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## Diesel Engine Lube Filtration

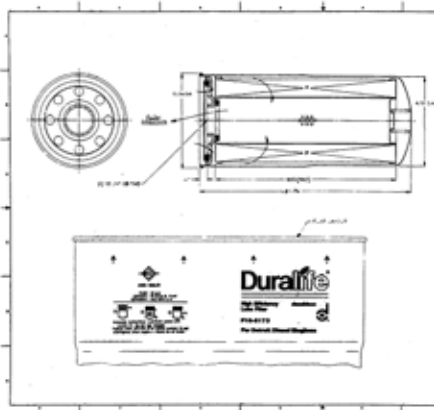
So much of the developed world's infrastructure can be attributed to the application of the diesel engine. The evolution of the diesel engine has been significant since first patented by Rudolph Diesel in 1892, however the working principle remains constant. Much the same can be said of the lube or oil system within the modern diesel engine. The lube system functions as the central circulatory system to these powerhouses in order to keep them running at top performance. While the internal demands continue to evolve, the basic principles remain the same.



Today's diesel engines are tasked with running more efficiently while leaving a smaller impact on the surrounding environment. These demands continue to drive significant changes to engines and the supporting components. Lube filtration engineers continue to introduce technology to keep these lube systems functioning at top performance while helping improve the environment through longer oil drain intervals and the introduction of green materials.

Donaldson introduced three extended life lube filters in the early 1980s for three popular U.S. engine

makes: Detroit Diesel, Cat, and Cummins. Extended service in 1984 was primarily focused on a more robust filter that would last through an extended mileage interval.



Engineering drawing of our first high efficiency, long life lube spin-on

Emission control technologies such as exhaust gas recirculation (EGR), diesel particulate filtration (DPF), and the introduction of closed crankcase ventilation (CCV) have a direct impact on the lube system. Today's oil is asked to handle more contamination for extended periods of time. A well designed lube filtration system is engineered up front with overall engine strategy in mind to provide maximum protection. The benefits of this up front design have resulted in enhanced filtration medias and inclusion of traditionally separate components into a streamlined system.

Understanding end user needs is a commitment Donaldson takes seriously. It is with this in mind that we strive to offer design flexibility to meet field application needs. Longer life medias, extended oil drain products, and traditional product offerings are combined to provide a solution for every diesel engine application.

## Diesel Lube Oil Trends & Changes

### Changes in Lube Oil Systems

- Increased EGR rates, soot & acid
- Crankcase ventilation – less oil consumption, thereby less make up oil added and oil has to work harder
- Improved cleanliness for tighter component clearances
- Typical contaminants
- Design strategies (bypass over-pressure valves, cold flow)

### Changes in end user oils

- CJ-4 vs. CI-4 Plus
- Increased levels of fuel dilution due to alternate fuels
- New contaminants due to alternate fuels
- Low SAPS oil compatible with emissions aftertreatment systems

### Filtration requirements evolving as a result

- Trend towards "green" cartridge filter
- System approach, integration of components such as oil coolers
- Enhanced protection while maintaining service intervals (bypass or secondary filters, extending service intervals & durable medias)



## Full Flow, By-pass or Two-Stage Filtration

The difference between the various lube filter configurations can be confusing. There are conflicting views in the industry as to which option is best. There are three common filtration approaches. A brief explanation of each is below.

### Full Flow Filtration

Full flow filters receive near 100% of the regulated flow in an engine lube system. Full flow filters provide essential engine protection for maximum cold flow performance and filter life. Most lube filters available today are full flow.

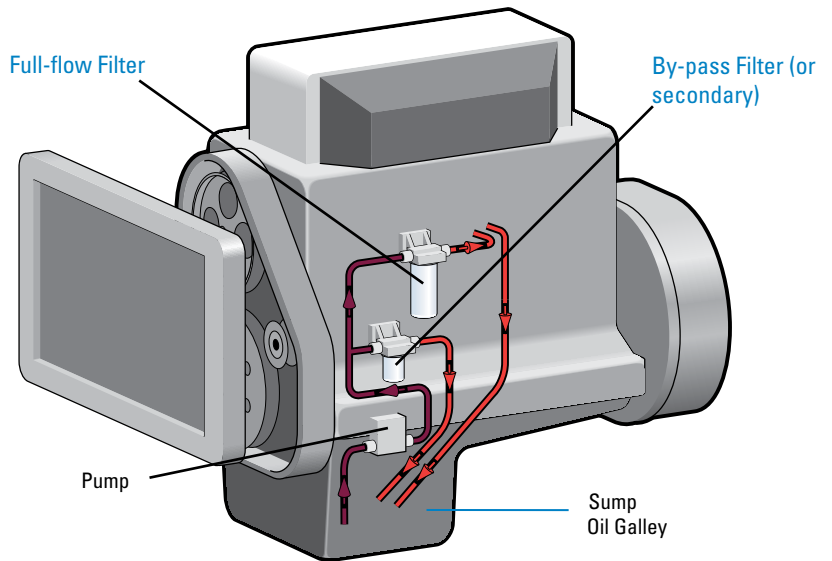
### By-pass (secondary) Filtration

By-pass filtration is when a small portion of the system's oil flow – usually 5-10% – is diverted back to the sump or oil pan before reaching the primary filter. A bypass filter captures smaller particles than the full flow. Because of the increased efficiency of a bypass filter, they are more restrictive. To optimize restriction, a bypass filter should be located in a separate flow path, as illustrated on the right.

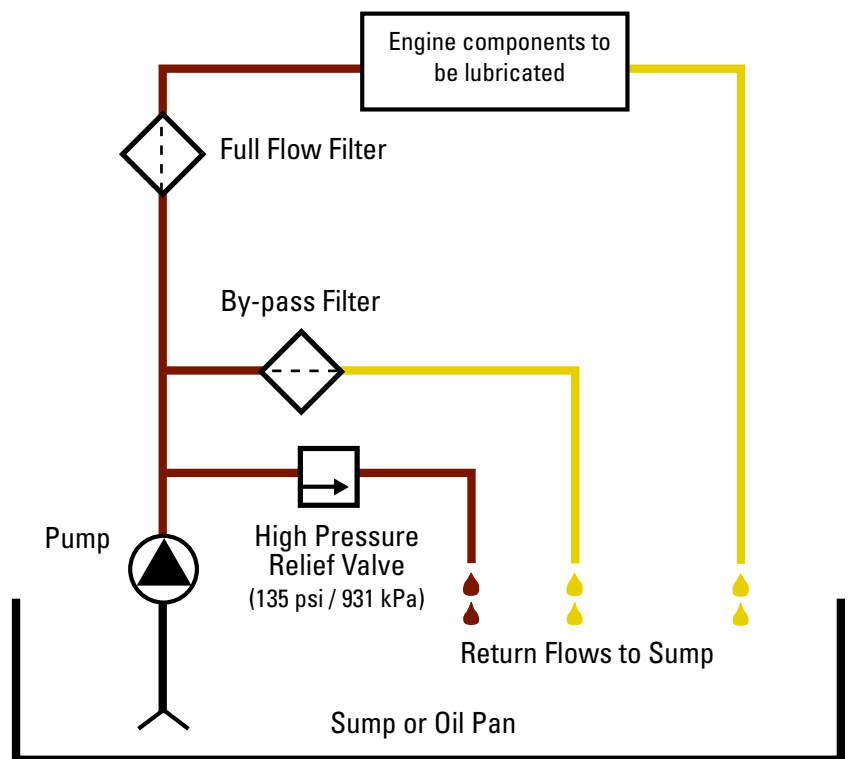
### Two-stage Filtration

A two-stage filter design attempts to combine the features of both a full flow and by-pass filter. The two-in-one design significantly increases restriction, causing shorter filter life and decreased cold flow performance. Poor cold flow performance starves the engine of oil during start up, leaving the engine temporarily unprotected. This will lead to increased engine wear that may result in premature repairs or even engine replacement.

### Typical Engine Lube Filtration System



### Typical Lube Circuit





## Filter Media

Lube filter medias are available to meet the most stringent of engine lube system design challenges. Donaldson engineers have a history of development and application of media technology that exceeds application cleanliness and service life expectations. In fact, Donaldson was the first company to introduce fully synthetic media's to the engine lube market in the early 1980's. This media is now commonly adopted for extended life or enhanced engine protection needs.

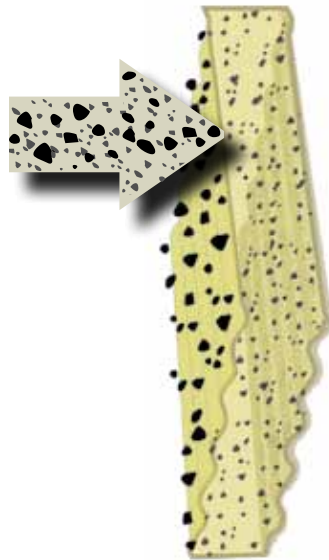
New lube media types are constantly under evaluation in our internal laboratories and in controlled field testing. Please contact Donaldson for additional options that may better suit the needs of your application.

### Cellulose (traditional media)

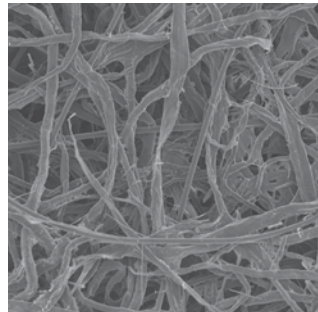
Engine lube filter media is most commonly a pleated cellulose base material. This media effectively combines an application's efficiency and capacity requirements while maintaining cost effectiveness.

As oil flows through media, large contaminant is captured on the surface (or dirty side) of the filter while smaller contaminant becomes embedded in the underlying media layer. Industry filtration performance standards, i.e., ISO 16889, are used to determine a performance rating. The combination of the size of the particles and number of particles that pass completely through the media are measured as a "beta ratio" function. The filtration performance characteristics of a lube system are typically specified by the engine manufacturer.

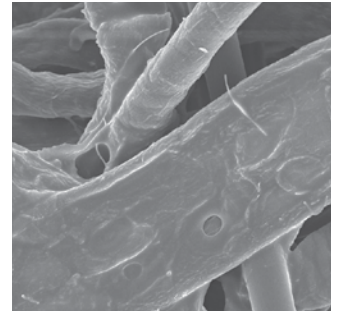
How it Works



SEM 100x



SEM 600x



Media Image



**Synthetic Blend (cellulose & synthetic media)**

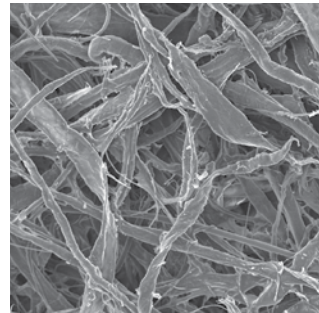
This media is a blend of cellulose and synthetic media technologies. It utilizes the best attributes of both media fiber types to achieve an improved cost to performance ratio for more demanding applications than a cellulose only media can achieve.

This media provides the consistency of layered fibers to capture coarse contaminant coupled with the affordability of cellulose to deliver an efficient and effective performance alternative to traditional cellulose media.

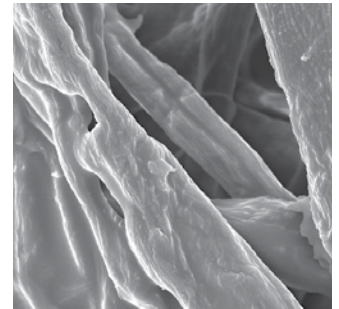
**How it Works**



**SEM 100x**



**SEM 600x**



**Media Image**



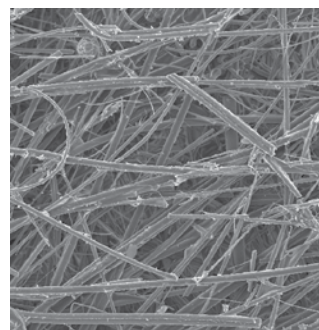
**Synteq™ Media (full synthetic media)**

This engine lube filter media is constructed of layered, micro-fiberglass synthetic fibers and is trademarked Synteq™. It provides enhanced durability for extended drain intervals while maintaining or improving efficiency and capacity. Donaldson Synteq™ lube media also offers lower restriction. Low restriction allows better flow which ensures component protection over a larger range of engine conditions.

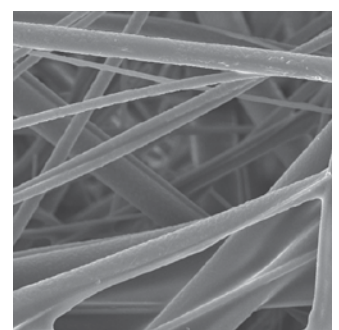
**How it Works**



**SEM 100x**



**SEM 600x**



**Media Image**





## Lube System Profile

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

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

- Lube system characteristics - oil flow rate, oil pressure, and temperature
- Filter change interval
- System functions - including pressure regulators, bypass valve settings and anti-drain back
- 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 design and development phases.

**ENGINE LUBE FILTRATION SYSTEM  
APPLICATION DESIGN WORKSHEET**

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

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

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

When completed, please forward to Donaldson.  
Email: [engine@donaldson.com](mailto:engine@donaldson.com)  
Fax: 932-887-3099

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 Project Dates:**

Design Proposal: \_\_\_\_\_

Prototype Delivery: \_\_\_\_\_

Design Freeze: \_\_\_\_\_

PPAP: \_\_\_\_\_

Start of Production: \_\_\_\_\_

**Lube System Profile**

Full Flow Filtration  Bypass Filtration

**Oil Type and Grade**

Type: \_\_\_\_\_ Grade: \_\_\_\_\_

Oil Flow Rate:  lpm or  gpm

Min: \_\_\_\_\_ Normal: \_\_\_\_\_ Max: \_\_\_\_\_

**Oil System Pressure (kPa):**

Minimum: \_\_\_\_\_ Normal: \_\_\_\_\_ Maximum: \_\_\_\_\_

**Temperature:**  °C or  °F

Oil: Min: \_\_\_\_\_ Normal: \_\_\_\_\_ Max: \_\_\_\_\_

Ambient: Min: \_\_\_\_\_ Normal: \_\_\_\_\_ Max: \_\_\_\_\_

**Oil Change Interval:**

km or  miles or  hours

**Pressure Relief Valve:**  In Engine  In Filter

Setting: \_\_\_\_\_ kPa

**Anti-drain Back Valve:**  Yes  No

Setting: \_\_\_\_\_ kPa Max. leak at valve: \_\_\_\_\_ kPa

**Bypass Valve:**  In Engine  In Filter

Setting: \_\_\_\_\_ kPa

**Performance Parameters**

Hydrostatic Pressure Resistance (burst): \_\_\_\_\_

Test Method: \_\_\_\_\_

Minimum Value: \_\_\_\_\_ kPa

Collapse Pressure: \_\_\_\_\_

Test Method: \_\_\_\_\_

Minimum Value: \_\_\_\_\_ kPa

More on next page.

## What's Right For Your Engine?

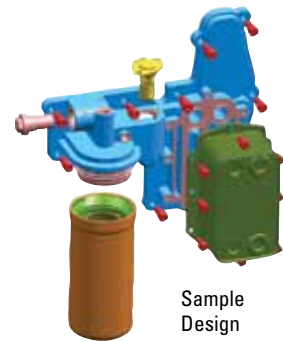
As you develop the future design of your engine or application, it is important to consider the filtration system. Depending on your objectives, it may be beneficial to choose from a catalog offering or partner with Donaldson for a filtration solution tailored to your needs.

### Reasons to Select a Standard System

- No or low budget for engineering collaboration, development time or cost or component tooling
- Prefer to have parts readily available – want to avoid manufacturing lead times (8-12 weeks) and not interested in warehousing service parts
- Have a need mix and match head assemblies with various filter performance choices
- End users would prefer an established brand for filtration

### Reasons to Consider a Custom, Integrated 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



Sample Design

## Extended Service Oil and Filters

Donaldson introduced three extended life lube filters in the early 1980s for three popular U.S. engine makes: Detroit Diesel, Cat and Cummins. Extended service in 1983 was primarily focused on a more robust filter that would last through an extended mileage interval.

Today, extended service filters are expected to last to the next oil change - in some cases this is double or triple traditional spin-on lube filters. Another major appeal with extended service filters is the “green” aspect – the use and disposition of fewer filters.

### Extended Service Oil Drains

The key to any oil drain extension program is doing it safely to ensure not to create any harmful effects. The proper way to implement the change that is through oil analysis. Oil analysis measures critical oil parameters to ensure that the oil quality and is critical to establishing an extended drain.



Donaldson Durance Kit (EOA7376) is ideal when looking to extend oil drain intervals

### Oil Considerations & Extended Drain Filters

Today’s mineral based oils are completely adequate for most heavy duty driving conditions and user needs. The formulations have evolved to the point that the serious problems of the past (such as viscosity breakdown) are no longer of concern for most applications. Additionally, the ability to readily combine with today’s additive packages and significantly lower price has helped mineral based oils remain the clear favorite.

Synthetic oils can perform better than mineral oils in extreme temperatures, both hot and cold. At sub-freezing temperatures, flow properties of synthetics are better. This means faster starts, and faster oil delivery through the engine. The benefit is better lubrication on start up and less work for your starting system. Synthetics are usually SAE 5W-40 / ISO VG 22-150 viscosity grade (mineral oils typically being SAE 15W-40/ISO VG 46-150) and allow a little better fuel economy (1-3%). However, driving habits have the most influence on fuel economy.

At high temperatures, synthetics are more oxidation resistant and less volatile than mineral oils. Less volatility can be a benefit, because less oil will be lost by evaporation, and may reduce the to top-off oil as frequently. High temperature oxidation resistance isn’t always a benefit.

Many older diesel engines don’t get hot enough to really challenge mineral oils that contain antioxidants. With more sophisticated emission control systems, engines may run hot enough to favor synthetic oil.

While there are clear benefits to synthetic oil, at least two drawbacks have hindered their wide spread adoption. The first issue is that synthetic oil has poor solubility for additives; making it harder to control for soot and Total Base Number (TBN) retention. All the while the base stock synthetic oil may remain useful, soot levels may exceed OEM guidelines or the oil may become too acidic. Secondly the price for synthetic oils is typically 3 – 4 times the cost of a comparable mineral oil. Combine the cost with the unlikely prospect of tripling an oil drain and synthetic oil becomes cost prohibitive.

### Extended Service Filters

Donaldson has two filter types to support customers who are interested in extending oil drains.

The first is Donaldson Durance™ filters for those who want to maintain oil health over the new drain interval and need a filter that can last as long as the oil.

The second is to apply a Donaldson Durance™ PLUS\* filter that will meet an oil change interval and maintain the oil additives. This filter type has Donaldson Additive Replenishment Technology – it is a concentrated additive inside the filter that slowly releases into the oil during the life of the filter.

Our Donaldson Durance filters use Synteq™ media. Synteq™ is more effective than standard cellulose filter media at removing small contaminants, it improves lubrication flow and offers increased dirt holding capacity for the extended service.

Donaldson Durance filters are direct replacements to standard filters – no system modifications and no special disposal requirements

### Calculate The Savings

For an example of how Donaldson end users can calculate their savings by switching to a filter with our Additive Replenishment Technology.

[www.ExpectMoreFromYourOil.com](http://www.ExpectMoreFromYourOil.com)



## Donaldson Endurance™ PLUS Lube Filters with Additive Replenishment Technology

Donaldson Endurance™ PLUS\* filters are designed to meet an oil change interval and maintain the oil additives. This filter type has Donaldson Additive Replenishment Technology – it is a concentrated additive inside the filter that slowly releases into the oil during the life of the filter.

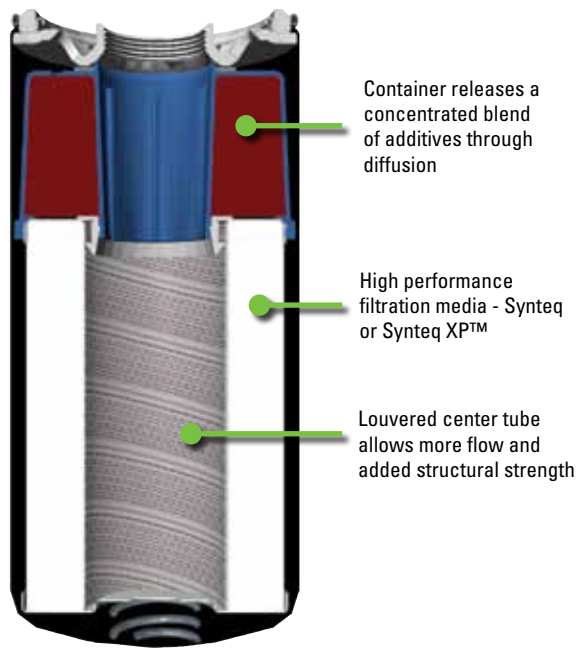
### Additive Replenishment Built into the Filter

- Reduces maintenance costs by extending oil change intervals up to two times
- Maintains a healthy condition of oil
- Ideally suited for EGR engines that more rapidly deplete additives

### How it Works

Oil enters the filter just as it does in today's standard lube filters. As dirty oil enters the replenishment container, a concentrated blend of additives is reintroduced to the oil.

The oil continues its normal flow to the media cartridge and passes through our Synteq filter media. Clean, replenished oil is returned to the engine.



## Donaldson Endurance™ Lube Filters

Primary Application	Standard Donaldson	Donaldson Endurance	Donaldson* Endurance PLUS
Cat Engines .....	P554004 .....	ELF7739	
Cat Engines .....	P554005 .....	ELF7405 .....	ELF2502*
Cummins, Detroit Diesel .....	P551670 .....	ELF7670	
Cummins Engines .....	P553000 .....	ELF7300	
Cummins 3932217, 3908615 .....	P558615 .....	ELF7349	
Cummins 3903224, 3908616 .....	P558616 .....	ELF7345	
Cummins Signature & ISM ...	P559000 .....	ELF7900 .....	ELF2501*
Detroit Diesel Engines .....	P550947 .....	ELF7947	
Detroit Diesel Series 60 .....	P552100 .....	ELF3998 .....	ELF2500*
Mack .....	P553191 .....	ELF7483	
Mercedes 0001802109 .....	P550769 .....	ELF7690	
Navistar 1819452C1 .....	P550367 .....	ELF7367	
Volvo/Mack .....	P551807 .....		ELF2504*

\* For Pre-EPA 2007 compliant engines only.



## Extended Oil Drain Intervals

### Filter Manufacturers Council Technical Service Bulletin 98-1

Extended Oil Drain Intervals Oil service intervals are pre-determined by engine manufacturers (OEM's) and are designed to provide maximum engine protection under a wide variety of conditions. While a majority of equipment owners follow these guidelines there is a growing trend to extend oil service intervals beyond the OEM recommendations; However, Extended Oil Drain Intervals (EODI) are not for everyone. To fully understand the risks involved you must look at the key factors affecting EODI's.

Engine lubricating oil is often referred to as the life blood of the engine. This analogy is not made simply because the oil circulates through the engine but more importantly because the oil performs critical functions necessary to maintain engine performance and maximize useful service life. There are two basic types of oil available today: Mineral and Synthetic oils. While these oils are completely different in composition and beyond the scope of this service bulletin, they must still meet the American Petroleum Institutes (API) qualification criteria recommended by the engine manufacturers. There are many suppliers of oil in the market today and not all meet the stringent requirements of the API standard. Insuring your oil meets these requirements and understanding the factors affecting the engine oil is the first step before extending your oil service interval.

Equipment operating extremes of Heat, Cold, Idle Time, Airborne Contaminants, and Engine Load adversely affect engine oil. Excessive Heat will break down engine oil and create deposits in the engine adversely affecting engine life. Severe cold will limit the ability of the engine oil to lubricate at start-up and may add unwanted moisture and unburned fuel to the oil. Extended Idle Time can result in increased amounts of unburned fuel entering the oil resulting in oil dilution and inadequate lubrication. Extreme dust conditions may tax even the best air filtration system adding fine contaminants to the oil overloading the additive package that keeps them in suspension. Heavy loads on the engine can produce extra heat putting a greater demand on the cooling system and increasing the importance of cooling system maintenance during EODI's. Offroad operation will likely see more of these extremes than on-highway operation.

Engine designs today are cleaner burning with reduced emissions and make excellent candidates for extended oil drain intervals; However, most customers cannot afford to buy new equipment every year and normally fleets have a mixture of equipment varying in vintage and service life. As piston rings and valve guides wear in the engine, combustion by-products increase. These combustion by-products end up accelerating oil additive depletion and create harmful deposits on internal engine surfaces making the engine less likely to benefit from an EODI.

Oil filters remove contaminants from the oil before they generate wear on engine component surfaces. There are many filtration products offered in the industry today with some claiming to allow for extended oil drain intervals. The fact is, the filter alone will not extend the life of engine oil. The filter has one function, and that is to filter contaminants from the oil. While most filters today do an excellent job in filtering, the trend of extending oil drain intervals 2 to 3 times the normal service interval has pushed the materials used in the manufacture of filters to the limit. Adhesives, Rubber Compounds, Filter Media, and even the steel construction in spin-on filters needs to be designed to meet the extended period of time they are expected to be in service. Before considering an EODI make sure the filter manufacturer will warranty their product when used in this manner.

If after considering all the factors affecting extended oil drain intervals you feel your equipment is a candidate for EODI's you will need to develop a test program to determine what length EODI is right for your equipment. To determine the correct length EODI you must first implement an oil analysis program to develop history on each piece of equipment scheduled for extended oil service. This will allow you to determine if there is any usable life left in the oil. The primary indicators will be Silicon (dirt), Viscosity (Oil Film Strength), Soot (Combustion by-product), and Total Base Number (TBN). Most engine manufacturers have oil analysis guidelines. Typically you will want to keep your silicon within 15ppm of the initial oil sample, your Viscosity within



the original oil grade specifications, Soot below 3%, and the TBN number above 3. Each piece of equipment will vary and the key is to look for trends in the analysis. If oil analysis indicates you can extend your service interval you then need to move out in steps. Oil analysis should continue at the normal service interval and in increments of 20% thereafter until the analysis shows the useful life of the oil deteriorating. Once the maximum limit on the oil is reached the change interval should be set at the mileage of the previous sampling prior to indications of oil deterioration. Example: Normal service interval = 16,000 miles (25,000 km). Oil analysis performed at 16,000 (25,000 km), 19,200 (30,000 km), 22,400 (35,000 km), 25,600 (40,000 km), and 28,800 (45,000 km). If oil analysis indicates problems at 28,800 (45,000 km) the change interval should be backed off to 25,600 miles (40,000 km). This will allow for variables in operation and environment.

Extended oil drain intervals are not without risk and short term cost savings benefits should be balanced equally with engine performance and reliability. With all of the factors affecting the engine oil it is easy to see why OEM's have traditionally been conservative in setting oil drain intervals. If you think your equipment is a candidate for EODI program, do some research. Check with your Filter, Engine, and Oil manufacturer for guidance. If you're not doing oil analysis, start a program. Review your filtration package and most of all understand the potential risks involved. If not properly implemented EODI short term savings are offset by expensive repairs and downtime further down the road. Always dispose of used engine oil and filters properly.

## Oil Analysis

Donaldson uses independent laboratories for oil analysis services and these labs are typically different from region to region. Each provides fast and accurate information about the status of your equipment. We only select labs and programs that have proven laboratory techniques and covers a wide range of systems and applications.

Typical oil analysis service includes evaluating the results of the tests we perform and providing detailed reports, including specific maintenance recommendations.

Vehicle owners use the data and recommendations to improve your preventive maintenance, reduce equipment downtime, and reduce your overall cost of lubricants by extending your oil drain intervals.

## Typical Oil Sampling Steps

- Collect the oil sample with sampling device
- Complete a lab processing form
- Labeling the sample with vehicle id, hours, miles, etc.
- Send the sample to lab
- Lab returns results - via mail or on-line.



## Recommended Sampling Intervals

### On-Road Engines

Diesel	10,000 miles / oil change
Gasoline	3,000 miles / oil change
LPG	3,000 miles / oil change
Non-Engines	20,000 miles / 500 hours

### Off-Road Engines

Diesel	250 hours / oil change
Gasoline	150 hours / oil change
LPG	150 hours / oil change
Non-Engines	500 hours / monthly

## Testing Kits for Fleets and Off-Road Vehicles and Equipment

Donaldson Endurance™ kit (EOA7376) is Ideal when looking to extend oil drain intervals



Use X007374 for routine oil analysis for diesel engines or hydraulic oil reports on wear metals and additives.



Details on what is analyzed and reported by the lab.

Kit	X007374	EOA7376
Metals, ppm by wt	●	●
Viscosity, cSt.	●	●
Water %	●	●
Fuel % by Infrared	●	
Fuel % by GC		●
Soot by Infrared	●	
Soot by LEM		●
Glycol (Coolant)	●	●

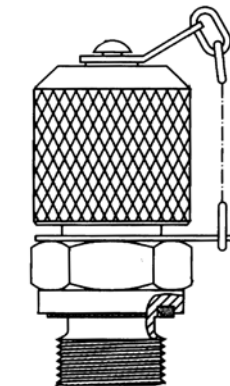
### Sampling Accessories

These accessories can simplify your oil analysis during the normal maintenance routines.

- plastic tubing (P176433)
- sampling pump (P176431)



Sampling Pump & Plastic Tubing (sold separately in 100 ft. rolls)



Quick Sampling Valve.

### Sample Processing/Reporting

Labs will request that you send your oil sample(s) as soon as possible after collecting. The oil samples do not “break down,” but any long delay between sampling and analysis can be crucial if a unit is failing.

Once the oil sample reaches the lab, we will process it within 24 hours. You will be notified by phone/fax if critical conditions are present.

#### Features of the Report:

- Up to 6 sets of test results (current and 5 previous) displayed
- Spectrochemical and physical results underlined where applicable
- Full headings for all results





## Lube Filtration Systems

The following pages present Donaldson’s catalog product offering for Lube Assemblies. Offering designed both bypass and full flow filtration.

Use the matrix below to determine the filtration system that best matches up with our fuel flow requirements and the key features for design and mounting on your engine.

### Filter Performance Choices

The filter tables provide you with the separate filters that fit the same head assembly -- these differ by length and filter performance. Choices are presented by level of efficiency.



### Lube Filter Mix & Match Choices

Mix and Match Lube Filter Systems		
Families by Filter Diameter $\phi$	Flow Range	Features
93 mm / 3.54"	20 gpm / 76 lpm	Standard design for full flow filtration, top mount, single port head, spin-on filter
118 mm / 4.65"	7.5 gpm / 28 lpm	Standard design for bypass filtration, side mount, single port heads, spin-on filter
	45 gpm / 170 lpm	Standard design for full flow filtration, top mount, single port head, spin-on filter

### Common Liquid Filtration Terms

- Spin On:** Filter encased in a metal housing for easier service
- Cartridge:** These fit into a filter housing which is spun on into a filter head
- Cellulose Media:** Media from wood fibers
- Synthetic Media:** This media is comprised of man made fibers and typically results in a lower pressure drop than cellulose media.
- Housing:** The place in which the cartridge filter fits into
- Micron ( $\mu\text{m}$ ):** The measurement of minute particles of dirt
- Pressure Drop:** The pressure difference between the upstream and downstream flow
- Pressure Regulating Valve:** regulates the pressure depending on the liquid force detected at the end of the receiving piston
- Sump or Oil Pan:** crankcase or oil reservoir of an internal-combustion engine
- Full Flow Lube Filter:** filters the oil passing through the engine before it reaches the bearings
- Bypass Lube Filter:** removes smaller particulates than would be removed by an engine’s normal filter, so that the need for additional oil or oil changes can be reduced
- Baffle Plate or Thread Plate:** mounted in the housing below the bearing will help retain the grease where it is needed

**Oil Flow Rate: 7.5 gpm / 28 lpm**

**Operating Pressure**

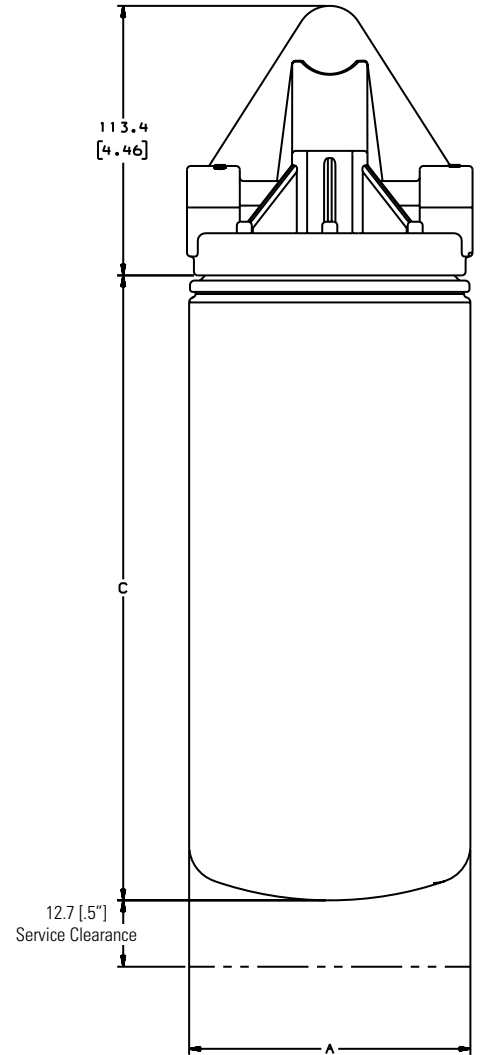
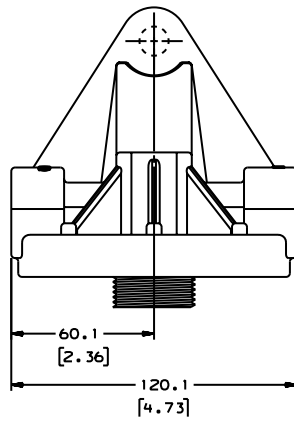
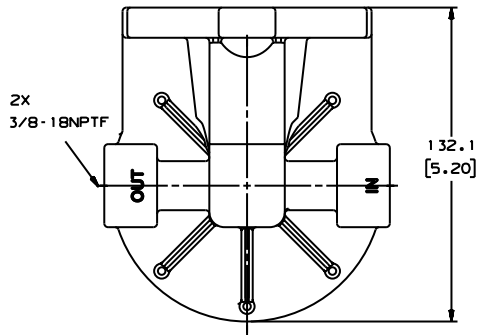
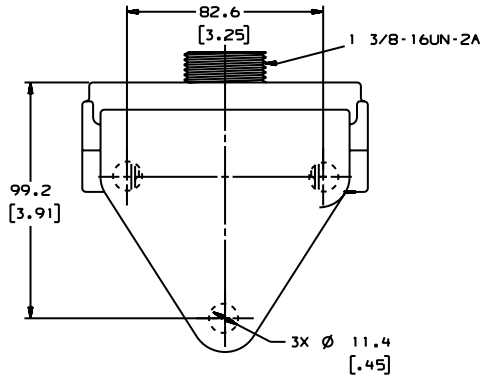
Up to 150 psi

**Oil Flow Rate**

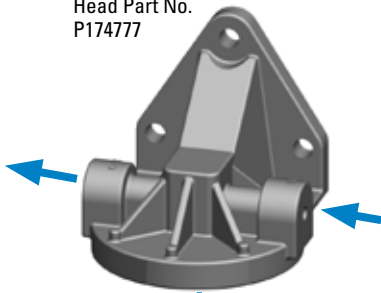
Up to 7.5 gpm / 28 lpm

**Oil Compatibility**

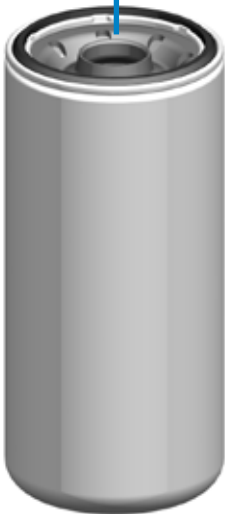
Compatible with petroleum based fluids (hydrocarbon) and up to 20% biodiesel



Head Part No.  
P174777



Threaded stud not viewable, due to angle of view



Outer Dia.		Length		Part No.	Efficiency @ Micron	Gasket Outer Dia.		Gasket Inner Dia.	
IN	MM	IN	MM			IN	MM	IN	MM
4.65	118	10.24	260	P550777	99% @ 23	4.32	110	3.85	98



# Lube Full Flow Filtration

## 93 MM (3.66") X 3/4"-14



**Oil Flow Rate: 20 gpm / 76 lpm**

**Operating Pressure**

Up to 150 psi

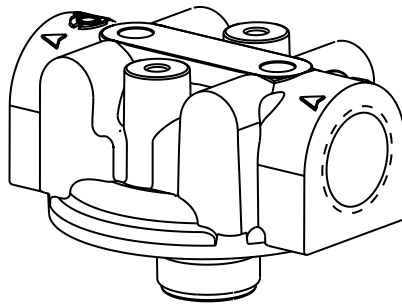
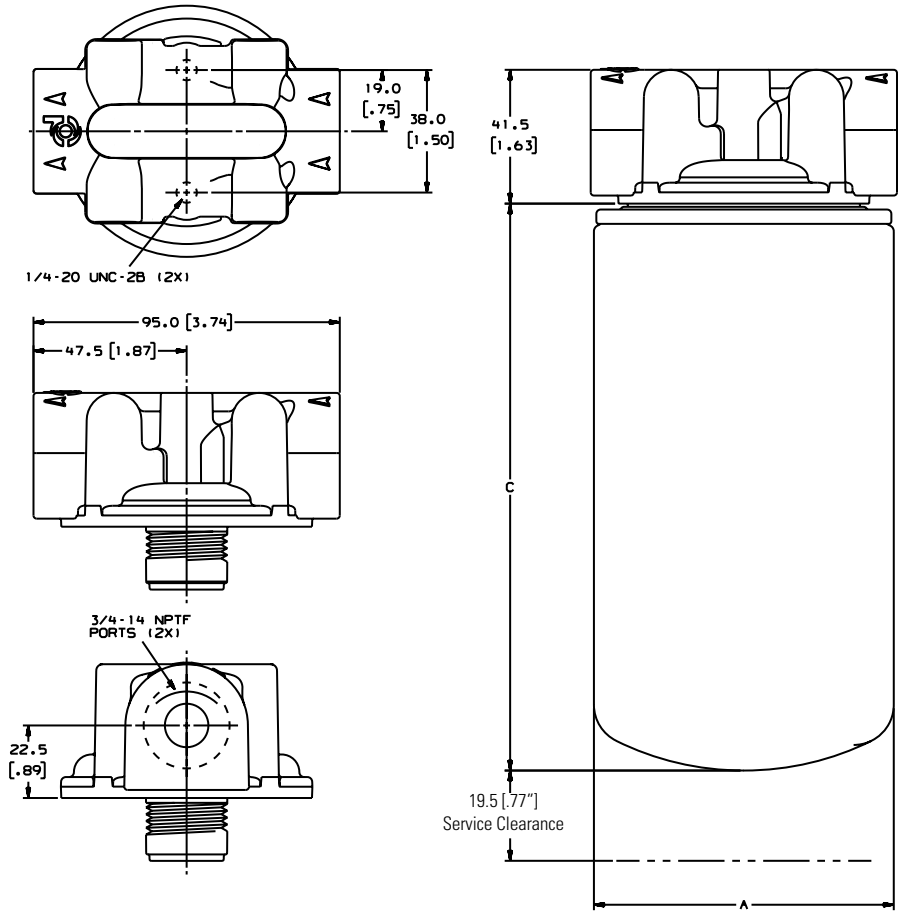
**Oil Flow Rate**

Up to 20 gpm / 76 lpm

**Oil Compatibility**

Compatible with petroleum based fluids (hydrocarbon) and up to 20% biodiesel

Head  
Part No. P561134



A (Outer Dia.)		Length		Part No.	Efficiency @ Micron	Filter Relief Valve Setting		Stand Tube	Gasket Outer Dia.		Gasket Inner Dia.			
IN	MM	IN	MM			PSI	Bar		IN	MM	IN	MM		
3.66	93	5.35	136	P552819	99% @ 40	18-23	1.30-1.60	No	2.81	71	2.42	61		
				P555680		18-23	1.30-1.60	No						
				P553712		6.85	174							No
				P555616										Yes
		P557207	7.87	200				No						
		5.47	139	P553771		7-10	0.50-0.70	No						
		5.47	139	P559418		35	2.41	No						
3.74	95	5.47	139	P559418		36	2.48	No						
3.81	97	6.78	172	P558250		11-17	0.80-1.00	No						

### Oil Flow Rate: 45 gpm / 170 lpm

#### Operating Pressure

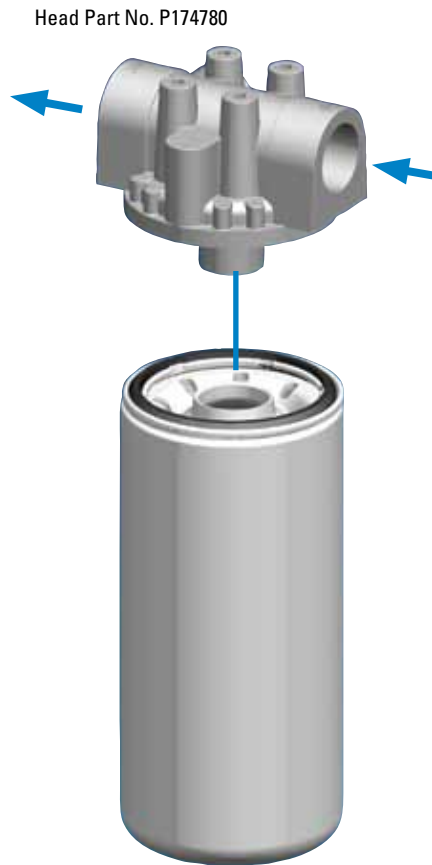
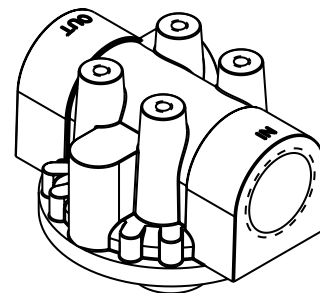
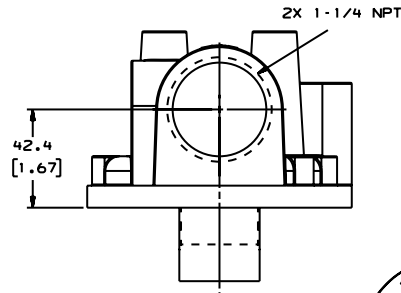
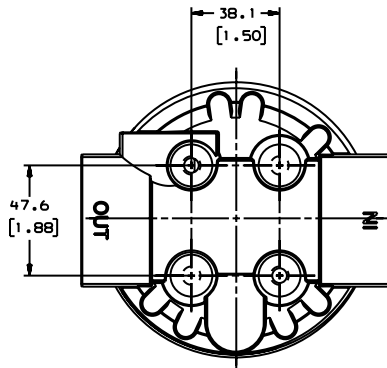
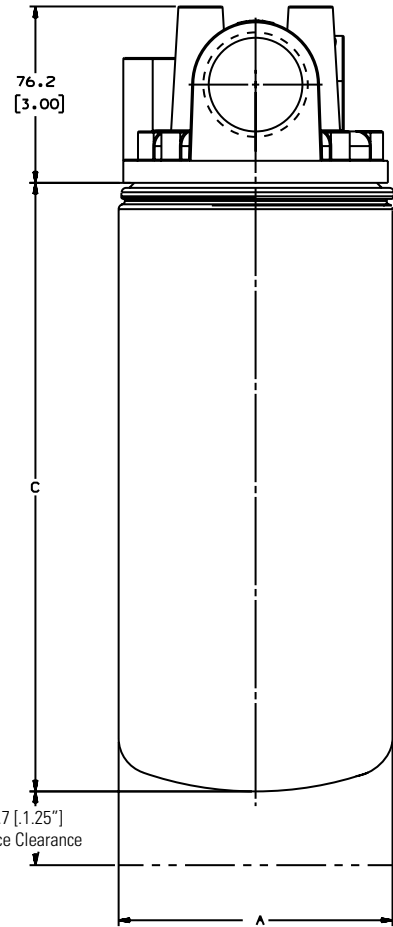
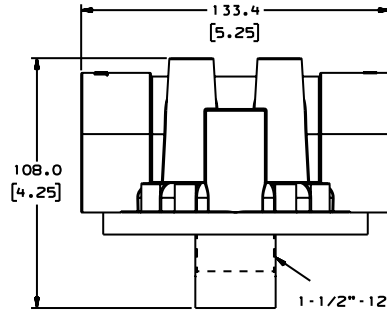
Up to 150 psi

#### Oil Flow Rate

Up to 45 gpm / 170 lpm

#### Oil Compatibility

Compatible with petroleum based fluids (hydrocarbon) and up to 20% biodiesel



(A) Outer Dia.		Length		Oil Flow Rate		Part No.	Efficiency @ Micron	Gasket Outer Dia.		Gasket Inner Dia.	
IN	MM	IN	MM	gpm	lpm			IN	MM	IN	MM
118	4.65	118	6.22	25	95	ELF7947	99% @ 16	158	4.31	109	3.84
			10.24	45	170	ELF7670	99% @ 16	260	4.31	109	3.84
			10.24	45	170	P551670	99% @ 23	260	4.32	110	3.85
		119	6.28	25	95	P550947	99% @ 23	159	4.32	110	3.85
			7.85	30	114	P551381	99% @ 40	199	4.32	110	3.85
			8.94	35	132	P550671	99% @ 23	227	4.32	110	3.85



Spin-on Lube Filters

Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
<b>68 mm / 2.68" Dia. Family</b>														
3/4-16	2.56	65	2.80	71	P502015	FULL FLOW	50% @ 20	TOYOTA 90915-03001, 90915-10001	11-17	0.80-1.00	2.46	62	1.94	49
	2.56	65	3.54	90	P502019	FULL FLOW	50% @ 20	TOYOTA 90915-03004			2.46	62	1.94	49
	2.56	65	3.35	85	P502070	FULL FLOW		NISSAN 1520853J00			2.46	62	2.06	52
	2.56	65	2.80	71	P550534	FULL FLOW		DATSUN, TOYOTA SUZUKI	11-17	0.80-1.00	2.46	62	1.94	49
	2.68	68	2.56	65	P502024	FULL FLOW	50% @ 20	BRIGGS & STRATON 492932, SUZUKI, DAIHATSU, MAZDA	11-17	0.80-1.00	2.56	65	2.20	56
M20 x 1.5	2.68	68	3.34	85	P502007	FULL FLOW	50% @ 20	mitsubishi MD135737, 30A4000100	11-17	0.80-1.00	2.67	68	2.15	55
	2.68	68	3.35	85	P502047	FULL FLOW	50% @ 20	ISUZU 94314263			2.58	66	2.15	55
	2.68	68	3.35	85	P502057	BYPASS	50% @ 20	MAZDA FEY014302			2.56	65	3.03	77
	2.68	68	2.56	65	P502062	FULL FLOW	50% @ 20	KIA			2.58	66	2.17	55
	2.68	68	3.35	85	P502063	FULL FLOW	50% @ 20	MAZDA JEY014302	11-17	0.80-1.00	2.58	66	2.15	55
	2.68	68	2.56	65	P502067	FULL FLOW	50% @ 20	NISSAN, MAZDA, MITSUBISHI	11-17	0.80-1.00	2.56	65	2.19	56
	2.69	68	2.78	71	P551783	FULL FLOW		HONDA 15410MM90003			2.42	61	2.23	57
<b>76 mm / 3.00" Dia. Family</b>														
3/4-16	2.92	74	3.40	86	P552430	FULL FLOW	50% @ 24	Harley-Davidson 63805-80A			2.73	69	2.42	61
	2.92	74	4.53	115	P551763	FULL FLOW		KOHLER 1205001, CUB CADET	8	0.55	2.73	69	2.43	62
	2.91	74	3.31	84	P502016	FULL FLOW	99% @ 50	TOYOTA 90915-03002, 90915-20001						
	3.00	76	3.46	88	P502107	FULL FLOW	50% @ 20	ECHLIN OF18			2.80	71	2.50	64
	3.00	76	3.40	86	P550335	FULL FLOW	50% @ 20	MOPAR L335, CHRYSLER, CLARK, INTERCEPTOR MARINE	7-10	0.50-0.70	2.75	70	2.37	60
	2.99	76	4.72	120	P554770	FULL FLOW	50% @ 20	JOHN DEERE AM34770	26-30	1.80-2.10	2.75	70	2.37	60
	3.00	76	3.42	87	P551251	FULL FLOW		OPEL 2866477						
	3.00	76	4.74	120	P550400	FULL FLOW	99% @ 40	FORD E1FZ6731A, MOTORCRAFT FL400	7-10	0.50-0.70	2.75	70	2.37	60
	3.00	76	5.53	140	P554408*	FULL FLOW	99% @ 48	PERKINS 2654408, MF	8-11	0.60-0.80	2.83	72	2.44	62
13/16-16	2.92	74	4.83	123	P550598	FULL FLOW	50% @ 25	GM 25010324			2.73	69	2.43	62
	2.96	75	4.45	113	P550505	FULL FLOW	99% @ 40	GM LIGHT TRUCK, AC PF59, PH59			2.77	70	2.36	60
	2.99	76	3.41	87	P551307	FULL FLOW	99% @ 40	GM 6439857,25010325			2.84	72	2.47	63
M18 x 1.5	3.00	76	3.40	86	P550047	FULL FLOW	99% @ 45	AMC, GMC 25010792	7-9	0.50-0.60	2.76	70	2.39	61
	3.00	76	5.09	129	P550051	FULL FLOW	99% @ 45	GMC 25010908			2.76	70	2.39	61
M20 x 1.5	2.96	75	3.40	86	P552849	FULL FLOW	99% @ 36	FORD, MAZDA	11-17	0.80-1.00	2.70	69	2.33	59
	3.00	76	2.52	64	P502010	FULL FLOW		MITSUBISHI MD322508			2.48	63	2.03	52
	3.00	76	3.26	83	P550794	FULL FLOW		GM 2007 LIGHT TRUCK						
<b>80 mm / 3.15" Dia. Family</b>														
3/4-16	3.15	80	3.15	80	P502020	FULL FLOW	50% @ 20	TOYOTA			2.48	63	2.20	56
	3.15	80	2.95	75	P502022	FULL FLOW	50% @ 20	ATLAS COPCO, BMW, DAIHATSU, SUZUKI	11-17	0.80-1.00	2.48	63	2.03	52
	3.15	80	2.72	69	P502069	FULL FLOW	50% @ 20	NISSAN 1520801B10			2.46	62	2.00	51
	3.23	82	3.19	81	P552454	FULL FLOW		Allis Chalmers 2100723; Massey Ferguson 3283341-M1			2.49	63	2.01	51
	3.24	82	4.40	112	P550715	FULL FLOW	99% @ 40	KUBOTA 15426-32430	16-19	1.00-1.30	2.58	66	2.26	57
	3.24	82	3.90	99	P550711	FULL FLOW	99% @ 45	NISSAN 15208-H8911			2.26	57		





Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
M20 x 1.5	3.12	79	3.87	98	<b>P555522</b>	FULL FLOW	99% @ 50	THERMOKING 11.5522, J.DEERE, YANMAR	11-17	0.80-1.00	2.45	62	2.15	55
	3.15	80	2.52	64	<b>P502009</b>	FULL FLOW	50% @ 20	MINITUBISHI MD136466	11-17	0.80-1.00	2.48	63	2.03	52
	3.15	80	3.15	80	<b>P502049</b>	FULL FLOW	50% @ 20	HONDA 15400-PR3-004			2.49	63	2.00	51
	3.16	80	5.64	143	<b>P502056</b>	FULL FLOW	50% @ 20	MAZDA 145623802,145623802A ,RF0323802			2.50	64	2.28	58
	3.15	80	3.94	100	<b>P502051</b>	FULL FLOW		HONDA 15400-PH1-014, 15400-PK1-003	11-17	0.80-1.00	2.48	63	1.81	46
	3.15	80	3.15	80	<b>P550776</b>	FULL FLOW		KUBOTA 7000015241	10-15		2.48	63		
	3.15	80	3.98	101	<b>P550405</b>	FULL FLOW	99% @ 40	HINO 23304-78020			2.48	63	1.81	46
	3.18	81	3.39	86	<b>P550162</b>	FULL FLOW	99% @ 39	ISUZU, HONDA	11-17	0.80-1.00	2.50	64	2.11	54
M22 x 1.5	3.15	80	3.94	100	<b>P550389</b>	FULL FLOW	50% @ 25	ISUZU 8941145840	8-11	0.60-0.80	2.48	63	1.99	51
	3.15	80	3.17	81	<b>P550600</b>	FULL FLOW		HONDA 15400PL2004, 005, 305			2.94	75	2.43	62
<b>85 mm / 2.68" Dia. Family</b>														
3/4-16	3.31	84	4.92	125	<b>P550078</b>	FULL FLOW	50% @ 20	TOYOTA 15601-33010			2.47	63	2.25	57
	3.31	84	3.93	100	<b>P550227</b>	FULL FLOW	99% @ 45	SUBARU, PINTO, DATSUN			2.47	63	2.25	57
2 3/4-5	3.33	85	4.84	123	<b>P552451</b>	BYPASS		Wisconsin RV40						
M20 x 1.5	3.28	83	2.78	71	<b>P550726</b>	FULL FLOW	99% @ 40	KUBOTA 15841-32430, 15841-32431	11-15	0.80-1.00	2.52	64	2.26	57
	3.43	87	3.50	89	<b>P502076</b>	FULL FLOW	50% @ 20	PEUGEOT 110951			3.33	85	2.81	71
<b>93 mm / 3.54" Dia. Family</b>														
1-12	3.66	93	5.08	129	<b>P502068</b>	COMBINATION		NISSAN 1520840L00, 1520820N00			2.87	73	2.00	51
	3.66	93	5.35	136	<b>P552819</b>	FULL FLOW	50% @ 20	DEUTZ, CLARK, HYSTER	18-23	1.30-1.60	2.81	71	2.42	61
	3.66	93	5.35	136	<b>P555680</b>	FULL FLOW	50% @ 20	CAT 9N-5680	18-23	1.30-1.60	2.81	71	2.42	61
	3.66	93	6.85	174	<b>P553712</b>	FULL FLOW	50% @ 20	CARRIER, ATLS COPCO, THERMOKING 11.3712			2.81	71	2.42	61
	3.66	93	6.85	174	<b>P557207</b>	FULL FLOW	50% @ 20	IHC 427207C2	7-10	0.50-0.70	2.81	71	2.42	61
	3.66	93	6.85	174	<b>P555616</b>	FULL FLOW	99% @ 40	IHC 675616C91, CASE			2.81	71	2.42	61
	3.67	93	6.88	175	<b>P551297</b>	FULL FLOW	99% @ 45	KOMATSU/KOMATSU DRESSER 6002115213	18-21	1.30-1.50	2.85	72	2.47	63
	3.66	93	7.87	200	<b>P553771</b>	FULL FLOW	50% @ 20	DEUTZ 1174421., CASE IH	35	2.41	2.81	71	2.42	61
	3.67	93	8.00	203	<b>P551262</b>	FULL FLOW		NAVISTAR 1808896C1			2.85	72	2.47	63
	3.70	94	3.75	95	<b>P550710</b>	FULL FLOW	99% @ 40	KOMATSU 600-211-6140	34-37	2.40-2.60	2.85	72	2.45	62
	3.69	94	6.99	178	<b>P552411</b>	FULL FLOW		CASE 528250R1			2.73	69	2.42	61
	3.70	94	8.30	211	<b>P550562</b>	FULL FLOW		LIEBHERR 5700043			2.83	72	2.48	63
	3.73	95	4.22	107	<b>P550719</b>	FULL FLOW	99% @ 40	IHC 3136046R93	20-24	1.40-1.70	2.78	71	2.43	62
	3.74	95	5.47	139	<b>P559418</b>	FULL FLOW	50% @ 20	DEUTZ 1174418	36	2.48	2.81	71	2.42	61
	3.75	95	6.99	178	<b>P550362</b>	FULL FLOW	99% @ 40	DEUTZ 1174419	30	2.07				
	3.74	95	8.31	211	<b>P550317</b>	FULL FLOW	99% @ 40	RENAULT RVI 5000670671	34-37	2.40-2.60	2.80	71	2.40	61
3.81	97	6.78	172	<b>P558250</b>	FULL FLOW	99% @ 40	IHC 528250R91,	11-17	0.80-1.00	2.81	71	2.42	61	
1-16	3.66	93	5.35	136	<b>P558616</b>	FULL FLOW	50% @ 20	CUMMINS 3903224, 3908616			2.81	71	2.42	61
	3.66	93	5.35	136	<b>ELF7345</b>	FULL FLOW	99% @ 15	CUMMINS 4B 3.9 SERIES LUBE			2.81	71	2.42	61
	3.66	93	6.85	174	<b>P558615</b>	FULL FLOW	50% @ 20	CUMMINS 3932217, 3908615			2.81	71	2.42	61
	3.67	93	6.87	174	<b>P551265</b>	FULL FLOW		DAEWOO 65055105009			2.83	72	2.46	62
	3.66	93	6.85	174	<b>ELF7349</b>	FULL FLOW	99% @ 15	CUMMINS 4B & 6B SERIES LUBE			2.81	71	2.42	61
7/8-14	3.67	93	3.75	95	<b>P551287</b>	FULL FLOW	50% @ 25	CATERPILLAR 9M-8755	17-19	1.20-1.30	2.85	72	2.45	62
3/4-16	3.67	93	2.22	56	<b>P551784</b>	FULL FLOW		LISTER PETTER 75110620			2.75	70	2.43	62
	3.66	93	3.30	84	<b>P551042</b>	FULL FLOW		BOBCAT 6678233			2.83	72	2.44	62
	3.66	93	3.39	86	<b>P550939</b>	FULL FLOW	99% @ 40	KUBOTA 1732132430	10	.70	2.83	72	2.46	62
	3.66	93	3.57	91	<b>P550572</b>	FULL FLOW	50% @ 21	CUMMINS C6002112110	16	1.10	2.83	72	2.46	63
	3.66	93	4.21	107	<b>P552518</b>	FULL FLOW	99% @ 40	DODGE 6CYL-225,V8-318, CHYRYS, FORD & OTHERS	7-10	0.50-0.70	2.81	71	2.42	61
	3.67	93	5.32	135	<b>P169071</b>	FULL FLOW	99% @ 22	HIGH EFFICIENCY VERSION OF P550008	8-11	0.60-0.80	2.85	72	2.47	63



Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
3/4-16	3.66	93	5.35	136	P550008	FULL FLOW	50% @ 20	FORD, MOTORCRAFT FL1A	7-10	0.50-0.70	2.81	71	2.42	61
	3.66	93	5.35	136	P554403	FULL FLOW	50% @ 20	PERKINS 2654403, MF	7-10	0.50-0.70	2.81	71	2.41	61
	3.66	93	5.35	136	P557780	FULL FLOW	50% @ 20	ISUZU, NISSAN	18-23	1.30-1.60	2.81	71	2.42	61
	3.66	93	5.87	149	P550006	FULL FLOW		MERCEDES, RVI			2.81	71	2.44	62
	3.66	93	6.85	174	P550299	FULL FLOW	99% @ 40	FORD D3HZ6731B, MOTORCRAFT FL788	7-10	0.50-0.70	2.81	71	2.42	61
	3.66	93	6.86	174	P554407	FULL FLOW	99% @ 48	PERKINS 2654407	8-11	0.60-0.80	2.82	72	2.48	63
	3.66	93	4.21	107	P550942	FULL FLOW	99% @ 40	KUBOTA 1540232090	34-37	2.40-2.60	2.80	71	2.48	63
	3.66	93	4.21	107	P550941	FULL FLOW	99% @ 40	CASE, DAVID BROWN, TOYOTA	18-20	1.30-1.40	2.84	72	2.47	63
	3.69	94	5.54	141	P553411	FULL FLOW	99% @ 40	ALLIS CHALMERS, WORTHINGTON, FORD	18-20	1.30-1.40	3.50	89	2.79	71
	3.74	95	3.62	92	P550318	FULL FLOW	50% @ 25	SCANIA 173171	14-20	1.00-1.40	2.81	71	2.42	61
	3.72	95	3.95	100	P550963	FULL FLOW	50% @ 20	DODGE LIGHT TRUCK	8-16	0.60-1.10	2.84	72	2.48	63
	3.66	97	3.58	91	P550882	FULL FLOW	99% @ 40	ATLAS COPCO 10300882, FORD, MACK	10-20	0.80-1.20	2.82	72	2.42	61
	3.81	97	3.72	95	P550095	FULL FLOW	99% @ 36	FORD, ONAN	8-11	0.60-0.80	2.82	72	2.42	61
	3.82	97	3.98	101	P551201	FULL FLOW	50% @ 10	ZETTELMEYER 2138220	36	2.48	2.80	71	2.40	61
5/8-18	3.73	95	4.31	109	P550154	BYPASS	99% @ 45	IHC 538836R1			2.83	72	2.46	62
	3.81	97	5.22	133	P550050	BYPASS	99% @ 45	CAT, AMC, MF, ALLIS 74512207			2.82	72	2.42	61
	3.81	97	5.68	144	P550194	FULL FLOW		WISCONSIN RV38	12-15	0.80-1.00				
	3.81	97	7.91	201	P553404	BYPASS	99% @ 45	CARRIER TRANSICOLD 30.00304.00			2.82	72	2.42	61
3/4-20	3.69	94	5.43	138	P552363	BYPASS	50% @ 21	Thermo King 116228			2.83	72	2.46	63
1 1/2-16	3.70	94	5.51	140	P551352	FULL FLOW	99% @ 48	JOHN DEERE RE59754			3.76	96	3.22	82
1 1/8-16	3.66	93	6.81	173	P551348	FULL FLOW	50% @ 16	mitsubishi C45702411, WP110			2.80	71	2.01	51
	3.66	93	6.85	174	P550428	FULL FLOW	50% @ 20	CUMMINS "98" B SERIES			2.84	72	2.44	62
	3.81	97	5.22	133	P555570	FULL FLOW	99% @ 45	CAT 8N-9586, 9N-5570			2.81	71	2.42	61
13/16-16	3.66	93	3.79	96	P552463	FULL FLOW		Quicksilver 14957			3.44	87	3.10	79
	3.66	93	4.34	110	P550551	BYPASS		WISCONSIN RV51			3.44	87	3.10	79
	3.66	93	4.34	110	P550599	FULL FLOW		GM 6437462			2.83	72	2.46	63
	3.66	93	7.87	200	P550832	FULL FLOW	50% @ 20	GMC 6439034			3.38	86	3.04	77
	3.69	94	5.20	132	P551764	FULL FLOW		GM 6438868			3.44	87	3.10	79
	3.69	94	5.36	136	P550518	FULL FLOW	99% @ 20	AC PF2232 2001 SILVERADO V8 400 6.6L F.I.	11-17	0.80-1.00	3.48	88	3.10	79
	3.73	95	5.37	136	P166564	FULL FLOW	99% @ 22	GM CAR & TRUCK			3.45	88	3.00	76
	3.77	96	3.08	78	P550507	FULL FLOW	99% @ 22	GM LIGHT TRUCK, AC PF454, PH454			3.57	91	3.16	80
	3.78	96	5.14	131	P550964	FULL FLOW	99% @ 35	GM LIGHT TRUCK			3.38	86	3.04	77
	3.81	97	4.22	107	P550025	FULL FLOW	99% @ 40	GMC 6CYL. & V8 GAS			3.38	86	3.04	77
	3.81	97	5.12	130	P550035	FULL FLOW	50% @ 20	GM, ACPF35			3.38	86	3.04	77
	3.81	97	5.22	133	P550024	FULL FLOW	99% @ 40	ALLIS CHALMERS, CASE, IHC			2.82	72	2.42	61
	3.81	97	5.53	140	P550020	FULL FLOW	99% @ 40	JOHN DEERE AR58956, T19044	18-23	1.30-1.60	2.81	71	2.42	61
2 3/4-4	3.54	90	4.86	123	P558717	BYPASS		Case A36136, Hyster 38714, MF 835652M91						
	3.79	96	6.02	153	P552404	BYPASS	50% @ 10	Oliver 100126ASA; White 1LA5507			3.05	77	2.68	68
	3.79	96	8.13	206	P552464	FULL FLOW		Oliver 250046, 100125ASA; Waukesha 119390A, K5507			3.05	77	2.68	68
M18 x 1.5	3.70	94	3.72	95	P550242	BYPASS	50% @ 25	MITSUBISHI ME014838	8-11	0.60-0.80	2.46	62	2.20	56
M20 x 1.5	3.52	89	3.23	82	P502092	FULL FLOW	50% @ 20	PROTON			2.44	62	1.98	50
	3.54	90	3.93	100	P502039	FULL FLOW	50% @ 20	ISUZU 8944309830			3.43	87	3.01	76
	3.66	93	3.95	100	P550933	FULL FLOW	50% @ 19	ISUZU 8-9421-7272-0			3.42	87	3.01	76
	3.64	92	4.92	125	P550412	BYPASS	50% @ 5	MAZDA SL5014V61			3.43	87	2.08	53
	3.66	93	3.39	86	P550935	FULL FLOW		CHRYSLER	8-10	0.60-0.70	2.63	67		
	3.67	93	3.16	80	P551306	FULL FLOW		HONDA, ISUZU, MAZDA	13.50	0.93	3.59	91		
	3.67	93	3.14	80	P552381	FULL FLOW		HONDA 15400-634-003			3.44	87	3.10	79
	3.66	93	5.35	136	P550934	FULL FLOW	99% @ 40	FORD E3T26731C	8-11	0.60-0.80	2.82	72	2.42	61



Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
M22 x 1.5	3.54	90	3.18	81	<b>P502048</b>	FULL FLOW	50% @ 20	HONDA 15400-PA6-305			2.52	64	2.27	58
	3.64	92	5.47	139	<b>P502072</b>	FULL FLOW	50% @ 20	MOTORCRAFT			2.75	70		
	3.67	93	3.58	91	<b>P550965</b>	FULL FLOW	50% @ 20	FORD LIGHT TRUCK	15	1.03	2.81	71	2.42	61
	3.67	93	5.42	138	<b>P550166</b>	FULL FLOW	99% @ 45	ONAN 122-0550	17-22	1.20-1.50	2.83	72	2.46	62
	3.78	96	3.78	96	<b>P550357</b>	FULL FLOW		FORD 844F6716AA	10-15	0.70-1.00	3.54	90	3.03	77
	3.82	97	5.51	140	<b>P553315</b>	FULL FLOW		FORD 785F-6714-AA3A			2.82	72	2.45	62
M24 x 1.5	3.66	93	5.35	136	<b>P550758</b>	FULL FLOW	99% @ 40	JOHN DEERE RE519626, RE518977	24	1.70	2.83	72	2.44	62
	3.75	95	6.88	175	<b>P550975</b>	FULL FLOW		VALMET 836136342	34-37	2.40-2.60				
M26 x 1.5	3.54	90	4.92	125	<b>P502043</b>	COMBINATION	50% @ 20	ISUZU 8943604271			3.44	87	3.00	76
	3.58	91	4.92	125	<b>P502058</b>	COMBINATION	50% @ 20	DAIHATSU, ISUZU, MAZDA			3.43	87	3.00	76
	3.66	93	6.92	176	<b>P557382</b>	COMBINATION	99% @ 25	THERMO KING 117382,			2.81	71	2.42	61
M27 x 2	3.85	98	6.89	175	<b>P550520</b>	FULL FLOW		DAF 1399494			2.83	72	2.44	62
M92 x 2.5-6H	3.66	93	5.94	151	<b>P550779</b>	FULL FLOW	99% @ 40	JOHN DEERE RE504836						
<b>100 mm / 3.94" Dia. Family</b>														
1-12	3.96	101	4.92	125	<b>P502060</b>	FULL FLOW	50% @ 20	MAZDA TFY014302	11-17	0.80-1.00	3.92	100	3.48	88
	3.96	101	4.92	125	<b>P550411</b>	FULL FLOW		MAZDA 130523802	11-17	0.80-1.00	3.92	100	3.48	88
	3.98	101	5.85	149	<b>P505956</b>	FULL FLOW		HINO						
	4.02	102	5.91	150	<b>P550409</b>	FULL FLOW	50% @ 16	MAZDA SL0223802			3.92	100	3.46	88
	4.02	102	5.91	150	<b>P502080</b>	FULL FLOW	50% @ 20	MINIBUS 32B4000100			3.91	99	3.46	88
	4.00	102	5.92	150	<b>P550422</b>	FULL FLOW		HITACHI 4183853, ISUZU 8943212191	17	1.20	3.92	100	3.48	88
M24 x 1.5	3.93	100	3.30	84	<b>P502017</b>	COMBINATION	50% @ 5	TOYOTA 90915-03003, 90915-30001	11-17	0.80-1.00	3.15	80		
M26 x 1.5	4.02	102	4.92	125	<b>P502061</b>	COMBINATION		MAZDA VSY114302			3.35	85	2.17	55
	4.02	102	5.31	135	<b>P551343</b>	BYPASS	50% @ 16	MITSUBISHI MD069782	12-16	0.80-1.00	2.87	73	1.77	45
	4.02	102	6.02	153	<b>P550406</b>	FULL FLOW	50% @ 16	HINO 156071480	11-17	0.80-1.00	2.87	73	2.20	56
<b>108 mm / 4.25" Dia. Family</b>														
1-12	4.21	107	3.96	101	<b>P502085</b>	FULL FLOW	50% @ 20	MITSUBISHI 32A4000100	18-24	1.30-1.70	3.90	99	3.46	88
	4.25	108	5.14	131	<b>P502032</b>	COMBINATION	50% @ 20	ISUZU 8941432050			2.90	74	2.15	55
	4.23	107	5.79	147	<b>P559126</b>	FULL FLOW	50% @ 25	FORD E7HZ6731A (BRAZILIAN CAB FORWARD)	18-23	1.30-1.60	2.82	72	2.42	61
	4.25	108	6.61	168	<b>P553871</b>	FULL FLOW	50% @ 20	THERMOKING 11.3871			2.82	72	2.42	61
	4.27	108	8.00	203	<b>P550319</b>	FULL FLOW	99% @ 25	IHC 1811953C1 FOR DT/DTA360 & 466 DIESEL ENG			2.82	72	2.42	61
	4.23	107	7.95	202	<b>P559126</b>	FULL FLOW	99% @ 40	FORD E7HZ6731A	7-9	0.50-0.60	2.82	72	2.46	62
	4.27	108	9.09	231	<b>P550393</b>	FULL FLOW	99% @ 40	MERCEDES TRUCK 0031841701			2.82	72	2.44	62
	4.25	108	9.13	232	<b>P551604</b>	FULL FLOW	50% @ 14	FIAT 71909137, IVECO 01901604	18-20	1.30-1.40	2.81	71	2.46	62
1-16	4.28	109	5.78	147	<b>P550152</b>	FULL FLOW	99% @ 40	FIAT ALLIS, A.CHALMERS 4023548-3			2.83	72	2.45	62
	4.28	109	7.33	186	<b>P552474</b>	FULL FLOW		Allis Chalmers 4037047			2.83	72	2.46	63
7/8-16	4.27	108	8.06	205	<b>P550714</b>	FULL FLOW	99% @ 40	WHITE 30-3068145	18-25	1.30-1.70	2.82	72		
	4.23	108	7.95	202	<b>P559130</b>	FULL FLOW	99% @ 40	CaseIH A62423			2.83	72	2.44	62
3/4-16	4.24	108	6.59	167	<b>P551267</b>	FULL FLOW	99% @ 30	NISSAN 15201Z9008			2.82	72	2.46	62
	4.26	108	7.25	184	<b>P551603</b>	FULL FLOW	99% @ 23	FIAT 71909101, IVECO 01901603, HESSTON	30	2.07	2.83	72	2.44	62
	4.28	109	3.77	96	<b>P550580</b>	FULL FLOW	99% @ 45	FORD, MASSEY FERGUSON, MPLS MOLINE	8-11	0.60-0.80	2.81	71	2.42	61
	4.40	112	5.70	145	<b>P550226</b>	FULL FLOW	50% @ 4	IVECO 1902047	20-23	1.30-1.80	2.83	72	2.44	62
3/4-20	4.28	109	7.89	200	<b>P553746</b>	BYPASS	99% @ 12	THERMO KING 11.3746			2.83	72	2.45	62
1 1/2-12	4.25	108	10.42	265	<b>P502081</b>	FULL FLOW	50% @ 16	MITSUBISHI 3754001101			4.02	102	3.42	87
1-1/2-16	4.23	107	5.79	147	<b>P559127</b>	FULL FLOW	99% @ 40	FORD E3TZ6731A, IHC 6.9L 1804442C1			3.89	99	3.55	90
	4.27	108	8.02	204	<b>P550371</b>	FULL FLOW	99% @ 25	NAVISTAR 1822731C1, 1814562C1 Ford F4TZ-6731-A			3.89	99	3.55	90



Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
1 1/8-16	4.23	107	10.31	262	<a href="#">ELF2504</a>	FULL FLOW	99% @ 15	EXTENDED SERVICE MACK, VOLVO ENGINES			3.89	99	3.54	90
	4.26	108	6.57	167	<a href="#">P550086</a>	FULL FLOW	50% @ 20	KOMATSU 6136-51-5120	11-17	0.80-1.00	3.89	99	3.55	90
	4.24	108	6.56	167	<a href="#">P550708</a>	FULL FLOW	99% @ 45	KOMATSU 6134-51-5120	27	1.86	3.94	100	3.58	91
	4.24	108	6.73	171	<a href="#">P551266</a>	FULL FLOW		NISSAN FL201Z9010			4.01	102	3.60	91
	4.24	108	7.02	178	<a href="#">P551263</a>	FULL FLOW		VOLVO 8477416			3.94	100	3.56	90
	4.25	108	10.24	260	<a href="#">P550519</a>	FULL FLOW		M&H W11102/20						
	4.25	108	10.31	262	<a href="#">P554004</a>	FULL FLOW	50% @ 20	CATERPILLAR 1R-0658, 2P-4004			3.89	99	3.55	90
	4.24	108	10.32	262	<a href="#">P553191</a>	FULL FLOW	50% @ 9	MACK 485-GB-3191, RENAULT, VOLVO & ON HWY TRUCKS			3.89	99	3.55	90
	4.25	108	10.31	262	<a href="#">ELF7483</a>	FULL FLOW	99% @ 15	MACK/VOLVO ENGINES			3.88	99	3.55	90
	4.25	108	10.31	262	<a href="#">ELF7739</a>	FULL FLOW	99% @ 15	CAT ENGINES			3.88	99	3.55	90
	4.25	108	10.32	262	<a href="#">P551807</a>	FULL FLOW	99% @ 21	CATERPILLAR 1R1807, MACK 485GB3236			3.89	99	3.55	90
	4.23	107	5.79	147	<a href="#">P559128</a>	FULL FLOW	99% @ 40	CAT 9N-6007			3.94	100	3.55	90
	4.33	110	6.38	162	<a href="#">P550420</a>	FULL FLOW	50% @ 20	HITACHI 4296675			4.13	105	3.74	95
	4.33	110	6.73	171	<a href="#">P502088</a>	FULL FLOW	50% @ 16	NISSAN 15201Z9000, 15201Z9002, 15201Z9003			3.90	99	3.46	88
	4.33	110	10.08	256	<a href="#">P551102</a>	FULL FLOW	50% @ 20	DEUTZ 1174420	30-42	2.10-2.80	4.02	102	3.62	92
4.33	110	10.20	260	<a href="#">P550490</a>	FULL FLOW		SCANIA 1117285			4.09	104	3.66	93	
4.45	113	6.73	171	<a href="#">P502083</a>	FULL FLOW	99% @ 48	MITSUBISHI 3743802400			2.93	74	2.54	65	
1 3/8-16	4.29	109	10.36	263	<a href="#">P550425</a>	BYPASS	99% @ 35	VOLVO 4775565			3.99	101	3.63	92
M20 x 1.5	4.13	105	3.15	80	<a href="#">P550383</a>	FULL FLOW		ISUZU 8941145850			3.92	100	3.52	89
	4.20	107	4.98	126	<a href="#">P550067</a>	FULL FLOW	50% @ 16	MITSUBISHI ME014833, ME004099			3.90	99	3.46	88
	4.24	108	5.62	143	<a href="#">P551264</a>	FULL FLOW		KOMATSU/KOMATSU DRESSER Z14020F105	20	1.38	3.94	100	3.56	90
	4.33	110	6.38	162	<a href="#">P551257</a>	FULL FLOW	99% @ 5	ISUZU X13201012			4.13	105	3.74	95
M24 x 1.5	4.13	105	4.81	122	<a href="#">P550597</a>	COMBINATION		TOYOTA 9091503006, 9091530002			3.15	80	2.80	71
M26 x 1.5	4.21	107	5.90	150	<a href="#">P502008</a>	COMBINATION	50% @ 20	MITSUBISHI ME013307, ME013343	11-17	0.80-1.00	2.87	73	2.19	56
M30 x 1.5	4.25	108	5.51	140	<a href="#">P550707</a>	FULL FLOW	99% @ 48	TOYOTA 15601-68010	18-21	1.30-1.50	3.37	86	2.95	75
	4.23	107	6.61	168	<a href="#">P559129</a>	FULL FLOW	99% @ 30	ROLLS ROYCE CV2473	18-21	1.30-1.50	4.05	103	3.42	87
M30 x 2	4.25	108	5.62	143	<a href="#">P502222</a>	FULL FLOW	50% @ 16	FIAT 74741272			2.83	72	2.44	62
	4.27	108	9.00	229	<a href="#">P550712</a>	FULL FLOW	99% @ 35	FIAT ALLIS 74744707	18-21	1.30-1.50	3.96	101	3.59	91
	4.29	109	9.06	230	<a href="#">P550342</a>	FULL FLOW	50% @ 12	IVECO 1902102	36	2.48	4.06	103	3.62	92
	4.45	113	8.92	227	<a href="#">P550639</a>	FULL FLOW	50% @ 14							
M32 x 1.5	4.25	108	8.77	223	<a href="#">P502093*</a>	COMBINATION	50% @ 20	CATERPILLAR 517950	25-31	1.80-2.20	4.02	102	3.62	92
<b>118 mm / 4.65" Dia. Family</b>														
1 1/2-12	4.65	118	6.22	158	<a href="#">ELF7947</a>	FULL FLOW	99% @ 15	DETROIT DIESEL ENGINES			4.31	109	3.84	98
	4.65	118	8.09	205	<a href="#">P550596</a>	FULL FLOW	99% @ 25	HITACHI 4448336	20	1.40	4.33	110	3.85	98
	4.65	118	10.24	260	<a href="#">P551670</a>	FULL FLOW	50% @ 14	CUMMINS 3313279, DET DIESEL ENG			4.32	110	3.85	98
	4.65	118	10.24	260	<a href="#">ELF7670</a>	FULL FLOW	99% @ 15	CUMMINS AND DETROIT DIESEL ENGINES			4.31	109	3.84	98
	4.65	118	10.24	260	<a href="#">P167670</a>	FULL FLOW	99% @ 15	MERCEDES 23518524			4.31	109	3.84	98
	4.67	119	6.28	159	<a href="#">P550947</a>	FULL FLOW	50% @ 14	GMC 25011106, Detroit Diesel Engines			4.32	110	3.85	98
	4.67	119	7.85	199	<a href="#">P551381</a>	FULL FLOW	50% @ 20	HINO 15607-1381			4.32	110	3.85	98
	4.67	119	8.94	227	<a href="#">P550671</a>	FULL FLOW	50% @ 14	CUMMINS			4.32	110	3.85	98
	4.86	123	5.87	149	<a href="#">P550973</a>	COMBINATION	50% @ 20	ISUZU 8970492820, FULL FLOW BYPASS COMBO			4.32	110	3.85	98
	4.88	124	4.72	120	<a href="#">P502042</a>	COMBINATION	50% @ 16	ISUZU 8970967770, 2906548000, 97148270	11-17	0.80-1.00	4.59	116	3.86	98
	4.88	124	4.72	120	<a href="#">P502046</a>	COMBINATION	50% @ 20	ISUZU 8970967770, 8943381811			4.59	116	3.86	98
1 1/2-16	4.65	118	7.83	199	<a href="#">P552050</a>	FULL FLOW	99% @ 39	HINO 156072050			4.32	110	3.85	98
	4.65	118	11.73	298	<a href="#">ELF7405</a>	FULL FLOW	99% @ 15	CAT ENGINES			4.32	110	3.85	98
	4.67	119	11.75	298	<a href="#">P554105</a>	FULL FLOW	50% @ 20	4-5/8" DIA. VERSION OF CATERPILLAR #2P4005			4.32	110	3.85	98



Thread	OD		Length		Item No	Part Description	Efficiency @ Micron	Primary Application	Relief Valve Setting		GSKT O.D.		GSKT I.D.	
	IN	MM	IN	MM					PSI	Bar	IN	MM	IN	MM
1 1/8-16	4.50	114	8.50	216	<a href="#">P550073</a>	FULL FLOW	50% @ 25	NISSAN 15208-Z9001			3.34	85	2.95	75
1 3/8-16	4.66	118	9.91	252	<a href="#">P550421</a>	FULL FLOW	99% @ 50	HITACHI 4266385, ISUZU 11324010521			4.33	110	3.85	98
	4.65	118	10.24	260	<a href="#">P550777</a>	BYPASS	50% @ 14	CUMMINS 330432, 3313289			4.32	110	3.85	98
1 5/8-12	4.65	118	10.24	260	<a href="#">ELF2500</a>	FULL FLOW	99% @ 15	EXTENDED SERVICE DETROIT DIESEL SERIES 60, 50 ENGINES			4.33	110	3.87	98
	4.65	118	10.24	260	<a href="#">ELF3998</a>	FULL FLOW	99% @ 15	DETROIT DIESEL SERIES 60 ENGINES			4.31	109	3.84	98
	4.65	118	10.24	260	<a href="#">P552100</a>	FULL FLOW	99% @ 30	DET. DIESEL 50 & 60 SERIES ENGINES, 23518480			4.32	110	3.85	98
2 1/4-12	4.65	118	8.94	227	<a href="#">P553548</a>	COMBINATION	99% @ 15	CASE IH J919562			4.68	119	4.00	102
	4.65	118	11.70	297	<a href="#">P553000</a>	COMBINATION	99% @ 22	CUMMINS ENGINES			4.68	119	4.00	102
	4.65	118	11.75	298	<a href="#">ELF7300</a>	COMBINATION	99% @ 15	CUMMINS ENGINES	75	5.17	4.68	119	4.00	102
M52 x 1.5	4.66	118	11.70	297	<a href="#">P550595</a>	COMBINATION	99% @ 22	JOHN DEERE VENTURI COMBO			4.68	119	4.01	102
M90 x 2.0	4.79	122	11.85	301	<a href="#">P550775</a>	FULL FLOW	50% @ 7	CUMMINS QSK ENGINES						
M95 x 2.0	4.65	118	13.67	347	<a href="#">P550656</a>	COMBINATION	99% @ 30	IH DT466 2004 ON			4.68	119	4.00	102
M95 x 2.5	4.65	118	11.70	297	<a href="#">ELF7900</a>	FULL FLOW	99% @ 15	CUMMINS SIGNATURE & ISM ENGINES			4.68	119	4.00	102
	4.66	118	11.70	297	<a href="#">P559000</a>	COMBINATION	99% @ 22	FLEETGUARD LF9000, LF9001 CUMMINS SIGNATURE 600			4.68	119	4.00	102
	4.67	119	11.70	297	<a href="#">ELF2501</a>	FULL FLOW	99% @ 15	EXTENDED SERVICE CUMMINS ISX, ISM ENGINES			4.64	118	3.97	101
<b>136 mm / 5.36" Dia. Family</b>														
1 1/2-12	5.06	129	6.72	171	<a href="#">P558329</a>	FULL FLOW	50% @ 25	JOHN DEERE AR98329						
1 1/2-16	5.00	127	6.85	174	<a href="#">P553634</a>	FULL FLOW	50% @ 20	MICH FP, JOHN DEERE AR43634			5.05	128	4.71	120
	5.32	135	9.61	244	<a href="#">P550788</a>	FULL FLOW	99% @ 21	CATERPILLAR C13 ENGINES			4.31	109	3.92	99
	5.33	135	12.13	308	<a href="#">P551402</a>	FULL FLOW	50% @ 14	DD 2000 SERIES AND MARINE VERSION 4000 SERIES	31-38	2.20-2.70	4.31	109	3.92	100
	5.33	135	12.13	308	<a href="#">ELF2502</a>	FULL FLOW	99% @ 15	EXTENDED SERVICE CATERPILLAR ENGINES			4.33	110	3.93	100
	5.32	135	12.13	308	<a href="#">P551808</a>	FULL FLOW	99% @ 21	CATERPILLAR 1R1808			4.31	109	3.92	100
	5.33	135	12.13	308	<a href="#">P554005</a>	FULL FLOW	99% @ 39	CAT 1R-0716, 2P-4005, STGR, SULLAIR			4.31	109	3.92	100
	5.35	136	9.68	246	<a href="#">P554206</a>	FULL FLOW	99% @ 40	IHC 684206C1			4.29	109	3.89	99
	5.55	141	12.20	310	<a href="#">P550341</a>	FULL FLOW	50% @ 25	DAF 267714	32-40	2.20-2.80	4.37	111	3.94	100
1 1/8-16	5.56	141	6.00	152	<a href="#">P550157</a>	FULL FLOW		FORD EDNN6714AA			4.37	111	3.97	101
13/16-16	5.44	138	5.44	138	<a href="#">P550188</a>	FULL FLOW	99% @ 45	CUMMINS 170200	8-10	0.60-0.70				
M36 x 1.5	5.12	130	8.66	220	<a href="#">P552562</a>	COMBINATION	99% @ 45	MITSUBISHI ME074013			4.21	107	3.86	98
	5.33	135	12.13	308	<a href="#">ELF7367</a>	FULL FLOW		NAVISTAR 1819452C1			4.29	109	3.89	99
	5.33	135	12.10	308	<a href="#">P550512</a>	FULL FLOW	99% @ 21	DETROIT DIESEL 5241840301	31-38	2.14-2.62	4.31	109	3.92	100
	5.32	136	12.10	307	<a href="#">P550367</a>	FULL FLOW	50% @ 14	NAVISTAR 1819452C1	26-30	1.80-2.10	4.35	110	3.95	100
M42 x 2	5.51	140	11.89	302	<a href="#">P550452</a>	FULL FLOW		DAF 1310901, FLEETGUARD LF3737 & LF3773	36	2.48	4.37	111	3.97	101
M45 x 1.5	5.33	135	12.13	308	<a href="#">P551400</a>	FULL FLOW	50% @ 14	DETROIT DIESEL 4000 SERIES ENGINE			4.31	109	3.92	100
M60 x 3	5.48	139	6.62	168	<a href="#">P550356</a>	COMBINATION		FORD 826F6714	10-15	0.70-1.00				



## Cartridge Lube Filters

Outer Dia.		Inner Dia.		Length		Item No	Part Description	Efficiency @	Primary Application
IN	MM	IN	MM	IN	MM				
1.97	50	0.46	12	1.48	38	P552421	CARTRIDGE FULL FLOW		Honda 15410-KF0-315, 15412-KF0-000
2.00	51	0.81	21	2.12	54	P555400	CARTRIDGE FULL FLOW		LISTER, PETTER
2.09	53	0.77	20	3.86	98	P552361	CARTRIDGE FULL FLOW		GMC 25177917
2.30	58	0.44	11	4.63	118	P551294	CARTRIDGE FULL FLOW		CASE IH 376373R91
2.36	60	0.63	16	3.94	100	P550744	CARTRIDGE		Mercedes-Benz A0002690321
2.35	60	0.70	18	3.90	99	P550396	CARTRIDGE FULL FLOW	50% @ 25	Mercedes 001844901, 00184425
2.44	62	0.86	21	6.20	157	P550521	CARTRIDGE FULL FLOW		MERCEDES 1041800109
2.48	63	1.08	27	3.53	90	P552419	CARTRIDGE FULL FLOW		Ford DOHZ-3C602-B; International 507809-C91
2.50	64	1.22	31	4.53	115	P550564	CARTRIDGE FULL FLOW		MERCEDES 6111800009
2.50	64	1.22	31	5.91	150	P550633	CARTRIDGE		Volvo 1521527 / M&H HU721
2.59	66	1.22	31	4.52	115	P550798	CARTRIDGE	99% @ 39	MERCEDES 0001802609
1.97	68	1.38	35	3.50	89	P552441	CARTRIDGE FULL FLOW		GMC 24460713; Saturn 22685727
2.75	70	1.31	33	3.33	85	P551291	CARTRIDGE FULL FLOW		LEYLAND 134311
2.75	70	1.31	33	6.00	152	P550183	CARTRIDGE FULL FLOW	99% @ 36	FORD E1ADKN18662A
2.79	71	1.22	31	3.74	95	P550797	CARTRIDGE	99% @ 38	MERCEDES 6421800009
2.83	72	0.83	21	4.47	114	P550184	CARTRIDGE FULL FLOW	50% @ 20	FORD A730X6731TA
2.85	72	1.30	33	5.39	137	P502193	CARTRIDGE FULL FLOW	50% @ 20	ISUZU
2.85	72	1.30	33	5.39	137	P550052	CARTRIDGE FULL FLOW		MASSEY FERGUSON 101811M91, 1881840M1, 894976M91
2.87	73	0.93	24	4.02	102	P505978	CARTRIDGE		NISSAN 15208-2W200
2.90	74	1.12	28	5.53	140	P552382	CARTRIDGE FULL FLOW		INTERNATIONAL 406669-R1 406705-R91
2.97	75	1.07	27	5.64	143	P551296	CARTRIDGE FULL FLOW	99% @ 30	CASE IH A40902
2.98	76	0.78	20	4.07	103	P551279	CARTRIDGE FULL FLOW		CHRYSLER 1634447
3.03	77	1.02	26	8.19	208	P550429	CARTRIDGE FULL FLOW	99% @ 45	CATERPILLAR 9T-9054
3.11	79	0.75	19	9.37	238	P550311	CARTRIDGE FULL FLOW	50% @ 10	LEYLAND 602426
3.09	79	1.03	26	1.56	40	P552402	CARTRIDGE FULL FLOW		Case A22279; International 133205-R91
3.11	79	1.38	35	9.04	230	P550165	CARTRIDGE FULL FLOW		CAT, LINK BELT 9F6742, LEROI
3.11	79	1.56	40	5.35	136	P502203	CARTRIDGE FULL FLOW	50% @ 20	NISSAN 1520876225
3.12	79	1.83	46	9.00	229	P550816	CARTRIDGE FULL FLOW	50% @ 20	CAT 4J-0816
3.22	82	1.50	38	7.89	200	P550451	CARTRIDGE		M.A.N. 51055040096
3.26	83	0.48	12	7.58	193	P550181	CARTRIDGE	99% @ 20	IHC 376375R91
3.27	83	0.83	21	5.16	131	P550767	CARTRIDGE FULL FLOW		MERCEDES OM SERIES ENGINES
3.27	83	0.83	21	7.60	193	P550764	CARTRIDGE FULL FLOW		MERCEDES, M.A.N., CLAAS
3.27	83	0.94	24	5.12	130	P550354	CARTRIDGE FULL FLOW		MERCEDES 3661840225
3.24	83	1.41	36	6.65	169	P550563	CARTRIDGE FULL FLOW		MERCEDES 6061840125
3.27	83	1.49	38	6.36	161	P552422	CARTRIDGE FULL FLOW		BMW 11421745390 11421745391
3.27	83	1.59	40	5.80	147	P550768	CARTRIDGE FULL FLOW	99% @ 40	MERCEDES 0001801609
3.27	83	2.00	51	8.24	209	P550761	CARTRIDGE FULL FLOW	50% @ 15	MERCEDES 0001801709
3.26	83	2.20	56	7.59	193	P550763	CARTRIDGE FULL FLOW		METAL FREE LUBE
3.27	83			5.39	137	P550766	CARTRIDGE FULL FLOW		MERCEDES, DEMAG, LIEBHERR, O&K, RVI, CLAAS
3.25	83			7.13	181	P550528	CARTRIDGE FULL FLOW	99% @ 25	FORD 3C3Z6731AA F SERIES PICKUP
3.31	84	0.65	17	5.63	143	P550015	CARTRIDGE FULL FLOW	50% @ 16	ISUZU 9885111940
3.31	84	0.75	19	4.21	107	P550220	CARTRIDGE FULL FLOW		SCANIA 1329876, 1381235
3.30	84	0.93	24	7.50	190	P550315	CARTRIDGE FULL FLOW		MERCEDES 3661800009
3.35	85	1.57	40	5.63	143	P502194	CARTRIDGE FULL FLOW	50% @ 16	ISUZU 13240085,
3.34	85	1.62	41	6.50	165	P555088	CARTRIDGE FULL FLOW	99% @ 38	JOHN DEERE AT15088T, PURO R14



Outer Dia.		Inner Dia.		Length		Item No	Part Description	Efficiency @	Primary Application
IN	MM	IN	MM	IN	MM				
3.37	86	1.13	29	4.25	108	<b>P552465</b>	CARTRIDGE		JOHN DEERE AH1081R
3.47	88	0.43	11	7.61	193	<b>P552471</b>	CARTRIDGE FULL FLOW		Mercedes-Benz 6171840025, 6171840125
3.52	89	0.69	18	4.16	106	<b>P550179</b>	CARTRIDGE	50% @ 10	CASE 08152AB
3.47	89	0.94	24	5.53	141	<b>P550186</b>	CARTRIDGE	99% @ 20	IHC 355009R91
3.50	89	1.34	34	3.78	96	<b>P551285</b>	CARTRIDGE FULL FLOW		PERKINS 101606
3.56	90	1.28	33	5.69	145	<b>P550141</b>	CARTRIDGE FULL FLOW	50% @ 20	JOY, GMC 5576054, 5574540
3.56	90	1.28	33	8.44	214	<b>P550190</b>	CARTRIDGE FULL FLOW	99% @ 36	GMC 6437562, AC PF166
3.54	90	1.92	49	4.09	104	<b>P502202</b>	CARTRIDGE FULL FLOW	50% @ 20	ISUZU 1878103720
3.58	91	0.47	12	6.42	163	<b>P550361</b>	CARTRIDGE COMBINATION		MERCEDES 6011800009
3.59	91	1.28	33	6.37	162	<b>P552415</b>	CARTRIDGE FULL FLOW		GMC 5573976
3.62	92	0.51	13	5.83	148	<b>P550359</b>	CARTRIDGE FULL FLOW		ROLLS ROYCE OE12448
3.62	92	0.69	18	4.33	110	<b>P502179</b>	CARTRIDGE FULL FLOW	50% @ 20	MITSUBISHI 3134012030
3.62	92	0.69	18	6.30	160	<b>P502180</b>	CARTRIDGE FULL FLOW	50% @ 20	MITSUBISHI 3144012030
3.63	92	1.31	33	7.88	200	<b>P552375</b>	CARTRIDGE SOCK		Oliver 156149AS; Waukesha 493009; White 872946
3.75	95	1.04	26	5.94	151	<b>P550092</b>	CARTRIDGE FULL FLOW	99% @ 25	AC, CASE, CAT, CLARK, FTGD LF503
3.74	95	1.09	28	5.06	129	<b>P552433</b>	CARTRIDGE FULL FLOW		Massey Ferguson 535040-M1
3.74	95	1.91	49	7.05	179	<b>P502225</b>	CARTRIDGE FULL FLOW	50% @ 16	LEYLAND 11K243
3.78	96	1.10	28	5.96	151	<b>P552458</b>	CARTRIDGE FULL FLOW		Case D45378, G33058, A60524, A61234
3.78	96	1.10	28	6.09	155	<b>P552455</b>	CARTRIDGE FULL FLOW		Case D45378, G33058, A60524, A61234
3.82	97	1.35	34	4.41	112	<b>P550185</b>	CARTRIDGE FULL FLOW	50% @ 20	MASSEY FERGUSON 1852331M1
3.82	97	1.73	44	5.74	146	<b>P550076</b>	CARTRIDGE		NISSAN 15274-99428
3.87	98	0.49	13	4.58	116	<b>P550287</b>	CARTRIDGE		MACK 57GC2187
3.87	98	0.64	16	4.58	116	<b>P550286</b>	CARTRIDGE FULL FLOW		MACK 57GC2134
3.84	98	7.00	178			<b>P552206</b>	CARTRIDGE		MACK ASET
3.91	99	0.57	15	4.37	111	<b>P550203</b>	CARTRIDGE FULL FLOW	99% @ 20	FIAT ALLIS, CASE, CLARK, MF, HYSTER, GALION
3.89	99	0.66	17	5.67	144	<b>P550074</b>	CARTRIDGE		NISSAN 15274-Z9029
3.93	100	0.87	22	4.81	122	<b>P551475</b>	CARTRIDGE FULL FLOW	99% @ 40	CASE A21475, ALLIS CHALMERS
3.94	100	1.56	40	7.19	183	<b>P502206</b>	CARTRIDGE FULL FLOW	50% @ 16	NISSAN 1527499128
3.94	100	1.73	44	7.24	184	<b>P550077</b>	CARTRIDGE FULL FLOW	50% @ 16	NISSAN 15274-90225
3.98	101	0.65	17	7.68	195	<b>P550070</b>	CARTRIDGE FULL FLOW	50% @ 25	MITSUBISHI ME034481
3.98	101	1.10	28	9.25	235	<b>P550068</b>	CARTRIDGE FULL FLOW	50% @ 25	MITSUBISHI ME021254
3.97	101	1.20	30	9.21	234	<b>P502183</b>	CARTRIDGE FULL FLOW		MITSUBISHI ME021073
3.98	101	1.22	31	7.64	194	<b>P550069</b>	CARTRIDGE FULL FLOW		MITSUBISHI ME034161
3.98	101	1.27	32	2.78	71	<b>P551761</b>	CARTRIDGE FULL FLOW		CASE 902125
3.98	101	1.41	36	9.25	235	<b>P552362</b>	CARTRIDGE FULL FLOW		Allis Chalmers 4348260, 4348261
3.98	101	1.63	41	9.29	236	<b>P550484</b>	CARTRIDGE FULL FLOW	50% @ 20	CAT 1R-0659, 4W-4840, KOMATSU 6610-53-5120
4.00	102	0.56	14	5.00	127	<b>P550170</b>	CARTRIDGE		FRAM F4
4.00	102	0.56	14	5.00	127	<b>P550171</b>	CARTRIDGE		FRAM F21
4.02	102	0.55	14	8.00	203	<b>P550117</b>	CARTRIDGE	99% @ 20	CLARK EUCLID GMC 5572425 (MILITARY SEN.)
4.03	102	0.66	17	4.67	119	<b>P551277</b>	CARTRIDGE		DELUXE WD30
4.02	102	1.76	45	9.92	252	<b>P550629</b>	CARTRIDGE		Scania 164 serie, scania marine engines DI series
4.06	103	1.62	41	5.50	140	<b>P553335</b>	CARTRIDGE FULL FLOW	99% @ 40	IHC, GALION, HOUGH, TOWMOTOR
4.06	103	5.80	146			<b>P550793</b>	CARTRIDGE		MERCEDES A9061810086
4.09	104	0.59	15	5.67	144	<b>P550062</b>	CARTRIDGE FULL FLOW	50% @ 16	HITACHI 4507886
4.10	104	0.59	15	9.13	232	<b>P550059</b>	CARTRIDGE FULL FLOW	50% @ 16	HITACHI 4505384
4.09	104	1.26	32	6.69	170	<b>P550080</b>	CARTRIDGE FULL FLOW	50% @ 16	HINO 6071-2104-40
4.09	104	1.26	32	7.09	180	<b>P550379</b>	CARTRIDGE FULL FLOW	50% @ 25	HINO 156071560
4.09	104	1.92	49	6.30	160	<b>P550010</b>	CARTRIDGE FULL FLOW	50% @ 20	HINO 15607-1090



Outer Dia.		Inner Dia.		Length		Item No	Part Description	Efficiency @	Primary Application
IN	MM	IN	MM	IN	MM				
4.17	106	0.59	15	4.17	106	P550017	CARTRIDGE FULL FLOW	50% @ 25	ISUZU 9885132630
4.17	106	0.59	15	7.30	185	P550018	CARTRIDGE FULL FLOW	50% @ 16	ISUZU 9885132641
4.25	108	0.55	14	4.19	106	P550546	CARTRIDGE		KOHLER A270192, MF 830910M91
4.25	108	1.25	32	16.38	416	P552427	CARTRIDGE SOCK		Winslow W1645T
4.30	109	1.45	37	8.90	226	P550132	CARTRIDGE FULL FLOW	99% @ 30	DET. DIESEL ENG W/CARTRIDGE LUBE
4.29	109	7.44	189			P552231	CARTRIDGE		MACK E7
4.33	110	0.75	19	7.56	192	P550378	CARTRIDGE FULL FLOW	50% @ 25	MITSUBISHI ME034605
4.33	110	2.04	52	8.11	206	P502205	CARTRIDGE FULL FLOW	50% @ 16	NISSAN 1527499025
4.38	111	1.44	37	5.75	146	P550147	CARTRIDGE SOCK	99% @ 40	GMC 5574978
4.38	111	1.59	40	31.00	787	P550614	CARTRIDGE	95% @ 15	WAUKESHA 168660
4.37	111	3.62	92	9.56	243	P552469	CARTRIDGE FULL FLOW		John Deere AT45422
4.41	112	2.22	56	5.91	150	P550630	CARTRIDGE FULL FLOW		Daf 75CF, Daf 85CF, Daf 95 XF
4.44	113	2.67	68	8.66	220	P550661	CARTRIDGE		Daf 85CF and XF95
4.50	114	1.45	37	16.00	406	P552428	CARTRIDGE SOCK		Waukesha 167602B
4.47	114	1.75	44	9.06	230	P558462	CARTRIDGE FULL FLOW		IHC 268462R91, CUMMINS 104428
4.48	114	2.84	72	10.83	275	P502184	CARTRIDGE FULL FLOW	50% @ 16	MITSUBISHI 68937310012
4.53	115	1.23	31	9.00	229	P552418	CARTRIDGE FULL FLOW		International 262146-R91
4.53	115	2.24	57	7.68	195	P554925	CARTRIDGE FULL FLOW		M.A.N. 81.05504.0025
4.57	116	2.12	54	12.68	322	P550071	CARTRIDGE FULL FLOW	50% @ 25	MITSUBISHI ME064289
4.59	117	0.75	19	4.87	124	P551014	CARTRIDGE FULL FLOW		FORD C5TE6744A
4.59	117	2.25	57	7.00	178	P550174	CARTRIDGE FULL FLOW	99% @ 18	IHC 213445R91
4.64	118	1.78	45	11.77	299	P550453	CARTRIDGE		MERCEDES A5411840225
4.70	119	2.16	55	7.60	193	P558425	CARTRIDGE FULL FLOW		MERCEDES 4011840025
4.76	121	1.50	38	7.44	189	P550613	CARTRIDGE FULL FLOW	99% @ 48	CUMMINS 173174
4.76	121	2.20	56	5.67	144	P550765	CARTRIDGE FULL FLOW		M.A.N. 51.05504.0098
4.76	121	2.20	56	9.60	244	P550041	CARTRIDGE FULL FLOW	50% @ 20	MERCEDES BENZ 001 1843825, M.A.N.
4.76	121	2.24	57	9.76	248	P550769	CARTRIDGE FULL FLOW	99% @ 30	MERCEDES 0001802109
4.80	122	0.67	17	8.62	219	P502190	CARTRIDGE FULL FLOW	50% @ 5	HINO 15607-1351
4.81	122	0.66	17	8.86	225	P550058	CARTRIDGE		HINO 156071010
4.80	122	0.67	17	9.80	249	P502191	CARTRIDGE FULL FLOW	50% @ 5	HINO 156071341, 15607-1340
4.84	123	0.79	20	5.43	138	P502186	CARTRIDGE FULL FLOW	50% @ 20	TOYOTA
4.84	123	2.25	57	8.86	225	P553925	CARTRIDGE FULL FLOW	99% @ 36	MERCEDES BENZ 0011843925
5.06	127	0.07	2	12.13	305	P552377	CARTRIDGE FULL FLOW		NUGENT LUBE BAG REPLACEMENT CARTRIDGE
5.00	127	0.69	18	7.88	200	P551781	CARTRIDGE		WAUKESHA 73759B
5.00	127	0.77	19	8.22	209	P552462	CARTRIDGE FULL FLOW		Ford B8C-6731-A
5.00	127	1.50	38	9.62	244	P550516	CARTRIDGE FULL FLOW	50% @ 20	CUMMINS 158139
5.04	128	0.61	15	6.30	160	P550021	CARTRIDGE FULL FLOW	50% @ 25	NISSAN 15274-99329
5.04	128	0.79	20	7.91	201	P550380	CARTRIDGE FULL FLOW	50% @ 25	ISUZU 1878103141
5.04	128	2.22	56	9.10	231	P550087	CARTRIDGE FULL FLOW		KOMATSU 6610-50-5100
5.02	128	2.26	57	5.59	142	P550066	CARTRIDGE FULL FLOW	50% @ 20	MITSUBISHI 31240-53054
5.06	129	2.94	75	4.81	122	P552425	CARTRIDGE FULL FLOW		International 541275-R1, 547412-R91
5.06	129	2.94	75	9.00	229	P552380	CARTRIDGE FULL FLOW		INTERNATIONAL 623017-C1
5.07	129	3.34	85	9.00	229	P166481	CARTRIDGE FULL FLOW	99% @ 22	CAT 5S-0485
5.08	129	3.37	86	8.94	227	P550485	CARTRIDGE FULL FLOW	50% @ 14	CAT 1R-0721, 5S-0485, HYSTER 75669
5.12	130	0.59	15	9.17	233	P550034	CARTRIDGE FULL FLOW	50% @ 5	NISSAN 15274-99227
5.12	130	0.59	15	11.79	299	P550065	CARTRIDGE KIT	99% @ 48	MITSUBISHI ME064356
5.51	140	1.34	34	7.60	193	P502200	CARTRIDGE FULL FLOW	50% @ 20	ISUZU 1132401170
6.01	153	3.50	89	14.50	368	P551336	CARTRIDGE FULL FLOW	50% @ 25	FLEETLIFE FP614-40





Outer Dia.		Inner Dia.		Length		Item No	Part Description	Efficiency @	Primary Application
IN	MM	IN	MM	IN	MM				
6.30	160	0.28	7	5.20	132	<b>P551345</b>	CARTRIDGE	50% @ 5	HITACHI 4231195
6.30	160	0.67	17	10.51	267	<b>P550423</b>	CARTRIDGE		HITACHI 4225367
6.50	165	1.47	37	29.38	746	<b>P550636</b>	CARTRIDGE	99% @ 35	P22 RR & MARINE
6.50	165	1.69	43	7.56	192	<b>P551344</b>	CARTRIDGE		HITACHI 4208241
6.50	165	6.50	165	13.00	330	<b>P550381</b>	CARTRIDGE		ISUZU 1878100501
6.50	165	11.02	280	11.02	280	<b>P550382</b>	CARTRIDGE		ISUZU 1878102390
6.50	165	11.02	280	12.95	329	<b>P550384</b>	CARTRIDGE	50% @ 5	ISUZU 1132400560
6.50	165	3/8-24		8.75	222	<b>P552041</b>	CARTRIDGE		ISUZU/GMC CAB FORWARD HOUSING
6.75	171	2.47	63	17.75	451	<b>P552414</b>	CARTRIDGE SOCK		WHITE 673374
7.42	188	2.63	67	10.00	254	<b>P557500</b>	CARTRIDGE FULL FLOW	50% @ 20	CAT 7N-7500
7.42	188	3.43	87	13.38	340	<b>P554136</b>	CARTRIDGE FULL FLOW	50% @ 20	CAT 1W-4136
7.64	194	4.65	118	6.71	170	<b>P502223</b>	CARTRIDGE FULL FLOW	50% @ 20	MANN H20211
7.72	196	0.86	22	10.06	256	<b>P550500</b>	CARTRIDGE	50% @ 5	500 SERIES BYPASS
7.72	196	0.86	22	15.06	383	<b>P550750</b>	CARTRIDGE	50% @ 5	750 SERIES CARTRIDGE BYPASS
7.72	196	0.86	22	15.06	383	<b>P550751</b>	CARTRIDGE	50% @ 5	750 SERIES PREMIUM BYPASS
7.87	200	0.86	22	10.03	255	<b>P550493</b>	CARTRIDGE		CUMMINS 106621



## Upgrade from a Competitive Filter to Donaldson Endurance™

Mfg. Part	Mfg. Name	Donaldson Part
638	Crosland	ELF3998
2036	Crosland	ELF7670
2069	Crosland	ELF7349
2120	Crosland	ELF7345
6857	AC	ELF7739
9309	Crosland	ELF7739
9334	Crosland	ELF7405
9350	Crosland	ELF7670
9361	Crosland	ELF7739
24088	Wix	ELF4088
51602	Wix	ELF7345
51604	Wix	ELF7349
51607	Wix	ELF7349
51669	Wix	ELF7670
51670	Wix	ELF7670
51722	Wix	ELF7405
51748	Wix	ELF7300
51788	Wix	ELF7739
51791	Wix	ELF7483
51792	Wix	ELF7405
51799	Wix	ELF7367
51810	Wix	ELF7947
51811	Wix	ELF7670
51812	Wix	ELF7670
51848	Wix	ELF7405
51869	Wix	ELF7670
51870	Wix	ELF7670
51970	Wix	ELF7670
51971	Wix	ELF3998
57213	Wix	ELF7690
57500	Wix	ELF7300
57620	Wix	ELF7349
57745	Wix	ELF7900
57746	Wix	ELF7900
51602MP	Wix	ELF7345
51607MP	Wix	ELF7349
51748MP	Wix	ELF7300
51748XD	Wix	ELF7300
51791MP	Wix	ELF7483
51791XE	Wix	ELF7739
51792MP	Wix	ELF7405
51792XE	Wix	ELF7405
51799MP	Wix	ELF7367
51971MP	Wix	ELF3998
B105	Baldwin	ELF7947
B404	Baldwin	ELF7947
B49	Baldwin	ELF7405
B495	Baldwin	ELF3998
B495MPG	Baldwin	ELF3998
B495SS	Baldwin	ELF3998
B7117	Baldwin	ELF7345
B76	Baldwin	ELF7483
B7600	Baldwin	ELF7739
B7600SS	Baldwin	ELF7739
B76B	Baldwin	ELF7483
B76HPG	Baldwin	ELF7739
B76MPG	Baldwin	ELF7739
B76SS	Baldwin	ELF7483
B95	Baldwin	ELF7670
B95B	Baldwin	ELF7670
B95HPG	Baldwin	ELF7670
B95MPG	Baldwin	ELF7670
B95SS	Baldwin	ELF7670
B96	Baldwin	ELF7670
B96B	Baldwin	ELF7670
B96HPG	Baldwin	ELF7670
B96MPG	Baldwin	ELF7670

Mfg. Part	Mfg. Name	Donaldson Part
B96SS	Baldwin	ELF7670
B99	Baldwin	ELF7405
B99B	Baldwin	ELF7405
B99HPG	Baldwin	ELF7405
B99MPG	Baldwin	ELF7405
B99SS	Baldwin	ELF7405
BD103	Baldwin	ELF7300
BD103SS	Baldwin	ELF7300
BD7153	Baldwin	ELF7900
BD7154	Baldwin	ELF7900
BD7309	Baldwin	ELF7300
BT339	Baldwin	ELF7349
BT340	Baldwin	ELF7739
BT427	Baldwin	ELF7345
BT523	Baldwin	ELF7405
BT55610	Baldwin	ELF7739
BT7339	Baldwin	ELF7349
BW5200	Baldwin	ELF4088
HPH3335	Fram	ELF7405
HPH3612	Fram	ELF7670
HPH3690	Fram	ELF7947
HPH6349	Fram	ELF7300
HPH6349A	Fram	ELF7300
J8612670	Fleetguard	ELF7670
LF16046	Fleetguard	ELF7690
LF16101	Fleetguard	ELF7483
LF3000	Fleetguard	ELF7300
LF3000(ML)	Fleetguard	ELF7300
LF3000TP	Fleetguard	ELF7300
LF3321	Fleetguard	ELF7483
LF3325	Fleetguard	ELF7670
LF3333	Fleetguard	ELF7670
LF3333SC	Fleetguard	ELF7947
LF3345	Fleetguard	ELF7345
LF3349	Fleetguard	ELF7349
LF3363	Fleetguard	ELF7670
LF3363SC	Fleetguard	ELF7947
LF3374	Fleetguard	ELF7405
LF3379	Fleetguard	ELF7739
LF3380	Fleetguard	ELF7670
LF3453	Fleetguard	ELF7670
LF3477	Fleetguard	ELF7483
LF3541	Fleetguard	ELF7947
LF3552	Fleetguard	ELF7349
LF3553	Fleetguard	ELF7345
LF3566	Fleetguard	ELF7405
LF3620	Fleetguard	ELF3998
LF3639	Fleetguard	ELF7300
LF3671	Fleetguard	ELF3998
LF3675	Fleetguard	ELF7483
LF3677	Fleetguard	ELF7300
LF3805	Fleetguard	ELF7345
LF3806	Fleetguard	ELF7349
LF3885	Fleetguard	ELF7349
LF3894	Fleetguard	ELF7349
LF3935	Fleetguard	ELF7349
LF3959	Fleetguard	ELF7349
LF667	Fleetguard	ELF7483
LF670	Fleetguard	ELF7670
LF691	Fleetguard	ELF7405
LF691A	Fleetguard	ELF7405
LF747	Fleetguard	ELF7670
LF9000	Fleetguard	ELF7900
LF9001	Fleetguard	ELF7900
LF9009	Fleetguard	ELF7300
LF9031	Fleetguard	ELF7900
LF9039	Fleetguard	ELF7300

Mfg. Part	Mfg. Name	Donaldson Part
LF9325	Fleetguard	ELF7670
LF9333	Fleetguard	ELF7670
LF9620	Fleetguard	ELF3998
LF9667	Fleetguard	ELF7483
LF9691	Fleetguard	ELF7405
LF9691A	Fleetguard	ELF7405
LF9747	Fleetguard	ELF7670
LFP2160	Luber-finer	ELF3998
LFP2160XL	Luber-finer	ELF3998
LFP2216	Luber-finer	ELF7483
LFP2535	Luber-finer	ELF7947
LFP3000	Luber-finer	ELF7300
LFP3000XL	Luber-finer	ELF7300
LFP3191	Luber-finer	ELF7483
LFP3191XL	Luber-finer	ELF7483
LFP3900	Luber-finer	ELF7345
LFP4005	Luber-finer	ELF7405
LFP4005HE	Luber-finer	ELF7405
LFP4005XL	Luber-finer	ELF7405
LFP670	Luber-finer	ELF7670
LFP670HE	Luber-finer	ELF7670
LFP670XL	Luber-finer	ELF7670
LFP680	Luber-finer	ELF7670
LFP780	Luber-finer	ELF7349
LFP780XL	Luber-finer	ELF7349
LFP8591	Luber-finer	ELF7483
LFP9001	Luber-finer	ELF7900
LFP9007	Luber-finer	ELF7900
LFP9008	Luber-finer	ELF7900
LFP911	Luber-finer	ELF7670
LFP911HE	Luber-finer	ELF7670
LFP911XL	Luber-finer	ELF7670
LFP947	Luber-finer	ELF7947
LFW6500	Luber-finer	ELF4088
LP5048	Luber-finer	ELF7690
LP8995	Luber-finer	ELF7690
NF2088	Penray	ELF4088
P7230	Baldwin	ELF7690
P8021	Fram	ELF7405
PH4005	Luber-finer	ELF7405
WF2131	Fleetguard	ELF4088
XLF5000	Fleetguard	ELF3998
XLF7000	Fleetguard	ELF7300

