



SEM 600x



Media Image

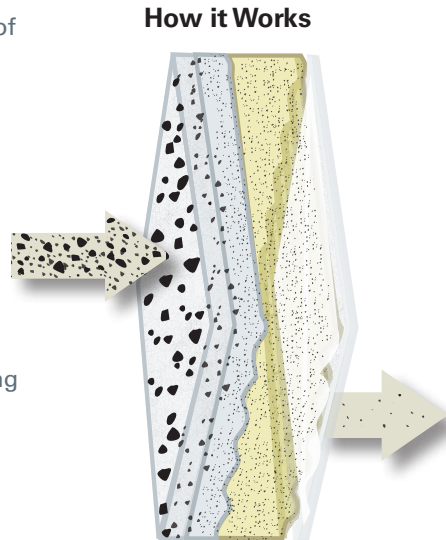


Synteq XP™ Media (Synthetic & Cellulose)

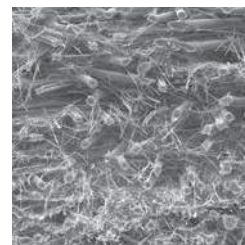
High-performance Synteq XP media was developed specifically to overcome the evolving challenges of today's fuels. This ground-breaking filter media takes fuel filtration performance to a whole new level by providing enhanced engine and system component protection options including:

- Higher efficiency for optimal engine protection, or
- Extended filter life (up to 2 to 3 times that of traditional filter media)

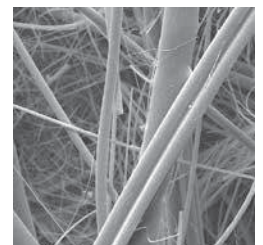
Versatile and smaller filter packaging configuration options are available for secondary fuel filtration.



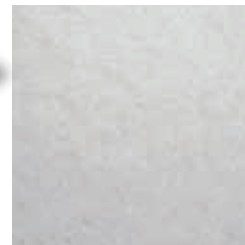
SEM 100x



SEM 600x



Media Image



Fuel System Profile

At the end of this publication is a “tear-out” profile form for you to use to convey your system needs to our engineers.

The system profile has a list of all the design considerations required for proper engineering review to determine which Donaldson fuel system would be the optimum solution.

- Fuel System Characteristics - fuel grade, reservoir capacity, fuel flow rates, and temperature
- Filter change interval
- System functions - including water separation, fuel heating, drain, priming pumps, and venting
- Mechanical performance requirements - pressure, fatigue and vibration
- Filtration performance and test conditions
- Fitting and servicing considerations

As with most manufacturers, custom solutions require minimum annual production volumes and a design and development phase. See page 141 for our fuel filtration system design worksheet.

ENGINE FUEL FILTRATION SYSTEM APPLICATION DESIGN WORKSHEET

This form is intended to be filled out by an engineer or buyer that interested in a custom FUEL filtration design system.

For proper development/design engineering solution, we ask you to provide details about your engine, project due dates, fuel system and performance (mechanical and filtered), system mounting, service, final packaging and product markings.

Upon receipt of the form, Donaldson will assess your requirements and get back to you within three working days.

When completed, please forward to Donaldson. Email: engine@donaldson.com Fax: 902-887-3059

Company Name: _____ Revision: _____
 Project Name: _____
 Contact Name: _____ Title: _____
 Phone: _____ Fax: _____ Email: _____
 Current Donaldson Model Used: (if applicable) _____ Your Part Number: _____

Engine Information

Manufacturer: _____
 Model: _____
 Displacement: _____
 Number of Cylinders: _____
 Annual Volume: _____

Key System Details

Design Proposal: _____
 Prototype Delivery: _____
 Design Freeze: _____
 PPS: _____
 Start of Production: _____

Fuel System Profile

Primary Filtration Secondary Filtration

Fuel Type:
 Standard grade
 Bio diesel and max. content
 Alternative

Fuel Delivery System Brand: _____
 Fuel Flow Rates: lpm or gpm
 Minimum _____ Normal _____ Maximum _____
 Fuel System Pressure (kPa):
 Minimum _____ Normal _____ Maximum _____
 Temperature: °C or °F
 Fuel: Min _____ Normal _____ Max _____
 Ambient: Min _____ Normal _____ Max _____
 Fuel Heating: Yes No
 Water Separation: Yes No
 Printing Pump: Yes No
 Air Relief Valve: Yes No
 Water Collection: Bowl No-bowl
 Water Sensor: Analog Digital

Mechanical Performance

Hydrostatic Pressure Resistance (Bar):
 Test Method: _____
 Minimum Value: _____ kPa

More on next page

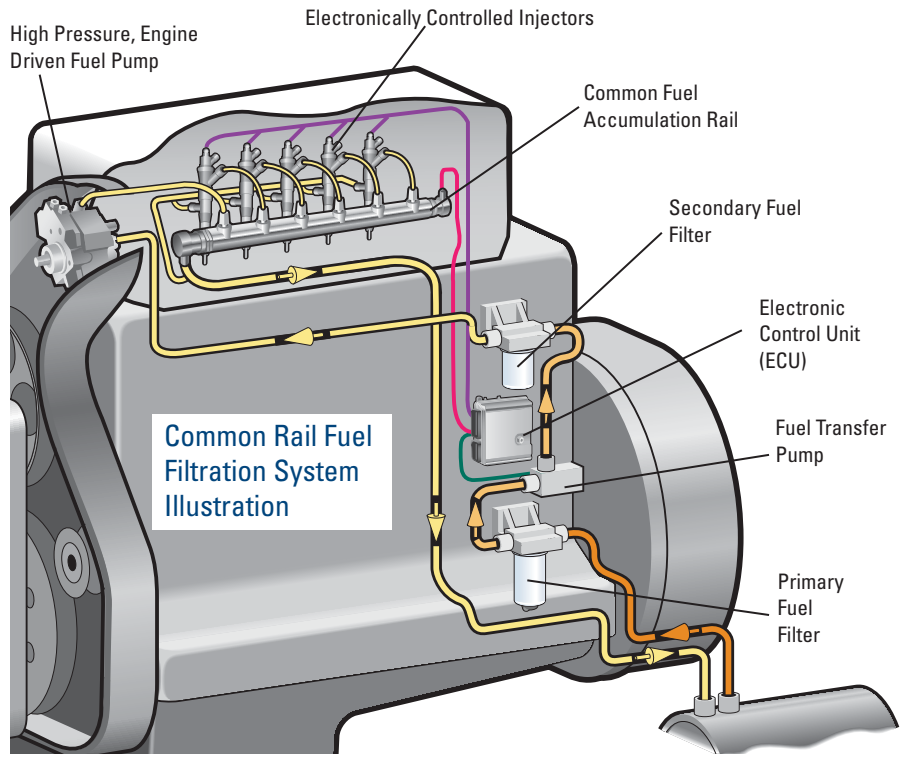
Fuel Filtration Design Considerations

To properly apply fuel filter systems there must be careful consideration of many different factors. There needs to be an understanding of what is being protected and what level of protection is required. Also, there needs to be a general understanding of the fuel system, where the filters are going to be placed and what the operating parameters are. Most fuel filters used in the engine fuel market are located in one of two positions, primary (pre-filter) or secondary (main filter). The illustration below shows the location and function of these two separate filters. When applying fuel filters to an engine, the filters need to be thought of as a system and how they work together instead of two stand-alone parts.

Primary filters are commonly utilized on the suction side of the fuel transfer pump. This placement allows for protection of the pump while simultaneously taking advantage of easier fuel water separation conditions. Water is typically in larger droplets in the suction side of the system (called coarse water).

If water travels through the transfer pump it becomes mixed in with the fuel in smaller droplets (called emulsified water). Typical micron (μm) ratings for suction side primary filters vary over a wide range. Depending on the vehicle, engine and operating environment, primary filters rated as low as $7\mu\text{m}$, or as high as to over $25\mu\text{m}$, may be employed. The efficiency of the primary filter is determined by the pump requirements, but is usually selected to help balance filter system life.

Secondary filters are usually placed between the transfer and high pressure injection pump. These filters protect the high pressure fuel pump and sensitive fuel injection components from damage due to particulate wear and erosion. Typical ratings for secondary filters in high pressure common rail fuel systems are in the $4\text{-}7\mu\text{m}$ range.





What's Right for your Engine?

As you develop the future design of your engine or application, it is important to consider the filtration system. Depending on your objectives, it may be beneficial to choose a catalog offering or to partner with Donaldson for a filtration solution tailored to your specific needs.

Reasons to Select a Standard System

- Low budget for engineering collaboration, development time or cost of component tooling
- Prefer to have parts readily available – want to avoid manufacturing lead times and not interested in warehousing service parts
- Have a need for mix and match head assemblies with various filter performance choices
- End users who prefer an established brand for filtration

Reasons to Consider a Custom System

- Engine design team is integrating new components that require a higher degree of filtration
- Looking for a system that does more; may include sensors, pumps, and/or heaters
- Have budget for engineering collaboration, development time/cost
- Interest in component / supplier consolidation – solutions that bridge a wide range of engine/vehicles
- Offering a unique solution with ease of maintenance

Liquid Filter Selection Process

Donaldson offers a full line of engine liquid products for a wide variety of applications and operating environments. There are different considerations depending on if you're looking for a filtration system for a new application or if you are looking to upgrade or improve on an existing application.

New System

The following pages feature our catalog heads and filter families that can be used to select standard line products. Choose the product to best suit your requirements and considerations

1. Determine flow range requirements.
2. Determine port size requirements.
3. Determine application filtration efficiency requirements.
4. Evaluate other system design considerations (refer to the application design worksheet on page 141).

Existing Application

Filter application selection for an existing application is best determined by OEM part number cross reference or OEM application make and model. Follow these steps only if the OEM part number or make and model catalog record is not available.

1. Determine filter category e.g. Lube, Fuel.
2. Determine filter type e.g. spin on, cartridge.
3. Determine family e.g. spin-on 93mm diameter, cartridge or competitive housing.
4. Determine other characteristics e.g. spin on thread size, inline fuel inlet/outlet diameter
5. Determine other requirements e.g. anti drain, bypass valve and it's opening pressure.
6. Determine available gasket sealing diameter dimensions.
7. Verify filtration efficiency requirements.



Frequently Asked Questions

Q1: Please explain the differences between the primary and secondary fuel filters in terms of the type of medium used, micron rating, and so forth.

Differences between primary and secondary filters vary from system to system, but in general, primary filters are used to separate water and larger particles (7-25 μm efficiency). Secondary filters are for final filtration (3-5 μm efficiency). Primary filters usually will have treated media to provide water separation performance. This can be either cellulose or a multi-layered synthetic media called melt-blown coupled with cellulose like Donaldson's Synteq™ media. Secondary filters have untreated, multi-layered cellulose or purely synthetic media. These differences mainly have to do with the water separation requirements placed on primary fuel filters.

Q2: Have micron (μm) ratings become smaller and smaller as injection technology has advanced? When replacing filters, how do you make sure you have the micron rating that's appropriate for your generation of engine and its injection system?

As injection technology has advanced and injection system pressures have increased the filtration requirements have become more demanding. These systems have required filtration technology to be more and more efficient. When replacing your filters be sure you use an OEM approved replacement or a direct cross from a reputable filter manufacture to ensure you are using a filter that is appropriate for your engine.

Q3: Some truckers used to use a fine primary filter to avoid changing the secondary, while the original equipment concept was to use a coarse primary (on the suction side) and a fine secondary (on the pressure side). This took extra changes, but they liked the idea of avoiding changing the secondary. Is doing this impractical on modern engines?

Primary and secondary filters are usually balanced to provide the required engine protection and the optimum filter life. Placing a fine filter in a primary (suction) filter location is impractical because they can not tolerate as much pressure drop and will need to be changed very often. Generally, fine filters do not contain the required water separation in a primary filter.

Q4: How have new engine designs affected fuel filtration?

In the past, diesel engines had either mechanical fuel injectors or unit injectors. The drive to develop engine that meet emissions regulations has led to the application of common rail fuel injection systems. The higher pressures of common rail systems enables more precise control of fuel delivery and control of the combustion process. The goal of the new technology is to reduce the particulate matter and NOx coming out of an engine system, thereby reducing the burden on after treatment systems.

The very high pressures in the common rail systems require tighter tolerances, elevating the requirements for cleanliness and efficiency on new and future fuel systems. This has created the need for increasingly better fuel filtration technology. Donaldson offers a range of products for those demanding conditions and is developing solutions for tomorrow's requirements.

Q5: Will common rail systems bring any changes in terms of fuel filter requirements? If so, can you say what will they be?

Most fuel injection systems today are already common rail or close derivatives. The technology itself does not drive specific changes, the injection pressures and desired filter service intervals are more influential.

Q6: How important is filtering fuel stored in bulk tanks?

It's becoming very important and can reduce future vehicle maintenance downtime. If you're using a bulk fuel tank, filtering the fuel BEFORE putting in your vehicle is another great practice that can reduce contaminant and water from the fuel before refilling your vehicle tank. Over time, tanks can corrode, water condensation can build up, contaminant could enter the tank opening during fills.

Q7: I've been handling my diesel the same way for years. Why should I change the way I store fuel?

With the exception of reducing sulfur content, fuel standards have not changed substantially in over a decade. Engines, however, have changed dramatically. In order for new equipment to run trouble-free, they require much cleaner fuel. This means an increased need for filtration. Manufacturers are insistent that damage caused by fuel contaminants is not a factory defect. Therefore, it is in your best interest to filter your fuel prior to use.



Q8: Shouldn't it be my fuel supplier's responsibility to deliver clean diesel?

More than likely, your supplier is delivering perfectly in-spec diesel. The problem is that diesel cleanliness specifications are woefully out of date when compared to the needs of the modern engine. Some distributors are starting to go the extra yard and filter diesel prior to delivery, but this is not an industry requirement. An additional note of caution: the term "clean diesel" can also be used when referring to ultra-low sulfur diesel. This is not the same as reduced contamination levels or fuel "cleanliness".

Q9: My fuel filters are plugging up really quickly. Should I change brands?

It is important to use high quality fuel filters to protect your engine. In most cases changing filter brands will NOT solve your fuel problems. Remember, a plugged filter did its job. Rapid filter plugging is an indication that there is a problem with the fuel, not the filter. The key to resolving rapid plugging issues is to determine how filterable solids are getting into or forming inside your fuel tank, and then fixing the root cause. Switching to a lower efficiency filter, regardless of brand, will simply spread the problem throughout your fleet.

Q10: The injectors and fuel pumps on my new equipment keep failing; what can I do?

The first step is to speak with your Original Equipment supplier. If you suspect that dirty fuel is behind the problems, a simple test can verify your fuel cleanliness level. Make sure you put the cleanest fuel possible into your equipment and protect your engine with a high-efficiency fuel filter. This should eliminate injector and fuel pump problems due to dirty fuel.

Q11: Diesel is diesel, right? Why not buy from the cheapest source?

As with anything, you typically get what you pay for. Diesel is expensive, so it is tempting to minimize operating expenses by purchasing the cheapest fuel possible. While this fuel may meet minimum industry standards, that may not be adequate. Small differences in handling practices can have a huge impact on overall fuel quality and cleanliness. Saving a few pennies on your fuel bill may end up costing you far more in downtime, lost production and equipment repairs. Partnering with a good supplier is one of your best defenses against unforeseen fuel quality issues.

Biodiesel – What You Should Know

Biodiesel is a clean burning, renewable, alternative fuel specifically designed for diesel engines. It's produced from domestic renewable sources, including animal fats and plant oils.

Biodiesel blends are created by combining biodiesel with petroleum diesel - allowing it to be used in most diesel engines without any modifications. The blend percentage can vary quite drastically between regions. For example, diesel fuel purchased in Illinois is commonly 11% biodiesel where other states are in the 2% to 5% range. The U.S. Federal Trade Commission (FTC) does not require percentage disclosure to the public for biodiesel blends less than 5%. This may be important for customers experiencing fuel filter life issues.

While biodiesel has many good qualities, it can be a challenge as it relates to filtration. Biodiesel acts as a solvent, so it tends to clean the infrastructure when first introduced, putting a stress on existing filtration. Biodiesel begins to gel or solidify at much higher temperatures than petro diesel, making it difficult to flow and filter in colder climates. And finally, biodiesel contains glycerin, which even in small quantities can contribute to rapid filter plugging. Your best strategy is to remove any solidified glycerin before it reaches your equipment.

All biodiesels are not created equal.

Know your suppliers and ensure they are providing quality biodiesel. The adoption of biodiesel is still in its infancy. Fuel stations are learning how to specify and store biodiesel properly. Industry specifications ASTM 6751, BQ-9000 and EN 14214 exist for your protection, but alone these do not ensure proper storage. Consider keeping a fuel log to trace issues to specific suppliers.

First time users are often most affected. Older equipment may have built up deposits or certain contaminants throughout the vehicle's fuel system (i.e. tanks, lines, etc.). Even quality biodiesel blends will tend to act as a system solvent. The first time user may experience a period of cleaning and short filter life due to this effect. Be assured that these filters are removing harmful contaminants and the plugging will subside. The most harmful thing one can do during this period is find a more "open" filter that would allow the filter to last longer but would let larger contaminant to pass through to fuel injectors.



Continued, Biodiesel – What You Should Know

When switching from ordinary diesel to biodiesel, flush or clean system first.

When first used in an engine, biodiesel has a cleaning effect. The hydrocarbon deposits that have accumulated throughout your fuel system will be flushed out. These deposits will be trapped in your fuel filter - shortening overall filter life. This issue will resolve itself as you continue to use biodiesel blends.

We recommend cleaning areas of the fuel system located downstream of the filters. There is no filtration protection for the injectors if a deposit breaks free after the secondary filter system. This type of cleaning is similar to changing to organic coolant. For example, all scale will flush away and often end up with leaks.

All Donaldson fuel filters can be used with up to 20% biodiesel blends (B20). For more information about our fuel filters, contact your Donaldson Representative or our Customer Support Team.

Key Points – Impact on Fuel Filtration

- Fuel filters used today are generally compatible with biodiesel blends up to B20
- Most plugging problems can be traced back to the fuel quality
- Recommendations to minimize plugging problems include:
 - Applying bulk filtration on storage tanks.
 - Implementing a preventative maintenance program.
 - Requesting compliance documentation from your fuel supplier.
 - Adding a fuel water separator to older vehicles not already equipped.

Common Causes of Fuel Filter Plugging and Shortened Filter Life

Using the wrong fuel for your operating climate will also shorten filter life. Fuels used in cold climates contain additives to help counteract the effects of the temperature. When using a fuel not intended for a cold climate, the fuel can gel or thicken, plugging the filter and greatly reducing filter life.

Fuel Filter Problems in Cold Weather

Encountering poor quality or unconditioned fuel is inevitable, so some precautions should be made when operating in cold weather. Depending on the severity of winter operating conditions, many operators may choose to protect their equipment through the use of fuel additives, fuel heaters, and fuel water separators.

Q: I use a good cold flow improver, so why do I continue to have so many problems in the winter?

Cold flow improvers, by design, stop small diesel fuel crystals from growing into large diesel fuel crystals (also known as gelling). This in turn lowers the temperature at which the diesel can still flow and be used in the fuel system. With today's HPCR engines, filters are becoming more efficient, and the smaller diesel crystals that used to pass through filters now get trapped just as particulates do. This can cause premature plugging of the filter and decreased life.

Most fuel related winter problems can be avoided using a #1 diesel or a winterized diesel blend.

Engine Power Loss

Diesel engine power loss during winter operation is a common occurrence. Unless there is a component failure within the engine, the problem can usually be traced back to paraffin crystal formation in the fuel which restricts the flow through fuel filters. Freezing temperatures can also cause emulsified water to form a fuel/ice slush, further restricting filters. Often, fuel filters are blamed for the problem when, in fact, the problem is caused by the effect of cold weather on grade #2 diesel fuel.

Cloud Point

The Cloud Point is the temperature at which paraffin or wax, which is naturally present in diesel fuel, begin to form cloudy wax crystals. When the fuel temperature reaches the cloud point, wax crystals flowing with the fuel coat the filter and quickly reduce the fuel flow, starving the engine. Typical cloud point temperatures range from -18°F (-28°C) to +20°F (-7°C), but may occasionally be as high as +40°F (4.4°C).

Grade #1 diesel fuel (or kerosene) contains very little paraffin, and therefore has a cloud point near -40°F (-40°C).

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Clean Fuel Carts Filter Anywhere

Compact, mobile carts are great for fuel transfers and kidney looping. Use it in your workshop, with in-plant machinery, or with mobile equipment to achieve and maintain the ISO cleanliness standards of your fuel.

X011407 AC Clean Fuel Cart

The X011407 features a high-quality 120V-AC PIUSI Panther® 56 pump for up to 15 gpm/56 lpm single-pass or kidney-looped filtration.

X011431 24-volt Clean Fuel Cart

The X011431 features a high-quality 24/12V DC PIUSI® Panther pump for up to 21 gpm/80 lpm single-pass or kidney-looped filtration.

X011408 12-volt DC Clean Fuel Cart

The X011408 features a high-quality 12V DC PIUSI Panther® pump for up to 16 gpm/60 lpm single-pass or kidney-looped filtration.



MyClean**DIESEL**.com



**You depend on diesel for the success of your operations.
You want to understand solutions before you see problems.**

Visit MyCleanDiesel.com to learn how clean diesel can help you Achieve More™.

- Learn the essentials of "clean diesel":
 - What is clean diesel?
 - Why is clean diesel needed?
 - How do I get clean diesel?
- Learn how to Achieve More™
 - Reduce unplanned downtime
 - Meet or exceed service intervals
 - Optimize fuel efficiency, power, and emissions
 - Prevent rapid filter plugging
- Understand global emissions regulations and why they matter
- Engine technologies such as high pressure common rail (HPCR)
- Understand additives are typically added to diesel and why?
- Learn how fuel is delivered from the refinery to your tank and why it matters
- Find relevant, diverse, new case studies
- Find up to date reference information/websites
- Discover FAQs from people like you who depend diesel for the success of their operation
- Find a solution for your problem
- Understand the solutions before you see the problems
- Contact the global Clean Fuels team in your area- get almost immediate responses
- Recognize and solve your diesel-related problems
- Find relevant how-to information
 - Taking good samples
 - Patch testing to measure cleanliness
 - Changing filters



Clean Diesel Kits Clean Fuel In Minutes

Donaldson Clean Diesel Kits are the answer to all your fuel cleanliness worries. You can't always control the cleanliness of diesel fuel delivered to you, but you can control how clean it is when you pump into your vehicles and equipment.

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

Every Clean Diesel Kit helps protect your engines, reduce your maintenance costs and prevent unplanned and costly downtime.

Additionally, each kit:

- Provides filtration to ISO 14/13/11 diesel cleanliness in a single pass
- Is recommended for all diesel and biodiesel blends



X011448
Basic Kit includes single head, high efficiency diesel filter and pressure gauge.
For flow rates up to 65 GPM / 246 LPM



X011450
High Capacity Kit includes dual head, high efficiency diesel filters (2), pressure gauge and flange adaptors.
For flow rates up to 125 GPM / 473 LPM



X011449
Clean & Dry Kit includes single head (2), high efficiency diesel filter, water absorbing filter, pressure gauge (2) and T.R.A.P.™ breather.
For flow rates up to 50 GPM / 189 LPM



Filtration Systems – Standard or Modular Designs

The following pages are Donaldson’s catalog product offering for Fuel Assemblies with and without water separation. Within each range there are multiple head assembly and filter choices - including performance and water removal/drain options. Consult Donaldson for a custom solutions.

Use the matrix below to determine the filtration system that best matches your fuel flow requirements, key design requirements and mounting configuration on your engine.

There are multiple filter choices (with and without water separation) within each product families. The flow range values are for fuel filter water separator filtration systems. The flow range will be higher if applying a non-water separating filter. Families identified as "modular" should be considered if you're interested in priming pumps and other add-on components.

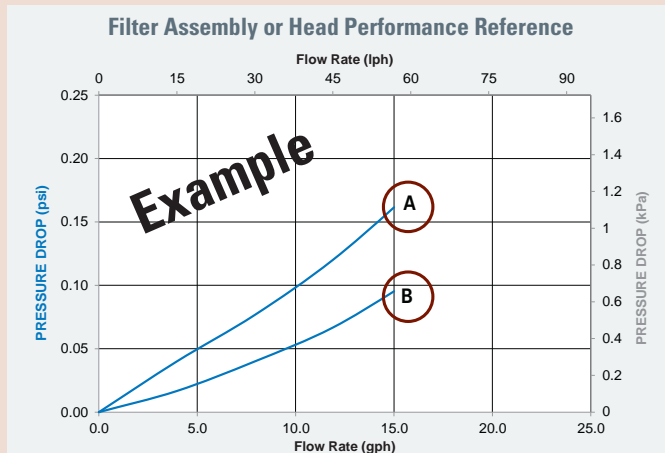
Donaldson recommends multiple assemblies in parallel for engine applications with higher flow ranges and horsepower (kilowatt).



Fuel Filtration System Application Matrix

Mix and Match Fuel Filter Systems		
Families by Filter Diameter ϕ	Flow Range Note: flow ranges listed are for water separating applications. Non-water separating designs will go higher.	Features
76 mm / 3.00"	up to 30 gph / 114 lph	Standard design, side mount, single port heads, spin-on filters
80 mm / 3.15"	up to 60 gph / 227 lph	<i>Modular design, side mount, dual port heads, spin-on filters</i>
93 mm / 3.54"	up to 90 gph / 341 lph	<i>Modular design, side mount, dual port heads, spin-on filters</i>
		Standard design, top mount, single port heads, spin-on filters
	up to 160 gph / 606 lph	Standard design, side mount, single port head, spin-on filter (no water sep)
108 mm / 4.25"	up to 180 gph / 881 lph	Standard design, side mount, three port head, spin-on filters
118 mm / 4.65"	up to 250 gph / 946 lph	Standard design, side mount, single port heads, spin-on filters

How Donaldson Displays Filter Flow versus Pressure Loss Data



Performance Curve Notes

- Pressure loss was tested per the ISO 3968 standards.
- All flow measurements were made with Ultra Low Sulfur Diesel (ULSD at 80°F (26.6°C)).
- Test conducted with a sample size of three filters.
- Filter performance curves will list an alpha reference (see circled areas on chart). These labels correspond with the filter choice tables.



Fuel Filtration

Filter Dia. 76 MM (3.0") x M16-1.5



Flow Range: up to 30 gph / 114 lph

Operating Pressure

0-100 psi (690 kPa) without bowl

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 30 gph / 114 lph

See table for filter flow rates

Fuel Compatibility

#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

Mounting

Engine or Chassis

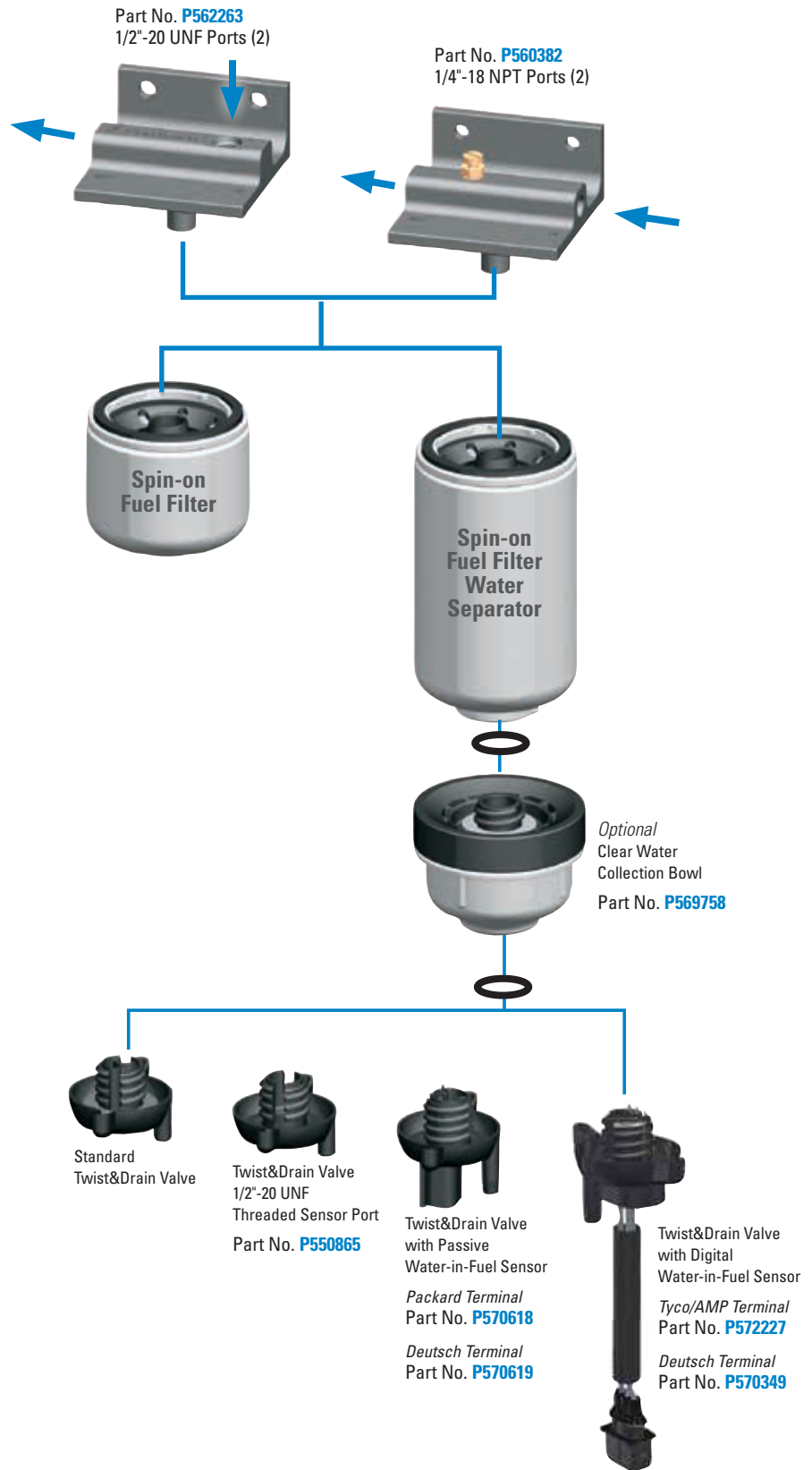
Water Removal @ Recommended Flow Rate

SAE J1488 Emulsified: 95% efficiency

SAE J1839 Free Water: 95% efficiency

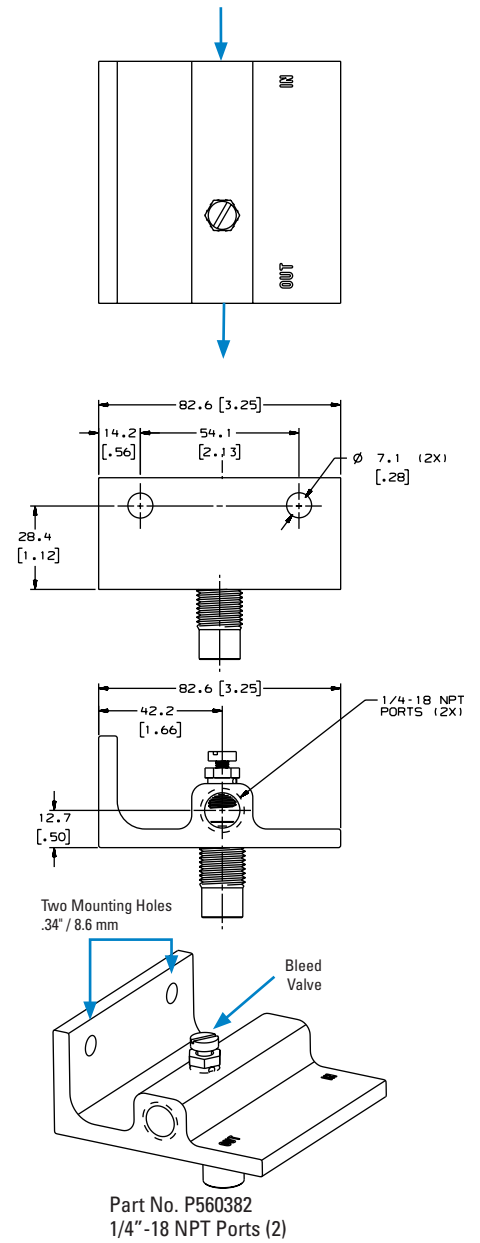
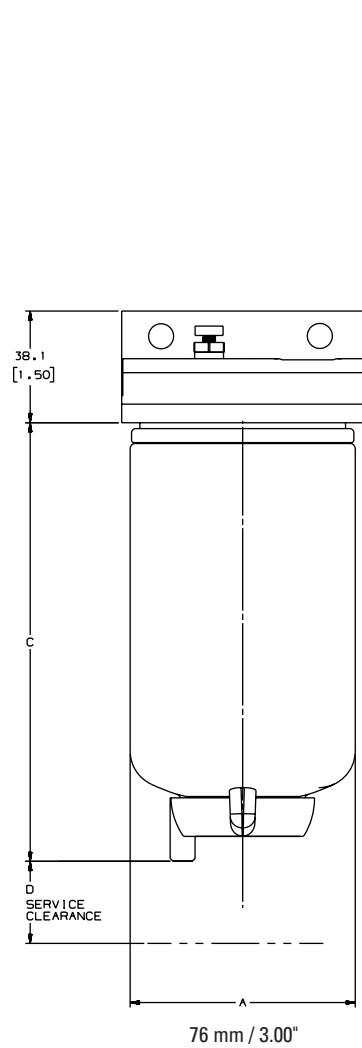
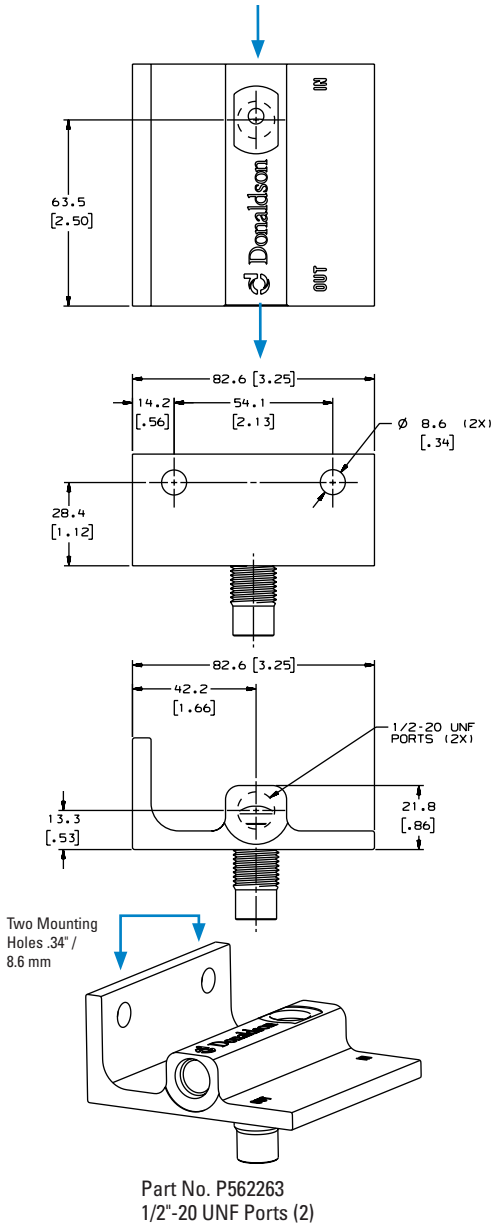
Air Bleed Vent

Bleed options available







Specification Illustrations



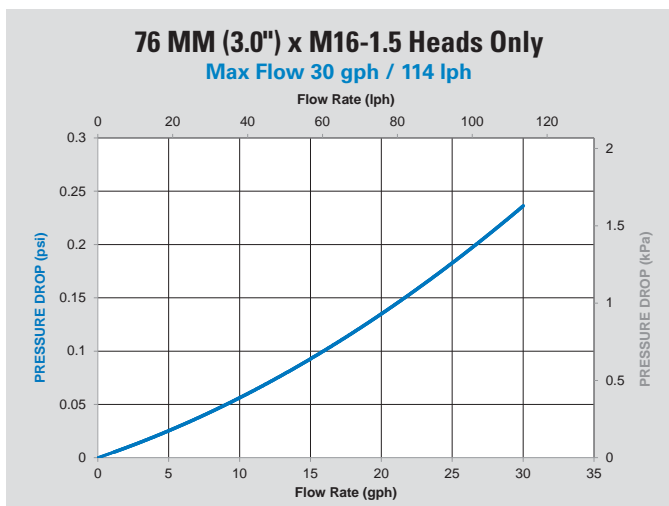
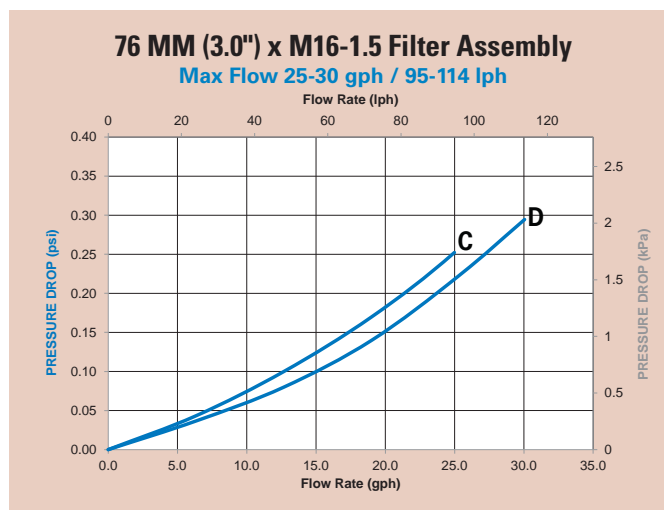
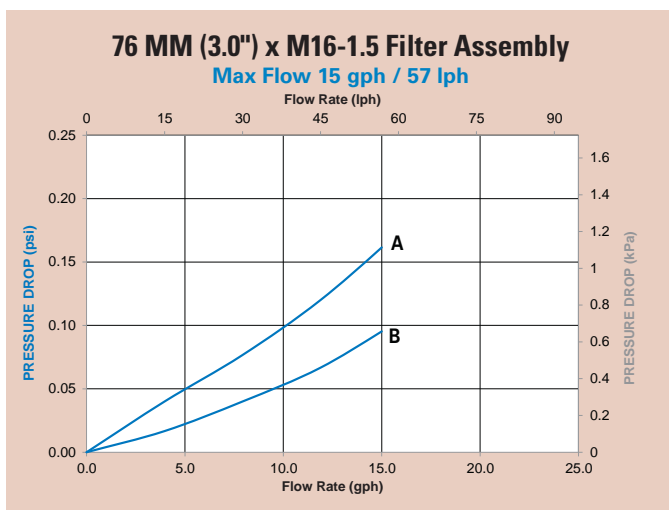


Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length*		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
Standard Drain 	15	57	4.01	102	Treated Cellulose	99% @ 15	No	P551039	B	.93	24
	30	114	5.81	148	Treated Cellulose	99% @ 11	No	P550588	C		
					Synteq	99% @ 3	No	P551615	N/A		
					Treated Cellulose	99% @ 15	Yes	P550248	C		
No Drain 	15	57	3.26	83	Cellulose	99% @ 16	No	P550345	B		
	25	95	4.72	120	Cellulose	99% @ 9	No	P555095	A		
					Cellulose	99% @ 16	Yes	P553004	C		
					Cellulose	99% @ 9	No	P550943	C		
30	114	4.72	120	Cellulose	99% @ 16	Yes	P550440	D			

* Water Collection Bowl (part no. P569758) adds 1.98" / 50 mm to filter length.

Performance Curves





Flow Range: up to 60 gph / 227 lph

Operating Pressure*

0-14.5 psi (100 kPa) with hand pump

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 60 gph / 227 lph

Note: Maximum flow rate may be exceeded (up to 400 lph) for non water-separating applications

Fuel Compatibility

#1 or #2 Diesel, Kerosene
Biodiesel up to B100

Mounting

Engine or Chassis

Clean Pressure Drop (Restriction)

At recommended flow rate without check-valve and priming pump

Water Removal

SAE J1488 Emulsified: 95% efficiency
SAE J1839 Free Water: 95% efficiency

Air Bleed Valve

Automatic or manual

Electric Heating Options

12V or 24V

Thermocouple heater rod, or PTC (Positive Temperature Coefficient) heater plate

Porting Size Options

Custom port configuration options:
1/2 - 20 SAE
9/16 - 18 SAE
M14x1.5 mm

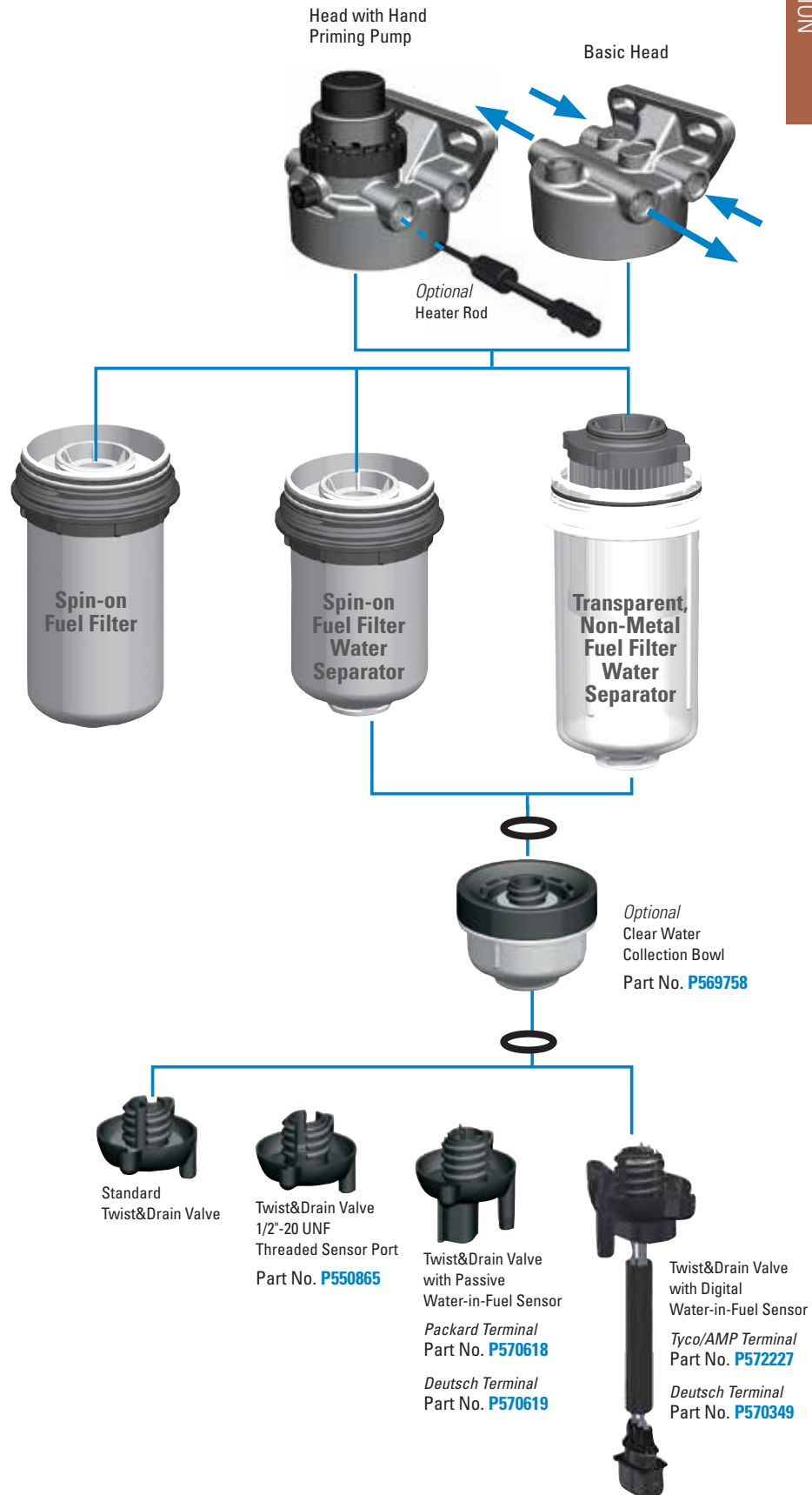
Pump Options

Electronic Transfer Pump:
12V or 24V
brushed or brushless motor types
Hand Priming Pump

Media Options

Custom performance packaging with advanced Synteq XP media technology, Synteq or standard cellulose media

* Dependent on application and configuration



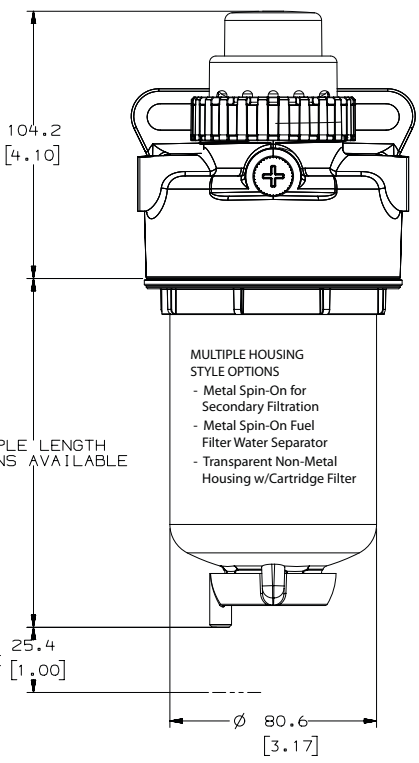
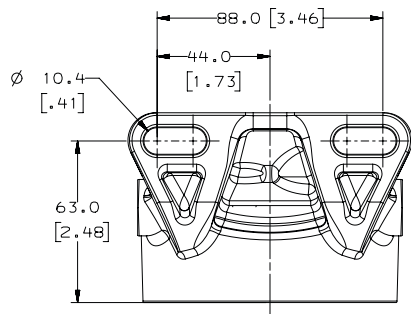
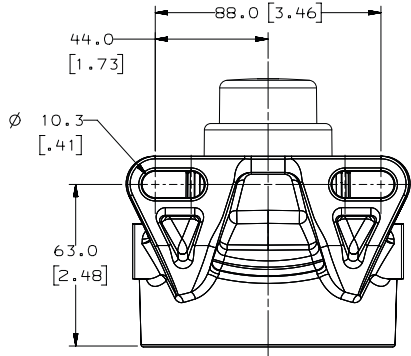
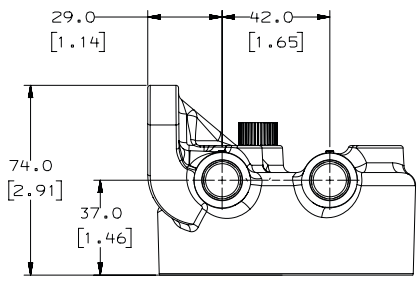
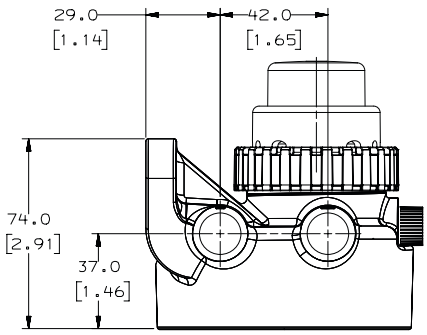
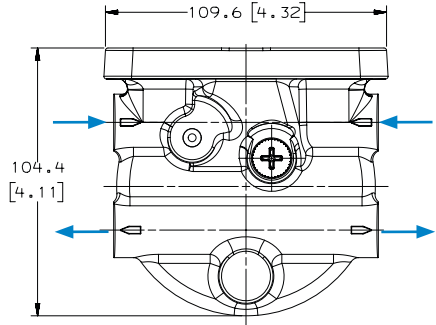
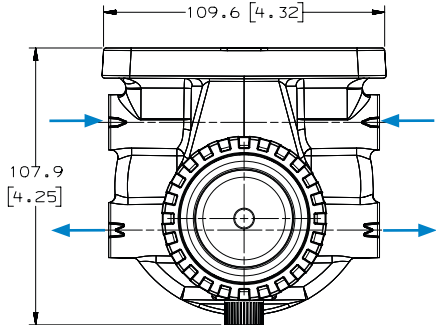


Fuel Filtration

Filter Dia. 80 MM (3.15") x M94-3



Specification Illustrations



- MULTIPLE HOUSING STYLE OPTIONS
- Metal Spin-On for Secondary Filtration
 - Metal Spin-On Fuel Filter Water Separator
 - Transparent Non-Metal Housing w/Cartridge Filter

Lead Time Note
 This product is configured with the specifications and features of your choice.
 Please contact your Donaldson representative for more details.



Flow Range: up to 90 gph / 341 lph

Operating Pressure

Without Drain Bowl:
-40 to 100 psi (-275 to 690 kPa)

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 90 gph / 341 lph

Fluid Compatibility

#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

Mounting

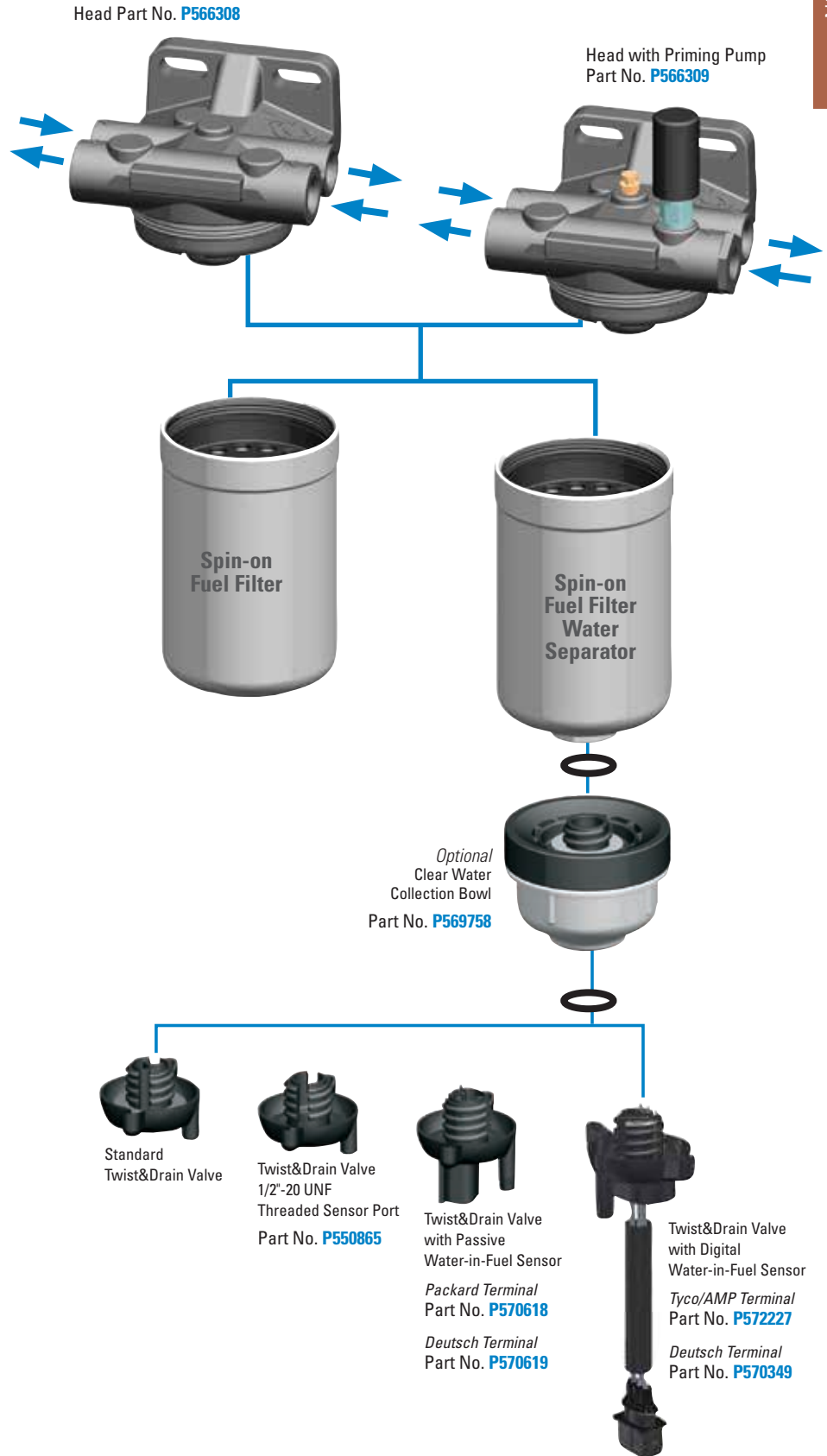
Engine or Chassis

Water Removal @ Recommended Flow Rate

SAE J1488 Emulsified: 95% efficiency
SAE J1839 Free Water: 95% efficiency

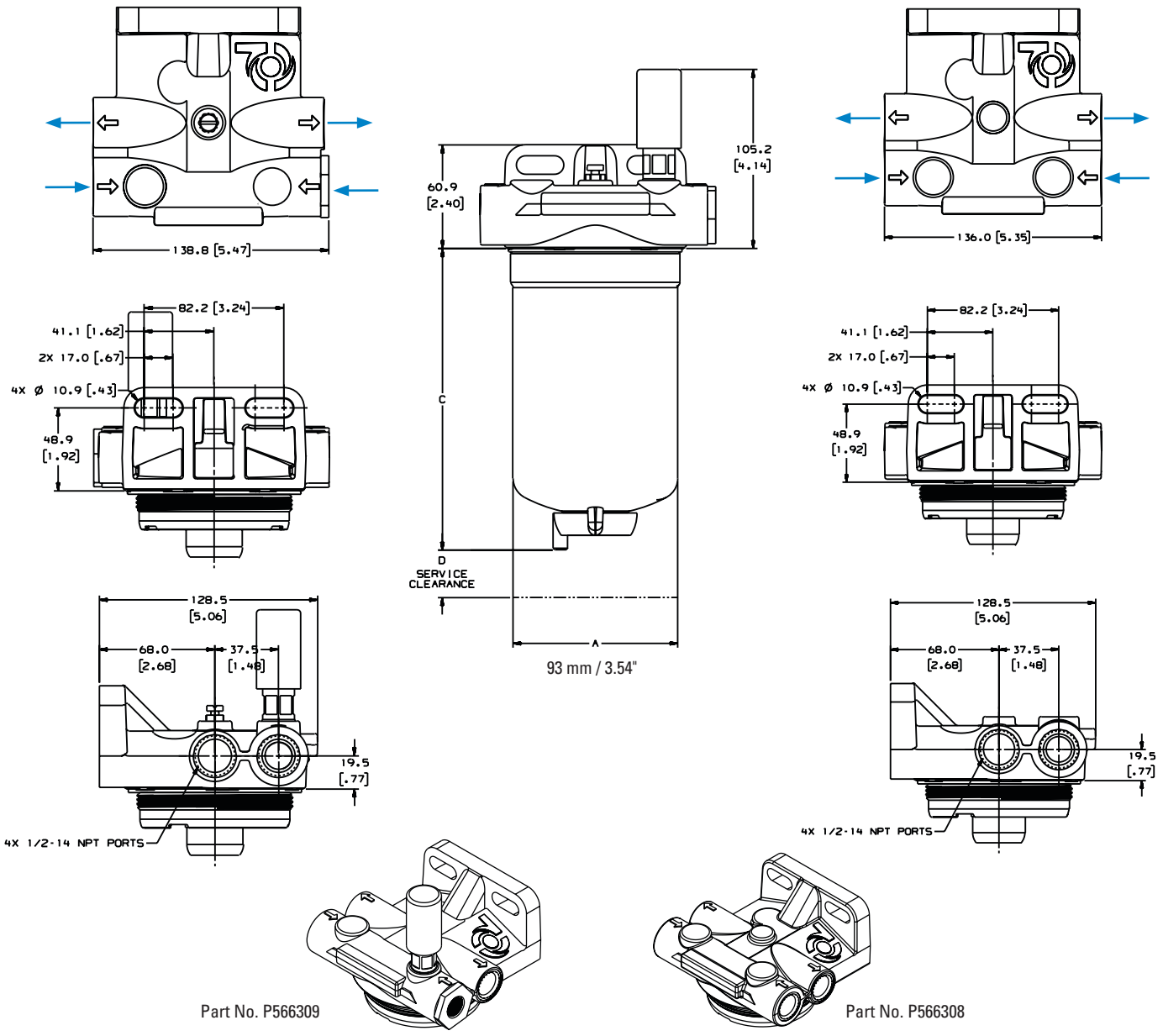
Air Bleed Vent

Bleed options available







Specification Illustrations



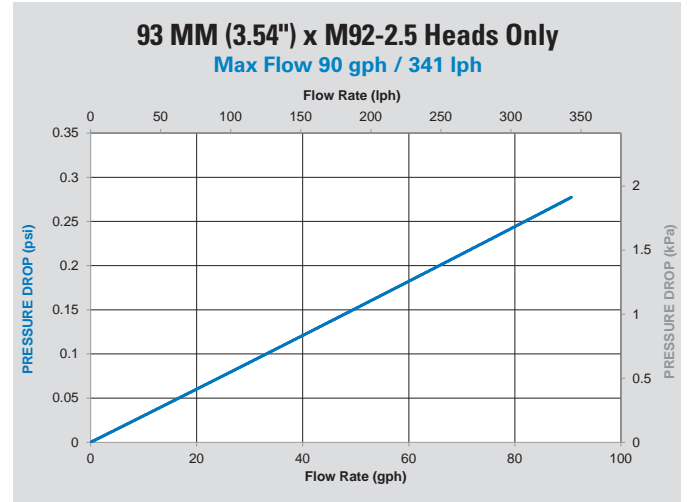
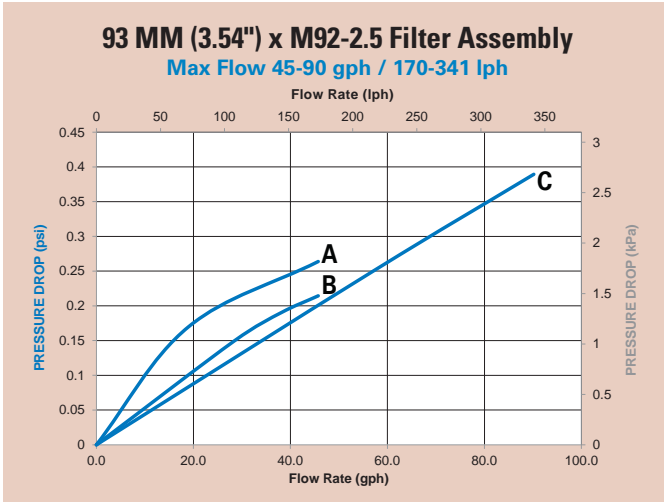


Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length*		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
Standard Drain 	90	341	6.88	175	Cellulose	99% @ 13	No	P566312	C	1.50	38
No Drain 	45	170	6.1	155	Cellulose	99% @ 3	No	P566310	A		
					Cellulose	99% @ 8	No	P566311	B		

* Water Collection Bowl (part no. P569758) adds 1.98" / 50 mm to filter length.

Performance Curves





Fuel Filtration

Filter Dia. 93 MM (3.54") x 13/16"-12



Flow Range: up to 90 gph / 340 lph

Operating Pressure

0-100 psi (690 kPa) without bowl

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 90 gph / 340 lph

See table for filter flow rates

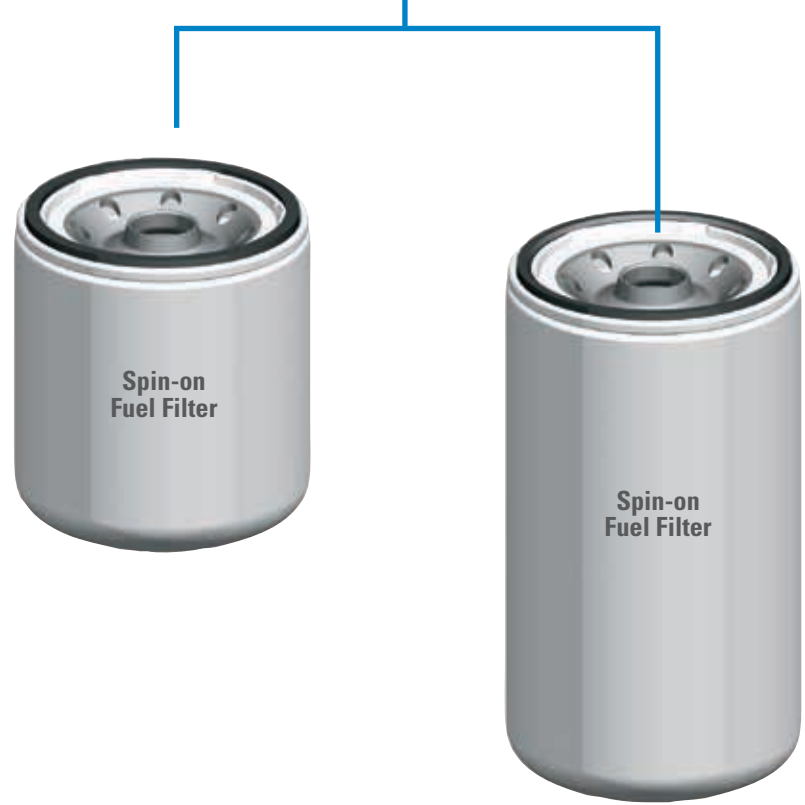
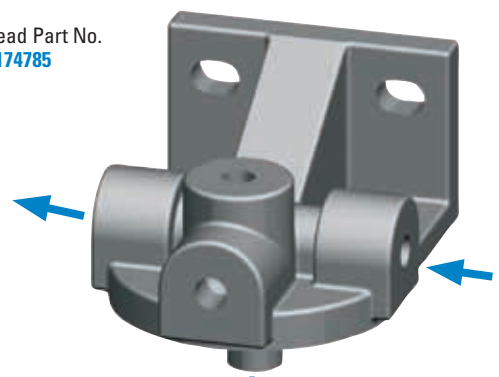
Fuel Compatibility

#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

Mounting

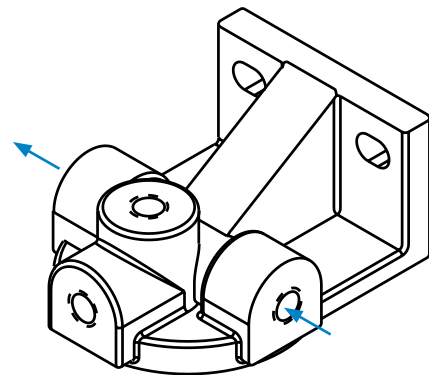
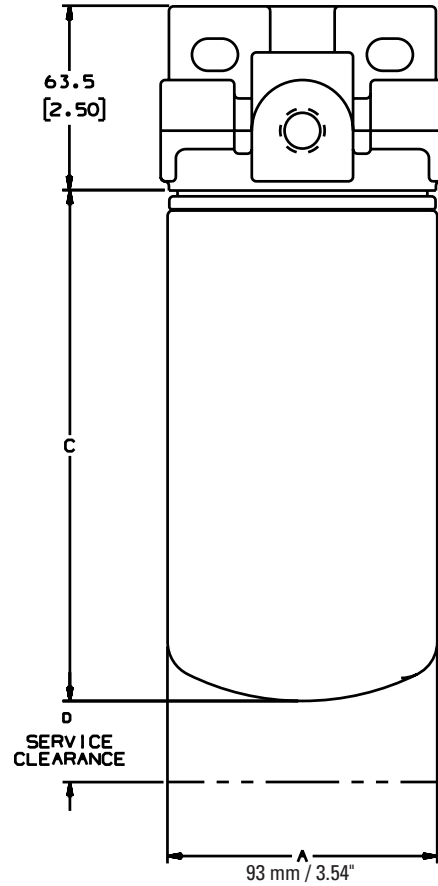
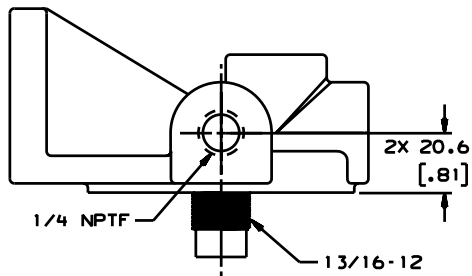
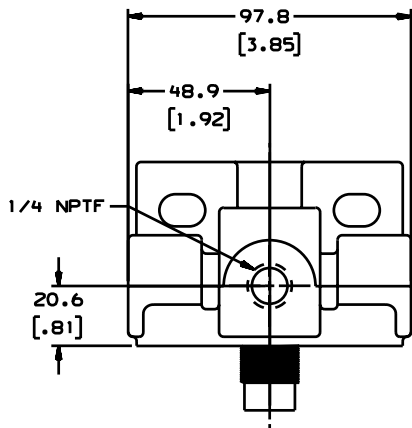
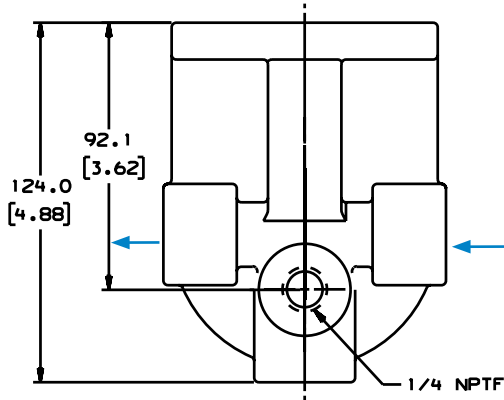
Engine or Chassis

Head Part No.
P174785






Specification Illustrations

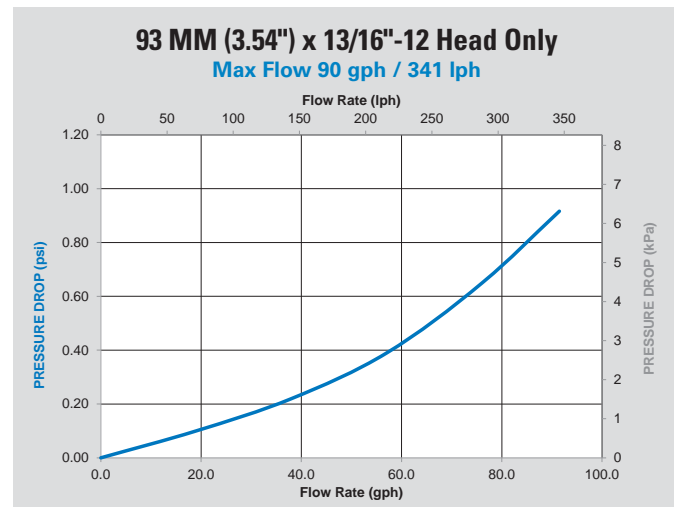
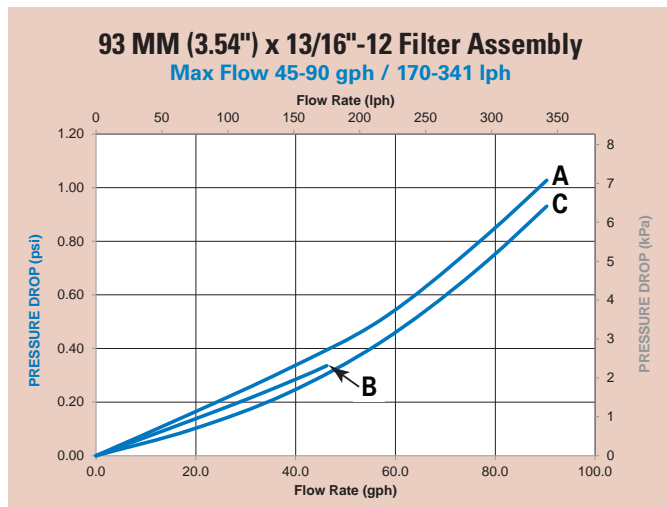




Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
 No Drain	45	170	4.21	107	Cellulose	99% @ 16	No	P550928	B	.90	23
					Synteq	99% @ 5	No	EFF7917	C		
	90	341	6.85	174	Cellulose	99% @ 9	No	P556916	C		
					Cellulose	99% @ 3	No	P556917	A		

Performance Curves





Flow Range: up to 160 gph / 606 lph

Operating Pressure

0-100 psi (690 kPa) without bowl

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 160 gph / 606 lph
See table for filter flow rates

Fuel Compatibility

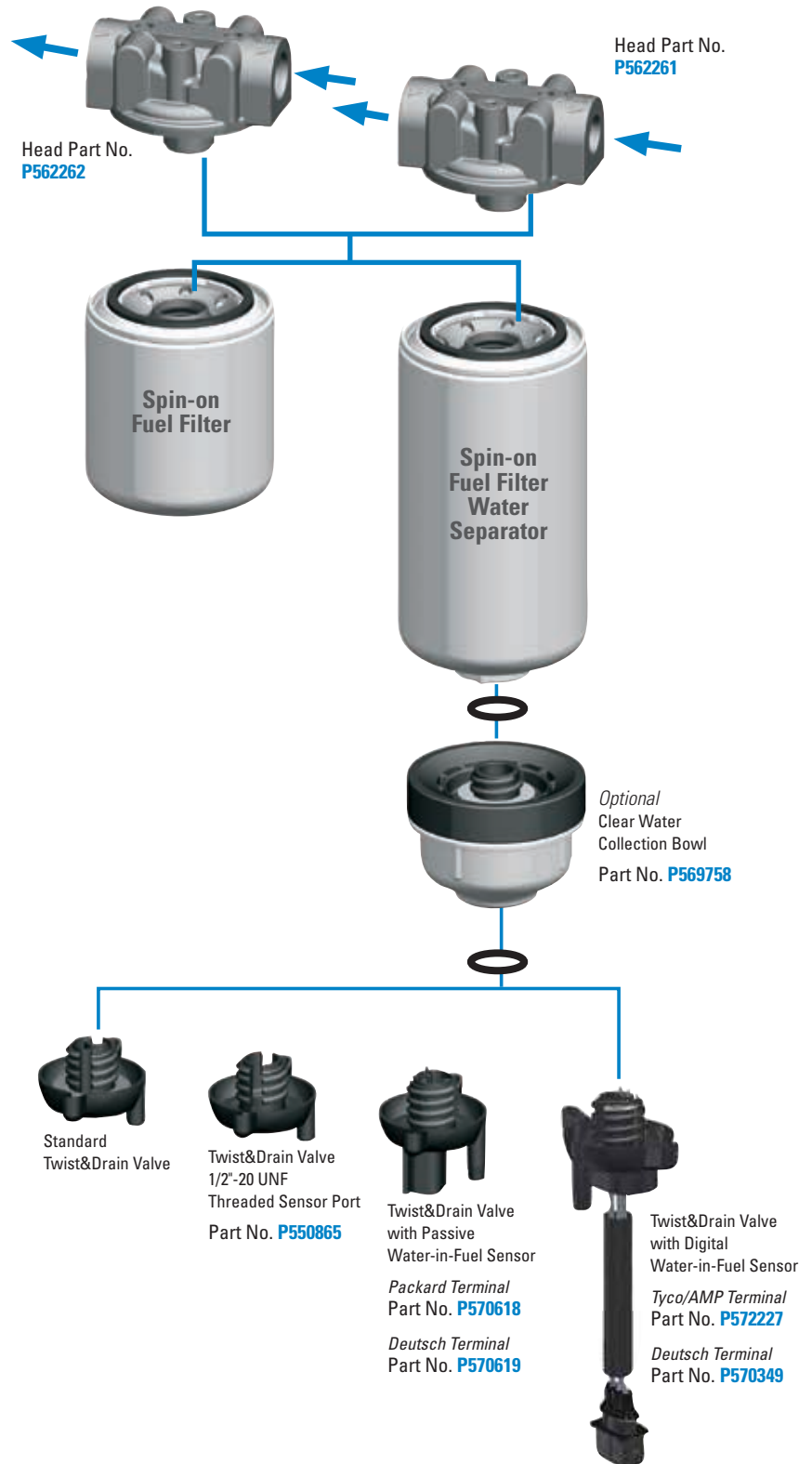
#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

Mounting

Engine or Chassis

Water Removal @ Recommended Flow Rate

SAE J1488 Emulsified: 95% efficiency
SAE J1839 Free Water: 95% efficiency



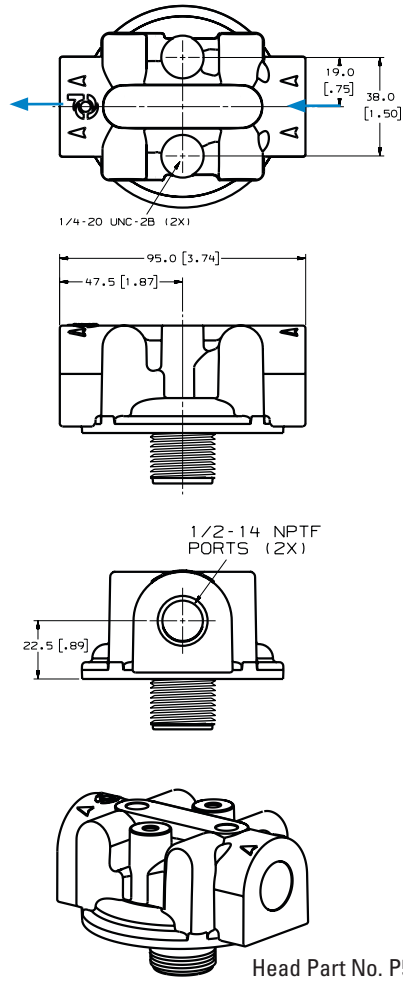
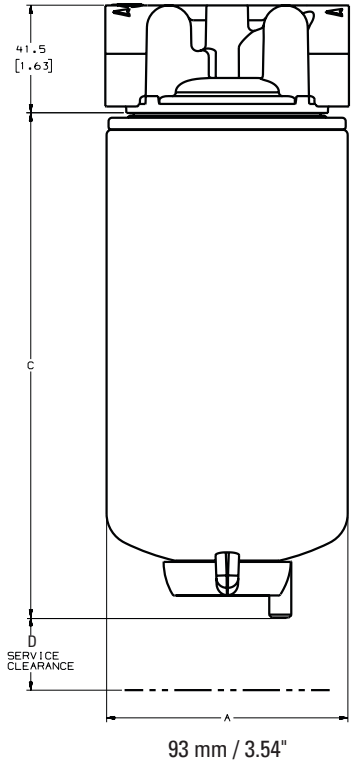
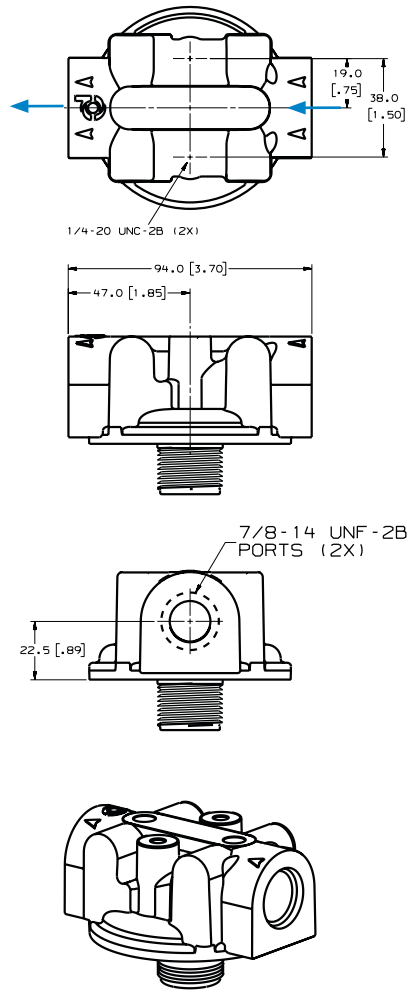


Fuel Filtration

Filter Dia. 93 MM (3.54") x 1"-14



Specification Illustrations





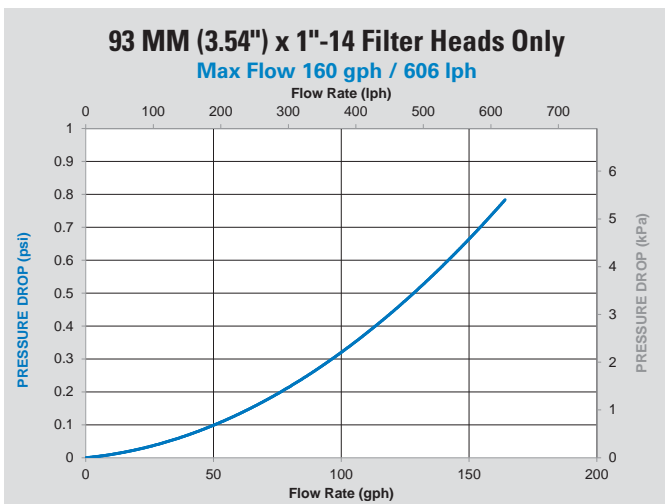
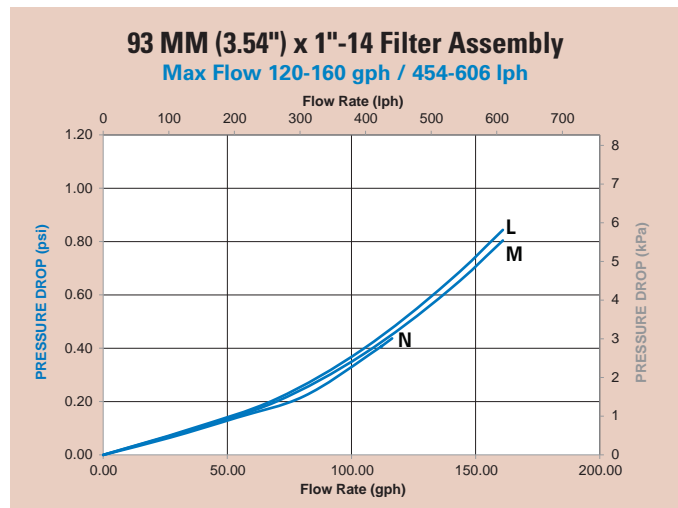
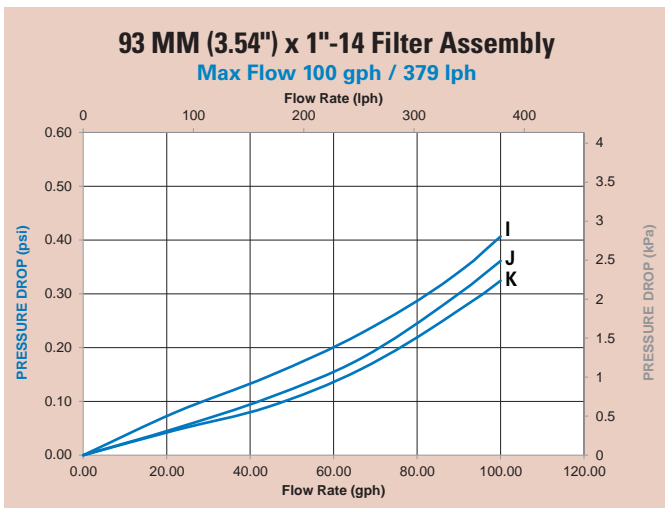
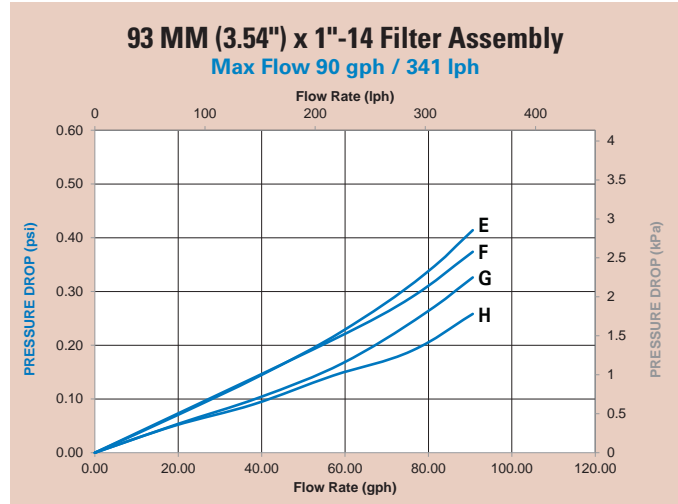
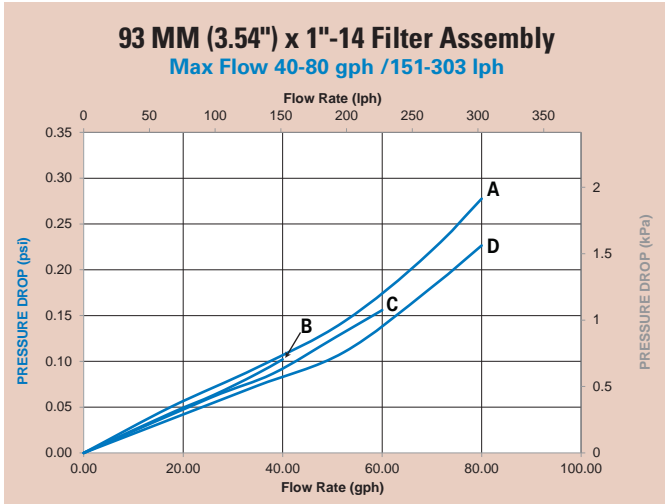
Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length*		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
Standard Drain 	90	341	7.38	187	Synteq	99% @ 10	No	P550847	G	.87	22
					Treated Cellulose	99% @ 15	No	P558000	G		
			7.61	193	Treated Cellulose	99% @ 3	No	P553203	G		
	100	379	7.68	195	Synteq	99% @ 10	Yes	P551001	J		
					8.64	219	Synteq	99% @ 10	No		
			Treated Cellulose	99% @ 35			No	P553204	K		
	120	454	9.70	246	Synteq	99% @ 10	Yes	P551000	N		
					9.71	247	Treated Cellulose	99% @ 7	Yes		
	Drain Valve for Deutsch WIF Sensor 	100	379	8.40	213	Synteq	99% @ 10	No	P550848		
120		454	9.01	229	Synteq	99% @ 10	Yes	P551122	N		
			9.40	239	Synteq	99% @ 10	Yes	P551103	N		
Drain Valve for 1/2"-20 UNF Threaded Port Sensor 	90	341	7.61	193	Treated Cellulose	99% @ 3	No	P553213	E		
					8.64	219	Synteq	99% @ 10	No	P553211	G
			Treated Cellulose	99% @ 35			No	P553214	H		
	120	454	9.22	234	Synteq	99% @ 10	No	P552032	N		
					Treated Cellulose	99% @ 3	No	P553217	F		
No Drain 	40	150	4.22	107	Cellulose	99% @ 25	No	P550104	B		
	60	227	5.35	136	Cellulose	99% @ 25	No	P550105	C		
					Cellulose	99% @ 17	No	P552251	C		
			5.78	147	Wire Mesh	95% @ 140	No	P552203	C		
	80	303	6.85	174	Cellulose	99% @ 25	No	P553854	D		
					Cellulose	99% @ 9	No	P557440	A		
	100	379	6.95	177	Cellulose	99% @ 3	No	P551313	I		
			7.40	188	Cellulose	99% @ 25	No	P550106	J		
			7.87	200	Cellulose	99% @ 9	No	P555627	I		
	120	454	8.69	221	Cellulose	99% @ 15	No	P552253	N		
	160	606	9.43	240	Cellulose	99% @ 9	No	P551712	M		
					Cellulose	99% @ 3	No	P551311	L		

* Water Collection Bowl (part no. P569758) adds 1.98" / 50 mm to filter length.



Performance Curves





Flow Range: up to 180 gph / 681 lph

Operating Pressure
0-100 psi (690 kPa) without bowl

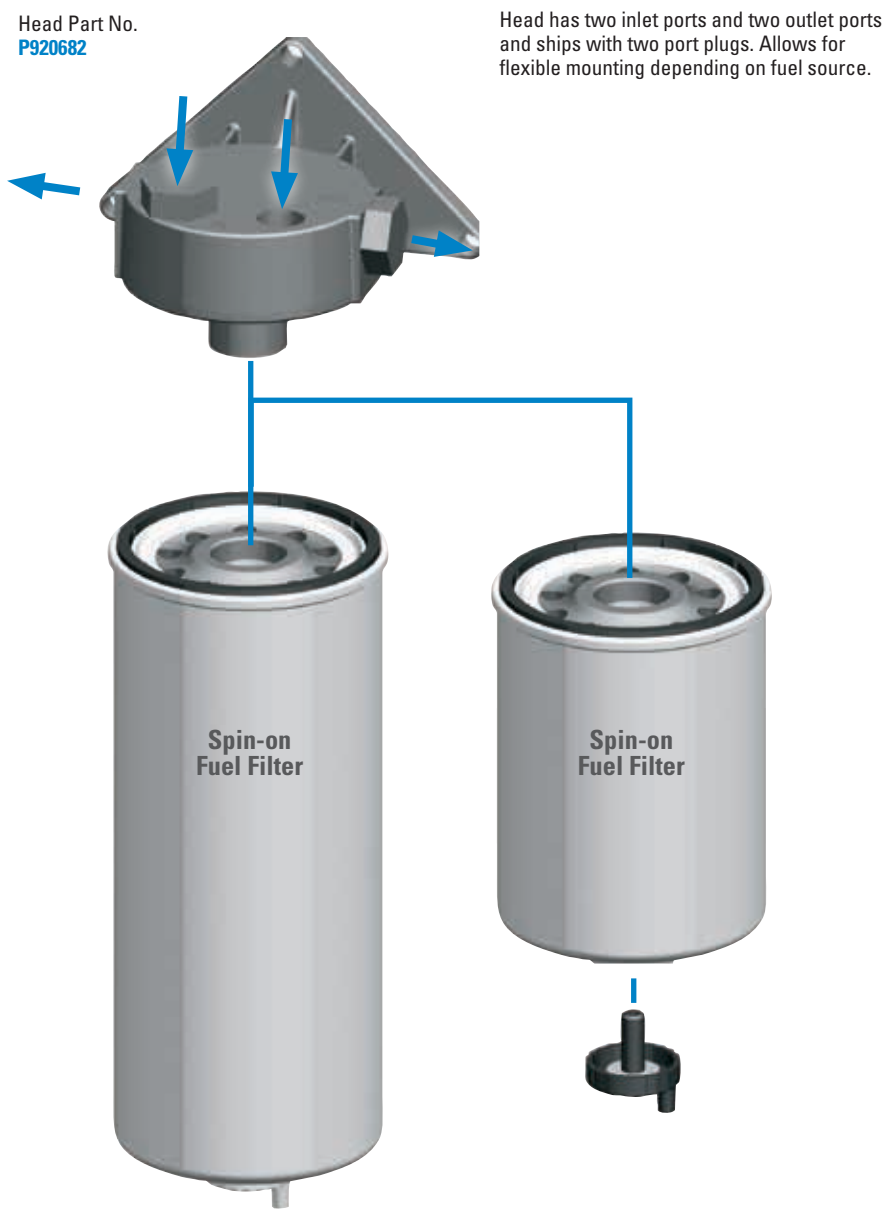
Temperature Range
-40° to 250°F (-40° to 121°C)

Flow Rate
Up to 180 gph / 681 lph
See table for filter flow rates

Fuel Compatibility
#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

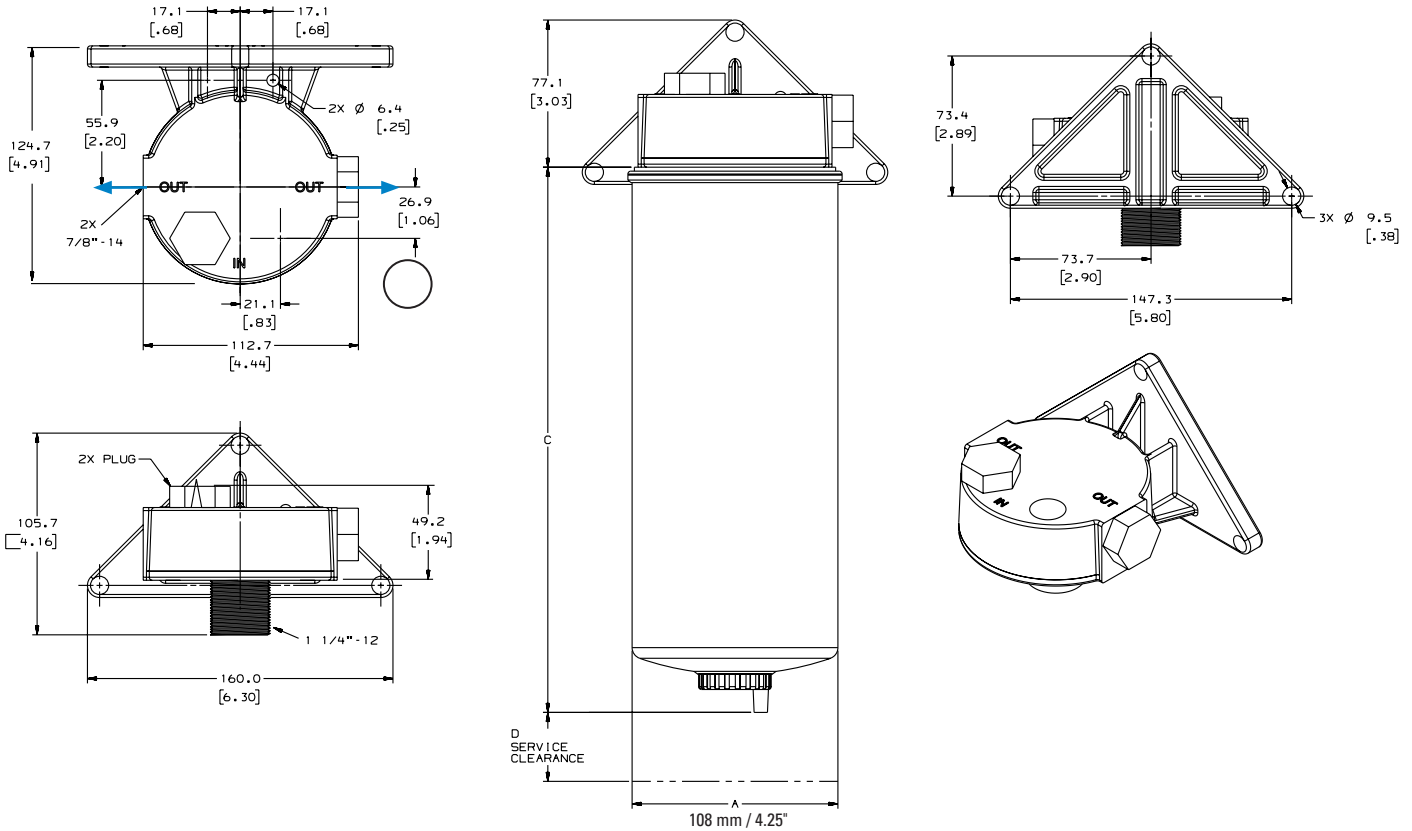
Mounting
Engine or Chassis

Water Removal @ Recommended Flow Rate
SAE J1488 Emulsified: 95% efficiency
SAE J1839 Free Water: 95% efficiency






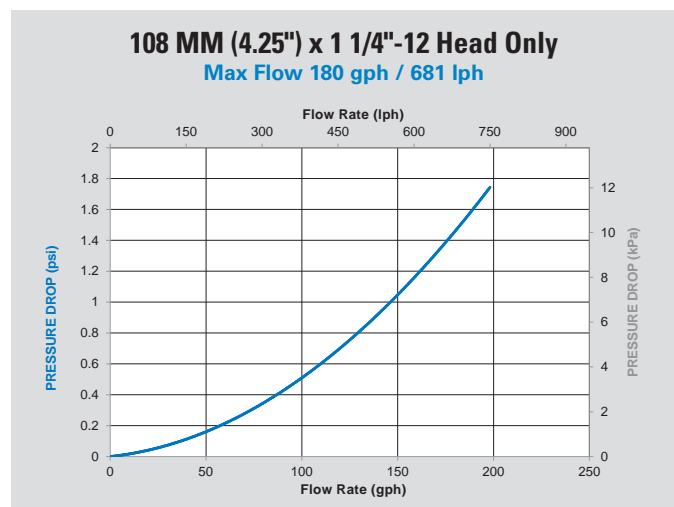
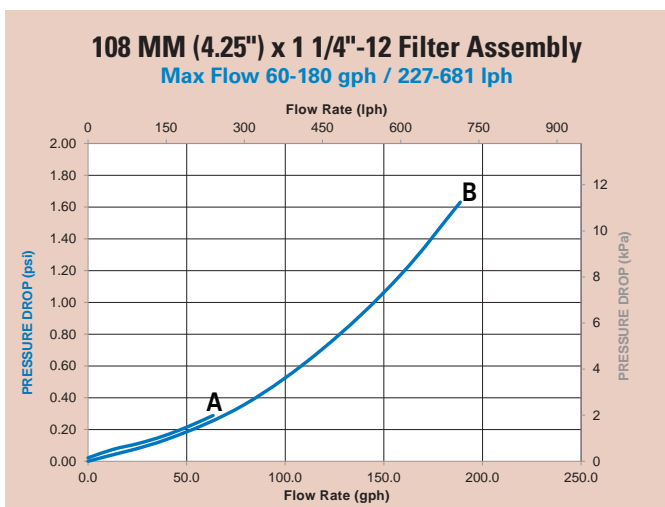
Specification Illustrations



Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length*		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
 Standard Drain	60	227	7.44	189	Treated Cellulose	99% @ 15	No	P920711	A	1.03	26
	180	681	11.75	298	Treated Cellulose	99% @ 15	No	P920683	B		

Performance Curves





Flow Range: up to 250 gph / 946 lph

Operating Pressure

0-100 psi (690 kPa) without bowl

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 230 gph / 946 lph
See table for filter flow rates

Fuel Compatibility

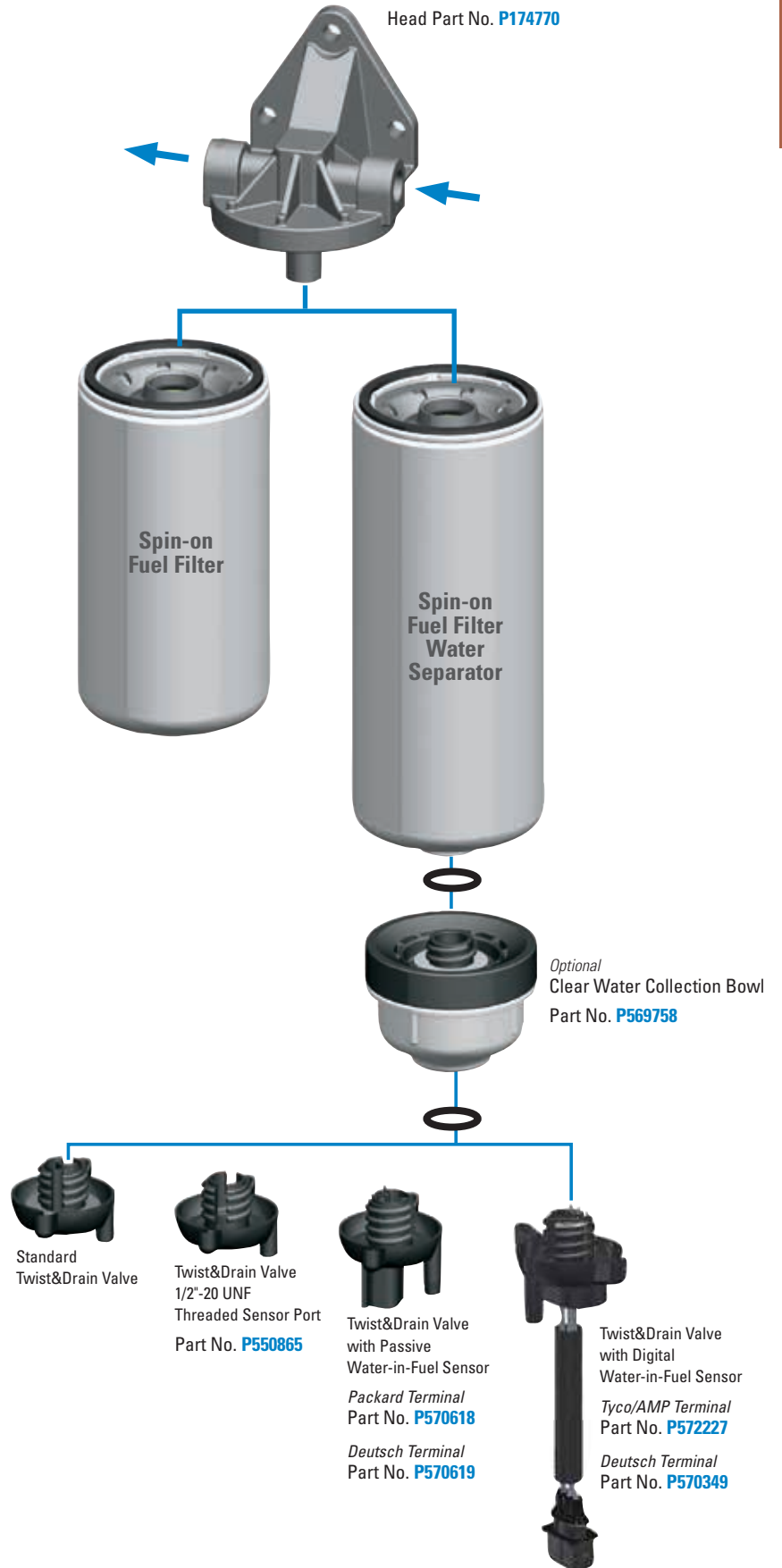
#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

Mounting

Engine or Chassis

Water Removal @ Recommended Flow Rate

SAE J1488 Emulsified: 95% efficiency
SAE J1839 Free Water: 95% efficiency





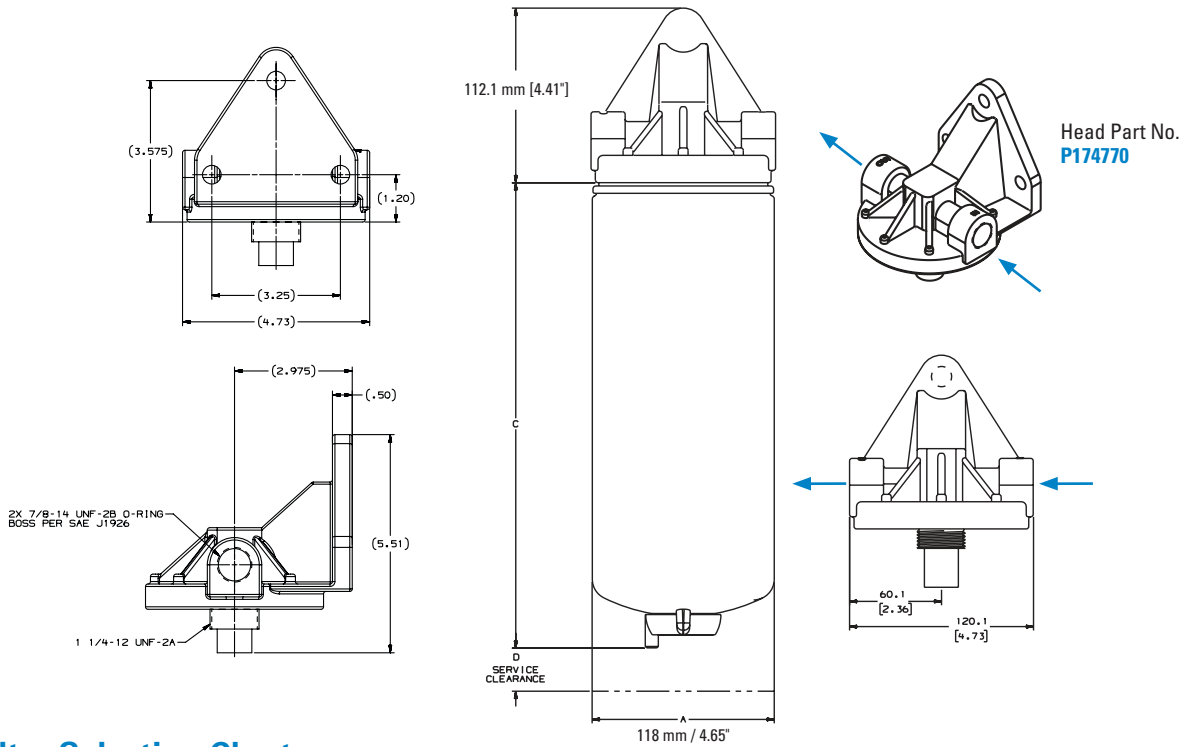
Fuel Filtration

Filter Dia. 118 MM (4.65") x 1 1/4"-12





FUEL FILTRATION

Specification Illustrations

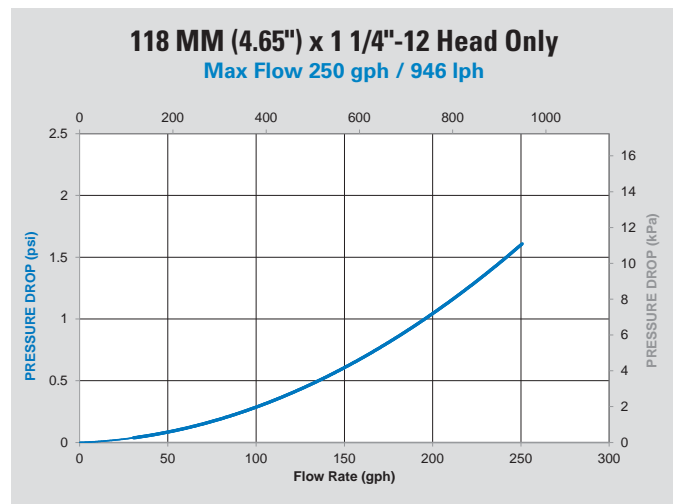
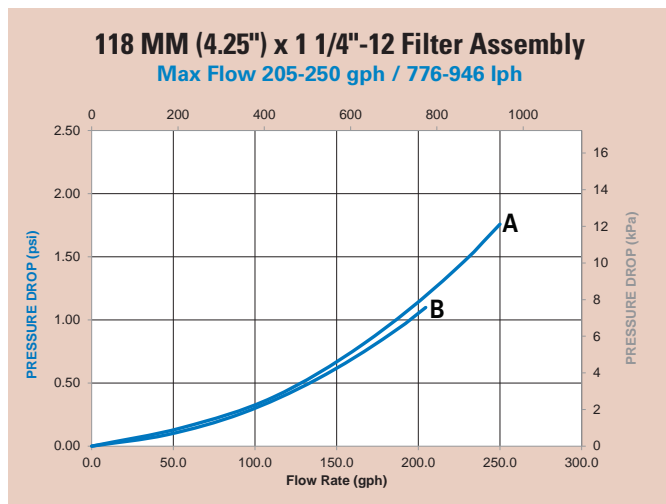


Filter Selection Chart

Filter Style	Max. Recommended Flow Rate		(C) Filter Length*		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
Standard Drain 	205	776	12.24	311	Treated Cellulose	99% @ 25	No	P552216	B	1.57	40
					Synteq	99% @ 9	No	P550937	B		
					Synteq	99% @ 10	Yes	P552006	B		
No Drain 	250	946	8.94	227	Cellulose	99% @ 30	No	P550958	A	1.57	40
			10.24	260	Cellulose	99% @ 9	No	P550202	A		

* Water Collection Bowl (part no. P569758) adds 1.98" / 50 mm to filter length.

Performance Curves





Flow Range: up to 250 gph / 946 lph

Operating Pressure

0-100 psi (690 kPa) without bowl

Temperature Range

-40° to 250°F (-40° to 121°C)

Flow Rate

Up to 250 gph / 946 lph
See table for filter flow rates

Fuel Compatibility

#1 or #2 Diesel, Kerosene, Biodiesel up to B20 and JP8

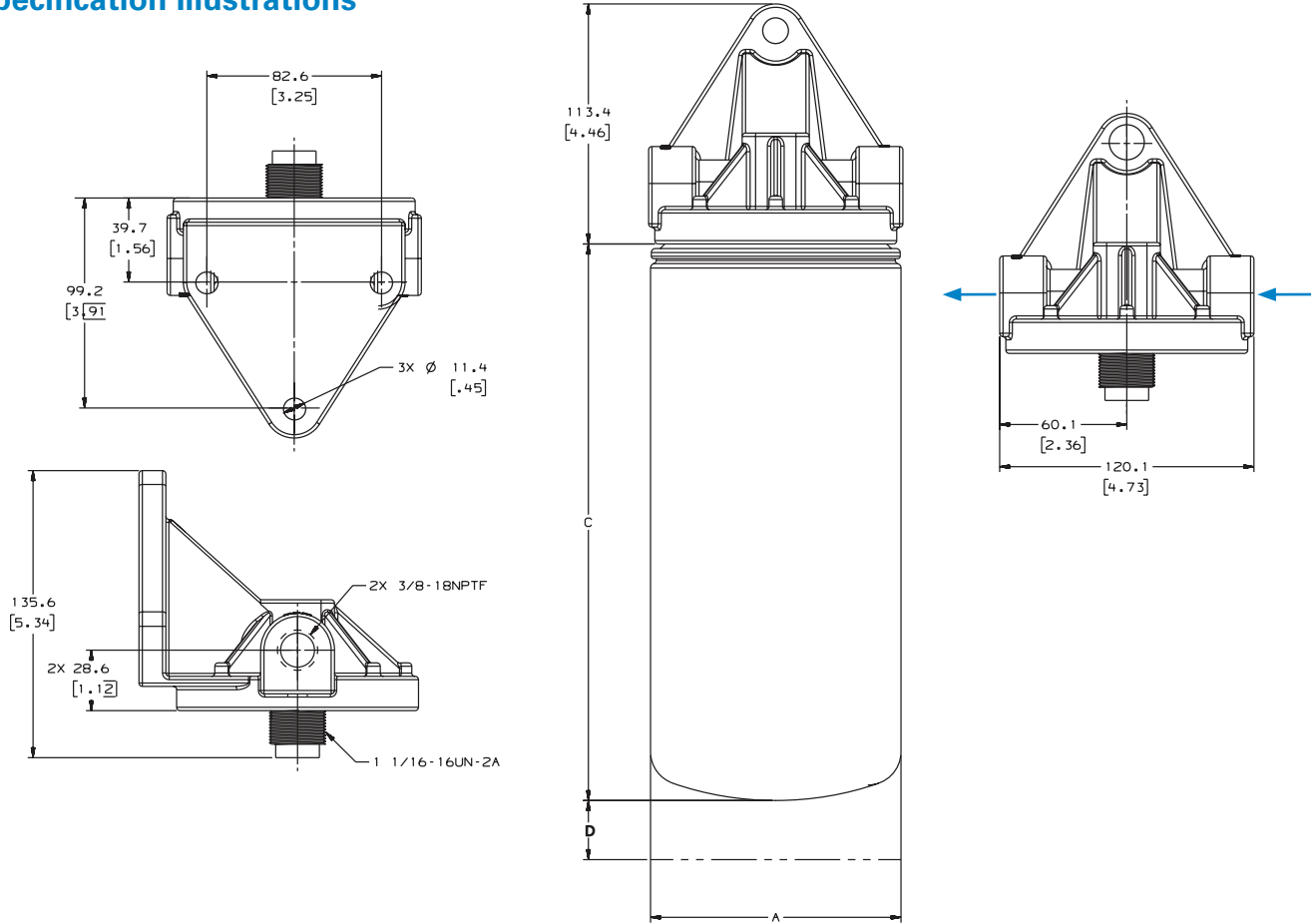
Mounting

Engine or Chassis






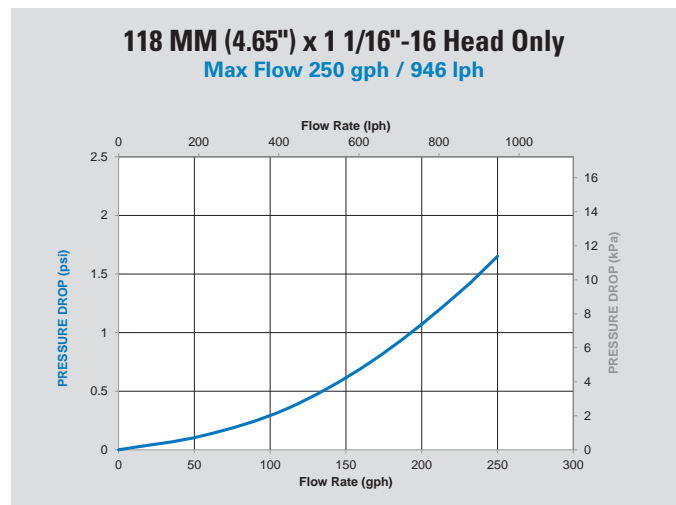
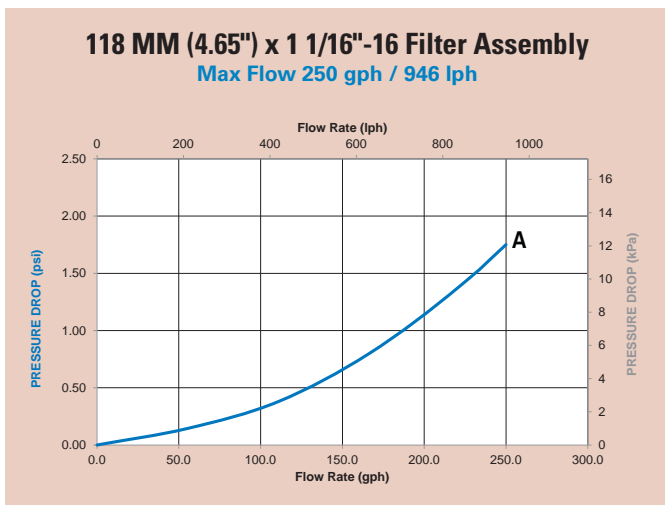
Specification Illustrations



Filter Selection Chart

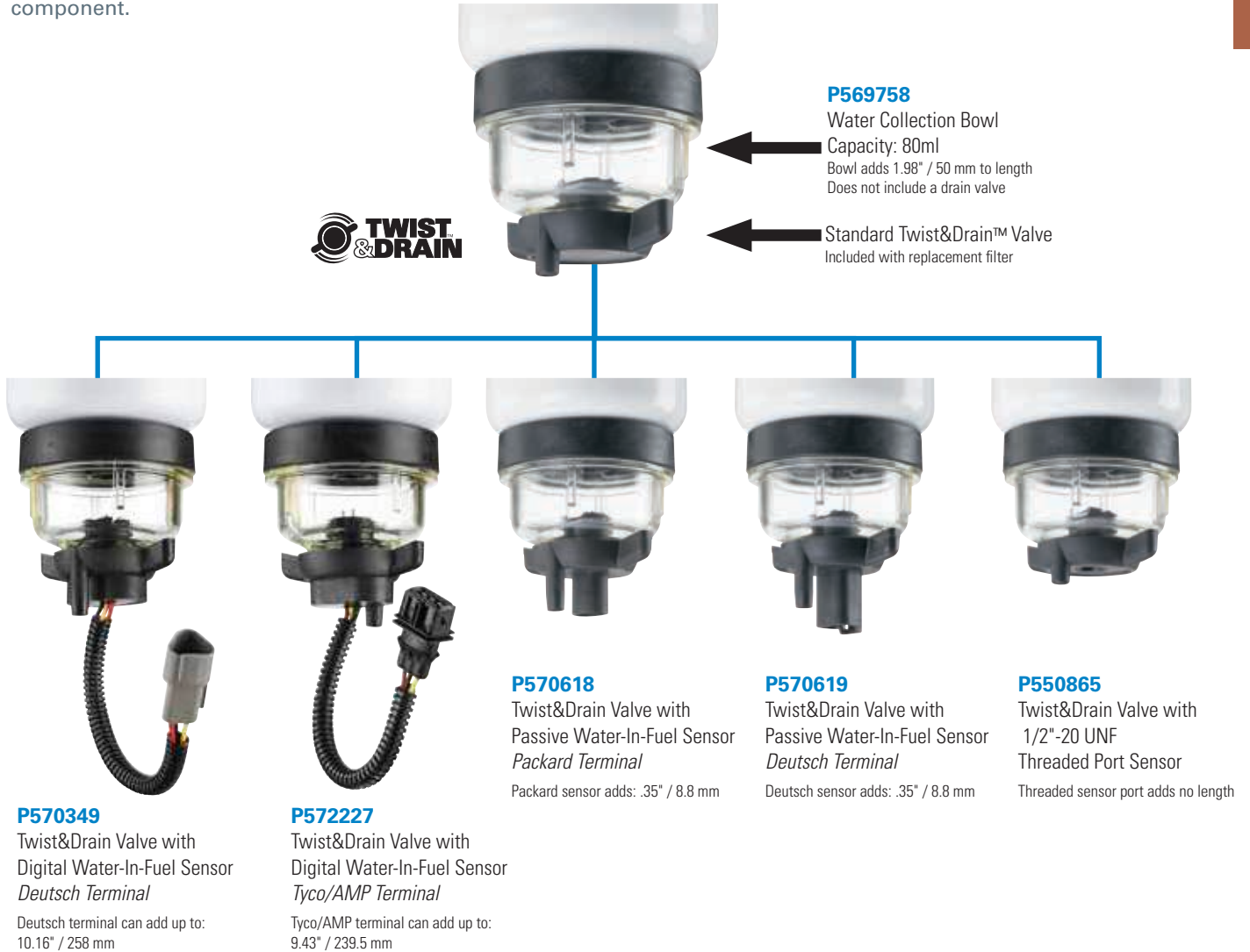
Filter Style	Max. Recommended Flow Rate		(C) Filter Length		Media Type	Efficiency @ Micron	Stand Tube	Part Number	Performance Curve	(D) Service Clearance	
	gph	lph	in	mm						in	mm
	250	946	8.94	227	Synteq	99% @ 5	No	EFF0047	A	1.14	29
					Cellulose	99% @ 16	No	P550959	A		

Performance Curves



Water Drain Valves, Sensors & Bowl

For water drain flexibility, Donaldson Twist&Drain™ spin-on filters have a connection that can accommodate multiple drain valve types and a clear water collection bowl (80ml capacity). All Twist&Drain filters ship with a specific drain valve and one seal. When purchasing a water collection bowl, one seal will be included. Drain valves can be ordered separately and will include a replacement seal. The water collection bowl is a separate add-on component.



P569758
Water Collection Bowl
Capacity: 80ml
Bowl adds 1.98" / 50 mm to length
Does not include a drain valve

Standard Twist&Drain™ Valve
Included with replacement filter

P570349
Twist&Drain Valve with Digital Water-In-Fuel Sensor
Deutsch Terminal
Deutsch terminal can add up to: 10.16" / 258 mm

P572227
Twist&Drain Valve with Digital Water-In-Fuel Sensor
Tyco/AMP Terminal
Tyco/AMP terminal can add up to: 9.43" / 239.5 mm

P570618
Twist&Drain Valve with Passive Water-In-Fuel Sensor
Packard Terminal
Packard sensor adds: .35" / 8.8 mm

P570619
Twist&Drain Valve with Passive Water-In-Fuel Sensor
Deutsch Terminal
Deutsch sensor adds: .35" / 8.8 mm

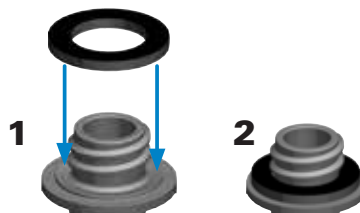
P550865
Twist&Drain Valve with 1/2"-20 UNF Threaded Port Sensor
Threaded sensor port adds no length

Installation Torque for Twist&Drain™ [M24 X 5] Threads

Component		TIGHTENING TORQUE	
		LB-FT (in-lbs)	NEWTON-METERS (N-M)
Twist&Drain Valve <i>with or without WIF sensor</i>	With external lube applied	3.3 ± 0.8 (40 ± 9.6)	4.5 ± 1.1
	Without external lube applied	4.2 ± 0.8 (50.4 ± 9.6)	5.7 ± 1.1
Water Collection Bowl		6.0 ± 0.9 (72 ± 10.8)	(8.1 ± 1.2)

Seal Replacement

- 1 Push seal down onto thread stem.
- 2 Ensure seal is fully seated.



Replacement Seals



If seals show signs of wear or deterioration they should be replaced. The placement of the seals are between the threaded connections of the filter, water collection bowl, and Twist&Drain valve. When purchasing a water collection bowl or a Twist&Drain valve, one seal will be included.

P570771

Replacement seal kits are available in packages of 12.



O.D. 1.38" / 35 mm
ID: .86" / 22 mm
Thickness: .13" / 3.2mm



Water & Draining Fuel Filters

Most primary fuel filters have drains that allow the operator to drain the water that has been separated by the filter. The frequency with which the primary fuel filter needs to be drained is ultimately dependent on the quality of fuel that is being used. Most OEMs recommend draining your water separator daily. It is also recommended to pay attention to how much water is removed at each drain and adjust the frequency of servicing accordingly.

Why Remove Water in Fuel?

Water in fuel can prematurely wear and oxidize the steel components within the fuel injectors, leading to:

- Rusting and corrosion of components
- Governor/metering component failure
- Sticky metering components (both pump and nozzle)
- Injection component wear and seizure

Free or emulsified water must be removed from the fuel to prevent corrosion and damage to the fuel system. Fuel additives may claim they remove water, when really they dissolve the water. Which in turn, will pass through the filter and enter fuel injectors.

Types of water contamination in diesel fuel:

- 1) Emulsified water: water suspended in the fuel
- 2) Free water: water separated from the fuel and generally collected at the bottom of the fuel or the fuel storage tank
- 3) Dissolved water: water chemically dissolved in the fuel

Maintenance Recommendations & Guidelines

- Drain water from your primary filter daily when refueling
- Carry a spare set of fuel filters in case you receive a "bad" load of fuel
- Never switch to more open filter to get longer filter life, you are trading away fuel pump and injector life
- Never use fuel to lube the gasket. Fuel isn't as slick as oil and if you use fuel it could cause gaskets to bunch or pinch when it is tightened, causing the filter to leak.
- If using biodiesel:
 - make sure your fuel supplier meets current fuel standards
 - make sure your engine is compatible with the concentration (or percent) biodiesel you wish to use
- When using your own fuel storage tank, remember that removing contaminants before they reach the vehicle is the best practice. Ensure you have effective bulk storage tank filtration.

Water-in-Fuel Sensors (WIFs)

Water-In-Fuel (WIF) sensors are typically chosen and installed by the engine manufacturer.

The WIF sensors connect to the fuel filter and route to a display on the dashboard. A WIF sends an electrical signal to the in-cab display and alerts the operator when water is in the fuel and should be drained from the filter. WIF sensors are more common in newer common rail injection systems.

During filter service, WIF sensors are disconnected and reused on the new filter. Sensors are likely to be replaced if connectors are damaged or wires are frayed.

The most common WIF sensors are either Packard or Deutsch styles. Donaldson offers digital Tyco/AMP and Deutsch WIF sensors – as well as passive Packard or Deutsch WIF sensors that are integrated into the Twist&Drain valve.



Twist&Drain™ Icons Installation & Water Drain

Installation



Filter will indicate if you should fill with fuel before installation.



Apply a thin film of clean motor oil to the new gasket. Do not use grease.



Line up the filter threads to the threaded port carefully. Screw on and tighten until gasket makes contact with base.



Number of turns

For final tightening of the filter, turn the can to the number of turns (+) indicated on the can.



Reconnect the WIF sensor.

Water Draining

Three easy steps with standard drain valve.



Turn to open drain valve



Let water drain

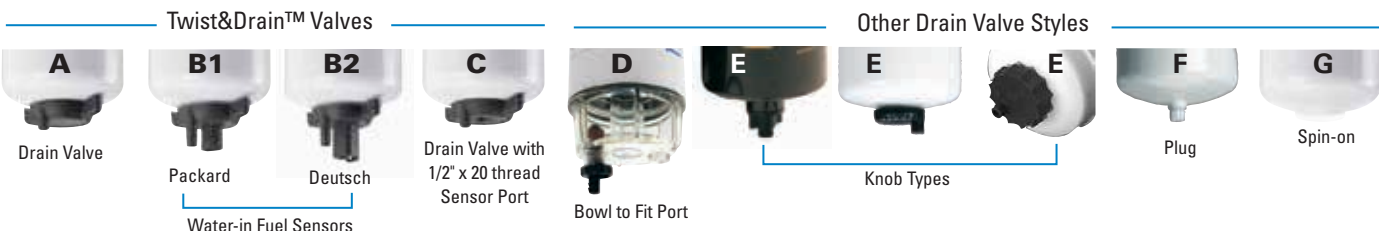


Retighten drain valve



Spin-On Filters

Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
68 mm / 2.68" Diameter Family														
1-14	2.62	67	4.34	110	G	P551751	FUEL PRIMARY	50% @ 10	REPLACES WIX 24104	1.00	25	0.80	20	
76 mm / 3.00" Diameter Family														
7/8-14	3.05	77	5.83	148	G	P550368	FUEL PRIMARY	50% @ 5	NAVISTAR 1820749C1	5.05	128	4.71	120	
3/4-16	3.01	76	5.75	146	G	P550410	FUEL PRIMARY	99% @ 17	KOMATSU 600-311-8220	2.75	70	2.37	60	
	3.01	76	3.46	88	G	P553240	FUEL PRIMARY	99% @ 22	ISUZU 8-94414-796	2.50	64	2.16	55	
7/16-20	3.03	77	4.87	124	G	P550325	FUEL PRIMARY	50% @ 10	ONAN 122B325	3.02	77	1.75	44	
M16 x 1.5	2.99	76	4.72	120	G	P550526	FUEL PRIMARY	50% @ 10	VOLVO	2.81	71	2.48	63	
	3.02	77	2.49	63	G	P550678	FUEL PRIMARY	99% @ 25	FORD E6HZ9365B	2.81	71	2.48	63	
	3.02	77	3.26	83	G	P555095	FUEL PRIMARY	99% @ 9	FORD #E67HZ9365A (BRAZILIAN CAB FORWARD)	2.75	70	2.37	60	
	3.02	77	3.26	83	G	P550345	FUEL PRIMARY	99% @ 16	DEUTZ 1174424, MANN WK712/2	2.83	72	2.40	61	
	3.02	77	4.01	102	A	P551039	FUEL/WATER SEPARATOR	99% @ 20	BOBCAT 6667352, CNH 86504140 T&D VALVE	2.75	70	2.40	61	
	3.03	77	4.40	112	E	P550690	FUEL/WATER SEPARATOR	99% @ 25	CASE J911213	2.83	72	2.46	62	
	3.03	77	4.51	115	E	P550249	FUEL/WATER SEPARATOR	99% @ 25	CUMMINS 3912104	2.81	71	2.48	63	
	3.02	77	4.72	120	G	P550943	FUEL SECONDARY	99% @ 9	GMC 6.2L 25011214	2.75	70	2.37	60	
	3.04	77	4.72	120	G	P553004	FUEL PRIMARY	99% @ 16	VOLVO 243004	2.76	70	2.38	60	Yes
	3.02	77	4.72	120	G	P550440	FUEL SECONDARY	99% @ 16	CUMMINS 6C, 6CT SERIES	2.75	70	2.37	60	Yes
	3.02	77	5.81	148	A	P550588	FUEL/WATER SEPARATOR	99% @ 11	BOSCH 1457434056	2.76	70	2.40	61	
	3.02	77	5.81	148	A	P550248	FUEL/WATER SEPARATOR	99% @ 15	CUMMINS 3903202	2.82	72	2.46	62	Yes
	3.00	76	6.50	165	E	P550587	FUEL/WATER SEPARATOR	99% @ 25	DEUTZ 2133558, 2133943	2.75	70	2.37	60	
	3.37	86	3.37	86	E	P552374	FUEL/WATER SEPARATOR	50% @ 25	ONAN 149-2106; TORO 63-8300	2.74	70	2.37	60	
M16 x 1.5	3.02	77	5.81	148	A	P551615	FUEL/WATER SEPARATOR	99% @ 3	LOW FLOW ON AND OFF HIGHWAY	2.76	70	2.40	61	
M18 x 1.5	3.00	76	2.37	60	E	P551768	FUEL/WATER SEPARATOR	50% @ 15	RACOR R12P	2.70	69	2.50	63	
M20 x 1.5	3.00	76	3.40	86	G	P550127	FUEL PRIMARY	99% @ 17	KUBOTA 70000-43081	2.70	69	2.33	59	
80 mm / 3.15" Diameter Family														
1-14	3.18	81	6.09	176	G	P551740	FUEL PRIMARY	99% @ 9	CATERPILLAR 1R-0740	2.91	74	2.52	64	
7/8-14	3.15	80	6.93	176	G	P551315	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R0759	2.89	74	2.50	64	
3/4-16	3.11	79	5.59	142	E	P550550	FUEL/WATER SEPARATOR	95% @ 20	KOMATSUP554477	2.76	70	2.48	63	
	3.15	80	3.31	84	G	P502177	FUEL PRIMARY	50% @ 10	FSA FF2028, RYCO Z169A	2.48	63	1.76	45	
	3.15	80	4.50	114	G	P502163	FUEL PRIMARY	50% @ 10	NISSAN 16403-Z9000, 16403-Z9005	2.50	64	2.11	54	
	3.15	80	6.89	175	G	P502167	FUEL PRIMARY	50% @ 10	NISSAN 16405-01T70	2.59	66	2.00	51	
	3.18	81	3.39	86	G	P550057	FUEL PRIMARY	99% @ 25	TOYOTA 23303-56301	2.52	64	2.13	54	
	3.31	84	3.94	100	G	P550225	FUEL SECONDARY	50% @ 10	HINO 23401-1332, NISSAN 16403Z9003	2.48	63	2.08	53	
M16 x 1.5	3.06	78	6.74	171	E	P550688	FUEL/WATER SEPARATOR	99% @ 25	DEUTZ	2.81	71	2.46	62	
	3.14	80	4.88	124	G	P550491	FUEL PRIMARY	50% @ 25	RVI, M&H WK727	2.80	71	2.44	62	
	3.15	80	5.98	152	F	P550498	FUEL/WATER SEPARATOR	50% @ 15	M & H WDK724	2.81	71	2.46	62	
	3.18	81	6.93	176	G	P550782	FUEL PRIMARY	99% @ 10	DAVCO 210 - M16 X 1.5 - 10 MICRON	2.81	71	2.52	64	
	3.18	81	6.93	176	G	P550783	FUEL PRIMARY	99% @ 25	DAVCO 210 - M16 X 1.5 - 25 MICRON	2.91	74	2.52	64	
M20 x 1.5	3.16	80	4.72	120	G	P502142	FUEL PRIMARY	50% @ 10	mitsubishi MB433425, TCM 20801-02131	3.06	78	2.48	63	
	3.15	80	3.93	100	G	P502143	FUEL PRIMARY	50% @ 10	MITSUBISHI 3446200300	2.76	70	2.52	64	





Spin-On Filters

Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
93 mm / 3.54" Diameter Family														
1-12	3.66	93	5.35	136	G	P550936	FUEL PRIMARY	99% @ 25	GMC 25011011, 8.2L	3.38	86	3.04	77	
	3.66	93	6.85	174	G	P554347	FUEL PRIMARY	99% @ 25	BULK FUEL W/O DRAIN	2.81	71	2.42	61	
	3.66	93	8.64	219	A	P553202	FUEL/WATER SEPARATOR	99% @ 35	RACOR S3202 T&D VALVE	3.39	86	3.05	78	
	3.66	93	8.64	219	c	P553212	FUEL/WATER SEPARATOR	99% @ 35	RACOR S3202 T&D INTEGRATED 1/2"-20 SENSOR PORT THD	3.39	86	3.05	78	
	3.69	94	5.37	136	G	P550115	FUEL PRIMARY	99% @ 45	FUEL DISPENSING PUMPS	2.84	72	2.47	63	
	3.69	94	5.37	136	G	P550215	FUEL PRIMARY	99% @ 22	WATER ABSORBING, FUEL DISPENSING PUMPS	2.84	72	2.46	62	
	3.69	94	7.44	189	F	P551915	FUEL PRIMARY	99% @ 22	BULK FUEL TANKS WITH SEDIMENT DRAIN	2.84	72	2.47	63	
	3.81	97	4.25	108	G	P550944	FUEL PRIMARY	50% @ 25	DETROIT DIESEL 8.2L ENG, FORD TRK & BUS	3.55	90	3.18	81	
	3.81	97	6.08	154	G	P550944	FUEL PRIMARY	99% @ 38	GMC 6.2L 25011285	3.55	90	3.18	81	
	3.81	97	7.36	187	A	P558010	FUEL/WATER SEPARATOR	99% @ 20	DETROIT DIESEL 23512317 T&D VALVE	3.55	90	3.18	81	
3.81	97	7.97	202	G	P556915	FUEL PRIMARY	99% @ 25	DET. DIESEL 23517471, AC T915D	3.38	86	3.04	77		
1-14	3.66	93	5.35	136	G	P550105	FUEL PRIMARY	99% @ 25	CUMMINS 154709	2.81	71	2.42	61	
	3.66	93	5.35	136	G	P552251	FUEL PRIMARY	99% @ 17	IHC 702250C1	2.81	71	2.42	61	
	3.66	93	6.11	155	A	P550828	FUEL/WATER SEPARATOR	99% @ 140	CUMMINS ENGINES	2.83	72	2.44	62	
	3.68	93	6.85	174	G	P551178	FUEL PRIMARY	50% @ 10	NISSAN FL40399008	2.85	72	2.47	63	
	3.66	93	6.85	174	G	P553854	FUEL PRIMARY	99% @ 25	CARRIER, IHC, THERMOKING 11.3854	2.81	71	2.42	61	
	3.66	93	6.85	174	G	P557440	FUEL PRIMARY	99% @ 9	CATERPILLAR 1R-0711, 1P-2299, 6L-7440, KTSU 600-311-8290	2.81	71	2.42	61	
	3.68	93	6.95	177	G	P551313	FUEL SECONDARY	99% @ 3	CATERPILLAR 1R-0750	2.83	72	2.46	62	
	3.66	93	7.40	188	A	P558000	FUEL/WATER SEPARATOR	99% @ 20	CUMMINS 3308638 T&D VALVE	2.81	71	2.42	61	
	3.66	93	7.61	193	A	P553203	FUEL/WATER SEPARATOR	99% @ 3	RACOR S3203 T&D VALVE	2.83	72	2.44	62	
	3.66	93	7.61	193	A	P553205	FUEL/WATER SEPARATOR	99% @ 7	CATERPILLAR ENGINES T&D VALVE	3.39	86	3.05	78	
	3.66	93	7.61	193	C	P553213	FUEL/WATER SEPARATOR	99% @ 3	RACOR S3203 T&D INTEGRATED 1/2"-20 SENSOR PORT THD	2.83	72	2.44	62	
	3.66	93	7.61	193	C	P553215	FUEL/WATER SEPARATOR	99% @ 7	CATERPILLAR ENGINES T&D INTEGRATED 1/2"-20 SENSOR PORT THD	3.39	86	3.05	78	
	3.66	93	7.87	200	C	P555627	FUEL PRIMARY	99% @ 9	IHC 625627C1	2.81	71	2.42	61	
	3.68	93	7.98	203	A	P551001	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS CELECT & QUANTUM ENGINE APPLICATIONS T&D VALVE	2.83	72	2.46	62	Yes
	3.66	93	8.40	213	B2	P550848	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS ENGINES T&D INTEGRATED WIF	2.83	72	2.44	62	
	3.66	93	8.64	219	A	P553201	FUEL/WATER SEPARATOR	99% @ 10	RACOR S3201 T&D VALVE	2.83	72	2.44	62	
	3.66	93	8.64	219	A	P553204	FUEL/WATER SEPARATOR	99% @ 35	ALLIANCE ABPN12232FRT04 T&D VALVE	2.83	72	2.44	62	
	3.66	93	8.64	219	A	P553207	FUEL/WATER SEPARATOR	99% @ 3	ALLIANCE ABPN12232FRT03 T&D VALVE	2.83	72	2.44	62	
	3.66	93	8.64	219	C	P553211	FUEL/WATER SEPARATOR	99% @ 10	RACOR S3201 T&D INTEGRATED 1/2"-20 SENSOR PORT THD	2.83	72	2.44	62	
	3.66	93	8.64	219	C	P553214	FUEL/WATER SEPARATOR	99% @ 35	ALLIANCE ABPN12232FRT04 T&D INTEGRATED 1/2"-20 SENSOR PORT THD	2.83	72	2.44	62	
	3.66	93	8.64	219	C	P553217	FUEL/WATER SEPARATOR	99% @ 33	ALLIANCE ABPN12232FRT03 T&D INTEGRATED 1/2"-20 SENSOR PORT THD	2.83	72	2.44	62	
	3.66	93	9.17	233	G	P551319	FUEL PRIMARY	99% @ <4	CATERPILLAR ENGINES	N/A	N/A	2.44	62	
	3.66	93	9.22	234	Spec	P552032	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS ISC, ISM ENGINES - CONTAINS DRAIN AND SENSOR PORT	2.81	72	2.42	62	
	3.68	93	9.43	240	G	P551311	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R-0749	2.83	72	2.46	62	
3.66	93	9.92	252	A	P551000	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS CELECT & QUANTUM ENGINE APPLICATIONS T&D VALVE	2.81	71	2.42	61	Yes	
3.66	93	9.92	252	A	P550901	FUEL/WATER SEPARATOR	99% @ 7	CUMMINS ENGINES T&D VALVE	2.81	71	2.46	63		



Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
1-14	3.69	94	5.52	140	E	P551744	FUEL/WATER SEPARATOR	50% @ 10	RACOR R24S	3.43	87	3.11	79	
	3.69	94	5.68	144	F	P550108	FUEL PRIMARY	50% @ 25	JOHN DEERE AR45098, AR45097	2.84	72	2.47	63	
	3.69	94	5.85	149	E	P550691	FUEL/WATER SEPARATOR	99% @ 25	CUMMINS 3843447	2.83	72	2.46	62	
	3.69	94	7.38	187	A	P550847	FUEL/WATER SEPARATOR	99% @ 10	CATERPILLAR 1752949	2.81	71	2.45	62	
	3.69	94	8.69	221	G	P552253	FUEL SECONDARY	99% @ 15	IHC 702253C1	2.84	72	2.47	63	
	3.69	94	9.38	238	B1	P551122	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS ENGINES T&D INTEGRATED W/F	2.83	72	2.46	62	Yes
	3.69	94	9.71	247	B2	P551103	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS ENGINES T&D INTEGRATED W/F	3.69	94	2.83	72	Yes
	3.70	94	10.75	273	G	P550625	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R0762	3.60	91	3.03	77	
	3.75	95	4.12	105	Bowl Thd	P550088	FUEL/WATER SEPARATOR	50% @ 10	FORD 6.6L & 7.8L ENG #E7HZ-4N184A, RACOR R26P	2.81	72	2.42	62	
	3.72	95	5.78	147	G	P552203	FUEL PRIMARY	95% @ 140	CUMMINS 4010476, FLEETGUARD FF2203	2.83	72	2.46	62	
	3.72	95	9.43	240	G	P551712	FUEL PRIMARY	99% @ 9	CATERPILLAR 1R-0712	2.81	71	2.42	61	
	3.79	96	6.22	158	E	P550553	FUEL/WATER SEPARATOR	99% @ 40	1999 FORD LIGHT TRUCK, MOTOR-CRAFT FD4597	3.59	91	3.15	80	
	3.81	97	4.22	107	G	P550104	FUEL PRIMARY	99% @ 25	CUMMINS 138627	2.81	71	2.42	61	
	3.81	97	5.70	145	G	P550109	FUEL PRIMARY	50% @ 10	FORD D3HE9176AA	3.56	90	3.17	81	
	3.81	97	7.40	188	F	P550106	FUEL PRIMARY	99% @ 25	CUMMINS D156172, 202893, FURN GSKT-P169192	2.81	71	2.42	61	
3.82	97	7.88	200	G	P551004	FUEL PRIMARY	99% @ 5	PACCAR 1655115	2.76	70	2.48	63		
7/8-14	3.66	93	6.85	174	G	P550774	FUEL PRIMARY	99% @ 3	CUMMINS 3959612, ISC, ISL ISM ENGINES	2.83	72	2.44	62	
	3.66	93	6.85	174	G	P550879	FUEL PRIMARY	99% @ 5	CUMMINS 4940647	2.83	72	2.44	62	
	3.68	93	9.43	240	G	P551312	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R-0753	2.83	72	2.46	62	
	3.78	96	8.70	221	G	P553855	FUEL SECONDARY	99% @ 20	IHC, THERMOKING 11.3855	2.84	72	2.46	62	
	3.81	97	5.22	133	G	P553693	FUEL SECONDARY	99% @ 20	CARRIER, THERMOKING 11.3693	2.82	72	2.42	61	
3/4-16	3.66	93	5.19	132	G	P552405	FUEL PRIMARY	50% @ 10	NISSAN 1640305D00, FL40305D00	2.83	72	2.46	63	
	3.71	94	4.92	125	G	P552564	FUEL PRIMARY	50% @ 10	ISUZU 1-13240-074-0, HITACHI 4206080	2.48	63	1.74	44	
	3.70	94	5.43	138	Spec	P550385	FUEL PRIMARY	50% @ 10	TOYOTA 2330364010	2.48	63	2.20	56	
	3.85	98	5.47	139	G	P551351	FUEL PRIMARY	50% @ 10	NISSAN 1640505E01	2.89	74	2.00	51	
1 1/2-16	3.78	96	7.35	187	Spec	P550735	FUEL PRIMARY	99% @ 25	NATURAL GAS FUELED CUMMINS ENGINES	3.47	88	2.99	76	
1 3/8-12	3.67	93	7.50	190	G	P551752	FUEL/WATER SEPARATOR	99% @ 40	AMACO A08	2.73	69	2.42	61	
13/16-12	3.66	93	4.21	107	G	P550928	FUEL SECONDARY	99% @ 16	GMC 25010959	3.38	86	3.04	77	
	3.66	93	6.85	174	G	EFF7917	FUEL SECONDARY	99% @ 5	DETROIT DIESEL 23530645	3.39	86	3.05	77	
	3.66	93	6.85	174	G	P556916	FUEL SECONDARY	99% @ 9	DET. DIESEL 23518530, AC TP916D	3.39	86	3.05	77	
	3.66	93	6.85	174	G	P556917	FUEL SECONDARY	99% @ 3	DETROIT DIESEL 23533726	3.39	86	3.05	77	
13/16-18	3.66	93	5.67	144	G	P558712	FUEL PRIMARY	99% @ 40	CASE IH A58712	2.81	71	2.42	61	
	3.76	96	6.01	153	A	P551329	FUEL/WATER SEPARATOR	99% @ 13	CASE, CUMMINS T&D VALVE	2.85	72	2.46	62	
	3.81	97	4.50	114	G	P550868	FUEL PRIMARY	99% @ 28	CASE A39868, DAVID BROWN	2.81	71	2.46	62	
15/16-16	3.66	93	5.55	141	G	P559100	FUEL PRIMARY	99% @ 23	CAT 9L-9100, 9L-8794	2.75	70	2.42	61	
	3.70	94	8.42	214	F	P552432	FUEL/WATER SEPARATOR	99% @ 25	ALLIS CHALMERS 4321716, 4321716-5	2.83	72	2.46	63	
	3.81	97	4.75	121	G	P550110	FUEL SECONDARY	99% @ 8	CASE A39867	2.82	72	2.42	61	
	3.81	97	5.61	142	G	P551127	FUEL SECONDARY	99% @ 12	CASE A58713	2.85	72	2.46	62	
M12 x 1.5	3.50	89	8.16	207	G	P550473	FUEL PRIMARY	50% @ 25	MERCEDES-BENZ 10922201, 10922301	2.80	71	2.44	62	
M14 x 1.5	3.82	97	7.60	193	G	P550665	FUEL/WATER SEPARATOR	50% @ 20	IVECO 1907539 / NEW HOLLAND 1931061	2.85	72	2.46	62	

Twist&Drain™ Valves

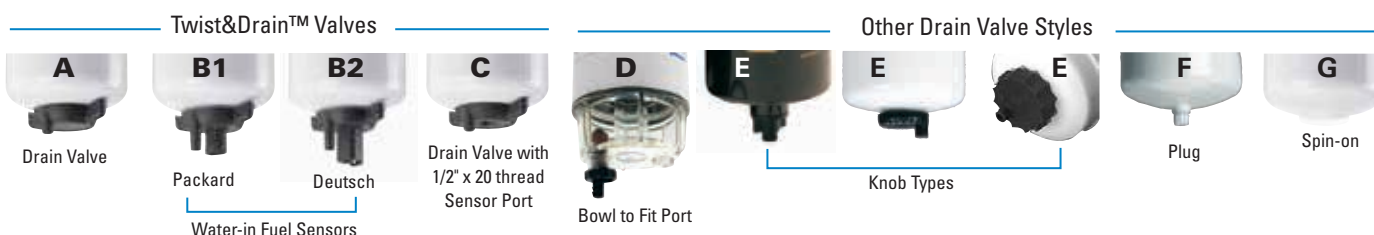
Other Drain Valve Styles





Spin-On Filters

Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
93 mm / 3.54" Diameter Family, continued														
M16 x 1.5	3.77	96	5.66	144	G	P550494	FUEL PRIMARY	50% @ 5	DAF 1318695	2.80	71	2.44	62	
	3.78	96	5.66	144	G	P550496	FUEL PRIMARY	50% @ 10	RENAULT V.I. 5010359706	2.80	71	2.44	62	
	3.77	96	8.34	211	G	P550472	FUEL PRIMARY	50% @ 3	DAF 1328177	2.80	71	2.44	62	
	3.82	97	5.47	139	G	P554620	FUEL PRIMARY	99% @ 9	DEUTZ 1174422	2.81	71	2.42	61	
	3.82	97	8.27	210	G	P559624	FUEL PRIMARY	50% @ 5	DAF 247138	2.80	71	2.44	62	
	3.68	93	4.25	108	G	P550662	FUEL PRIMARY	99% @ 9	VOLVO CONSTRUCTION EQUIPMENT, 11708555	2.77	70	9	9	
M18 x 1.5	3.71	94	8.13	207	G	P550372	FUEL PRIMARY	99% @ 5	VOLVO 420799	2.81	71	2.46	62	
	3.78	96	5.59	142	G	P550004	FUEL PRIMARY	50% @ 10	RENAULT	2.80	71	2.44	62	
M20 x 1.5	3.68	93	3.94	100	G	P550049	FUEL PRIMARY	99% @ 30	MITSUBISHI ME016823	2.54	65	2.28	58	
	3.66	93	6.30	160	G	P550643	FUEL PRIMARY	99% @ 10	YANMAR SV SERIE; VOLVO EC/EW SERIES; VOLVO EC55B; VOLVO ECR AND ECR88	2.72	69	2.32	59	
	3.66	93	6.85	174	G	P550880	FUEL PRIMARY	99% @ 5	CASE 87803200, CUMMINS 4897897	2.83	72	2.44	62	
	3.66	93	6.85	174	G	P550881	FUEL PRIMARY	99% @ 5	CUMMINS 4897833, IVECO 2992241, DAF 1399760	2.83	72	2.44	62	
	3.66	93	7.96	202	B1	P550929	FUEL/WATER SEPARATOR	99% @ 5	CUMMINS 3991498 TIER 2 QSB & 2VE ENGINES	2.84	72	2.42	62	
	3.66	94	4.21	107	G	P550932	FUEL PRIMARY	99% @ 30	MITSUBISHI ME035393, ME035829	3.43	87	2.42	62	
	3.66	93	5.50	140	Bowl Thd	P550930	FUEL/WATER SEPARATOR		CUMMINS 3942533	2.83	72	2.44	62	
	3.69	94	5.75	146	Bowl Thd	P550930	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS 3942533	2.73	69	2.46	63	
	3.74	95	3.15	80	G	P550048	FUEL PRIMARY	99% @ 30	MITSUBISHI ME006066	2.52	64	2.28	58	
	3.72	95	4.72	120	G	P502157	FUEL PRIMARY	50% @ 10	MAZDA	2.81	71	1.97	50	
	3.72	95	5.17	131	G	P502158	FUEL PRIMARY	50% @ 10	MAZDA 145623570A	3.62	92	2.81	71	
	3.78	96	4.65	118	Bowl Thd	P550931	FUEL/WATER SEPARATOR	95% @ 20	DODGE LIGHT TRUCK WITH CUMMINS DIESEL	2.83	72	2.46	62	
	3.90	99	5.43	138	G	P502149	FUEL PRIMARY	50% @ 10	DAIHATSU 2330387308000	2.81	71	2.19	56	
3.90	99	5.43	138	G	P550390	FUEL PRIMARY	50% @ 10	MITSUBISHI MB220900	2.87	73	2.20	56		
M24 x 1.5	3.66	93	6.77	172	G	P550391	FUEL PRIMARY	99% @ 30	MITSUBISHI ME056280	3.54	90	2.66	68	
	3.70	94	5.59	142	G	P550515	FUEL PRIMARY	85% @ 3-5	MANN & HUMMEL WK940/2, SCANIA 1411894	2.80	71	2.44	62	
	3.77	96	5.66	144	G	P550495	FUEL PRIMARY	50% @ 3	SAAB-SCANIA 1361685, 1372444	2.80	71	2.44	62	
	3.78	96	7.00	178	G	P550365	FUEL PRIMARY	99% @ 20	ROLLS ROYCE OE42873	2.84	72	2.46	63	
M72 x 2	3.58	91	9.00	228	G	P552200	FUEL SECONDARY	99% @ 8	CUMMINS 4088272, FLEETGUARD FF2200	3.74	95	3.10	79	





Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
108 mm / 4.25" Diameter Family														
1-12	4.24	108	8.90	226	G	P550753	FUEL PRIMARY	50% @ 10	JOHN DEERE RE519608	3.57	91	3.15	80	
	4.24	108	9.61	244	A	P551086	FUEL/WATER SEPARATOR	99% @ 12	DONALDSON TWIST&DRAIN	3.47	88	3.15	80	
	4.24	108	9.61	244	A	P551087	FUEL/WATER SEPARATOR	99% @ 15	DONALDSON TWIST&DRAIN	3.47	88	3.15	80	
	4.24	108	10.38	264	Spec	P550753	FUEL/WATER SEPARATOR	99% @ 5	JOHN DEERE RE509596, RE521818	4.00	102	3.56	90	
1-14	4.23	107	5.80	147	A	P551033	FUEL/WATER SEPARATOR	99% @ 9	RACOR R43, R50504	3.90	99	3.56	90	
	4.23	107	6.81	173	A	P551034	FUEL/WATER SEPARATOR	99% @ 9	RACOR S3226	3.90	99	3.56	90	
	4.23	107	5.80	147	A	P551055	FUEL/WATER SEPARATOR	99% @ 4	RACOR R60, S3225	3.51	89	3.17	81	
	4.23	107	5.80	147	A	P551056	FUEL/WATER SEPARATOR	99% @ 9	RACOR R60T	3.51	89	3.17	81	
	4.23	107	5.80	147	A	P551057	FUEL/WATER SEPARATOR	99% @ 25	RACOR R60P	3.51	89	3.17	81	
	4.23	107	3.82	173	A	P551065	FUEL/WATER SEPARATOR	99% @ 4	RACOR R90S, ALLIANCE	3.51	89	3.17	81	
	4.23	107	6.82	173	A	P551066	FUEL/WATER SEPARATOR	99% @ 9	RACOR R90T	3.51	89	3.17	81	
	4.23	107	6.82	173	A	P551067	FUEL/WATER SEPARATOR	99% @ 25	RACOR R90P	3.51	89	3.17	81	
	4.23	107	9.60	244	A	P551075	FUEL/WATER SEPARATOR	99% @ 4	RACOR R120S	3.51	89	3.17	81	
	4.23	107	9.60	245	A	P551025	FUEL/WATER SEPARATOR	99% @ 4	RACOR B32006	2.83	72	2.44	62	
	4.23	107	9.60	245	A	P551026	FUEL/WATER SEPARATOR	99% @ 9	MERCEDES 477130Z, VOLVO 11110668	3.90	99	3.56	90	
	4.23	107	9.60	244	A	P551076	FUEL/WATER SEPARATOR	99% @ 9	RACOR R120T	3.51	89	3.17	81	
	4.23	107	9.60	244	A	P551077	FUEL/WATER SEPARATOR	99% @ 25	RACOR R120P	3.51	89	3.17	81	
	4.23	107	9.78	248	A	P550900	FUEL/WATER SEPARATOR	99% @ 20	CATERPILLAR EQUIPMENT	3.86	98	3.55	90	Yes
	4.25	108	3.50	89	Bowl Thd	P550746	FUEL/WATER SEPARATOR	50% @ 3	RACOR R45 SERIES	3.77	96	3.50	89	
	4.26	108	5.79	147	E	P551056	FUEL/WATER SEPARATOR	50% @ 5	NAVISTAR 1685159C1	3.60	91	3.20	81	
	4.26	108	5.90	150	G	P559125	FUEL PRIMARY	99% @ 10	CARRIER 300109000	4.00	102	3.56	90	
	4.26	108	5.93	151	G	P550448	FUEL PRIMARY	99% @ 10	CARRIER 300109001	3.54	90	3.16	80	
	4.25	108	7.91	201	G	P551335	FUEL PRIMARY	99% @ 20	DAVCO 320120	3.98	101	3.58	91	
	4.25	108	10.31	262	G	EFF9092	FUEL PRIMARY	99% @ 5	CAT ENGINES	2.82	72	2.42	61	
4.25	108	11.88	302	Spec	P559122	FUEL/WATER SEPARATOR	99% @ 10	JOHN DEERE RE522687	4.00	102	3.56	90		
4.29	109	5.75	146	E	P551034	FUEL/WATER SEPARATOR	50% @ 12	NAVISTAR 1685159C91	3.97	101	3.59	91		
1-14	4.31	109	10.60	269	G	P555823	FUEL PRIMARY	99% @ 9	CAT 4N-5823	2.82	72	2.42	61	
	4.36	111	5.04	128	G	P550436	FUEL PRIMARY	50% @ 30	RACOR S3225P	4.00	102	3.56	90	
	4.36	111	5.05	128	Bowl Thd	P550729	FUEL/WATER SEPARATOR	50% @ 10	NAVISTAR 1677004C91	4.00	102	3.56	90	
	4.36	111	5.10	130	Bowl Thd	P550730	FUEL/WATER SEPARATOR	50% @ 10	FORD F1HZ9365A, CARRIER 30-01079	4.00	102	3.56	90	
	4.36	111	6.10	155	Bowl Thd	P550747	FUEL/WATER SEPARATOR	50% @ 10	RACOR R90 SERIES	3.77	96	3.50	89	
	4.38	111	8.21	209	E	P551767	FUEL/WATER SEPARATOR	99% @ 40	GM 23514654, JOHN DEERE 500186	3.77	96	3.50	89	
	4.38	111	8.50	216	Bowl Thd	P550748	FUEL/WATER SEPARATOR	50% @ 10	RACOR R120 SERIES	4.00	102	3.56	90	
	4.23	107	10.36	263	B2	P551010	FUEL/WATER SEPARATOR	99% @ 20	CATERPILLAR EQUIPMENT	3.86	98	3.55	90	Yes
	4.38	111	11.30	287	E	P551746	FUEL/WATER SEPARATOR	99% @ 5	CATERPILLAR 1335673	3.50	89	3.18	81	
	4.39	112	4.02	102	Bowl Thd	P553375	FUEL/WATER SEPARATOR	50% @ 10	FORD E8TZ-9N184-A	3.77	96	3.50	89	
7/8-14	4.23	107	4.23	107	A	P551027	FUEL/WATER SEPARATOR	99% @ 4	JOHN DEERE RE522688	3.90	99	3.56	90	
	4.23	107	9.6	244	A	P551031	FUEL/WATER SEPARATOR	99% @ 15	CASE 1808623C1	2.83	72	2.44	62	
	4.24	108	6.74	171	E	P550669	FUEL/WATER SEPARATOR	99% @ 5	JOHN DEERE RE522688	3.93	100	3.55	90	
	4.24	108	7.14	181	G	P551318	FUEL PRIMARY	99% @ 9	NAVISTAR 1822588C1	2.81	71	2.45	62	
	4.28	109	4.60	117	G	P550811	FUEL SECONDARY	99% @ 10	FORD, IHC 6.9L 1804459C1	2.83	72	2.45	62	
	4.28	109	7.98	203	G	P552603	FUEL SECONDARY	99% @ 9	IHC 672603C1	2.82	72	2.42	61	
3/4-16	4.29	109	7.20	183	G	P551605	FUEL PRIMARY	99% @ 3	IVECO 1901605	2.80	71	2.40	61	
7/8-16	4.28	109	7.89	200	G	P550218	FUEL SECONDARY	99% @ 17	MACK 483-GB-218B	2.82	72	2.42	61	
1 1/16-16	4.28	109	10.31	262	G	P550431	FUEL SECONDARY	99% @ 9	MACK 483-GB-431	3.89	99	3.55	90	
1 1/4-12	4.38	111	11.75	298	A	P920683	FUEL/WATER SEPARATOR	99% @ 15	3 GPM HIGH PERF FF/WS	4.32	110	3.85	98	
	4.38	111	7.44	189	A	P920711	FUEL/WATER SEPARATOR	99% @ 15	1 GPM HIGH PERF FF/WS	4.32	110	3.85	98	
13/16-18	4.23	107	9.60	244	A	P551030	FUEL/WATER SEPARATOR	99% @ 17	MACK 483GB465	2.83	72	2.44	62	
	4.28	109	7.89	200	G	P550219	FUEL PRIMARY	50% @ 14	MACK 483-GB-219A	2.82	72	2.42	61	



Spin-On Filters

Thread	OD		Length		Drain Type	Part No.	Part Description	Efficiency % @ Micron	Primary Application	GSKT O.D.		GSKT I.D.		Stand Tube
	IN	MM	IN	MM						IN	MM	IN	MM	
108 mm / 4.25" Diameter Family, continued														
15/16-16	4.26	108	8.96	228	F	P552475	FUEL/WATER SEPARATOR	50% @ 10	LUBER-FINER LFP2100C	2.81	71	2.46	62	
	4.28	109	10.31	262	F	P552370	FUEL/WATER SEPARATOR	50% @ 10	FORD E7HZ-9N184-B, E8HT-9J288-AA	2.85	72	2.48	63	
M22 x 1.5	4.23	107	9.6	244	A	P551028	FUEL/WATER SEPARATOR	99% @ 17	MACK 483GB472M	3.90	99	3.56	90	
	4.25	108	7.95	202	G	P554470	FUEL PRIMARY	99% @ 25	MACK 483-GB-470M	3.88	99	3.54	90	
	4.25	108	10.40	264	E	P554472	FUEL/WATER SEPARATOR	99% @ 25	MACK 483GB472M	3.98	101	3.58	91	
M30 x 1.5	4.23	107	7.95	202	G	P554476	FUEL SECONDARY	99% @ 9	MACK 483GB476M	3.90	99	3.54	90	
	4.23	107	9.6	244	A	P551029	FUEL/WATER SEPARATOR	99% @ 4	MACK 483GB477M	3.9	99	3.56	90	
	4.25	108	8.34	212	E	P554477	FUEL/WATER SEPARATOR	99% @ 5	MACK ASET	3.98	101	3.58	91	
	4.25	108	10.30	262	G	P554471	FUEL SECONDARY	99% @ 9	MACK 483GB471M	3.88	99	3.54	90	
M32 x 1.5	4.43	113	10.00	254	G	P550529	FUEL PRIMARY	99% @ 5	VOLVO 20430751	4.09	104	3.66	93	
	4.43	113	10.31	262	G	P554000	FUEL PRIMARY	99% @ 5	MTU ENGINE, MANN & HUMMEL WDK11102/10	4.09	104	3.66	93	
	4.25	108	10.24	260	G	P551021	FUEL PRIMARY	99% @ 5	MTU 0020922801, 002092801	4.06	103	3.66	93	
118 mm / 4.65" Diameter Family														
1 1/16-16	4.67	119	8.94	227	G	EFF0047	FUEL SECONDARY	99% @ 5	DETROIT DIESEL ENGINES	4.32	110	3.85	98	
	4.67	119	8.94	227	G	P550959	FUEL SECONDARY	99% @ 16	FORD, GMC 25011026	4.32	110	3.85	98	
1 1/4-12	4.67	119	8.94	227	G	P550958	FUEL PRIMARY	99% @ 30	DETROIT DIESEL 25011024	4.32	110	3.85	98	
	4.66	118	10.24	260	G	P550202	FUEL PRIMARY	99% @ 9	CUMMINS 299202	4.32	110	3.85	98	
	4.66	118	12.24	311	A	P552216	FUEL/WATER SEPARATOR	99% @ 17	CUMMINS 3309437	4.39	112	3.87	98	
	4.66	118	12.25	311	A	P550937	FUEL/WATER SEPARATOR	99% @ 9	KOMATSU	4.33	110	3.86	98	Yes
	4.74	120	12.32	313	A	P552006	FUEL/WATER SEPARATOR	99% @ 10	CUMMINS 3089916	4.39	112	3.87	98	
1 5/8-12	4.66	118	11.73	2.98	G	P553500	FUEL SECONDARY	99% @ 3	KOMATSU	4.33	110	3.86	98	
2 1/4-12	4.65	118	10.38	264	G	DBF5782	FUEL SECONDARY	99% @ 4	CUMMINS QSK19, QSK38, QSK50	4.68	119	4.00	102	
M90 x 2	4.65	118	8.80	224	G	P555776	FUEL SECONDARY	99% @ 5	CUMMINS ISX	4.69	119	4.02	102	
	4.65	118	11.68	297	G	P555686	FUEL SECONDARY	99% @ 5	CUMMINS ISX	4.69	119	4.02	102	
136 mm / 5.36" Diameter Family														
1 3/8-16	5.34	136	12.19	310	G	P551316	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R-0755	4.28	109	3.90	99	
	5.38	137	11.77	299	F	P550348	FUEL/WATER SEPARATOR	99% @ 7	DETROIT DIESEL 23512631	4.29	109	3.92	100	
	5.38	137	12.13	308	G	P553080	FUEL PRIMARY	99% @ 9	CAT 8N-3080, 3500 SERIES ENGINE	4.31	109	3.92	100	
M39 x 1.5	5.35	136	12.05	306	G	P765199	FUEL PRIMARY	99% @ 10	MTU 0020922101	4.29	109	4.33	110	



I.D.	OD		Length		Part No.	Part Description	Efficiency @ Micron	Primary Application
	IN	MM	IN	MM				
Stanadyne FM100 System Fuel Filter Water Separators								
Stanadyne® is a registered trademark of Stanadyne Corporation								
.90	23	3.15	80	5.31	135	P551423	FUEL/WATER SEPARATOR- STANDARD FLOW	99% @ 10 CAT, JOHN DEERE
.90	23	3.15	80	5.31	135	P551426	PRIMARY- STANDARD FLOW	99% @ 20 AGCO, CAT, JCB
.90	23	3.15	80	5.31	135	P551429	PRIMARY- STANDARD FLOW	99% @ 50 AGCO, CAT, PERKINS
.90	23	3.15	80	5.31	135	P551436	PRIMARY- REVERSE FLOW	99% @ 50 CAT
.90	23	3.15	80	6.05	154	P551421	FUEL/WATER SEPARATOR- STANDARD FLOW	99% @ 3 IR, JOHN DEERE, LIEBHERR
.90	23	3.15	80	6.05	154	P551424	FUEL/WATER SEPARATOR- STANDARD FLOW	99% @ 10 JOHN DEER, PERKINS, CAT
.90	23	3.15	80	6.05	154	P551427	PRIMARY- STANDARD FLOW	99% @ 20 CAT, JOHN DEERE, JCB
.90	23	3.15	80	6.05	154	P551430	PRIMARY- STANDARD FLOW	99% @ 50 JOHN DEERE, LIEBHERR, NEW HOLLAND
.90	23	3.15	80	6.05	154	P551432	FUEL/WATER SEPARATOR- REVERSE FLOW	99% @ 10 CNH, PERKINS, FORD
.90	23	3.15	80	6.05	154	P551434	PRIMARY- REVERSE FLOW	99% @ 20 JOHN DEERE, LIEBHERR, CASE, JCB
.90	23	3.15	80	6.05	154	P551437	PRIMARY- REVERSE FLOW	99% @ 50 JOHN DEERE, NEW HOLLAND
.90	23	3.15	80	7.71	196	P551422	FUEL/WATER SEPARATOR - STANDARD FLOW	99% @ 3 JOHN DEERE, LIEBHERR
.90	23	3.15	80	7.71	196	P551425	FUEL/WATER SEPARATOR - STANDARD FLOW	99% @ 10 CAT, CNH, JCB



Cartridge Filters

I.D.		OD		Length		Part No.	Part Description	Efficiency @ Micron	Primary Application
IN	MM	IN	MM	IN	MM				
.90	23	3.15	80	7.71	196	P551428	PRIMARY- STANDARD FLOW	99% @ 20	JOHN DEERE
.90	23	3.15	80	7.71	196	P551431	PRIMARY- STANDARD FLOW	99% @ 50	JOHN DEERE, MACK, RVI
.90	23	3.15	80	7.71	196	P551433	FUEL/WATER SEPARATOR- REVERSE FLOW	99% @ 10	CNH, FORD, CAT
.90	23	3.15	80	7.71	196	P551435	PRIMARY- REVERSE FLOW	99% @ 20	JOHN DEERE, McCORMICK
Fuel Cartridge Filters									
0.20	5	0.70	18	2.01	51	P550559	FUEL PRIMARY		GM 5651921
0.26	7	2.19	56	1.47	37	P550364	FUEL PRIMARY		LISTER PETER 20113112
0.35	9	3.28	83	3.00	76	P505973	FUEL PRIMARY		TOYOTA HILUX
0.38	10	2.24	57	2.99	76	P552341	FUEL PRIMARY	99% @ 45	CAT 9M2341, FOR 9M2342 USE 2 P552341
0.43	11	1.38	35	2.44	62	P502134	FUEL PRIMARY	50% @ 16	YANMAR 10450055710
0.43	11	1.38	35	3.39	86	P502166	FUEL PRIMARY	50% @ 16	YANMAR 12455055700, KUBOTA 16271-43560
0.44	11	2.14	54	3.47	88	P550214	FUEL PRIMARY	99% @ 20	CLARK, GMC, IHC, AUTO, PICKUP
0.43	11	2.44	62	2.36	60	P550038	FUEL PRIMARY	99% @ 30	HINO 23401-1060
0.43	11	2.83	72	1.73	44	P502113	FUEL PRIMARY	99% @ 30	MITSUBISHI 3166201031
0.43	11	2.83	72	3.54	90	P550056	FUEL PRIMARY	99% @ 30	NISSAN 16444-29000
0.47	12	1.38	35	3.43	87	P502135	FUEL PRIMARY	50% @ 12	YANMAR 10599155710
0.47	12	1.38	35	3.81	97	P502133	FUEL PRIMARY	50% @ 12	YANMAR
0.49	12	1.42	36	3.54	90	P550645	FUEL PRIMARY		YANMAR 11974055600
0.46	12	2.87	73	3.14	80	P550745	FUEL PRIMARY		YANMAR 120324-55760
0.47	12	3.30	84	5.53	140	P550349	FUEL PRIMARY		MERCEDES, MANN BF900X (FELT)
0.47	12	3.30	84	5.50	140	P550861	FUEL PRIMARY	99% @ 9	DEUTZ, MERCEDES, ATLAS-COPCO, IHC
0.52	13	1.14	29	2.27	58	P552378	FUEL PRIMARY		FORD SBA360720020
0.51	13	1.14	29	3.35	85	P502138	FUEL PRIMARY	50% @ 12	KUBOTA 15231-43563, 15231-43560
0.50	13	1.39	35	1.88	48	P550007	FUEL PRIMARY	99% @ 22	IHC, DODGE, FORD, JEEP, MELROE
0.51	13	1.87	47	1.77	45	P551769	FUEL PRIMARY		ISUZU 5878101970
0.53	13	2.22	56	4.49	114	P550860	FUEL PRIMARY		DEUTZ 1160033 (FELT)
0.52	13	2.75	70	4.52	115	P550481	FUEL PRIMARY		CLAAS, HANOMAG, LIEBHERR, MERCEDES, VOLVO
0.53	13	3.30	84	5.30	135	P550061	FUEL PRIMARY		DEUTZ 1168469
0.52	13	3.36	85	5.70	145	P550489	FUEL PRIMARY		CLAAS, DEMAG, LIEBHERR, MERCEDES
0.50	13	3.81	97	2.85	72	P550437	FUEL PRIMARY	95% @ 5	MOTORCRAFT FD4596, FORD F81Z-9N184-AA
0.55	14	2.60	66	4.30	109	P550060	FUEL PRIMARY	99% @ 9	DEUTZ, ATLAS COPCO (PLEATED PAPER)
0.55	14	4.86	123	3.55	90	P551081	FUEL PRIMARY	95% @ 5	FORD LIGHT TRUCK, INCLUDES SERVICE LID
0.55	14	4.86	123	4.54	115	P551082	FUEL PRIMARY	95% @ 5	FORD LIGHT TRUCK, INCLUDES SERVICE LID
0.56	14	3.56	90	3.99	101	P550966	FUEL/WATER SEPARATOR	50% @ 7	FORD NAVISTAR LIGHT TRUCK
0.57	14	2.83	72	3.35	85	P552563	FUEL PRIMARY	50% @ 20	ISUZU 5-878100500
0.57	14	3.53	90	5.31	135	P550040	FUEL PRIMARY	50% @ 5	HITACHI 4514801, ISUZU 1878100270
0.57	14	3.54	90	5.52	140	P550044	FUEL PRIMARY	99% @ 30	MITSUBISHI 30062-65011
0.57	14	4.00	102	6.32	161	P550042	FUEL PRIMARY	99% @ 30	ISUZU 1878102070
0.59	15	2.80	71	3.93	100	P550039	FUEL PRIMARY		HITACHI 4020429
0.58	15	2.93	74	2.91	74	P551339	FUEL PRIMARY	99% @ 30	TOYOTA 0423468010
0.58	15	3.33	84	2.88	73	P552470	FUEL PRIMARY		ALLIS CHALMERS 4512207-3 CATERPILLAR 666-3172; CHRYSLER J0936407; MASSEY FERGUSON 1069954-M91
0.53	13	3.30	84	5.30	135	P550061	FUEL PRIMARY		DEUTZ 1168469
0.52	13	3.36	85	5.70	145	P550489	FUEL PRIMARY		CLAAS, DEMAG, LIEBHERR, MERCEDES
0.50	13	3.81	97	2.85	72	P550437	FUEL PRIMARY	95% @ 5	MOTORCRAFT FD4596, FORD F81Z-9N184-AA
0.55	14	2.60	66	4.30	109	P550060	FUEL PRIMARY	99% @ 9	DEUTZ, ATLAS COPCO (PLEATED PAPER)
0.57	14	2.83	72	3.35	85	P552563	FUEL PRIMARY	50% @ 20	ISUZU 5-878100500
0.56	14	3.56	90	3.99	101	P550966	FUEL/WATER SEPARATOR	50% @ 7	FORD NAVISTAR LIGHT TRUCK
0.57	14	3.53	90	5.31	135	P550040	FUEL PRIMARY	50% @ 5	HITACHI 4514801, ISUZU 1878100270
0.59	15	3.58	91	5.43	138	P502116	FUEL PRIMARY	99% @ 30	MITSUBISHI ME971550, ME971553
0.59	15	3.60	91	6.38	162	P551338	FUEL PRIMARY	99% @ 30	NISSAN 1644429027
0.59	15	3.62	92	4.33	110	P550054	FUEL PRIMARY	99% @ 30	MITSUBISHI ME036478
0.59	15	3.61	92	5.28	134	P550055	FUEL PRIMARY	99% @ 30	NISSAN 16444-99128
0.59	15	3.62	92	5.31	135	P550023	FUEL PRIMARY	99% @ 30	NISSAN 16444-90127
0.59	15	4.09	104	4.09	104	P550392	FUEL PRIMARY	99% @ 30	HINO 234011090

Cartridge Filters

I.D.		OD		Length		Part No.	Part Description	Efficiency @ Micron	Primary Application
IN	MM	IN	MM	IN	MM				
Fuel Cartridge Filters									
0.59	15	4.37	111	5.51	140	P550028	FUEL PRIMARY	99% @ 30	NISSAN 16444-99028
0.62	16	2.59	66	4.47	114	P550120	FUEL PRIMARY	99% @ 20	MANN BF700X
0.62	16	2.93	74	2.20	56	P550673	FUEL PRIMARY	99% @ 25	IHC 478037C1
0.62	16	2.93	74	4.11	104	P550672	FUEL PRIMARY	99% @ 25	KOMATSU 600-311-8210
0.63	16	2.91	74	4.15	106	P550026	FUEL PRIMARY	99% @ 30	ISUZU 9-9885111940
0.63	16	2.95	75	2.60	66	P502118	FUEL PRIMARY	99% @ 30	TOYOTA 0423456010
0.63	16	3.50	89	6.42	163	P550366	FUEL/WATER SEPARATOR		FORD 844F9176CAB
0.63	16	3.54	90	2.73	69	P552014	FUEL/WATER SEPARATOR	50% @ 30	RACOR 2010PM
0.63	16	3.54	90	2.73	69	P552013	FUEL/WATER SEPARATOR	50% @ 2	RACOR 2010SM
0.65	17	4.31	109	6.47	164	P550447	FUEL/WATER SEPARATOR	99% @ 20	FLEETGUARD FS1011 FOR OPTIGUARD SYSTEM
0.70	18	1.45	37	3.82	97	P552395	FUEL PRIMARY		WHITE 163956AS
0.72	18	3.13	80	5.44	138	P552423	FUEL PRIMARY		SERVICE ELEMENT FOR GRAVITY FLOW SERVICE TANKS
0.69	18	4.52	115	8.10	206	P551624	FUEL SECONDARY	99% @ 30	AC TP624 W/PLEATED PAPER
0.75	19	2.95	75	6.97	177	P502196	FUEL PRIMARY	50% @ 20	ISUZU 13240045
0.75	19	3.37	86	4.12	105	P551748	FUEL PRIMARY		JOHN DEERE AR45678
0.74	19	3.41	87	2.80	71	P556245	FUEL PRIMARY	99% @ 14	CASE, JOHN DEERE, IHC, MF, ROOSAMASTER
0.75	19	3.44	87	3.41	87	P502169	FUEL PRIMARY	50% @ 10	LEYLAND ABU9642, MAZDA SL07-23570
0.75	19	3.50	89	2.76	70	P551168	FUEL PRIMARY		PERKINS 31938
0.75	19	3.50	89	2.80	71	P557111	FUEL PRIMARY		CAV FUEL SYSTEM APPLICATIONS
0.74	19	3.50	89	5.28	134	P550394	FUEL PRIMARY		MASSEY FERGUSON, PERKINS
0.73	19	3.62	92	5.51	140	P502114	FUEL PRIMARY	99% @ 30	mitsubishi ME046010
0.77	19	3.98	101	4.78	121	P552473	FUEL PRIMARY		ALLIS CHALMERS BM33761; CUMMINS BM33761; FORD EDL-9176-A; INTERNATIONAL 3054750-R91
0.75	19	4.23	107	4.34	110	P551310	FUEL/WATER SEPARATOR	99% @ 10	CHRYSLER 0488396AA
0.79	20	1.97	50	3.50	89	P502161	FUEL PRIMARY	50% @ 16	YANMAR 12910055650, KUBOTA 15521-43160
0.78	20	4.25	108	6.73	171	P502131	FUEL PRIMARY	50% @ 20	MANN B405C,
0.81	21	2.75	70	3.37	86	P551167	FUEL PRIMARY		CHRYSLER 5037896
0.81	21	4.33	110	4.60	117	P552044	FUEL/WATER SEPARATOR	50% @ 30	RACOR 2040PM
0.81	21	4.33	110	4.60	117	P552043	FUEL/WATER SEPARATOR	50% @ 2	RACOR 2040SM
0.81	21	4.67	119	9.60	244	P552024	FUEL/WATER SEPARATOR	50% @ 30	RACOR 2020PM
0.81	21	4.67	119	9.60	244	P552023	FUEL/WATER SEPARATOR	50% @ 2	RACOR 2020SM
0.82	21	3.41	87	4.10	104	P550800	FUEL/WATER SEPARATOR		DODGE LIGHT TRUCK, CHRYSLER 68001914AA
0.87	22	3.86	98	6.35	161	P502132	FUEL PRIMARY	99% @ 30	MANN EK405, P1018/1
0.87	22	4.64	118	8.39	213	P550125	FUEL PRIMARY	99% @ 20	CUMMINS 130909,299125
0.91	23	2.19	56	2.48	63	P550567	FUEL PRIMARY		PETTER 20332470
0.98	25	3.70	94	7.19	183	P550347	FUEL PRIMARY	99% @ 28	FIAT GEOTECH 1909107
0.97	25	5.00	127	9.75	248	P558600	FUEL PRIMARY		KOMATSU 6610-79-8600
0.98	25	5.83	148	8.07	205	P550316	FUEL/WATER SEPARATOR	99% @ 20	CAT, CUMMINS, GROVE
1.00	25	5.81	148	9.37	238	P550043	FUEL PRIMARY	99% @ 20	CUMMINS, HOUGH, MICH 139097, 256834
1.04	26	3.01	76	4.41	112	P550686	FUEL/WATER SEPARATOR	99% @ 25	FRAM CS1133PL SEPARATOR
1.02	26	3.00	76	6.00	152	P550522	FUEL SOCK	99% @ 40	GMC 21029
1.04	26	3.01	76	7.34	186	P550685	FUEL/WATER SEPARATOR	99% @ 25	FRAM CC1133PL COALESCER
1.03	26	2.98	76	7.81	198	P550540	FUEL SECONDARY	99% @ 22	CUMMINS, GMC 5573262
1.04	26	3.01	76	9.70	246	P551162	FUEL PRIMARY		CONTINENTAL 12395HE
1.02	26	4.33	110	7.91	201	P551337	FUEL PRIMARY	99% @ 30	NISSAN 1644497001
1.08	27	2.99	76	7.95	202	P550627	FUEL PRIMARY		MAN TGA
1.06	27	3.19	81	4.53	115	P550201	FUEL SECONDARY	99% @ 25	MACK 237-GB-28
1.07	27	3.74	95	3.72	95	P502226	FUEL PRIMARY	50% @ 20	ISUZU 1132401940
1.10	28	2.90	74	2.37	60	P550560	FUEL SOCK		CASE A35863, A36557
1.10	28	3.40	86	3.27	83	P553261	FUEL SECONDARY	99% @ 20	GMC 5573261
1.12	28	3.37	86	6.50	165	P558792	FUEL PRIMARY	99% @ 10	CAT 4H-8792, 9H-4729, 6H-5932
1.12	28	4.00	102	8.75	222	P550541	FUEL SOCK	99% @ 40	GMC 5574980
1.12	28	4.81	122	9.13	232	P550547	FUEL/WATER SEPARATOR	50% @ 30	CIMTEK EHS30, 300-07
1.12	28	4.81	122	9.13	232	P550607	FUEL/WATER SEPARATOR	50% @ 10	FUEL DISPENSING PUMPS



I.D.		OD		Length		Part No.	Part Description	Efficiency @ Micron	Primary Application
IN	MM	IN	MM	IN	MM				
1.24	31	2.95	75	8.38	213	P550552	FUEL SOCK		GMC 5575032
1.32	34	3.48	88	4.80	122	P550501	FUEL PRIMARY	99% @ 9	PUROLATOR F70100 HOUSING
1.50	38	3.35	85	7.11	180	P550628	FUEL PRIMARY		SCANIA 164 AND SCANIA MARINE ENGINES DI SERIES
1.53	39	3.46	88	4.45	113	P556287	FUEL PRIMARY		C.A.V. 7111/792
1.61	41	3.90	99	9.23	234	P551317	FUEL PRIMARY	99% @ 3	CATERPILLAR 1R-0756
1.62	41	3.93	100	9.25	235	P559850	FUEL PRIMARY	99% @ 22	CATERPILLAR 8N9850, 1R0718
1.73	44	1.38	35	0.45	11	P502115	FUEL PRIMARY	99% @ 30	MITSUBISHI MA125373
1.81	46	3.74	95	6.79	173	P785373	FUEL PRIMARY	99% @ 5	MAN TGL SERIES 51125030061
1.81	46	4.13	105	8.06	205	P550631	FUEL PRIMARY		CUMMINS 299631
2.22	56	2.40	61	1.97	50	P550404	FUEL PRIMARY	99% @ 30	TOYOTA 2330034100
2.46	62	5.50	140	10.00	254	P550032	FUEL SOCK	99% @ 40	DETROIT DIESEL
2.60	66	3.35	85	4.43	113	P550527	FUEL/WATER SEPARATOR		FORD 3C3Z9N184CA F SERIES PICKUP
2.73	69	3.27	83	5.23	133	P550352	FUEL/WATER SEPARATOR	50% @ 5	GM 10154635, 6.2L DIESEL
3.39	86	3.58	91	3.94	100	P550808	FUEL		MERCEDES 6460920501
6.47	164	4.62	117	0.65	17	P550752	FUEL/WATER SEPARATOR		Fleetguard FS19559
G 8-36	NA	1.12	28	2.72	69	P502136	FUEL PRIMARY		CAT 5S7645



DAVCO Fuel System Filters

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0.66	17	3.45	88	4.44	113	P550460	FUEL/WATER SEPARATOR	99% @ 7	DAVCO 230/232 SERIES DETROIT DIESEL
0.66	17	3.82	97	6.74	171	P550463	FUEL/WATER SEPARATOR	98% @ 7	DAVCO 380/382 SERIES DETROIT DIESEL ENGINES
0.66	17	3.82	97	6.74	171	P550467	FUEL/WATER SEPARATOR	99% @ 7	DAVCO 380/382 SERIES ELEMEX FUEL PROCESSORS
0.66	17	3.82	97	7.00	178	P550736	FUEL/WATER SEPARATOR	98% @ 25	DAVCO 380/382 SERIES ELEMEX FUEL PROCESSORS
0.66	17	3.82	97	7.00	178	P550737	FUEL/WATER SEPARATOR	99% @ 50	DAVCO 380/382 SERIES ELEMEX FUEL PROCESSORS
0.66	17	3.82	97	7.00	178	P550757	FUEL PRIMARY	99% @ 16	DAVCO 230/232 SERIES DETROIT DIESEL
0.66	17	3.81	97	7.03	179	P551052	FUEL/WATER SEPARATOR	99% @ 10	DAVCO 380/382 and CUMMINS FH230 FUEL PRO
0.66	17	4.21	107	6.74	171	P550510	FUEL/WATER SEPARATOR	99% @ 7	DAVCO 102011, 102012
.66	17	4.21	107	7.04	179	P550849	FUEL/WATER SEPARATOR	98% @ 7	DAVCO PLUS SIZE ELEMEX 7 MICRON
.66	17	4.21	107	7.04	179	P550851	FUEL/WATER SEPARATOR	98% @ 25	DAVCO PLUS SIZE ELEMEX 25 MICRON
.66	17	4.21	107	7.04	179	P550853	FUEL/WATER SEPARATOR	99% @ 50	DAVCO PLUS SIZE ELEMEX 50 MICRON
1.04	26	5.83	148	7.61	193	P551011	FUEL/WATER SEPARATOR	98% @ 7	DAVCO 482 SERIES 7 MICRON



Metal-Free Fuel Filters

NA	NA	3.54	90	6.22	158	P550908	FUEL PRIMARY		CHRYSLER 68061633AA, CUMMINS 5257769
0.55	14	3.74	95	7.97	202	P550762	FUEL PRIMARY	99% @ 15	MERCEDES 5410900151
0.83	21	3.39	86	4.09	104	P550785	FUEL/WATER SEPARATOR	99% @ 10	CHRYSLER 5015581AD
0.82	21	3.74	95	5.59	142	P550657	FUEL/WATER SEPARATOR	99% @ 7	IH DT466 2004 ON
1.06	27	3.62	92	3.98	101	P550632	FUEL PRIMARY	99% @ 8	MERCEDES 0000901551



Racor Turbine System Filters

Racor® is a registered trademark of Parker Hannifin Corporation

0.50	13	1.78	45	2.68	68	P552000	FUEL/WATER SEPARATOR	99% @ 30	RACOR 2000 SERIES
0.63	16	3.25	83	2.44	62	P552010	FUEL/WATER SEPARATOR	99% @ 30	RACOR 2010 SERIES
0.81	21	4.28	109	9.63	245	P552020	FUEL/WATER SEPARATOR	99% @ 30	RACOR 2020 SERIES
0.81	21	4.28	109	4.63	118	P552040	FUEL/WATER SEPARATOR	99% @ 30	RACOR 2040 SERIES



Box-Style Cartridge Filters

Width		Length		Height		Part No.	Part Description	Efficiency @ Micron	Primary Application
IN	MM	IN	MM	IN	MM				
Box-Style Cartridge Filters									
2.64	67	4.38	111	2.59	66	P552387	FUEL BOX PRIMARY	99% @ 22	GMC 25010487
2.83	72	4.61	117	2.46	62	P550955	FUEL BOX PRIMARY	99% @ 22	GMC 6.2 DIESEL, STANADYNE 23775
2.83	72	4.62	117	2.46	62	P556285	FUEL BOX PRIMARY	99% @ 10	THERMOKING 116285
2.83	72	4.62	117	2.46	62	P556286	FUEL/WATER SEPARATOR BOX	99% @ 30	THERMOKING 116286
2.83	72	4.62	117	2.46	62	P557264	FUEL/WATER SEPARATOR BOX	99% @ 30	THERMOKING 117264
3.28	83	6.31	160	2.64	67	P551049	FUEL BOX PRIMARY	99% @ 22	GMC V8-379, STANADYNE 27611
3.46	88	3.46	88	2.00	51	P502392	FUEL BOX PRIMARY	99% @ 35	DEUTZ 0319822, VOLVO 14514238
3.71	94	4.95	126	3.15	80	P551130	FUEL BOX PRIMARY	99% @ 22	JOHN DEERE AR50041, STANADYNE 20014
3.71	94	5.04	128	3.28	83	P556745	FUEL BOX PRIMARY	99% @ 22	JOHN DEERE AR86745, STANADYNE 26667
3.71	94	4.95	126	3.34	85	P559803	FUEL BOX PRIMARY	99% @ 22	CAT 8N-9850, STANADYNE 21167



P550955



P550955



P556285



P556286



P557264



P551049



P502392



P551130



P556745



P559803



In-Line Filters

Part No.	Primary Application	Outer. Dia.		Inlet Size	Length		Outlet Size	Efficiency @ Micron
		IN	MM		IN	MM		
In-Line Filters								
P550012	PICKUPS AND CARS -- UNIVERSAL 5/16" 2 HOSES 4 CLAMPS	1.94	49	5/16	4.17	106	5/16	99% @ 40
P550016	FORD D7TE9155A, MOTORCRAFT FG778 (1 HOSE 2 CLAMPS INCLUDED)	1.33	34	5/16	2.71	69	1/8-27	99% @ 100
P550090	FORD, GMC -- 2 HOSES 4 CLAMPS INCLUDED	1.94	49	3/8	3.88	99	3/8	99% @ 22
P550091	FORD, MOTORCRAFT FG14 -- 1 HOSE 2 CLAMPS INCLUDED	1.06	27	5/16	2.86	73	1/8-27	99% @ 100
P550094	UNIVERSAL 1/4" O.D. LINES,	1.94	49	1/4	4.06	103	1/4	99% @ 22
P550126	FORD E3FZ9155C	2.90	74	5/16	5.82	148	5/16	50% @ 23
P550209	GM LIGHT TRUCK	2.17	55	M16 x 1.5	4.29	109	M16 x 1.5	50% @ 23
P550433	CASE IH D145357	1.94	49	3/8	3.88	99	3/8	99% @ 150
P550446	JOHN DEERE AR103220, CUMMINS 3318919	1.89	48	5/8-24	3.54	90	5/8-24	99% @ 150
P550454	FORD D3FZ9155A, D2RY9155A -- 2 HOSES 4 CLAMPS INCLUDED	0.94	24	5/16	2.87	73	5/16	99% @ 100
P550504	GM LIGHT TRUCK, AC GF624, G580	2.28	58	3/8	6.38	162	3/8	50% @ 23
P550508	AC LIGHT DUTY, GF645, G645	2.28	58	M16 x 1.5	5.35	136	3/8	



P550012
PICKUPS AND CARS -- UNIVERSAL 5/16" 2 HOSES 4 CLAMPS



P550016
FORD D7TE9155A, MOTORCRAFT FG778 (1 HOSE 2 CLAMPS INCLUDED)



P550090
FORD, GMC -- 2 HOSES 4 CLAMPS INCLUDED



P550091
FORD, MOTORCRAFT FG14 -- 1 HOSE 2 CLAMPS INCLUDED



P550094
UNIVERSAL 1/4" O.D. LINES,



P550126
FORD E3FZ9155C



P550209
GM Light Truck



P550433
CASE IH D145357



P550446
JOHN DEERE AR103220, CUMMINS 3318919



P550454
FORD D3FZ9155A, D2RY9155A -- 2 HOSES 4 CLAMPS INCLUDED



P550504
GM LIGHT TRUCK, AC GF624, G580



P550508
AC LIGHT DUTY, GF645, G645



In-Line Filters

Part No.	Primary Application	Outer Dia.		Inlet Size	Length		Outlet Size	Efficiency @ Micron
		IN	MM		IN	MM		
P550556	MOTORCRAFT FG1036	2.22	56	3/8	7.00	178	3/8	50% @ 23
P550593	FORD MOTORCRAFT FG19B	0.78	20	5/16	2.17	55	7/8-20	99% @ 100
P550967	FORD LIGHT TRUCK	3.08	78	5/16	6.77	172	5/16	50% @ 23
P550974	CUMMINS 3826094, CASE IH STX	1.94	49	3/8	3.93	100	3/8	99% @ 150
P551759	CHRYSLER 4554040	2.16	55	3/8	6.37	162	5/16	50% @ 23
P551760	ISUZU 825053640, 8251217780	2.32	59	5/16	5.47	139	5/16	50% @ 23
P551770	KOMATSU 20704A1100	1.88	48	1/2	4.34	110	1/2	99% @ 150
P551771	GM 25055347	2.00	51	1/2	4.35	110	1/2	50% @ 23
P551772	FORD F89Z9155A	2.30	58	5/16	7.00	178	5/16	
P552366	GM 5651944	2.28	58	5/8-18	4.75	121	3/8	50% @ 23
P552371	GMC 25121293	2.17	55	3/8	5.47	137	M16 x 1.5	50% @ 23
P552376	AMC 8933000076	3.07	78	3/8	6.06	154	5/16	50% @ 23



P550556
MOTORCRAFT FG1036



P550593
FORD MOTORCRAFT FG19B



P550967
FORD LIGHT TRUCK



P550974
CUMMINS 3826094, CASE IH STX



P551759
CHRYSLER 4554040



P551760
ISUZU 825053640, 8251217780



P551770
Komatsu 20704A1100



P551771
GM 25055347



P551772
FORD F89Z9155A



P552366
GM 5651944



P552371
GMC 25121293



P552376
AMC 8933000076



Part No.	Primary Application	Outer. Dia.		Inlet Size	Length		Outlet Size	Efficiency @ Micron
		IN	MM		IN	MM		
P552394	GMC 25175542; NISSAN 16400-D0100, TOYOTA	4.05	103	9/32	2.31	59	9/32	50% @ 23
P552397	GMC 25121472	2.28	58	3/8	6.47	164	3/8	50% @ 23
P552398	mitsubishi MB504753, MB658689; TOYOTA 23030-74020, 23300-19045	2.80	71	M14 x 1.5	4.37	111	M12 x 1.25	50% @ 23
P552399	GMC 25010487	2.05	52	5/16	2.11	54	5/16	
P552400	CHRYSLER MB504732, MB504750; SUZUKI 15410-61A00	2.80	71	M12 x 1.25	5.04	128	M12 x 1.25	50% @ 12
P552401	MITSUBISHI MB433774	2.07	53	5/16	2.82	72	5/16	
P552403	CHRYSLER 4443452, 4443454, 4549712	2.18	55	5/16	4.74	120	5/16	50% @ 11
P552437	NISSAN 16400-72L00	2.50	64	5/16	5.00	127	5/16	50% @ 23
P552439	CHRYSLER 4708317, 52019023, 52020016	2.15	55	5/16	6.22	158	5/16	50% @ 23
P552442	AUDI 893133511; FERRARI 117792; VOLKSWAGEN 447133511; VOLVO 13895628	3.46	88	M14 x 1.5	5.86	149	M12 x 1.5	50% @ 23
P552448	GMC 25121978	2.28	58	3/8	6.37	162	3/8	50% @ 23
P552482	JOHN DEERE RE38818	1.94	49	9/16-18	3.65	93	9/16-18	99% @ 150



P552394
GMC 25175542; Nissan 16400-D0100, Toyota



P552397
GMC 25121472



P552398
Mitsubishi MB504753, MB658689;
Toyota 23030-74020, 23300-19045



P552399
GMC 25010487



P552400
Chrysler MB504732, MB504750;
Suzuki 15410-61A00



P552401
Mitsubishi MB433774



P552403
Chrysler 4443452, 4443454, 4549712



P552437
Nissan 16400-72L00



P552439
Chrysler 4708317, 52019023, 52020016



P552442
Audi 893133511; Ferrari 117792;
Volkswagen 447133511; Volvo 13895628



P552448
GMC 25121978



P552482
JOHN DEERE RE38818



Twist&Drain™ Filter Kits

Each filter kit contains all the components you need to change over to a Donaldson Twist&Drain fuel filter water separating system – with coverage for over 400 on- and off-road vehicle applications.

Note

For complete manufacturer and application cross reference, see Brochure F111383 on DonaldsonFilters.com

Twist&Drain™ Kit Contents

- Water separating fuel filter with standard Twist&Drain valve
- Water collection bowl for easy visual inspection
- Alternative Twist&Drain valve with water-in-fuel (WIF) sensor or threaded port

Twist&Drain FUEL KITS
SERVICE TRAINING VIDEO



YouTube - youtube.com/user/donaldsonengine





Kit with Clear Water Collection Bowl and Standard Drain Valve



Kit Contents:

Fuel Filter Water Separator with Standard Drain Valve
P569758 Water Collection Bowl - Adds 1.98" (50mm) length

P559117 Filter Kit

P551026 Fuel Filter

Filter Length: 9.60" (244mm)
Efficiency: 99% @ 9µm

Kit with Clear Water Collection Bowl and Packard WIF Sensor



Kit Contents:

Fuel Filter Water Separator
P569758 Water Collection Bowl - Adds 1.98" (50mm) length
P570618 Packard WIF Sensor - Adds .35" (8.8mm) length

P559119 Filter Kit

P551026 Fuel Filter

Filter Length: 9.60" (244mm)
Efficiency: 99% @ 9µm

Kits with Clear Water Collection Bowl and Deutsch WIF Sensor



Kit Contents:

Fuel Filter Water Separator - Varies by Kit
P569758 Water Collection Bowl - Adds 1.98" (50mm) length
Deutsch WIF Sensors - Adds .71" (18.1mm) length

P559121 Filter Kit

P551026 Fuel Filter

Filter Length: 9.60" (244mm)
P570619 (Cummins WIF)
Efficiency: 99% @ 9µm

P559122 Filter Kit

P551026 Fuel Filter

Filter Length: 9.60" (244mm)
P573413 (John Deere WIF)
Efficiency: 99% @ 9µm

Kits with Clear Water Collection Bowl and 1/2"-20 UNF Threaded Sensor Port



Compatible with OEM WIF Sensor

Kit Contents:

Fuel Filter Water Separator - Varies by Kit
P569758 Water Collection Bowl - Adds 1.98" (50mm) length
P550865 Threaded Sensor Port - Adds no length

P559111 Filter Kit

P551065 Fuel Filter

Filter Length: 6.82" (173mm)
Efficiency: 99% @ 4µm

P559114 Filter Kit

P551075 Fuel Filter

Filter Length: 9.60" (244mm)
Efficiency: 99% @ 4µm

P559118 Filter Kit

P551026 Fuel Filter

Filter Length: 9.60" (244mm)
Efficiency: 99% @ 9µm

P559109 Filter Kit

P551056 Fuel Filter

Filter Length: 5.80" (147mm)
Efficiency: 99% @ 9µm

P559112 Filter Kit

P551066 Fuel Filter

Filter Length: 6.82" (173mm)
Efficiency: 99% @ 9µm

P559115 Filter Kit

P551076 Fuel Filter

Filter Length: 9.60" (244mm)
Efficiency: 99% @ 9µm

P559108 Filter Kit

P551055 Fuel Filter

Filter Length: 5.80" (147mm)
Efficiency: 99% @ 4µm

P559110 Filter Kit

P551057 Fuel Filter

Filter Length: 5.8" (147mm)
Efficiency: 99% @ 25µm

P559113 Filter Kit

P551067 Fuel Filter

Filter Length: 6.82" (173mm)
Efficiency: 99% @ 25µm

P559116 Filter Kit

P551077 Fuel Filter

Filter Length: 9.6" (244mm)
Efficiency: 99% @ 25µm



Diesel Fuel Filter Kits

Available in Australia Only

Contaminated fuel can lead to equipment and vehicle downtime resulting in costly repairs. Donaldson's range of Diesel Fuel Filter Kits have you covered from overhead and portable tanks, light to medium trucks and common rail applications.

Note

Product featured on this page is available in Australia.
Contact Donaldson Australasia Customer Service on 1800 345 837 to find a distributor near you.
Further information can be found on www.donaldsontoolbox.com.au

Bulk Fuel Tank Kit

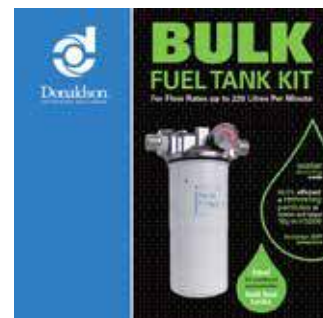
For low flow applications. Ideal solution for overhead and portable tanks

Features and Benefits

- Simple spin-on design for ease of service
- Filtration efficiency 99.5% removal of particles 10 micron or larger ($\beta_{10}=200$)
- Water absorbing media
- T.R.A.P. breather included with kit to help remove moisture and airbourne contaminant, replaces desiccant and silica gel style breathers
- Kit includes adapters for head and breather to connect to connect to BSP fittings

Kit Part Number P902973

See pages 34 for additional diesel tank filtration kits.



Chassis Mount Diesel Fuel Filter Kit

For diesel platforms with flow rates up to 379LPH

Features and Benefits

- Ideal for light to medium trucks
- Filtration efficiency 99% removal of particle 3 micron or larger ($\beta_3=100$)
- Water separating filter and drain bowl
- Includes additional filter element

Kit Part Number P903074





Available in Australia Only

Common Rail Diesel Fuel Filter Kit

For diesel platforms with flow rates up to 114LPH

Features and Benefits

- Ideal for many 4WD applications
- Filtration efficiency 99% removal of particle 11 micron or larger ($\beta_{11}=100$)
- Water separating filter and drain bowl
- Includes additional filter element

Kit Part Number P902976



High Efficiency Diesel Fuel Filter Kit

For diesel platforms with flow rates up to 114LPH

Features and Benefits

- Ideal for many 4WD applications
- Filtration efficiency 99% removal of particles 3 micron or larger ($\beta_3=200$)
- Water separating filter and drain bowl
- Includes additional filter element

Kit Part Number P903316



Clean and Dry Diesel Filter Kit

For diesel fuel applications up to 189LPM

Features and Benefits

- Ideal for service vehicles, mobile tanks, fixed bulk tanks
- Maximum working pressure 350 psi
- Includes single head (2), high efficiency diesel filter, water absorbing filter, pressure gauge (2)

Kit Part Number P506073





Fuel Filtration

Donaldson Blue™ Filters for Cummins® ISX Engines



DBF5782 Cross Reference			
Cummins	Fleetguard	Baldwin	Wix
4964234	FF5782	BF7932	33944

Donaldson Blue™ DBF5782 for **Cummins® QSK engines** consistently retains particles under high pressure common rail fuel system dynamics (engine vibration), protecting your hard-working equipment and maximizing your uptime.

PERFORMANCE UNDER ENGINE VIBRATION AND PARTICLE RETENTION

Compared to the competition's best product, the Donaldson Blue DBF5782 with Synteq XP media averages **4x CLEANER** under heavy-duty vibration testing over the life of the filter. Lower particle release means less micro-contamination is flowing downstream to the fuel injectors.

START TO FINISH

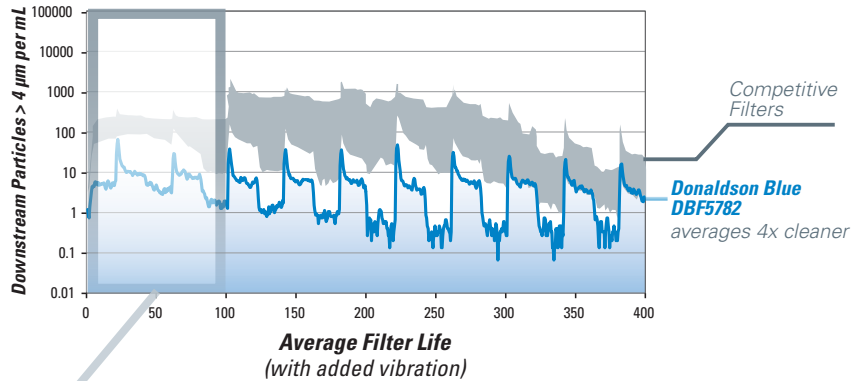
4x cleaner fuel

THAN THE BEST COMPETITIVE FILTER

Donaldson Blue DBF5782 averages 4x lower particle concentration than the competition's best product.

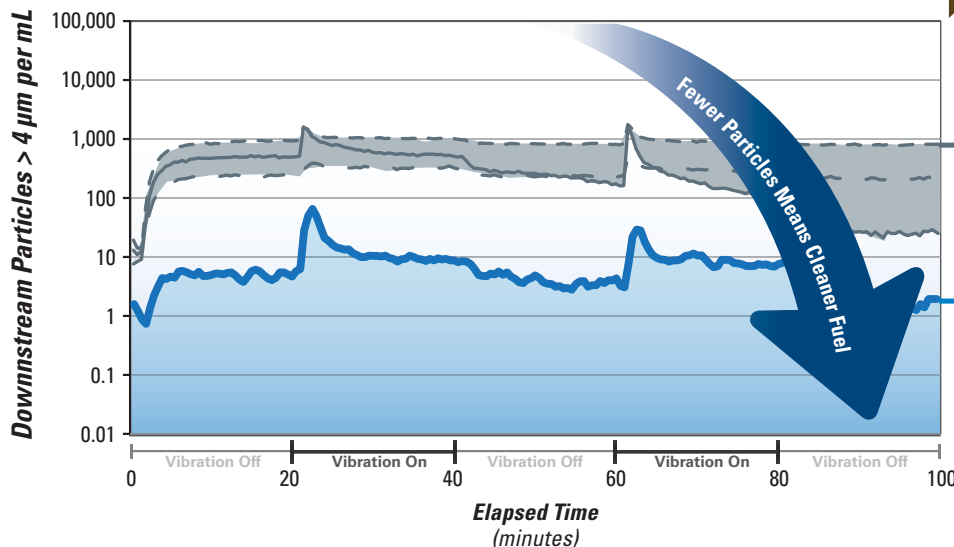
Particle retention was tested under SAE J1985 single-pass test standards with added vibration. Test conducted March - April 2013 with a sample size of six filters per manufacturer.

Donaldson Blue DBF5782 provides cleaner fuel over the life of the filter



Donaldson Blue DBF5782 provides much cleaner fuel when first installed

Upstream particle concentration tested at >100,000 @ >4µm per mL



ISO 24 DIRTY FUEL IN

ISO 14 -16 COMPETITIVE FILTERS
Fuel cleanliness range of competitive filters

ISO 11 CLEAN FUEL OUT
Under these test conditions, **Donaldson Blue DBF5782** can deliver fuel cleanliness down to ISO 11. Competitor filters need to load with contaminant before reaching peak efficiency. Donaldson filters average 20x cleaner over the first portion of the filter's life.

Cummins® is a registered trademark of Cummins, Inc.

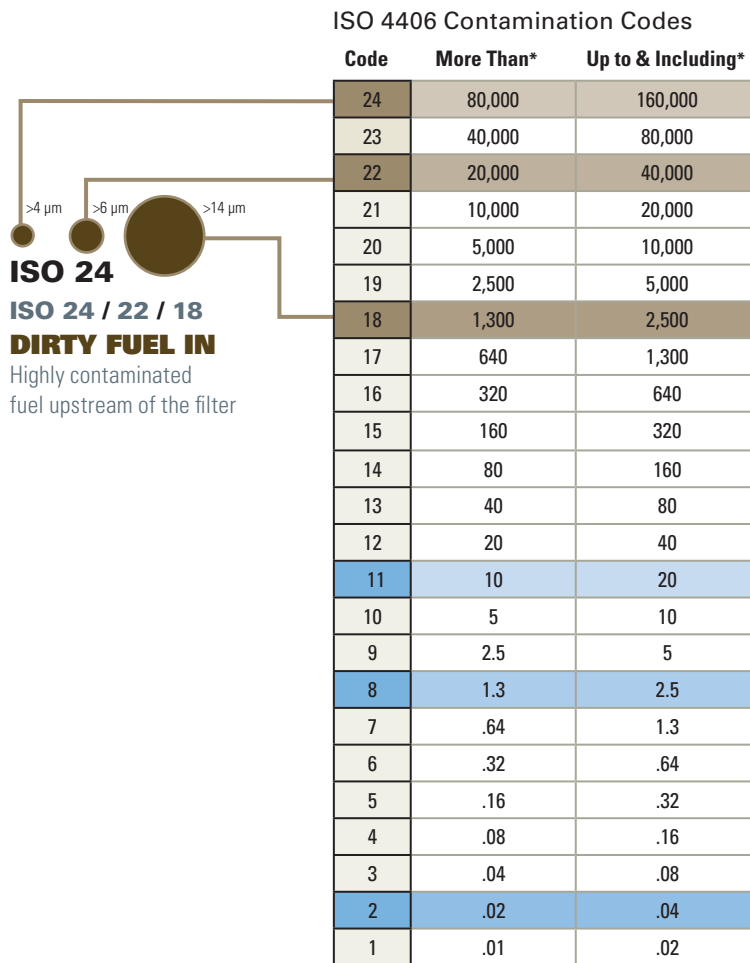


Donaldson Blue™ DBF5782 Fuel Filters Deliver Clean Fuel

UNDERSTANDING DIESEL FUEL CLEANLINESS

ISO 4406 contamination codes consist of three numbers corresponding to the number of particles 4 microns (µm) and larger, 6 microns and larger, and 14 microns and larger present in the fuel. Determining fuel cleanliness requirements includes measuring both the particle size and count.

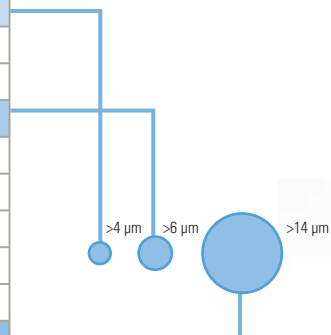
The following chart illustrates what it means to start with heavily contaminated fuel levels of ISO 24/22/18 and how the **Donaldson Blue DBF5782** delivers exceptionally clean fuel. These results are based on SAE J1985 single-pass test standards with added vibration to simulate dynamic engine operating conditions.



*Number of particles per milliliter

INTERPRETING THE ISO CODES
Example: ISO 24 / 22 / 18

ISO / /
>4 µm >6 µm >14 µm



ISO 11
ISO 11 / 8 / 2
CLEAN FUEL OUT

Donaldson Blue DBF5782
The low particle count downstream of the filter makes the DBF5782 the best in its class.



Donaldson
BLUE™

Liquid Filtration Solutions

For Selective Catalytic Reduction (SCR) Systems

Denox 1.0 and 2.0 AdBlue® Filter Kits

Available in Europe and Australia Only

Note

Product featured on this page is available in Europe and Australia.

For other regions, please contact your Donaldson representative for availability.

In order to meet current and future Exhaust Emission Regulation, Selective Catalytic Reduction (SCR) are fitted with liquid AdBlue® (urea) injection systems which require high performance and reliable filtration.

Compressible devices in the Donaldson filter absorb urea volume expansion at low temperatures ($\leq -11^{\circ}\text{C}/12^{\circ}\text{F}$), adapting to extreme freezing conditions.

- They will not wear down or deteriorate during the filter's useful service life
- They are compatible with AdBlue® liquid as well as diesel fuel and other types of engine liquids

Bosch® Denoxtronic 1.0 Urea Injection System

Primary Application: DAF 1819795

Overall Dimensions: 69mm OD, 75mm Long

Kit Part No. X770733

Competitive Cross References

Name	Part No.
BALDWIN	PE5270
BOSCH	F00BH40012
BOSCH	F00BH40096
CUMMINS	3967874
DAF	1649425
DAF	1674458
DAF	1674485
DAF	1789050
DAF	1815766
DAF	1819795
DAF	18819795
DAF	42553548
DAF	649425
HENGST	E101UD178
IVECO	42553548
IVECO	42561571
IVECO	42562233
JURA FILTRATION	SN70332
MAN	81154036015
MAN	81154036089
MANN & HUMMEL	
..... U6202XKIT, U6202YKIT	
..... U6203YKIT, U6204XKIT	
NEOPLAN	81154036015
NISSAN/UD	20421NY00J
SCANIA	1545482
SCANIA	1761034
SCANIA	1795459
SCANIA	1852188
SCANIA	1907422
SF-Filter	SAB540SET
SOLARIS BUS (PL) ...	0120322535
SOLARIS BUS (PL)	120322535
VOLVO	20713630
VOLVO	20713636



Bosch® Denoxtronic 2.0 Urea Injection System

Primary Application:

Volvo Truck FE, FH, FL, FM Series, 20876498

Overall Dimensions: 68mm OD, 96mm Long

Kit Part No. X770734

Competitive Cross References

Name	Part No.
AGCO	V837062993
BALDWIN	PE5271
DEUTZ	2934622
CUMMINS	3986767
HENGST	E100UD160
IVECO	2997594
IVECO	42555073
IVECO	42555548
IVECO	42561605
JURA FILTRATION	SN70318
MANN & HUMMEL	U630XKIT
NEW HOLLAND	84254852
RENAULT VI	7420877950
RENAULT VI	7420877953
RENAULT VI	7421333098
SF-Filter	SAB541
VOLVO	20876498
VOLVO	20876502
VOLVO	21333097
VOLVO	21333097



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Bosch® is a registered trademark of Robert Bosch GmbH