

# LIQUID PURIFICATION SYSTEMS FLUSHING SYSTEMS & SERVICES

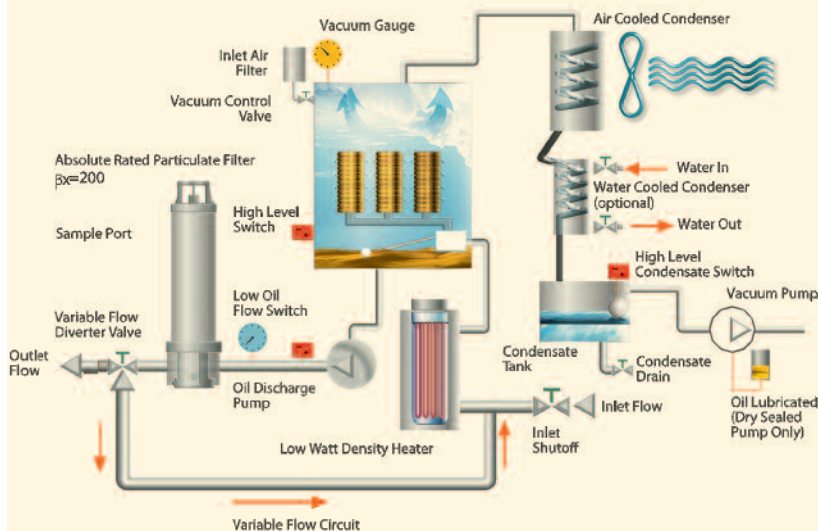
**Donaldson introduces** a new line of high quality oil, fuel and fluid filtration systems. Our systems provide innovative and environmentally sound solutions for purifying contaminated oils, fuels and many other fluids for a variety of industrial applications.

## Vacuum Dehydrators

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



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



## Coalescers

Designed to rapidly remove water and particulates from diesel fuel, fuel oil and most other hydraulic/lubricating oils. Coalescing technology outperforms centrifuges, are simpler to use, cost less to maintain and are lower in initial purchase price. Designed to run continuously in an outdoor environment, virtually no mechanical maintenance is needed.



240 GPM Coalescer System



Donaldson®

## LTC Transformer Filtration

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



## Bearing Lubrication

This system will remove particulate and heat from bearing lube oils to increase bearing life. It will achieve particulate removal from fluids to as low as ISO 12/10/9.

It is available with optional flow and temperature monitoring devices.



## High Flow Filter Skids

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



## Flushing Services

We will perform a turnkey flush on your site, providing all pumps, heaters, hoses and filters. Qualified technicians verify the results to required ISO cleanliness codes with our Portable Oil Analysis Kit.

### Industrial Fluid Purification Common Applications:

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

**For more information on how Donaldson can help with your oil and fuel filtration needs, please contact us at 1-800-846-1846.**



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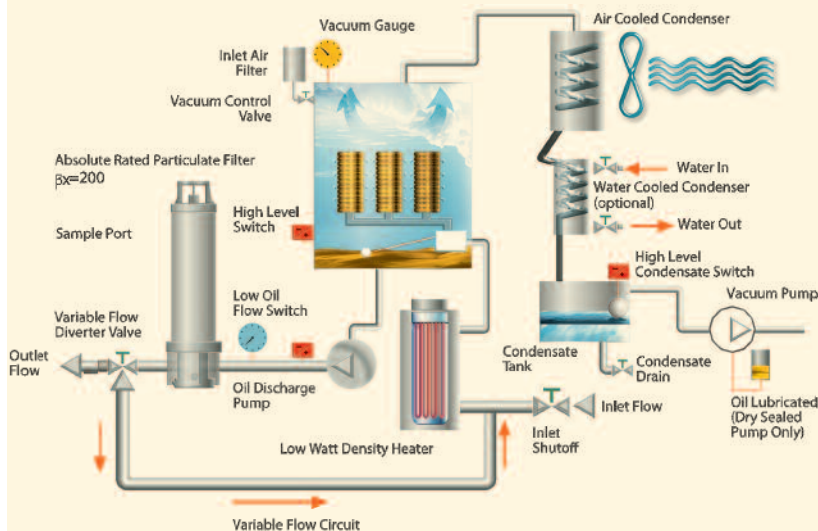
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# Bulk Liquid Filtration



Low Pressure, High Flow Filters

Duramax® Spin-On Filters

Manifolds

Breathers, Water Separators

Gauges, Valves , Test Points, more



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



*Donaldson Duramax units at this South Africa ore mine filter bulk oil as it runs from storage tanks to delivery trucks for transport to the customer. This parallel filter configuration provides for high flow rates.*

## Why install filtration on bulk oil and diesel systems?

Filtration on bulk oil and diesel systems controls the ingress of solid particulate matter into equipment when filling or topping up oil or fuel tanks.

Contamination in a lube or fuel system slowly wears away at expensive components, shortening usable life.

Filter manifolds may be installed upstream and downstream of bulk reservoirs or on recirculating systems for bulk oil and fuel. Using Donaldson's flexible HMK25 double head assembly and spin-on filters, we can easily customize a cost effective solution for high flow and high efficiency that meets your exact filtration needs.

### Donaldson Filter Manifold Features

- ASA 150 Inlet and Outlet flanges
- Schedule 40 pipe work
- Upstream and downstream pressure gauges to monitor differential pressures
- Non-bypass to prevent contaminated fluid bypassing the filters
- Optional shut off valves/check valves for fast filter changes without shutting down flow.
- 2-way 80 gpm/300 lpm, 3-way 100 gpm/400 lpm, 4-way 160 gpm/600 lpm, 5-way 240 gpm/900 lpm (listed flow rates are measured for fuel)
- Can be used with a wide variety of fluids, viscosities and volumes
- Micron ratings from 3µm to 150µm absolute (@Beta 1000)
- Test points for oil sampling to monitor cleanliness levels. Test points also accommodate a gauge adaptor and gauge to monitor differential pressure across the filters.
- Gauge and gauge adaptor supplied with manifold
- Spin on filters allow cleaner filter maintenance



**By reducing contamination levels in the bulk filtration system, you can reduce maintenance, downtime, labor costs and your total cost of ownership.**





*At this oil depot, high-flow/low-pressure HEK11 filters are used to remove both ingressed & induced contamination from oil that is piped around from reservoir to tank.*



*This truck transports hydraulic fluid to mines, steel mills and other industrial sites in South Africa. Four double-head HMK25 Duramax filters, with flow rates of 100gpm, are used to clean the oil before it is piped into large storage tanks at the customer site.*



Donaldson Duramax® filters are the highest rated medium pressure filters available in a spin-on configuration.

Duramax® are reliable, sturdy, long-lived and easy to install. They are designed for working pressures up to 1000 psi. Media choices

include: SYNTEQ® (Donaldson's synthetic filter media specially made for fluid filtration), natural fiber cellulose and stainless steel wiremesh for harsh environments.

## HEK11 High Volume Filter Manifolds

- 150 psi/1035 kPa working pressure
- For use with fuel or oil
- Flow rates to 300 gpm/1136 lpm
- Elements from 4µm to 35µm @ Beta 1000 and 150 µm nominal wiremesh
- Electrical or visual indicators
- 4" NPT or 2-1/2" SAE 4 bolt (code 61) flange ports
- Inside to outside flow for cleaner element maintenance



*HEK11 filter sets continuously clean bulk oil at a copper mine in Indonesia. Read the case study details on the next page.*



# Bulk Oil Filtration Saves Money for Mine

A copper mine in southern Indonesia has found a way to save millions of dollars a year by continuously filtering oil.

As is typical of bulk oil deliveries, new oil coming to the site has a high particle count. More particles are added when oil is transferred from one storage container to another. Additional particle ingress comes from the lines between bulk storage tanks. The result is a particle count in excess of the desired ISO cleanliness code.

To solve the problem, the mine's heavy equipment workshop implemented a program to continually circulate and filter oil and antifreeze. The bulk fluids are circulated by economical basic air diaphragm pumps. HEK11 assemblies are mounted in parallel to filter oil as it comes out of the bulk tanks before it enters compartments. Each filter is equipped with a service indicator.





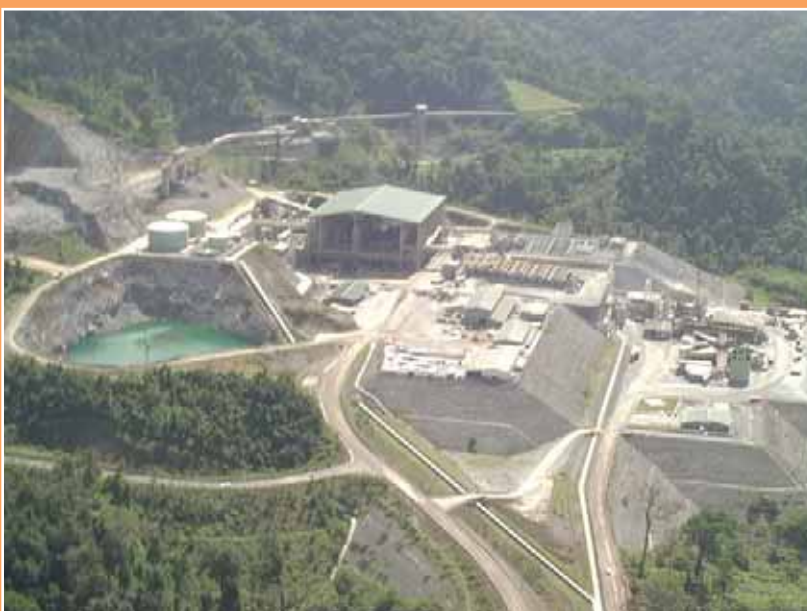
The impact of such a rigorous oil cleanliness program is measurable and impressive. The life of 793C special rear axle oil has been extended from 2,000 hour to 8,000 hours, resulting in oil savings of \$1,714 per truck per year. Total oil savings per year for rear axle oil filtration is \$78,844. The world cost-per-hour average for 793 wheel groups is \$7.00, or about \$6,619,200 per year. The average cost-per-hour at this site is \$3.08, about \$2,912,448 per year.

That's \$3,706,752 total savings per year for this 120-wheel group.

The system has been operating for over a year, producing immediate results and showing continued improvements in ISO cleanliness ratings. The mine is also seeing less downtime since filtering of the new oil starts when oil was scheduled for change. Kidney loop filtering time during preventative maintenance is also significantly reduced.

The success of the mine's program in southern Indonesia provides an excellent example of how to save money and improve productivity through clean oil.

*The operation in southern Indonesia is an open pit mine with associated processing and support facilities. It produces copper concentrate containing small quantities of gold, which is transported to local and foreign smelters for further processing.*



### Breathers

Breathers installed on tanks prevent ingress of airborne solid contamination and moisture.

#### Bulk Tank Breather

- Micron ratings from 3 $\mu$ m to 35 $\mu$ m absolute (@Beta 1000)
- Desiccant Breather for water removal
- 1-1/2 BSP internal thread tank attachment
- 8 psi relief valve
- Informer indicator for element condition monitoring
- Replacement desiccant and filters available
- Capacity of 265 gpm/1000 lpm



#### Donaldson T.R.A.P. Breather with Thermally Reactive Advanced Protection

- Prevents moisture condensation in hydraulic tanks by lowering and stabilizing the relative humidity inside the tank, decreasing the dewpoint.
- T.R.A.P. media is self-regenerating
- Media efficiency 99.7% on particles 3 $\mu$ m and larger
- Reversible flow through media allows moisture to exit the tank
- Filter service indicator flashes when a change out is needed
- Effective down to -40 degrees F.



## Diesel System Water Removal Solutions

In addition to particulate filters in diesel systems, water removal filters can be installed in lines upstream of the bulk tanks and downstream of the tanks on the filling/recirculating lines.

#### Fuel Filter/Water Separator

- Replacement element 15 $\mu$ m absolute (@Beta 1000)
- 1-1/2 BSP ports
- 58 psi/1400kPa/4 bar max pressure
- 40 gpm/150 lpm capacity

#### Diesel Fuel Water Separator Single Skid

- 40 gpm/150 lpm
- Max pressure 58 psi/1400 kPa/4 bar
- 15 micron absolute (@Beta 1000) water separator element
- 3 micron absolute spin-on filters (other efficiencies available)

#### Diesel Fuel Water Separator Double Skid

- 80 gpm/300 lpm
- Max Pressure 58 psi/1400 kPa/4 bar
- 15 micron absolute (@Beta 1000) water separator element
- 3 micron absolute spin-on filters (other efficiencies available)





Donaldson-developed Synteq® synthetic filter media has smooth, rounded fibers for low resistance to fluid flow. Synteq® is ideal for filtering synthetic fluids, water glycols, water/oil emulsions, HWCf and petroleum-based fluids.



## Kidney Loop Dedicated Off-Line Circuit For Fluid Conditioning

One very effective way of ensuring thorough fluid conditioning is with a dedicated off-line circuit, or kidney loop.

Widely used in industrial applications, this system uses a separate circulation pump that runs continuously, circulating and conditioning the fluid. Multiple stages and types of filters can be included in the circuit, as well as heat exchangers and in-line immersion heaters.

We've designed the HFK08-0087 in-line model with features that make it perfect for kidney looping - SAE 20 ports, 50gpm flow capacity, a built-in visual service indicator and Synteq® synthetic media.

## Kidney Loop Carts



*This custom-built kidney loop cart uses two HFK08 filters with Synteq® filter media to clean the many bulk oil tanks in a steel mill in northern California.*

Kidney Loop Carts are perfect for filtering hydraulic tanks and differentials on mobile equipment during the service interval. A variety of filter elements provide flexibility to achieve desired flow and cleanliness levels. Custom filter carts are available from most Donaldson distributors. Call 1-800-846-1846 for more information.



## Consistent Quality



**Filtration solutions that  
lower your cost of ownership  
through clean oil and fuel**

**Less downtime**

**Longer machine life**

**Lower maintenance costs**

**Expert technical support**

**Reliable, prompt customer service**

## Hydraulic Filtration Solutions

Donaldson delivers quality hydraulic filters, replacement elements, test points and reservoir accessories for industrial and mobile equipment, bulk fuel and lube systems.

**Call 1-800-846-1846 today to receive a FREE Hydraulic Filters + Accessories Catalog.**

**Thousands of filters in stock, ready to ship.**

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



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Fax: 27-11-908-2216

**Latin America & Caribbean**  
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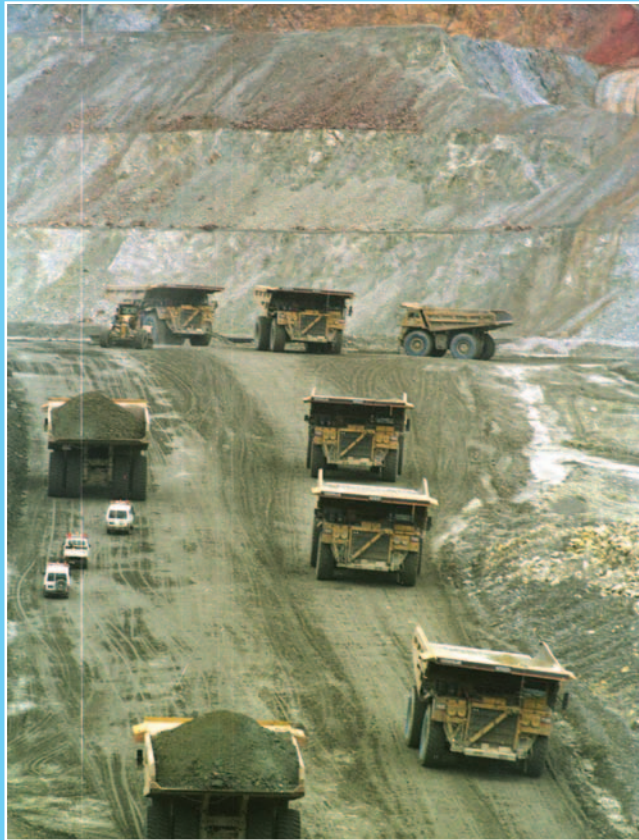
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# Donaldson Hydraulic Filters

## *Protect Your System and Your Turf*



*with Plurasafe® EnBio TC®S - The “NO Burn” Hydraulic Fluid*



*Donaldson hydraulic filters are specifically designed for use with Plurasafe® EnBio TC®S - a new environmentally-friendly high performance hydraulic fluid.*

### Why Donaldson?

- **Exclusive Synteq® filter media** - provides optimal protection.
- **Conventional filters break down and deteriorate when used with Plurasafe® EnBio TC®S, resulting in equipment damage and downtime** - Donaldson hydraulic filters can withstand the fluid and protect your investment.
- **Donaldson - the filter recommended for use with Plurasafe® EnBio TC®S - The “NO Burn” hydraulic fluid.** Through extensive research and testing, Donaldson developed a filter that can withstand the fluid and protect the hydraulic system on your turf equipment.



Figure A



Figure B

### Damaged Filters

Conventional filters break down (Figure A) and separate (Figure B) when used with Plurasafe® EnBio TC®S.

**The grass is greener on the other side - the Donaldson side.**





Synteq.

Synteq® - Donaldson's  
synthetic filter media  
specially developed  
for fluid filtration.

## Why YOU should choose Donaldson

FEATURE	Donaldson Filter	Standard Filter
Developed for use with Plurasafe® EnBio TC®S	Yes	No
Tested and proven	Yes	No
Recommended for use with the fluid	Yes	No
Compatible with Plurasafe® EnBio TC®S	Yes	No

Donaldson hydraulic filters are engineered to fit many machine applications, most common equipment brand names are Jacobsen, John Deere, Toro, and others. See our Applications Guide for a complete applications listing or contact our Customer Support team.

### Hydraulic Filtration Solutions

Questions? Call the Donaldson Hydraulic Technical Support at **800-846-1846** for all your hydraulic system solutions.



*Protect your system,  
reduce your  
maintenance  
costs*



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# DT-041 In-Line Hydraulic Filter

Donaldson.

## Features

The DT-041 high flow filter combines the best features of a base-mounted assembly; several inlet port options, top cover element servicing for ease of maintenance, and a wide selection of service indicators. The DT-041 all-aluminum head design and plated steel cylinder provides a strong, durable, and dependable unit. We offer standard features like deep pleat elements for higher dirt holding capacity and our standard Donaldson Triboguard™ 5-layer media element construction. This technology, combined with many other standard features, is ideal for today's applications in pulp and paper, power generation, and steel mill applications. Five standard grades of media are offered. Thermal lockout and surge control are two key features incorporated in the differential indicators.

## Technical Data

Max. Working Pressure	500 psi (34.5 bar)
Rated Burst Pressure	1,500 psi max (103 bar)
Operating Temp. Range	-20° to 250°F (-29° to 121°C)
Head Material	Aluminum
Cap Material	Cast Iron
Weight	Assembly length 16": 48.5 lbs (22,0 kg)
	Assembly length 39": 86.2 lbs (39,2 kg)

**DT-041** series filter housing is a suitable replacement for competitor filter housings such as:

**Pall 8300, Schroeder QF5, Parker IL8, Hydac NFH, PTI F8G, Eaton HV6R**

**300 gpm (1135 l/min)**

**One diagnostic port in cover plus two drain ports in head for easy maintenance**

**Two  $\Delta P$  indicator options available**

**High strength bypass valve assembly for durable, reliable performance**

**Exceptional high dirt holding capacity**

**Large T-handle for fast servicing without tools**

**Fluorocarbon seals standard**



# DT-041 Performance Data

Donaldson

## Housing and Filter Element

Flow versus Pressure Drop

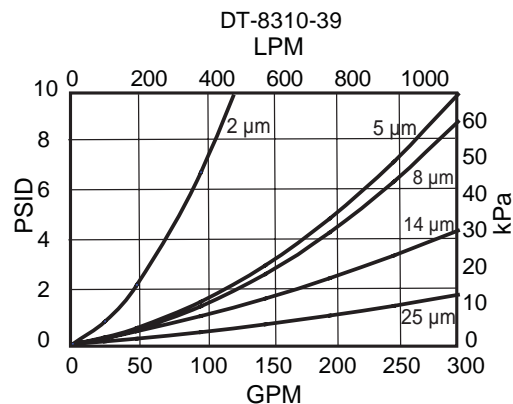
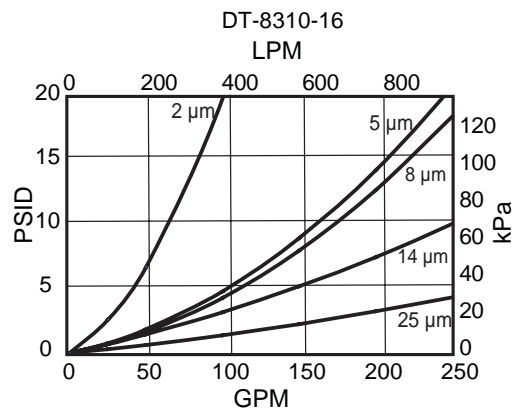
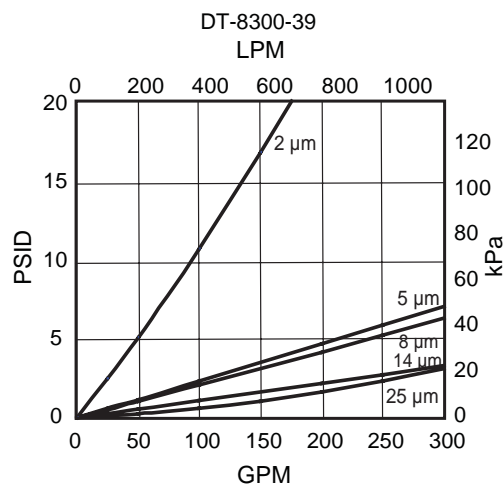
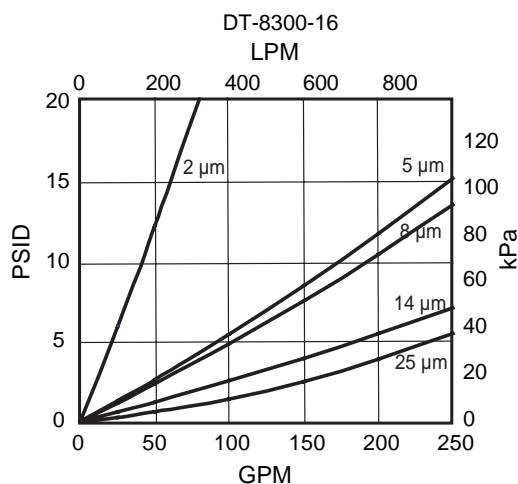
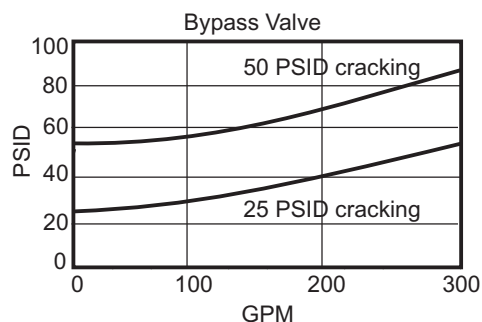
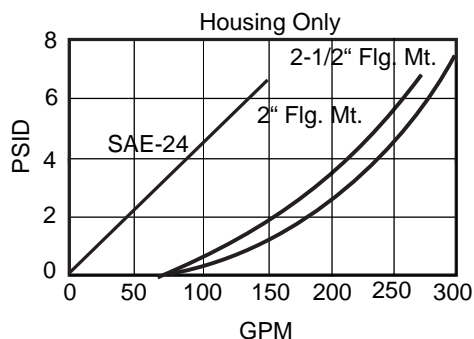
150 SUS (32 cst.) oil with specific gravity  $\leq 0.9$

## Viscosity Correction Formula

$$\Delta P_{\text{Element}} = \Delta P_{\text{from curve}} \times \frac{\text{New Viscosity (SUS)}}{150} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P_{\text{Housing}} = \Delta P_{\text{from curve}} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P_{\text{Assembly}} = \Delta P_{\text{Element}} + \Delta P_{\text{Housing}}$$





# DT-041 Ordering Code

Donaldson.

## Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
<b>DT-041</b>	2	A	D	J	A	02
	TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6

Housing shipped without element.

## Select one option from each table below.

(See example shown above.)

TABLE 1  
Housing Length

1	16"
2	39"

TABLE 2  
Bypass Valve

A	No bypass
B	50 psid bypass

TABLE 3  
Indicator

A	Visual Indicator 35 psid
C	Visual/Electrical 35 psid
B	Visual Indicator 70 psid
D	Visual/Electrical 70 psid
N	No indicator

TABLE 4  
Porting

D	SAE-24
H	2" Code 61 Four Bolt
J	2½" Code 61 Four Bolt

TABLE 5  
Element Construction

A	Standard (150 psid)
D	Extended Life (100 psid)

Please note: Element selection to be ordered separately.

TABLE 6  
Micron Rating

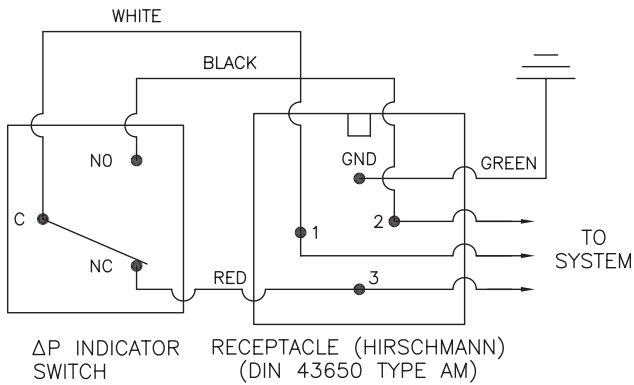
02	Beta 1,000 at < 4 micron
05	Beta 1,000 at 5 micron
08	Beta 1,000 at 8 micron
14	Beta 1,000 at 14 micron
25	Beta 1,000 at 25 micron

## Element Chart

Length	Construction	Micron Rating				
		02	05	08	14	25
1	A	DT-8300-16-2µm	DT-8300-16-5µm	DT-8300-16-8µm	DT-8300-16-14µm	DT-8300-16-25µm
	D	DT-8310-16-2µm	DT-8310-16-5µm	DT-8310-16-8µm	DT-8310-16-14µm	DT-8310-16-25µm
2	A	DT-8300-39-2µm	DT-8300-39-5µm	DT-8300-39-8µm	DT-8300-39-14µm	DT-8300-39-25µm
	D	DT-8310-39-2µm	DT-8310-39-5µm	DT-8310-39-8µm	DT-8310-39-14µm	DT-8310-39-25µm



## Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



**Note:** The female plug (connector) is to be furnished by customer

### Differential Indicators

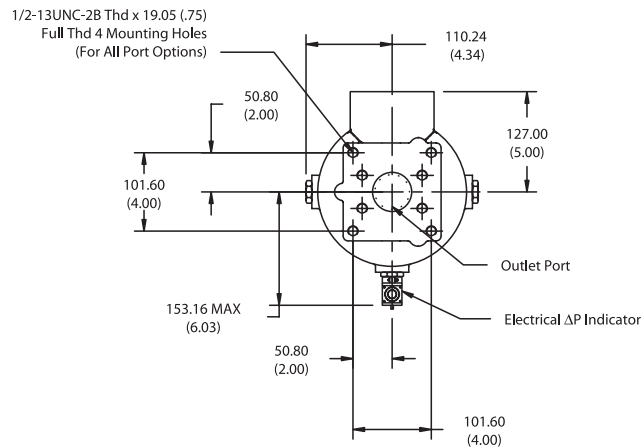
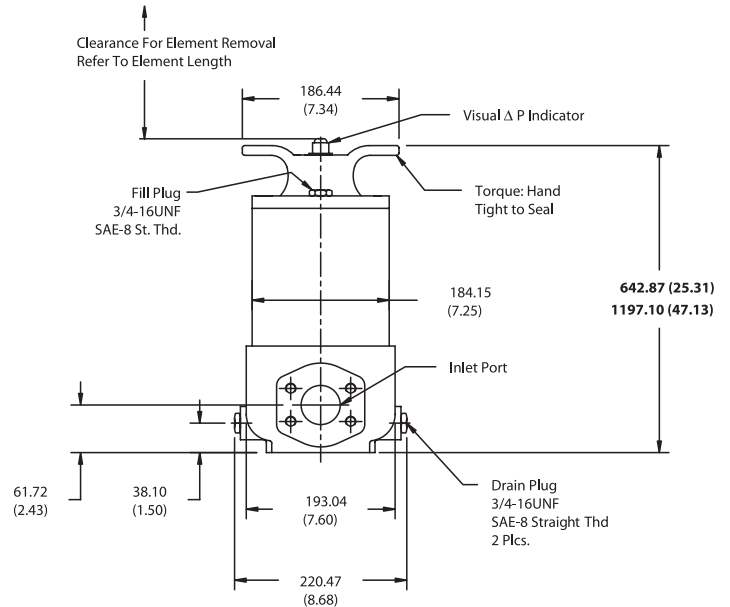
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 70 psid is used with a non-bypass housing.

### Surge Control

This optional feature is used to dampen pressure surges or spikes to avoid premature actuation of the indicator. Surge control delays the indicator response.

### Thermal Lockout

Thermal Lockout (TL), prevents actuation below 60°F and allows actuation above 100°F system operating temperature. Its purpose is to avoid false actuations during periods of high fluid viscosity such as experienced during cold start.



Dimensions: millimeter (inch)



# DT-042 In-Line Hydraulic Filter

Donaldson.

## Features

DT-042 duplex filters insure continuous filtration is maintained while servicing elements, thus avoiding machine shutdown. The DT-042 all-aluminum head design and plated steel cylinders provide a strong, durable, and dependable unit. We offer standard features like deep pleat elements for higher dirt holding capacity and our standard Donaldson Triboguard™ 5-layer media element construction.

This technology, combined with many other standard features, is ideal for today's applications in pulp and paper, power generation, and steel mill applications. Five standard grades of media are offered. Thermal lockout and surge control are two key features incorporated in the differential indicators.

300 gpm (1135 l/min)

Hydrostatically-balanced, cam-operated, positive sealing valve for low torque shifting

Dual poppet outlet checks for positive isolation during element replacement

Two  $\Delta P$  indicator ports

One diagnostic port in cover plus two drain ports in head for easy maintenance

Fluorocarbon seals standard

## Technical Data

Max. Working Pressure	400 psi (27.6 bar)
Typical Burst Pressure	1,500 psi max (103.4 bar)
Operating Temp. Range	-20° to 250°F (-29° to 121°C)
Head Material	Aluminum
Cap Material	Cast Iron
Weight	Assembly length 16": 234 lbs (106,4 kg) Assembly length 39": 308 lbs (140 kg)

**DT-042** series filter housing is a suitable replacement for competitor filter housings such as:

**Pall 8300, Schroeder QF5, Parker IL8, Hydac NFH, PTI F8G, Eaton HV6R**



# DT-042 Performance Data

Donaldson.

## Housing and Filter Element

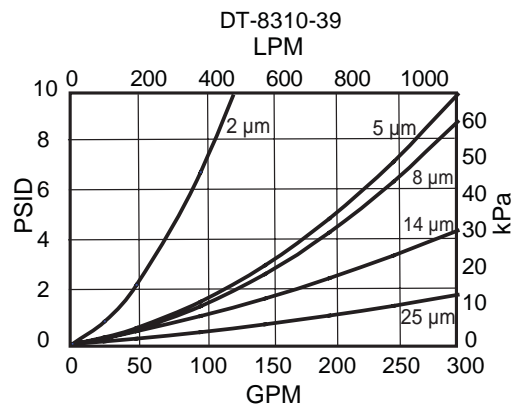
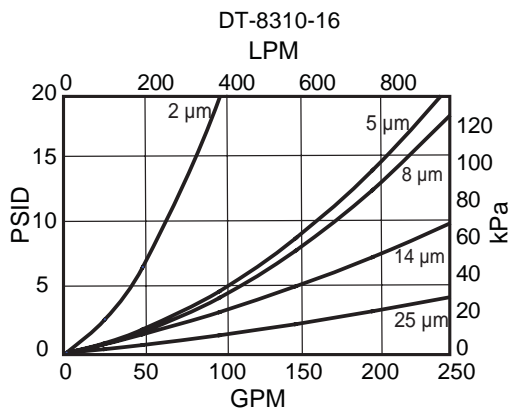
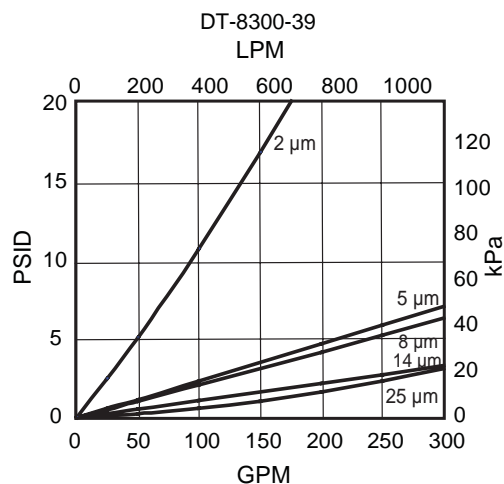
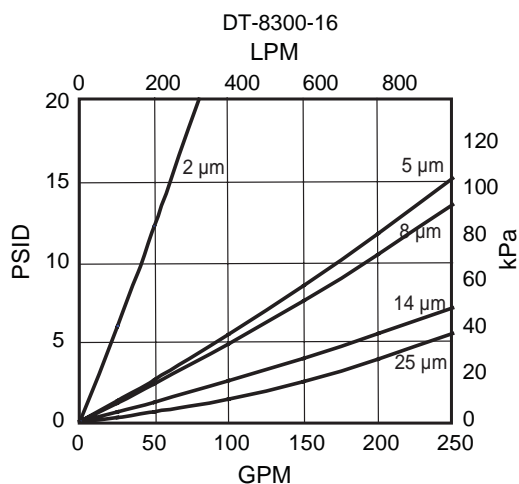
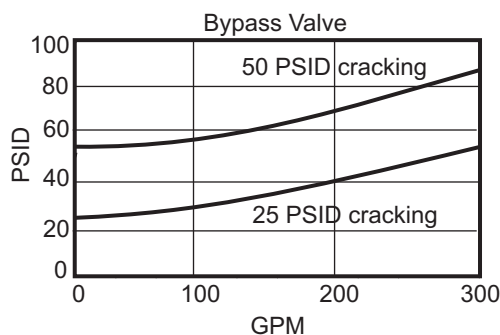
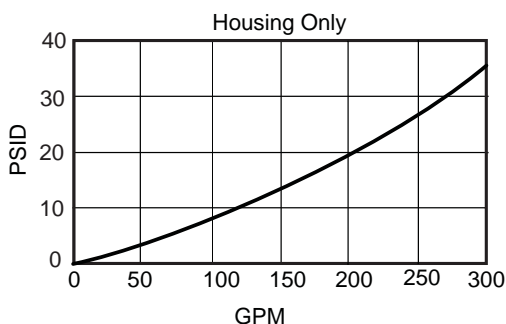
Flow versus Pressure Drop  
150 SUS (32 cst.) oil with specific gravity  $\leq 0.9$

## Viscosity Correction Formula

$$\Delta P_{\text{Element}} = \Delta P_{\text{from curve}} \times \frac{\text{New Viscosity (SUS)}}{150} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P_{\text{Housing}} = \Delta P_{\text{from curve}} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P_{\text{Assembly}} = \Delta P_{\text{Element}} + \Delta P_{\text{Housing}}$$





# DT-042 Ordering Code

Donaldson.

## Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
<b>DT-042</b>	1	B	A	K	D	25
	TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6

Housing shipped without element.

## Select one option from each table below.

(See example shown above.)

TABLE 1  
Housing Length

1	16"
2	39"

TABLE 2  
Bypass Valve

A	No bypass
B	50 psid bypass

TABLE 3  
Indicator

A	Visual Indicator 35 psid
B	Visual Indicator 70 psid
C	Visual/Electrical 35 psid
D	Visual/Electrical 70 psid
N	No indicator

TABLE 4  
Porting

K	3" SAE 4 bolt flange
---	----------------------

TABLE 5  
Element Construction

A	Standard (150 psid)
D	Extended Life (100 psid)

**Please note:** Element selection to be ordered separately.

TABLE 6  
Micron Rating

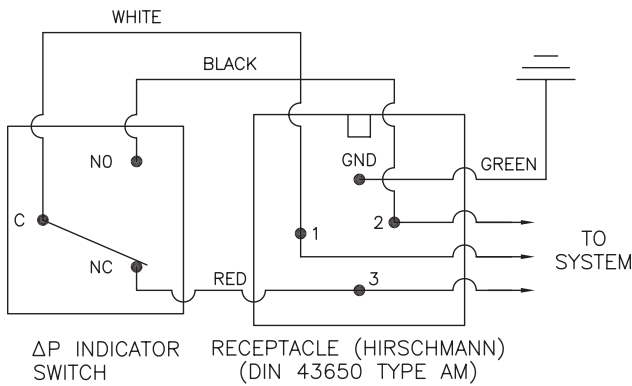
02	Beta 1,000 at < 4 micron
05	Beta 1,000 at 5 micron
08	Beta 1,000 at 8 micron
14	Beta 1,000 at 14 micron
25	Beta 1,000 at 25 micron

## Element Chart

Length	Construction	Micron Rating				
		02	05	08	14	25
1	A	DT-8300-16-2µm	DT-8300-16-5µm	DT-8300-16-8µm	DT-8300-16-14µm	DT-8300-16-25µm
	D	DT-8310-16-2µm	DT-8310-16-5µm	DT-8310-16-8µm	DT-8310-16-14µm	DT-8310-16-25µm
2	A	DT-8300-39-2µm	DT-8300-39-5µm	DT-8300-39-8µm	DT-8300-39-14µm	DT-8300-39-25µm
	D	DT-8310-39-2µm	DT-8310-39-5µm	DT-8310-39-8µm	DT-8310-39-14µm	DT-8310-39-25µm



## Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



**Note:** The female plug (connector) is to be furnished by customer

### Differential Indicators

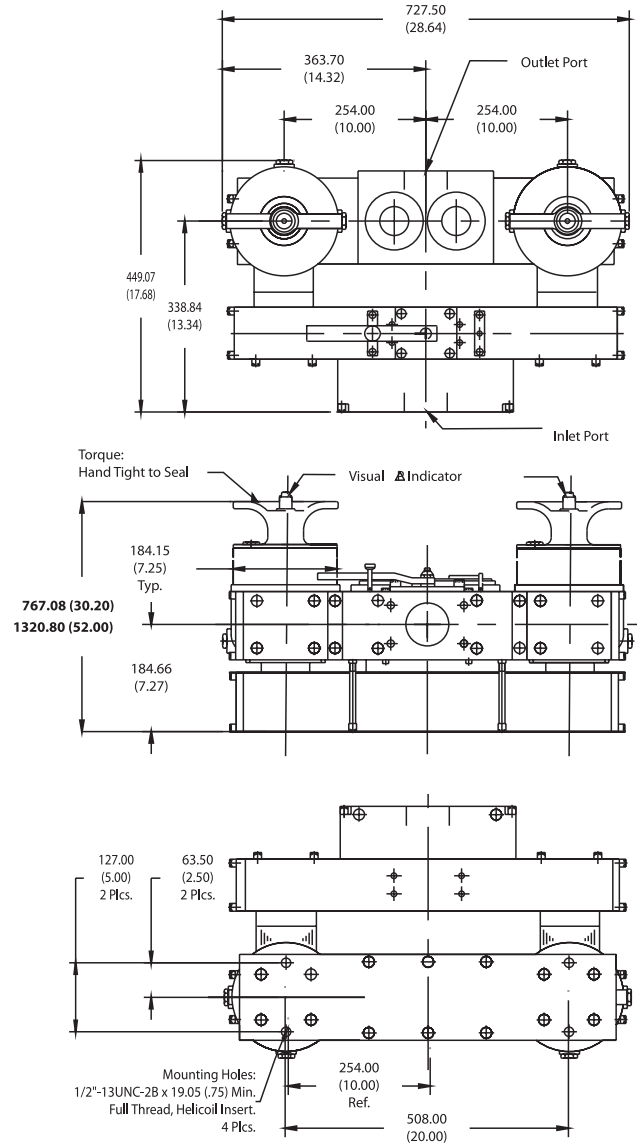
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 70 psid is used with a non-bypass housing.

### Surge Control

This optional feature is used to dampen pressure surges or spikes to avoid premature actuation of the indicator. Surge control delays the indicator response.

### Thermal Lockout

Thermal Lockout (TL), prevents actuation below 60°F and allows actuation above 100°F system operating temperature. Its purpose is to avoid false actuations during periods of high fluid viscosity such as experienced during cold start.



Dimensions: millimeter(inch)





Industrial Filters · Accumulators

## Application

Filtration of pressurised liquids and lubricants.

Direct installation in pipelines.

Direct wear protection of subsequent components and systems.

## Design

The duplex filters consist of two or more in-line filters connected by stub pipes via a control housing with segment change-over.

## Filter Element

Pleated design with optimised pleat density and various filter media.

The filter element is the most important component of the filter in view of prolonged life and wear protection of the system.

Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.

For further detailed information please refer our "Filter Elements" brochure.

A proper filter selection is enabled by our "EPE-FILTERSELECT" software.

## Accessories

### Maintenance Indicators

For monitoring the filter element's contamination status, optical and optical/electrical indicators, with one or two switching points are available.

### Bypass Valve

To protect the filter element during start up and over pressurisation due to clogging.

### Vent Valve

For removing the air from the filter during starting and for safe de-pressurisation.

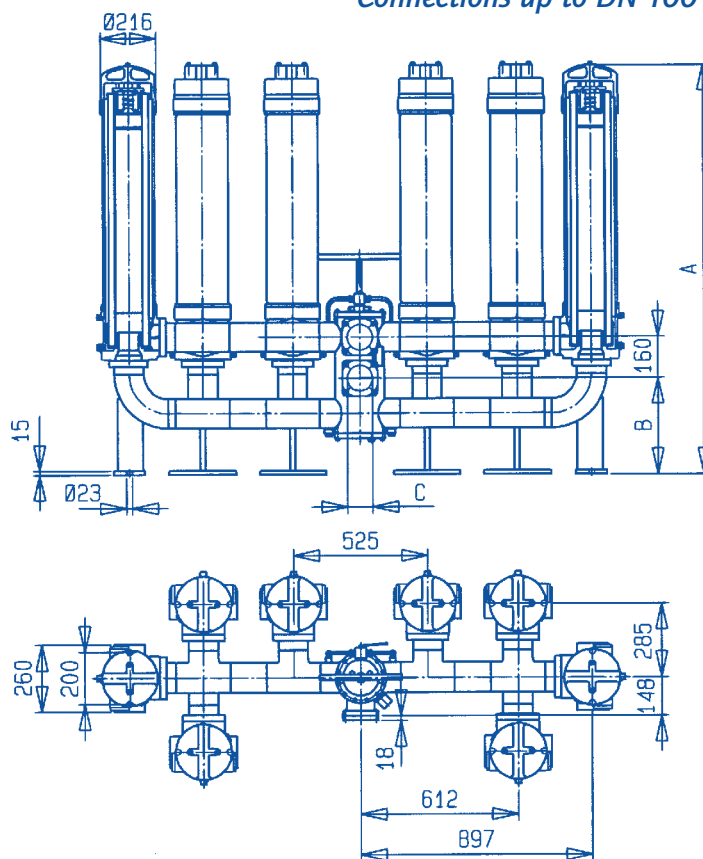
K. & H. Eppensteiner GmbH & Co. KG  
Hardtwaldstraße 43 · D-68775 Ketsch  
P.O. Box 1120 · D-68768 Ketsch  
Phone: +49 62 02/6 03-0  
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Internet: [www.eppensteiner.de](http://www.eppensteiner.de)

# Duplex Filters

## 40 FLD 0146(C)-0274(C)

## 40 FLDN 1001-1004

Operating pressure 40 bar  
Connections up to DN 100



## Assembly of the filter housings

40 FLD 0146(C)	40 FLD 0147(C)	40 FLD 0148(C)	40 FLD 0149(C)
40 FLD 0201(C)	40 FLD 0202(C)	40 FLD 0203(C)	40 FLD 0204(C)
40 FLD 0271(C)	40 FLD 0272(C)	40 FLD 0273(C)	40 FLD 0274(C)
40 FLDN 1001	40 FLDN 1002	40 FLDN 1003	40 FLDN 1004



Type	No. of filters	No. of filter elements	A	B	Connection C
40 FLD 0146(C)	2x1	2x1.0145(C)	930	300	DN 80
40 FLD 0147(C)	2x2	4x1.0145(C)	998	375	DN 100
40 FLD 0148(C)	2x3	6x1.0145(C)	998		
40 FLD 0149(C)	2x4	8x1.0145(C)	998		
40 FLD 0201(C)	2x1	2x1.0200(C)	1280	300	DN 80
40 FLD 0202(C)	2x2	4x1.0200(C)	1356	375	DN 100
40 FLD 0203(C)	2x3	6x1.0200(C)	1356		
40 FLD 0204(C)	2x4	8x1.0200(C)	1356		
40 FLD 0271(C)	2x1	2x1.0270(C)	1522	300	DN 80
40 FLD 0272(C)	2x2	4x1.0270(C)	1590	375	DN 100
40 FLD 0273(C)	2x3	6x1.0270(C)	1590		
40 FLD 0274(C)	2x4	8x1.0270(C)	1590		
40 FLDN 1001	2x1	2x1.1000(C)	930	300	DN 80
40 FLDN 1002	2x2	4x1.1000(C)	998	375	DN 100
40 FLDN 1003	2x3	6x1.1000(C)	998		
40 FLDN 1004	2x4	8x1.1000(C)	998		



Quality assured!

## Ordering Information

Selection of filter size:  
using the computer program  
"EPE-FILTERSELECT".

Special designs available on  
request.

Filter Type		Magnet	Maintenance Indicator			Connection	Material
FLD = Duplex Filter FLDN = Duplex Filter with filter element acc. to DIN 24550		O = Without	O = Without A = Manometer M 010 B = Maintenance indicator opt. G.. A0 00 00P C = Maintenance indicator opt./electr. with equipment connector thread G.. GW 02 00P F = Maintenance indicator with three luminous diodes T.. GW 09 20P Standard switch pressure 2,5 bar			FO = EPE - Square flange	O = Standard

**Filter Assembly** → 40 FLD 0271(C) H10SL - A 00 - 0 7 0 - FO P 0 0

**Seal Kit** → D40 FLD 0271(C) - 0 - FO P 0

Nominal Pressure	Nominal Size		Filtration Grade	Differential Pressure	Filter Element Design	Bypass Valve	Seal	Add. Info
	Filter	Filter element						
40 bar	0146(C)	1.0415(C)	Nominal filter fineness in µm G = Stainless steel wire mesh, cleanable G10 G25 G40 G60 G80 G100 VS = Nonwoven media, non cleanable VS25 VS40 VS60 P = Paper, non cleanable P5 P10 P25  Absolute filtration grade (ISO 4572) in µm H...SL = Micro glass-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glass-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowed differential pressure of the filter element O = 15 bar not possible in coreless design A = 30 bar	O... = Standard-adhesive T = 100°C E... = Special-adhesive T = 160°C  ...O = Standard-material ...Z = Zinc free	O = Without 7 = 3,5 bar  for Filter Element always 0	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	O = Without 8 = Change-over with rigid pressing A = Pressure equalisation line E = Vent valve Z = Inspection certificate  Z = Inspection certificate 5 = Silicone free
	0147(C)							
	0148(C)							
	0149(C)							
Filter Element	0201(C)	1.0200(C)	Absolute filtration grade (ISO 4572) in µm H...SL = Micro glass-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glass-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowed differential pressure of the filter element O = 15 bar not possible in coreless design A = 30 bar	O... = Standard-adhesive T = 100°C E... = Special-adhesive T = 160°C  ...O = Standard-material ...Z = Zinc free	O = Without 7 = 3,5 bar  for Filter Element always 0	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	O = Without 8 = Change-over with rigid pressing A = Pressure equalisation line E = Vent valve Z = Inspection certificate  Z = Inspection certificate 5 = Silicone free
	0202(C)							
	0203(C)							
	0204(C)							
Type:	0271(C)	1.0270(C)	Absolute filtration grade (ISO 4572) in µm H...SL = Micro glass-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glass-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowed differential pressure of the filter element O = 15 bar not possible in coreless design A = 30 bar	O... = Standard-adhesive T = 100°C E... = Special-adhesive T = 160°C  ...O = Standard-material ...Z = Zinc free	O = Without 7 = 3,5 bar  for Filter Element always 0	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	O = Without 8 = Change-over with rigid pressing A = Pressure equalisation line E = Vent valve Z = Inspection certificate  Z = Inspection certificate 5 = Silicone free
	0272(C)							
	0273(C)							
	0274(C)							
1.	1001	1.1000	Absolute filtration grade (ISO 4572) in µm H...SL = Micro glass-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glass-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowed differential pressure of the filter element O = 15 bar not possible in coreless design A = 30 bar	O... = Standard-adhesive T = 100°C E... = Special-adhesive T = 160°C  ...O = Standard-material ...Z = Zinc free	O = Without 7 = 3,5 bar  for Filter Element always 0	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	O = Without 8 = Change-over with rigid pressing A = Pressure equalisation line E = Vent valve Z = Inspection certificate  Z = Inspection certificate 5 = Silicone free
	1002							
	1003							
	1004							
(C) = coreless filter element								

**Filter Element** → 1. 0270(C) H10SL - A - 00 - 0 P -

## Installation, Starting and Maintenance

### Installation

Verify operating pressure on the nameplate is equal or greater than the maximum system pressure. Install the filter using mounting device considering flow direction (direction arrows) and servicing height required for cleaning/replacing filter elements.

### Connection of Electrical Maintenance Indicator

See brochure 64.

### Starting

Move switching lever to central position to fill both filter sides. Switch on system pump. De-aerate filter by opening the vent valve, close when liquid emerges from valve. Move switching lever to filter in use. Switching lever must be moved into final position.

### Maintenance

The filter element is clogged and needs to be replaced or cleaned if the visual indicator's red pin reaches its final position and/or the electrical switch is activated.

### Filter Element Service

Open valve in pressure equalisation valve, move switching lever to opposite direction until final position on clean filter side is reached. Close pressure equalisation valve. Open vent valve and depressurise system in filter out of use. Close vent valve.

Unscrew filter head. Open drain plug and drain filter. Close drain plug. Remove filter element, turning slightly off from its lower spigot in the filter housing.

Check filter housing inside and clean if necessary. Replace filter element H...SL, P..., VS... and AS... . The filter element with G...-media is cleanable. The efficiency of the cleaning process depends on the characteristics of contamination and the final pressure drop prior to servicing / cleaning the element. If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... filter element also needs to be replaced.

Replace filter element in filter housing. Check o-ring and replace in case of damage or wear. Install filter head by turning clockwise by hand. Don't use any tools. Turn back 1/4 turn counter-clockwise. De-aerate filter by opening the vent valve, close when liquid emerges.

### Warning

Assemble and disassemble filter only when system is switched off!

Vessel is under pressure!

Leave pressure equalisation valve closed while filter housing is out of service!

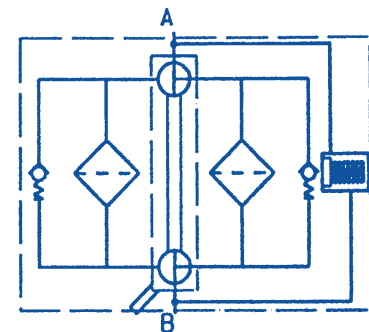
Do not operate switching device while filter housing is out of service!

Do not change maintenance indicator or pressure equalisation valve when filter is under pressure!

Functions and safety warranty only with EPE- spare part!

Service filter only by trained personal!

## Filter Switching Symbol



Numbers of filters  
according to filter type



*Industrial Filters · Accumulators*

## *Duplex Filters*

40 FLDK 0008(C)-0120(C)



*Filters for inline installation  
for continuous operating*

*Ball valve change – over*

*Optimised flow characteristics  
by 3D – computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*

*Operating pressure 40 bar  
Connections up to DN 80*



Quality assured!



## Duplex Filters

40 FLDK 0008(C) - 0120(C)

Operating pressure 40 bar

Operating temperature -10°C to +100°C

Connections up to DN 80

### Application

Filtration of pressurised liquids and lubricants.

Filtration of liquids and gases.

Direct installation in pipelines. Direct wear protection of subsequent components and systems.

Continuous operation due to duplex filter design.

### Design

Two filter housings in cast iron, connected with a ball valve change-over unit with integrated pressure equalisation.

Connections for inlet and outlet on same side mounted vertically at the filters face.

Material: as per spare parts list in this brochure

### Filter Element

Pleated design with optimised pleat density and various filter media. The filter element is the most important component of the filter in view of prolonged life and wear protection of the system.

Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.

For further detailed information please refer our "Filter Elements" brochure.

A proper filter selection is enabled by our "EPE - FILTERSELECT" software.

### Accessories

#### Maintenance Indicators

For monitoring the filter element's contamination status, optical and optical/electrical indicators, with one or two switching points are available.

#### Bypass Valve

To protect the filter element during start up and over pressurisation due to clogging.

#### Vent Valve

For removing the air from the filter during starting and for safe de-pressurisation.

## Performance Characteristics

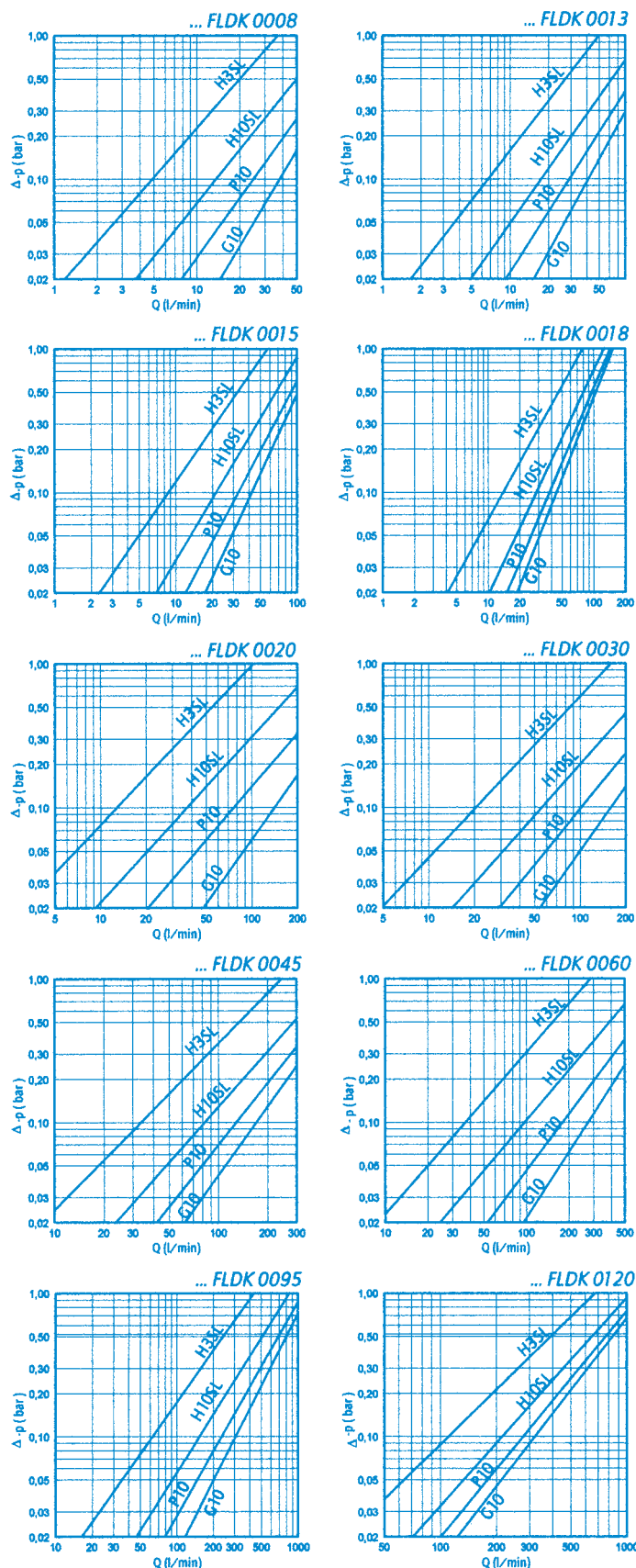
Oil Viscosity: 30 mm<sup>2</sup>/s

Specific gravity: < 0.9 kg/dm<sup>3</sup>

Pressure drop curves for filter assemblies.

Recommended initial  $\Delta p$  pressure drop for filter selection = 0.8 bar

Recommended max. velocity = 3.5 m/s



## Ordering information

Selection of filter size:  
using the computer program  
"EPE - FILTERSELECT"  
or performance characteristics  
in this brochure.  
Special designs available  
on request.

Type	Magnet	Maintenance Indicator	Connection	Material
FLDK= Duplex filter with ball valve change - over	0 = Without	0 = Without A = Maintenance indicator visual B = Maintenance indicator visual/ electrical with electric plug D = Maintenance indicator visual/ electrical with luminous diodes and two switching points  Switching pressure: 2.5 bar  See illustrations of maintenance indicator for detailed information and technical data!	D0 = DIN-flange	0 = Standard

**Filter Assembly** → 40 FLDK 0008 H10SL - A 00 - 0 7 B2,5 - D0 P 0 0

**Seal Kit** → D 40 FLDK 0008 - B - D0 P 0

Pressure	Size	Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Seal	Addit. Info
40 bar	0008 (C) 0013 (C) 0015 (C) 0018 (C) 0020 (C) 0030 (C) 0045 (C) 0060 (C) 0095 (C) 0120 (C)	Nominal filter fineness in µm G = Stainless steel wire mesh, cleanable G10 G25 G40 G60 G80 G100 VS = Nonwoven media, non cleanable VS25 VS40 VS60 P = Paper, not cleanable P5 P10 P25  Absolute filtration grade (ISO 4572) in µm H...SL = Micro glass-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glass-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowable differential pressure of the filter element  A = 30 bar	0... = Standard-adhesive T = 100°C  E... = Special-adhesive T = 160°C  ...0 = Standard-material ...V = Stainless steel 1.4571	Operating pressure 0 = Without 7 = 3.5 bar  Always 0 for filter element	P = Buna N V = Viton E = Ethylene Propylene N = Neoprene	0 = Without 5 = Silicone free E = Vent valve Z = Inspection certificate  5 = Silicone free Z = Inspection certificate

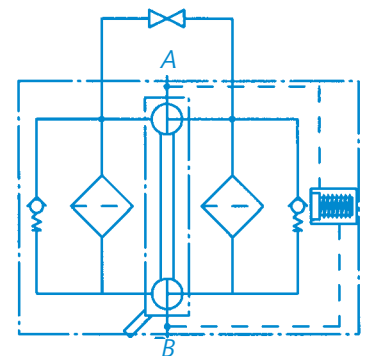
**Filter Element** → 1. 0008 H10SL - A 00 - 0 - P -

## Maintenance Indicator

The maintenance indicator monitors the degree of clogging of the filter elements.  
They are available as visual or visual/electrical displays.  
See "Maintenance Indicator" brochure for technical data.

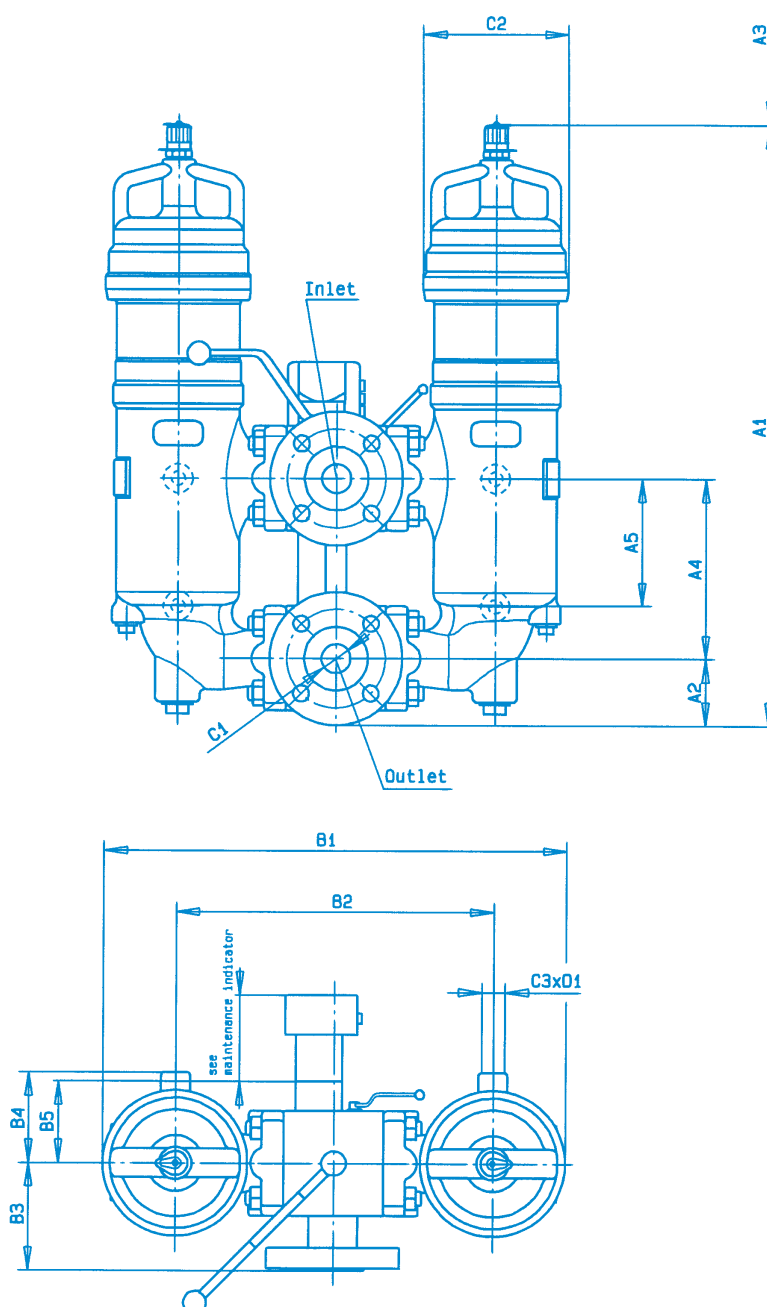
A...Visual	B...Visual/Electrical	D...Visual/Electrical with three 24 V diodes and two switching points
Ordering information A2,5 = G2,5 A0 00 00P*	Ordering information B2,5 = G2,5 GW 02 00P*	Ordering information D2,5 = T2,5 GW 09 20P*
	Switching Symbol 	Switching Symbol 

## Filter Switching Symbol



\*P = Buna N, V = Viton, E = Ethylene Propylene, N = Neoprene possible

## Dimensions



Switch lever indicates operating side

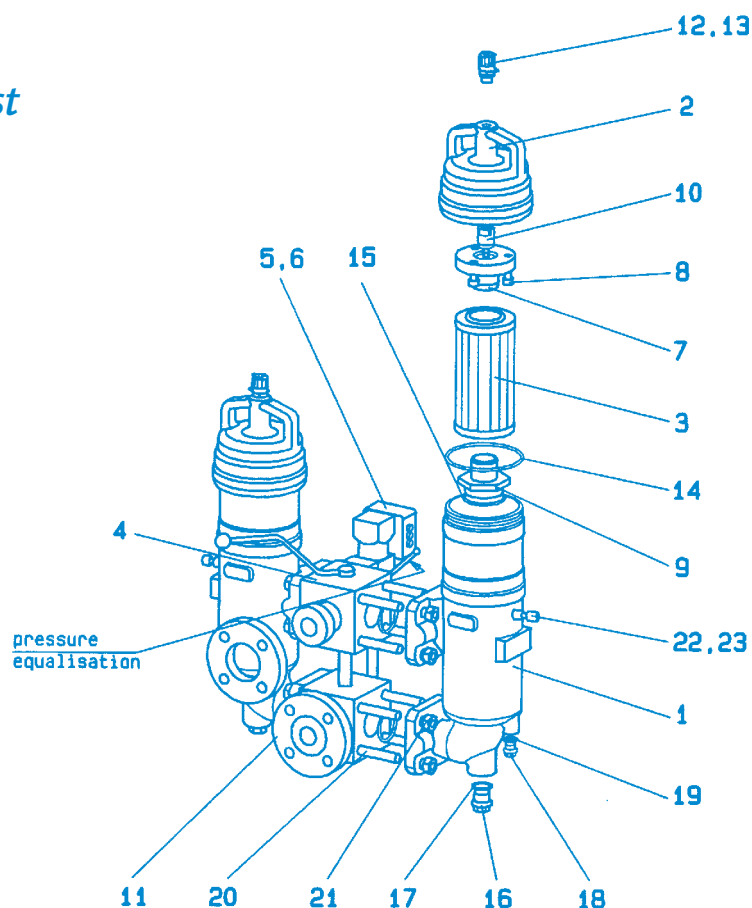
Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	D1
40 FLDK 0008 (C)	2 x 1,5	39	416	95	160	155	110	399	274	92.5	77.5	70	DN 25	ø125	M12	18
40 FLDK 0013 (C)	2 x 2,0	42	506		250											
40 FLDK 0015 (C)	2 x 1,5	39	416		164											
40 FLDK 0018 (C)	2 x 2,0	42	506		254											
40 FLDK 0020 (C)	2 x 4,0	90	584	70	160	210	210	629	375	149	100	85	DN 50	ø158	M16	23
40 FLDK 0030 (C)	2 x 4,0	90			250											
40 FLDK 0045 (C)	2 x 6,0	97			400											
40 FLDK 0060 (C)	2 x 9,0	152	686	100	250	230	230	729	484	155	115	130	DN 80	ø188	M20	22
40 FLDK 0095 (C)	2 x 9,0	152	836		400											
40 FLDK 0120 (C)	2 x 16,0	161	1193		757											

<sup>1)</sup> = weight including standard filter element and maintenance indicator

<sup>2)</sup> = servicing height for filter element replacement



## Spare Parts List



Part	Quantity	Designation	Size	0008(C)	0013(C)	0015(C)	0018(C)	0020(C)	0030(C)	0045(C)	0060(C)	0095(C)	0120(C)
			Material										
1	2	Filter housing	GGG 50	please indicate ordering information "Filter"									
2	2	Filter head	GkAlSi10Mg	please indicate ordering information "Filter"									
3	2	Filter element	various	please indicate ordering information "Filter Element"									
4	1	Ball valve combination	various	please indicate ordering information "Filter"									
5	1	Maintenance indicator	various	please indicate ordering information "Maintenance Indicator"									
6	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"									
7	2	Filter element locator	AlCuMgPb	please indicate ordering information "Filter"									
8	6	Hexagon head cap screw	8.8	Part No. 637							Part No. 652		
9	2	Filter element locator	AlCuMgPb	please indicate ordering information "Filter"									
10	2	Bypass valve or Blanking plug	various	Part No. 5118				Part No. 5360					
				Part No. 793				Part No. 825					
11	2	DIN flange	C22	Part No. 5204				Part No. 5296			Part No. 4969		
12	2	Measuring connection	various	Part No. 1282									
13	2	Sealing ring	Soft iron	please indicate ordering information „Filter“									
14	2	O-ring	Buna N/Viton	please indicate ordering information „Seal Kit“									
15	2	O-ring	Buna N/Viton	please indicate ordering information „Seal Kit“									
16	2	Blanking plug	St	Part No. 789									
17	2	Sealing ring	Soft iron	please indicate ordering information „Seal Kit“									
18	2	Blanking plug	St	Part No. 770									
19	2	Sealing ring	Soft iron	please indicate ordering information „Seal Kit“									
20	16/32	Stud	8.8	Part No. 9587(16x)				Part No. 9586(16x)			Part No. 9586(32x)		
21	16/32	Hexagon nut	5	Part No. 683(16x)				Part No. 684(16x)			Part No. 684(32x)		
22	2	Arrest screw	various	—							Part No. 4844		
23	2	Sealing ring	Soft iron	—							please ind. ordering inf. „Seal Kit“		

## Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality-management-system in accordance with DIN EN ISO 9001.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, LRIS, ABS, BV, DNV, DRIRE, UDT etc.) is available on request.

The stability calculation and testing of the filters proceeds according to existing pressure vessel regulations, as well as in accordance with national and international norms.

The CE - identification mark according to the Pressure Equipment Directive 97/23/EG depends upon the individual application and operating conditions. On request we will classify the filters.



Industrial Filters · Accumulators

## Installation, Starting and Maintenance

### Filter Installation

Verify operating pressure with name plate information.  
Mount the filter housing Part 1 using mounting device considering flow direction (direction arrows) and servicing height required for cleaning/replacing filter elements.

### Connection of Electrical Maintenance Indicator

See brochure 64  
and list acc. this brochure

### Starting

Switch on system pump. Open pressure equalisation.  
De-aerate filter by opening the vent valve Part 12, close when liquid emerges from valve. Leave pressure equalisation open.

### Maintenance

The filter element is clogged and must be changed or cleaned when at operating temperature the red pointer on the maintenance indicator Part 5 is hard against the plastic cap and/or the switching process on the electrical indicator is triggered.

### Filter Element Service

Operate switching lever and switch to filter housing out of service.  
Close pressure equalisation.

De-pressurise filter out of service by opening vent valve Part 12 one turn. Open plugs Part 16 + Part 18 and drain contaminated oil.  
Unscrew filter head Part 2. Remove filter element Part 3 from filter housing Part 1 turning slightly off from its locator in the filter lower part. Close plugs Part 16 + Part 18 and vent valve Part 12. Control cleanliness of filter housing.

Replace filter element H... SL, VS..., AS... and P... , the filter element with G... media is cleanable. The efficiency of the cleaning process depends on the characteristics of contamination and the final pressure drop prior to servicing /cleaning the element. If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... element also needs to be replaced.

Lubricate filter element O-ring and install replaced or cleaned filter element inside filter housing by putting it up to its locator and slightly turning. Take care not to damage pleated filter element matrix during installation in filter housing. Check O-ring Part 14 in filter head, replace in case of damage or wear. Screw on filter head without using a tool until the end of the thread. Turn it back  $\frac{1}{4}$  thread turn.

Open pressure equalisation. De-aerate filter by opening the vent valve Part 12, close when liquid emerges from valve. Leave pressure equalisation open.

### Warning

Assemble and disassemble filter only when system is switched off!

Vessel is under pressure!

Leave pressure equalisation valve closed while filter housing is out of service!

Do not operate switching device while filter housing is out of service!

Do not change maintenance indicator or pressure equalisation valve when filter is under pressure!

Functions and safety warranty only with EPE-spare part!

Service filter only by trained personal!

Technical modifications reserved!

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Industrial Filters · Accumulators

## Inline Filters

40 FLE 0020(C) - 0270(C)

40 FLEN 0160 - 1000

100 FLE 0020(C) - 0120(C)

100 FLEN 0160 - 0630



*Filters for Inline installation*

*Designed for offline filtration*

*Installation of environmental friendly  
ECOPore Filter Elements with reusable  
core ( central tube )*

*Large filter area*

*Optimised flow characteristics  
by 3D - computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*

*Operating pressure: 40/100 bar*

*Connection up to SAE 4"*

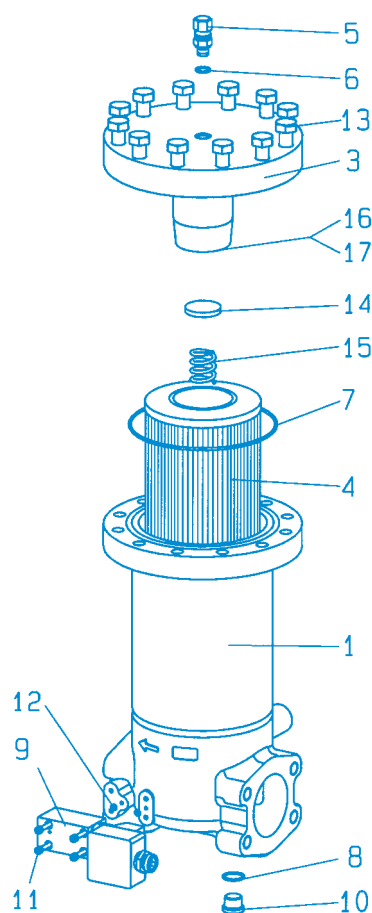


Quality assured!



## Spare Parts List

100 FLE 0020(C) - 0120(C)  
100 FLEN 0160 - 0630



			Size FLE FLEN	0020(C) 0160	0030(C) 0250	0045(C)	0060(C) 0400	0095(C) 0630	00120(C)
Part	Quantity	Designation	Material						
1	1	Filter housing	various	please indicate ordering information „Filter“					
3	1	Filter head	various	please indicate ordering information „Filter“					
4	1	Filter element	various	please indicate ordering information „Filter Element“					
4.1	1	Core	St	only for ECOPore® „C“ indicate ordering information „Filter“					
5	1	Vent valve	Bronze	Part No. 848					
6	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“					
7	1	O-ring	Buna N	please indicate ordering information „Seal Kit“					
8	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“					
9	1	Maintenance indicator	various	please indicate ordering information „Maintenance indicator“					
10	1	Plug	St	Part No. 789					
11	4	Hexagon head cap screw	8.8	Part No. 633					
12	2	O-ring	Buna N	please indicate ordering information „Seal Kit“					
13	8	Hexagon screw	8.8	Part No. 602			—		
	12			—			Part No. 603		
14	1	Valve disk	various	please indicate ordering information „Filter“					
15	1	Valve disk	1.0600						
16	1	Valve spring	St						
17	1	Retaining ring	Spring steel						

## Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality management system in accordance with DIN EN ISO 9001.

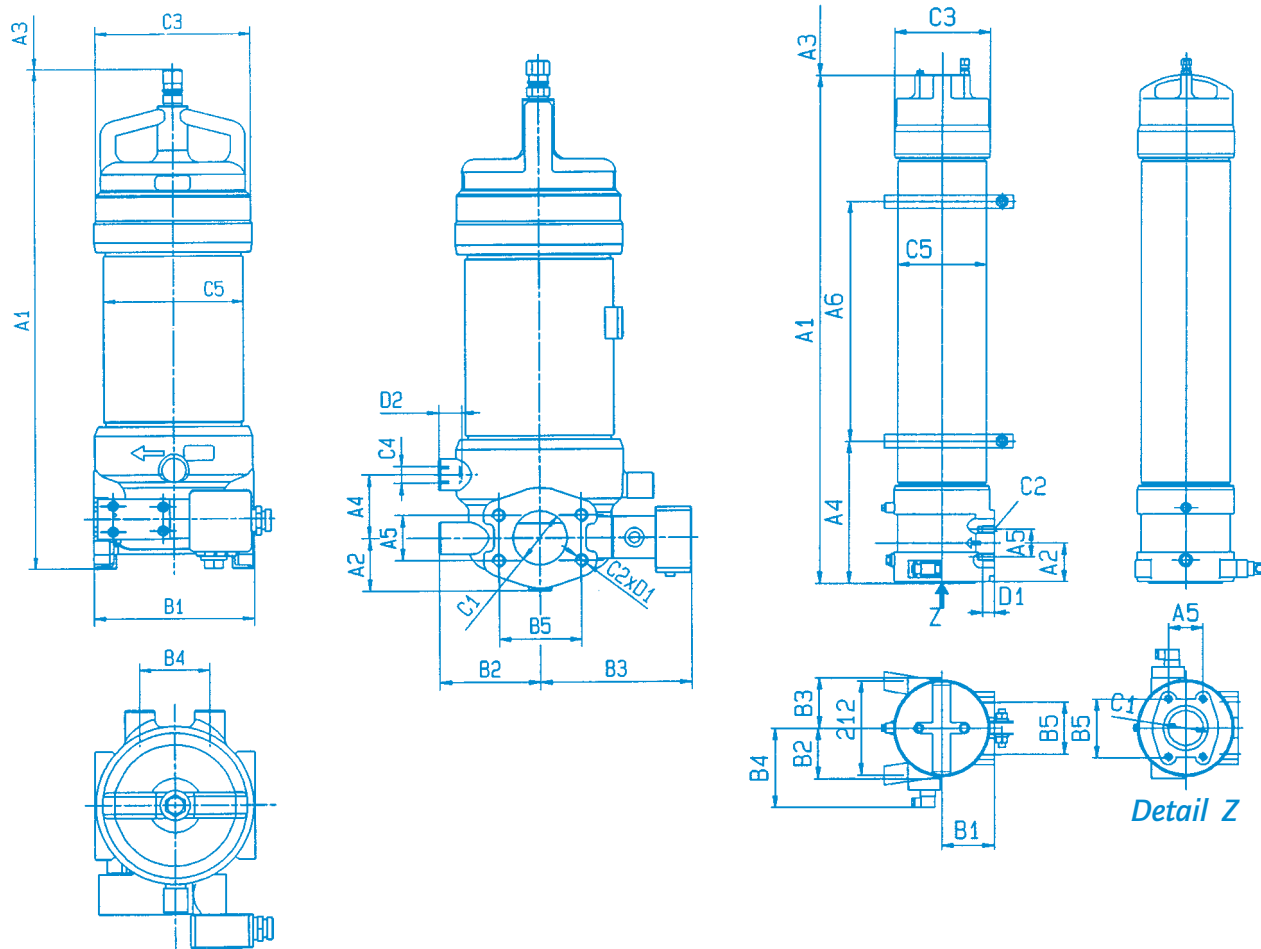
The stability calculation and testing of the filters proceeds according to existing pressure vessel regulations, as well as in accordance with national and international norms.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, LRIS, ABS, BV, DNV, DRIRE, UDT etc.) is available on request.

## Dimensions

40 FLE 0020(C) - 0120(C)  
40 FLEN 0160 - 0630

40 FLE 0145(C) - 0270 (C)  
40 FLEN 1000



### Filter housing for filter element in accordance with EPE standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	A 6	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
40 FLE 0020 (C)	1,4	12	411	49,5	160	60	42,9	-	160	95	143	70	77,8	SAE2"	M12	Ø158	M16	Ø140	20	22
40 FLE 0030 (C)	2,7	13,2	501		250									3000psi						
40 FLE 0045 (C)	4,8	19	651		400									DN50						
40 FLE 0060 (C)	4	19,5	543	61,5	250	70	61,9	-	195	105	155	90	106,4	SAE3"	M16	Ø188	M16	Ø170	30	22
40 FLE 0095 (C)	7,1	21,9	693		400									3000psi						
40 FLE 0120 (C)	14	27,4	1050		750									DN80						
40 FLE 0145 (C)	12	50	553	90	400	260	77,8	65	118	113	113	183	130	SAE4"	M16	Ø216	-	Ø200	26	-
40 FLE 0200 (C)	22	60	911		758									3000psi						
40 FLE 0270 (C)	28	70	1145		992									DN100						

### Filter housing for filter element in accordance with DIN 24550

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	A 6	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
40 FLEN0160	1,4	12	411	49,5	160	60	42,9	-	160	95	143	70	77,8	SAE2"	M12	Ø 158	M16	Ø 140	20	22
40 FLEN0250	2,7	13,2	501		250									SAE3000psi						
40 FLEN0400	4	19,5	543		400									DN 50						
40 FLEN0630	7,1	21,9	693	61,5	250	70	61,9	-	195	105	155	90	106,4	SAE3"	M16	Ø 188	M16	Ø 170	30	22
					400									SAE3000psi						
					750									DN 80						
40 FLEN1000	12	50	553	90	400	260	77,8	65	118	113	113	183	130	SAE4"	M16	Ø 216	-	Ø 200	26	-
														SAE3000psi						
														DN100						

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

<sup>2)</sup> = Construction dimension for filter element change

## Inline Filter

40/100 FLE 0020(C) - 0270(C)  
 40 FLEN 0160 - 1000  
 100 FLE 0020(C) - 0120(C)  
 100 FLEN 0250 - 0630  
 Operating pressure 40/100 bar  
 Operating temperature -10°C bis +100°C  
 Connection up to SAE 4"

### Application

Filtration of pressurised liquids and lubricants.

Filtration of liquids and gases.

Direct installation in pipelines. Direct wear protection of subsequent components and systems.

Offline filtration with high service time.

### Design:

40 FLE 0020 (C) - 0270 (C) and  
 40 FLEN 0160 - 1000

Modular design constructed out of three parts including filter bowl with inlet and outlet, filter body and threaded filter head.

100 FLE 0020 (C) - 0120 (C) and  
 100 FLEN 0160 - 0630

Two part design out of filter housing with inlet and outlet and flange mounted filter cover.

### Filter Element

Pleated design with optimised pleat density and various filter media. The filter element is the most important component of the filter in view of prolonged life and wear protection of the system.

Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.

For further detailed information please refer our "Filter Elements" brochure.

A proper filter selection is enabled by our "EPE - FILTERSELECT" software.

### Accessories

#### Maintenance Indicators

For monitoring the filter element's contamination status, optical and optical/electrical indicators, with one or two switching points are available.

#### Bypass Valve

To protect the filter element during start up and over pressurisation due to clogging.

#### Vent valve

For removing the air from the filter during starting and for safe de-pressurisation.

## Performance Characteristics

Oil Viscosity 30 mm<sup>2</sup>/s

Specific gravity: < 0,9 kg/dm<sup>3</sup>

Pressure drop curves for filter assemblies  
 recommended initial  $\Delta p$  for filter selection

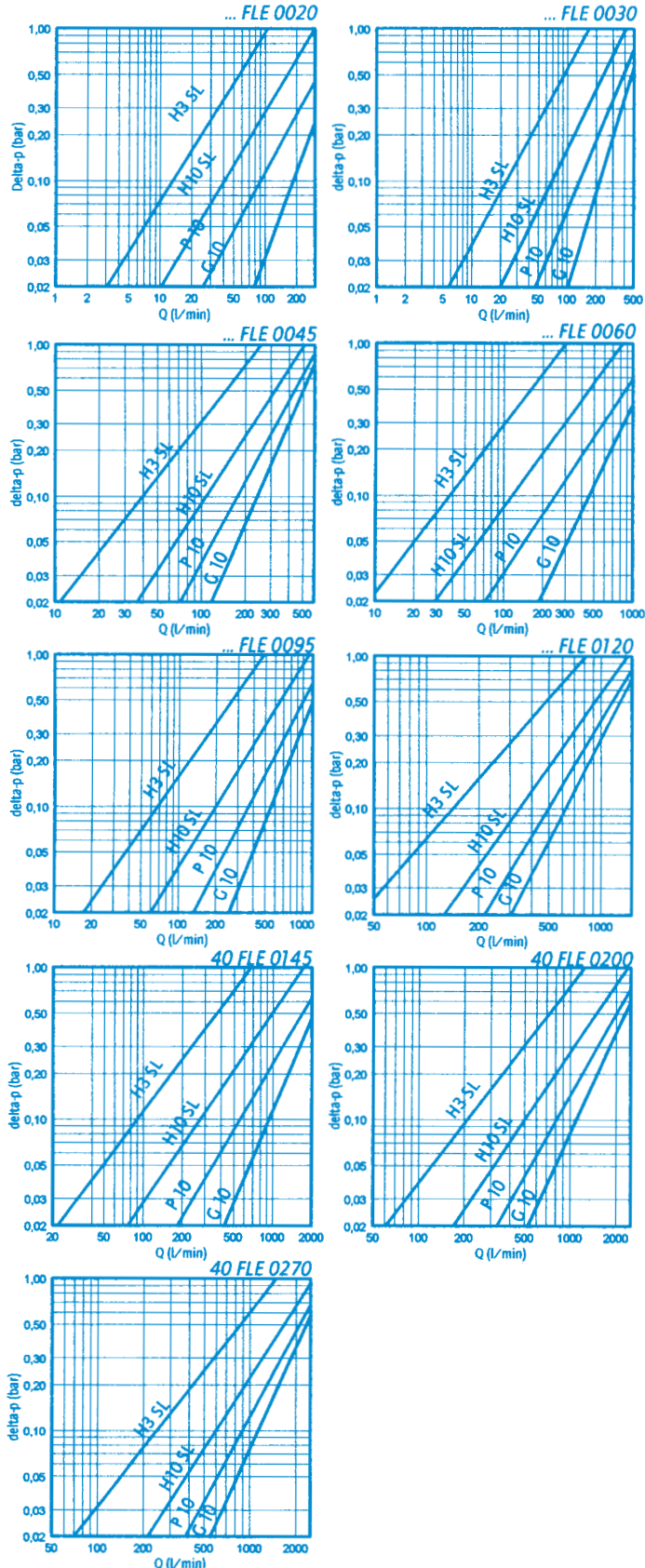
40 FLE/FLEN: 0,8 bar

100 FLE/FLEN: 1,5 bar

recommended max. velocity

40 FLE/FLEN: 3,5 m/s

100 FLE/FLEN: 4,0 m/s





## Ordering code

Identification of filter size:

Using the computer programme

„EPE-FILTERSELECT“ or the performance characteristic lines in this brochure.

Special models are available on request.

Type	Magnet	Maintenance Indicator	Connection	Material
FLE= Inline filter with filter element according to EPE Standard	0= without	0...=without 40 FLE 0145 - 0270, 40 FLEN 1000 B...=Maintenance indicator optical C...=Maintenance indicator optical/ electrical with electric plug D...=Maintenance indicator with three 24V diodes and two switch points	SO= SAE-Flange	0=standard
FLEN= Inline filter with filter element according to DIN 24550		40/100 FLE 0020 - 0120, 40/100 FLEN 0160 - 0630 A...=Maintenance indicator optical B...=Maintenance indicator optical/ electrical with electric plug C...=Maintenance indicator with three 24V diodes two switch points Standard switch pressure: 2,5 u. 5,0 bar For extensive ordering information and technical data refer to on brochure "Maintenance indicator"		

Filter	Seal Kit	Pressure	Size	Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Dichtung	Erg. Angaben
40	D40	40 bar 100 bar	40/100 FLE 0020(C) 0030(C) 0045(C) 0060(C) 0095(C) 0120(C) only for 40 FLE 0145(C) 0200(C) 0270(C) only for 40/100 FLEN 0160 0250 0400 0630 1000 (C)=coreless filter element	Nominal filter fineness in µm G = stainless steel wire mesh cleanable G10, G25, G40, G60, G80, G100 VS = nonwoven, not cleanable VS25, VS40, VS60 P = Paper, not cleanable P5, P10, P25 Absolute filter fineness (ISO 4572) in µm H...SL= Microglass, not cleanable H1SL, H3SL, H6SL, H10SL, H20SL AS = Microglass, water-absorbent, not cleanable AS1, AS3, AS6, AS10, AS20	Max. allowable differential pressure of the filter element A= 30 bar 0= 15 bar only for 0145 0200 0270	0...= Standard-adhesive T=100°C E...= Special-adhesive T=160°C ...0= Standard material ...Z= Free of zinc	0= without 7= 3,5 bar	P= Buna N V= Viton E= Ethylene-propylene N= Neoprene	0= without 1= "A" Indicator for 40 FLE 0145(C)-0270(C) 2= "B" Indicator for 40 FLE 0145(C)-0270(C) 5= silicon free B= fixing clamp E= vent valve Z= documentation 5= silicon free Z= documentation
FLE 0270 H10SL - 0 00 - 0 0 B2,5 - SO P 0 0	FLE 0270 - B - SO P 0								

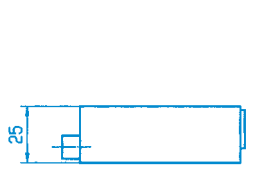
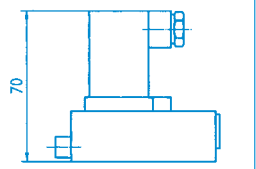
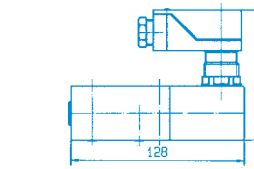
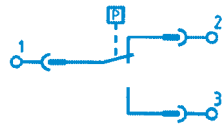
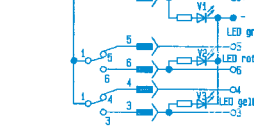
Filter Element	Pressure	Size	Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Dichtung	Erg. Angaben
1.	40 bar 100 bar	40/100 FLE 0020(C) 0030(C) 0045(C) 0060(C) 0095(C) 0120(C) only for 40 FLE 0145(C) 0200(C) 0270(C) only for 40/100 FLEN 0160 0250 0400 0630 1000 (C)=coreless filter element	Nominal filter fineness in µm G = stainless steel wire mesh cleanable G10, G25, G40, G60, G80, G100 VS = nonwoven, not cleanable VS25, VS40, VS60 P = Paper, not cleanable P5, P10, P25 Absolute filter fineness (ISO 4572) in µm H...SL= Microglass, not cleanable H1SL, H3SL, H6SL, H10SL, H20SL AS = Microglass, water-absorbent, not cleanable AS1, AS3, AS6, AS10, AS20	Max. allowable differential pressure of the filter element A= 30 bar 0= 15 bar only for 0145 0200 0270	0...= Standard-adhesive T=100°C E...= Special-adhesive T=160°C ...0= Standard material ...Z= Free of zinc	0= without 7= 3,5 bar	P= Buna N V= Viton E= Ethylene-propylene N= Neoprene	0= without 1= "A" Indicator for 40 FLE 0145(C)-0270(C) 2= "B" Indicator for 40 FLE 0145(C)-0270(C) 5= silicon free B= fixing clamp E= vent valve Z= documentation 5= silicon free Z= documentation
FLE 0270 H10SL - 0 00 - 0 0 B2,5 - SO P 0 0								

## Maintenance Indicator

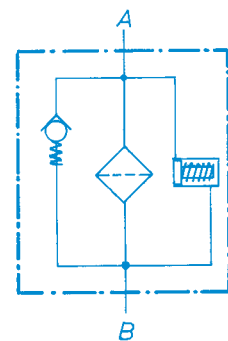
The maintenance indicator monitors the degree of clogging of the filter elements.

They are available as optical or optical/electrical displays.

See "Maintenance Indicator" brochure for technical data.

		
A...optical B...optical	B...optical/electrical C...optical/electrical	C/D...optical/electrical with three 24 V diodes and two switching points
Ordering information A2,5 = F2,5 A0 00 00P* B2,5 = F2,5 A0 00 00P*	Ordering information B2,5 = F2,5 GW 02 00P* C2,5 = F2,5 GW 02 00P*	Ordering information C2,5 = R2,5 GW 09 Z0P* D2,5 = R2,5 GW 09 Z0P*
	Switching Symbol	Switching Symbol
		

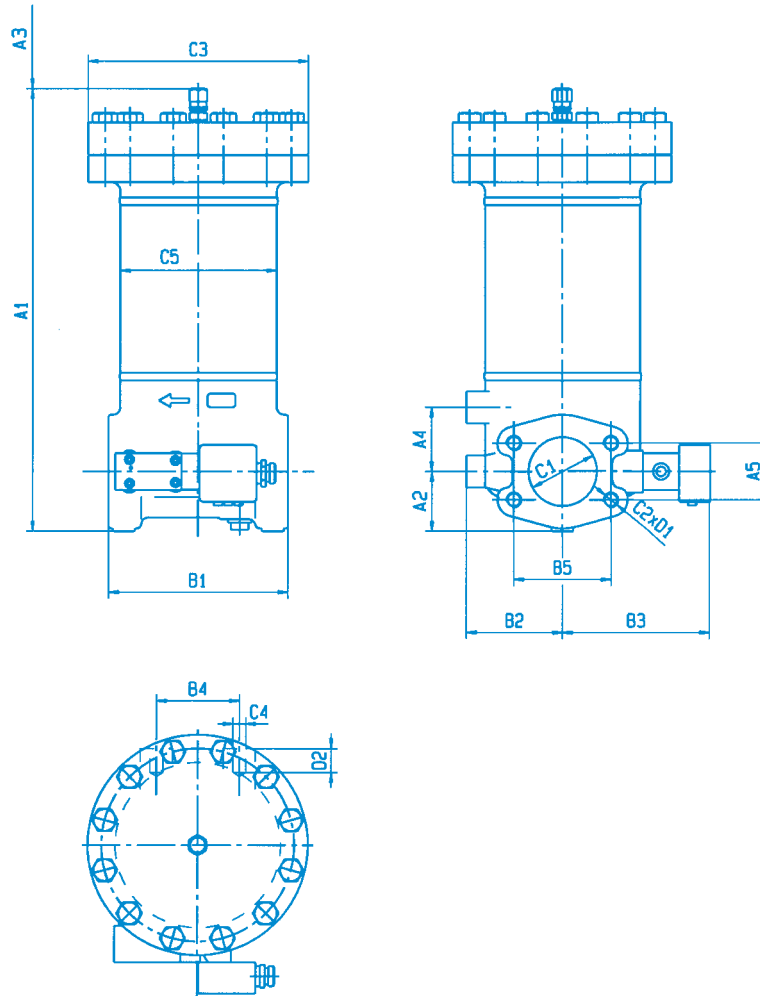
## Filter Switching Symbol



\*P = Buna N; V = Viton, E = Ethylene Propylene, N = Neoprene possible

## Dimensions

100 FLE 0020(C) - 0120(C)  
100 FLEN 0160 - 0630



### Filter housing for filter element in accordance with EPE standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
100 FLE 0020(C)	2,1	22,4	351		160								SAE2"						
100 FLE 0030(C)	3,2	28	441	50	250	60	42,9	160	95	144	70	77,8	3000psi	M 12	Ø200		Ø140	20	
100 FLE 0045(C)		29	591		400								DN50			M 16			22
100 FLE 0060(C)	5,1	34	482		250								SAE3"						
100 FLE 0095(C)	7,8	38,3	632	65	400	70	61,9	195	105	158	90	106,4	3000psi	M 16	Ø240		Ø170	30	
100 FLE 0120(C)	14,3	49,2	989		750								DN80						

### Filter housing for filter element in accordance with DIN 24550

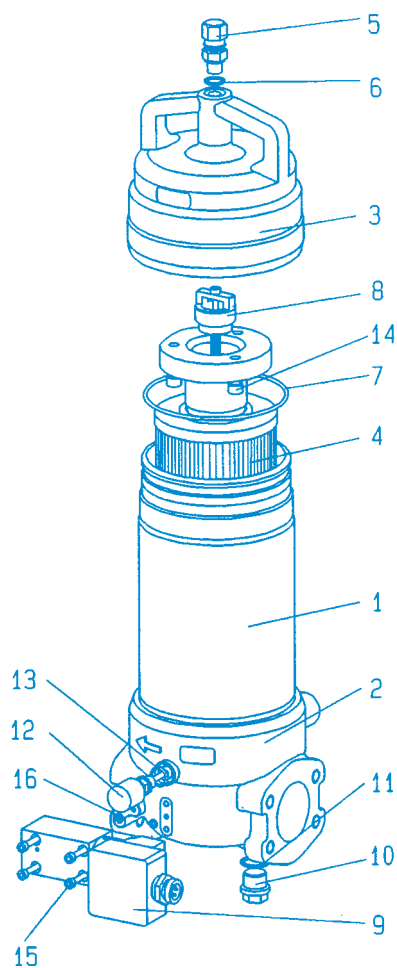
Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
100 FLEN 0160	2,1	22,4	351	50	160	60	42,9	160	95	144	70	77,8	SAE2"						
100 FLEN 0250	3,2	28	441		250								3000psi	M 12	Ø200		Ø140	20	
100 FLEN 0400	5,1	34	482		400								DN50			M 16			22
100 FLEN 0630	7,8	38,3	632	65	400	70	61,9	195	105	158	90	106,4	SAE3"	M 16	Ø240		Ø170	30	
													3000psi						
													DN80						

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

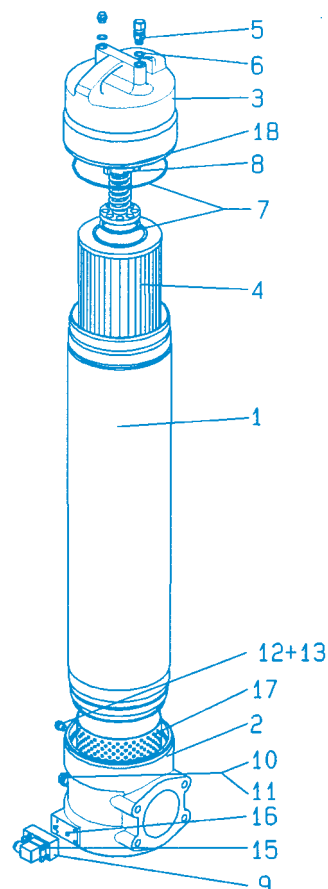
<sup>2)</sup> = Construction dimension for filter element change

## Spare Parts List

40 FLE 0020(C) - 0120(C)  
40 FLEN 0160 - 0630



40 FLE 0145(C) - 0270(C)  
40 FLEN 1000



			Size FLE FLEN	0020(C) 0160	0030(C) 0250	0045(C)	0060(C) 0400	0095(C) 0630	00120(C)	0145(C) 1000	0200(C)	0270(C)
Port	Quantity	Designation	Material									
1	1	Filter housing	various	please indicate ordering information „Filter“								
2	1	Filter lower part	various	please indicate ordering information „Filter“								
3	1	Filter head	various	please indicate ordering information „Filter“								
4	1	Filter element	various	please indicate ordering information „Filter Element“								
4.1	1	Core	St	only for ECOpore® „C“ indicate ordering information „Filter“								
5	1	Vent valve	Bronze	Part No. 848								
6	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
7	3	O-ring	Buna N	please indicate ordering information „Seal Kit“								
8	1	Bypass-valve	various	Part No. 5360							please indicate ordering information „Filter“	
9	1	Maintenance indicator	various	please indicate ordering information „Maintenance indicator“								
10	1	Plug	St	Part No. 789								
11	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
12	1	Locking screw	various	Part No. 4844								
13	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
14	3	Hexagon head cap screw	8.8	Part No. 637			Part No. 652			—		
15	4	Hexagon head cap screw	8.8	Part No. 633								
16	2	O-ring	Buna N	please indicate ordering information „Seal Kit“								
17	1	Protecting basket	St	—							Part No. 4736	
18	1	Plug	St	—							Part No. 795	





**Industrial Filters · Accumulators**

## **Installation, Starting and Maintenance**

### **Installation**

Verify operating pressure with name plate information.

Mount the filter assembly using mounting holes on the filter housing (Part 1) considering flow direction (direction arrows) and servicing height required for cleaning/replacing elements.

Switch of system pump. Remove dust caps from filter inlet and outlet, fit filter into the pipe avoiding tension stress on existing pipework.

### **Connection of electrical maintenance indicator**

Connect indicator using the three wired cable.

Please verify electrical ratings on the indicators (Part 9) name plate.

- |            |                                  |
|------------|----------------------------------|
| 1. Closer  | 1 (black) + 3 (blue)             |
| 2. Opener  | 1 (black) + 2 (brown)            |
| 3. Changer | 1 (black) + 2 (brown) + 3 (blue) |

### **Starting**

Switch on service pump.

Ventilate filter by opening the vent valve (Part 5), close when operating liquid appears.

### **Maintenance**

The filter element is clogged and must be changed or cleaned when at operation temperature the red pointer on the maintenance indicator (Part 9) is hard against the plastic cap and / or the switching process on the electrical indicator is triggered.

### **Filter element service**

Switch of system pump.

Open vent valve (part 5) and depressurize system.

Open plug (part 10) and drain contaminated oil from filter housing.

Unscrew filter upper part / filter cover (part 3) and remove filter element from housing turning slightly off its locator in the filter lower part.

Screw in plug (part 10).

Replace filter element H...SL, P... and VS.... The filter element with G... media is cleanable.

The efficiency of the cleaning process depends on the characteristics of contamination and the final pressure drop prior to servicing / cleaning the element. If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... element also needs to be replaced.

Lubricate filter element O-ring and install replaced or cleaned filter element inside filter housing by putting it up to its locator and slightly turning.

Take care not to damage pleated filter element matrix during installation in filter housing. Remove the filter element's polyethylene protection sleeve when operation temperature is above 60°C or synthetic oil is used.

Check O-ring (part 7) in filter housing, replace in case of damage or wear. Screw on filter head without using a tool until the end of the thread. Turn it back 1/4 thread turn. (40 FLE...). Assemble filter cover with hexagon screw (100 FLE ...).

Operate filter as describe above.

Filter element service when using coreless EPE ECOPore® filter elements. Remove EPE ECOPore® filter element by slightly turning from the supporting tube. The supporting tube is re-usable and remains inside the filter housing.

Put on new EPE ECOPore® filter element over the supporting tube.

### **Warning**

Assemble and disassemble filter only when system is switched off!

Vessel is under pressure!

Leave pressure equalisation valve closed while filter housing is out of service!

Do not change maintenance indicator or pressure equalisation valve when filter is under pressure!

Functions and safety warranty only with EPE-spare part!

Service filter only by trained personal!

Technical modifications reserved!

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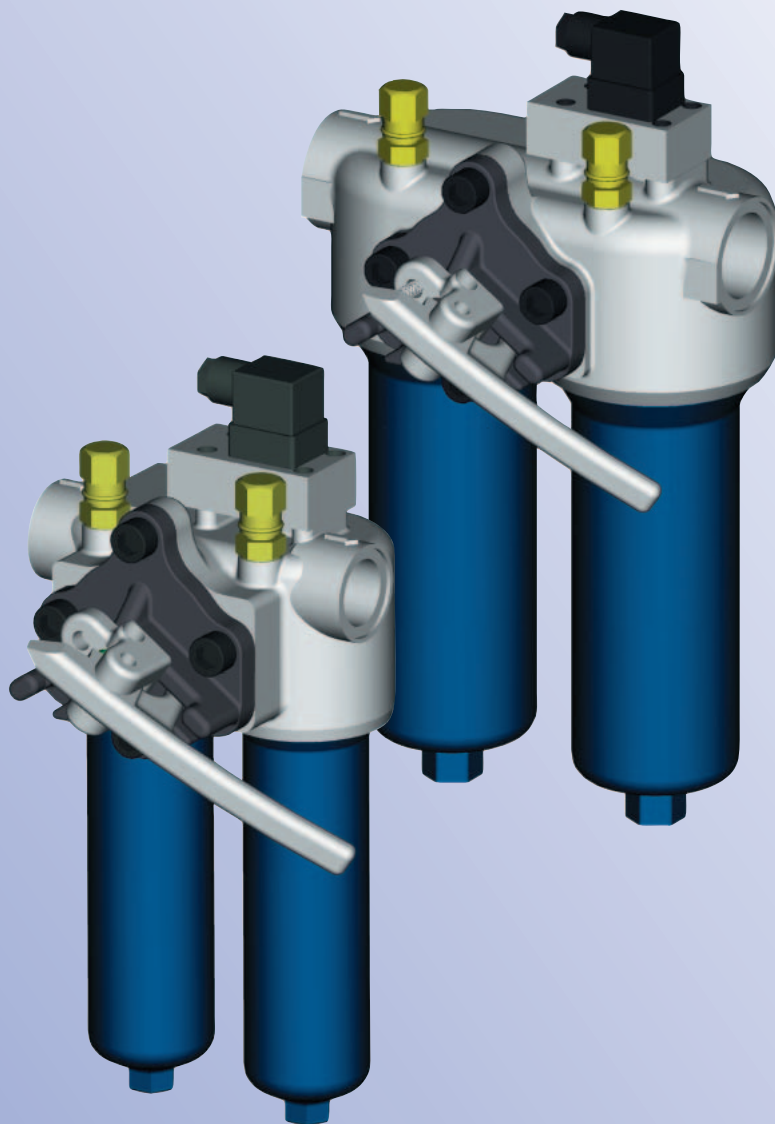


*Industrial Filters · Accumulators*

## *Duplex Filters*

*40/160 LD 0003 - 0045*

*40/160 LDN 0040 - 0400*



*Filters for inline installation  
for continuous operation*

*With integrated pressure  
equalisation valve*

*Optimised flow characteristics  
by 3D - computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*

*Operation pressure 40/160 bar  
Connection up to SAE 1½"*



**Quality assured!**

## Duplex Filters

40/160 LD 0003 - 0045

40/160 LDN 0040 - 0400

Operating pressure 40/160 bar

Operating temperature  $-10^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$

Connection up to SAE  $1\frac{1}{2}"$

### Application

Filtration of hydraulic fluids and lubricants.

Filtration of liquids.

Direct installation in pipelines to provide wear protection of subsequent components and systems.

### Design

Filter Head with inlet & outlet ports and spigots to locate filter elements.

Screwed Filter Bowl.

Materials: See spare parts list in this brochure.

### Filter Element

Pleated design with optimal pleat density and various filter material.

The filter element is the most important part of the system "Filter" with respect to availability and corrosion protection for the installation.

The deciding factors for selection are the degree of purity of the operating medium, the initial differential pressure, and the dirt retaining capacity.

Further details can be found in our brochure "Filter Elements".

Our computer programme

"EPE-FILTERSELECT" enables an optimal filter selection.

### Accessories

#### Maintenance Indicator

These monitor the degree of clogging of the filter elements and are available as visual or visual/electric displays with one or two shift points.

#### Bypass Valve

For the protection of the filter elements during cold start and when the differential pressure is exceeded due to clogging.

#### Vent Valve

For venting air from the filter during start up and for safe depressurisation.

## Performance Characteristics

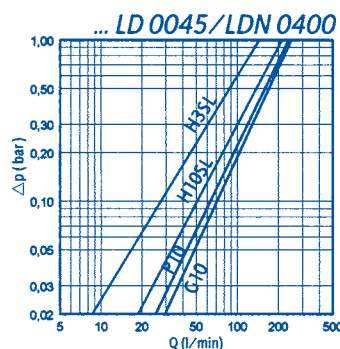
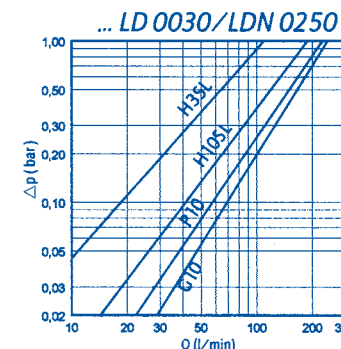
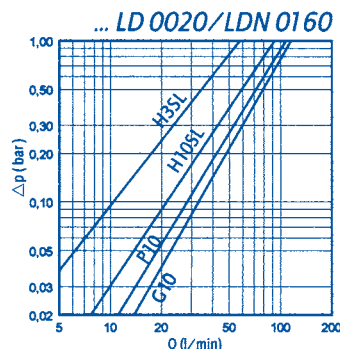
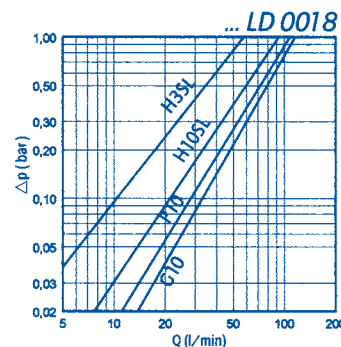
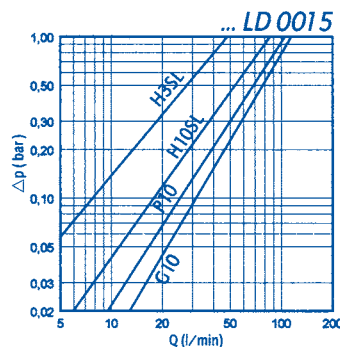
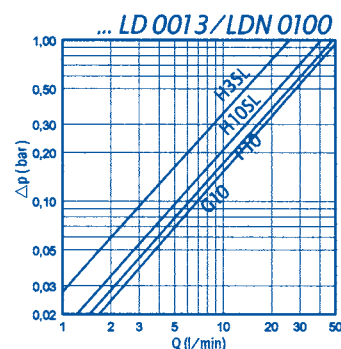
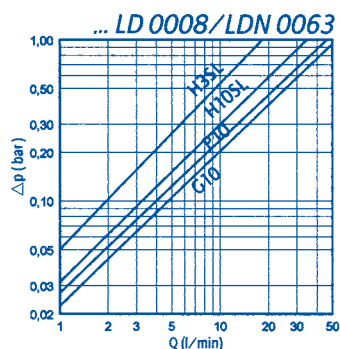
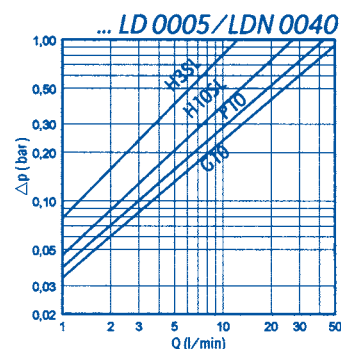
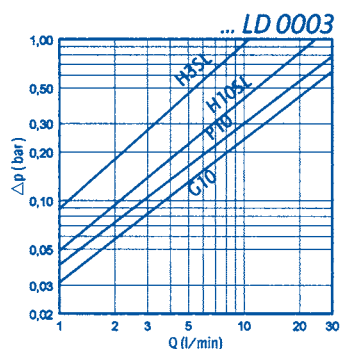
$\Delta p$ -Q-characteristic lines for complete

filters recommended start  $\Delta p$  for layout = 0.8 bar

recommended velocity for layout = 3.5 m/s

Oil Viscosity: 30 mm<sup>2</sup>/s

Specific gravity < 0.9 kg/dm<sup>3</sup>





## Ordering code

Identification of filter size:  
Using the computer  
programme  
"EPE- FILTERSELECT" or the  
performance characteristic  
lines in this brochure.  
Special models are available  
on request

Type	Magnet	Maintenance Indicator	Connection	Material
LD = duplex filter with filter element according to EPE Standard  LDN = duplex filter with filter element according to DIN 24550	0 = without	0 = without A = Maintenance visual B = Maintenance visual/elect. with equipment connector thread D = Service display visual/elect. with luminous diodes and two shift points  Enter switching pressure: 2,5 bar for 40 LD and LDN 5,0 bar for 160 LD and LDN  See illustrations of maintenance indicator for detailed information and technical data.	00 = pipe thread  50 = SAE- flange	0 = Standard

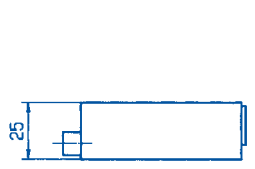
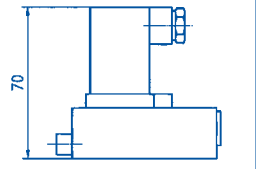
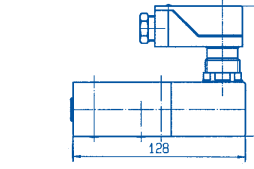
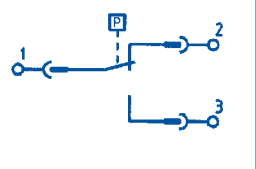
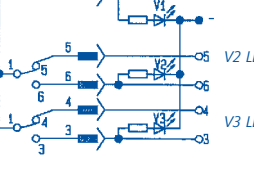
**Filter** → 160 LD 0013 H10SL - A 00 - 0 9 D5,0 - 00 P 0 0  
**Seal Kit** → D 160 LD 0013 - D - 00 P 0

Pressure	Size	Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Seal	Addit. Info
40 bar 160 bar	40/160 LD... 0003* 0005 0008 0013 0015 0018 0020 0030 0045	Nominal filter fineness in µm G = Stainless steel meshing, cleanable G10 G25 G40 G60 G80 G100 VS = bonded fabric, not cleanable VS25 VS40 VS60 P = Paper, not cleanable P5 P10 P25 Absolute filter to (ISO 4572) in µm H...SL = Microglass, not cleanable H1SL H3SL H6SL H10SL H20SL AS = Microglass, water-absorbent, not cleanable AS1 AS3 AS6 AS10 AS20	Max. allowable differential pressure of the filter element  A = 30 bar B = 330 bar	0... = Standard- adhesive T = 100°C  E... = Special- adhesive T = 160°C  ...0 = Standard material ...Z = Free of zinc	opening pressure 0 = Without  7 = 3,5 bar for 40 LD and 40 LDN  9 = 7,0 bar for 160 LD and 160 LDN  Always 0 for filter element	P = Buna N V = Viton E = Ethylene- propylene N = Neoprene	0 = without 5 = silicon free E = ventilation valve Z = inspection certificate  5 = silicon free Z = inspection certificate

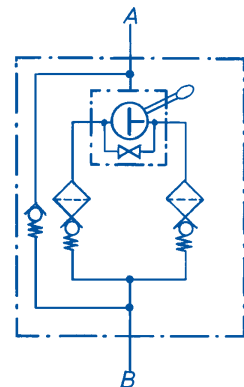
**Filter Element** → 2. 0013 H10SL - A 00 - 0 - P -

## Maintenance Indicator

The maintenance indicator monitors the degree of clogging of the filter elements.  
They are available as visual or visual/electrical displays.  
See "Maintenance Indicator" brochure for technical data.

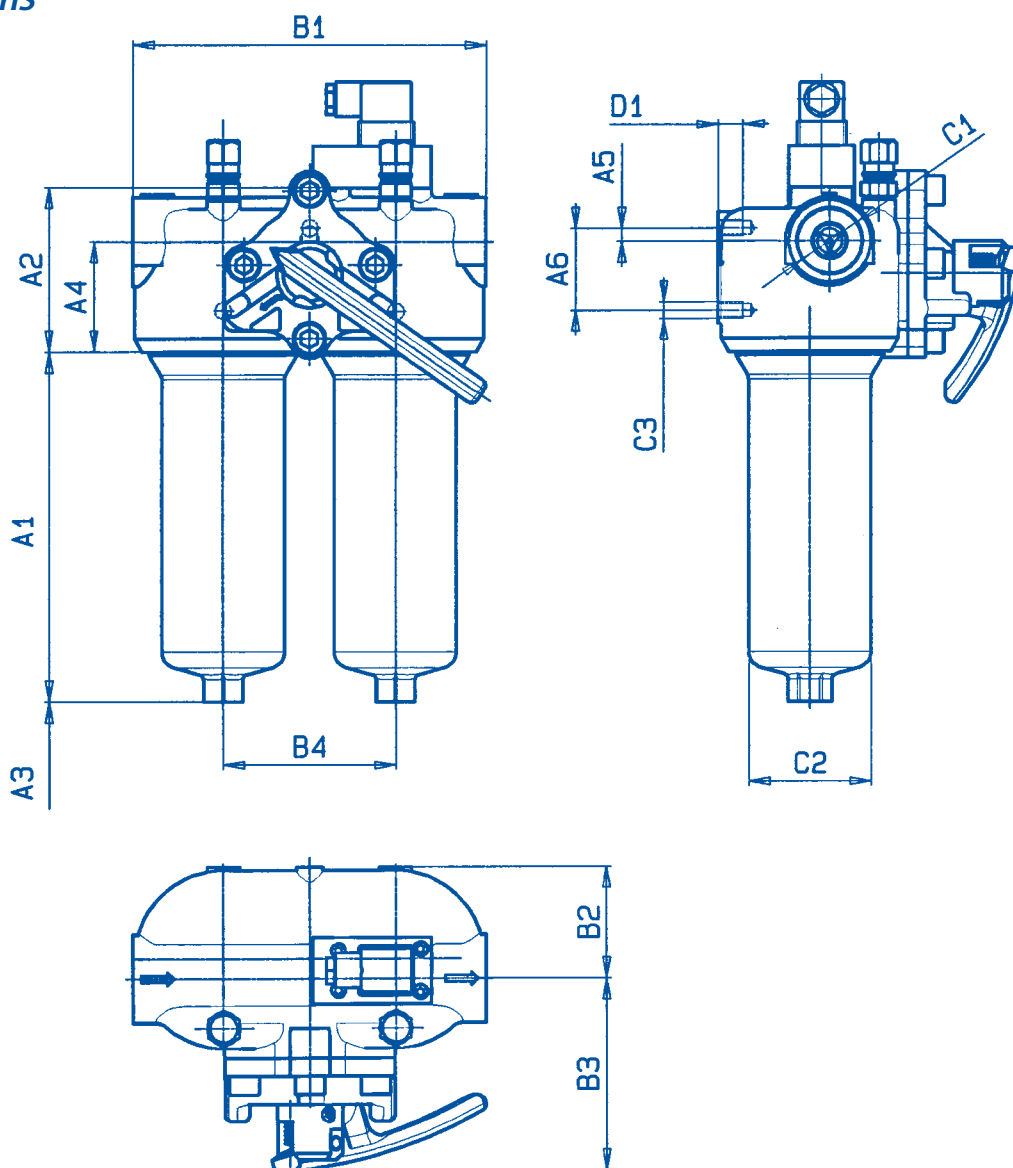
		
A...Optical	B...Optical/electrical	D...Optical/electrical with three 24 V diodes and two switch points
Ordering information A2,5 = F2,5 A0 00 00P* A5,0 = F5,0 A0 00 00P*	Ordering information B2,5 = F2,5 GW 02 00P* B5,0 = F5,0 GW 02 00P*	Ordering information D2,5 = R2,5 GW 09 Z0P* D5,0 = R5,0 GW 09 Z0P*
	Switch Symbol 	Switch Symbol 

## Filter Switching Symbol



\*P = Buna N; V = Viton; E = Ethylene Propylene; N = Neoprene possible

## Dimensions



### Filter housing for filter element in accordance with EPE standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	B1	B2	B3	B4	C1 Connection	C2	C3	D1
40/160 LD 0003	2 x 0,23	6,8	115	102	80	70	8	50	160	54	115	80	G1	55	M10	15
40/160 LD 0005	2 x 0,23	7,0	115		100											
40/160 LD 0008	2 x 0,36	7,5	179		120											
40/160 LD 0013	2 x 0,53	8,8	269													
40/160 LD 0015	2 x 0,80	13,2	213	100		67	10	50	215	68	120	105	G1¼	76	M12	18
40/160 LD 0018	2 x 0,99	16,3	263													
40/160 LD 0020	2 x 1,19	19,0	188	116		81	17	55	270	102	115	134	G1½	104	M16	24
40/160 LD 0030	2 x 1,76	20,0	276													
40/160 LD 0045	2 x 2,72	23,0	426													

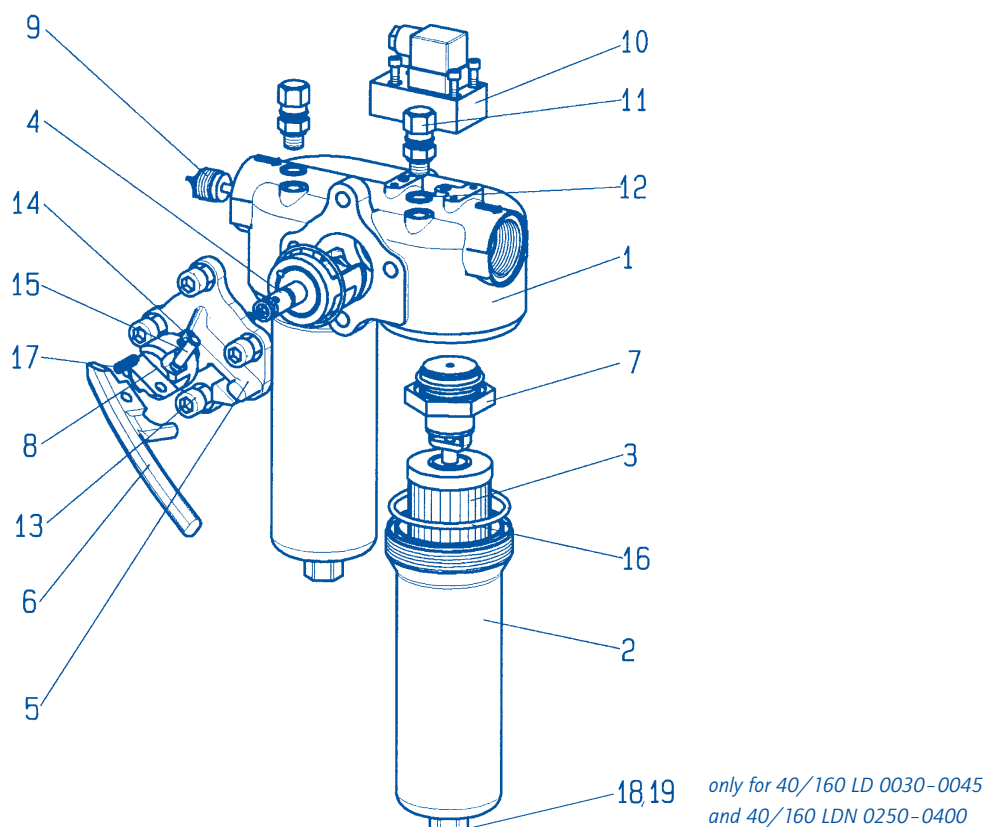
### Filter housing for filter element in accordance with DIN 24550

Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	B1	B2	B3	B4	C1 Connection	C2	C3	D1
40/160 LDN 0040	2 x 0,23	7,0	115	102	100	70	8	50	160	54	115	80	G1	55	M10	15
40/160 LDN 0063	2 x 0,36	7,5	179													
40/160 LDN 0100	2 x 0,53	8,8	269													
40/160 LDN 0160	2 x 1,19	19,0	188	116	120	81	17	55	270	102	115	134	G1½	104	M16	24
40/160 LDN 0250	2 x 1,76	20,0	276													
40/160 LDN 0400	2 x 2,72	23,0	426										SAE1½"3000 psi			

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

<sup>2)</sup> = Construction dimension for filter element change

## Spare Parts List



Switch lever indicates the side of maintenance.

		Size LD Size LDN		0003	0005 0040	0008 0063	0013 0100	0015	0018	0020 0160	0030 0250	0045 0400	
Part	quantity	Title	Material										
1	1	Filter head	GGG50	please indicate ordering information "Filter"									
2	2	Filter bowl	C-steel	please indicate ordering information "Filter"									
3	2	Filter element	various	please indicate ordering information "Filter Element"									
3.1	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
4	1	Change over valve	various	Part No. 3617 (with filter head only)									
4.1	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
4.2	1	Wiper	Buna N	please indicate ordering information"Seal Kit"									
4.3	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
5	1	Cover	GGG50	Part No. 3616									
6	1	Switch lever	Al Si 9 Mg	Part No. 3618									
7	2	Return valve	various	Part No. 5195				Part No. 5161		Part No. 3619			
7.1	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
7.2	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
8	1	Bolts	9SMn28K	Part No. 3630									
9	1	Bypass valve*	various	Part No. 5358				Part No. 5118					
10	1	Maintenance indicator	various	please indicate ordering information "Maintenance Indicator"									
11	2	Vent valve	Bronze	Part No. 848									
12	2	Sealing ring	Soft iron	please indicate ordering information"Seal Kit"									
13	4	Hexagon screw	8.8	Part No. 4971									
14	2	Hexagon screw	8.8	Part No. 5119									
15	1	Parallel pin	St	Part No. 3631									
16	2	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"									
17	1	Spring	Spring steel	Part No. 3201									
18	2	Drain plug	5.8	-							Part No. 770		
19	2	Sealing ring	Soft iron	-							please indicate ordering information „Seal Kit"		

\* please specify operating pressure

## Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality management system in accordance with DIN EN ISO 9001.

The stability calculation and testing of the filters proceeds according to actual standards, as well as in accordance with national and international norms.

The CE-identification mark according to the Pressure Equipment Directive 97/23/EG depends upon the individual application and operating conditions. On request we will classify the filters.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, ABS, BV, DNV, DRIRE, UDT, etc.) is available on request.





Industrial Filters · Accumulators

## **Installation, Starting Maintenance**

### **Installation**

Check that the pressure rating of the filter is suitable for the system in which it is being installed.

Screw the filter head (Part 1) onto the mounting device, taking into account the direction of flow (directional arrow) and installation height of the filter element (Part 3).

Remove filter entry and exit plugs, screw filter into the pipe-line, taking care to avoid stress on the components.

### **Connection of electrical maintenance indicator**

Connect using three pole cable, paying attention to breaking capacity on the rating plate of the filter (Part 10).

Connection variants:

- |            |                                  |
|------------|----------------------------------|
| 1. Closer  | 1 (black) + 3 (blue)             |
| 2. Opener  | 1 (black) + 2 (brown)            |
| 3. Changer | 1 (black) + 2 (brown) + 3 (blue) |

### **Starting**

Switch on service pump

Ventilate filter by opening the vent valve (Part 11), close when operating liquid appears.

Switch lever indicates the side of maintenance.

### **Maintenance**

The filter element is clogged and must be changed or cleaned when at operating temperature the red pointer on the Maintenance indicator (Part 10) is hard against the plastic cap. and/or the switching process on the electrical indicator is triggered.

### **Filter Element Service**

Pull the switch-over lever and switch over to the second filter.

Open the vent valve (Part 11) on the filter half taken out of operation and reduce the pressure.

Unscrew the filter (Part 2) and remove the filter element (Part 3) with slight rotation, from the centering spigot on the filter head.

Check the filter head for cleanliness and clean if necessary.

Replace filter elements H ... -SL, P ... and VS ... Clean the filter element with material G ...

The effectiveness of cleaning is dependent on the type of dirt and the level of the differential pressure at the time of changing the filter element.

If the differential pressure is more than 50 % of the value obtaining before the filter change, then the element G ... is to be replaced.

Using a light rotation movement, place new or cleaned filter elements on the centering spigot.

Check O-ring (Part 16) in the filter housing and replace when damaged or worn.

Screw on the filter head and tighten the hexagon with appropriate tool.

Put back into operation as described above.

### **Information**

When disassembling the filters make sure that the filter inlet and outlet are drained separately!

Technical specification are subject to change!

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Telefax +49 6202/603-199  
E-Mail: [info@eppensteiner.com](mailto:info@eppensteiner.com)  
Internet: [www.eppensteiner.de](http://www.eppensteiner.de)

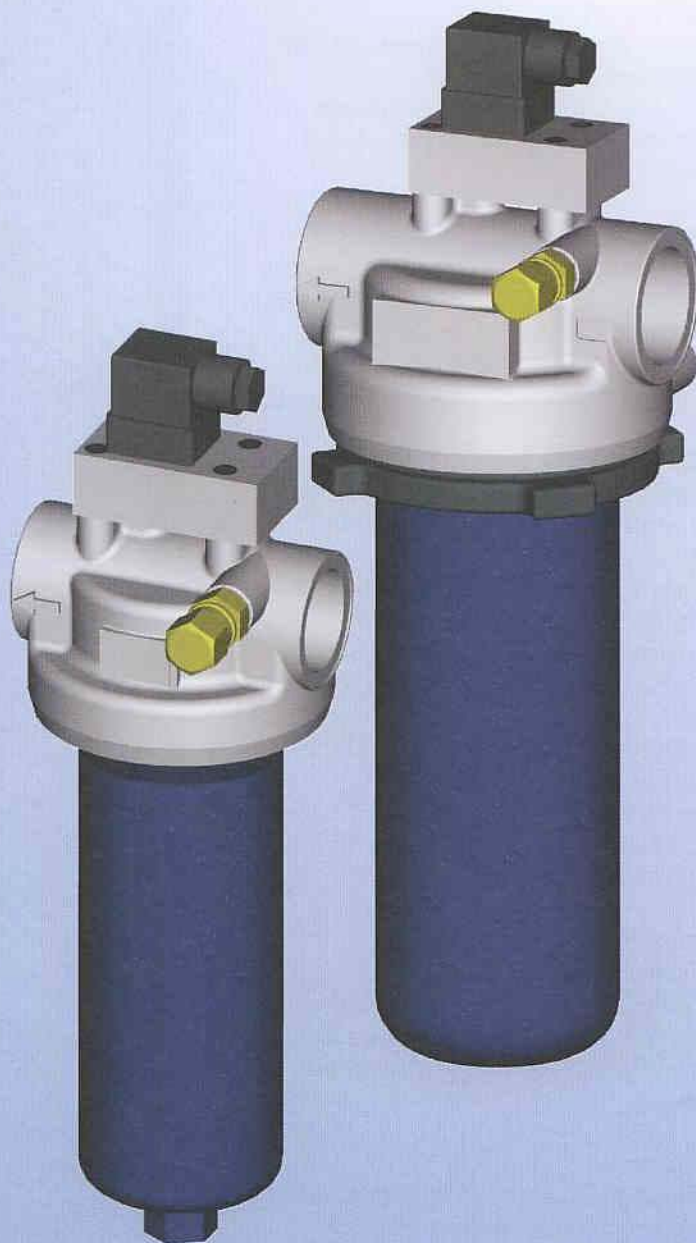


*Industrial Filters · Accumulators*

## *Inline Filters*

*40/160 LE 0003 - 0045*

*40/160 LEN 0040 - 0400*



*Filters for inline installation*

*Wide application*

*Compact modular design*

*Optimised flow characteristics  
by 3D - computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*

*Operating pressure: 40/160 bar*

*Connection up to DN 38*



*Quality assured!*



# Inline Filters

40/160 LE 0003 - 0045  
40/160 LEN 0040 - 0400

Operating pressure 40/160 bar  
Operating temperature -10°C to +100°C  
Connection up to DN 38

## Application

Filtration of pressurised fluids and lubricants.  
Filtration of liquids and gases.  
Direct installation in pipelines to provide wear protection of subsequent components and systems.

## Design

Filter head with inlet, outlet and filter element spigot. Filter bowl is unscrewed for small sizes, others with quick locking device.  
Material: as per spare parts list in this brochure.

## Filter Element

Pleated design with optimised pleat density and various filter media. The filter element is the most important component of the filter to provide prolonged life and wear protection of the system.  
Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.  
For further detailed information please refer our "Filter Elements" brochure.  
A proper filter selection is enabled by our "EPE-FILTERSELECT" software will offer the best filter selection.

## Accessories

### Maintenance Indicator

For monitoring the filter element's contamination status, visual and visual/electrical indicators, with one or two switching points are available.

### Bypass Valve

To protect the filter element during start up and over pressurisation due to clogging.

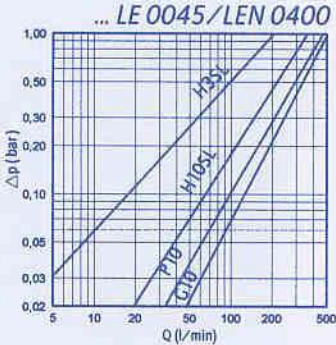
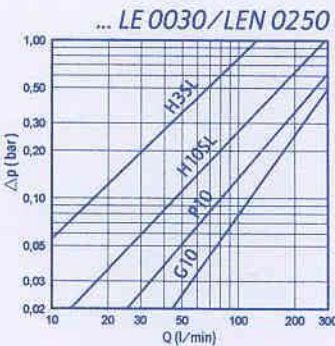
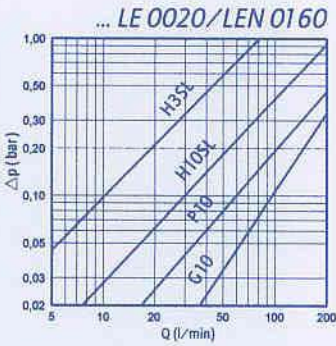
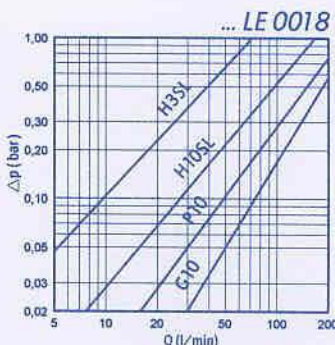
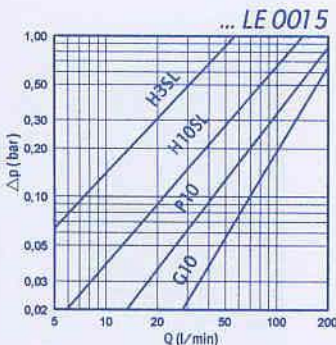
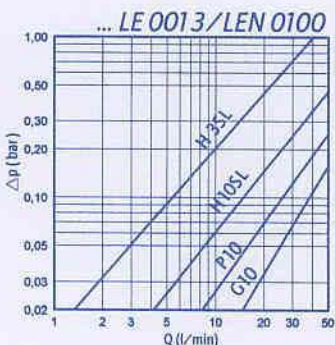
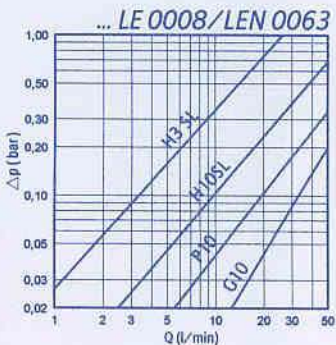
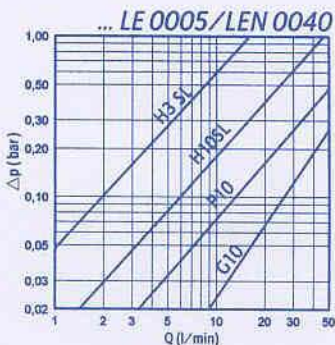
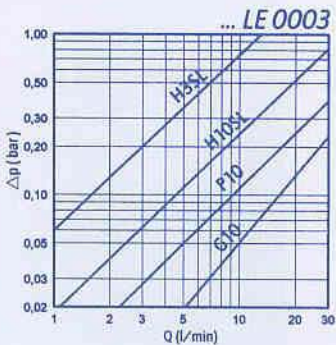
### Vent Valve

For removing the air from the filter during starting and for safe depressurisation.

# Performance Characteristics

$\Delta p$ -Q-characteristic lines for complete filters recommended start- $\Delta p$  for layout = 0.8 bar

Oil Viscosity: 30 mm<sup>2</sup>/s  
Specific gravity < 0.9 kg/dm<sup>3</sup>





Ordering information

Identification of filter size:  
Using the computer programme  
"EPE-FILTERSELECT" or  
pressure characteristic lines  
in this brochure.  
  
Special models are available  
on request.

Filter Type	Magnet	Maintenance Indicator	Connection	Material
LE = Inline Filter with EPE standard filter element  LEN = Inline Filter with filter element acc. to DIN 24550	O = without	O = without A = visual maintenance indicator. B = combined visual/electrical indicator with electric plug D = combined visual/electrical indicator with signal lights and two switching points  Standard switch pressure: 2,5 bar for 40 LE and LEN 5,0 bar for 160 LE and LEN  For extensive ordering information and technical data refer to on brochure "Maintenance Indicators".	RO = pipe thread	O = standard

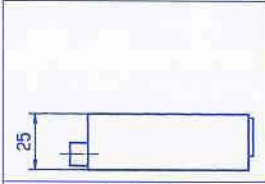
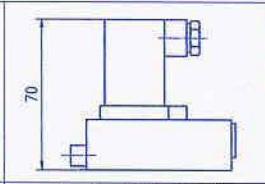
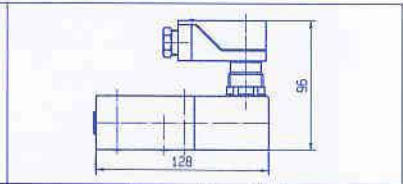
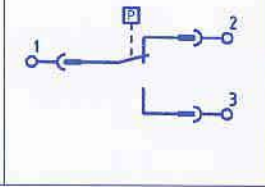
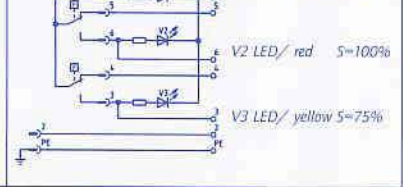
Filter Assembly → 160 LE 0013 H10SL - A 00 - 0 9 D5.0 - RO P 0 0  
Seal Kit → D 160 LE 0013 - - D - RO P 0

Pressure	Nominal Size	Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Seal	Addit. Info
40 bar 160 bar	40/160 LE... 0003* 0005 0008 0013 0015 0018 0020 0030 0045  40/160 LEN... 0040 0063 0100 0160 0250 0400  * Filter element 2.0004	Nominal filter fineness in µm G = stainless steel wire mesh, cleanable G10 G25 G40 G60 G80 G100 VS = nonwoven, not cleanable VS25 VS40 VS60 P = paper, not cleanable P5 P10 P25  Absolute filter fineness (ISO 4572) in µm H...SL = Microglass, not cleanable H1SL H3SL H6SL H10SL H20SL AS = Microglass, water absorbing, not cleanable AS1 AS3 AS6 AS10 AS20	Max. allowed differential pressure of the filter element  A = 30 bar B = 330 bar	O... = Standard adhesive T = 100°C  E... = Special adhesive T = 160°C  ...O = Standard material ...Z = Zinc free	opening pressure O = without 7 = 3,5 bar for 40 LE and 40 LEN 9 = 7,0 bar for 160 LE and 160 LEN  for filter element always 0	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	O = without S = silicon free E = vent valve Z = inspection certificate  O = without S = silicon free Z = inspection certificate

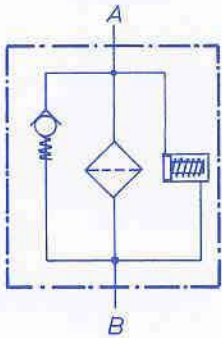
Filter Element → 2. 0013 H10SL - A 00 - 0 - P 0

Maintenance Indicator

The maintenance indicator monitors the degree of dirt of the filter elements.  
They are available as visual or visual/electrical displays.  
See "Maintenance Indicator" brochure for technical data.

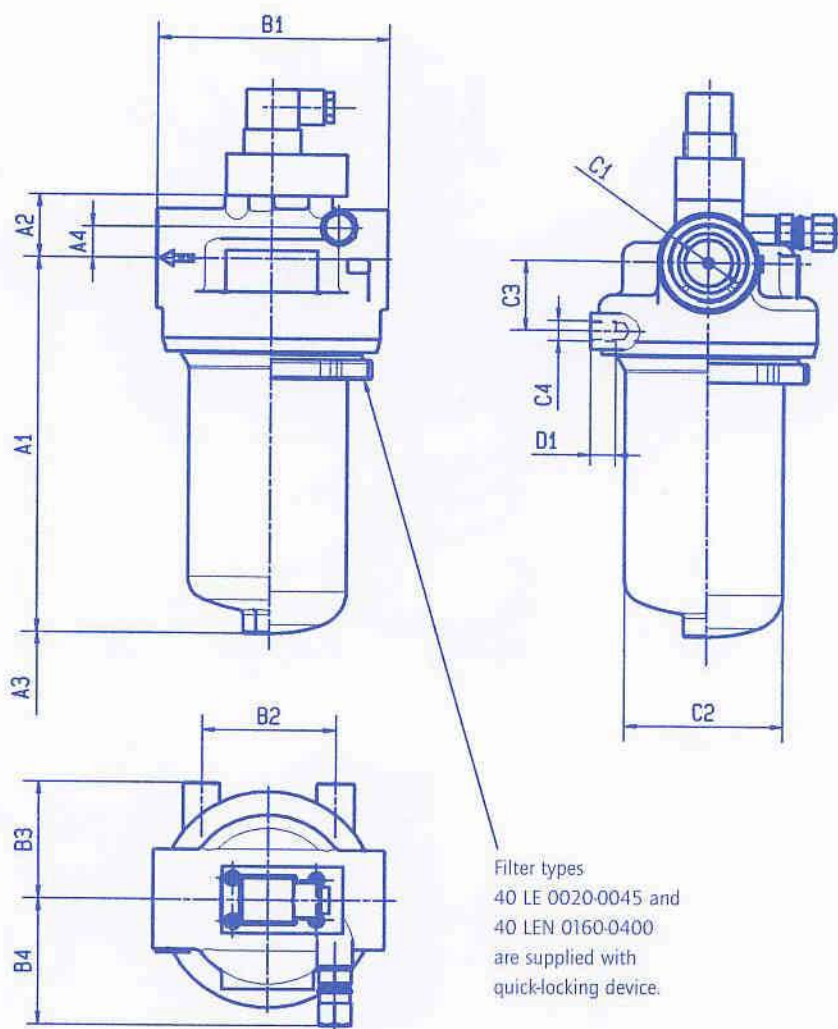
		
A...visual	B...visual/electrical	D...visual/electrical with three light indicators 24 V and two switching points
Ordering information A2,5 = F2,5 A0 00 00P* A5,0 = F5,0 A0 00 00P*	Ordering information B2,5 = F2,5 GW 02 00P* B5,0 = F5,0 GW 02 00P*	Ordering information D2,5 = R2,5 GW 09 Z0P* D5,0 = R5,0 GW 09 Z0P*
	Switch Symbol 	Switch Symbol 

Filter Switching Symbol



\*Buna N, V = Viton, E = Ethylene Propylene, N = Neoprene possible

## Dimensions



### Filter housing for Filter Elements in accordance with EPE Standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	B1	B2	B3	B4	C1 Connection	C2	C3	C4	D1
40/160 LE 0003	0,21	1,47	150	30	80	14	84	45	45	62	G <sup>1</sup> / <sub>2</sub>	ø55	21	M8	10
40/160 LE 0005	0,21	1,47	150		100						G1				
40/160 LE 0008	0,35	1,69	210		120						G1				
40/160 LE 0013	0,53	2,03	300	35	120	15	114	60	60	72	G1¼	ø76	28		
40/160 LE 0015	0,76	3,87	257												
40/160 LE 0018	0,96	4,20	308												
40/160 LE 0020	1,13	4,86	220	38	120	19	138	80	70	76	G1½	ø98	42	M12	14
40/160 LE 0030	1,60	6,25	316												
40/160 LE 0045	2,40	8,16	466												

### Filter housing for Filter Elements in accordance with DIN 24550

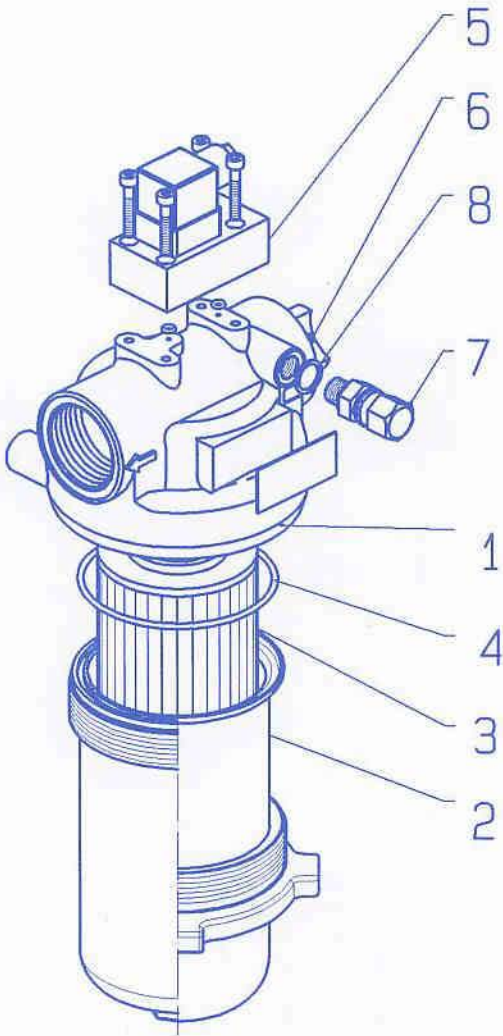
Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	B1	B2	B3	B4	C1 Connection	C2	C3	C4	D1
40/160 LEN 0040	0,21	1,47	150	30	100	14	84	45	45	62	G1	ø55	21	M8	10
40/160 LEN 0063	0,35	1,69	210												
40/160 LEN 0100	0,53	2,03	300												
40/160 LEN 0160	1,13	4,86	220	38	120	19	138	80	70	76	G1½	ø98	42	M12	14
40/160 LEN 0250	1,60	6,25	316												
40/160 LEN 0400	2,40	8,16	466												

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

<sup>2)</sup> = Construction dimension for filter element change



Spare Parts List



		Size LE Size LEN		0003	0005 0040	0008 0063	0013 0100	0015	0018	0020 0160	0030 0250	0045 0400
Part	quantity	Title	Material									
1	1	Filter head	aluminium	please indicate ordering information"Filter"								
2	1	Filter bowl	Carbon steel	please indicate ordering information"Filter"								
3	1	Filter element	various	please indicate ordering information"Filter Element"								
4	1	O-ring	Buna N/Viton	please indicate ordering information"Seal Kit"								
5	1	Seal	various	please indicate ordering information"Seal Kit"								
6	1	Bypass valve*	Al/synthetic	Part No. 5359				Part No. 5118		Part No. 5360		
7	1	Vent valve	Bronze	Part No. 848								
8	1	Seal ring	Copper	please indicate ordering information"Seal Kit"								
9	2	Plug for design without indicator	St	Part No. 5715								

\* please specify opening pressure

Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality management system in accordance with DIN EN ISO 9001.

The stability calculation and testing of the filters proceeds according to existing pressure vessel regulations, as well as in accordance with national and international norms.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, LRS, ABS, BV, DNV, DRIRE, UDT, etc.) is available on request.



**Industrial Filters · Accumulators**

## **Installation, Starting and Maintenance**

### **Installation**

Verify operating pressure with name plate information.

Mount the filter assembly using mounting holes on the head (Part 1) considering flow direction (direction arrows) and servicing height required for cleaning/replacing elements.

### **Connection of electrical maintenance indicator**

Connect indicator using the three wired cable.

Please verify electrical ratings on the indicators (Part 5) name plate.

Connection variants:

- |            |                                  |
|------------|----------------------------------|
| 1. Closer  | 1 (black) + 3 (blue)             |
| 2. Opener  | 1 (black) + 2 (brown)            |
| 3. Changer | 1 (black) + 2 (brown) + 3 (blue) |

### **Starting**

Switch on service pump.

Ventilate filter by opening the vent valve (Part 7), close when operating liquid appears.

### **Maintenance**

The filter element is clogged and must be changed or cleaned when at operation temperature the red pointer on the maintenance indicator (Part 5) is hard against the plastic cap and/or the switching process on the electrical indicator is triggered.

### **Filter element service**

Switch off pump, open vent valve (Part 7) and ventilate system.

Unscrew filter bowl (Part 2), unscrew quick locking device for size 40 LE 0020-0045 and 40 LEN 0160-0400) and remove filter element (Part 3), turning slightly off from its locator in the filter head (Part 1).

Check filter bowl inside and clean if necessary.

Replace filter element H...SL, P... and VS... The filter element with G: media is cleanable.

The effectiveness of cleaning depends on the type dirt and the level of the differential pressure at the time of changing the filter element.

If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... filter element also needs to be replaced.

Replace filter element by slightly turning it back on its locator.

Check O-ring (Part 4) on filter bowl, replace in case of damage or wear.

Screw filter bowl and tighten it at hexagon bolt using a suitable tool (size 40 LE 0020-0045 and 40 LEN 0160-0400: connect filter bowl at filter head and screw it with the quick locking device).

Operate filter as described above.

K. & H. Eppensteiner GmbH & Co. KG  
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E-Mail: eppensteiner@compuserve.com  
Internet: www.eppensteiner.de

Technical specification are subject to change!



## FIK In-Tank Filters

**Working Pressures to:** 145 *psi*  
1000 kPa  
10 bar

**Rated Static Burst to:** 217 *psi*  
1500 kPa  
15 bar

**Flow Range to:** 211 *gpm*  
800 l/min

## Features

FIK in-tank filters are economical, space-saving units with simple screw-on covers, ideal for low pressure in-tank applications. This is a heavy-duty filter, with die cast aluminum head and steel canister.

The head (and inlet) sit above the tank, with the housing in the tank. Element flow is outside to inside.

Three service indicators are available: pressure gauge, visual indicator, and electrical indicator. Optional air breathers are also available.

FIK filter assemblies are provided from the factory with cellulose media. Replacement cartridges are offered in a range of media types and performance ratings.



### Beta Rating

- Performance to  $\beta_{10}=75$

### Porting Sizes

- SAE-8, -12, -16 and -20 (low flow)
- SAE-16, -20, -24 O-Ring and 2" SAE 4-Bolt Flange (high flow)

### Standard Bypass Ratings

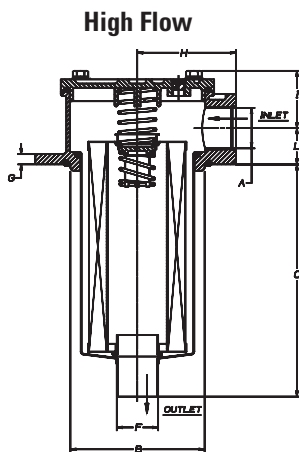
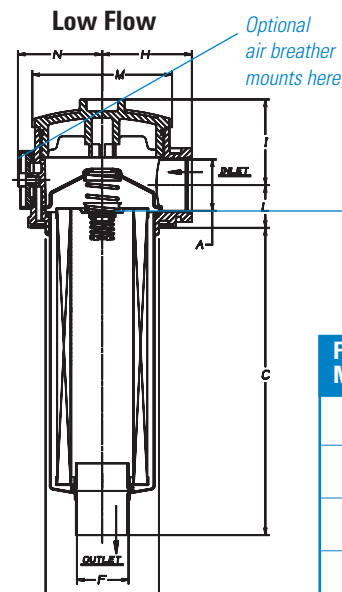
- 22 *psi* / 150 kPa / 1.5 bar

### Operating Temperatures

- -4°F to 194°F / -20°C to 90°C

### Collapse Ratings

- 145 *psid* / 1000 kPa / 10 bar

**Assembly - Side View**


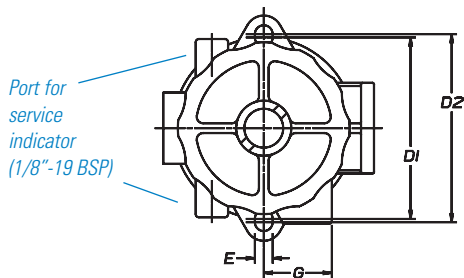
**for:** Return Lines  
Side Loop Systems  
Fluid Conditioning Systems  
Process Systems  
Case Drains  
Cooling Circuits  
Lube Oil Systems

FIK Model	K030319	K040811	K040812	K040813	K040799	K051204	K070248	K070249	K070250
<b>A</b>	½-inch SAE O-Ring	¾-inch SAE O-Ring	1-inch SAE O-Ring	1¼-inch SAE O-Ring	1-inch SAE O-Ring	1¼-inch SAE O-Ring	1½-inch SAE O-Ring	2-inch SAE 4-Bolt Flange	2-inch SAE 4-Bolt Flange
<b>B</b>	2.4 inches 60mm	3.4 inches 89mm	3.4 inches 86mm	3.4 inches 86mm	3.54 inches 90mm	5.2 inches 131mm	6.9 inches 175mm	6.8 inches 174mm	6.8 inches 174mm
<b>C</b>	7.2 inches 184mm	4.1 inches 104mm	5.9 inches 150mm	9.3 inches 235mm	5.7 inches 145mm	9 inches 230mm	9.5 inches 242mm	11.7 inches 297mm	15.9 inches 405mm
<b>D1</b>	3.3 inches 84mm	4.4 inches 112mm	4.4 inches 112mm	4.4 inches 112mm	4.52 inches 115mm	6.9 inches 175mm	8.66 inches 220mm	8.66 inches 220mm	8.66 inches 220mm
<b>D2</b>	3.46 inches 88mm	4.56 inches 116mm	4.56 inches 116mm	4.56 inches 116mm	NA	NA	NA	NA	NA
<b>E</b>	0.4 inches 10mm	0.43 inches 11mm	0.43 inches 11mm	0.43 inches 11mm	0.33 inches 8.4mm	0.4 inches 10.5mm	0.4 inches 10.5mm	0.4 inches 10.5mm	0.4 inches 10.5mm
<b>F</b>	0.87 inches 22mm	1.1 inches 28mm	1.1 inches 28mm	1.6 inches 40mm	1.1 inches 28mm	1.57 inches 40mm	1.97 inches 50mm	2.5 inches 63.5mm	2.5 inches 63.5mm
<b>G</b>	NA	0.47 inches 42mm	0.47 inches 42mm	0.47 inches 42mm	0.4 inches 10mm	0.4 inches 10mm	0.4 inches 10mm	0.4 inches 10mm	0.4 inches 10mm
<b>H</b>	1.9 inches 48mm	2.67 inches 68mm	2.67 inches 68mm	2.67 inches 68mm	2.6 inches 66mm	3.7 inches 95mm	4.7 inches 119mm	4.7 inches 119mm	4.7 inches 119mm
<b>I</b>	1.85 inches 47mm	2.56 inches 65mm	2.56 inches 65mm	2.56 inches 65mm	1.7 inches 43mm	2.1 inches 53mm	2.5 inches 64mm	2.5 inches 64mm	2.5 inches 64mm
<b>L</b>	0.82 inches 21mm	1.26 inches 32mm	1.26 inches 32mm	1.26 inches 32mm	1.1 inches 28mm	1.4 inches 35mm	1.6 inches 41mm	1.6 inches 41mm	1.6 inches 41mm
<b>M</b>	2.9 inches 74mm	4.2 inches 106mm	4.2 inches 106mm	4.2 inches 106mm	NA	NA	NA	NA	NA
<b>N</b>	2.4 inches 60mm	3.4 inches 86mm	3.4 inches 86mm	3.4 inches 86mm	NA	NA	NA	NA	NA
<b>Weight</b>	1.8 lbs. 0.8 kg.	2.1 lbs. 0.95 kg.	3.2 lbs. 1.45 kg.	4.1 lbs. 1.86 kg.	2.1 lbs. 0.95 kg.	7.0 lbs. 3.2 kg.	10.0 lbs. 4.5 kg.	13.1 lbs. 5.9 kg.	18.6 lbs. 8.4 kg.

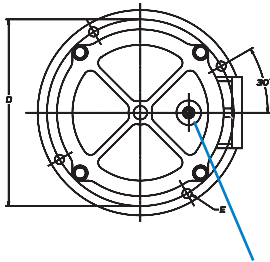
All dimensions above are shown in inches [millimeters]

**Head - Top View**

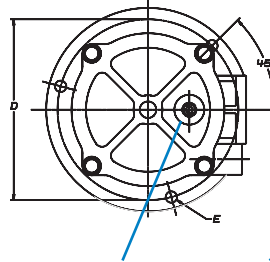
**FIK-030319, FIK-040811,  
FIK-040812, FIK-040813**



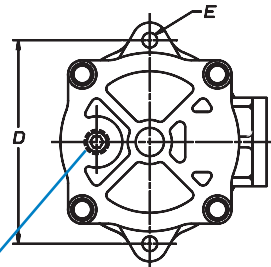
**FIK-070248, FIK-070249,  
FIK-070250**



**FIK-051204**

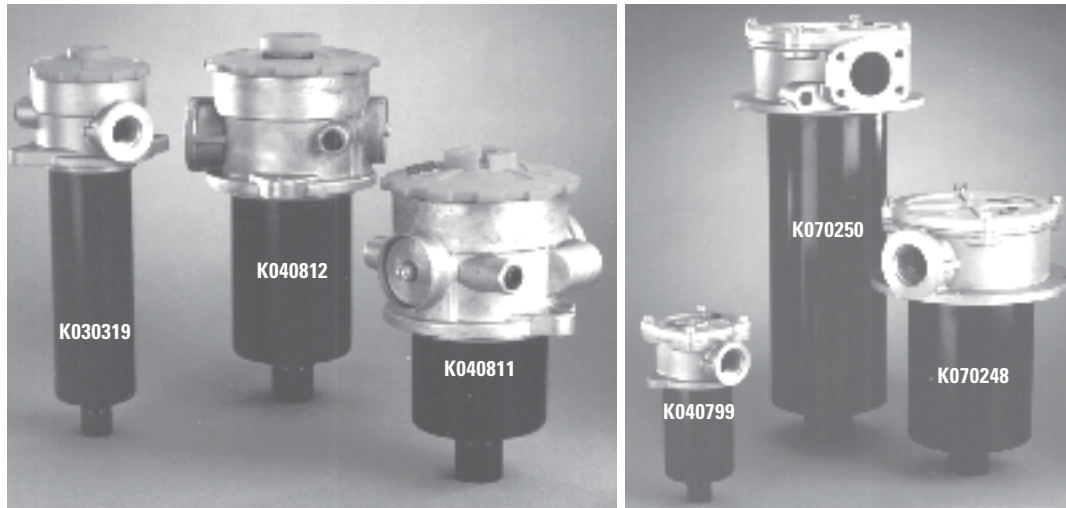


**FIK-040799**



Port for Service Indicator (1/8" - 19 BSP)

# FIK Assemblies & Service Parts



## FIK Filter Assemblies

Port Size	Bypass Rating*	Service Indicator	Beta Rating	FIK Assembly Model	Provided with this Element	Flow Range
SAE-8 O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K030319	P171839	10 gpm
SAE-12 O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K040811	P171527	14 gpm
SAE-16 O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K040812	P171533	25 gpm
SAE-20 O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K040813	P171840	40 gpm
1" SAE O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K040799	P171533	20 gpm
1¼" SAE O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K051204	P171539	40 gpm
1½" SAE O-Ring	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K070248	P171557	60 gpm
2" SAE 4-Bolt Flange	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K070249	P171575	120 gpm
2" SAE 4-Bolt Flange	22 psi / 150 kPa / 1.5 bar	Port Available	$\beta_{10} = 2$	K070250	P171581	211 gpm

### Note

\* Bypass valve is integral part of replacement filter

## Replacement Element Choices

Media Type	Beta Rating	Fits Assembly Model:			
		K030319	K040811	K040812	K040813
Synteq®	$\beta_{10} = 75$	P171845	P171525	P171531	P171846
Synteq®	$\beta_{25} = 75$		P171526	P171532	P171843
Cellulose	$\beta_{10} = 2$	P171839	P171527	P171533	P171840
Cellulose	$\beta_{25} = 2$		P171528	P171534	P171837
Wiremesh	60 Absolute		P171529	P171535	P171834
Wiremesh	90 Absolute		P171524	P171530	

## Service Indicators

### Pressure Gauges P171956

G  $\frac{1}{8}$   
(center back)



### P171953

G  $\frac{1}{8}$   
(bottom mount)

-14.5 to 72 *psi*  
-1 to +5 bar

### AC/DC Electrical Indicator P171966

17 *psi*  
1.2 bar



G  $\frac{1}{8}$  →

### Visual Indicator P171958

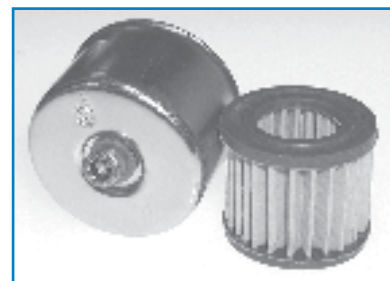
17 *psi*  
1.2 bar



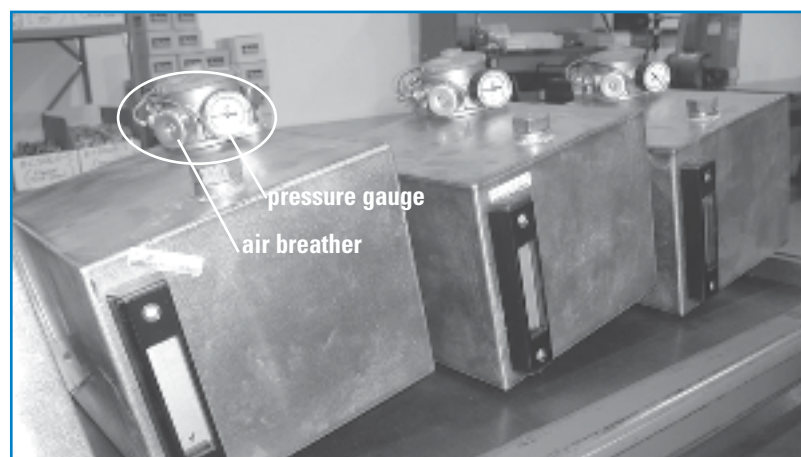
G  $\frac{1}{8}$  →

## Optional Air Breathers

Part No.	Beta Rating	Fits Assembly Models:
P172434	10µm	K040811, K040812, K040813
P173330	10µm	K030319



*Optional air breather is easily installed on filter head.*



## FIK Application

FIK in-tank return filters are used on small reservoirs to clean the oil before it goes into vehicles. Shown here, the P171956 pressure gauge and P173330 air breather are installed on the filter heads.

## Replacement Element Choices

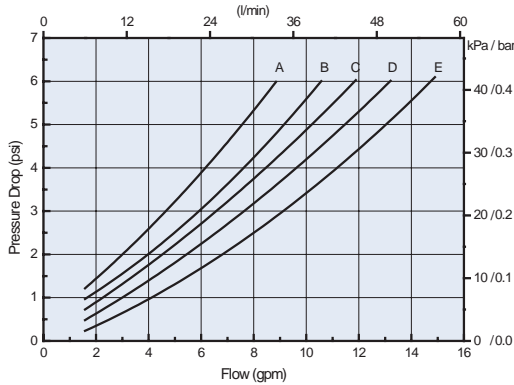
Media Type	Beta Rating	K040799	K051204	Fits Assembly Model: K070248	K070249	K070250
Synthetic	β <sub>10</sub> =75	P171531	P171537	P171555	P171573	P171579
Synthetic	β <sub>25</sub> =75	P171532	P171538	P171556	P171574	P171580
Cellulose	β <sub>10</sub> =2	P171533	P171539	P171557	P171575	P171581
Cellulose	β <sub>25</sub> =2	P171534	P171540	P171558	P171576	P171582
Wiremesh	60 Absolute	P171535	P171541			P171583
Wiremesh	90 Absolute	P171530	P171536		P171572	



# Performance Data

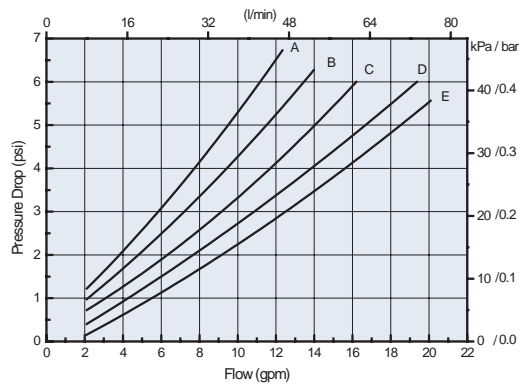
For a full explanation of how our performance curves were derived, see page 150.

### K030319 Assembly



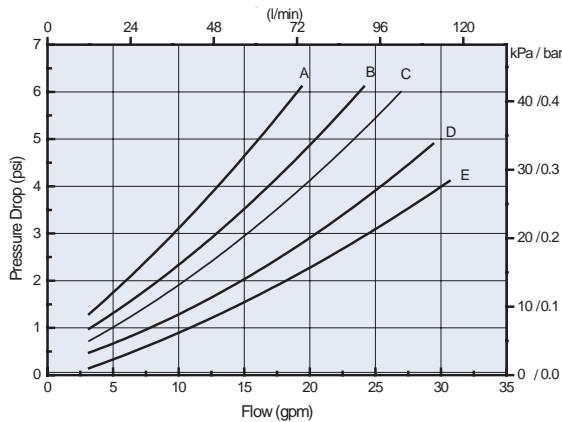
Service Element Part Numbers  
 A. P171845 (Synthetic)  
 C. P171839\* (Cellulose)  
 D. P171836 (Cellulose)  
 E. P171833, P171830 (Wiremesh)

### K040811 Assembly



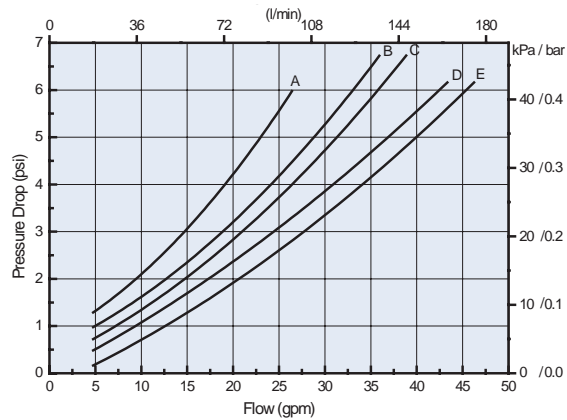
Service Element Part Numbers  
 A. P171525 (Synthetic)  
 B. P171526 (Synthetic)  
 C. P171527\* (Cellulose)  
 D. P171528 (Cellulose)  
 E. P171529, P171524 (Wiremesh)

### K040812 Assembly



Service Element Part Numbers  
 A. P171531 (Synthetic)  
 B. P171532 (Synthetic)  
 C. P171533\* (Cellulose)  
 D. P171534 (Cellulose)  
 E. P171535, P171530 (Wiremesh)

### K040813 Assembly

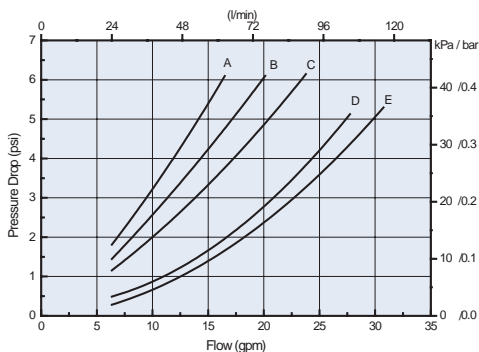


Service Element Part Numbers  
 A. P171846 (Synthetic)  
 B. P171843 (Synthetic)  
 C. P171840\* (Cellulose)  
 D. P171837 (Cellulose)  
 E. P171834, P171831 (Wiremesh)

# Performance Data

For a full explanation of how our performance curves were derived, see page 150.

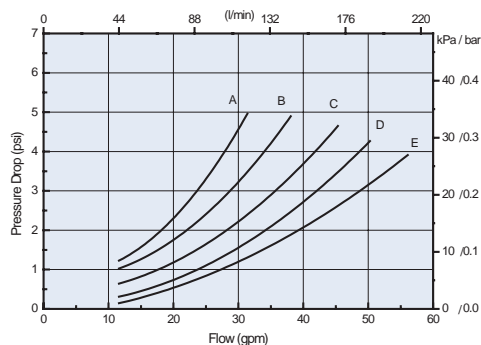
## K040799 Assembly



Service Element Part Numbers

- A. P171531 (Synthetic)
- B. P171532 (Synthetic)
- C. P171533\* (Cellulose)
- D. P171534 (Cellulose)
- E. P171535, P171530 (Wiremesh)

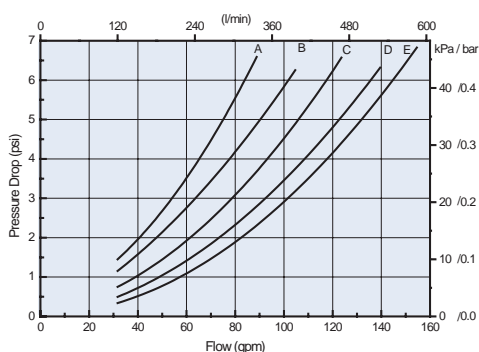
## K051204 Assembly



Service Element Part Numbers

- A. P171537 (Synthetic)
- B. P171538 (Synthetic)
- C. P171539\* (Cellulose)
- D. P171540 (Hvy Duty Cellulose)
- E. P171541, P171536 (Wiremesh)

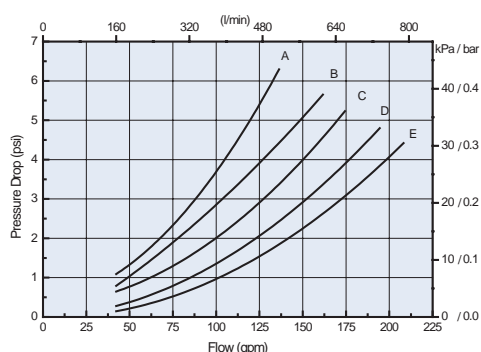
## K070249 Assembly



Service Element Part Numbers

- A. P171573 (Synthetic)
- B. P171574 (Synthetic)
- C. P171575\* (Cellulose)
- D. P171576 (Cellulose)
- E. P171572 (Wiremesh)

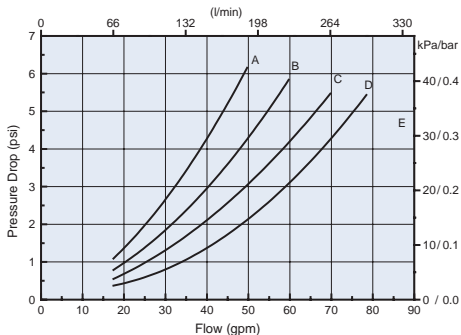
## K070250 Assembly



Service Element Part Numbers

- A. P171579 (Synthetic)
- B. P171580 (Synthetic)
- C. P171581\* (Cellulose)
- D. P171582 (Cellulose)
- E. P171583 (Wiremesh)

## K070248 Assembly



Service Element Part Numbers

- A. P171555 (Synthetic)
- B. P171556 (Synthetic)
- C. P171557\* (Cellulose)
- D. P171558 (Cellulose)

# HBK05 Spin-On Filter

**Working Pressures to:** 150 *psi*  
1034 kPa  
10.3 bar

**Rated Static Burst to:** 250 *psi*  
1724 kPa  
17.2 bar

**Flow Ranges to:** 60 *gpm*  
227 l/min



## Features

HBK05 is a strong and durable low pressure filter with a spin-on design that simplifies servicing and reduces maintenance costs. Its heavy-duty steel canister has a rigid steel attachment plate for added strength, and the head-to-canister O-ring seal is designed to ensure seal integrity beyond 250 *psi*. The head is made of die-cast aluminum.

Take advantage of our Mix 'n Match system of in-stock heads and elements—so you can get exactly what you need! HBK05 is available with your choice of visual or electrical service indicators, and bypass ratings of 25 *psi* or 5 *psi*. The filter media is Synteq®, our proprietary synthetic media specifically designed for liquid filtration.

### Beta Rating

- Performance to  $\beta_{3(c)}=1000$

### Porting Sizes

- 1¼" NPT
- SAE-20 O-Ring

### Replacement Filter Lengths

- 6.7" / 170mm (short)
- 10.7" / 271mm (long)

### Standard Bypass Ratings

- 25 *psi* / 172.5 kPa / 1.7 bar
- 5 *psi* / 34.5 kPa / .34 bar

### Assembly Weight

- 6.9 lbs / 3.1 kg (long)
- 5.7 lbs / 2.6 kg (short)

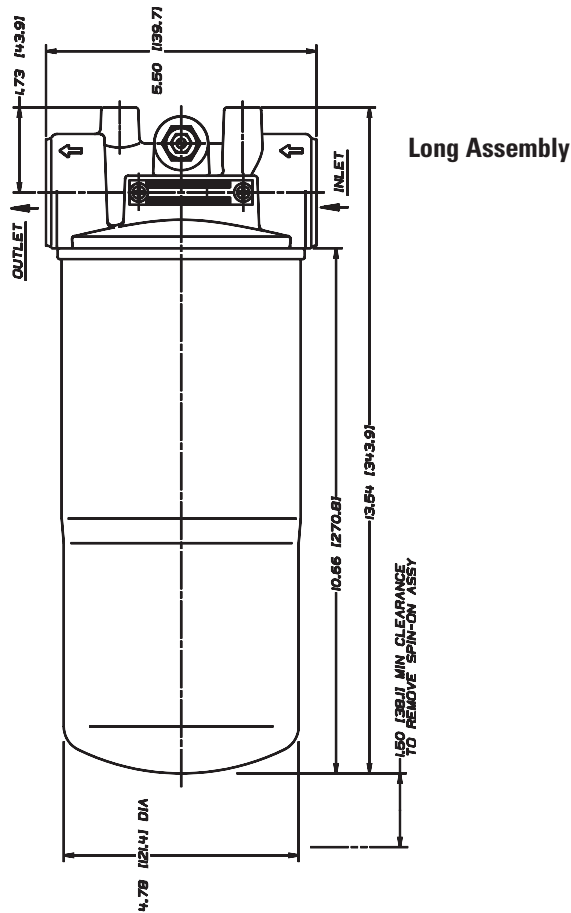
### Operating Temperatures

- -20°F to 225°F / -29°C to 107°C

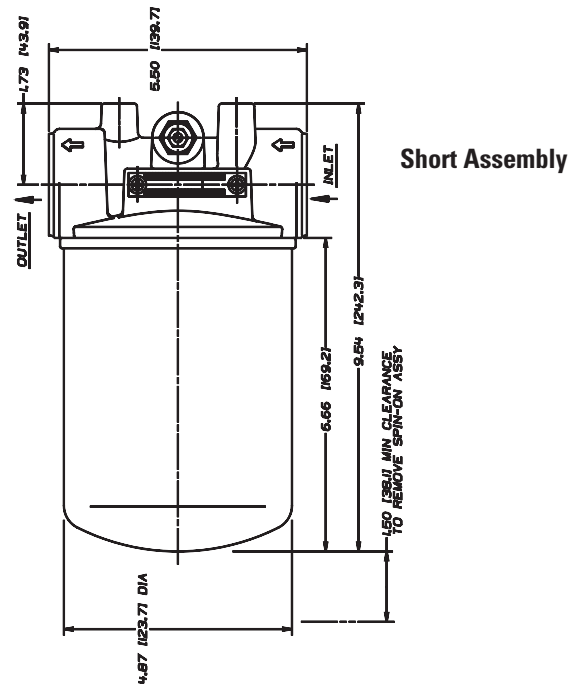
### Element Collapse Ratings

- 125 *psid* / 863 kPa / 8.6 bar

## Assembly - Side View

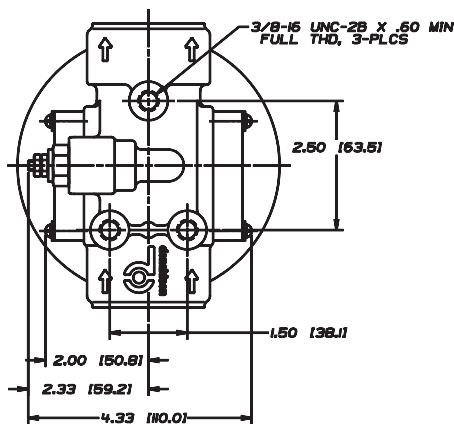


for: Case Drains  
Fluid Conditioning  
Return-Line/Side-Loop  
Hydrostatic Charge Pump Suction  
Lube Oil & Process Systems  
Power Transmissions  
Cooling Circuits

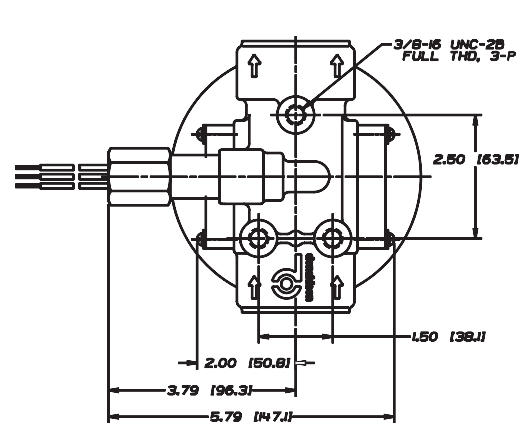


## Head - Top View

with DC Electrical Service Indicator



with AC/DC Electrical Service Indicator



All dimensions above are shown in inches [millimeters]



# HBK05 Components

## Spin-On Element Choices

Media Rating	B <sub>2(c)</sub> = 1000	Length		Part No.
		(in.)	(mm)	
No. ½	<3µm	10.7	271	P167796 with Viton Seal
No. 1	6µm	6.7	170	P169430
		10.7	271	P167832
No. 2	9µm	6.7	170	P167162
		10.7	271	P165762
No. 2½	10µm	6.7	170	P165875
		10.7	271	P165876
No. 6	13µm	6.7	170	P167944 with Viton Seal
		10.7	271	P167945 with Viton Seal
No. 9	23µm	6.7	170	P165877
		10.7	271	P165878
No. 20	>50µm	6.7	170	P165879
		10.7	271	P165880

## Head Choices

Port Size	Bypass Rating	Indicator Style & Location	Part No.
1¼" NPT	25 psi 172 kPa	Visual, Both Sides	P166418
1¼" NPT	5 psi 34 kPa	Visual, Both Sides	P166665
SAE-20 O-Ring	25 psi 172 kPa	Visual, Both sides	P166439

### Note

\* Donaldson uses the inlet port as the reference point. "Left side", for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.

## Service Indicator Options

### Electric Models<sup>(1)</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>(3)</sup>	Description
5 psi / 34.5 kPa	P163642	A	Single post DC. Normally open.
15 psi / 103 kPa	P163601	A	Single post DC. Normally open.
25 psi / 172.5 kPa	P163839	A	Single post DC. Normally closed.
25 psi / 172.5 kPa	P162400	A	Single post DC. Normally open.
25 psi / 172.5 kPa	P171143	B	2-wire with Cannon connector. Normally open.
25 psi / 172.5 kPa	P173944	C	3-wire: White = normally open Red = normally closed Black = common

### Visual Models (Non-Electric)<sup>(2)</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>(3)</sup>
5 psi / 34.5 kPa	P162694	D
15 psi / 103 kPa	P162642	D
25 psi / 172.5 kPa	P162696	D
n/a	P165984	(blank plate)

### Indicator Notes

<sup>(1)</sup>All electric models have a maximum operating temperature of 250°F/ 121°C.

<sup>(2)</sup>All non-electric models have a maximum operating temperature of 180°F/ 82°C.

<sup>(3)</sup>See indicator illustrations on facing page.



### Mix 'n Match System

Donaldson's Mix 'n Match system provides the great performance and functional advantages of custom-engineered filters with the convenience and speedy delivery of in-stock parts. Choose your options and build an HBK05 filter to suit your specifications. HBK05 spin-ons are interchangeable with SP50/60 spin-ons....see pg 20.

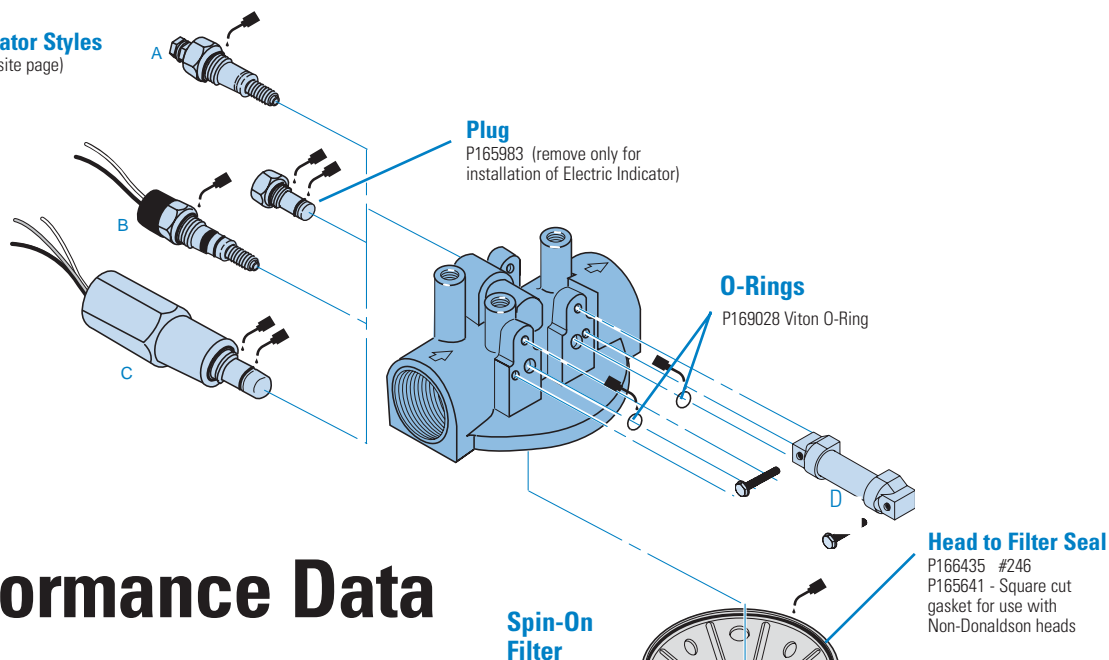


What's so special about Donaldson-developed Synteq<sup>®</sup> synthetic filter media?  
Go to [page 8](#) to find out!

# HBK05 Service Parts

## Service Indicator Styles

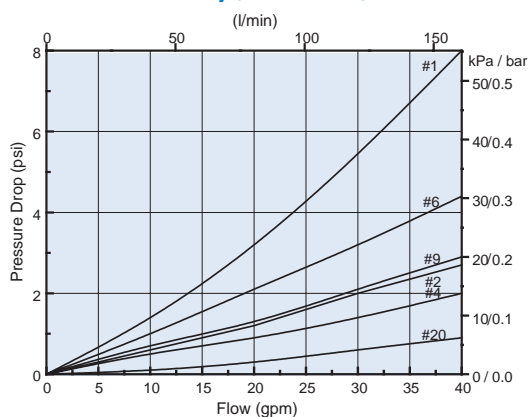
(See table on opposite page)



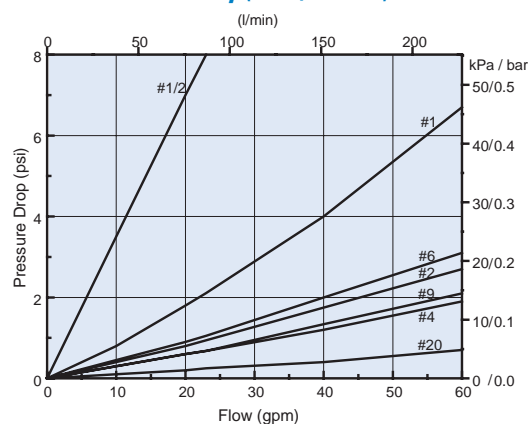
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

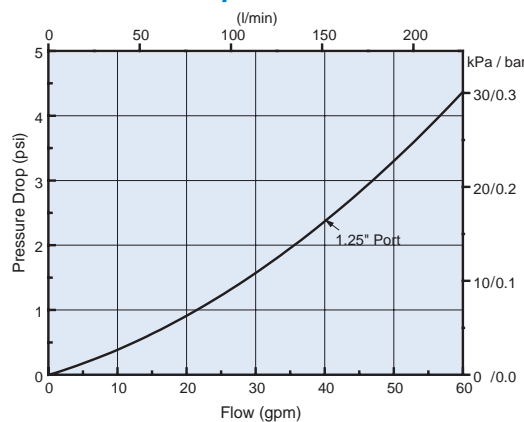
**HBK05 Filter Only (6.7"/170mm)**



**HBK05 Filter Only (10.7"/272mm)**



**HBK05 Head Only**



### Filter Notes

- If you're filtering petroleum-based oil, filters with seals made of BunaN are appropriate for most applications.
- If you're filtering diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF over 150°F/ 83°C, use filters with seals made of fluorocarbon, such as Viton® from DuPont Dow Elastomers, or Fluorel® from 3M Company.
- Synteq® filter media, which is in all HBK05 filter cartridges, is compatible with petroleum based fluids, as well as with most phosphate esters, water oil emulsions, and HWCF (high water content fluids).

# HDK06 In-Line/Tank Mount Filter

**Working Pressures to:** 350 *psi*  
2413 kPa  
24.1 bar

**Rated Static Burst to:** 500 *psi*  
3448 kPa  
34.5 bar

**Flow Ranges to:** 150 *gpm*  
568 l/min

## Features

HDK06 low pressure filters come in two styles: In-Line and Tank Mount. It features a die cast aluminum head and steel body for strength and durability; service is made easier with a single, center retention bolt on top of the head. Element flow is inside to outside. BunaN seals are standard.

HDK06 assemblies come complete with our  $\beta_{20(c)}=1000$  rated Synteq® filter cartridge. Other ratings are available, depending on your cleanliness requirements. HDK06 comes with an easy-to-read visual service indicator.



See what's so special about Donaldson-developed Synteq® synthetic filter media on [page 8](#).

### Beta Rating

- Performance to  $\beta_{<3(c)}=1000$

### Porting Sizes

- 2½" NPT

### Assembly Weight

- 26 lbs / 12 kg

### Replacement Filter Length

- 16" / 406mm

### Standard Bypass Rating

- 25 *psi* / 172.5 kPa / 1.7 bar

### Operating Temperatures

- Synthetic media -20°F to 250°F  
-29°C to 121°C

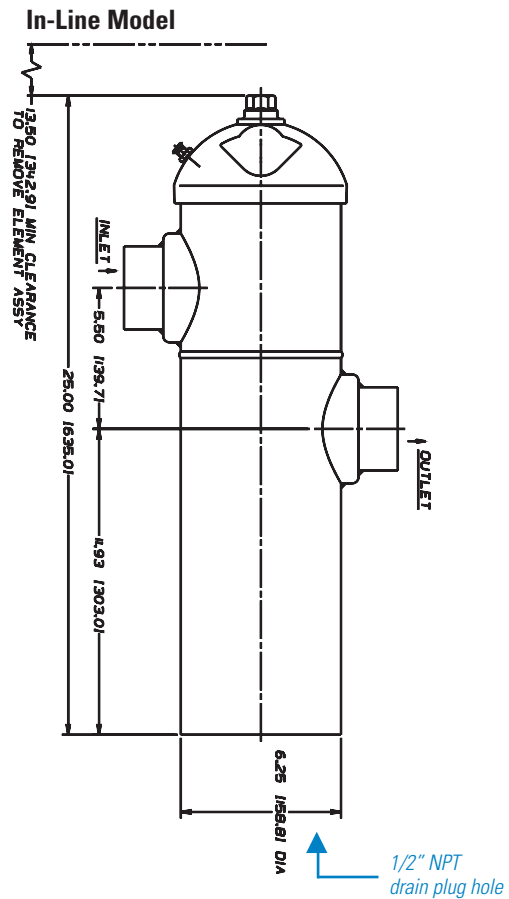
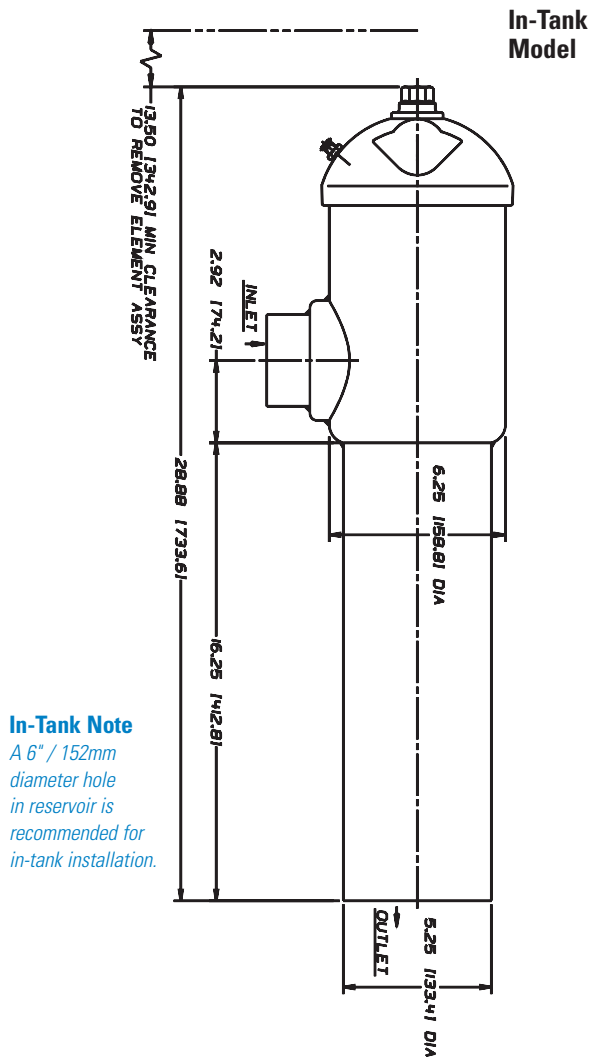
### Element Burst Ratings

- 100 *psid* / 690 kPa / 6.9 bar

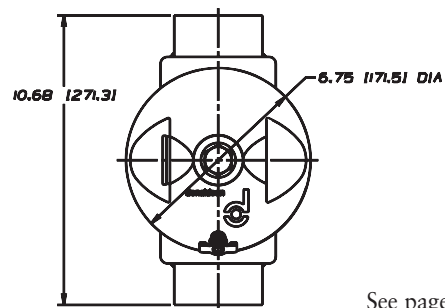
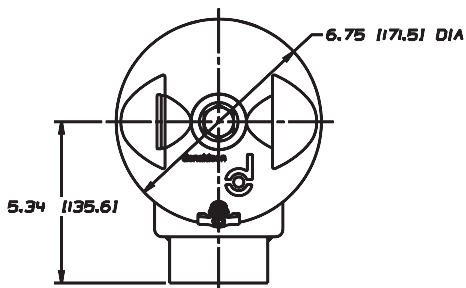
## Assembly - Side View

for: Cooling Circuits  
Return-Line/Suction  
Lube Oil Systems  
Fluid Conditioning

Low Pressure Filters



## Head - Top View



See page 150 for information on how to read the visual service indicator.

All dimensions above are shown in inches [millimeters]



# HDK06 Components

## In-Stock Assemblies

Style	Part No.	Port Size	Bypass Rating	Indicator <sup>1</sup>	Includes Filter Cartridge
In-Tank	K060173	2½" NPT	25 psi / 172.5 kPa	Visual	P164697 Synteq®
In-Line	K060160				

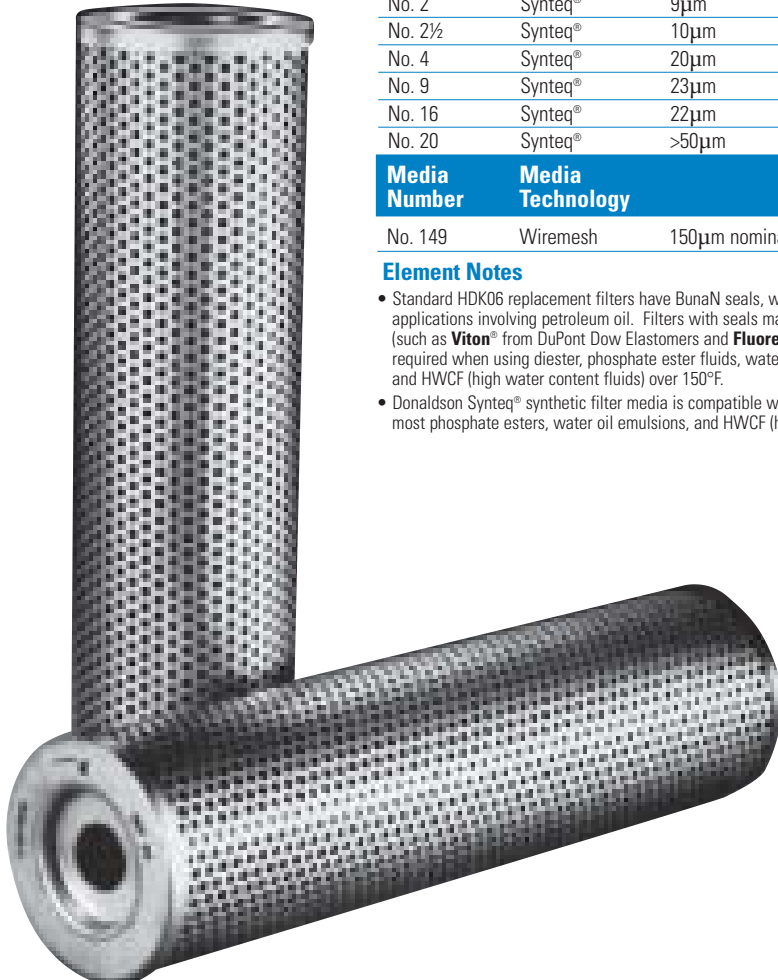
## Replacement Filter Cartridges

Media Number	Media Technology	B <sub>x(c)</sub> = 1000 Rating	Part No.
No. ½	Synteq®	<3µm	P161016
No. 2	Synteq®	9µm	P165628
No. 2½	Synteq®	10µm	P176221
No. 4	Synteq®	20µm	P164697
No. 9	Synteq®	23µm	P164699
No. 16	Synteq®	22µm	P161571
No. 20	Synteq®	>50µm	P166597
Media Number	Media Technology		Part No.
No. 149	Wiremesh	150µm nominal	P160700

### Element Notes

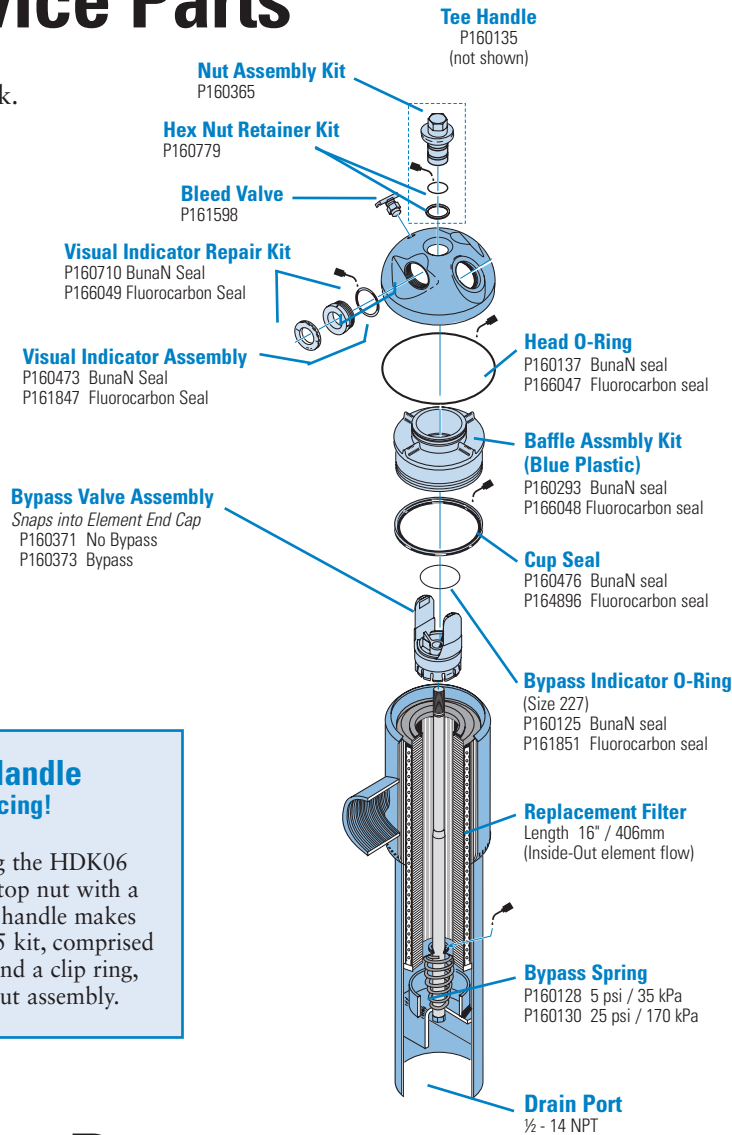
- Standard HDK06 replacement filters have BunaN seals, which are appropriate for most applications involving petroleum oil. Filters with seals made of fluorocarbon elastomer (such as **Viton**® from DuPont Dow Elastomers and **Fluorel** from 3M Company) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF (high water content fluids) over 150°F.
- Donaldson Synteq® synthetic filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, and HWCF (high water content fluids).

*All HDK06 filter cartridges are 16"/406mm in length.*



# HDK06 Service Parts

Not all service parts are in-stock.  
Call for availability.



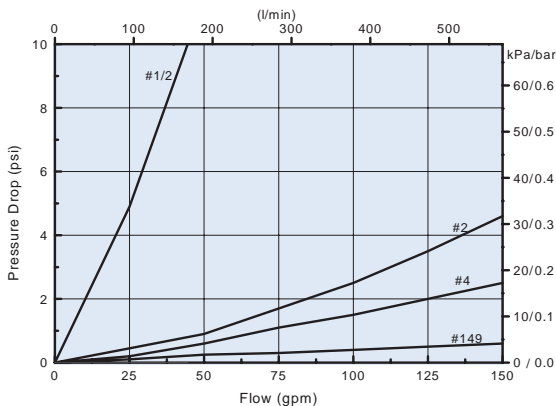
## Optional Tee Handle for Easier Servicing!

The first step in changing the HDK06 cartridge is loosening the top nut with a wrench. Our optional tee handle makes this job easier. The P160135 kit, comprised of the handle, an o-ring, and a clip ring, replaces the entire top nut assembly.

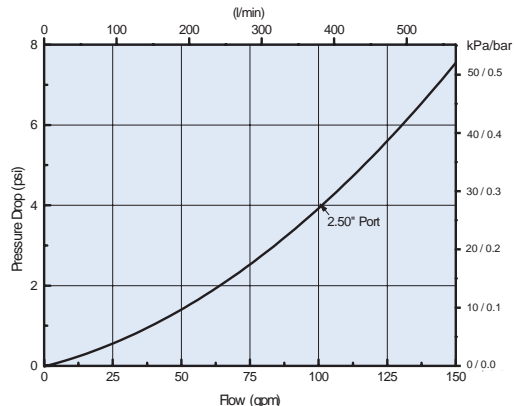
# Performance Data

For a full explanation of how our performance curves were derived, see page 150.

**HDK06 Element Only**



**HDK06 Head Only**



# HEK11 In-Line High-Flow Filter

**Working Pressures to:** 150 *psi*  
1034 kPa  
10.3 bar

**Rated Static Burst to:** 250 *psi*  
1724 kPa  
17.2 bar

**Flow Ranges to:** 600 *gpm*  
2271 l/min



## Features

The HEK11 low-pressure, high flow filter features a cast aluminum head, steel body and a head-to-canister band clamp that simplifies servicing. Flow is inside-to-outside. BunaN seals are on the in-stock models.

Filter media is Synteq®, Donaldson's exclusive synthetic media designed especially for liquid filtration. A wire mesh media is available for harsh applications. HEK11 comes standard with a visual service indicator available via service parts.

### Beta Rating

- Performance to  $\beta_{<3(c)}=1000$

### Porting Sizes

- 4" NPT
- 2½" SAE 4-Bolt Flange, code 61

### Assembly Weight

- 125 lbs / 57 kg

### Assembly Length

- In-Line model: 32.50" / 825.5mm

### Standard Bypass Ratings

- 25 *psi* / 172.5 kPa / 1.7 bar (standard)
- Optional: No Bypass

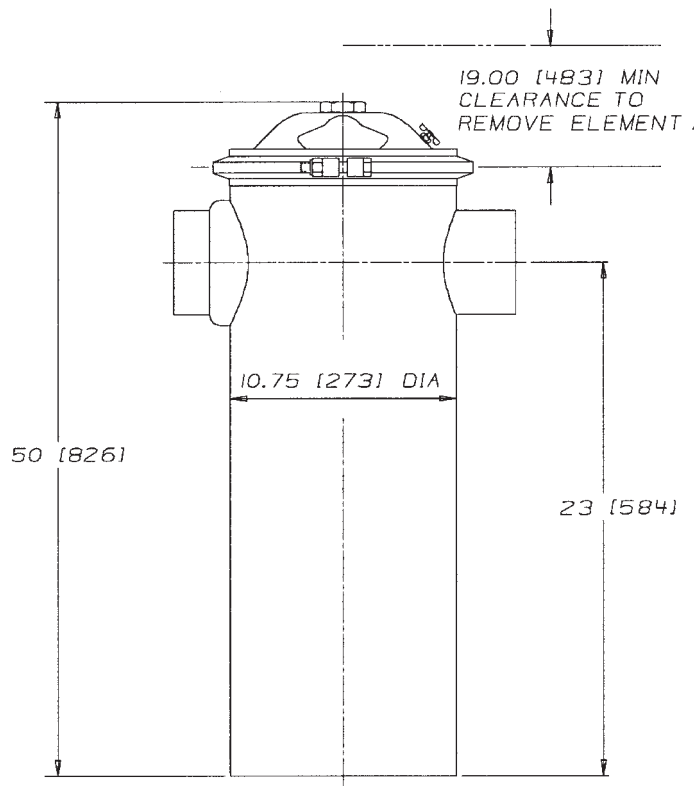
### Operating Temperatures

- Synthetic media -20°F to 250°F  
-29°C to 121°C

### Element Burst Rating

- 100 *psi* / 689 kPa / 6.9 bar

## Assembly - Side View

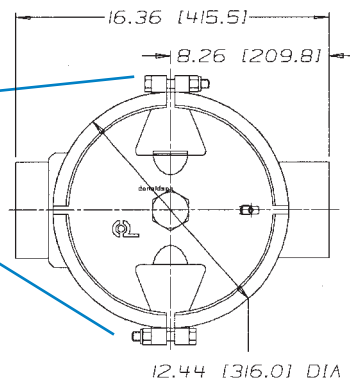


**for:** Cooling Circuits  
Fluid Conditioning  
Return-Line/Suction/Side-Loop  
Lube Oil Systems  
Mobile and In-Plant

Low Pressure Filters

## Head - Top View

**Bolts of head clamp  
MUST be positioned 90°  
from inlet port, as shown.  
TORQUE bolts to 30 ft/lb,  
alternating tightening  
sequence between the  
two clamp bolts.**



● All dimensions above are shown in inches [millimeters]



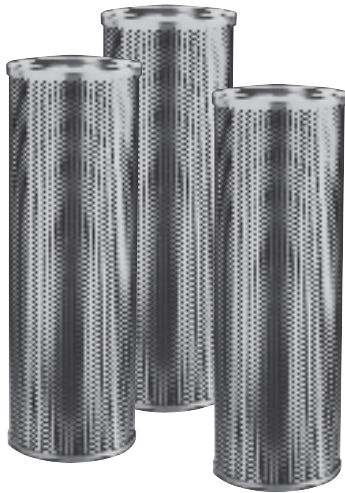
# HEK11 Components

## In-Stock Assemblies

Port Size	Bypass Rating	Indicator Style <sup>1</sup> & Location <sup>2</sup>	Assembly Part No.	Includes this filter
4" NPT	25 psi / 172.5 kPa	Visual, Left side	K110056	P164707, media No. 9
2½" SAE 4-Bolt Flange	25 psi / 172.5 kPa	Visual, Right side	K110125	P176417, media No. 2

### Assembly Notes

<sup>1</sup> Donaldson uses the inlet port as the reference point. "Left side," for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.



Synteq

What's so special about Donaldson-developed Synteq® synthetic filter media? Find out on [page 8](#) !

## Replacement Element Options

All HEK11 filter cartridges are 22"/559mm in length, and contain Synteq® synthetic filter media, except for the P160078.

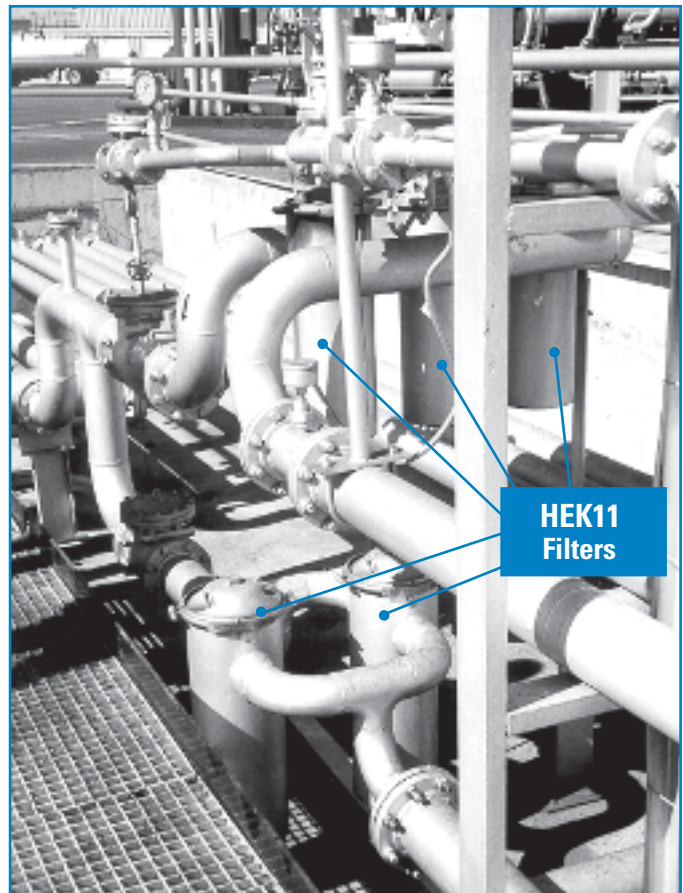
Media Number	B <sub>2(c)</sub> = 1000 Rating	Part No.
No. ½	<3µm	P163472
No. 2	9µm	P176417
No. 2½	10µm	P176223
No. 6	13µm	P165449
No. 9	23µm	P164707
No. 20	>50µm	P171279
Media Number	Media Technology	Part No.
No. 149	Wiremesh 150µm nominal	P160078

### Filter Notes

- Synteq® filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, and HWCF (high water content fluids.)

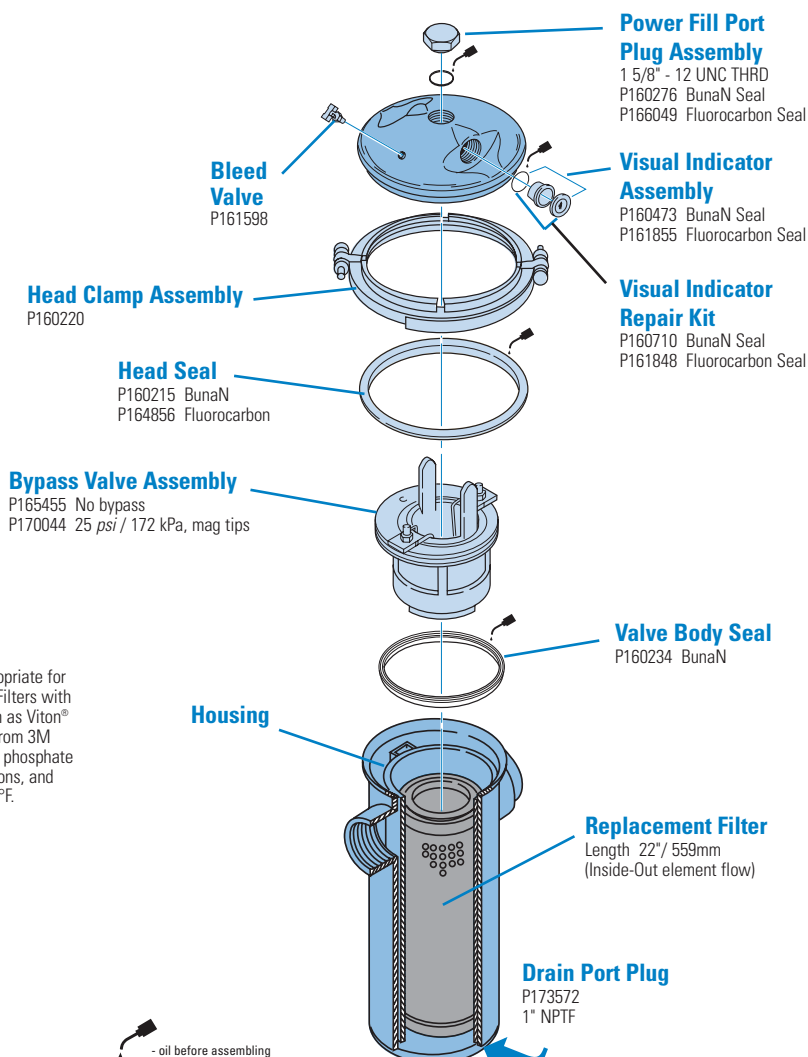
## HEK11 at Oil Depot

High-flow/low pressure HEK11 filters are used at this oil depot to remove both ingressed and induced contamination from oil that is piped around from reservoir to tank.



# HEK11 Service Parts

Not all service parts are in-stock.  
Call for availability.



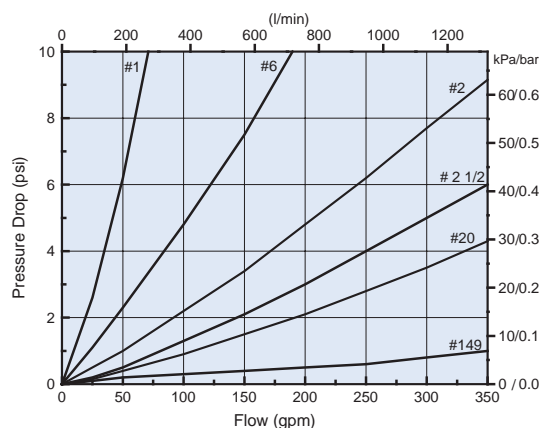
## A Note on Seals

- Filters with seals made of BunaN are appropriate for most applications involving petroleum oil. Filters with seals made of fluorocarbon elastomer (such as Viton® from DuPont Dow Elastomers and Fluorel from 3M Company) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF (high water content fluids) over 150°F.

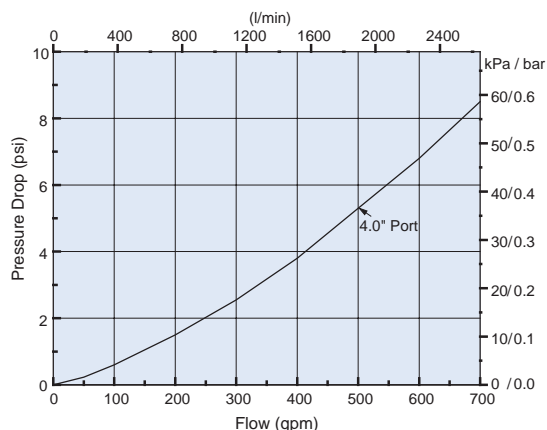
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

HEK11 Element Only (22" / 559mm)



HEK11 Head Only

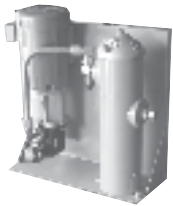


## HFK08 In-Line/Tank Mount Filter

<b>Working Pressures to:</b>	350 <i>psi</i> 2413 kPa 24.1 bar
<b>Rated Static Burst to:</b>	500 <i>psi</i> 3448 kPa 34.5 bar
<b>Flow Ranges to:</b>	300 <i>gpm</i> 1136 l/min

## Features

HFK08 is available in two styles: In-Line and In-Tank. Both styles feature a cast aluminum head and steel body for maximum strength and durability. Its single, center retention bolt simplifies servicing. Flow is from inside to outside the filter cartridge.



Our HFK08-0087 in-line model, seen at left, comes with a smaller SAE 20 inlet/outlet port and 50 *gpm* flow capacity— one good choice for kidney loop filtration applications. Dedicated off-line circuits or kidney loops are very effective in ensuring thorough fluid conditioning.

Three in-stock HFK08 models offer our proprietary Synteq® synthetic media designed especially for liquid filtration. A wider range of filter media is available to purchase separately, as are fluoroelastomer seals. A visual service indicator is built into the HFK08 head; see the service parts list.



### Beta Rating

- Performance to  $\beta_{<3(c)}=1000$

### Porting Size

- 3" NPT or SAE-20 O-Ring

### Assembly Weight

- 34 lbs / 15.4 kg

### Replacement Filter Length

- 18" / 457mm

### Standard Bypass Ratings

- 25 *psi* / 172.5 kPa / 1.7 bar

### Operating Temperatures

- Synthetic media    -20°F to 250°F  
-29°C to 121°C

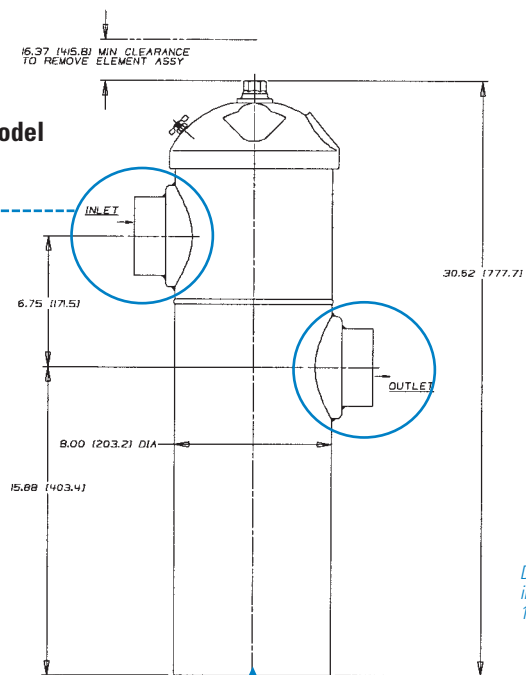
### Element Burst Ratings

- 75 *psi* / 517 kPa / 5.2 bar (synthetic)
- 100 *psi* / 689 kPa / 6.9 bar (wiremesh)

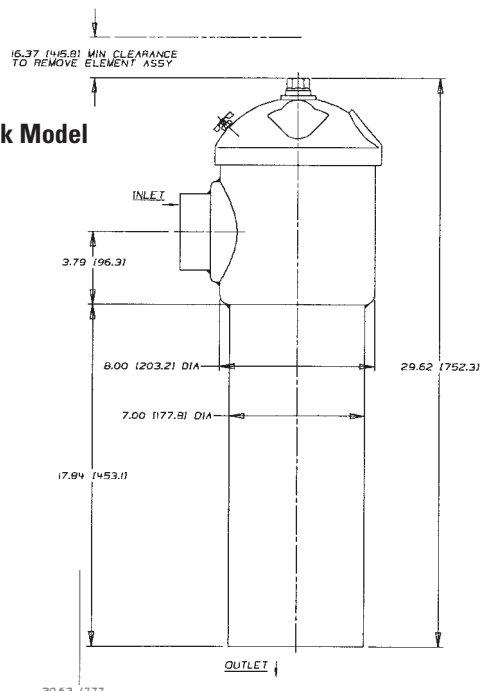
## Assembly - Side View

**for:** Return Lines  
Lube Oil Systems  
Kidney Loop Systems  
Fluid Conditioning  
Suction Lines

**In-Line Model**

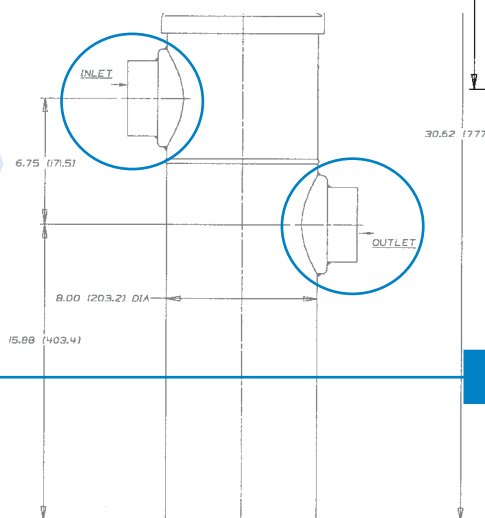


**In-Tank Model**

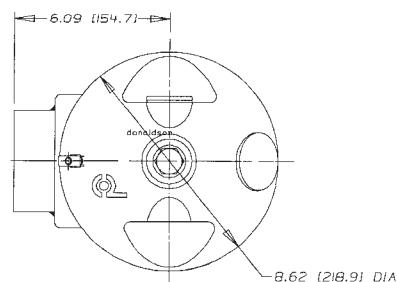
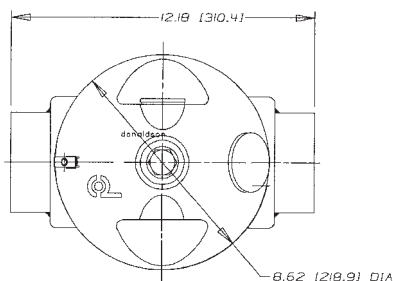


**HFK08-0087 In-Line Model**

Smaller port size  
(SAE-20) works well for  
Kidney Loop filtration.



## Head - Top View



All dimensions above are shown in inches [millimeters]



# HFK08 Components

## In-Stock HFK08 Assemblies

Port Size	Bypass Rating	Indicator Style & Location	Assembly Part No.	Media	Length (in./mm)	Filter Part No.
3" NPT	25 psi / 172.5 kPa	Visual, Left side	K080051, In-Tank	No. 9	18"/457mm	P164703
		Visual, Right side	K080033, In-Line	No. 9	18"/457mm	P164703
			K080085, In-Line	No. 6	18"/457mm	P164407 all seals are Viton
SAE-20	25 psi / 172.5 kPa	Visual, Right side	K080087, In-Line	No. ½	18"/457mm	P164405

### Assembly Notes

<sup>1</sup> Donaldson uses the inlet port as the reference point. "Left side," for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.

## Replacement Filter Choices

Media Number	Media Technology	B <sub>x(c)</sub> = 1000 Rating	Part No.
No. ½	Synteq®	<3µm	P164405
No. 2	Synteq®	9µm	P166462
No. 2½	Synteq®	10µm	P176222
No. 4	Synteq®	20µm	P164701
No. 6	Synteq®	13µm	P164407 w/Viton seal
No. 9	Synteq®	23µm	P164703
Media Number	Media Technology		Part No.
No. 44	Wiremesh	45µm nominal	P173573
No. 149	Wiremesh	150µm nominal	P163945

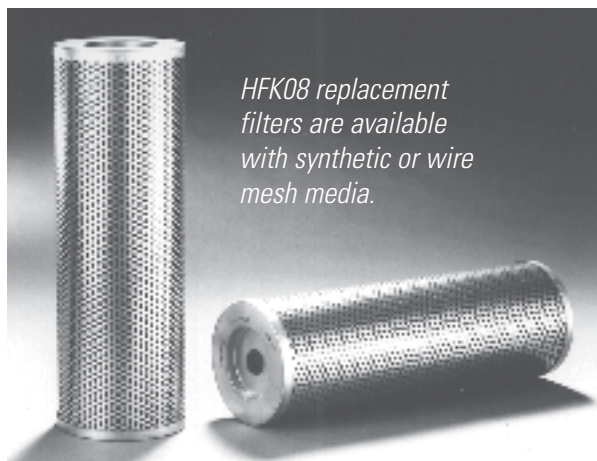
### Filter Notes

- HFK08 replacement filters have seals made of **BunaN**, except as noted above, which is a material appropriate for most applications involving petroleum oil. Filters with seals made of **Viton**® (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HWCF (high water content fluids) over 150°F. (Viton® is a registered trademark of DuPont Chemical Corp.)
- Synteq® filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, & HWCF (high water content fluids).



*The K080087 model has features that are perfect for kidney loop filtration:*

- SAE-20 port size
- 50gpm flow capacity (enables constant face velocity and prevents sloughing)
- High-efficiency Synteq media



*HFK08 replacement filters are available with synthetic or wire mesh media.*

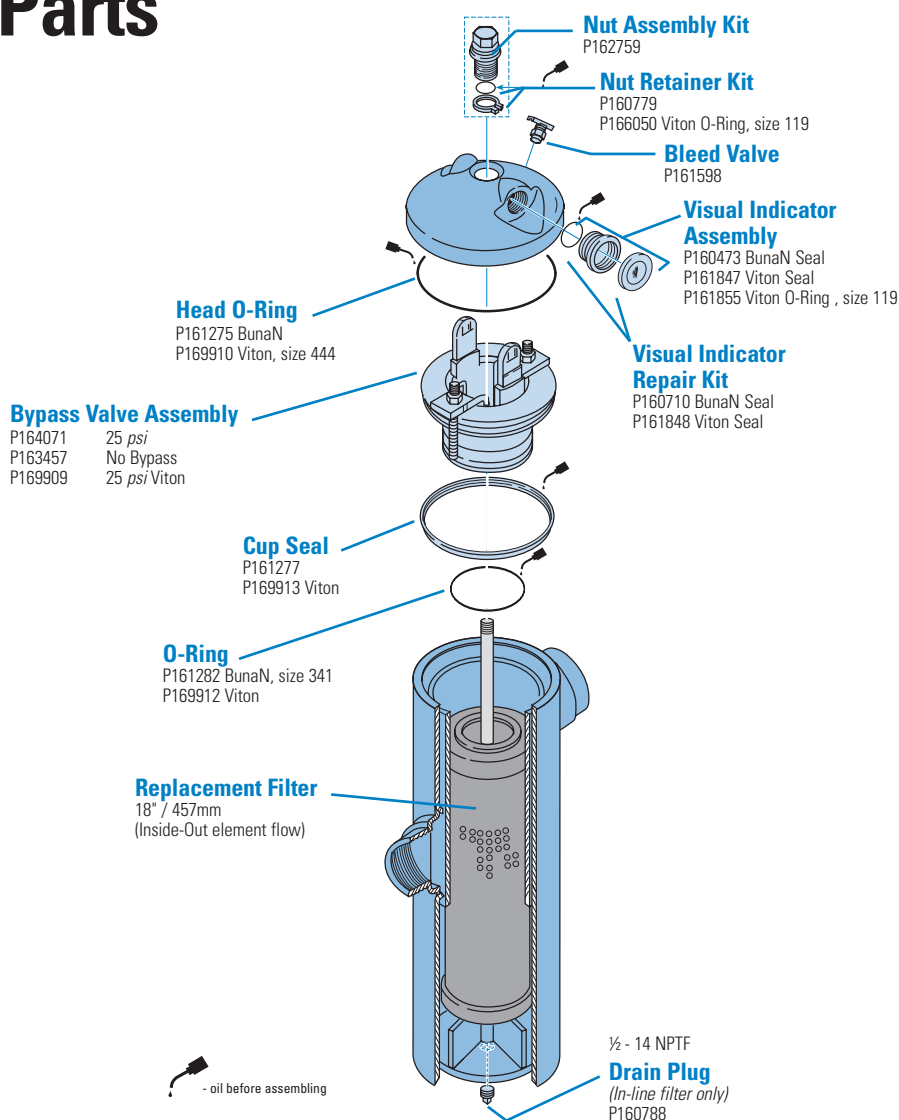


Learn more about  
Donaldson-developed  
Synteq® synthetic filter  
media on page 8.

# HFK08 Service Parts

Not all service parts are in-stock.  
Call for availability.

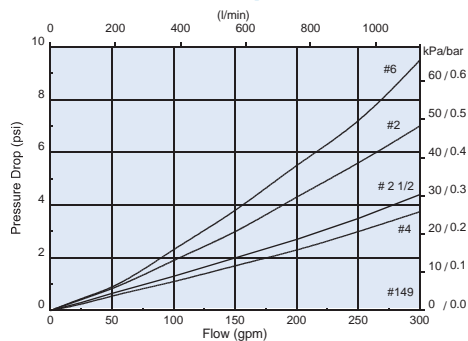
See page 150 for information on how to  
read the visual service indicator.



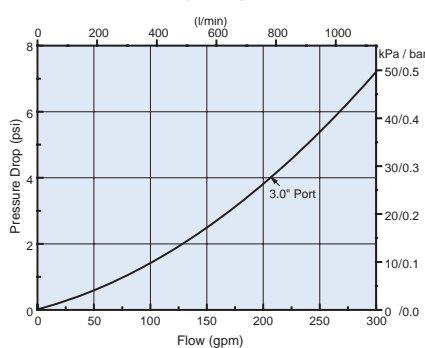
## Performance Data

For a full explanation of how our performance curves were  
derived, see page 150.

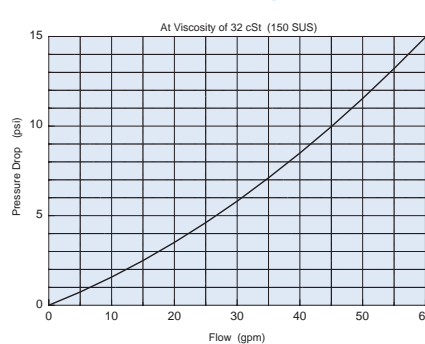
**HFK08 Element Only**



**HFK08 Housing Only**



**HFK08-0087 Assembly**



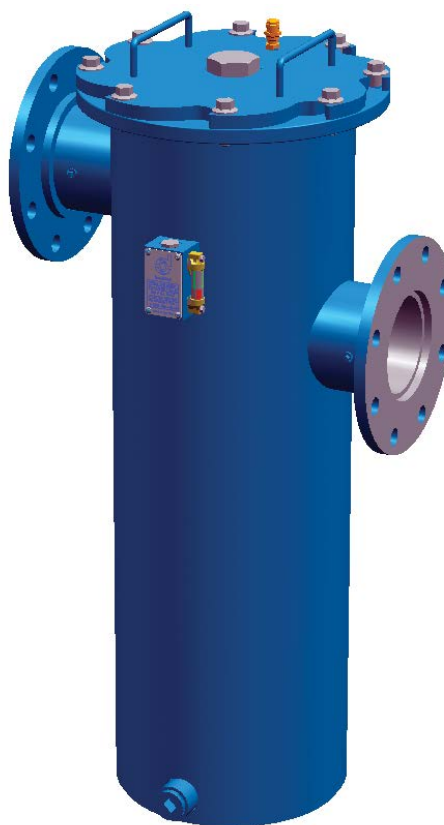
# HRK10 In-Line Hydraulic Filter



## Applications

- Mining
- Off-shore
- In-Plant
- Cooling Circuits
- Bulk Oil & Fuel
- Return Line/Suction
- Other demanding industrial applications

<b>Working Pressures to:</b>	150 <i>psi</i> 1034 kPa 10.3 bar
<b>Rated Static Burst to:</b>	500 <i>psi</i> 3448 kPa 34.4 bar
<b>Flow Ranges to:</b>	300 <i>gpm</i> 1140 <i>l/min</i>



## Features & Benefits

**Rugged all steel construction** - durable

**Inside to outside flow** - contaminants remain in filter at servicing

**High dirt holding capacity & low pressure drop** - longer element life

**Proven valve design** - superior seal

**Robust "Twist & Lift" cover and seal design** - easier to service



### Beta Rating (per ISO 16889)

- Performance to  $\beta_{<4(c)}=1000$

### Porting Sizes

- Standard 4" ANSI Flange

### Assembly Weight

- 140 lbs / 64 kg

### Standard Bypass Ratings

- No Bypass
- 5 *psi* / 34.5 kPa / .34 bar
- 25 *psi* / 172.5 kPa / 1.7 bar
- 50 *psi* / 345 kPa / 3.4 bar

### Operating Temperatures

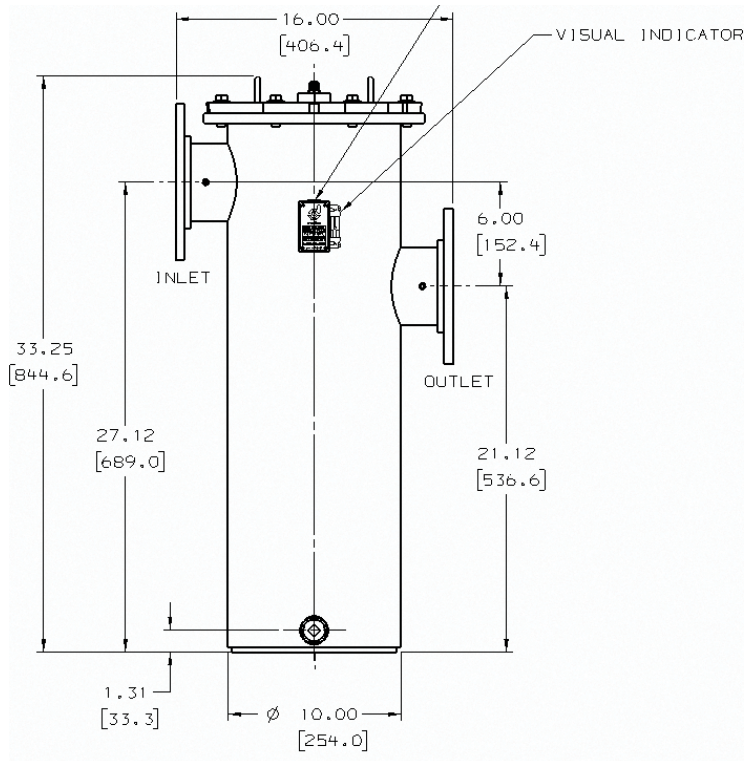
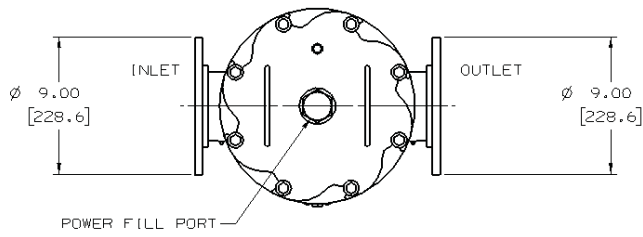
- -20°F to 250°F
- -29°C to 121°C

### Element Burst Rating

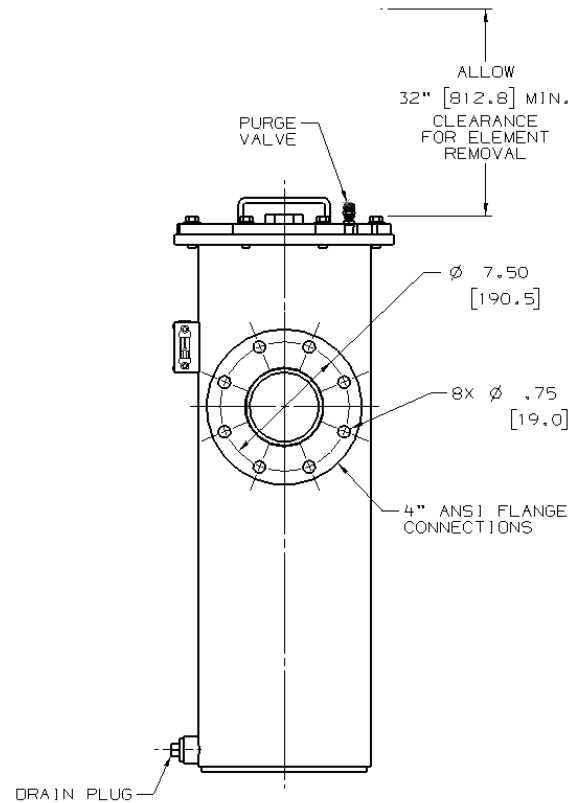
- 100 *psi* / 689 kPa / 6.9 bar

Donaldson®

# HRK10 Assembly Drawings

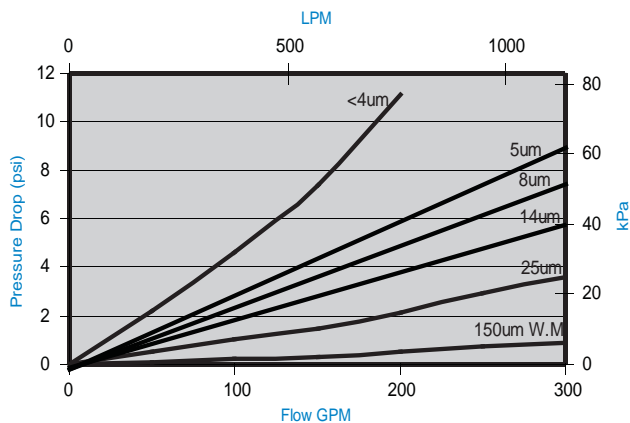


Dimensions are shown in  
inches [millimeters].

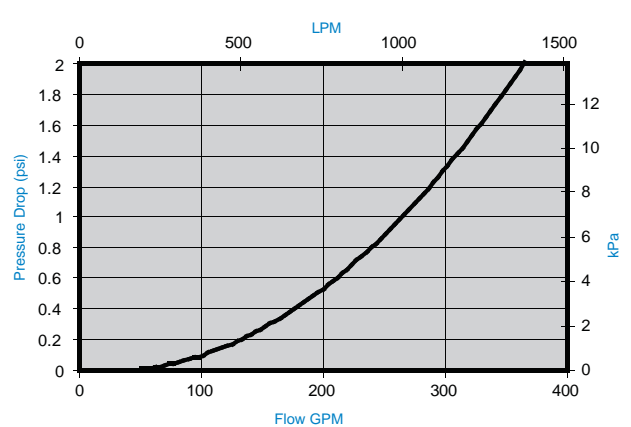


## Performance Data

HRK10 Element Only (22" / 559mm)



HRK10 Housing Only with 4" Port





# HRK10 Components

## HRK10 Filter Housings

Part #	Inlet/Outlet Port Connections	Bypass Valve Rating	Indicator Options
HRK100001	4" ANSI flange	No bypass	Visual indicator standard, electrical indicator optional
HRK100002	4" ANSI flange	5 psi bypass	Visual indicator standard, electrical indicator optional
HRK100003	4" ANSI flange	25 psi bypass	Visual indicator standard, electrical indicator optional
HRK100004	4" ANSI flange	50 psi bypass	Visual indicator standard, electrical indicator optional

### Notes

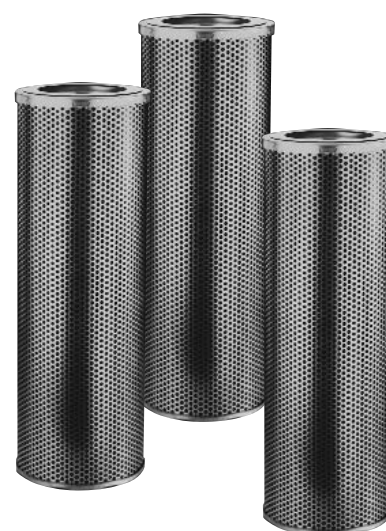
- 1) Filter Housings are shipped without element. Order element separately from available choices below.
- 2) Filter Housings are standard with fluorocarbon seals.
- 3) See table below for Optional Electrical Indicators.

*Use HRK10 in place of previous HEK11 housings. For better performance use HRK10 elements in existing HEK11 housings.*

## Replacement Element Choices

All HRK10 filter cartridges are 22"/559mm in length, and contain Synteq® synthetic filter media.

Part #	Media Efficiency per ISO16889 $R_{x(c)}=1000$	Media Type
P566187	< 4 $\mu$ m	Synteq
P566188	5 $\mu$ m	Synteq
P566189	8 $\mu$ m	Synteq
P566190	14 $\mu$ m	Synteq
P566191	25 $\mu$ m	Synteq
P566192	NA	150 micron Wiremesh

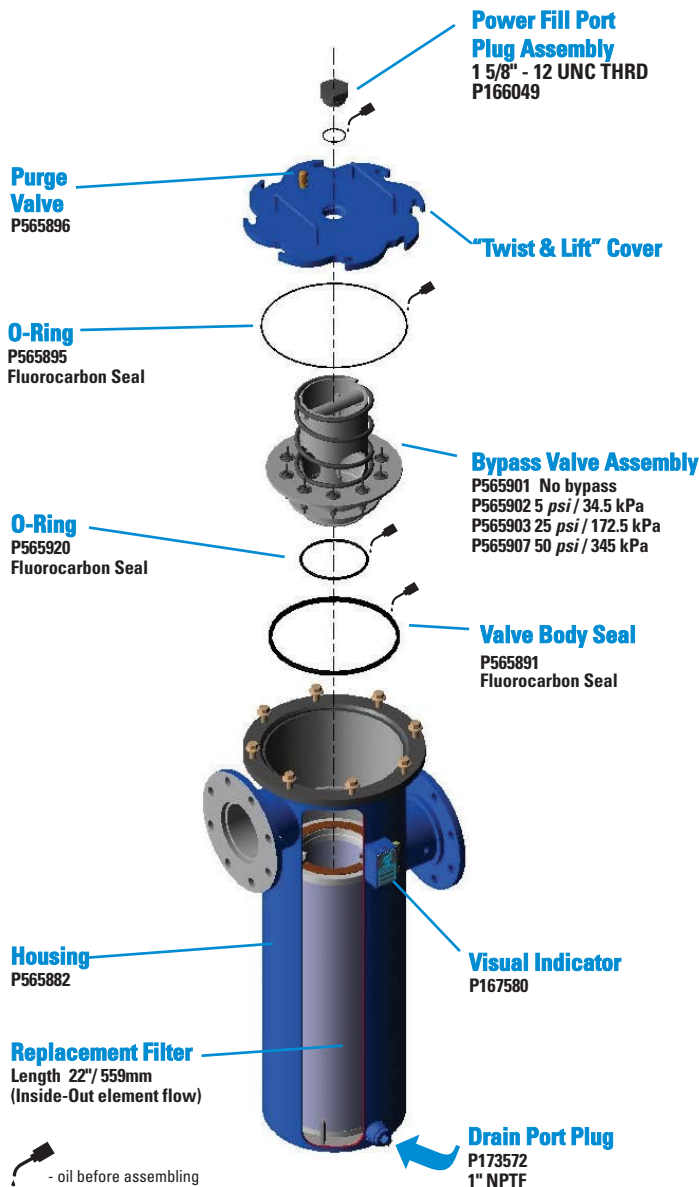


## Electrical Indicator Options

Part #	Set Point	Description
P173944	20 psi	AC/DC, 3 wire
P174396	40 psi	AC/DC, 3 wire

Donaldson-developed Synteq® synthetic filter media has smooth, rounded fibers for low resistance to fluid flow. Synteq® media is ideal for filtering synthetic fluids, water glycols, water/oil emulsions, HWCF and petroleum-based fluids.

# HRK10 Service Parts



## Special Features

- Robust **"Twist & Lift"** cover simplifies servicing - no need to remove bolts.
- Unique **convex valve design** provides superior seal. Multiple valves assure full flow during bypass operation.
- Filter attaches to the bypass assembly with a **finger-activated clip** for easier element removal.
- Standard **fluorocarbon seals** are compatible with many hydraulic fluids.



**Donaldson**  
Filtration Solutions

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Tel.: 61-2-4352-2022  
Fax: 61-2-4351-2036

### Asia-Singapore

Tel.: 65-63117373  
Fax: 65-63117399

### Europe

Tel.: 32-16-38-3811  
Fax: 32-16-38-3939

### South Africa

Tel.: 27-11-389-8808  
Fax: 27-11-908-2216

### Latin America & Caribbean

Tel.: 52-555-557-8128  
Fax: 52-555-557-8410

# *New HRK10 and Donaldson Triboguard™ Filters Save Paper Mill's Main Lube Circuit*

**INDUSTRY:** Paper  
**PROBLEM:** Collapsing Competitive Filter Elements  
**SOLUTION:** Donaldson HRK10  
Donaldson Triboguard Elements

**Donaldson**  
**Triboguard™**



*New HRK10 Housing*



Recently, Donaldson Company was contacted by an upper Midwestern paper mill. The mill was interested in our new T.R.A.P.™ breather (moisture/dirt breather filter). The new product is most commonly used on hydraulic power units, lube circuits and gear boxes. The customer used the T.R.A.P.™ breather throughout the plant to prevent moisture from entering these critical applications with great success!

Since our initial success with the T.R.A.P.™ product, this paper mill called Donaldson and our Distribution Partner for assistance with a different application. The customer was experiencing filter collapse in existing competitive filter housings, resulting in contamination of the main lube circuit. In addition, the filtration system, using 8300 competitive style housings, was inefficient and didn't offer a bypass option.

The mill runs a demanding 24/7 operation with minimal shutdown opportunities, but the company had a major maintenance shutdown (20 hours max) scheduled, which provided a narrow window of opportunity for Donaldson and our Distribution Partner to shine.

The mill found a solution in Donaldson's new HRK10 filter housings and Donaldson Triboguard filter elements. Four HRK10 units were configured in a duplex arrangement. Donaldson Triboguard  $\beta_{(c)5}=1000$  filter elements were installed and are currently achieving an ISO cleanliness level of 16/14/11. Routine oil samplings upstream and downstream continue to confirm great results.

Through the joint efforts of Donaldson Company and our Distribution Partner, we delivered an economical solution which created a new relationship and happy customer.



# LPS04, SP15/25 Spin-On Filters

<b>Maximum Working Pressures to:</b>	150 <i>psi</i> 1034 kPa 10.3 bar
<b>Rated Static Burst to:</b>	375 <i>psi</i> 2590 kPa 25.9 bar
<b>Flow Ranges to:</b>	30 <i>gpm</i> 114 l/min

## Features

The LPS04 and SP15/25 series are economical, low pressure filters with spin-on convenience and a wide range of cleanliness ratings. Filters are available with the bypass ratings of your choice—  
25 *psi*, 15 *psi*, 5 *psi* or no bypass.

Take advantage of our Mix 'n Match system of in-stock heads & elements, so you can get exactly what you need!

Likewise, choose the media type and configuration that's best for your application. Options include Donaldson's exclusive Synteq®, natural fiber cellulose, stainless steel wiremesh or water absorbing media.



### Beta Rating

- Performance to  $\beta_{9(c)}=1000$

### Porting Sizes

- ½", ¾" NPT or ½", ¾" O-Ring

### Replacement Filter Lengths

- |                 |               |
|-----------------|---------------|
| • Synteq®       | 5.35" / 136mm |
|                 | 7.87" / 200mm |
| • Cellulose     | 5.35" / 136mm |
|                 | 7.87" / 200mm |
| • Wiremesh      | 5.35" / 136mm |
| • Water Removal | 5.35" / 136mm |

### Standard Bypass Ratings

- 25 *psi* / 172.5 kPa / 1.7 bar
- 15 *psi* / 97 kPa / .97 bar
- 5 *psi* / 34.5 kPa / .34 bar
- No Bypass

### Assembly Weight

- 2.2 lbs / 1 kg (approx.)

### Operating Temperatures

- -20°F to 225°F / -27°C to 107°C

### Collapse Ratings

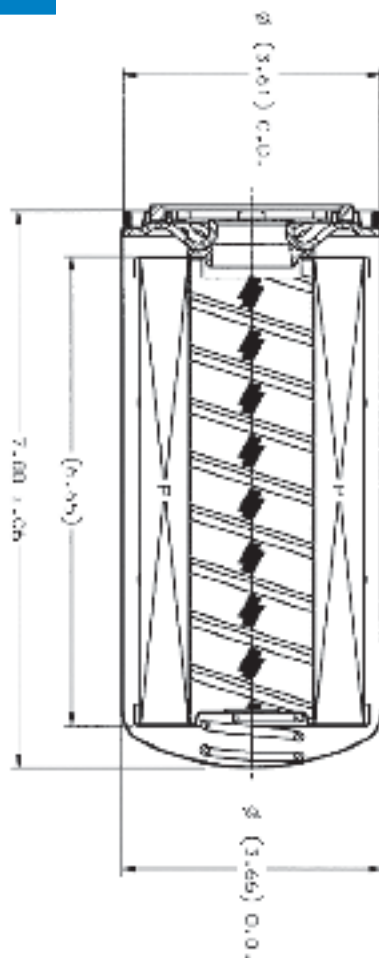
- 100 *psid* / 690 kPa / 6.9 bar (standard)



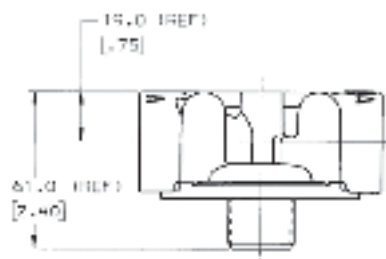
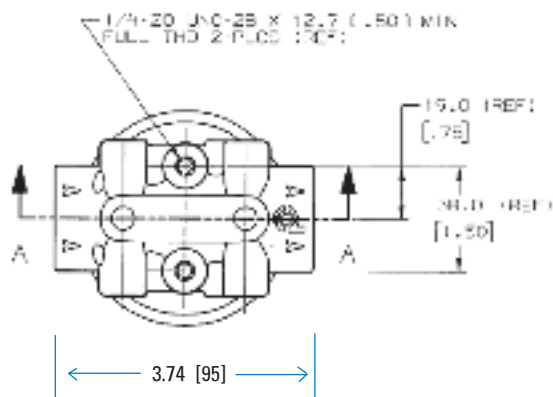
## Element Dimensions

for: In-Plant Systems  
Ag Equipment  
Mining  
Construction  
Logging

For available  
element lengths,  
see page 14.



## Head Dimensions



All dimensions above are shown in inches [millimeters]

# LPS04 Components

## Element Choices

Media Type	Beta <sub>x(c)</sub> =200 Rating	Beta <sub>x(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part No.	Comments
Cellulose Media # 3		24	5.35/136	P565061	
Cellulose Media # 10		23	5.35/136	P562198	
Cellulose Media # 10		23	7.87/200	P565059	
Synteq Media # 2		9	7.87/200	P564357	Synthetic Media
Synteq Media # 2-1/2		10	5.35/136	P560693	Synthetic Media
Synteq Media # 2-1/2		10	7.87/200	P179089	Synthetic Media
Synteq Media # 9		23	5.35/136	P560694	Synthetic Media
Synteq Media # 1		6	5.35/136	P564967	Synthetic Media
Cellulose Media # 25	32		5.35/136	P562199	
Cellulose Media # 25	32		7.87/200	P565060	
Water absorbing Media	32		5.35/136	P565062	Absorbs Approx. 6 oz/170 ml of water @ 20 psid
Wiremesh Media # 149	150		5.35/136	P550274	

## Head Choices for LPS04 and SP15/25

Port Size	Bypass Range	Gauge ports (drill, tap, plug)	Gauge Port Location	DCI Part No.
½" NPT	15 psi / 103.4 kPa / 1.34 bar	(2) 1/8" NPT	upstream side	P563288
¾" NPT	25 psi / 172.5 kPa / 1.72 bar	(2) 1/8" NPT	upstream side	P561131
¾" NPT	5 psi / 34.5 kPa / .34 bar	(2) 1/8" NPT	downstream side	P561132
¾" NPT	25 psi / 172.5 kPa / 1.72 bar	none	na	P561134
¾" NPT	5 psi / 34.5 kPa / .34 bar	none	na	P561135
¾" NPT	none	none	na	P561136
¾" NPT	15 psi / 103.4 kPa / 1.34 bar	none	na	P563278
SAE-12	none	none	na	P561133
SAE-12	none	(1) SAE-4	upstream side, LH	P561137
SAE-12	5 psi / 34.5 kPa / .34 bar	none	na	P561140
SAE-12	25 psi / 172.5 kPa / 1.72 bar	none	na	P561141
SAE-12	15 psi / 103.4 kPa / 1.34 bar	none	na	P563279
SAE-12	25 psi / 172.5 kPa / 1.72 bar	(2) 1/8" NPT	upstream side	P563280
SAE-12	15 psi / 103.4 kPa / 1.34 bar	none	M6 mtg. Thrds	P563287
SAE-8	25 psi / 172.5 kPa / 1.72 bar	none	na	P561138



## Mix 'n Match...

Donaldson's Mix 'n Match system provides the great performance and functional advantages of custom-engineered filters with the convenience and speedy delivery of in-stock parts. Choose your options and build a filter model to suit your specifications.

## Filter Service Gauges - Visual Indicators

Donaldson Part No.	Pressure Range	Use With Bypass Valve Rating	Type
P563978	5 to 30 psi field adj. *	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, electrical
P563979	-5 to 15 in Hg field adj. *	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, electrical
P563296	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, numeric scale
P563297	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar Bypass	Return indicator, color coded
P563298	0 to 100 psi	25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, color-coded
P563299	0 to -20 Hg	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, numeric scale

### Notes

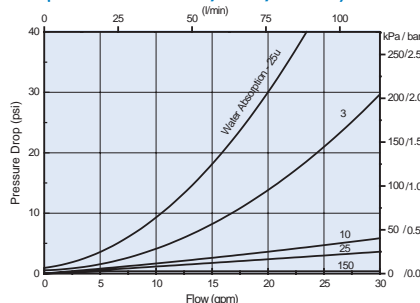
\* NOT PRESET: Setting adjustable for desired application



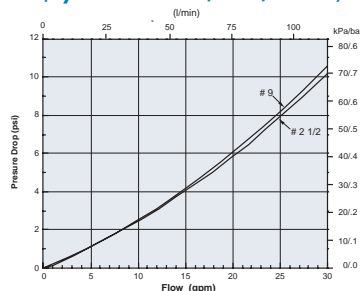
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

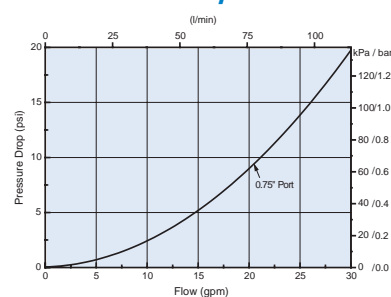
**LPS04 Filter Only**  
(Cellulose Media, 5.35"/136mm)



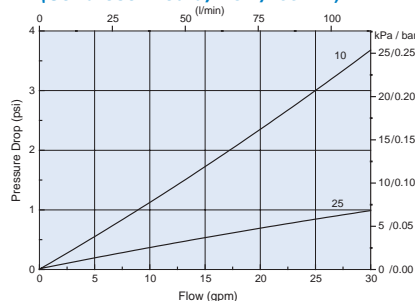
**LPS04 Filter Only**  
(Synthetic Media, 5.35"/136mm)



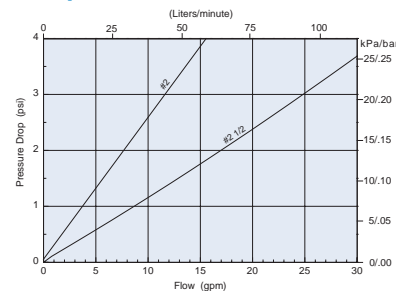
**LPS04 Head Only**



**LPS04 Filter Only**  
(Cellulose Media, 7.87"/200mm)



**LPS04 Filter Only**  
(Synthetic Media, 7.87"/200mm)

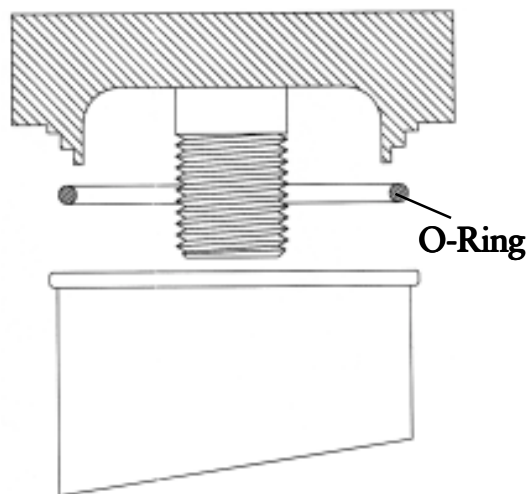


## Seal Installation Instructions

Use only one of the following seals and the corresponding installation method.

### O-Ring Seal (P166435)

Use with: Donaldson **HBK05** series filter heads only.



#### 3 Easy Steps

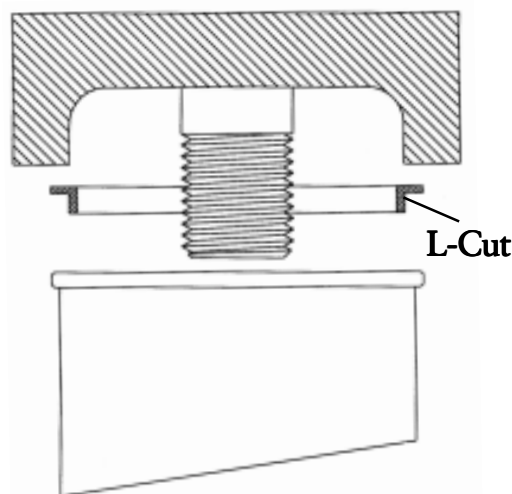
1. Remove used seal and clean gasket seat in head. Apply clean oil to new surfaces.
2. Install new seal on inside lip of filter.
3. Screw on new filter until gasket makes contact. Tighten filter until top edge makes metal to metal contact with filter head (approximately 1.5 additional turns).

#### Remember...

- Over-tightening filter may damage head.
- Dispose of used filter properly.

### L-Cut Gasket (P170894)

Use with: Donaldson **LPS05** series filter heads and some non-Donaldson heads.



#### 3 Easy Steps

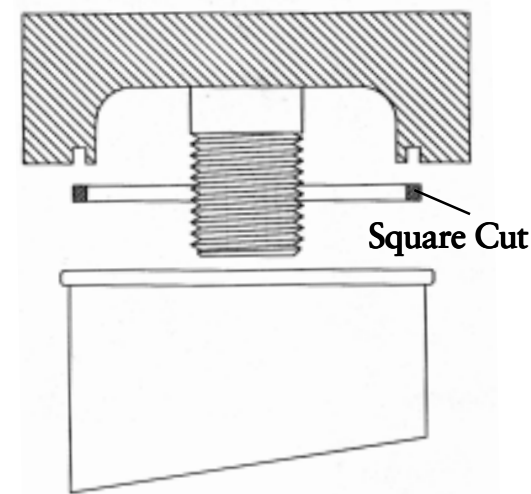
1. Remove used gasket and clean sealing surface. Apply clean oil to new gasket surfaces.
2. Install new gasket on inside lip of filter.
3. Screw on new filter until gasket makes contact. Tighten filter an additional 3/4 turn.

#### Remember...

- Over-tightening filter may damage head.
- Dispose of used filter properly.

### Square-Cut Gasket (P165641)

Use with: Donaldson LHA **SP50/60, 80/90, 100/120** series filter heads and some non-Donaldson heads.



#### 3 Easy Steps

1. Remove used gasket and clean groove in head. Apply clean oil to new gasket surfaces.
2. Install new gasket into groove in filter head.
3. Screw on new filter until gasket makes contact. Tighten filter an additional 3/4 turn.

#### Remember...

- Over-tightening filter may damage head.
- Dispose of used filter properly.



# SP100/120 Spin-On Filters

**Working Pressures to:** 150 *psi*  
1035 kPa  
10.3 bar

**Rated Static Burst to:** 250 *psi*  
1725 kPa  
17.2 bar

**Flow Range to:** 100 *gpm*  
380 l/min



## Features

SP100/120 double element head allows for double the flow capacity and a unique, space-saving configuration. Aluminum casting and Buna-N seals standard. SP100/120 elements are interchangeable with SP50/60 filters.

### Beta Rating

- Performance to  $\beta_{6(c)}=1000$

### Porting Sizes

- 1½" NPT

### Replacement Filter Lengths

- 6.7" / 170mm
- 7.0" / 178mm
- 10.7" / 271mm

### Standard Bypass Ratings

- 25 psi / 172.5 kPa / 1.72 bar

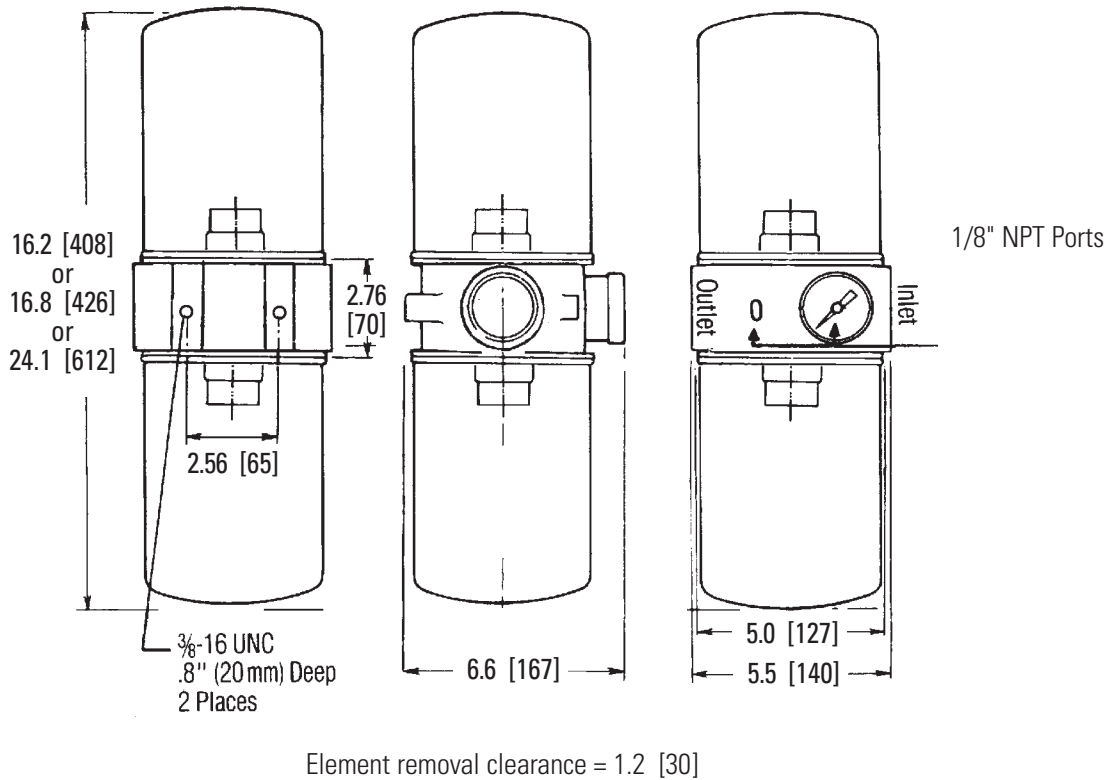
### Operating Temperatures

- -22°F to 250°F / -30°C to 121°C

### Assembly Weight

- 7.0 lbs (short)
- 8.8 lbs (long)

## Assembly - Side View



● All dimensions are shown  
in inches [millimeters]

# SP100/120 Components

## Element Choices

Media Type	Beta <sub>x(c)</sub> =200 Rating	Beta <sub>x(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part No.	Comments
Cellulose Media #3		24µm	6.7/169	P550386	
Cellulose Media #3		24µm	10.7/271	P550250	
Cellulose Media #10		23µm	6.7/169	P550388	
Cellulose Media #10		23µm	10.7/271	P550251	
Cellulose Media #10		23µm	6.7/169	P562201	
Cellulose Media #10		23µm	7.00/178	P550148	1¼" BSP thread
Cellulose Media #10		23µm	10.7/271	P562204	
Cellulose Media # 3		24µm	6.7/169	P562200	
Beta-10 Absolute Synthetic		10µm	6.7/169	P562207	Synthetic
Beta-10 Absolute Synthetic		10µm	10.7/271	P562208	Synthetic
Beta 3 Absolute Synthetic		6µm	6.7/169	P562209	Synthetic
Beta 3 Absolute Synthetic		6µm	10.7/271	P167832	Synthetic
Cellulose Media #25	32µm		6.7/169	P550387	
Cellulose Media #25	32µm		10.7/271	P550252	
Cellulose Media #25	32µm		6.7/169	P562202	
Cellulose Media #25	32µm		7.0/178	P171616	1¼" BSP thread
Cellulose Media #25	32µm		10.7/271	P562205	
Water Absorbing	10µm water absorption		10.7/271	P561183	Absorbs 24 oz./700 ml water
Wiremesh	150µm nominal		6.7/169	P550275	Stainless Steel
Wiremesh	150µm nominal		10.7/271	P550276	Stainless Steel
Wiremesh	150µm nominal		6.7/169	P562203	

All models have 1½ -16 UNF threads except for P550148 and P171616 which have 1¼" BSP threads.  
All models measure 5.0"/127mm outer diameter.

## Head Choices for SP100/120

Port Size	Bypass Rating	Gauge Ports (drill, tap, plug)	Gauge Port Location	DCI Part No.
1½" NPT	25 psi / 172.5 kPa / 1.72 bar	(2) 1/8" NPT	upstream & downstream sides	P563277



## Optional Filter Service Indicators

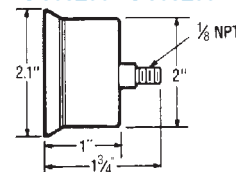
This handy pressure gauge, mounted on the side of an SP100/120 filter head, will tell you when it's time to service the filter element.

Donaldson Part No.	Pressure Range	Use With Bypass Valve Rating	Type
P563978	5 to 30 psi field adj.*	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, electrical
P563979	-5 to 15 in Hg field adj.*	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, electrical
P563296	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, numeric scale
P563297	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar Bypass	Return indicator, color coded
P563298	0 to 100 psi	25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, color-coded
P563299	0 to -20 Hg	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, numeric scale

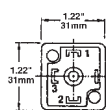
### Notes

\* NOT PRESET: Setting adjustable for desired application

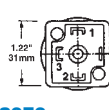
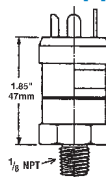
P563296 - P563299



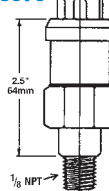
#1 Common; #2 Normally Closed;  
#3 Normally Open



P173978



P563979



### Instructions

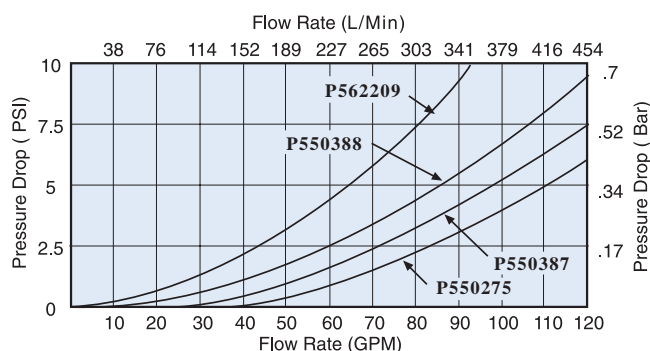
1. Remove DIN adaptor
2. Remove small brass screw
3. Using 1/8" allen wrench adjust clockwise to increase set point/counter-clockwise to decrease set point
4. NO / NC

Adjustment screw located in center of elec. prongs

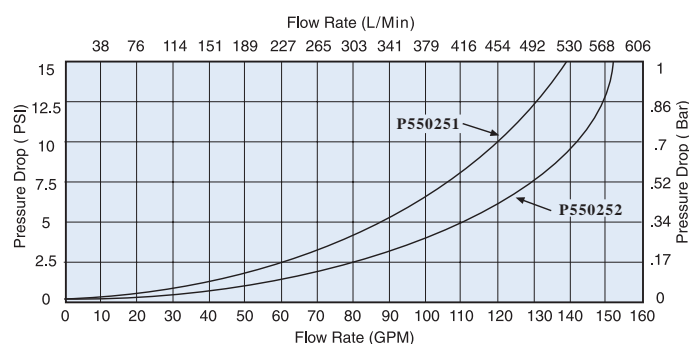
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

SP100



SP120





## SP50/60 Spin-On Filter (Replaces LPS05)

**Working Pressures to:** 150 *psi*  
1035 kPa  
10.3 bar

**Rated Static Burst to:** 250 *psi*  
1725 kPa  
17.2 bar

**Flow Range to:** 60 *gpm*  
227 l/min



## Features

The SP50/60 spin-on filter is an economical, low-pressure model with a broad selection of media ratings. The die cast aluminum head and steel body ensure strength and durability—perfect for a wide variety of mobile and in-plant applications.

Take advantage of Donaldson's Mix 'n Match system of in-stock heads and element choices—so you can get exactly what you need! Element options include: synthetic media, natural-fiber cellulose, water-absorbing cellulose media and wire mesh media.

SP50/60 spin-on filters are interchangeable with HBK05 filters, as listed on page 18. Please note gasket options on page 22.

### Beta Rating

- Performance to  $\beta_{6(c)}=1000$

### Porting Sizes

- 1¼" NPT
- SAE-20 (1¼") O-Ring

### Replacement Filter Lengths

- 6.7" / 170mm
- 10.7" / 271mm

### Outer Diameter

- 5" / 127mm

### Element Collapse Ratings

- 100 *psid* / 690 kPa / 6.9 bar

### Standard Bypass Ratings

- 25 *psi* / 172.5 kPa / 1.7 bar
- 15 *psi* / 103.4 kPa / 1.03 bar
- 5 *psi* / 34.5 kPa / .34 bar
- 2.5 *psi* / 17.2 kPa / .17 bar
- No Bypass

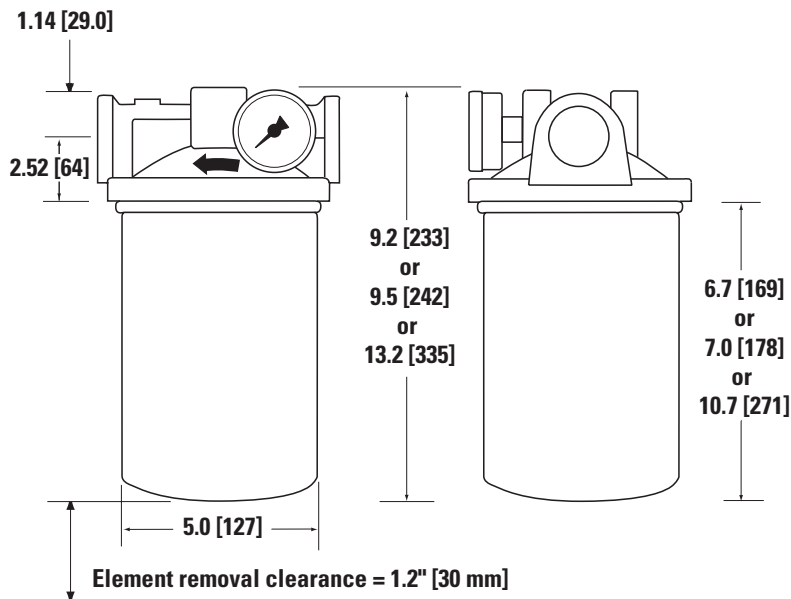
### Assembly Weight

- 4.7 lbs / 2.1 kg (short)
- 5.6 lbs / 2.5 kg (long)

### Operating Temperatures

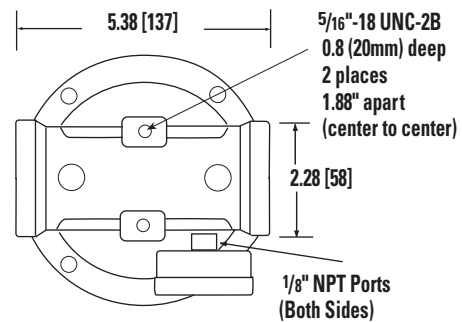
- -22°F to 250°F / -30°C to 121°C

## Assembly - Side View



**for:** Process Systems  
Fluid Conditioning  
In-plant & Mobile Equipment  
Power Transmissions  
Filter Cart

## Head - Top View



All dimensions above are shown in inches [millimeters]

# SP50/60 Components

## Element Choices

Media Type	Beta <sub>x(c)</sub> =200 Rating	Beta <sub>x(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part No.	Comments
Cellulose Media #3		24µm	6.7/169	P550386	
Cellulose Media #3		24µm	10.7/271	P550250	
Cellulose Media #10		23µm	6.7/169	P550388	
Cellulose Media #10		23µm	10.7/271	P550251	
Cellulose Media #10		23µm	6.7/169	P562201	
Cellulose Media #10		23µm	7.00/178	P550148	1¼" BSP thread
Cellulose Media #10		23µm	10.7/271	P562204	
Cellulose Media #3		24µm	6.7/169	P562200	
Beta-10 Absolute Synthetic		10µm	6.7/169	P562207	Synthetic
Beta-10 Absolute Synthetic		10µm	10.7/271	P562208	Synthetic
Beta 3 Absolute Synthetic		6µm	6.7/169	P562209	Synthetic
Beta 3 Absolute Synthetic		6µm	10.7/271	P167832	Synthetic
Cellulose Media #25	32µm		6.7/169	P550387	
Cellulose Media #25	32µm		10.7/271	P550252	
Cellulose Media #25	32µm		6.7/169	P562202	
Cellulose Media #25	32µm		7.0/178	P171616	1¼" BSP thread
Cellulose Media #25	32µm		10.7/271	P562205	
Water Absorbing	10µm water absorption		10.7/271	P561183	Absorbs 24 oz./700 ml water
Wiremesh	150µm nominal		6.7/169	P550275	Stainless Steel
Wiremesh	150µm nominal		10.7/271	P550276	Stainless Steel
Wiremesh	150µm nominal		6.7/169	P562203	Stainless Steel




All models have 1½ -16 UNF threads except for P550148 and P171616 which have 1¼" BSP threads.  
All models measure 5.0" / 127mm outer diameter.

## Head Choices for SP50/60

Port Size	Bypass Rating	Gauge Ports (drill, tap, plug)	Gauge Port Location	DCI Part No.
1¼" NPT	15 psi / 103.4 kPa / 1.34 bar	(2) 1/8" NPT	upstream side	P563267
1¼" NPT	25 psi / 172.5 kPa / 1.72 bar	(2) 1/8" NPT	upstream side	P563268
1¼" NPT	5 psi / 34.5 kPa / .34 bar	(2) 1/8" NPT	downstream side	P563269
1¼" NPT	15 psi / 103.4 kPa / 1.34 bar	none	na	P563270
1¼" NPT	Blocked	(2) 1/8" NPT	downstream side	P561952
1¼" NPT	2.5 psi / 17.3 kPa / .17 bar	none	na	P563490
1¼" NPT	2.5 psi / 17.3 kPa / .17 bar	(2) 1/8" NPT	downstream side	P563491
1¼" NPT	25 psi / 172.5 kPa / 1.72 bar	none	na	P563492
SAE - 20	15 psi / 103.4 kPa / 1.34 bar	(2) 1/8" NPT	upstream side	P563271
SAE - 20	25 psi / 172.5 kPa / 1.72 bar	(2) 1/8" NPT	upstream side	P563272
SAE - 20	Blocked	(2) 1/8" NPT	upstream side	P564147
SAE - 20	25 psi / 172.5 kPa / 1.72 bar	none	na	P563493

## Gaskets

SP50/60 spin-on filters can be used with three gasket styles. Donaldson-branded elements ship with all three types of gasket; LHA-branded elements ship with square cut gasket only. Other gaskets may be ordered separately using the part numbers below:

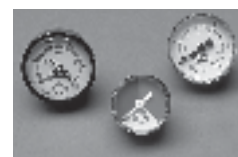
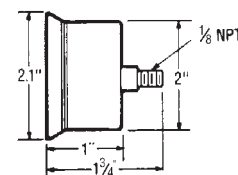
P170894	L Shaped		P165641	Square Cut		P166435	O-Ring	
Use with Donaldson LPS05 head. Shipped with each Donaldson-branded spin-on element.			Use with SP50/60 and non-Donaldson head. Shipped with each Donaldson- and LHA-branded spin-on element.			Use with Donaldson HBK05 head. Shipped with each Donaldson-branded spin-on element.		



## Optional Filter Service Indicators

This handy pressure gauge, mounted on the side of an SP50/60 filter head, will tell you when it's time to service the filter element.

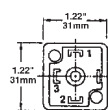
Donaldson Part No.	Pressure Range	Use With Bypass Valve Rating	Type
P563978	5 to 30 psi field adj.*	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, electrical
P563979	-5 to 15 in Hg field adj.*	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, electrical
P563296	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, numeric scale
P563297	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar Bypass	Return indicator, color coded
P563298	0 to 100 psi	25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, color-coded
P563299	0 to -20 Hg	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, numeric scale



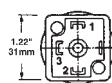
### Notes

\* NOT PRESET: Setting adjustable for desired application

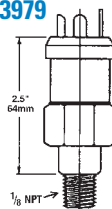
#1 Common; #2 Normally Closed;  
#3 Normally Open



P563978



P563979



### Instructions

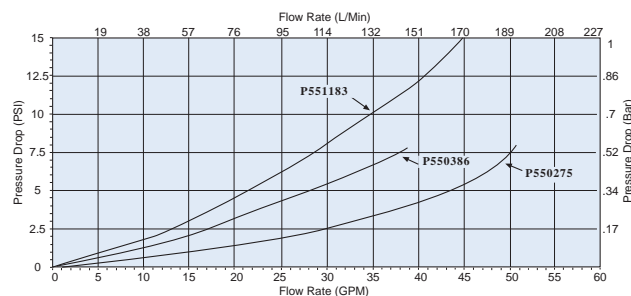
1. Remove DIN adaptor
2. Remove small brass screw
3. Using 1/8" allen wrench adjust clockwise to increase set point/counter-clockwise to decrease set point
4. NO / NC

Adjustment screw located in center of elec. prongs

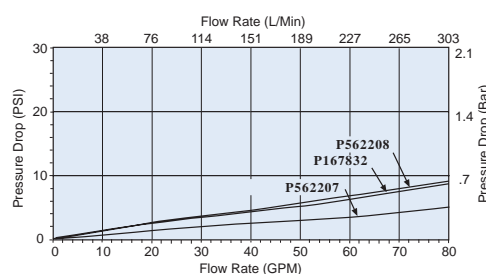
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

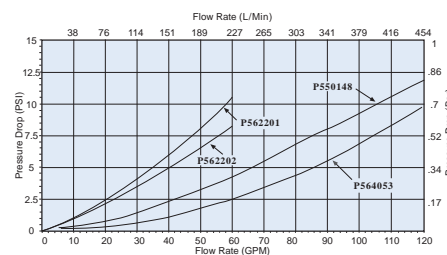
### SP50/60



### SP50/60-BTA



### SP50/52





# SP80/90 Spin-On Filters

**Working Pressures to:** 150 *psi*  
1035 kPa  
10.3 bar

**Rated Static Burst to:** 250 *psi*  
1725 kPa  
17.2 bar

**Flow Range to:** 100 *gpm*  
380 *l/min*



## Features

SP80/90 double element head allows for double the flow capacity, with two filters to hold more contaminant. Aluminum casting and Buna-N seals standard. SP80/90 elements are interchangeable with SP50/60 filters.

### Beta Rating

- Performance to  $\beta_{6(c)}=1000$

### Porting Sizes

- 1½" NPT, 2" SAE Flange, SAE-24

### Replacement Filter Lengths

- 6.7" / 170mm
- 7.0" / 178mm
- 10.7" / 271mm

### Standard Bypass Ratings

- 25 psi / 172.5 kPa / 1.72 bar
- 15 psi / 103.4 kPa / 1.34 bar
- 5 psi / 34.5 kPa / .34 bar
- No Bypass

### Operating Temperatures

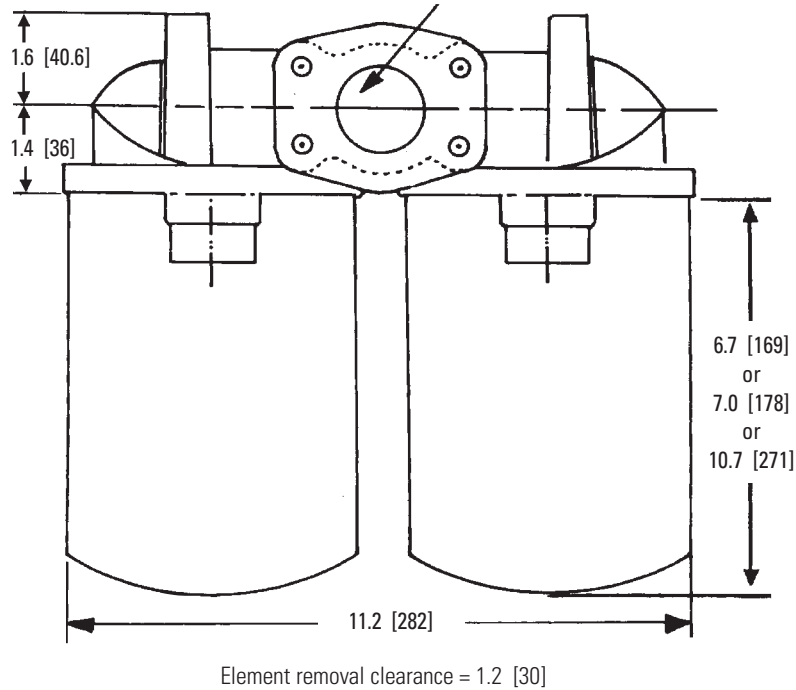
- -22°F to 250°F / -30°C to 121°C

### Assembly Weight

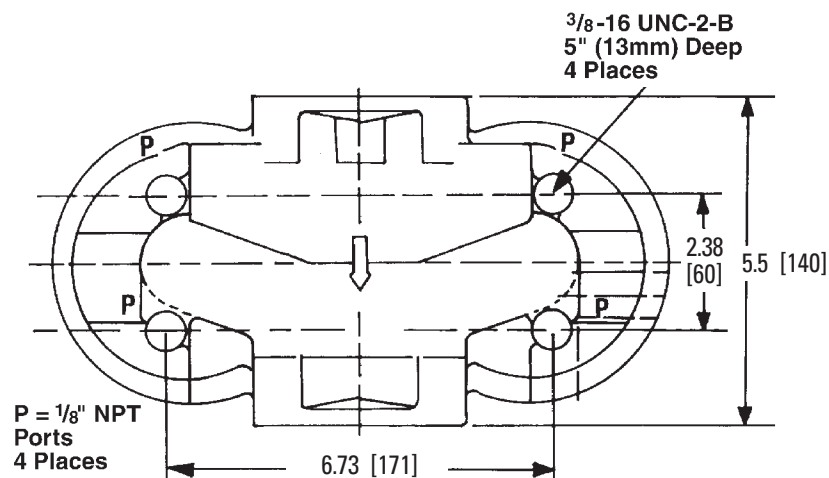
- 10.0 lbs (short)
- 11.8 lbs (long)

## Assembly - Side View

**Combination**  
**1 1/2" NPT and 2" SAE**  
**4 Bolt Flange (Both Ends) or**  
**SAE-24 & 2" SAE 4 Bolt**



## Head - Top View



All dimensions above are shown in inches [millimeters]

# SP80/90 Components

## Element Choices

Media Type	Beta <sub>x(c)</sub> =200 Rating	Beta <sub>x(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part No.	Comments
Cellulose Media #3		24µm	6.7/169	P550386	
Cellulose Media #3		24µm	10.7/271	P550250	
Cellulose Media #10		23µm	6.7/169	P550388	
Cellulose Media #10		23µm	10.7/271	P550251	
Cellulose Media #10		23µm	6.7/169	P562201	
Cellulose Media #10		23µm	7.00/178	P550148	1¼" BSP thread
Cellulose Media #10		23µm	10.7/271	P562204	
Cellulose Media #3		24µm	6.7/169	P562200	
Beta-10 Absolute Synthetic		10µm	6.7/169	P562207	Synthetic
Beta-10 Absolute Synthetic		10µm	10.7/271	P562208	Synthetic
Beta 3 Absolute Synthetic		6µm	6.7/169	P562209	Synthetic
Beta 3 Absolute Synthetic		6µm	10.7/271	P167832	Synthetic
Cellulose Media #25	32µm		6.7/169	P550387	
Cellulose Media #25	32µm		10.7/271	P550252	
Cellulose Media #25	32µm		6.7/169	P562202	
Cellulose Media #25	32µm		7.0/178	P171616	1¼" BSP thread
Cellulose Media #25	32µm		10.7/271	P562205	
Water Absorbing	10µm water absorption		10.7/271	P561183	Absorbs 24 oz./700 ml water
Wiremesh	150µm nominal		6.7/169	P550275	Stainless Steel
Wiremesh	150µm nominal		10.7/271	P550276	Stainless Steel
Wiremesh	150µm nominal		6.7/169	P562203	

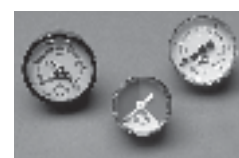
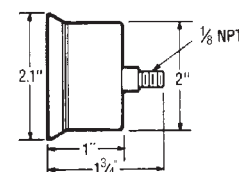
All models have 1½ -16 UNF threads except for P550148 and P171616 which have 1¼" BSP threads.  
All models measure 5.0" / 127mm outer diameter.

## Head Choices for SP80/90

Port Size	Bypass Rating	Gauge Ports (drill, tap, plug)	Gauge Port Location	DCI Part No.
1½" NPT & 2" SAE 4 BOLT	15 psi / 103.4 kPa / 1.34 bar	(4) 1/8" NPT	upstream & downstream sides	P563273
1½" NPT & 2" SAE 4 BOLT	25 psi / 172.5 kPa / 1.72 bar	(4) 1/8" NPT	upstream & downstream sides	P563274
1½" NPT & 2" SAE 4 BOLT	Blocked	(4) 1/8" NPT	upstream & downstream sides	P563275
1½" NPT & 2" SAE 4 BOLT	5 psi / 34.5 kPa / .34 bar	(4) 1/8" NPT	upstream & downstream sides	P563276
SAE-24 & 2" SAE 4 BOLT	25 psi / 172.5 kPa / 1.72 bar	(4) 1/8" NPT	upstream & downstream sides	P564892

## Optional Filter Service Indicators

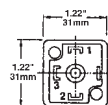
Donaldson Part No.	Pressure Range	Use With Bypass Valve Rating	Type
P563978	5 to 30 psi field adj.*	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, electrical
P563979	-5 to 15 in Hg field adj.*	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, electrical
P563296	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, numeric scale
P563297	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar Bypass	Return indicator, color coded
P563298	0 to 100 psi	25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, color-coded
P563299	0 to -20 Hg	5 psi / 34.5 kPa / .34 bar or No Bypass	Suction indicator, numeric scale



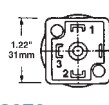
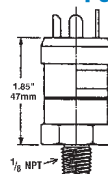
### Notes

\* NOT PRESET: Setting adjustable for desired application

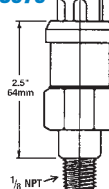
#1 Common; #2 Normally Closed;  
#3 Normally Open



P563978



P563979



### Instructions

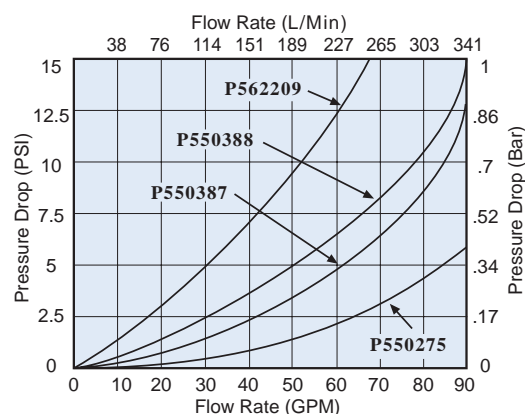
1. Remove DIN adaptor
2. Remove small brass screw
3. Using 1/8" allen wrench adjust clockwise to increase set point/counter-clockwise to decrease set point
4. NO / NC

Adjustment screw located in center of elec. prongs

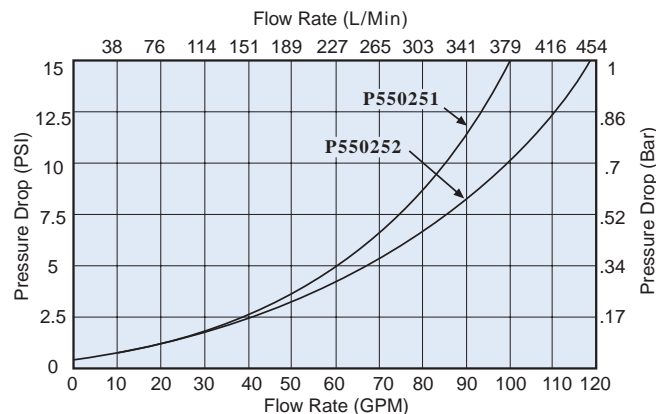
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

### SP80



### SP90





# TI25 Tank Immersed Filters

**Working Pressures to:** 100 *psi*  
690 kPa  
6.9 bar

**Flow Ranges to:** 60 *gpm*  
227 l/min

## Features

TI25 tank immersed filter mounts to tank, with the head and inlet above the tank and the housing inside the tank. Elements replaceable through the filter cover. Features aluminum casting, Buna-N seals and steel bowls. For use with petroleum and water-based fluids.

Electrical and visual service indicators and a variety of replacement filter media options are available.



### Beta Rating

- Performance to  $\beta_{10}=75$

### Porting Sizes

- 1¼" NPT

### Replacement Filter Length

- 9" / 229mm

### Standard Bypass Ratings

- 25 *psi* / 150 kPa / 1.5 bar

### Operating Temperatures

- -22°F to 250°F / -30°C to 121°C

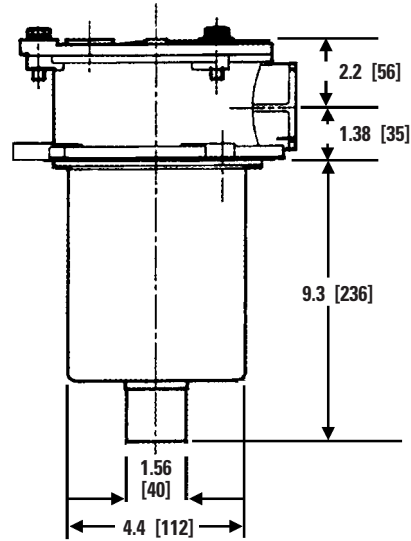
### Assembly Weight

- 5.5 lbs

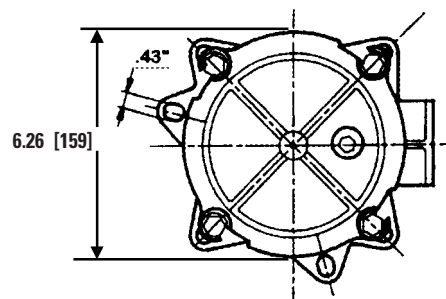
### Element Collapse Pressure

- 150 *psid* / 1035 kPa / 10.3 bar

## Assembly - Side View



## Head - Top View



Mounting bolt circle: 6.25" [159 mm]  
 Tank cut-out: 5.00" [127 mm]  
 Mounting bolt holes: 5/16" [7.9 mm]

● All dimensions above are shown in inches [millimeters]

# TI25 Assemblies & Service Parts

## TI25 Filter Assemblies

Port Size	Bypass Rating	Service Indicator	Bowl Length	Donaldson Part No.	Element
1½" NPT	25 psi / 172.5 kPa / 1.7 bar	Port Available	9.3" / 236 mm	K052051	Cellulose Media # 10
1¼" NPT	25 psi / 172.5 kPa / 1.7 bar	Visual	9.3" / 236 mm	K052046	Cellulose Media # 10
1¼" NPT	25 psi / 172.5 kPa / 1.7 bar	Visual	9.3" / 236 mm	K052047	Synteq Media # 2-1/2

## Element Choices

Media Type	Beta <sub>η(c)</sub> =200 Rating	Beta <sub>η(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part No.	Comments
Cellulose Media # 3		24	9.02/229	P167514	
Cellulose Media # 10		23	9.02/229	P167410	
Cellulose Media # 25	32		9.02/229	P167425	
Synteq Media # 1		6	9.02/229	P169341	Synthetic Media
Synteq Media # 1		6	9.02/229	P174622	Synthetic Media, Viton seals
Synteq Media # 2		9	9.02/229	P169344	Synthetic Media
Synteq Media # 2		9	9.02/229	P174623	Synthetic Media, Viton seals
Synteq Media # 2-1/2		10	9.02/229	P163903	Synthetic Media
Synteq Media # 4		20	9.02/229	P174624	Synthetic Media, Viton seals
Synteq Media # 9		23	9.02/229	P163910	Synthetic Media
Wiremesh Media # 74	75		9.02/229	P173781	Wire Mesh
Wiremesh Media # 149	150		9.02/229	P173780	Wire Mesh

## Optional Filter Service Indicators

Donaldson Part No.	Pressure Range	Use With Bypass Valve Rating	Type
P563978	5 to 30 psi field adj.*	15 psi / 103.4 kPa / 1.34 bar or 25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, electrical
P563297	0 to 100 psi	15 psi / 103.4 kPa / 1.34 bar Bypass	Return indicator, color coded
P563298	0 to 100 psi	25 psi / 172.5 kPa / 1.72 bar or No Bypass	Return indicator, color-coded

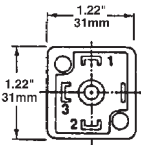
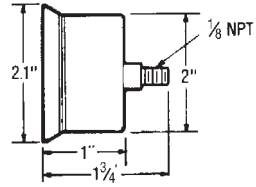
### Notes

\* NOT PRESET: Setting adjustable for desired application

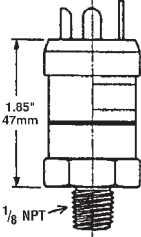
## Optional Filter Service Parts

Donaldson Part No.	Description
P563959	Cover Bolt 5/16-18 x 1"
P563966	Cover Seal O-Ring
P563965	Bowl Seal
P563968	Standard Reservoir Seal
P563969	Thick Reservoir Seal
P563970	Bypass Cartridge 25 psi
P563960	Metal Bowl

P563297  
P563298



P563978



- #1 Common;
- #2 Normally Closed;
- #3 Normally Open



Instructions

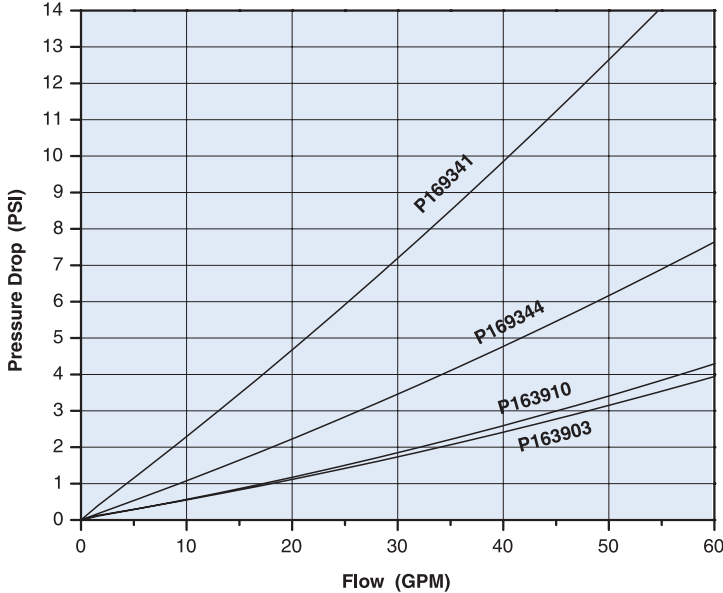
1. Remove DIN adaptor
2. Remove small brass screw
3. Using 1/8" allen wrench adjust clockwise to increase set point/counter-clockwise to decrease set point
4. NO / NC

Adjustment screw located in center of elec. prongs

# Performance Data

For a full explanation of how our performance curves were derived, see page 150.

TI25 Elements





# TT15/30/60 Spin-On Tank Top Return Filters

**Working Pressures to:** 100 *psi*  
690 kPa  
6.9 bar

**Flow Range to:** 50 *gpm*  
190 l/min

## Features

TT15/30/60 Tank Top filters are designed for industrial service. Aluminum casting and Buna-N seals standard. For use with mineral and synthetic based fluids

These return filters conveniently mount to tank tops with four screws. Common holes are used to mount the filter head to the reservoir without welding. A down pipe is attached to a threaded port and the gasket surface provides a watertight seal. Each element provides a new bypass valve and anti-drainback valve for easy element change.



### Beta Rating

- Performance to  $\beta_{23(c)}=1000$

### Porting Sizes

- 3/4" NPT, 1 1/2" NPT

### Replacement Filter Lengths

- 5.83" / 148mm **TT15**
- 7.05" / 179mm **TT30**
- 9.29" / 236mm **TT60**

### Standard Bypass Ratings

- 22 *psi* / 150 kPa / 1.5 bar

### Operating Temperatures

- -22°F to 250°F / -30°C to 121°C

### Assembly Weight

- 2.0 lbs **TT15**
- 4.3 lbs **TT30**
- 5.2 lbs **TT60**

## TT15/30/60 Components

### Element Choices

Media Type	Beta <sub>23(c)</sub> =1000 Rating	Length (in./mm)	Donaldson Part #	Element Thread
10 Micron Nominal Cellulose	23μm	5.9	P171625	3/4" BSP
10 Micron Nominal Cellulose	23μm	7.05	P550269	1 1/4" BSP
10 Micron Nominal Cellulose	23μm	9.29	P171640	1 1/4" BSP

## Head Choices for TT15/30/60

Port Size	Bypass Rating*	Gauge Ports (drill, tap, plug)	Gauge Port Location	DCI Part No.	Description
3/4" NPT	22 psi / 150 kPa / 1.5 bar	(2) 1/8" NPT	upstream side	P564038	TT15 Series
1 1/2" NPT	22 psi / 150 kPa / 1.5 bar	(2) 1/8" NPT	upstream side	P563973	TT30/60 Series

### Note

\* Bypass valve is integral part of replacement filter

## Optional Filter Service Indicators

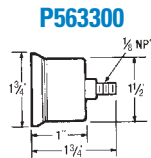
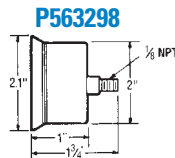
Donaldson Part No.	Pressure Range	Use With Series	Type
P563300	0 to 30 psi	TT15/30/60	Return indicator, color-coded
P563978	5 to 30 psi field adj.*	TT15/30/60	Return indicator, electrical
P563298	0 to 100 psi	TT15/30/60	Return indicator, color-coded

### Notes

\* NOT PRESET: Setting adjustable for desired application

### 1/8"-27 NPTF threads

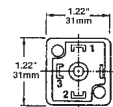
- Built in snubber to minimize damage caused by pressure surges
- Compatible with petroleum and mineral-based fluids
- Anti-splash



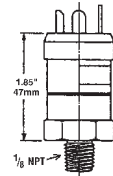
### Instructions

1. Remove DIN adaptor
2. Remove small brass screw
3. Using 1/8" allen wrench adjust clockwise to increase set point/counter-clockwise to decrease set point
4. NO / NC

- #1 Common  
#2 Normally Closed  
#3 Normally Open

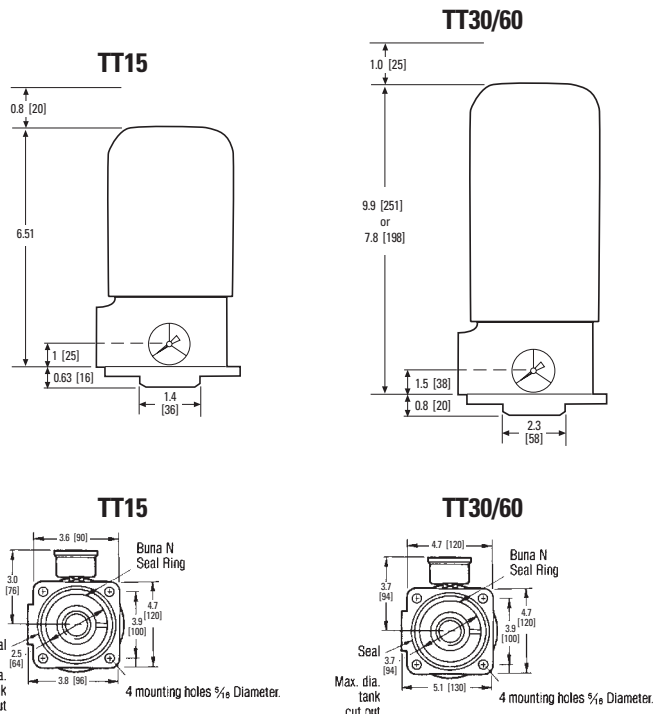


**P563978**



Adjustment screw located in center of elec. prongs

## Assembly - Side View

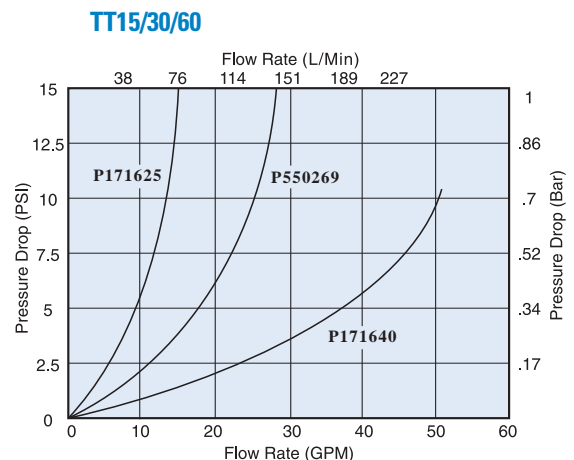


All dimensions above are shown in inches [millimeters]

## Head - Top View

## Performance Data

For a full explanation of how our performance curves were derived, see page 150.



# DT-061 In-Line Hydraulic Filter

Donaldson.

## Features

The DT-061 filter assembly contains the popular HF3 filter element. Quick filter change outs are accomplished with the use of our easily serviceable ring assembly. Donaldson Triboguard™ 5-layer media is offered in a variety of designs. Five different media grades are offered. Donaldson elements core collapse options range from 150 to 3,000 psi. The differential pressure indicator line is designed to work with a wide assortment of bypass valves. Thermal lockout and surge control are two key features incorporated in the differential indicators.

100 gpm (379 l/min)

Assembly length code 2 conforms to HF3 specifications

Diagnostic port in head

Wide selection of indicator options

Fluorocarbon seals standard

## Technical Data

Max. Working Pressure	600 psi (41 bar)
Fatigue Pressure Rating	600 psi (41 bar)
Typical Burst Pressure	1,500 psi max (100 bar)
Operating Temp. Range	-20° to 250°F (-29° to 121°C)
Head Material	Cast Iron
Bowl & Notched Material	Steel
Weight (w/o elements)	Assembly length 4": 7.9 lbs (3,6 kg)
	Assembly length 8": 8.9 lbs (4,0 kg)
	Assembly length 13": 10.2 lbs (4,6 kg)

**DT-061** series filter housing is a suitable replacement for competitor filter housings such as:

**Pall 8600 & 8800, Schroeder RLT, Parker 40CN & 80CN, Hydac LPF330, Eaton HV3R**



# DT-061 Performance Data

Donaldson

## Housing and Filter Element

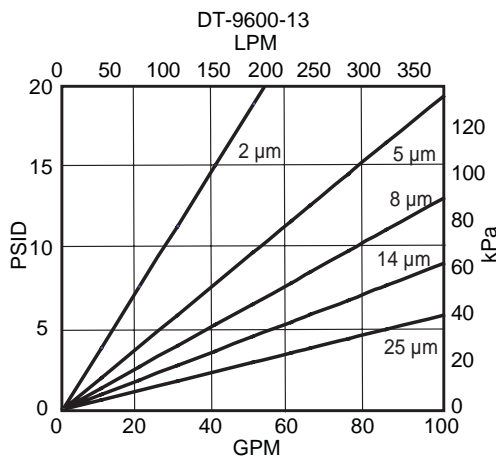
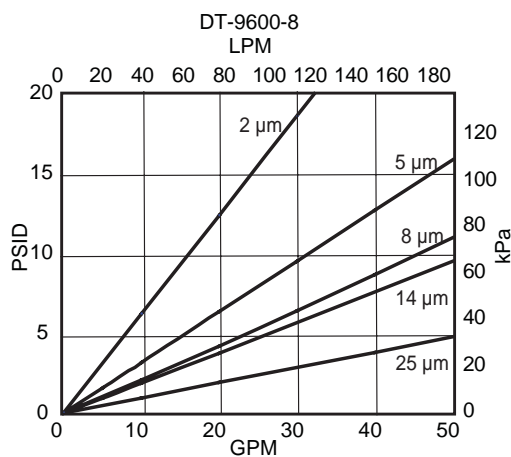
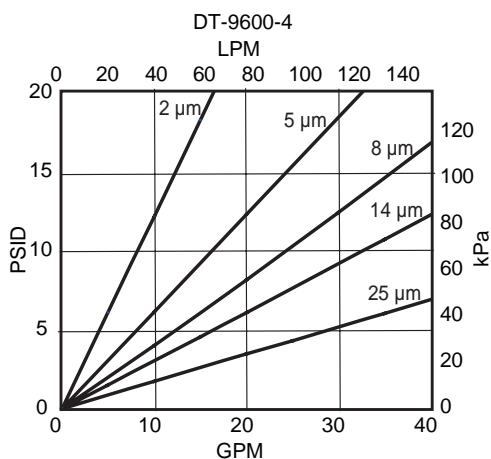
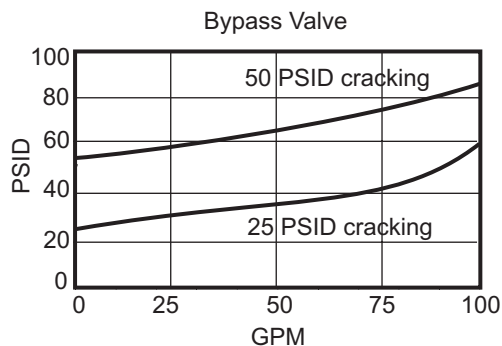
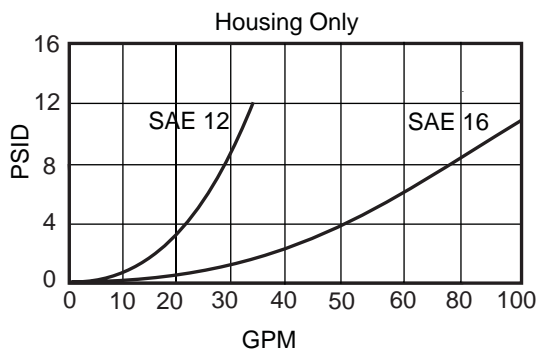
Flow versus Pressure Drop  
150 SUS (32 cst.) oil with specific gravity  $\leq 0.9$

## Viscosity Correction Formula

$$\Delta P \text{ Element} = \Delta P \text{ from curve} \times \frac{\text{New Viscosity (SUS)}}{150} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P \text{ Housing} = \Delta P \text{ from curve} \times \frac{\text{New Specific Gravity}}{0.90}$$

$$\Delta P \text{ Assembly} = \Delta P \text{ Element} + \Delta P \text{ Housing}$$



# DT-061 Ordering Code

Donaldson.

## Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
<b>DT-061</b>	3	A	C	B	A	05
	TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6

Housing shipped without element.

## Select one option from each table below.

(See example shown above.)

TABLE 1  
Housing Length

1	4"
2	8"
3	13"

TABLE 2  
Bypass Valve

A	No bypass
B	50 psid bypass

TABLE 3  
Indicator

A	Visual Indicator 35 psid
C	Visual/Electrical 35 psid
N	No indicator

TABLE 4  
Porting

A	SAE-12 O-Ring
B	SAE-16 O-Ring

TABLE 5  
Element Construction

A	Standard (200 psid)
---	---------------------

TABLE 6  
Micron Rating

02	Beta 1,000 at < 4 micron
05	Beta 1,000 at 5 micron
08	Beta 1,000 at 8 micron
14	Beta 1,000 at 14 micron
25	Beta 1,000 at 25 micron

**Please note:** Element selection to be ordered separately.

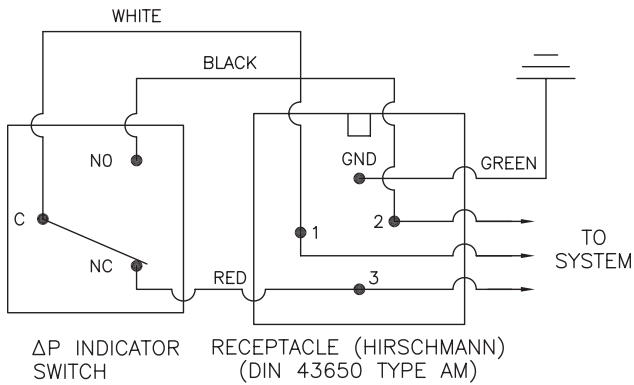
## Element Chart

Length	Construction	Micron Rating				
		02	05	08	14	25
1	A	DT-9600-4-2µm	DT-9600-4-5µm	DT-9600-4-8µm	DT-9600-4-14µm	DT-9600-4-25µm
2		DT-9600-8-2µm	DT-9600-8-5µm	DT-9600-8-8µm	DT-9600-8-14µm	DT-9600-8-25µm
3		DT-9600-13-2µm	DT-9600-13-5µm	DT-9600-13-8µm	DT-9600-13-14µm	DT-9600-13-25µm





## Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



**Note:** The female plug (connector) is to be furnished by customer

### Differential Indicators

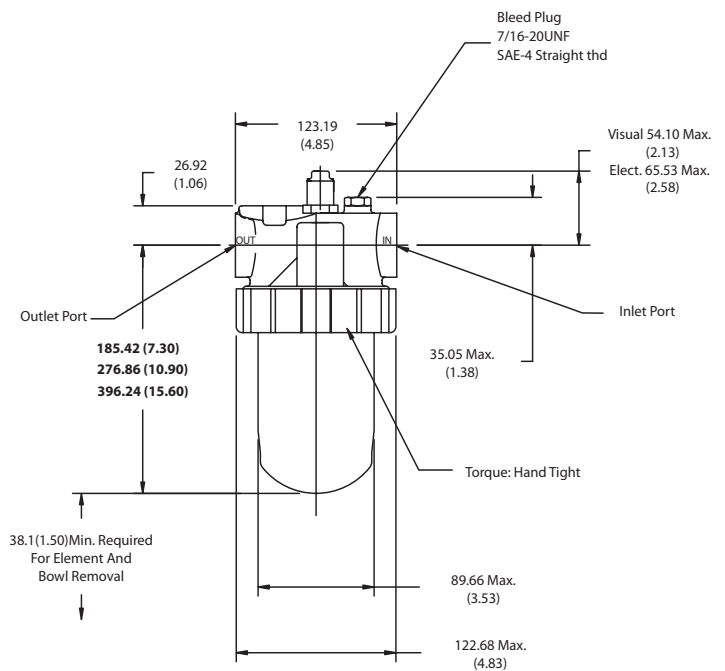
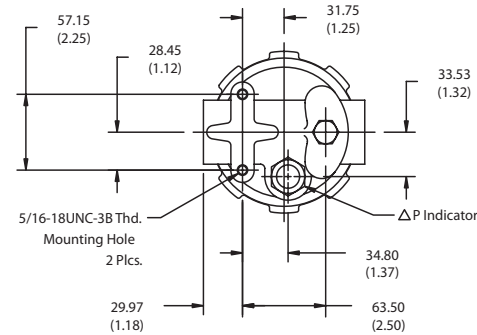
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 35 psid is used with a non-bypass housing.

### Surge Control

This optional feature is used to dampen pressure surges or spikes to avoid premature actuation of the indicator. Surge control delays the indicator response.

### Thermal Lockout

Thermal Lockout (TL), prevents actuation below 60°F and allows actuation above 100°F system operating temperature. Its purpose is to avoid false actuations during periods of high fluid viscosity such as experienced during cold start.



Dimensions: millimeter(inch)



*Industrial Filters · Accumulators*

## *Duplex Filters*

*100 FLD 0020-0270*

*100 FLDN 0160-1000*

*Filter for inline installation,  
for continuous operation*

*FLDN Type with  
Filterelements according  
to DIN 24550*

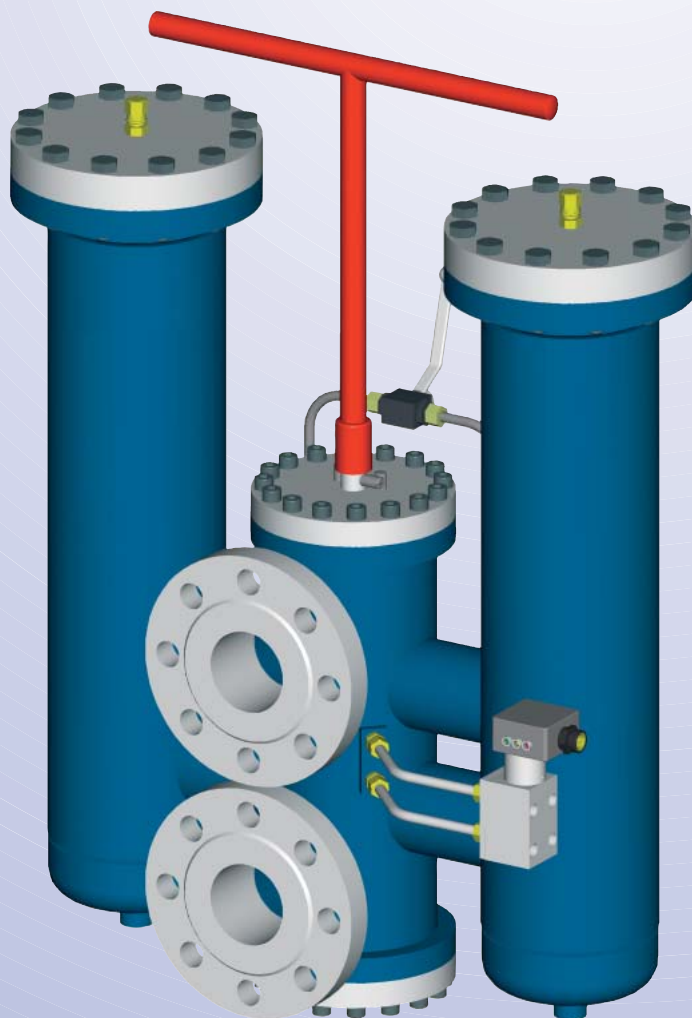
*Wide application*

*Compact modular design*

*Optimised flow characteristics  
by 3D - computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*



*Operating pressure 100 bar  
Connections up to DN 100*



**Quality assured!**

## Ordering Information

Selection of filter size:  
using the computer program  
"EPE-FILTERSELECT"

Special designs are available  
on request

Filter Type	Magnet	Maintenance Indicator	Connection	Material
FLD = Duplex filter with filter element according to EPE Standard  FLDN = Duplex filter with filter element according to DIN 24550	0 = Without	0 = Without A = Maintenance indicator visual C = Maintenance indicator visual/electr. with equipment connector thread F = Maintenance indicator visual/electr. with 3 signal lights  Standard switch pressure 2,5 bar  See illustrations of maintenance indicator for detailed information and technical data.	D0 = DIN- Flange	0 = Standard

**Filter Assembly** → 100 FLD 0020 H10SL - A 00 - 0 7 A2,5 - D0 P 0 0

**Seal Kit** → D100 FLD 0020 - A - D0 P 0 0

Nominal Pressure	Nominal Size	Filtration Grade	Differential Pressure	Filter Element Design	Bypass Valve	Seal	Add. Info
100 bar	100 FLD... 0020 0030 0045 0060 0095 0120 0145 0200 0270	Nominal filter fineness in µm G = Stainless steel wire mesh, cleanable G10 G25 G40 G60 G80 G100 VS = Nonwoven media, non cleanable VS25 VS40 VS60 P = Paper, non cleanable P5 P10 P25  Absolute filtration grade (ISO 4572) in µm H...SL = Micro glas-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glas-fibre, wateradsorbent non cleanable AS1 AS3 AS6 AS10 AS20	Max. allowable differential pressure of the filter element  A = 30 bar	O... = Standard adhesive T = 100°C  E... = Special adhesive T = 160°C  ...0 = Standard material ...V = stainless steel 1.4571	Opening pressure: 0 = Without 7 = 3,5 bar  for filter element always 0	P = Buna N V = Viton E = Ethylene- Propylene N = Neoprene	0 = Without 5 = Silicone free A = Pressure- equalisation- line E = Vent valve Z = Inspection certificate  5 = Silicone free Z = Inspection certificate

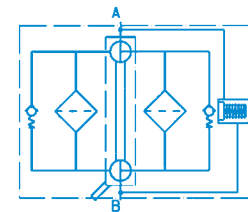
**Filter Element** → 1. 0020 H10SL - A 00 - 0 - P -

## Maintenance Indicator

The maintenance indicator monitors the degree of clogging of the filter elements.  
They are available as visual or visual/electrical displays.  
See "Maintenance Indicator" brochure for technical data.

## Filter Switching Symbol

A...visual	C...visual/electrical with electric plug	F...visual/electrical with three light indicators 24 V and two switching points
Ordering information A 2,5 = A 2,5 A0 00 00P*	Ordering information C 2,5 = A 2,5 GW 02 00P*	Ordering information F 2,5 = A 2,5 GW 09 ZOP*
	Switching symbol 	Switching symbol 



\*P = Buna N, V = Viton, E = Ethylene-Propylene, N = Neoprene possible

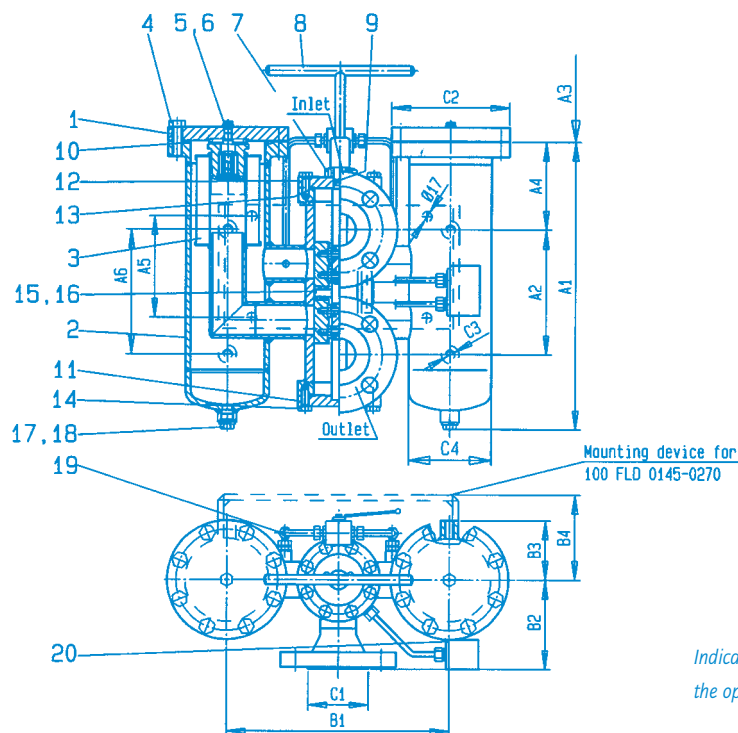
## Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality-management-system in accordance with DIN EN ISO 9001.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, LRIS, ABS, BV, DNV, DRIRE, UDT etc.) is available on request.

The stability calculation and testing of the filters proceeds according to existing pressure vessel regulations, as well as in accordance with national and international norms. The CE - identification mark according to the Pressure Equipment Directive 97/23/EG depends upon the individual application and operating conditions. On request we will classify the filters.

## Dimensions



Indicator pin points towards the operating side.

### Filter Housing for Filter Elements according to EPE Standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	B1	B2	B3	B4	C1 Connection DIN 2637	C2	C3	C4
100 FLD 0020	2x5	127,5	490	210	180	148	-	210	375	150	100	-	DN50	Ø200	M16	Ø139,7
100 FLD 0030	2x6	130	580		270	238										
100 FLD 0045	2x8	134,5	730		420	388										
100 FLD 0060	2x10	181,5	627		270	256										
100 FLD 0095	2x13	187	777	235	420	406	-	230	485	180	115	-	DN80	Ø240	M20	Ø168,3
100 FLD 0120	2x20	199	1134		780	763										
100 FLD 0145	2x19	226	888		420	463										
100 FLD 0200	2x28	322	1246	270	780	821	250	-	480	225	-	188	DN100	Ø260	-	Ø193,7
100 FLD 0270	2x33	384	1480		1010	1055										

### Filter Housing for Filter Elements according to DIN 24550

Type	Capacity in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	B1	B2	B3	B4	C1 Connection DIN 2637	C2	C3	C4
100 FLDN 0160	2x5	127,5	490	210	180	148	-	210	375	150	100	-	DN50	Ø200	M16	Ø139,7
100 FLDN 0250	2x6	130	580		270	238										
100 FLDN 0400	2x10	181,5	627		270	256										
100 FLDN 0630	2x13	187	777		420	406										
100 FLDN 1000	2x19	226	888	270	420	463	250	-	480	225	-	188	DN100	Ø260	-	Ø193,7

### Spare Parts List

		Size FLD Size FLDN		0020 0160	0030 0250	0045	0060 0400	0095 0630	0120	0145 1000	0200	0270
Part	Qty	Designation	Material	Part-Number								
1	2	Filter head without valve	various	9843			9842			9840		
		Filter head with valve		5979			5994			9841		
2	2	Filter housing	St	please indicate ordering information "Filter"								
3	2	Filter element	various	please indicate ordering information "Filter Element"								
3.1	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"								
4	16 24	Hexagon screw	8.8	602			—			—		
				—			605			—		
5	2	Vent valve	Bronze	848								
		Air ventilate screw	5.8	4158								
6	2	Sealing ring	Iron	please indicate ordering information "Seal Kit"								
7	3	Set screw	St	709			713			718		
8	1	Valve handle	St	1258	3295	1262	1260	1261	9829	9830	1264	9829
9	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"								
10	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"								
11	1	Bottom	St	4019			4055			4075		
12	1	Cover	St	4018			4056			4058		
13	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"								
14	32 24 16	Hexagon socket head cap screw	8.8	—			654			—		
				—			—			662		
		Hexagon screw		594			—			—		
15	1	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"								
16	1	Guide ribbon	PTFE/Bronze	please indicate ordering information "Seal Kit"								
17	2	Blanking plug	5.8				789			790		
18	2	Sealing ring	Iron	please indicate ordering information "Seal Kit"								
19	1	Pressure equalisation device	St	please indicate ordering information "Filter"								
20	1	Maintenance indicator	various	please indicate ordering information "Maintenance Indicator"								

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

<sup>2)</sup> = Servicing height for filter element change



**Industrial Filters · Accumulators**

## **Installation, Starting and Maintenance**

### **Installation**

Verify operating pressure on the nameplate is equal or greater than the maximum system pressure. Install the filter using a mounting points provided and check the flow direction is correct and ensure sufficient clearance for filter servicing.

### **Connection of Electrical Maintenance Indicator**

See brochure 64 .

### **Starting**

Move switching lever Part 8 to central position to fill both filter sides. Switch on system pump. De-aerate filter by opening the vent valves Part 5, close when liquid emerges from valve. Move switching lever to filter in use. Switching lever must be moved into final position.

### **Maintenance**

The filter element is clogged and needs to be replaced or cleaned if the visual indicator 's Part 20 red pin reaches its final position and /or the electrical switch is activated.

### **Filter Element Service**

Open valve in pressure equalisation valve Part 19, move switching lever Part 8 to opposite direction until final position on clean filter side is reached. Indicator pin points towards the operating side. Close pressure equalisation valve Part 19. Open vent valve Part 5 and depressurise system in filter out of use. Close vent valve Part 5. Unscrew filter head Part 1. Open drain plug Part 17 and drain filter housing Part 2. Close drain plug Part 17. Remove filter element Part 3, turning slightly off from its lower spigot in the filter housing Part 2. Check filter housing Part 2 inside and clean if necessary. Replace filter element H...SL, P..., VS... and AS... . The filter element with G...media is cleanable. The efficiency of the cleaning process depends on the characteristics of contamination and the final pressure drop prior to servicing / cleaning the element. If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... filter element also needs to be replaced. Replace filter element in filter housing.

Check o-ring Part 10 and replace in case of damage or wear. Install filter head Part 1 . De-aerate filter housing Part 2 by opening the vent valve Part 5, close when liquid emerges.

### **Warning**

Assemble and disassemble filter only when system is switched off!  
Vessel is under pressure!

Leave pressure equalisation valve closed while filter housing is out of service!

Do not operate switching device while filter housing is out of service!

Do not change maintenance indicator or pressure equalisation valve when filter is under pressure!

Functions and safety warranty only with EPE- spare part!

Service filter only by trained personal!

Technical modifications reserved!

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Industrial Filters · Accumulators

## Inline Filters

40 FLE 0020(C) - 0270(C)

40 FLEN 0160 - 1000

100 FLE 0020(C) - 0120(C)

100 FLEN 0160 - 0630



*Filters for Inline installation*

*Designed for offline filtration*

*Installation of environmental friendly  
ECOPore Filter Elements with reusable  
core ( central tube )*

*Large filter area*

*Optimised flow characteristics  
by 3D - computer aided design*

*Low pressure drop*

*Special high efficient  
filter media*

*Operating pressure: 40/100 bar*

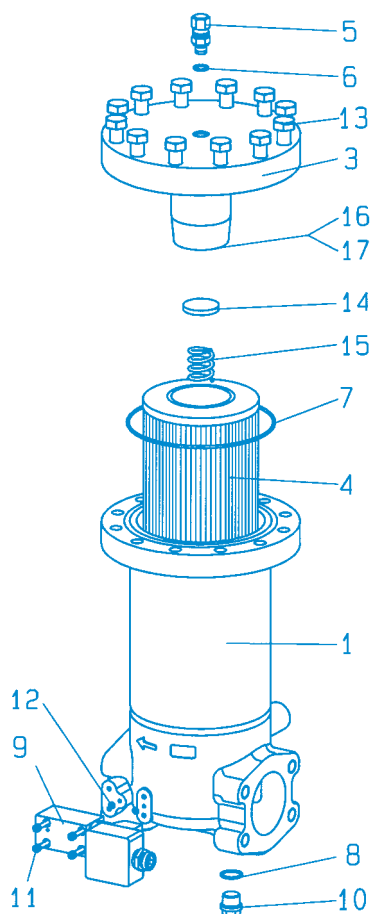
*Connection up to SAE 4"*



Quality assured!

## Spare Parts List

100 FLE 0020(C) - 0120(C)  
100 FLEN 0160 - 0630



			Size FLE FLEN	0020(C) 0160	0030(C) 0250	0045(C)	0060(C) 0400	0095(C) 0630	00120(C)
Part	Quantity	Designation	Material						
1	1	Filter housing	various	please indicate ordering information „Filter“					
3	1	Filter head	various	please indicate ordering information „Filter“					
4	1	Filter element	various	please indicate ordering information „Filter Element“					
4.1	1	Core	St	only for ECOPore® „C“ indicate ordering information „Filter“					
5	1	Vent valve	Bronze	Part No. 848					
6	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“					
7	1	O-ring	Buna N	please indicate ordering information „Seal Kit“					
8	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“					
9	1	Maintenance indicator	various	please indicate ordering information „Maintenance indicator“					
10	1	Plug	St	Part No. 789					
11	4	Hexagon head cap screw	8.8	Part No. 633					
12	2	O-ring	Buna N	please indicate ordering information „Seal Kit“					
13	8	Hexagon screw	8.8	Part No. 602			—		
	12			—			Part No. 603		
14	1	Valve disk	various	please indicate ordering information „Filter“					
15	1	Valve disk	1.0600						
16	1	Valve spring	St						
17	1	Retaining ring	Spring steel						

## Quality and Standardisation

The development, manufacture and assembly of EPE-industrial filters and filter elements is carried out within the framework of a certified quality management system in accordance with DIN EN ISO 9001.

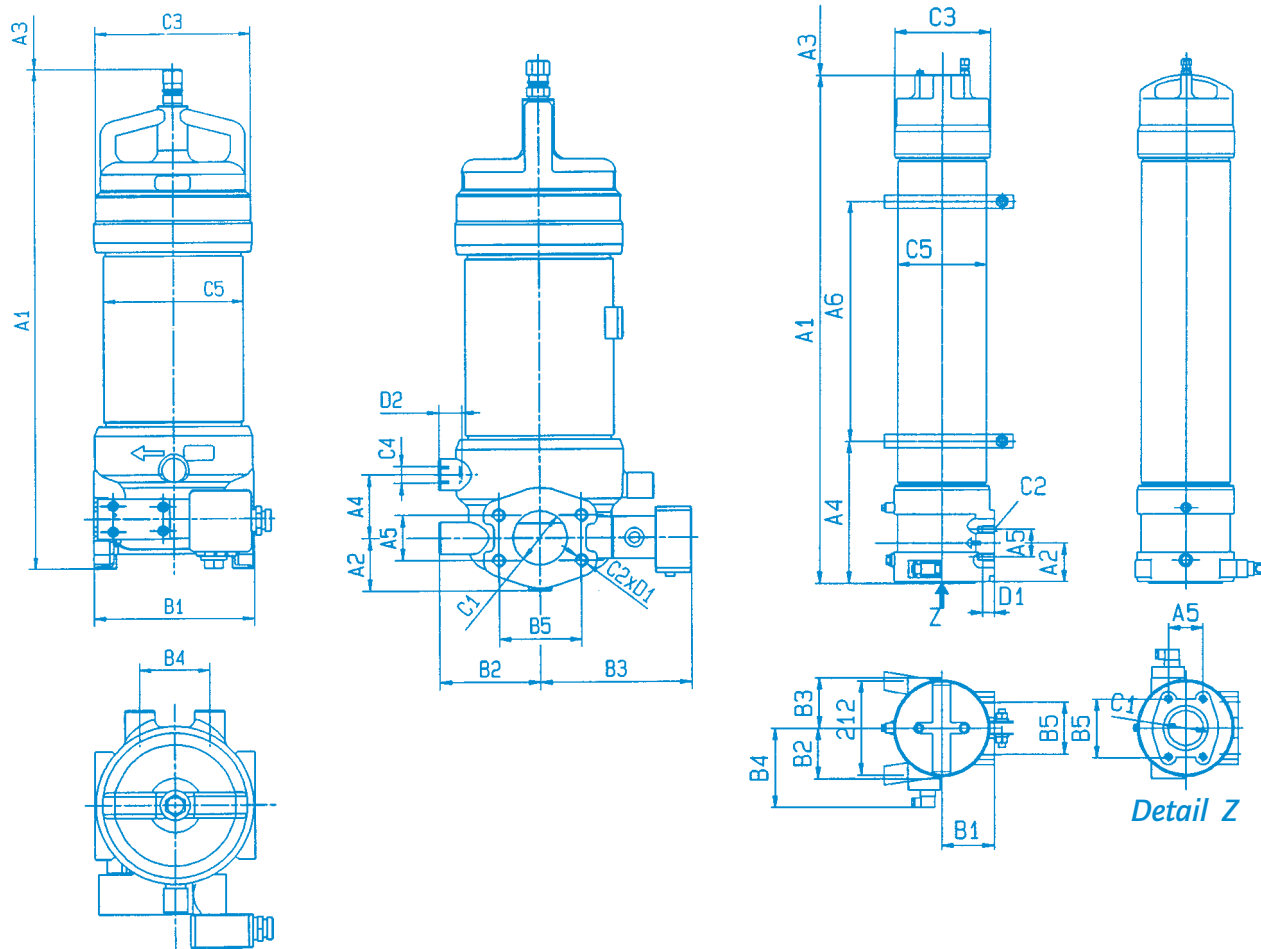
The stability calculation and testing of the filters proceeds according to existing pressure vessel regulations, as well as in accordance with national and international norms.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS, LRIS, ABS, BV, DNV, DRIRE, UDT etc.) is available on request.

## Dimensions

40 FLE 0020(C) - 0120(C)  
40 FLEN 0160 - 0630

40 FLE 0145(C) - 0270 (C)  
40 FLEN 1000



### Filter housing for filter element in accordance with EPE standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	A 6	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
40 FLE 0020 (C)	1,4	12	411	49,5	160	60	42,9	-	160	95	143	70	77,8	SAE2"	M12	Ø158	M16	Ø140	20	22
40 FLE 0030 (C)	2,7	13,2	501		250									3000psi						
40 FLE 0045 (C)	4,8	19	651		400									DN50						
40 FLE 0060 (C)	4	19,5	543	61,5	250	70	61,9	-	195	105	155	90	106,4	SAE3"	M16	Ø188	M16	Ø170	30	22
40 FLE 0095 (C)	7,1	21,9	693		400									3000psi						
40 FLE 0120 (C)	14	27,4	1050		750									DN80						
40 FLE 0145 (C)	12	50	553	90	400	260	77,8	65	118	113	113	183	130	SAE4"	M16	Ø216	-	Ø200	26	-
40 FLE 0200 (C)	22	60	911		758									3000psi						
40 FLE 0270 (C)	28	70	1145		992									DN100						

### Filter housing for filter element in accordance with DIN 24550

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	A 6	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
40 FLEN0160	1,4	12	411	49,5	160	60	42,9	-	160	95	143	70	77,8	SAE2"	M12	Ø 158	M16	Ø 140	20	22
40 FLEN0250	2,7	13,2	501		250									SAE3000psi						
40 FLEN0400	4	19,5	543		400									DN 50						
40 FLEN0630	7,1	21,9	693	61,5	250	70	61,9	-	195	105	155	90	106,4	SAE3"	M16	Ø 188	M16	Ø 170	30	22
					400									SAE3000psi						
					750									DN 80						
40 FLEN1000	12	50	553	90	400	260	77,8	65	118	113	113	183	130	SAE4"	M16	Ø 216	-	Ø 200	26	-
														SAE3000psi						
														DN100						

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

<sup>2)</sup> = Construction dimension for filter element change

## Inline Filter

40/100 FLE 0020(C) - 0270(C)  
 40 FLEN 0160 - 1000  
 100 FLE 0020(C) - 0120(C)  
 100 FLEN 0250 - 0630  
 Operating pressure 40/100 bar  
 Operating temperature -10°C bis +100°C  
 Connection up to SAE 4"

### Application

Filtration of pressurised liquids and lubricants.

Filtration of liquids and gases.

Direct installation in pipelines. Direct wear protection of subsequent components and systems.

Offline filtration with high service time.

### Design:

40 FLE 0020 (C) - 0270 (C) and  
 40 FLEN 0160 - 1000

Modular design constructed out of three parts including filter bowl with inlet and outlet, filter body and threaded filter head.

100 FLE 0020 (C) - 0120 (C) and  
 100 FLEN 0160 - 0630

Two part design out of filter housing with inlet and outlet and flange mounted filter cover.

### Filter Element

Pleated design with optimised pleat density and various filter media. The filter element is the most important component of the filter in view of prolonged life and wear protection of the system.

Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.

For further detailed information please refer our "Filter Elements" brochure.

A proper filter selection is enabled by our "EPE - FILTERSELECT" software.

### Accessories

#### Maintenance Indicators

For monitoring the filter element's contamination status, optical and optical/electrical indicators, with one or two switching points are available.

#### Bypass Valve

To protect the filter element during start up and over pressurisation due to clogging.

#### Vent valve

For removing the air from the filter during starting and for safe de-pressurisation.

## Performance Characteristics

Oil Viscosity 30 mm<sup>2</sup>/s

Specific gravity: < 0,9 kg/dm<sup>3</sup>

Pressure drop curves for filter assemblies  
 recommended initial  $\Delta p$  for filter selection

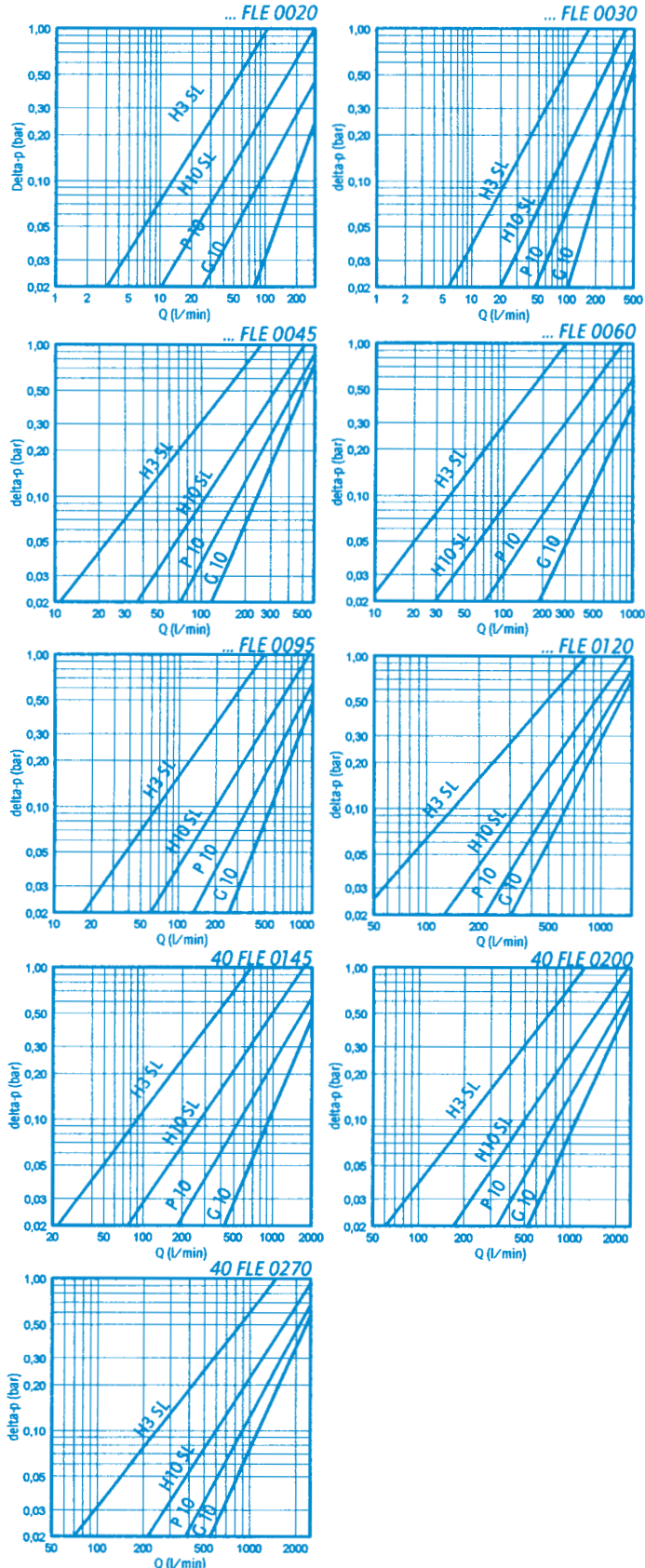
40 FLE/FLEN: 0,8 bar

100 FLE/FLEN: 1,5 bar

recommended max. velocity

40 FLE/FLEN: 3,5 m/s

100 FLE/FLEN: 4,0 m/s



## Ordering code

Identification of filter size:

Using the computer programme „EPE-FILTERSELECT“ or the performance characteristic lines in this brochure.

Special models are available on request.

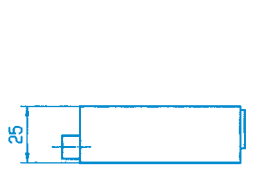
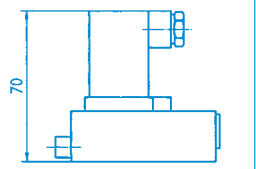
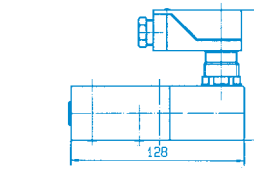
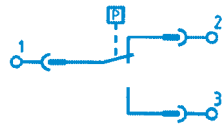
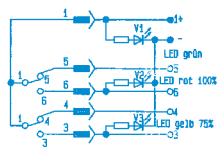
Identification of filter size: Using the computer programme „EPE-FILTERSELECT“ or the per- formance characteristic lines in this brochure.		Type		Magnet	Maintenance Indicator		Connection		Material						
Special models are available on request.		FLE= Inline filter with filter element according to EPE Standard  FLEN= Inline filter with filter element according to DIN 24550		O= without	O...=without 40 FLE 0145 - 0270, 40 FLEN 1000 B...=Maintenance indicator optical C...=Maintenance indicator optical/ electrical with electric plug D...=Maintenance indicator with three 24V diods and two switch points  40/100 FLE 0020 - 0120, 40 /100 FLEN 0160 - 0630 A...=Maintenance indicator optical B...=Maintenance indicator optical/ electrical with electric plug C...=Maintenance indicator with three 24V diods two switch points Standard switch pressure: 2,5 u. 5,0 bar  For extensive ordering information and technical data refer to on brochure "Maintenance indicator"		SO= SAE-Flange		O=standard						
Filter	40	FLE	0270	H10SL	0	00	0	B2,5	SO	P	0	0			
Seal Kit	D40	FLE	0270	—	—	—	—	B	SO	P	0	—			
Pressure	40 bar 100 bar	Size	40/100 FLE 0020(C) 0030(C) 0045(C) 0060(C) 0095(C) 0120(C) only for 40 FLE 0145(C) 0200(C) 0270(C) only for 40/100 FLEN 0160 0250 0400 0630 1000 (C)=coreless filter element	Filtration Grade	Nominal filter fineness in µm G = stainless steel wire mesh cleanable G10, G25, G40, G60, G80, G100 VS = nonwoven, not cleanable VS25, VS40, VS60 P = Paper, not cleanable P5, P10, P25  Absolute filter fineness (ISO 4572) in µm H...SL= Microglass, not cleanable H1SL, H3SL, H6SL, H10SL, H20SL AS = Microglass, water-absorbent, not cleanable AS1, AS3, AS6, AS10, AS20	Diff. Pressure	Max. allowable differential pressure of the filter element A= 30 bar O= 15 bar only for 0145 0200 0270	Element Model	O...= Standard- adhesive T=100°C E...= Special- adhesive T=160°C  ...O= Standard material ...Z= Free of zinc	Bypass Valve	0= without 7= 3,5 bar  for filter element always "O"!	Dichtung	P= Buna N V= Viton E= Ethylene- propylene N= Neoprene	Erg. Angaben	0= without 1= "A" Indicator for 40 FLE 0145(C)- 0270(C) 2= "B" Indicator for 40 FLE 0145(C)- 0270(C)  5= silicon free B= fixing clamp E= vent valve Z= documentation  5= silicon free Z= documentation
Filter Element	1.	1.	0270	H10SL	—	0	00	—	0	—	P	—			

## Maintenance Indicator

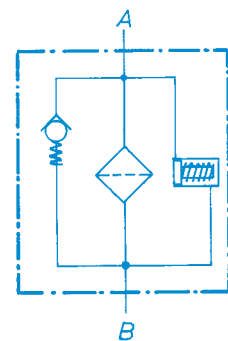
The maintenance indicator monitors the degree of clogging of the filter elements.

They are available as optical or optical/electrical displays.

See "Maintenance Indicator" brochure for technical data.

		
A...optical B...optical	B...optical/electrical C...optical/electrical	C/D...optical/electrical with three 24 V diodes and two switching points
Ordering information A2,5 = F2,5 A0 00 00P* B2,5 = F2,5 A0 00 00P*	Ordering information B2,5 = F2,5 GW 02 00P* C2,5 = F2,5 GW 02 00P*	Ordering information C2,5 = R2,5 GW 09 Z0P* D2,5 = R2,5 GW 09 Z0P*
	Switching Symbol	Switching Symbol
		

## Filter Switching Symbol

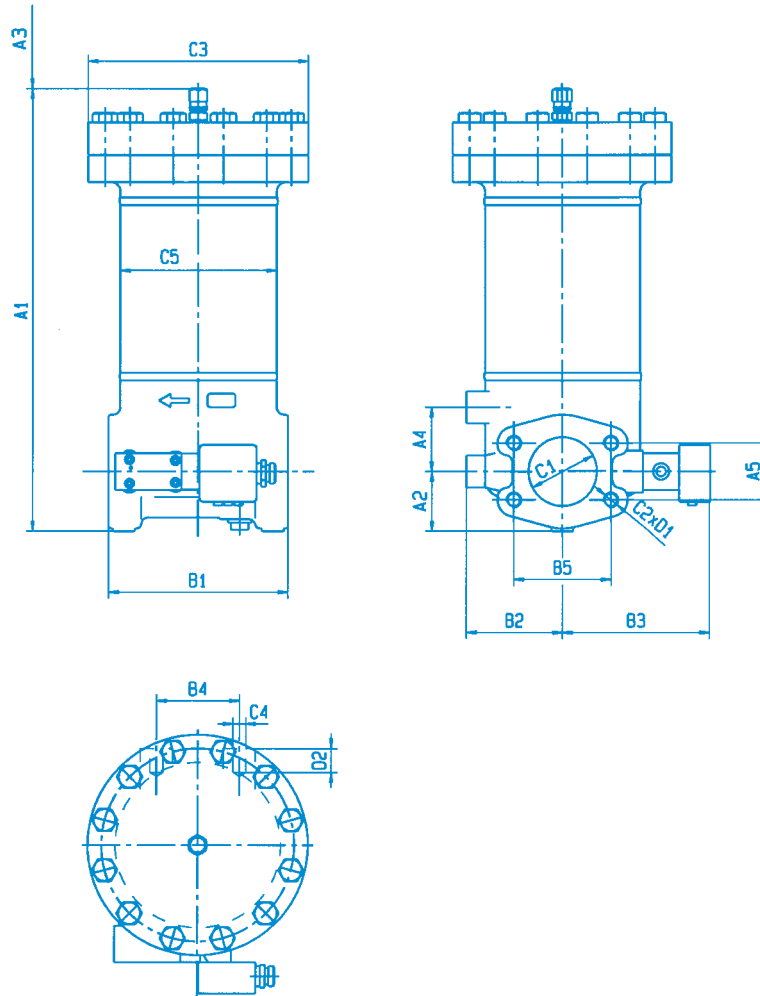


\*P = Buna N; V = Viton, E = Ethylene Propylene, N = Neoprene possible



## Dimensions

100 FLE 0020(C) - 0120(C)  
100 FLEN 0160 - 0630



### Filter housing for filter element in accordance with EPE standard

Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
100 FLE 0020(C)	2,1	22,4	351		160								SAE2"						
100 FLE 0030(C)	3,2	28	441	50	250	60	42,9	160	95	144	70	77,8	3000psi	M 12	Ø200		Ø140	20	
100 FLE 0045(C)		29	591		400								DN50			M 16			22
100 FLE 0060(C)	5,1	34	482		250								SAE3"						
100 FLE 0095(C)	7,8	38,3	632	65	400	70	61,9	195	105	158	90	106,4	3000psi	M 16	Ø240		Ø170	30	
100 FLE 0120(C)	14,3	49,2	989		750								DN80						

### Filter housing for filter element in accordance with DIN 24550

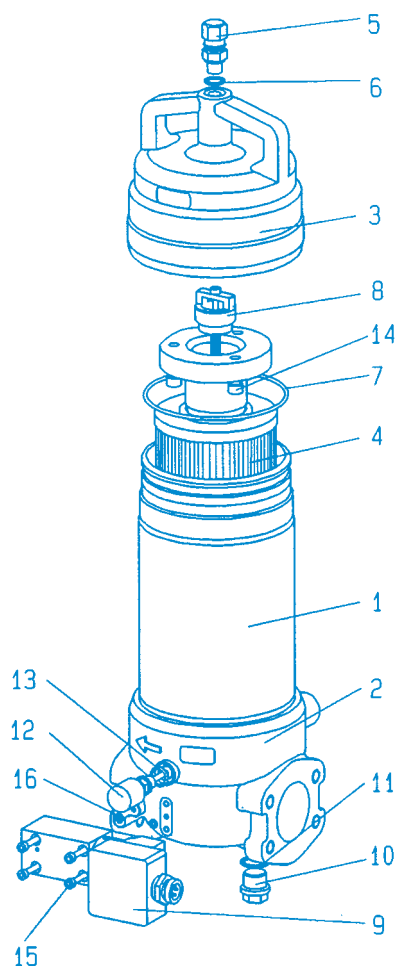
Type	Capacity in l	Weight in kg <sup>1)</sup>	A 1	A 2	A 3 <sup>2)</sup>	A 4	A 5	B 1	B 2	B 3	B 4	B 5	C 1	C 2	C 3	C 4	C 5	D 1	D 2
100 FLEN 0160	2,1	22,4	351	50	160	60	42,9	160	95	144	70	77,8	SAE2"						
100 FLEN 0250	3,2	28	441		250								3000psi	M 12	Ø200		Ø140	20	
100 FLEN 0400	5,1	34	482	65	400	70	61,9	195	105	158	90	106,4	DN50			M 16			22
100 FLEN 0630	7,8	38,3	632		400								SAE3"	M 16	Ø240		Ø170	30	
													3000psi						
													DN80						

<sup>1)</sup> = Weight including standard filter element and maintenance indicator

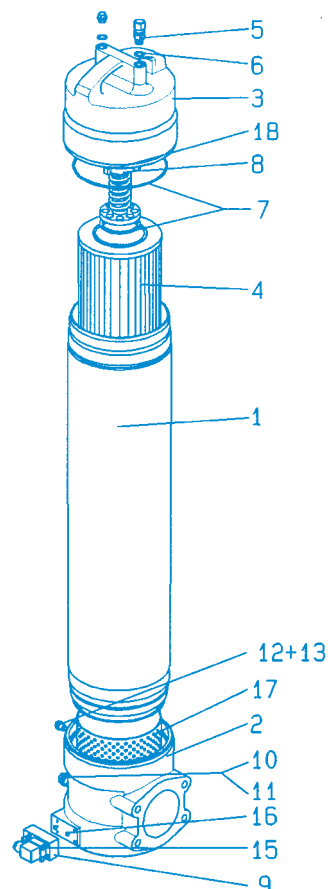
<sup>2)</sup> = Construction dimension for filter element change

## Spare Parts List

40 FLE 0020(C) - 0120(C)  
40 FLEN 0160 - 0630



40 FLE 0145(C) - 0270(C)  
40 FLEN 1000



			Size FLE FLEN	0020(C) 0160	0030(C) 0250	0045(C)	0060(C) 0400	0095(C) 0630	00120(C)	0145(C) 1000	0200(C)	0270(C)
Port	Quantity	Designation	Material									
1	1	Filter housing	various	please indicate ordering information „Filter“								
2	1	Filter lower part	various	please indicate ordering information „Filter“								
3	1	Filter head	various	please indicate ordering information „Filter“								
4	1	Filter element	various	please indicate ordering information „Filter Element“								
4.1	1	Core	St	only for ECOpore® „C“ indicate ordering information „Filter“								
5	1	Vent valve	Bronze	Part No. 848								
6	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
7	3	O-ring	Buna N	please indicate ordering information „Seal Kit“								
8	1	Bypass-valve	various	Part No. 5360							please indicate ordering information „Filter“	
9	1	Maintenance indicator	various	please indicate ordering information „Maintenance indicator“								
10	1	Plug	St	Part No. 789								
11	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
12	1	Locking screw	various	Part No. 4844								
13	1	Seal ring	Soft iron	please indicate ordering information „Seal Kit“								
14	3	Hexagon head cap screw	8.8	Part No. 637			Part No. 652			—		
15	4	Hexagon head cap screw	8.8	Part No. 633								
16	2	O-ring	Buna N	please indicate ordering information „Seal Kit“								
17	1	Protecting basket	St	—							Part No. 4736	
18	1	Plug	St	—							Part No. 795	



**Industrial Filters · Accumulators**

## **Installation, Starting and Maintenance**

### **Installation**

Verify operating pressure with name plate information.

Mount the filter assembly using mounting holes on the filter housing (Part 1) considering flow direction (direction arrows) and servicing height required for cleaning/replacing elements.

Switch of system pump. Remove dust caps from filter inlet and outlet, fit filter into the pipe avoiding tension stress on existing pipework.

### **Connection of electrical maintenance indicator**

Connect indicator using the three wired cable.

Please verify electrical ratings on the indicators (Part 9) name plate.

- |            |                                  |
|------------|----------------------------------|
| 1. Closer  | 1 (black) + 3 (blue)             |
| 2. Opener  | 1 (black) + 2 (brown)            |
| 3. Changer | 1 (black) + 2 (brown) + 3 (blue) |

### **Starting**

Switch on service pump.

Ventilate filter by opening the vent valve (Part 5), close when operating liquid appears.

### **Maintenance**

The filter element is clogged and must be changed or cleaned when at operation temperature the red pointer on the maintenance indicator (Part 9) is hard against the plastic cap and / or the switching process on the electrical indicator is triggered.

### **Filter element service**

Switch of system pump.

Open vent valve (part 5) and depressurize system.

Open plug (part 10) and drain contaminated oil from filter housing.

Unscrew filter upper part / filter cover (part 3) and remove filter element from housing turning slightly off its locator in the filter lower part.

Screw in plug (part 10).

Replace filter element H...SL, P... and VS.... The filter element with G... media is cleanable.

The efficiency of the cleaning process depends on the characteristics of contamination and the final pressure drop prior to servicing / cleaning the element. If the differential pressure after the filter element's cleaning process exceeds more than 50% of the pre service value the G... element also needs to be replaced.

Lubricate filter element O-ring and install replaced or cleaned filter element inside filter housing by putting it up to its locator and slightly turning.

Take care not to damage pleated filter element matrix during installation in filter housing. Remove the filter element's polyethylene protection sleeve when operation temperature is above 60°C or synthetic oil is used.

Check O-ring (part 7) in filter housing, replace in case of damage or wear. Screw on filter head without using a tool until the end of the thread. Turn it back 1/4 thread turn. (40 FLE...). Assemble filter cover with hexagon screw (100 FLE ...).

Operate filter as describe above.

Filter element service when using coreless EPE ECOPore® filter elements. Remove EPE ECOPore® filter element by slightly turning from the supporting tube. The supporting tube is re-usable and remains inside the filter housing.

Put on new EPE ECOPore® filter element over the supporting tube.

### **Warning**

Assemble and disassemble filter only when system is switched off!

Vessel is under pressure!

Leave pressure equalisation valve closed while filter housing is out of service!

Do not change maintenance indicator or pressure equalisation valve when filter is under pressure!

Functions and safety warranty only with EPE-spare part!

Service filter only by trained personal!

Technical modifications reserved!

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Internet: [www.eppensteiner.de](http://www.eppensteiner.de)

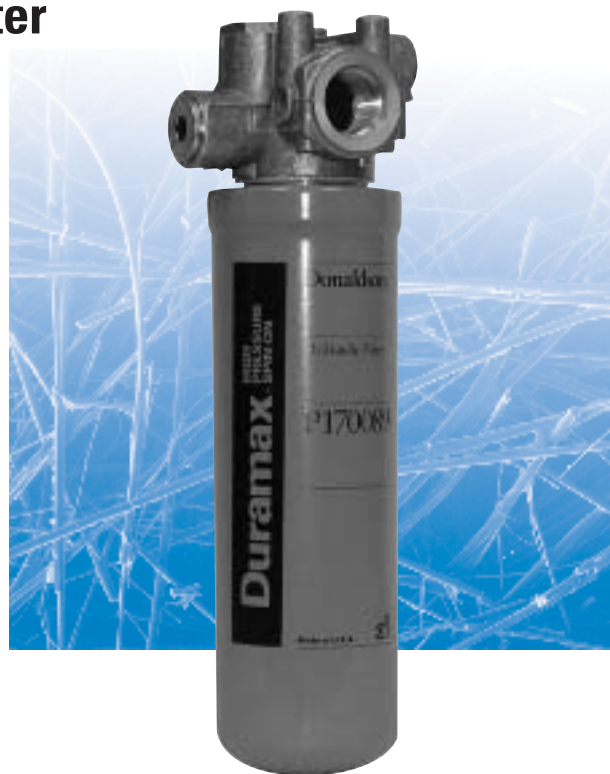
40B-GB/01/06.01/2000/Wei

# HMK03 DURAMAX® Spin-On Filter

**Working Pressures to:** 1000 *psi*  
6895 kPa  
69 bar

**Rated Static Burst to:** 2000 *psi*  
13790 kPa  
138 bar

**Flow Range to:** 25 *gpm*  
95 l/min



## Features

HMK03 Series Duramax® spin-on filters offer twice the capacity of competitive filters, yet they are physically smaller than traditional housing/cartridge filter assemblies. It features a die cast aluminum head and a unique radial seal O-Ring gasket design that eliminates leakage.

Take advantage of Donaldson's Mix 'n Match system of in-stock heads, housings and media choices—so you can get exactly what you need! A full range of media options are available, including: natural-fiber cellulose and Donaldson's exclusive Synteq® synthetic media designed especially for liquid filtration. Likewise, select the exact indicator types and bypass options to suit your application.

### Beta Rating

- Performance to  $\beta_{6(c)}=1000$

### Porting Sizes

- 3/4" SAE O-Ring (standard)

### Assembly Weight

- Short: 3.3 lbs / 1.5 kg
- Long: 4.2 lbs / 1.9 kg

### Replacement Filter Lengths

- 5.5" / 140mm
- 9.5" / 242mm

### Standard Bypass Ratings

- 50 *psi* or No Bypass

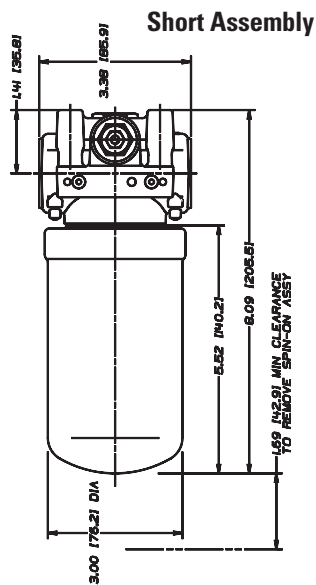
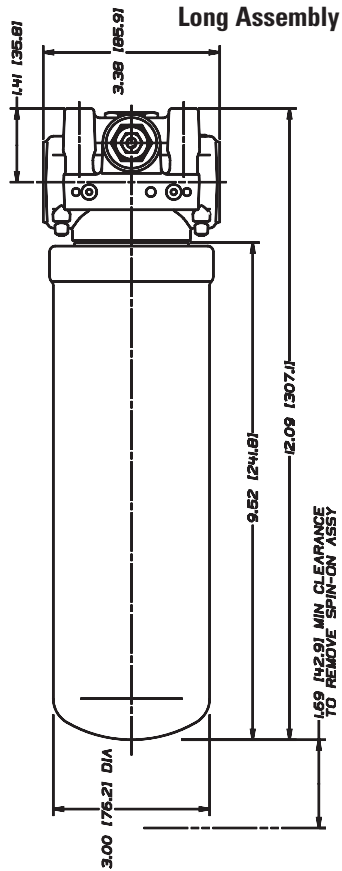
### Operating Temperatures

- -20°F to 250°F / -29°C to 121°C

### Housing Fatigue Strength Ratings

- 100,000 Cycles: 0-1000 *psi* / 0-6895 kPa / 68 bar
- 300,000 Cycles: 0-800 *psi* / 0-5516 kPa / 55 bar
- 1,000,000 Cycles: 0-700 *psi* / 0-4826 kPa / 48 bar
- Standard Head Construction Cast Aluminum

## Assembly - Side View

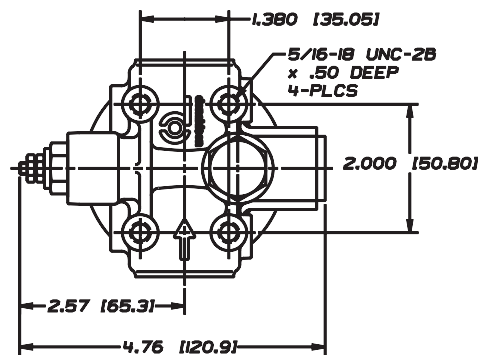


All dimensions above are shown in inches [millimeters]

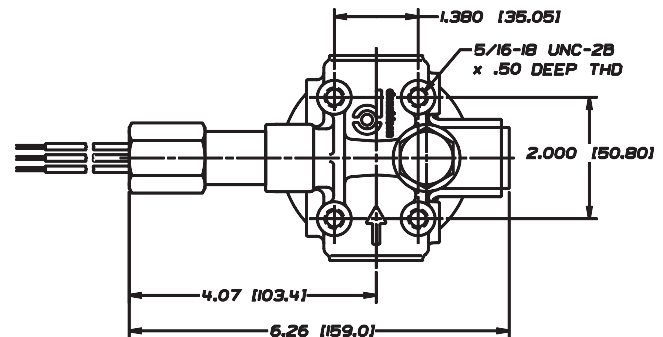
for: Pilot Control Circuits  
Refrigeration Compressor Circuits  
Hydrostatic Transmission —  
Charge Pumps

## Head with Indicators

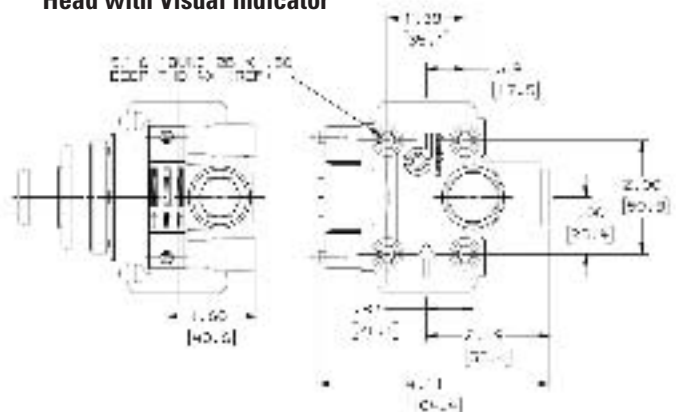
### Head with DC Electrical Indicator



### Head with AC/DC Electrical Indicator



### Head with Visual Indicator





# HMK03 Components

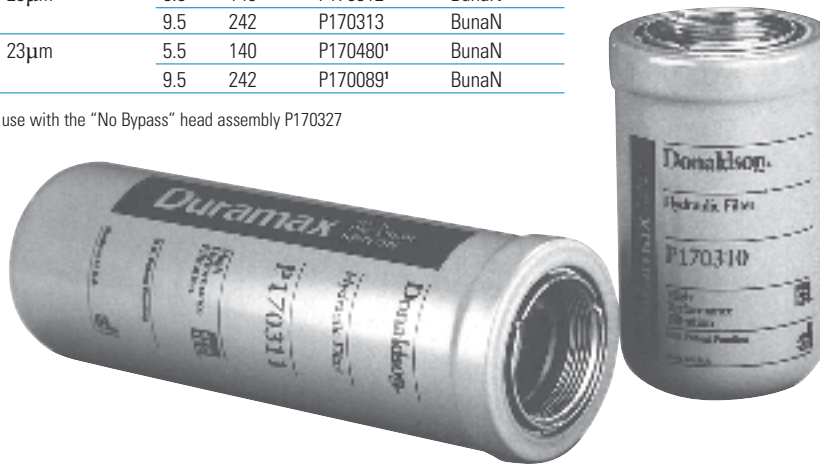
## Element Choices

Media No.	Media Tech	B <sub>10</sub> = 1000 Rating	Length (in.) (mm)		Part No.	Seal Material
No. 1	Synteq®	6µm	5.5	140	P170306	BunaN
			9.5	242	P170307	BunaN
No. 2	Synteq®	9µm	5.5	140	P170308	BunaN
			9.5	242	P170309	BunaN
No. 2½	Synteq®	10µm	9.5	242	P176107	BunaN
No. 3	Synteq®	14µm	9.5	242	P173702	BunaN
No. 4	Synteq®	20µm	5.5	140	P170310	BunaN
			9.5	242	P170311	BunaN
No. 9	Synteq®	23µm	5.5	140	P170312	BunaN
			9.5	242	P170313	BunaN
No. 10	Cellulose	23µm	5.5	140	P170480¹	BunaN
			9.5	242	P170089¹	BunaN

¹ This filter not recommended for use with the "No Bypass" head assembly P170327

### Filter Notes

- Synteq® filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, and HWCF (high water content fluids).



## HMK03 Head

Port Size	Bypass Rating	Indicator	Head Part No.
¾" SAE-12 O-Ring	No Bypass	None*	P170327
	50 psi 345 kPa	None*	P170773
		Visual*	P179460

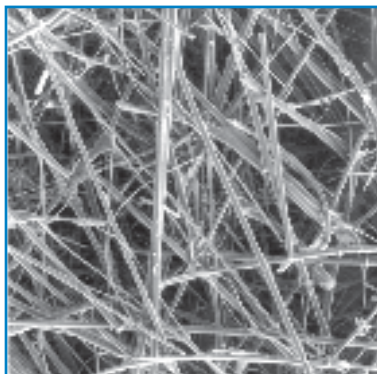
\*Head is machined to accept optional electrical indicators. See Indicator list at right for the available choices.

## In-Oil Service Indicator Choices

Use with Bypass Valve Pressure of:	Part No.	Style²	Description¹
25 psi / 172.5 kPa	P171143	B	Electric 2-wire DC
	P173944	C	Electric 3-wire AC/DC
50 psi / 345 kPa	P165194	A	Electric Single post DC
	P171087	B	Electric 2-wire DC
	P174396	C	Electric 3-wire AC/DC
	P165965	D	Visual

¹ All electric models have a maximum operating temperature of 250°F/121°C.

² See illustration of indicator styles on next page and complete details on all service indicators on page 56-57.



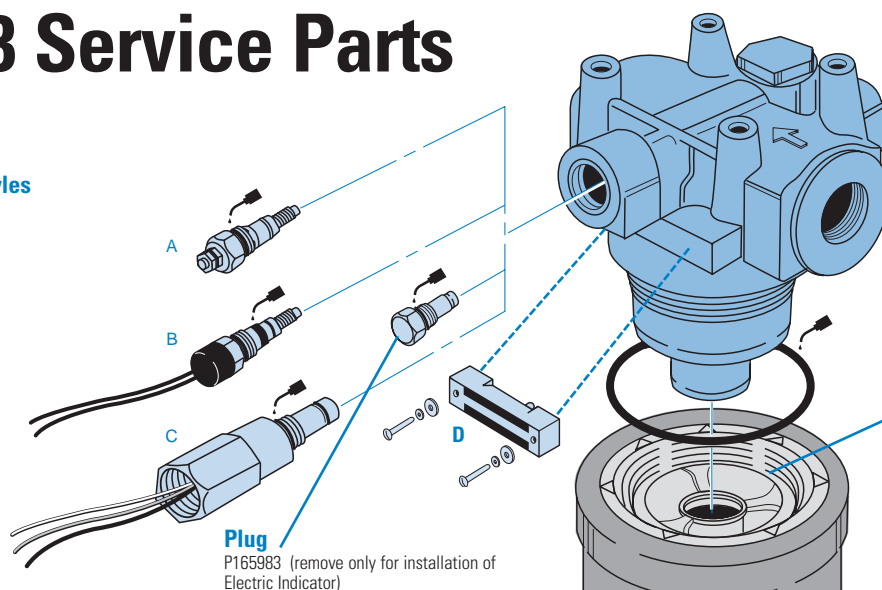
**Synteq®** is Donaldson's synthetic filter media that was specially developed for liquid filtration. Its low-friction, high-flow properties result in consistently low differential pressure over the life of the filter.

Note the smooth rounded fibers in this photo from the scanning electron microscope. Donaldson designed this consistently-shaped fiber pattern to control fiber size, pore size, and flow patterns throughout the media mat. The result is a media with predictable filtration efficiencies, maximum dirt holding capacity, and low pressure drop.

# HMK03 Service Parts

## Service Indicator Styles

(See table on opposite page)

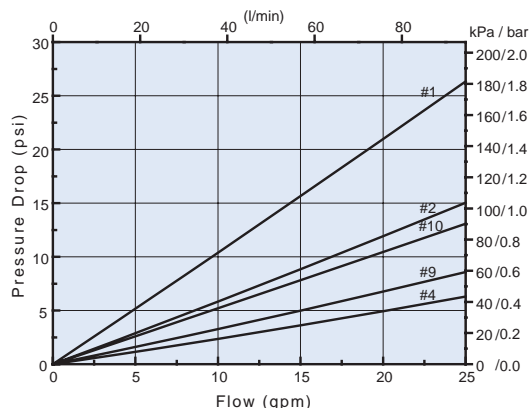


Duramax® Spin-Ons

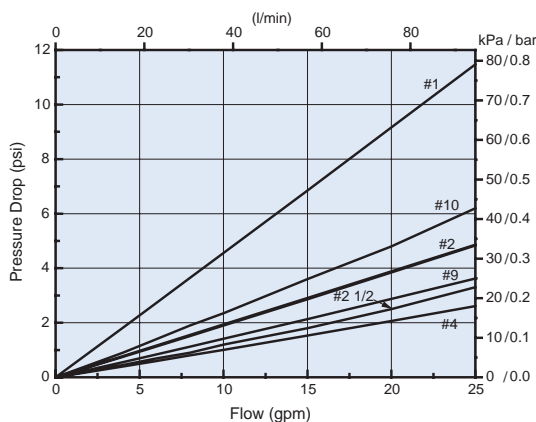
## Performance Data

For a full explanation of how our performance curves were derived, see page 150.

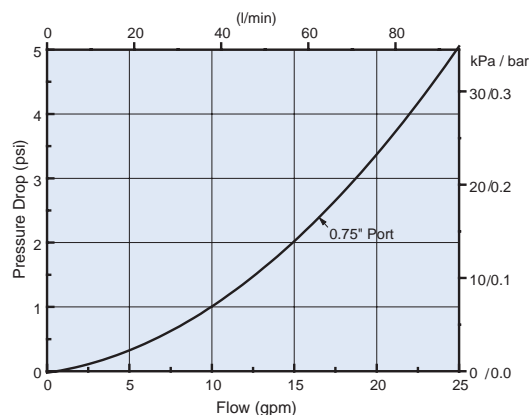
**HMK03 Element Only (5.5"/140mm)**



**HMK03 Element Only (9.5"/242mm)**



**HMK03 Head Only**



# HMK04/24 DURAMAX® Spin-Ons

<b>Working Pressures to:</b>	500 <i>psi</i> 3450 kPa 34.5 bar	
<b>Rated Static Burst to:</b>	1000 <i>psi</i> 6900 kPa 69 bar	
<b>Flow Range to:</b>	<b>HMK04</b> 35 <i>gpm</i> 130 l/min	<b>HMK24</b> 60 <i>gpm</i> 230 l/min



## Features

HMK04 (single) and HMK24 (double) Duramax® spin-on filters feature a heavy-duty steel body, with diecast top plate for added strength. A special head-to-canister O-Ring seal prevents leakage. BunaN seals are standard; Viton® seals are available on some models.

Since both HMK04 and HMK24 models use the same replacement filter elements, they make a great team for your application. Both filters feature identical pressure ratings, but HMK24 handles double the flow capacity as HMK04. So there's no need to inventory two different part numbers for replacement elements.

A full range of media options is available, including natural-fiber cellulose and Donaldson's exclusive Synteq® synthetic media designed especially for liquid filtration. Likewise, select the exact indicator types and bypass options to suit your application.

### Beta Rating

- Performance to  $\beta_{3(c)}=1000$

### Porting Sizes

- |                      |                  |
|----------------------|------------------|
| <b>HMK04</b>         | <b>HMK24</b>     |
| • SAE-12, -16 O-Ring | • SAE-20 O-Ring  |
| • ¾" & 1" NPT        | • 1¼" SAE 4-Bolt |

### Assembly Weight

- HMK04 with short element: 3.9 lbs/1.8 kg
- HMK04 with long element: 4.8 lbs/2.2 kg
- HMK24: 13 lbs/ 5.9 kg

### Replacement Filter Lengths

- 6" / 152mm
- 9.4" / 240mm

### Standard Bypass Ratings

- 25 *psi*, 50 *psi*, No Bypass

### Operating Temperatures

- -20°F to 250°F / -29°C to 121°C (synthetic)
- -20°F to 225°F / -29°C to 107°C (cellulose)

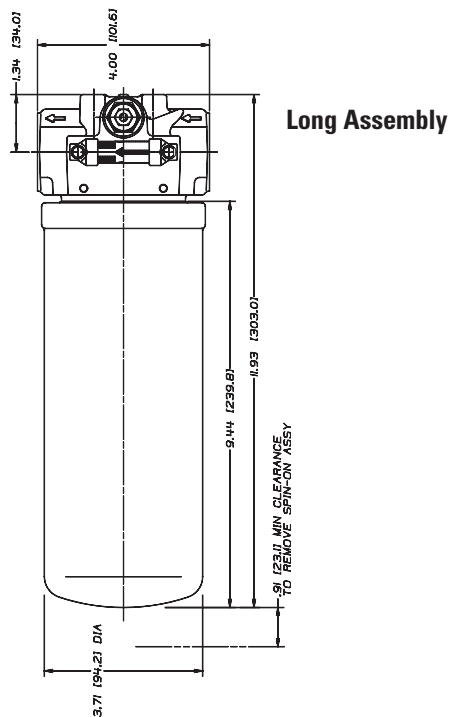
### Housing Fatigue Strength Ratings

- 100,000 Cycles: 0-500 *psi*/ 0-3450 kPa /34.5 bar
- 300,000 Cycles: 0-400 *psi*/ 0-2758 kPa /27.6 bar
- 1,000,000 Cycles: 0-350 *psi*/ 0-2415 kPa /24 bar

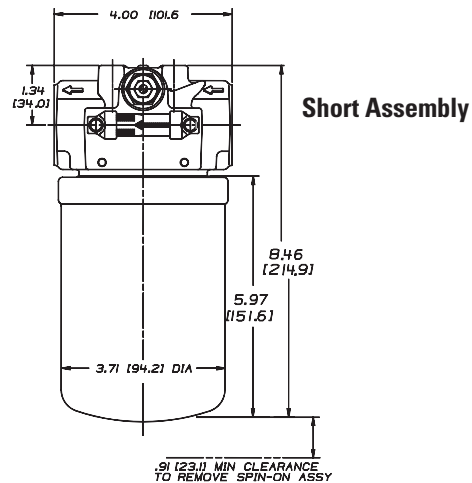
### Element Collapse Rating

- 150 psid
- 300 psid also available
- Standard Head Construction Cast Aluminum

## Assembly - Side View



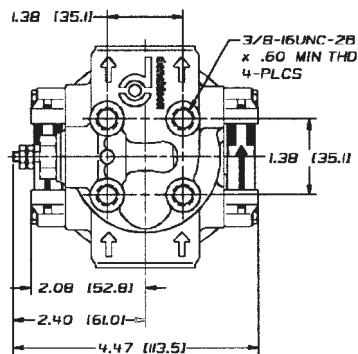
*for:* Return-Lines  
Case Drains  
Side Loop Systems  
Bearing/Gear Lube Systems  
Hydrostatic Charge Pumps  
Power Transmissions  
Cooling Circuits  
Fuel Transfer



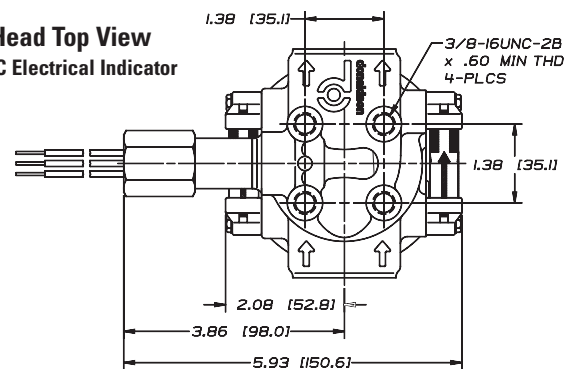
Duramax® Spin-Ons

## Heads - Top & Side Views

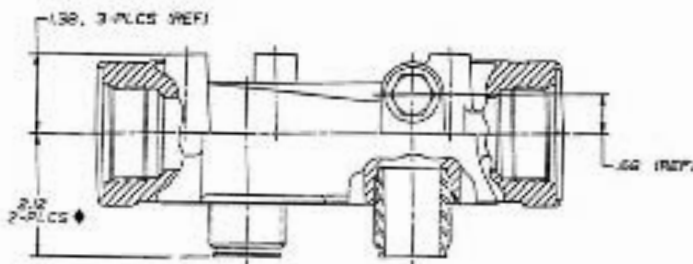
**HMK04 Head  
Top View  
with DC Electrical  
Indicator**



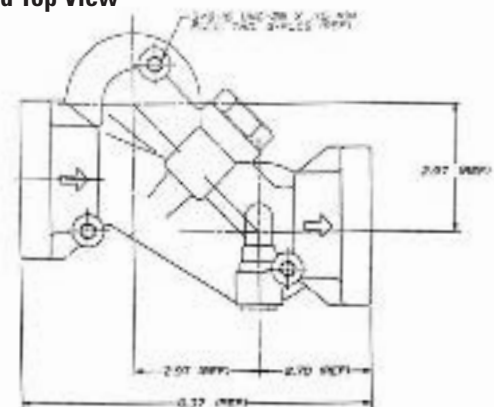
**HMK04 Head Top View  
with AC/DC Electrical Indicator**



**HMK24 Head Side View**



**HMK24 Head Top View**



All dimensions above are shown in inches [millimeters]

# HMK04/24 Components



## Mix 'n Match to Get What You Need

Donaldson's Mix 'n Match system provides the great performance and functional advantages of custom-engineered filters with the convenience and speedy delivery of in-stock parts. Choose your options and build a filter model that exactly suits your cleanliness requirements.

## Notes on Spin-On Elements

- Filters with seals made of BunaN are appropriate for most applications involving petroleum oil. Filters with seals made of Viton (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions and HWCF (high water content fluids) over 150°F. Donaldson offers both types.
- Syntex® filter media is compatible with petroleum based fluids, most phosphate esters, water emulsions, and HWCF.
- Standard element collapse rating is 150 psi, except as noted.

## Spin-On Elements for both HMK04 and HMK24

Media Number	B <sub>%(c)</sub> = 1000 Rating	Media Technology	Length (in.)	(mm)	Part No.
No. ½	<3µm	Synteq®	9.4	240	P165185 Viton Seal
No. 1	6µm	Synteq®	9.4	240	P167590
No. 2	9µm	Synteq®	6	52	P165354
			9.4	240	P165332
No. 2½	10µm	Synteq®	6	152	P176565
			9.4	240	P176566
No. 3	24µm	Cellulose	6	152	P163405
			9.4	240	P163323
No. 4	20µm	Synteq® 300 psi collapse	6	152	P163542
			9.4	240	P163555
No. 4	20µm	Synteq®	6/	152	P164375
			9.4	240	P164378
No. 6	13µm	Synteq®	9.4	240	P164056 Viton Seal
No. 7	33µm	Synteq®	6	152	P164381
			9.4	240	P164384
No. 10	23µm	Cellulose	6	152	P163419
			9.4	240	P163324
No. 15	29µm	Cellulose	6	152	P163496
			9.4	240	P163322
No. 16	22µm	Synteq®	9.4	240	P164059 Viton Seal
No. 20	>50µm	Synteq®	6	152	P165335
			9.4	240	P165338
	na	Water Removal	9.4	240	P560584

## Head Choices for HMK24 (double)



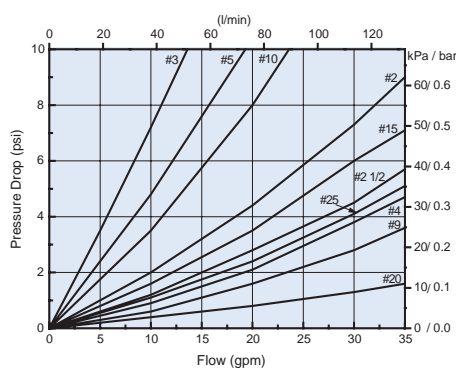
Port Size	Bypass Rating	Indicator Options <sup>1</sup>	Part No.
SAE-20 O-Ring	None	A,B,C	P179609
1¼" 4-Bolt	50 psi	A,B,C	P179582

<sup>1</sup> Reference illustration on next page for indicator styles.

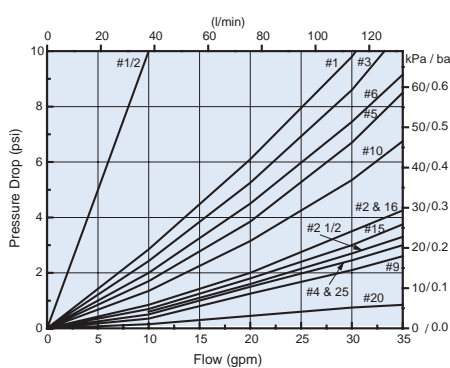
**IMPORTANT:**

**The filter head snout/post must be lubricated before spinning on a new filter to prevent thread damage.**

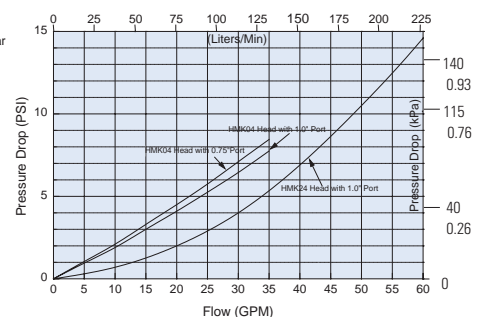
### Short Filter Only (6"/152mm)



### Long Filter Only (9.4"/240mm)



### HMK04 & HMK24 Heads Only







### Head Notes

<sup>1</sup> Reference illustration below for indicator styles.

<sup>2</sup> Donaldson uses the inlet port as the reference point. "Left side," for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.

**The filter head snout/post must be lubricated before spinning on a new filter to prevent thread damage.**

### 3-Port Head for Charge Pumps

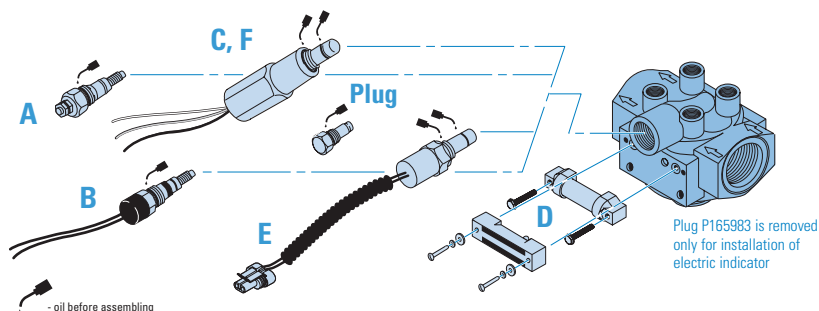


The P167529 head is designed with a 50 *psi* third port bypass valve that diverts all bypass flow back to the reservoir, instead of going straight through the head and into the system as it does in 2-ported heads. Unfiltered fluid is NOT allowed into the system in the case of plugged filters. Designed primarily for charge pump applications.

## Head Choices for HMK04 (single)

Port Size	Bypass Rating	Standard Indicator Style & Location <sup>1,2</sup>	Indicator Options	Head Part No.
¾"NPT	25 psi	None	None	P169317
	172 kPa	D (Visual), Left Side	None	P169310
SAE-12 O-Ring	25 psi	None	None	P167473
	172 kPa	D (Visual), Left Side	None	P166387
	No Bypass	D (Visual), Left Side (25 psi)	None	P169320
		None	None	P165434
	No Bypass	D (Visual), Left Side (50 psi)	None	P173750
SAE-12 O-Ring (3 ports)	50 psi	A (Electrical)	B,C	P167529
1" NPT	25 psi	D (Visual), Both Sides	A, B, C	P166086
	172 kPa	None	None	P169309
SAE-16 O-Ring	15 psi	D (Visual), Left Side	None	P166416
	100 kPa	None	A	P176569
SAE-16 O-Ring	25 psi	None	None	P163681
		D (Visual), Left Side	None	P166417
	No Bypass	D (Visual), Both Sides	A, B, C	P166088
		E (Electrical)	None	P176568
		A (Electrical)	B, C	P165537
		D (Visual), Both Sides (25 psi)	A, B, C	P166664
	50 psi	A (Electrical)	B, C	P166902
		D (Visual, Right Side)	All	P179381
	No Bypass	None	None	P164667
	50 psi	None	None	P167201
	345 kPa	A (Electrical)	B, C	P166862
	SAE-16 O-Ring	5 psi	D (Visual), Both Sides	All
1" NPT	No Bypass	D (Visual), Left Side (25 psiD)	None	P564484
1" NPT	25 psi	D (Visual), Left Side (25 psiD)	None	P564485

### Service Indicator Choices



#### Electric Models<sup>1</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>3</sup>	Description
5 psi / 34.5 kPa	P163642	A	Single post DC.
15 psi / 103 kPa	P163601	A	Single post DC.
25 psi / 172.5 kPa	P163839	A	Single post DC.
25 psi / 172.5 kPa	P162400	A	Single post DC.
25 psi / 172.5 kPa	P171143	B	DC 2-wire.
25 psi / 172.5 kPa	P173944	C	AC/DC 3-wire.
50 psi / 345 kPa	P165194	A	Single post DC.
50 psi / 345 kPa	P167455	A	Single post DC.
50 psi / 345 kPa	P171087	B	DC 2-wire.
50 psi / 345 kPa	P170926	E	DC 2-wire.
50 psi / 345 kPa	P173893	F	DC 3-wire.
50 psi / 345 kPa	P174396	C	AC/DC 3-wire.

#### Visual Models (non-electric)<sup>2</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>3</sup>
15 psi / 103 kPa	P162642	D
25 psi / 172. kPa	P162696	D
50 psi / 345 kPa	P167580	D
n/a (blank plate)	P165984	n/a

NOTE: PSI is marked on the face of the visual indicators.

#### Indicator Notes

<sup>1</sup> All electric models have a maximum operating temperature of 250°F/ 121°C.

<sup>2</sup> All non-electric models have a maximum operating temperature of 180°F/ 82°C.

<sup>3</sup> Indicator styles are illustrated above and detailed on page 56-57.

# HMK05/25 DURAMAX® Spin-Ons

<b>Working Pressures to:</b>	350 <i>psi</i> 2413 kPa 24.1 bar	
<b>Rated Static Burst to:</b>	800 <i>psi</i> 5520 kPa 55.2 bar	
<b>Flow Range to:</b>	<b>HMK05</b>	<b>HMK25</b>
	50 <i>gpm</i> 189.3 l/min	100 <i>gpm</i> 378.5 l/min

## Features

HMK05 (single) and HMK25 (double) Duramax® spin-on filters are perfect for high-flow applications, featuring a heavy-duty steel body and diecast top plate for added strength. A special head-to-canister O-Ring seal prevents leakage. BunaN seals are standard. Seals made of fluorocarbon (such as Viton® from DuPont Dow Elastomers or Fluorel™ from 3M Company) are available.

Since both HMK05 and HMK25 models use the same replacement filter elements, they make a great team within your application. Both filters feature identical pressure ratings, but the HMK25 double element head means double flow capability, with two filters to hold more contaminant. So there's no need to inventory two different part numbers for replacement elements!

Take advantage of Donaldson's Mix 'n Match system of in-stock heads, housings and media choices—so you can get exactly what you need! Media options include natural-fiber cellulose, wire mesh and Donaldson's exclusive Synteq® synthetic media designed especially for liquid filtration.



### Beta Rating

- Performance to  $\beta_{6(c)}=1000$

### Porting sizes

- |                 |                         |
|-----------------|-------------------------|
| <b>HMK05</b>    | <b>HMK25</b>            |
| • 1¼" NPT       | • 1½" NPT               |
| • SAE-20 O-Ring | • 1½" SAE 4-Bolt Flange |
|                 | • SAE-24 O-Ring         |

### Assembly Weight

- 7.5 lbs / 3.4 kg (single)
- 16 lbs / 7.3 kg (double)

### Replacement Filter Lengths

- 11.63" / 295.4mm
- 14.2" / 361mm

### Standard Bypass Ratings

- 25 *psid* or No Bypass

### Operating Temperatures

- -20°F to 250°F / -29°C to 121°C (synthetic)
- -20°F to 225°F / -29°C to 107°C (cellulose)
- -20°F to 250°F / -29°C to 121°C (wire mesh)

### Housing Fatigue Strength Ratings

- 100,000 Cycles: 0-350 *psi* / 0-2413 kPa / 24.1 bar
- 300,000 Cycles: 0-300 *psi* / 0-2068 kPa / 20.7 bar
- 1,000,000 Cycles: 0-250 *psi* / 0-1734 kPa / 17.3 bar

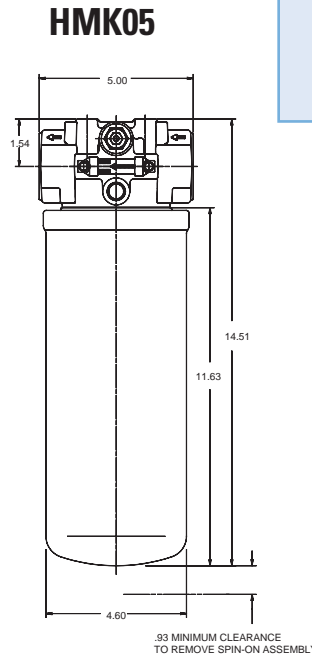
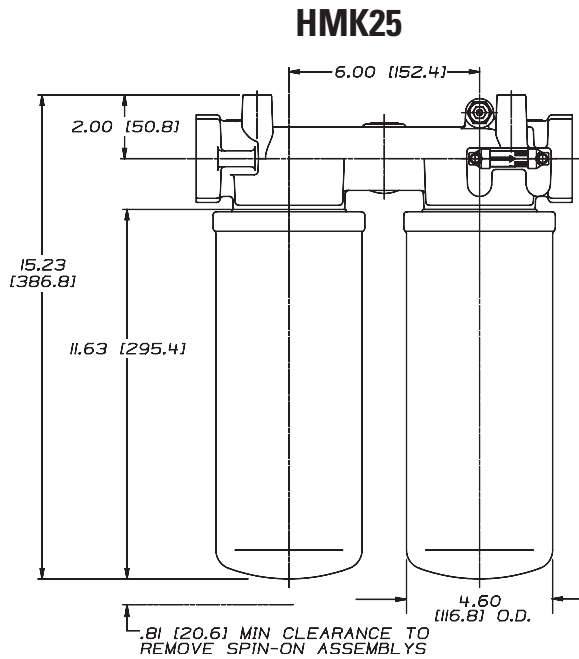
### Element Collapse Ratings

- 200 *psi*

### Filter Head Construction

- Standard Head Cast Aluminum
- Ductile Iron Available in HMK25

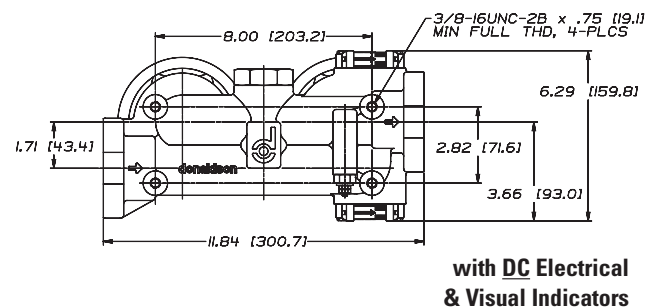
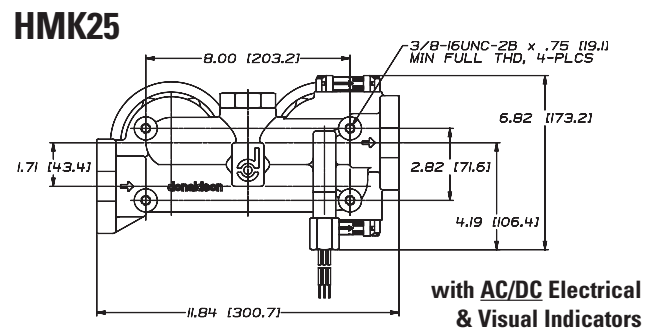
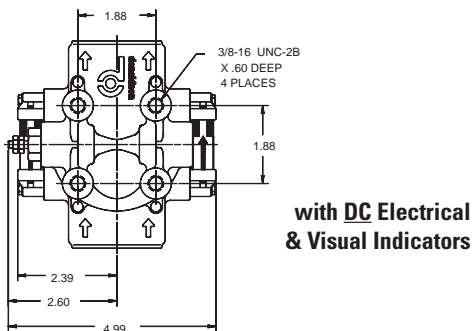
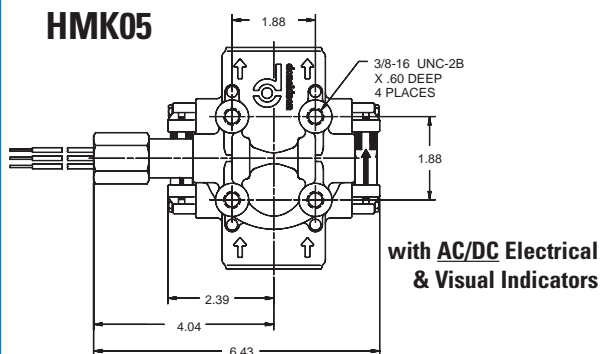
## Assembly - Side View



**for:** Case Drains  
Fluid Conditioning  
Power Transmissions  
Return-Line & Side Loop Systems  
Hydrostatic Charge Pumps  
Lube Oil Systems  
Cooling Circuits  
Fuel Transfer

Duramax® Spin-Ons

## Head - Top View



All dimensions above are shown in inches [millimeters]

# HMK05/25 Components

## Spin-On Elements for HMK05 and HMK25

Media Number	Media Type	B <sub>10</sub> = 1000 Rating	Length (in./mm)	Part No.
No. ½	Synteq®	<3µm	14.2/361	P564468
No. 1	Synteq®	6µm	11.6/294	P170906
No. 2	Synteq®	9µm	11.6/294	P171273 <sup>2</sup> Viton
			11.6/294	P165675
			11.6/294	P171274 <sup>2</sup> Viton
			14.2/361	P179763
No. 2½	Synteq®	10µm	11.6/294	P176567
No. 3	Synteq®	14µm	14.2/361	P170949
No. 4	Synteq®	20µm	11.6/294	P165659
			11.6/294	P171275 <sup>2</sup> Viton
			11.6/294	P165569
No. 9	Synteq®	23µm	11.6/294	P171276 <sup>2</sup> Viton
			11.6/294	P173789
			14.2/361	P173789
No. 10	Cellulose	23µm	11.6/294	P165705
No. 20	Synteq®	>50µm	11.6/294	P165672
			14.2/361	P170546

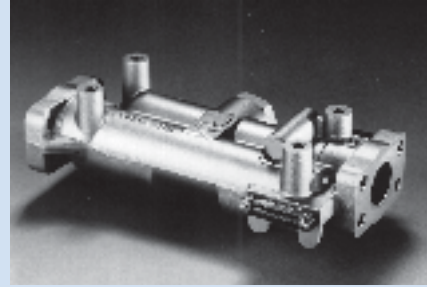
Media Number	Media Technology		Length (in./mm)	Part No.
No. 149	Wiremesh	150µm nominal	11.6/294	P173943
	Water Removal	na	11.6/294	P179075

### Filter Notes

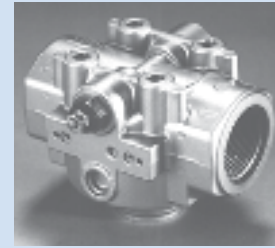
<sup>1</sup> Synteq® filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, and HVCF (high water content fluids).

<sup>2</sup> Filters with seals made of **BunaN** are appropriate for most applications involving petroleum oil. Filters with seals made of **Viton**® (a fluoroelastomer) are required when using diester, phosphate ester fluids, water glycol, water/oil emulsions, and HVCF (high water content fluids) over 150°F. Donaldson offers both types, as shown in the table above. (Viton® is a registered trademark of DuPont Dow Elastomers.)

Head Choices are shown on page 71.



Choose the dual head, single head, or 3-port head



## In-Oil Service Indicator Options (illustrated on opposite page)

### Electric Models<sup>(1)</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>(a)</sup>	Description
5 psi / 34.5 kPa	P163642	A	Single post DC.
15 psi / 103 kPa	P163601	A	Single post DC.
25 psi / 172.5 kPa	P163839	A	Single post DC.
25 psi / 172.5 kPa	P162400	A	Single post DC.
25 psi / 172.5 kPa	P171143	B	DC 2-wire.
25 psi / 172.5 kPa	P173944	C	AC/DC 3-wire.
50 psi / 345 kPa	P165194	A	Single post DC.
50 psi / 345 kPa	P167455	A	Single post DC.
50 psi / 345 kPa	P171087	B	DC 2-wire.
50 psi / 345 kPa	P170926	E	DC 2-wire.
50 psi / 345 kPa	P173893	F	DC 3-wire.
50 psi / 345 kPa	P174396	C	AC/DC 3-wire.

### Visual Models (Non-Electric)<sup>(2)</sup>

Use with Bypass Valve Pressure of:	Indicator Part No.	Style <sup>(a)</sup>
15 psi / 103 kPa	P162642	D
25 psi / 172.5 kPa	P162696	D
50 psi / 345 kPa	P167580	D
n/a	P165984	(blank plate)

### Indicator Notes

<sup>(1)</sup> All electric models have a maximum operating temperature of 250°F/ 114°C.

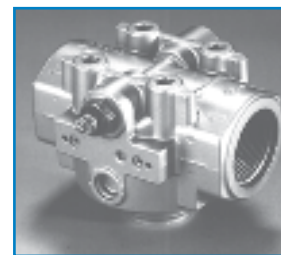
<sup>(2)</sup> All non-electric models have a maximum operating temperature of 180°F/ 82°C.

Detailed descriptions of service indicators are on page 56-57.

# HMK05/25 Components *continued...*

## Head Choices for HMK05 (single)

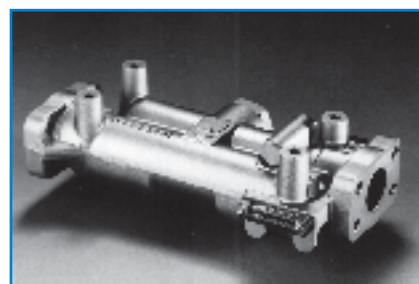
Port Size	Bypass Rating	Standard Indicator Style & Location <sup>1</sup>	Indicator Options <sup>2</sup>	Part No.
1¼" NPT	25 psi	D (Visual), Both Sides (25 psi)	A, B, C, E, F	P167294
	172 kPa	A (Electrical) (25 psi)	A, B, C, E, F	P167621
1¼" NPT	25 psi	D (Visual), Left Side (25 psi)	D	P167622
SAE-20	25 psi	D (Visual), Both Sides (25 psi)	A, B, C, E, F	P165973
O-Ring	172 kPa	None	None	P167619
	No Bypass	D (Visual), Both Sides (25 psi)	A, B, C, E, F	P166663
	No Bypass	D (Visual), Right Side (25 psi)	D	P564486
	No Bypass	D (Visual), Both Sides (50 psi)	A, B, C, E, F	P564858



Single head

## Head Choices for HMK25 (double)

Port Size	Bypass Rating	Indicator Style & Location <sup>1</sup>	Indicator Options <sup>2</sup>	Part No.
1½" NPT	25 psi	D (Visual),	A,B,C,E,F	P169985
172 kPa	Both Sides			
1½" SAE	25 psi	D (Visual),	A,B,C,E,F	P167296
4-Bolt	172 kPa	Both sides		
Flange	No	D (Visual),	A,B,C,E,F	P169984
	Bypass	Both Sides		
1½" SAE	25 psi	D (Visual),	A,B,C,E,F	P167297
O-Ring	172 kPa	Both sides		
1½" 4-Bolt	50 psi	Visual RH	A,B,C,E,F	P560855*
Flange				



Dual head

\*Ductile Iron Construction

## Head Choice for HMK05 (3rd port return)

Port size of inlet & outlet ports: 1¼" SAE 4-Bolt Flange

Size of 3rd port: 1" SAE 4-Bolt Flange

Bypass Rating	Service Indicator Options <sup>2</sup>	Part No.
50 psi	A,B,C,E,F	P561924
364 kPa		

### Head Notes

<sup>1</sup> Donaldson uses the inlet port as the reference point. "Left side," for instance, means the indicator mounts on the Left side when you face the inlet port.

<sup>2</sup> May be purchased separately. See indicator illustrations on page 72.



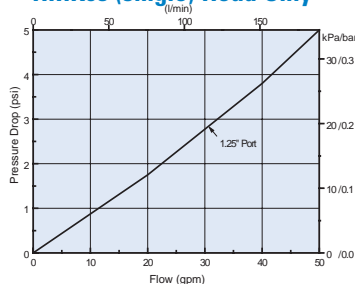
3-port head

Note that the filter head snout/post must be lubricated before spinning on a new filter to prevent thread damage.

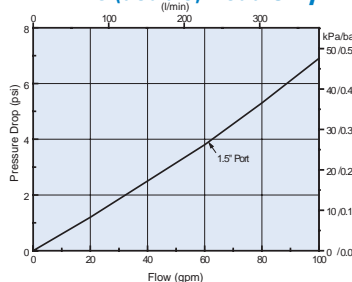
# Performance Data

For a full explanation of how our performance curves were derived, see page 150.

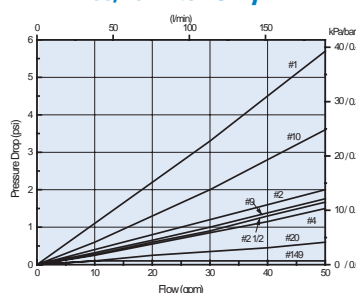
HMK05 (single) Head Only



HMK25 (double) Head Only



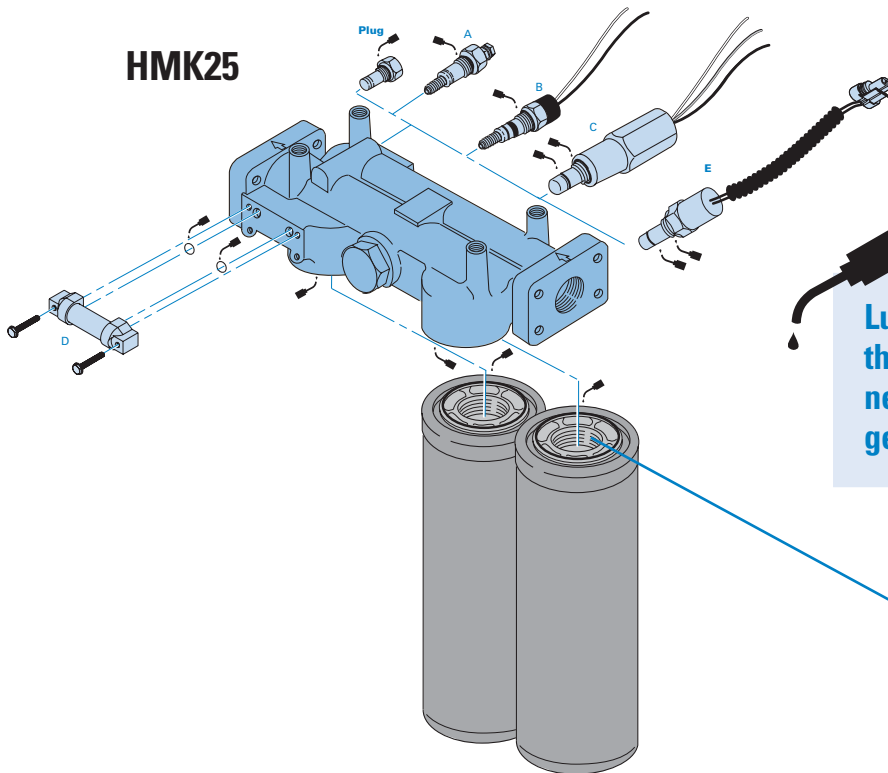
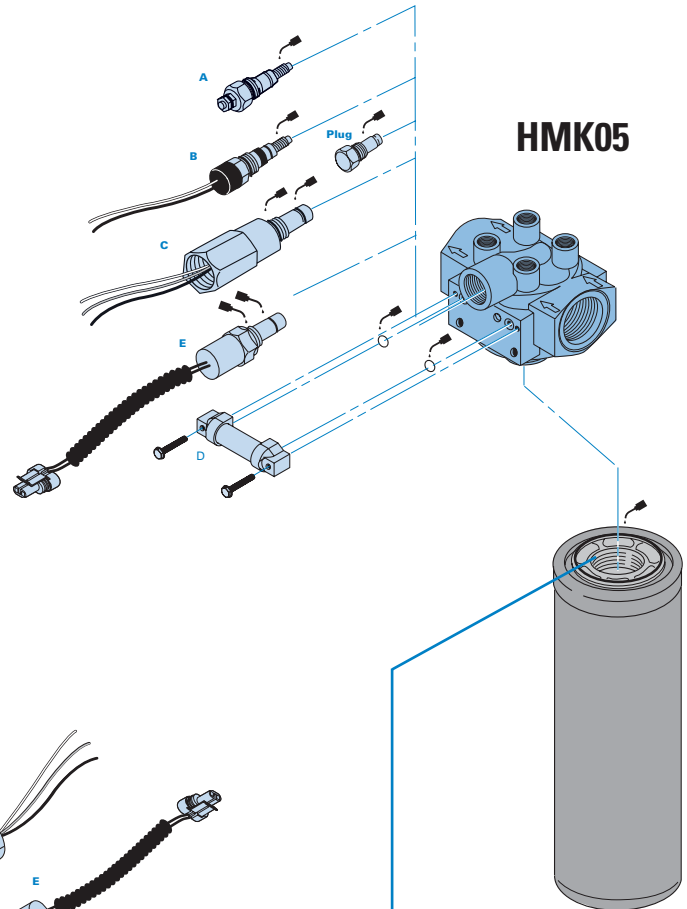
HMK05/25 Filter Only

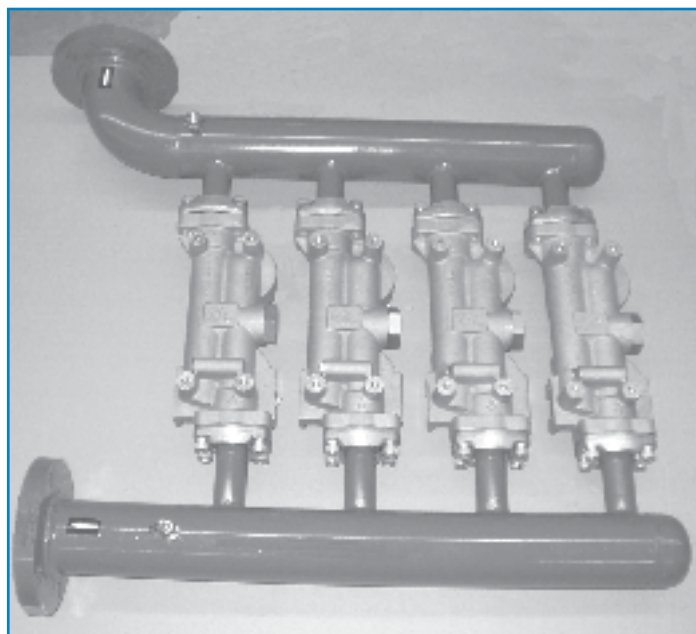




# HMK05/25 Components

*See how to bank several of these dual heads together to create a higher flow circuit, described on page 73.*





## Banks of HMK25 Heads with Manifold Enable Higher Flow or Higher Viscosity

If you need to filter hydraulic fluid at higher flow rates or filter higher viscosity oil—yet want the economy and convenience of spin-on filters, consider banking several Donaldson HMK05 dual heads together with our manifold, as shown at left.

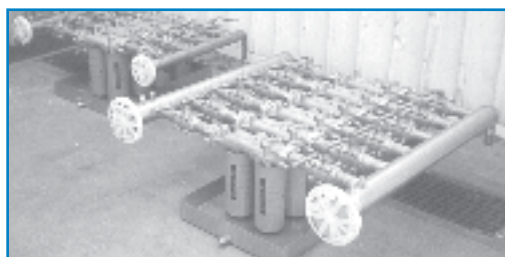
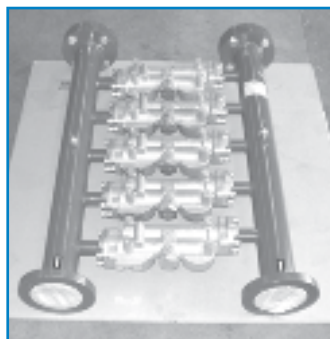
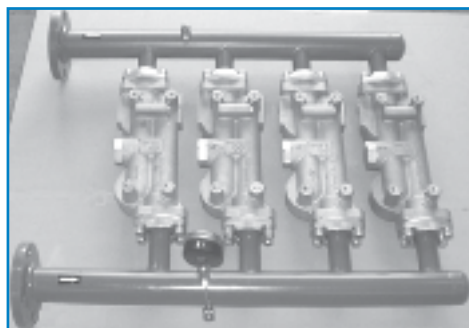
This arrangement can also be used to achieve higher dirt-holding capacity—while retaining the convenience of spin-on filters that are easy to change and require less clean-up.

The heads (2, 3, 4 or more) are piped together, sharing common inlet and outlet pipes.

Whereas a single HMK25 can potentially handle 100 *gpm*, two HMK25 filters together (with common inlet/outlet pipes) can potentially handle 200 *gpm*.

The multiple HMK25 configuration is ideal for any bulk oil storage tank—like the kind found at refineries, mines, oil processing plants, and hundreds of other operations that use a lot of oil. Oil stored in tanks can pick up bacteria, metal particles, and other contamination that must be filtered out of the oil before it's used in expensive machinery.

HMK25 dual heads specs are on facing page; manifolds are custom made to suit your requirements. Call your Authorized Donaldson Distributor for further information on Donaldson manifold options.



**COST-EFFECTIVE DUPLEX ALTERNATIVE:** In this application, the manifolds have on/off valves so that filters can be changed without shutting down the whole system.