

DT-350 In-Line Hydraulic Filter

Donaldson.

Features

The DT-350 T-type ported series offers flows to 50 gpm with 3 bypass options and conforms to the HF3 automotive standard. Our standard bowl drain plug helps relieve system pressure during filter change-outs. 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 the wide assortment of bypass valves. Thermal lockout and surge control are two key features incorporated in the differential indicators.

50 gpm (189 l/min)

Conforms to HF3 specifications

Wide range of indicator options

High collapse element available for use in non-bypass applications

Fluorocarbon seals standard

Technical Data

Max. Working Pressure	3,000 psi (210 bar)
Fatigue Pressure Rating	1,500 psi (100 bar)
Typical Burst Pressure	7,500 psi max (517 bar)
Operating Temp. Range	-20° to 250°F (-29° to 121°C)
Head Material	Cast Iron
Bowl Material	Steel
Weight (w/o elements)	Assembly length 4": 13 lbs (5,9 kg) Assembly length 8": 15 lbs (6,8 kg)

DT-350 series filter housing is a suitable replacement for competitor filter housings such as:

Pall 9650, Schroeder TF30, Parker 30P, Hydac LF



DT-350 Performance Data

Housing and Filter Element

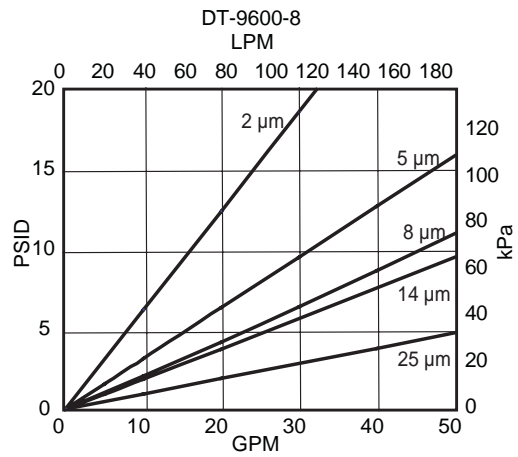
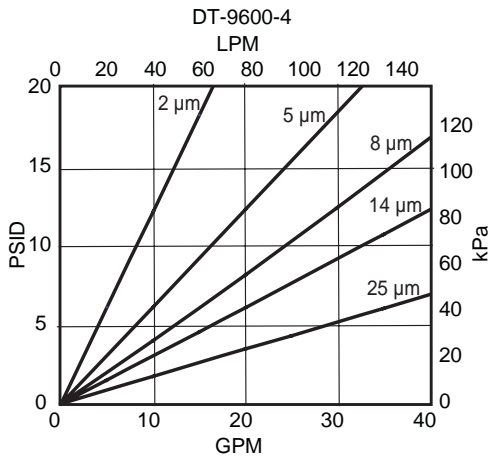
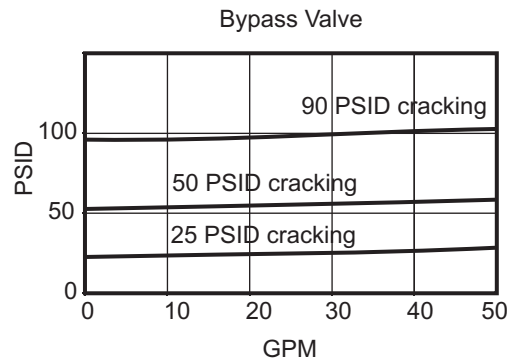
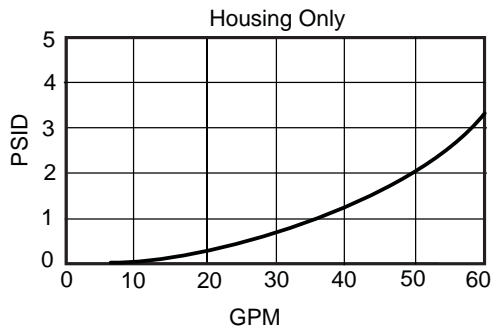
Flow versus Pressure Drop
150 SUS (32 cst.) oil with specific gravity ≤ 0.9

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-350 Ordering Code



Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
DT-350	1	A	B	B	A	14
	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"

TABLE 2
Bypass Valve

A	No bypass
B	50 psid bypass
C	90 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

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

TABLE 5
Element Construction

A	Standard (200 psid)
B	High Collapse (3,000 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

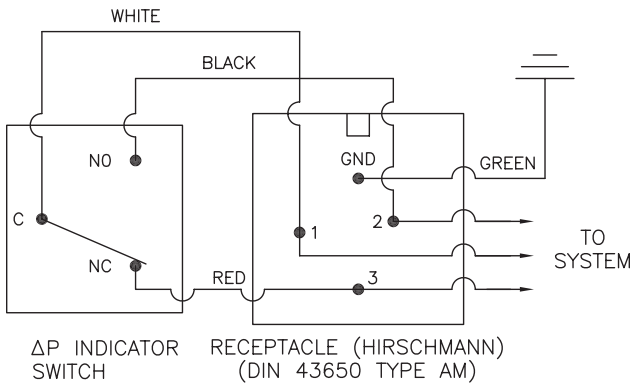
Please note: Element selection to be ordered separately.

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
	B		DT-9601-4-5µm		DT-9601-4-14µm	
2	A	DT-9600-8-2µm	DT-9600-8-5µm	DT-9600-8-8µm	DT-9600-8-14µm	DT-9600-8-25µm
	B		DT-9601-8-5µm		DT-9601-8-14µm	



Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



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

Differential Indicators

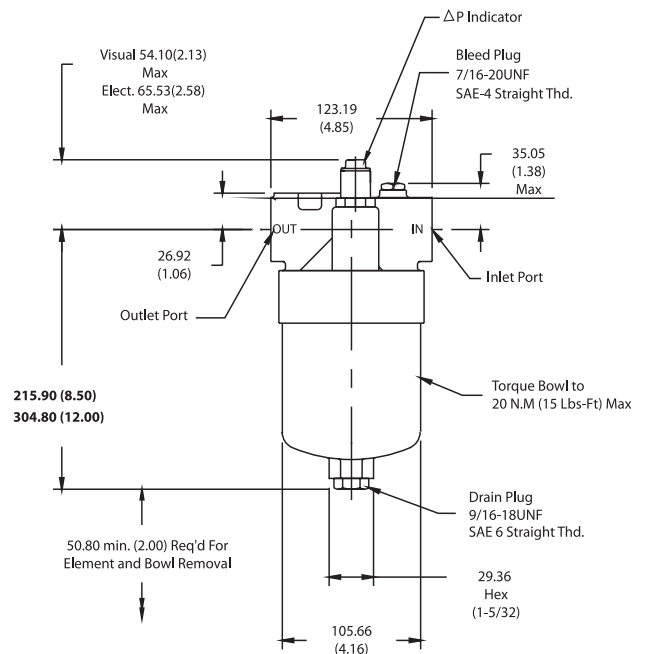
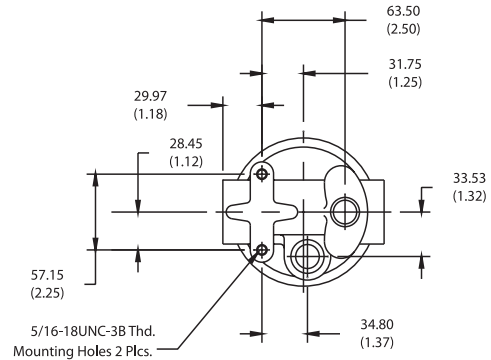
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 70 psid is used with a non-bypass housing.

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-440 In-Line Hydraulic Filter

Donaldson.

Features

The DT-440 filter assembly can be manifold mounted to the hydraulic system. The size and material configuration are well-suited for today's demanding proportional and servo valve applications. Our standard bowl drain plug helps relieve system pressure during filter change-outs. 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 the wide assortment of bypass valves. Thermal lockout and surge control are two key features incorporated in the differential indicators.

20 gpm (91 l/min)

Conforms to HF2 specifications

High collapse element available for use with non-bypass applications

Positive sealing poppet bypass for reliability and zero leakage

Wide range of indicator options

Compact design for use with servo or proportional valve

Two bowl length options for design flexibility

Fluorocarbon seals standard

Technical Data

Max. Working Pressure	4,000 psi (276 bar)
Fatigue Pressure Rating	2,450 psi max (169 bar)
Typical Burst Pressure	10,000 psi max (690 bar)
Operating Temp. Range	-20° to 250°F (-29° to 121°C)
Head Material	Cast Iron
Bowl Material	Steel
Weight (w/o elements)	Assembly length 4": 8.4 lbs (3,8 kg) Assembly length 8": 10.6 lbs (4,8 kg)

DT-440 series filter housing is a suitable replacement for competitor filter housings such as:

Pall 9020, Schroeder DF40, Parker 15P, Hydac HF2P, Eaton HF2P



DT-440 Performance Data

Housing and Filter Element

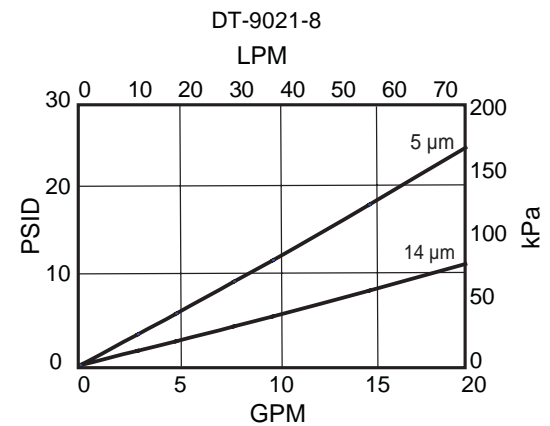
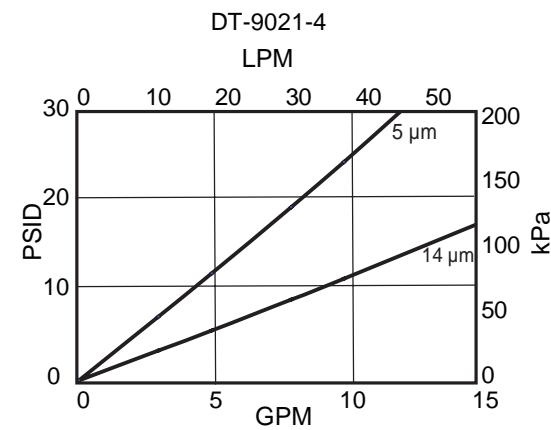
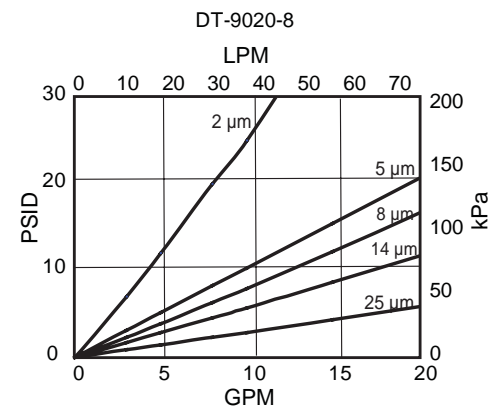
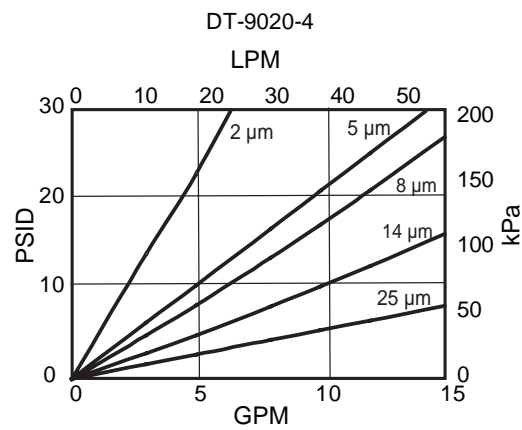
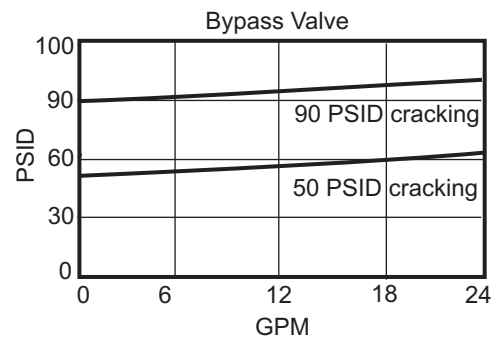
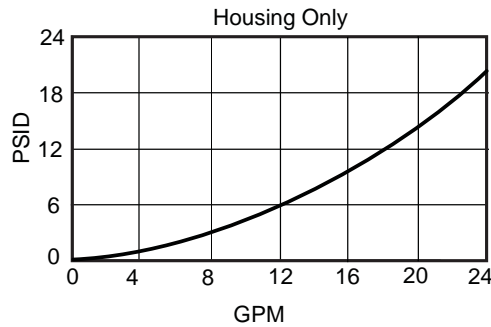
Flow versus Pressure Drop
150 SUS (32 cst.) oil with specific gravity ≤ 0.9

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-440 Ordering Code



Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
DT-440	2	C	D	M	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"

TABLE 2
Bypass Valve

A	No bypass
B	50 psid bypass
C	90 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

M	Manifold Mount
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TABLE 5
Element Construction

A	Standard (150 psid)
B	High Collapse (3,000 psid)

Please note: Element selection to be ordered separately.

TABLE 6
Micron Rating

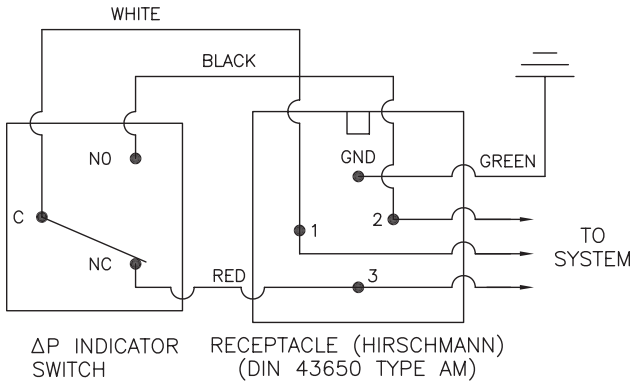
02	Beta 1,000 at < 4 micron
05	Beta 1,000 at 5 micron
08	Beta 1,000 at 8 micron
14	Beta 1,000 at 14 micron
25	Beta 1,000 at 25 micron

Element Chart

Length	Construction	Micron Rating				
		02	05	08	14	25
1	A	DT-9020-4-2µm	DT-9020-4-5µm	DT-9020-4-8µm	DT-9020-4-14µm	DT-9020-4-25µm
	B		DT-9021-4-5µm		DT-9021-4-14µm	
2	A	DT-9020-8-2µm	DT-9020-8-5µm	DT-9020-8-8µm	DT-9020-8-14µm	DT-9020-8-25µm
	B		DT-9021-8-5µm		DT-9021-8-14µm	



Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



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

Differential Indicators

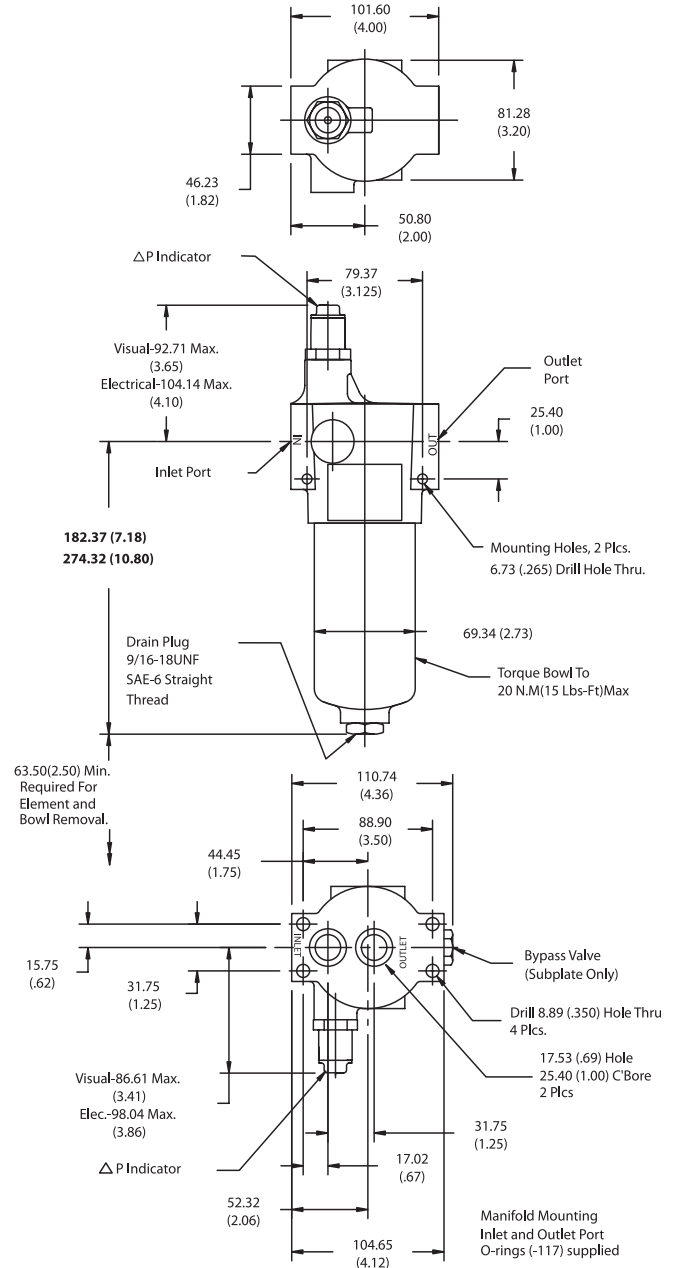
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 70 psid is used with a non-bypass housing.

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-451 In-Line Hydraulic Filter

Donaldson.

Features

The DT-451 base-mounted filter series provides for easy servicing featuring top cover access for element change out. The ductile iron filter head design provides for SAE ports along with optional space saving manifold mounting. This product features the popular HF4 automotive element. Donaldson Triboguard™ 5-layer media is offered in a variety of designs. Five different media grades are offered. Element core collapse options range from 150 to 3,000 psi. The differential pressure indicator line is designed to work with the wide assortment of bypass valves. Thermal lockout and surge control are two key features incorporated in all of the indicators.

Technical Data

Max. Working Pressure	4,500 psi (310 bar)
Fatigue Pressure Rating	3,000 psi max (207 bar)
Typical Burst Pressure	13,500 psi max (931 bar)
Operating Temp. Range	-45° to 250°F (-43° to 121°C)
Head & Cap Material	Cast Iron
Bowl & Notched Material	Steel
Weight (w/o elements)	Assembly length 9": 56 lbs (25,4 kg)
	Assembly length 18": 82 lbs (37,5 kg)
	Assembly length 27": 109 lbs (49,5 kg)

DT-451 series filter housing is a suitable replacement for competitor filter housings such as: **Pall 9700, Schroeder KF30 & KF50, Parker 50P, Hydac HF4P**

150 gpm (568 l/min)

Conforms to HF4 automotive specifications

High collapse element available for use with non-bypass applications

Three bowl length options for design flexibility

Wide range of visual or electrical/visual indicators

Diagnostic port in head for easy system analysis

Drain port in base

Fluorocarbon seals standard



DT-451 Performance Data

Housing and Filter Element

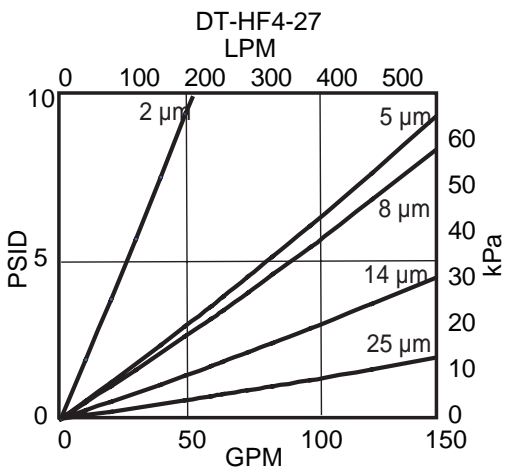
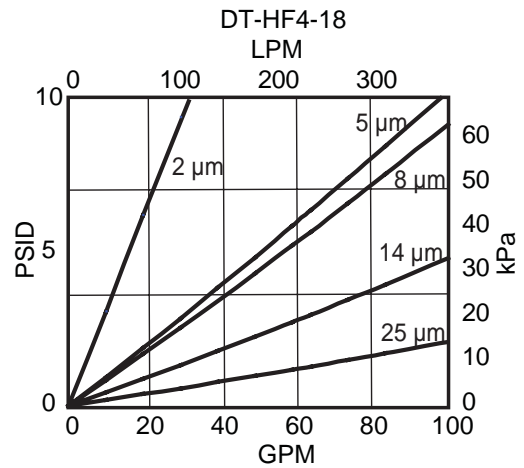
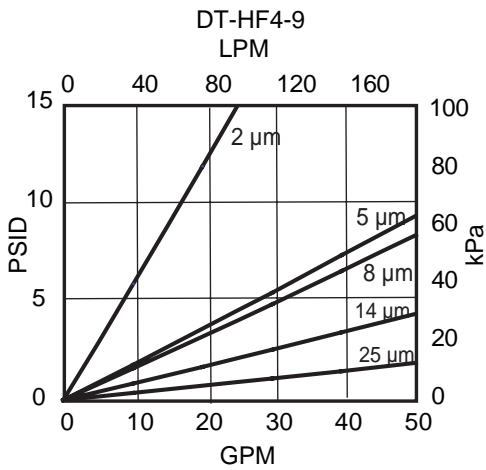
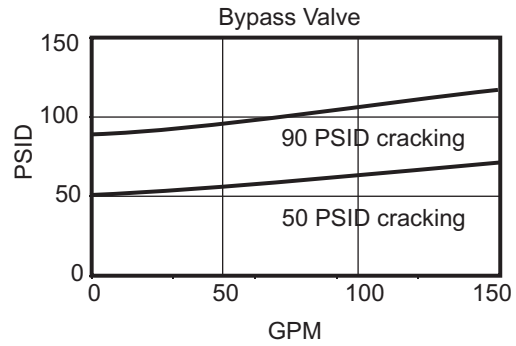
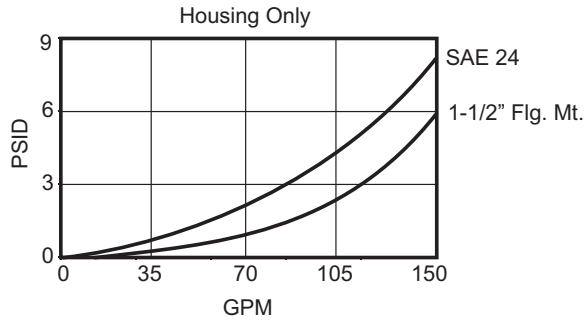
Flow versus Pressure Drop
150 SUS (32 cst.) oil with specific gravity ≤ 0.9

Viscosity Correction Formula

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

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

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



Note: Pressure Drop curve for DT-HF4-HC elements was not available at the time this brochure was printed. Please, contact Donaldson Customer Support at 1-800-846-1846 for updated information.

DT-451 Ordering Code



Example

Model	Housing Length	Bypass Valve	Indicator	Porting	Element Construction	Micron Rating
DT-451	1	A	C	M	A	14
	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	9"
2	18"
3	27"

TABLE 2
Bypass Valve

A	No bypass
B	50 psid bypass
C	90 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 O-Ring
G	1½" SAE 4 bolt flange, Code 61
L	1½" SAE 4 bolt flange, Code 62
M	Manifold Mount

TABLE 5
Element Construction

A	Standard (200 psid)
B	High collapse (3,000 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

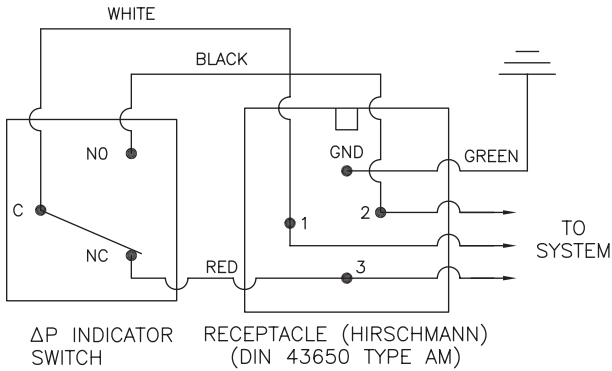
Length	Construction	Micron Rating				
		02	05	08	14	25
1	A	DT-HF4-9-2µm	DT-HF4-9-5µm	DT-HF4-9-8µm	DT-HF4-9-14µm	DT-HF4-9-25µm
	B		DT-HF4HC-9-2µm		DT-HF4HC-18-14µm	
2	A	DT-HF4-18-2µm	DT-HF4-18-5µm	DT-HF4-18-8µm	DT-HF4-18-14µm	DT-HF4-18-25µm
	B		see below*		see below*	
3	A	DT-HF4-27-2µm	DT-HF4-27-5µm	DT-HF4-27-8µm	DT-HF4-27-14µm	DT-HF4-27-25µm
	B		see below**		see below**	

*Requires (2) DT-HF4HC-9-xµm elements and (1) P167324 connector.

**Requires (3) DT-HF4HC-9-xµm elements and (2) P167324 connectors.



Electric Indicator (Aluminum Housings) Schematic Wiring Diagram



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

Differential Indicators

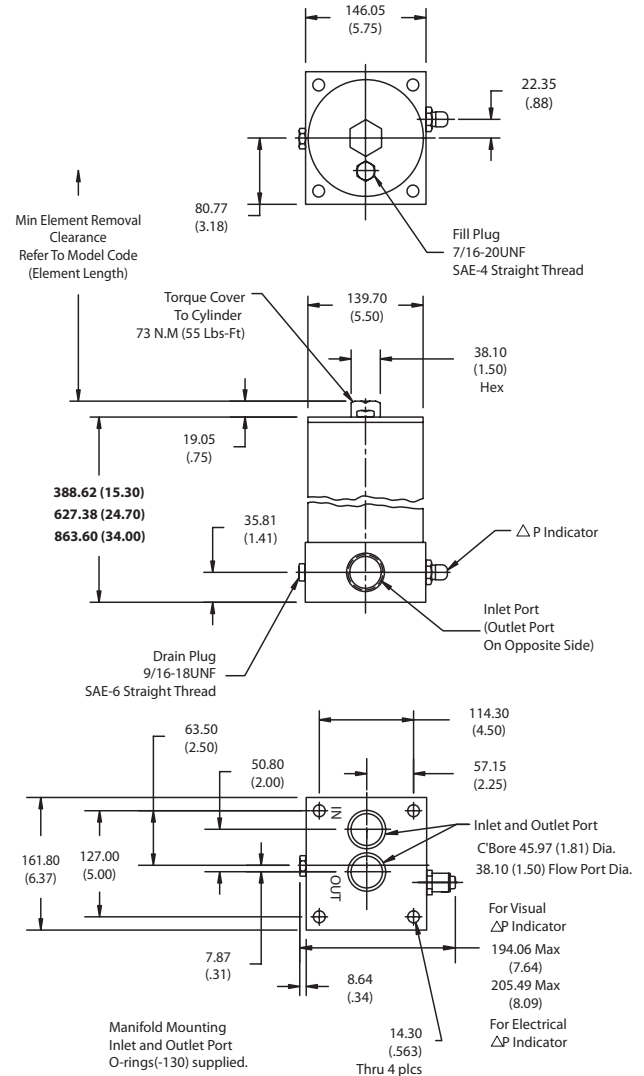
Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 70 psid is used with a non-bypass housing.

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.



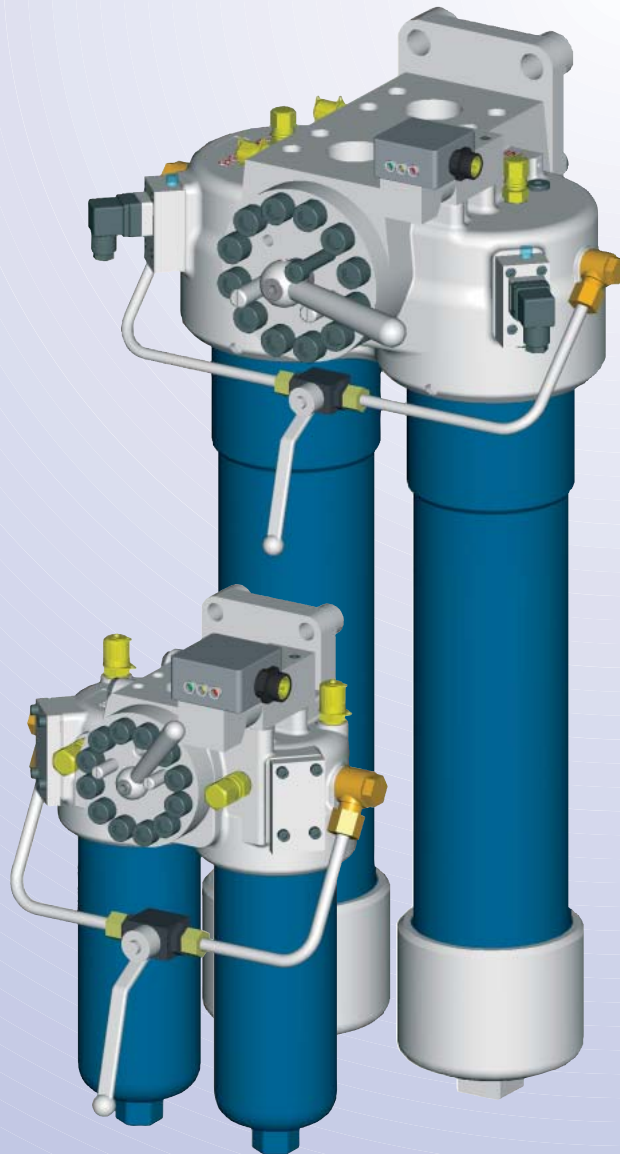
Dimensions: millimeter (inch)



Industrial Filters · Accumulators

High Pressure Duplex Filters

250/450 LD 0003-0145
250/450 LDN 0040-1000



*Filters for inline installation
for continuous operation*

*LDN-Type with Filter Elements
according to DIN 24550*

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

Low pressure drop

Special high efficient filter media

*Operating pressure: 250/450 bar
Connections up to SAE 2"*



Quality assured!

High Pressure Duplex Filters

250/450 LD 0003-0145
250/450 LDN 0040-1000

Operating pressure 250/450 bar
Operating temperature -10°C up to +100°C
Connections up to SAE 2"

Application

Filtration of liquids and lubricants.
Filtration of liquids and gases.
Installation in pipelines to protect subsequent system components from contamination.

Continuous operation due to duplex filter design.

Design

Filter head with inlet, outlet and filter element spigots. Filter bowl is unscrewed downwards. Filter head includes further switching valve for closure ref. starting filter side.

Material: as per spare part 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;
visual und visual/electrical indicators, with one or two switching points are available.

Vent Valve

For removing the air from the filter during start up and for secure de pressurising.

Performance Characteristics

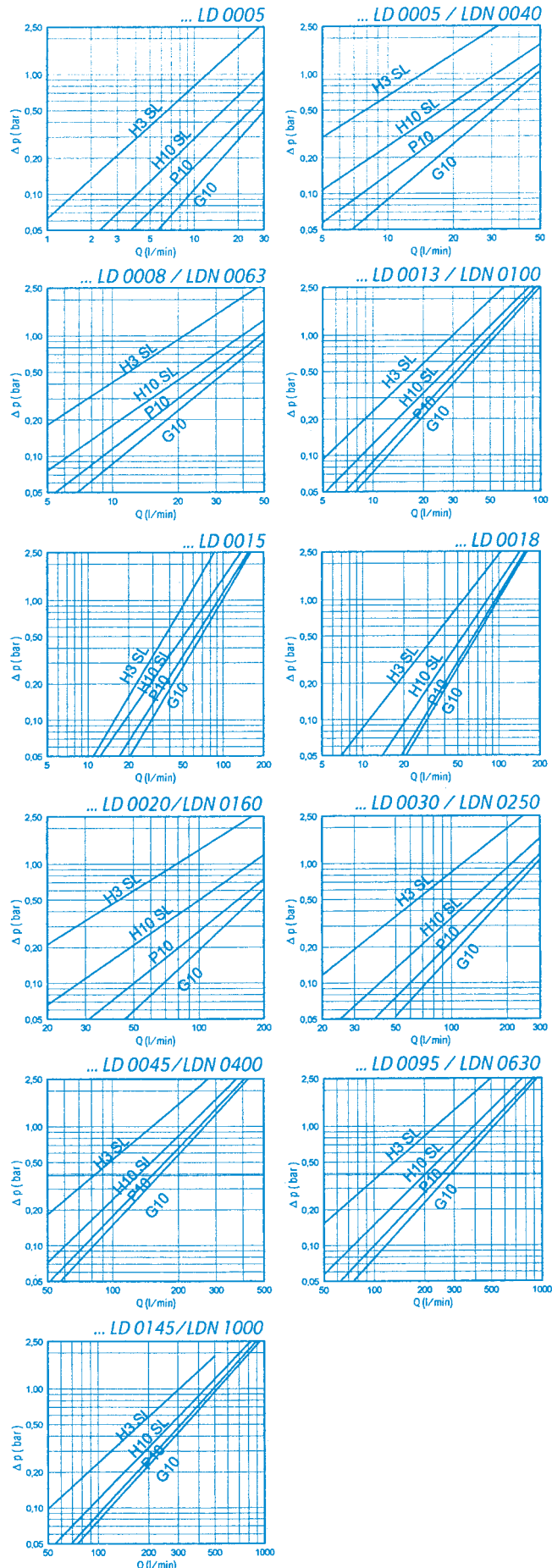
Oil viscosity: 30 mm²/s

Specific weight: < 0,9 kg/dm³

Pressure drop curves for filter assembly

Recommended initial Δp for filter selection = 2,0 bar (250 LD/LDN) / 2,5 bar (450 LD/LDN)

Recommended max velocity = 6 m/sec. (250 LD/LDN) / 7 m/sec. (450 LD/LDN)



Ordering Information

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

Filter Type	Magnet	Maintenance Indicator	Connection	Material
LD = Duplex filter with EPE standard filter element LDN = Duplex filter with filter element acc. to DIN 24550	0 = Without	0 = Without A = Maintenance visual B = Maintenance visual/elect. with equipment connector thread D = Maintenance visual/elect. with signal lights and two switching points Standard switch pressure: 5,0 bar See illustrations of maintenance indicator for detailed information and technical data.	R0 = Pipe thread for 250/450 LD 0003-0013 and 250/450 LDN 0040-0100 S0 = SAE-flange for 250/450 LD 0015-0145 and 250/450 LDN 0160-1000	0 = Standard

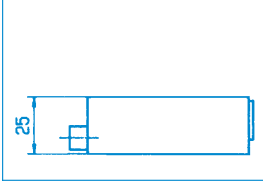
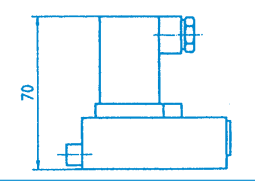
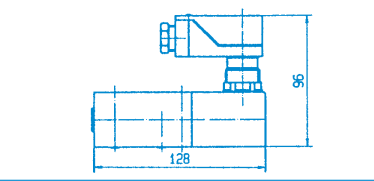
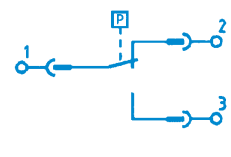
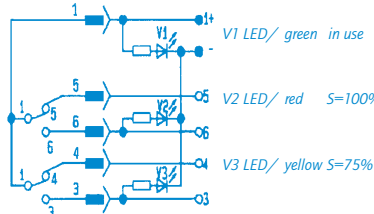
Filter Assembly → 250 LD 0013 H10SL - B 00 - 0 0 B5,0 - R0 P 0 0
Seal Kit → 250 LD 0013 - B - R0 P 0

Pressure	Nominal Size	Filtration Grade	Differential Pressure	Filter Element Design	Bypass Valve	Seal	Additional Information
250 bar 450 bar	250/450 LD... 0003* 0005 0008 0013 0015 0018 0020 0030 0045 250/450 LDN... 0040 0063 0100 0160 0250 0400	Nominal filtration grade 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 glas-fibre, non cleanable H1SL H3SL H6SL H10SL H20SL AS = Micro glas-fibre, water adsorbent, non cleanable AS1 AS3 AS6 AS10 AS20	Maximum allowable differential pressure drop across the filter elements A = 30 bar B = 330 bar C = 160 bar	0... = Standard adhesive T = 100°C E... = Special adhesive T = 160°C ...0 = Standard material ...Z = Zinc free	0 = Without	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	0 = Without 4 = Drain plug 5 = Silicone free A = Pressure equalisation-line E = Vent valve Z = Inspection certificate 5 = Silicone free Z = Inspection certificate

Filterelement → 2. 0013 H10SL - B 00 - 0 - P -

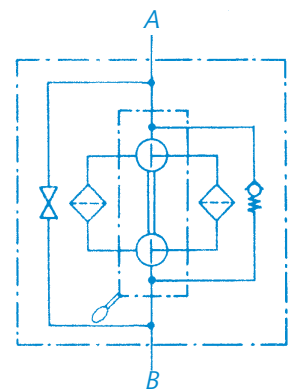
Maintenance Indicator

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.

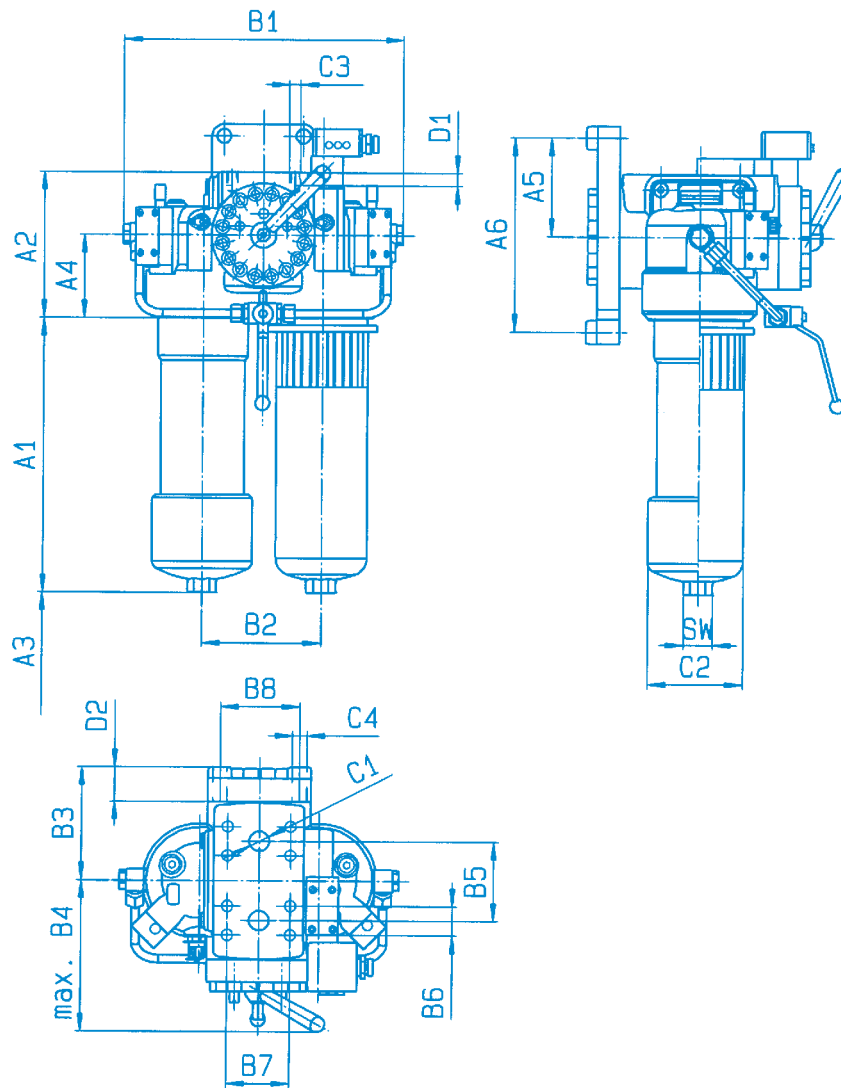
		
A...Visual	B...Visual/Electrical	D...Visual/Electrical with three 24 V diodes and two switching points
Ordering information A5,0 = F5,0 AO 00 00P*	Ordering information B5,0 = F5,0 GW 02 00P*	Ordering information D5,0 = R5,0 GW 09 Z0P*
	Switching symbol 	Switching symbol 

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

Filter Switching Symbol



Dimensions



Filter Housing for Filter Elements according to EPE Standard

Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	B1	B2	B3	B4	B5	B6	B7	B8	C1 Connect. RO/SO	C2 250 450	C3	C4	D1	D2	SW	
250/450 LD 0003	2 x 0,2	12,5	92	109	110	60	60	120	238	90	85	160	40	-	-	56	G 1/2	Ø64 Ø67	-	Ø9	-	35	24	
250/450 LD 0005	2 x 0,2	12,5																						
250/450 LD 0008	2 x 0,3	14,0																						
250/450 LD 0013	2 x 0,5	18,5	245	127,5	-	75	72,5	170	302	120	111	160	75	27,76	57,15	80	SAE 1" 6000 psi	Ø92	M12	Ø14	22	36	-	
250/450 LD 0015	2 x 0,9	32,0																						
250/450 LD 0018	2 x 1,1	34,0	241	184	120	105	125	245	352	150	143	190	100	36,50	79,38	100	SAE 1 1/2" 6000 psi	Ø114	M16	Ø18	25	43	32	
250/450 LD 0020	2 x 1,3	56,0																						
250/450 LD 0030	2 x 1,9	60,0																						
250/450 LD 0045	2 x 3,0	66,0	412	192	-	110	110	240	440	190	166	245	120	44,45	96,82	110	SAE 2" 6000 psi	-	Ø140 Ø156	M20	Ø23	30	46	41
450 LD 0095	2 x 4,5	122,5																						
450 LD 0145	2 x 6,2	148,5	639																					

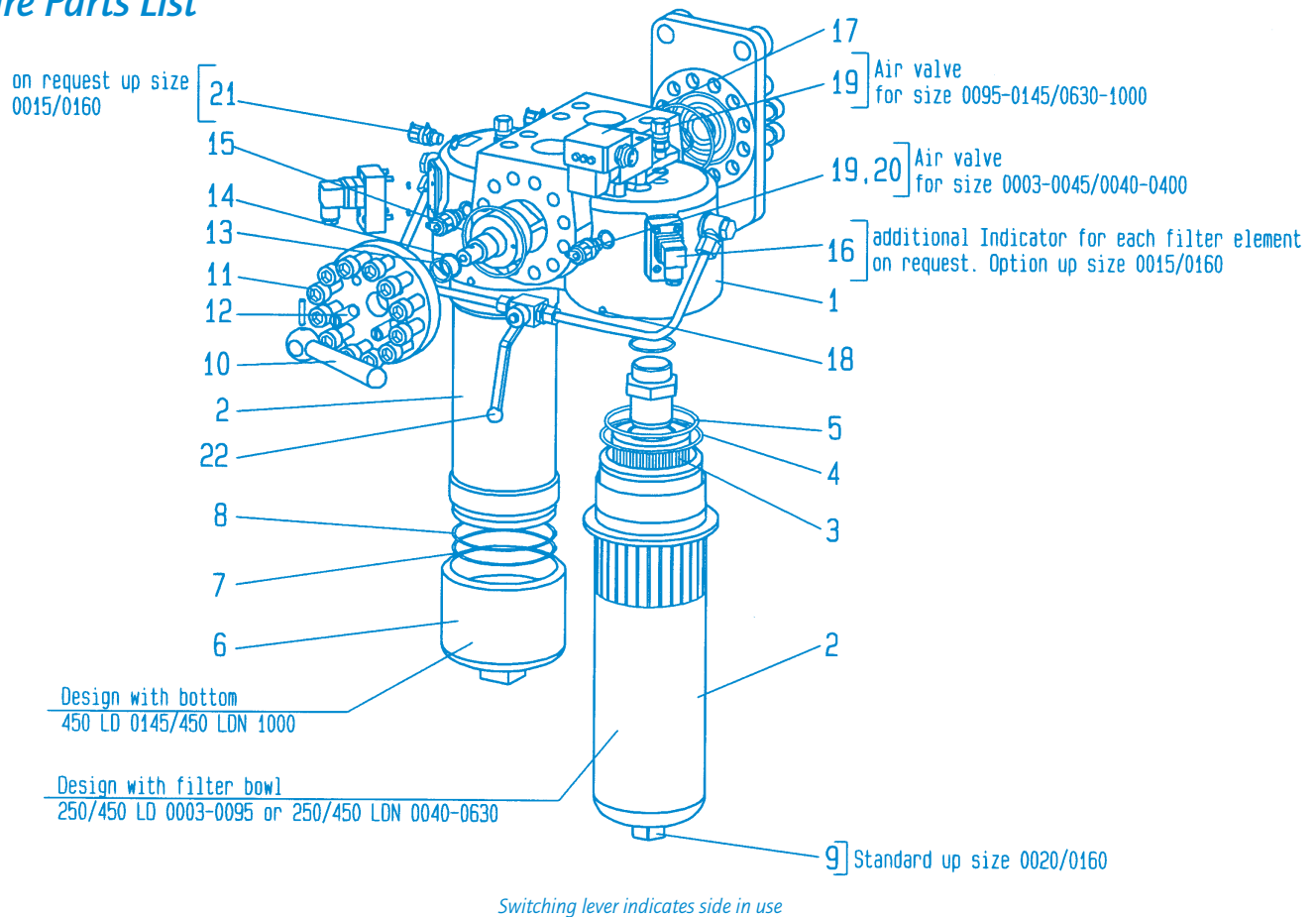
Filter Housing for Filter Elements according to DIN 24550

Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	B1	B2	B3	B4	B5	B6	B7	B8	C1 Connect. RO/SO	C2 250 450	C3	C4	D1	D2	SW	
250/450 LDN 0040	2x0,2	12,5	92	109	110	60	60	120	238	90	85	160	40	-	-	56	G 1/2	Ø64 Ø67	-	Ø9	-	35	24	
250/450 LDN 0063	2x0,3	14,0																						
250/450 LDN 0100	2x0,5	18,5																						
250/450 LDN 0160	2x1,3	56,0	171	184	120	105	125	245	352	150	143	190	100	36,50	79,38	100	SAE 1 1/2" 6000 psi	Ø114	M16	Ø18	25	43	32	
250/450 LDN 0250	2x1,9	60,0																						
250/450 LDN 0400	2x3,0	66,0	412	192	-	110	110	240	440	190	166	245	120	44,45	96,82	110	SAE 2" 6000 psi	-	Ø140 Ø156	M20	Ø23	30	46	41
450 LDN 0630	2x4,5	122,5																						
450 LDN 1000	2x6,2	148,5	639																					

¹⁾ = weight including standard filter element and maintenance indicator

²⁾ = servicing height for filter element replacement

Spare Parts List



Part	Qty.	Designation	Material	0003		0005		0008		0013		0015		0018		0020		0030		0045		0095		0145			
				250	450	250	450	250	450	250	450	250	450	250	450	250	450	250	450	250	450	250	450	-	450	-	450
1	1	Filter head	GGG 50	Part-Number																							
2	2	Filter bowl	C-steel/24CrMo5/42CrMo4	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	2	Supporting ring	Teflon	please indicate ordering information „Seal Kit“																							
5	2	O-ring	Buna N/Viton	please indicate ordering information „Seal Kit“																							
6	2	Bottom	42CrMo4	-																							
7	4	Supporting ring	Teflon	-																							
8	4	O-ring	Buna N/Viton	-																							
9	2	Plug	St	-																							
10	1	Lever	St	-																							
10.1	1	Clamping sleeve	Spring steel/A4	-																							
8	8	Hexagon screw	A4	745																							
11	32	Hexagon screw	8.8	-																							
	24	Hexagon screw	8.8	-																							
12	2	Set screw	St	3959																							
13	2	Supporting ring	Teflon	-																							
14	2	O-ring	Buna N/Viton	-																							
15	2	O-ring	Buna N/Viton	-																							
16	2	Maintenance Indicator	various	-																							
17	1	Maintenance Indicator	various	-																							
18	2	Stud bolt	8.8	-																							
19	2	Measuring connection	St/Viton	-																							
20	2	Vent valve	Bronze	848																							
20.1	2	Sealing ring	Iron	-																							
21	2	Measuring connection	St/Viton	-																							
22	1	Pressure equalisation device	various	-																							

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 assembly using mounting device on the head Part 1 considering flow direction (direction arrows) and servicing height required for cleaning/replacing elements Part 3.
Remove dust protection plugs from filter inlet and outlet, screw filter in pipeline without tension stress.

Connection of Electrical Maintenance Indicator

See brochure 64 and list according to this brochure.

Starting

Put valve handle Part 10 in the central position to fill both filter sides.
Switch on system pump.
Ventilate filter by opening the valves Part 19/Part 20, close when operating liquid emerges. Put valve handle Part 10 in end stop for standard operation.

Maintenance

The filter element is clogged and needs to be replaced or cleaned when at the operating temperature the visual indicator's Part 17 red pin reaches its final position and/or the electrical switch is activated.

Filter Element Service

Open pressure-equalisation valve Part 22 to equalise pressure in both filter housings.

Switch change over valve on other side by moving lever Part 10.

Close pressure-equalisation valve Part 22.

Open the valves Part 19/Part 20 on the filter taken out of operation and reduce the pressure.

Unscrew filter bowl Part 2/Bottom Part 6 (only 450 LD 0145 and 450 LDN 1000) of filter bowl Part 2 and remove filter element Part 3, turning slightly off its spigot in the filter head (Part 1).

Check filter 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... element also needs to be replaced. Install cleaned or replaced filter element by slightly turning it back on its spigot.

250/450 LD 0003-0045 or 250/450 LDN 0040-0400:

Check o-ring Part 5 on filter bowl Part 2, replace in case of damage or wear.

450 LD 0095-0145 or 450 LDN 0630-1000:

Check o-ring Part 8 on filter bowl Part 2, replace in case of damage or wear.

Screw filter bowl Part 2/Bottom Part 6 and tighten it at hexagon bolt using a suitable tool.

Open pressure-equalisation valve Part 22, ventilate filter by opening the valves Part 19/Part 20, close when operating liquid emerges.

Close pressure-equalisation valve Part 22.

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!

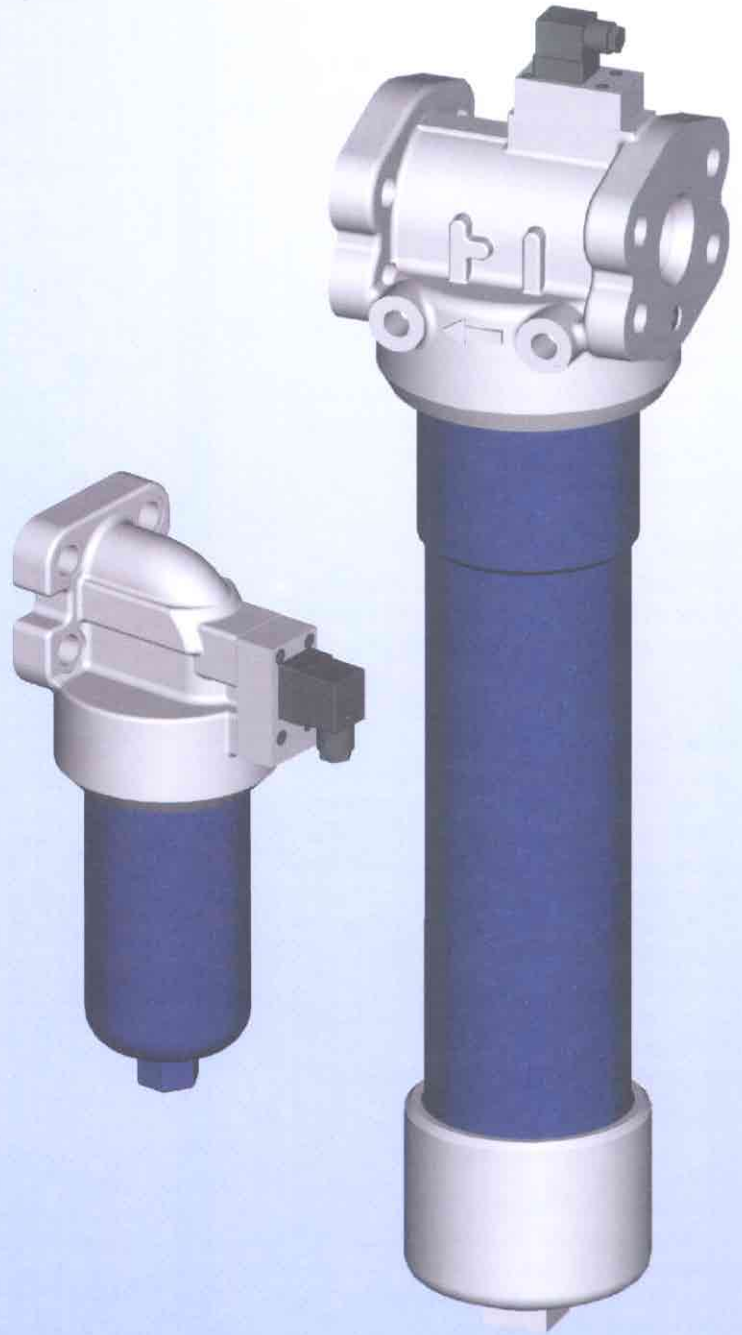
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Industrial Filters · Accumulators

High Pressure Inline Filters

250 / 450 LE and FE 0003 - 0145
250 / 450 LEN and FEN 0040 - 1000



Filters for inline installation

Flange mounted filters

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

Low pressure drop

Special high efficient filter media

Operating pressure: 250/450 bar

Connection up to SAE 2 1/2"



Quality assured!

High Pressure Inline Filters

250 / 450 LE 0003-0145
 250 / 450 LEN 0040-1000
 250 / 450 FE 0003-0145
 250 / 450 FEN 0040-1000

Operating pressure 250/450 bar
 Operating temperature -10°C to +100°C
 Connection up to SAE 2 1/2 "

Application

Filtration of liquids and lubricants at high pressure.
 Filtration of liquids and gases.
 Filter series LE 0003-0145 (LEN 0040-1000) are intended for installation in pipelines, filter series FE 0003-0145 (FEN0040-1000) are used for manifold installation and are to protect system components from contamination.

Design

Filter head with inlet, outlet and filter element locator. Filter bowl is unscrewed downwards. 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, visual and visual/electrical indicators, with one or two switching points are available.

Bypass Valve

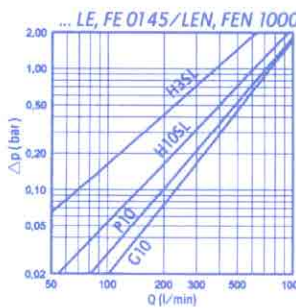
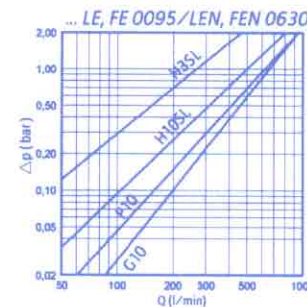
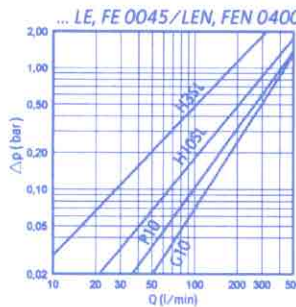
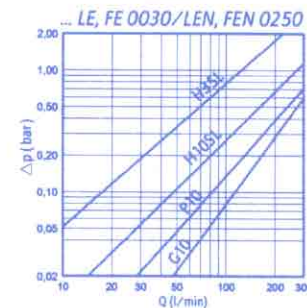
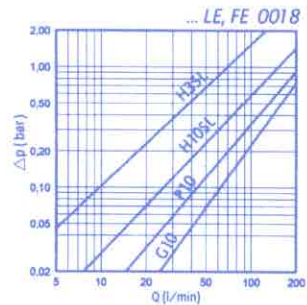
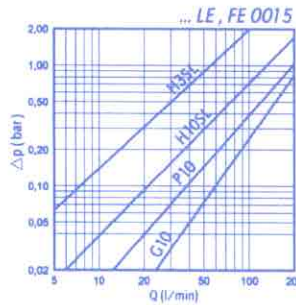
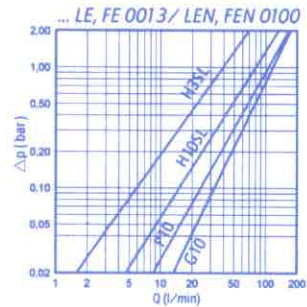
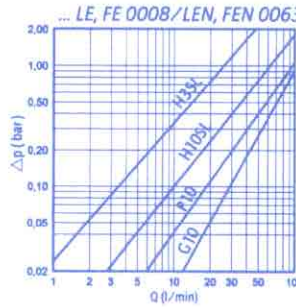
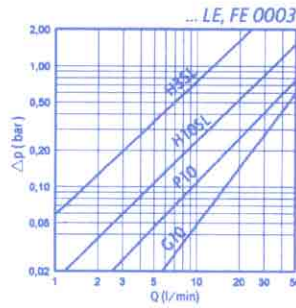
To protect the filter element during start up and over pressurisation due to clogging.

Performance Characteristics

Oil viscosity : 30 mm²/s
 Specific weight: < 0,9 kg/dm³

Pressure drop curves for filter assembly

Recommended initial Δp for filter selection = 1,5 bar



Ordering Information

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

Special designs 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 FE = flange mounted filter with EPE standard filter element FEN = flange mounted filter element with filter element acc. to DIN 24550	0 = without	0 = without LE 0003 A5,0 = visual maintenance indicator C5,0 = combined visual / electrical indicator F5,0 = combined visual / electrical indicator with signal lights and 2 switching points LE 0005-0145 and FE 0003-0145 LEN/FEN 0040-1000 A5,0 = visual maintenance indicator B5,0 = combined visual / electrical indicator D5,0 = combined visual / electrical indicator with signal lights and 2 switching points Standard switch pressure, 5,0 bar For extensive ordering information and technical data refer section "Maintenance Indicators"	LE/LEN inlet / outlet RO = pipe thread SO = SAE flange FE/FEN inlet / outlet OO = standard	0 = standard

Filter Assembly → 450 LE 0013 H10SL - A 00 - 0 0 D5,0 - RO P 0 0
Seal Kit → D 450 LE 0013 - - D - RO P 0

Pressure	Nominal Size	Filtration Grade	Differential Pressure	Filter Element Design	Bypass Valve	Seal	Additional Information
250 bar 450 bar	LE/ FE... 0003* 0005 0008 0013 0015 0018 0020 0030 0045 0095 0145	nominal filtration grade in µm G = stainless steel wire mesh, cleanable G10 G25 G40 G60 G80 G100 VS = nonwoven media, not cleanable VS 25 VS 40 VS 60 P = paper, not cleanable P5 P10 P25	Maximum allowable pressure drop across 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 = zinc free	LE/LEN 0 = without 9 = 7,0 bar FE/FEN 0 = without	P = Buna N V = Viton E = Ethylene-Propylene N = Neoprene	0 = without 5 = silicon free Z = inspection certificate 5 = silicon free Z = inspection certificate
Filter Element	Type: LEN/ FEN... 0040 0063 0100 0160 0250 0400 0630 1000 * filter element 2.0004	absolute filtration grade (ISO4572) in µm H...SL = micro glass-fibre, not cleanable H1SL H3SL H6SL H10SL H20SL AS = micro glass-fibre, water absorbing, not cleanable AS1 AS3 AS6 AS10 AS20			for Filter Element always 0!		

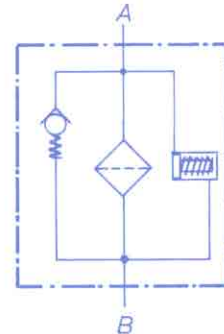
Filter Element → 2. 0013 H10SL - A 00 - 0 - P -

Maintenance Indicator

Maintenance indicators are used for monitoring the filter element's contamination status. They are available as visual or visual / electrical indicators. For technical data refer our brochure "Maintenance Indicators"

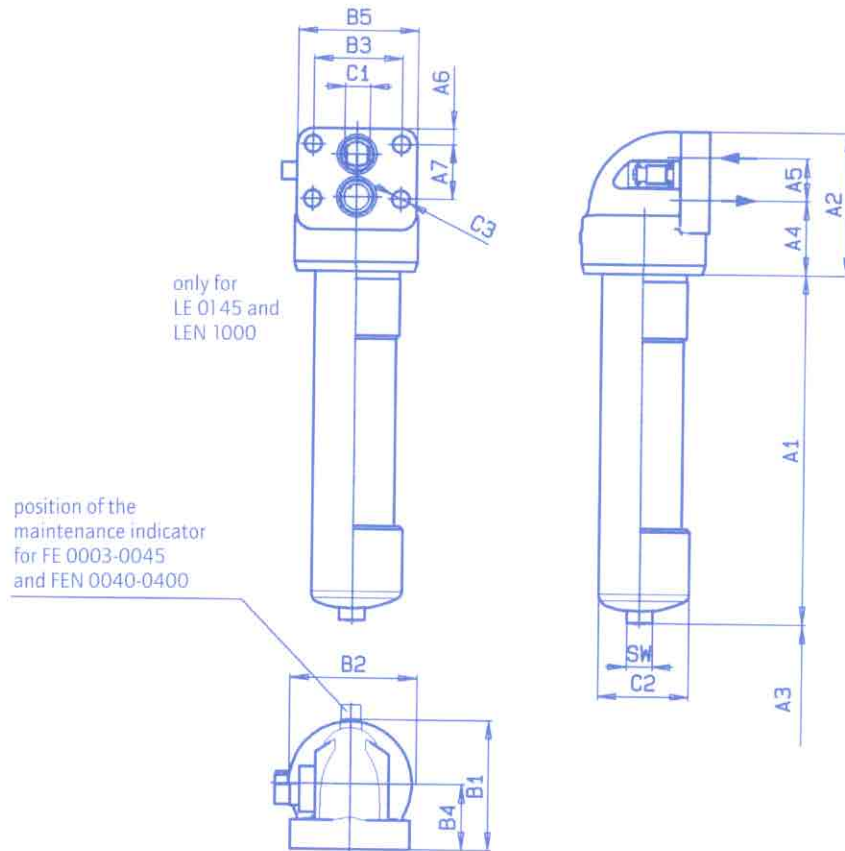
250/450 LE 0003		
A... visual	C... visual/electrical	F... visual/electrical with three light indicators 24V and two switching points
Ordering information A5,0 = E5,0 A0 00 00P*	Ordering information C5,0 = E5,0 GW02 00P*	Ordering information C5,0 = E5,0 GW09 Z0P*
250/450 LE 0005-0145, 250/450 FE 0003-0145 and 250/450 LEN/FEN 0040/1000		
A... visual	B... visual/electrical	D... visual/electrical with three light indicators 24V and two switching points
Ordering information A5,0 = F5,0 A0 00 00P*	Ordering information B5,0 = F5,0 GW02 00P*	Ordering information D5,0 = R5,0 GW09 Z0P*
	switching symbol 	switching symbol
		V1 green LED in use V2 red LED, 100% clogging V3 yellow LED, 75% clogging

Filter Switching Symbol



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

Dimensions



Filter housing for filter elements according to EPE standard

Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2		C3	SW										
																250	450												
250/450 FE 0003	0,2	4,6	98	112	100																								
250/450 FE 0005	0,2	4,6	98		56	28	12	45	95	88	57	48	80	ø 14	ø 64	ø 67	ø 14	24											
250/450 FE 0008	0,3	5,9	161		110																								
250/450 FE 0013	0,5	6,1	251																										
250/450 FE 0015	0,9	11,0	188	150	130	80	35	20	55	130	125	72	65	110	ø 18	ø 92		ø 18	32										
250/450 FE 0018	1,1	12,7	239																										
250/450 FE 0020	1,3	16,5	167	160	150	79,5	52	22,5	60	156	150	95	80	140	ø 32	ø 114		ø 23											
250/450 FE 0030	1,9	19,2	257																										
250/450 FE 0045	3,0	24,1	407																										
450 FE 0095	4,5	47,5	421	225		117	67	25	86	199	195	140	99	190	ø 50	-		ø 27	41										
450 FE 0145	6,2	67,5	641																										

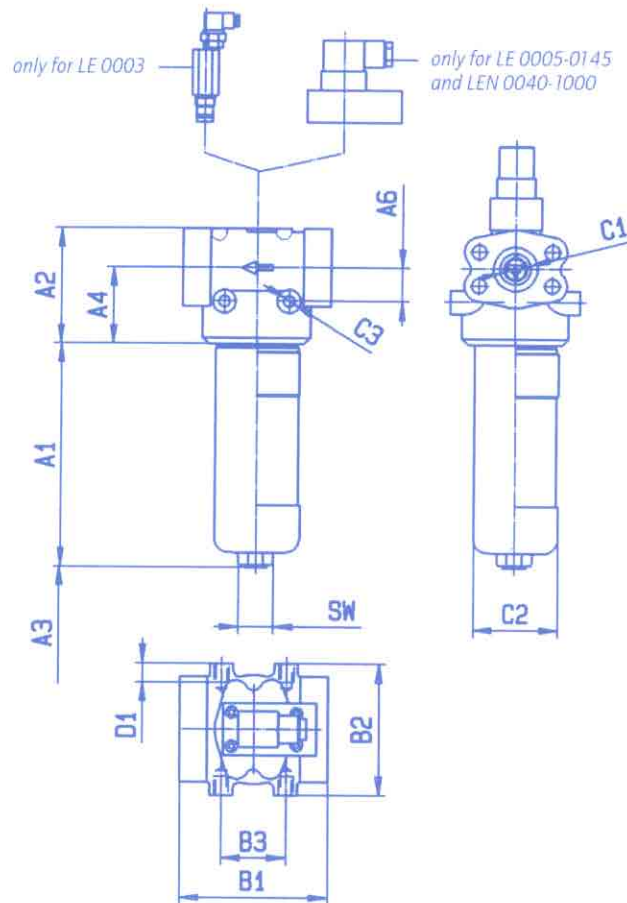
Filter housing for filter elements according to DIN 24550

Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	SW
250/450 FEN 0040	0,2	4,6	98	112	110	56	28	12	45	95	88	57	48	80	ø 14	ø 67	ø 14	24
250/450 FEN 0063	0,3	5,9	161															
250/450 FEN 0100	0,5	6,1	251															
250/450 FEN 0160	1,3	16,5	167	160	150	79,5	52	22,5	60	156	150	95	80	140	ø 32	ø 114	ø 23	32
250/450 FEN 0250	1,9	19,2	257															
250/450 FEN 0400	3,0	24,1	407															
450 FEN 0630	4,5	47,5	421															
450 FEN 1000	6,2	67,5	641	225		117	67	25	86	199	195	140	99	190	ø 50	ø 140 ø 156	ø 27	41

¹⁾ = weight including standard filter element and maintenance indicator

²⁾ = servicing height for filter element replacement

Dimensions



Filter housing for filter elements according to EPE standard

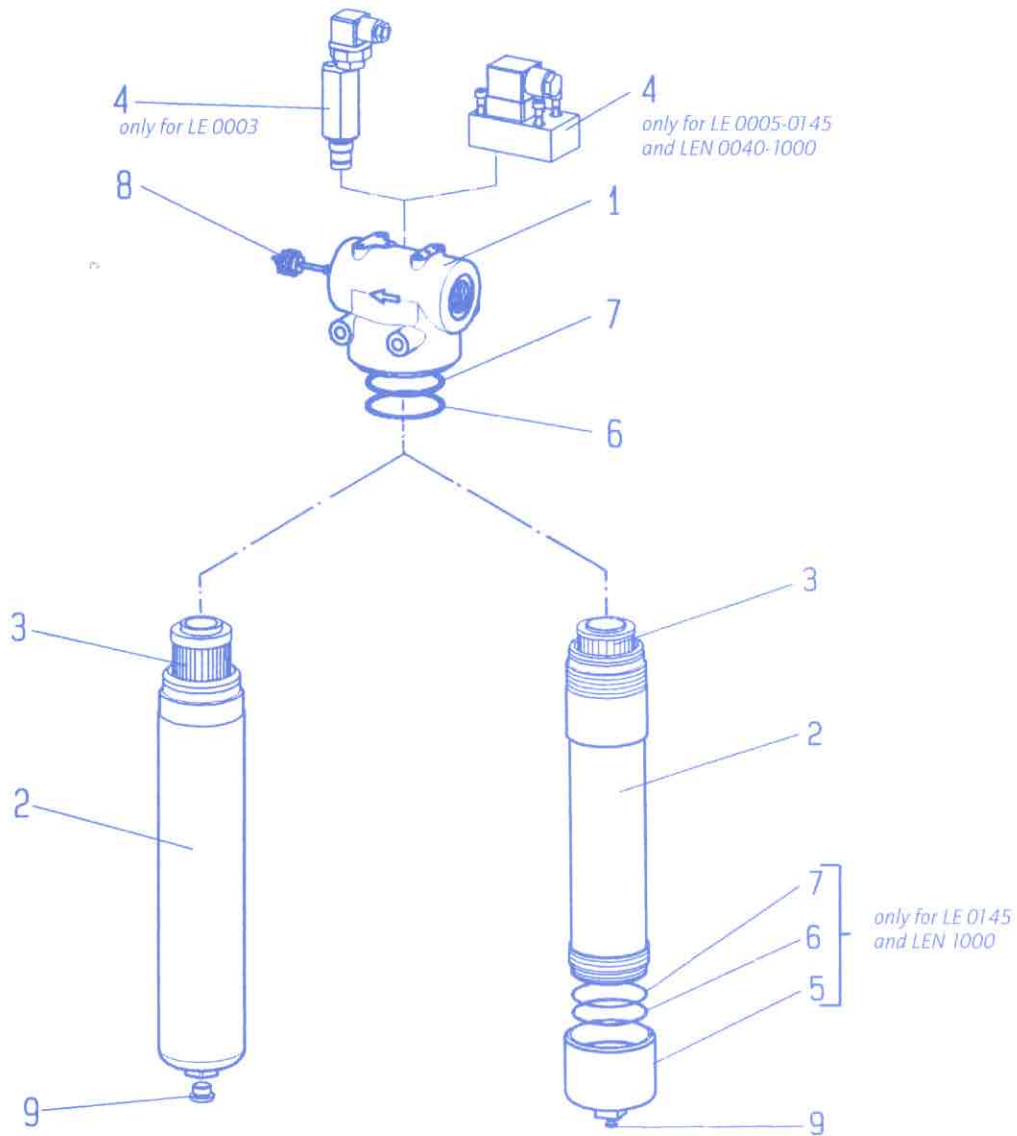
Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A6	B1	B2	B3	C1 Connection RO/SO	C2 250 450	C3	D1	SW				
250/450 LE 0003	0,2	3,9	98	69	110	49	20	80	80	45	G 1/2	ø 64 ø 67	M 8	10	24				
250/450 LE 0005	0,2	4,0	101	89		59	26	100	100	50	G 3/4		M 10	13					
250/450 LE 0008	0,3	4,5	161			250/450 LE 0013	0,5	5,4	251										
250/450 LE 0015	0,9	10,3	188	125	120	82	36	140	140	80	G 1	ø 92	M 12	20	32				
250/450 LE 0018	1,1	12,6	239			87	37	160	156	80	G 1 1/4		ø 114			M 16			
250/450 LE 0020	1,3	16,8	167			142	120	87	37	160	156						80	SAE 1 1/2" 6000 psi	
250/450 LE 0030	1,9	19,5	257										450 LE 0095			4,5		49,5	415
250/450 LE 0045	3,0	23,8	407	187	120	110	42	200	200	100	SAE 2 1/2" 6000 psi	ø 156							
450 LE 0145	6,2	64,6	638																

Filter housing for filter elements according to DIN 24550

Type	Volume in ltrs.	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	B1	B2	B3	C1 Connection RO/SO	C2	C3	D1	SW	
250/450 LEN 0040	0,2	4,0	101	89	110	59	26	100	100	50	G 3/4	ø 67	M 10	13	24	
250/450 LEN 0063	0,3	4,5	161			142	120	87	37	160	156	80	ø 114	M 16	20	32
250/450 LEN 0100	0,5	5,4	251													
250/450 LEN 0160	1,3	16,8	167	187	120	110	42	200	200	100	ø 140	M 20	27	41		
250/450 LEN 0250	1,9	19,5	257												SAE 2" 6000 psi	
250/450 LEN 0400	3,0	23,8	407								ø 156					
450 LEN 0630	4,5	49,5	415													
450 LEN 1000	6,2	64,6	638													

¹⁾ = weight including standard filter element and maintenance indicator

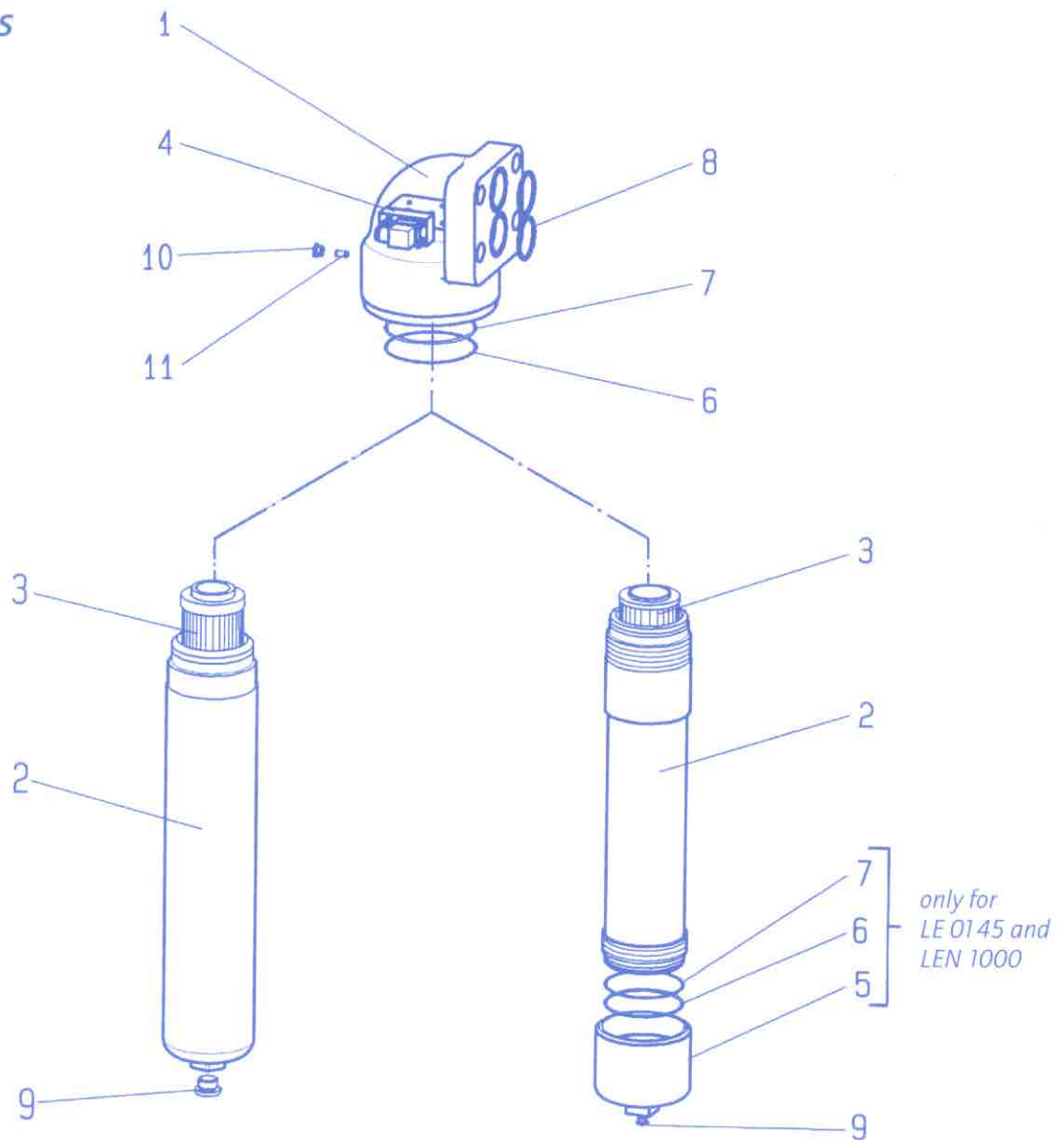
²⁾ = servicing height for filter element replacement



		Size LE Size LEN		0003	0005 0040	0008 0063	0013 0100	0015	0018	0020 0160	0030 0250	0045 0400	0095 0630	0145 1000
Part	Qty	Designation	Material	please indicate ordering information "Filter Assembly"										
1	1	Filter head	GGG50	please indicate ordering information "Filter Assembly"										
2	1	Filter bowl	carbon steel/24CrMo5	please indicate ordering information "Filter Assembly"										
3	1	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	Maintenance indicator	various	refer section "Maintenance indicator"										
5	1	Bowl	42CrMo4	Part.No. 4374										
6	2	Supporting ring	Teflon	please indicate ordering information "Seal Kit"										
7	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"										
8	1	Bypass valve	various	Part.No. 3054		Part.No. 3058		Part.No. 5167						
9	1	Plug	steel	Part.No. 778										

* please indicate opening pressure

Spare Parts



		Size LE		0003	0005	0008	0013	0015	0018	0020	0030	0045	0095	0145
		Size LEN			0040	0063	0100			0160	0250	0400	0630	1000
Part	Qty.	Designation	Material											
1	1	Filter head	GGG50	please indicate ordering information "Filter Assembly"										
2	1	Filter bowl	carbon steel/24CrMo5	please indicate ordering information "Filter Assembly"										
3	1	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	Maintenance indicator	various	refer section "Maintenance indicator"										
5	1	Bowl	42CrMo4	Part.No. 4374										
6	2	Supporting ring	Teflon	please indicate ordering information "Seal Kit"										
7	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"										
8	2	O-ring	Buna N/Viton	please indicate ordering information "Seal Kit"										
9	1	Plug	steel	Part.No. 778										
10	1	Plug	steel	Part.No. 771										
11	1	Set screw	5.8	Part.No. 4371										

Quality and Standardisation

The development, manufacturing and assembly of EPE Industrial filters and filter elements is performed within the guidelines of a certified quality management system according to DIN EN ISO 9001.

The calculation of strength and the filter tests are done in compliance to actual pressure vessel regulations and national & international standards.

A filter inspection by accredited certification bodies (e.g. TÜV, GL, LRS, LRIS, ABS, BV, DNV, DRIRE, UDT etc.) is possible on request.



Industrial Filters · Accumulators

Installation, Starting and Maintenance

Filter Installation

Verify operating pressure with name plate information.
Mount the filter assembly using mounting device on the head (Part 1) considering flow direction (direction arrows) and servicing height required for cleaning / replacing elements (Part 3)
Remove dust protection plugs from filter inlet and outlet, screw filter in pipeline without tension stress.

Connection of Electrical Maintenance Indicator

Connect indicator using the three wired cable.
Please verify electrical ratings on the indicators name plate.
Connection settings:

- | | |
|--------------------|--|
| 1. normally closed | 1 (black & white) + 3 (blue) |
| 2. normally open | 1 (black & white) + 2 (brown) |
| 3. changer | 1 (black & white) + 2 (brown) + 3 (blue) |

Starting

Switch on system pump.

Maintenance

The filter element is clogged and needs to be replaced or cleaned if the visual indicator's (Part 4) red pin reaches its final position and / or the electrical switch is activated.

Filter Element Service

Switch off pump and depressurise system.

Unscrew filter bowl (Part 2) or bottom (pos 5) of filter bowl (Part 2, only for LE/FE 0145 and LEN/FEN 1000) 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 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.

Install cleaned or replaced filter element by slightly turning it back on its locator. Check o-ring (Part 7) on filter bowl, replace in case of damage or wear. Screw filter bowl (Part 2) and tighten it at hexagon bolt using a suitable tool.

Operate filter as described above.

FPK02 Highlights

Working Pressures to: 6090 *psi*
42,000 kPa
420 bar

Rated Static Burst to: 9135 *psi*
63,000 kPa
630 bar

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



Features

The FPK02 is built to withstand pressures upwards of 6000 *psi*. It features a cast iron head and cold-extruded steel housing for ultimate strength and durability. This filter meets the HF2 in-plant automotive specification.

Bypass options include 87 *psid* bypass, bypass with reverse-flow check valve, or no bypass.

Take advantage of our Mix 'n Match system of in-stock heads, housings & cartridges—so you can get exactly what you need! Likewise, choose the media type and configuration that's best for your application. All FPK02 filters contain Synteq®, Donaldson's exclusive synthetic fiber media formulated especially for liquid filtration! (See page 8 for details on Synteq.)

Beta Rating

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

T-Type Porting Sizes

- SAE-12 O-Ring Ports (standard)

Assembly Weight

- 4" Assembly: 9.2 lbs / 4.2 kg
- 8" Assembly: 13.2 lbs / 6.0 kg

Replacement Filter Lengths

- 4" / 101.5mm
- 8" / 203mm

Standard Bypass Ratings

- 87 *psi* / 600 kPa / 6 bar
- 87 *psi* Bypass with reverse-flow check valve
- No Bypass

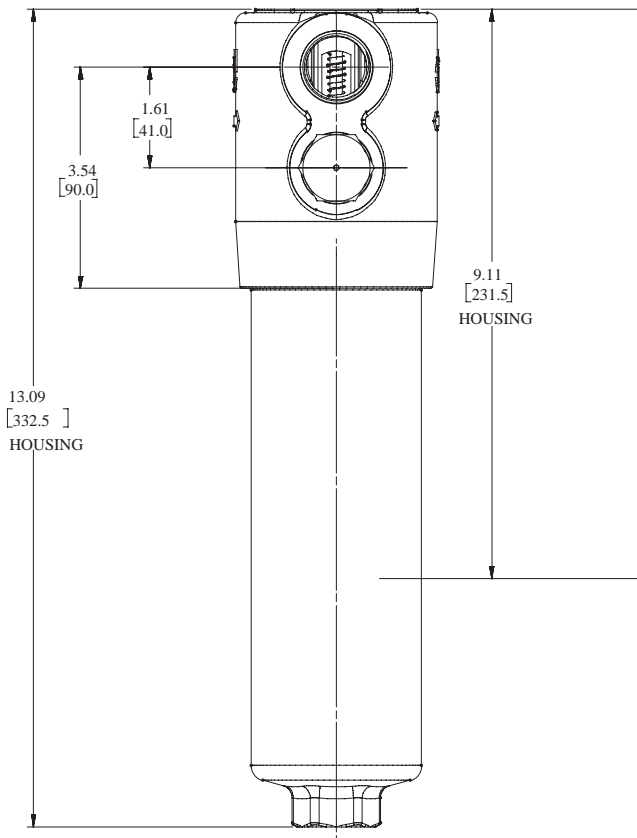
Operating Temperatures

- -20°F to 250°F / -29°C to 120°C

Element Collapse Ratings

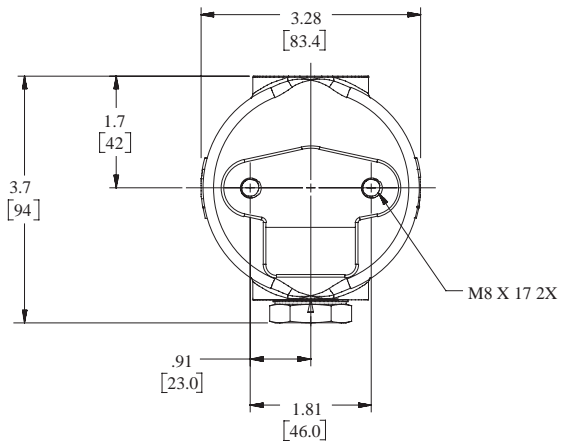
- 290 *psi* / 2000 kPa / 20 bar (standard)
- 3000 *psi* / 20,700 kPa / 207 bar (high collapse)

Assembly - Side View

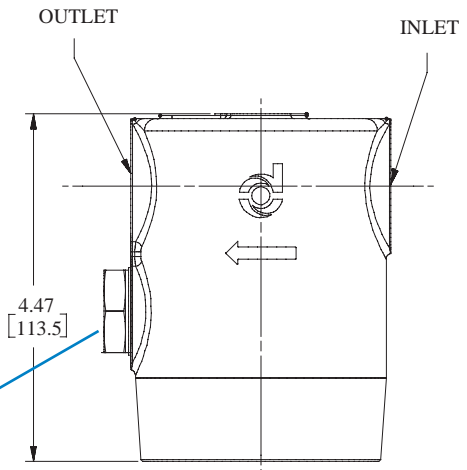


for: Servo Valve Circuits
 In-Plant & Mobile Equipment
 Power Steering Circuits
 High Pressure Circuits
 Meets HF2 Specification

Head - Top View



Head - Side View



Indicator Plug
 Remove plug to
 install visual or
 electrical indicator.

All dimensions above are shown in inches [millimeters]

High Pressure Filters

FPK02 Components

Element Choices

Media Number	B ₅₀ (μ) = 1000 Rating	Length (in./mm)	Part No.	Comments
No. 1	6 μ m	4.37/111	P169429	BunaN Seal
			P167180	Fluorocarbon Seal High Collapse
		8.12/203	P167838	BunaN Seal
			P167182	Fluorocarbon Seal High Collapse
No. 2	9 μ m	4.37/111	P165041	BunaN Seal
		8.12/203	P165043	BunaN Seal
No. 2½	10 μ m	4.37/111	P165006	BunaN Seal
			P167181	Fluorocarbon Seal High Collapse
		8.12/203	P165015	BunaN Seal
			P167183	Fluorocarbon Seal High Collapse
No. 9	23 μ m	4.37/111	P165136	BunaN Seal
		8.12/203	P165138	BunaN Seal



All FPK02 filters contain Synteq®, our synthetic filter media designed especially for liquid filtration. Learn more about Synteq® on page 8!

Filter Notes

- Synteq® filter media, which is in all FPK02 filter cartridges, is compatible with petroleum based fluids, as well as with most phosphate esters, water oil emulsions, and HWCF (high water content fluids).
- 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.
- Donaldson "high collapse" elements, with their steel endcaps and wire-backed media, are rated to withstand up to 3000 psi/ 20,700 kPa before collapsing.

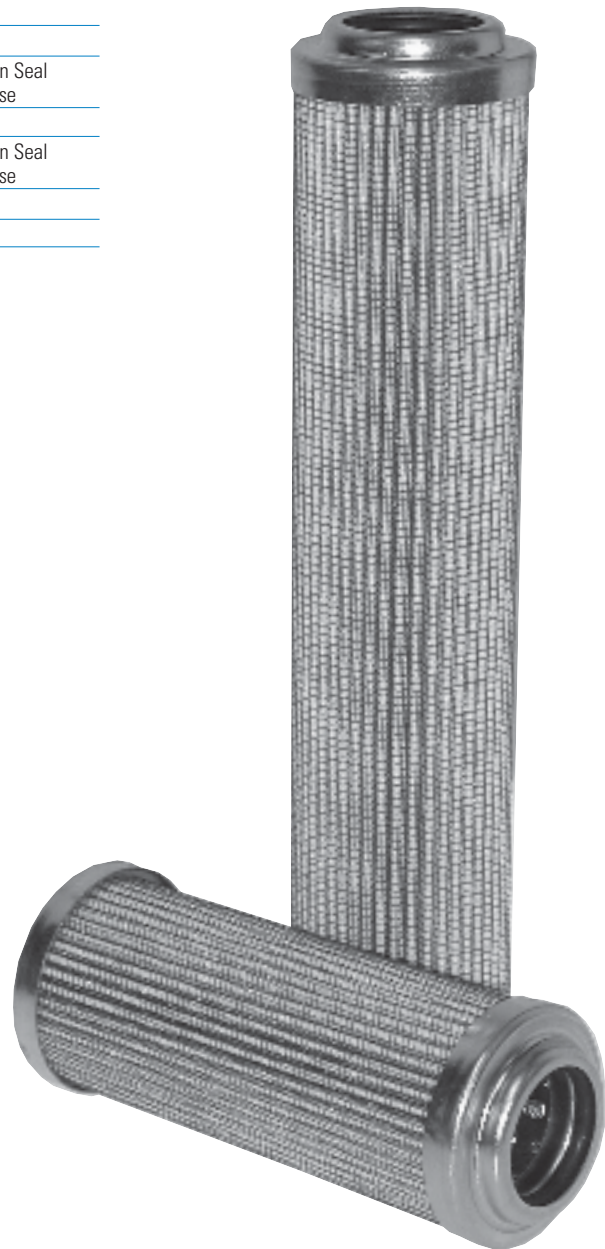
Housing Choices

Length (in./cm)	Part No.
4" element	P762769
8" element	P762770

Head Choices

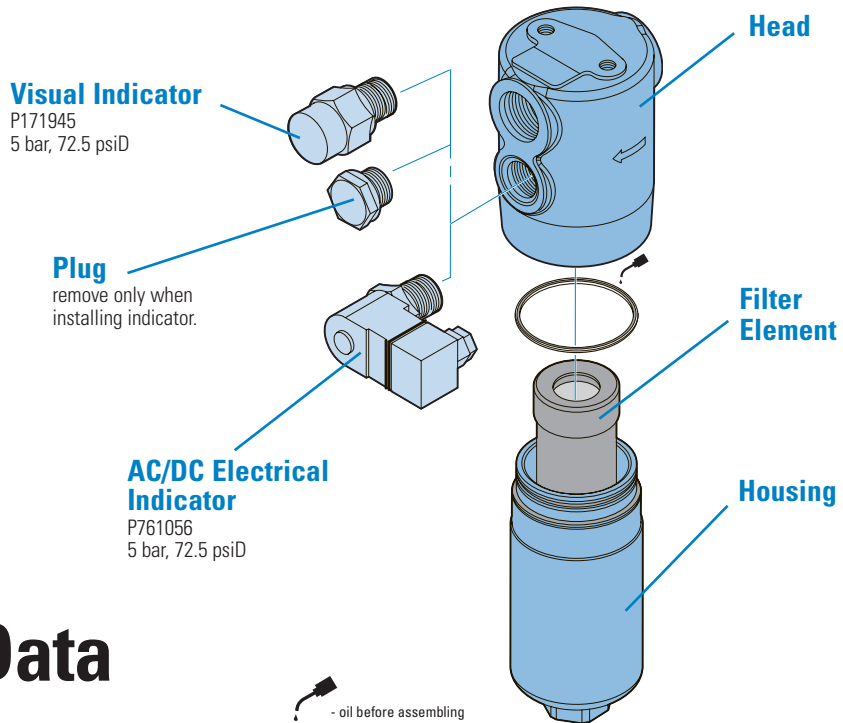
Port Size ⁴	Bypass Rating	Part No.
3/4" O-Ring*	87 psi Bypass	P762766
3/4" O-Ring*	87 psi Bypass	P762767 with reverse-flow check valve
3/4" O-Ring*	No Bypass	P762768

NOTE: Port is machined and plugged. Replace plug with indicator of choice: P171945 (visual) or P761056 (electrical). See illustration on opposite page for details.



FPK02 Service Parts

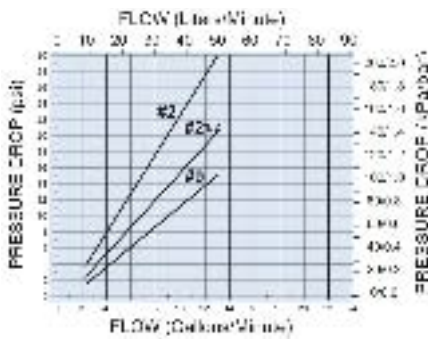
When installing the FPK02 housing onto an installed head, torque it to 15 ft-lbs.



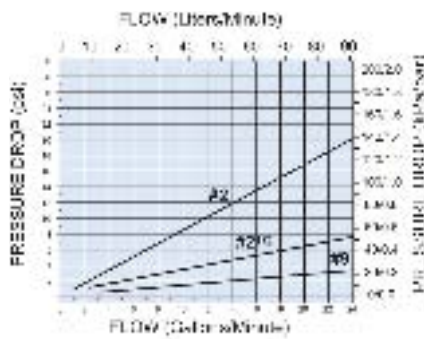
Performance Data

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

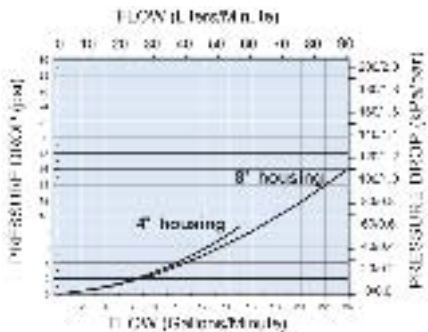
FPK02 4" Element Only



FPK02 8" Element Only



FPK02 Housing Only



HPK02 Highlights

Working Pressures to: 2000 *psi*
13,790 kPa
137.9 bar

Rated Static Burst to: 4500 *psi*
31,030 kPa
310.3 bar

Flow Range to: 20 *gpm*
75 *l/min*



Features

The HPK02 is a heavy-duty filter built for high pressure applications, with cast aluminum head and impact-extruded aluminum housing for strength and durability at relatively light weight.

Take advantage of our Mix 'n Match system of in-stock heads, housings and cartridges—so you can get exactly what you need! HPK02 is available with your choice of visual or AC/DC electrical indicators. Likewise, choose the bypass option that's right for your application—50 *psi* bypass, or no bypass. Seals made of fluorocarbon (such as Viton® and Fluorel®) or BunaN are available with HPK02.

All HPK02 filters contain Synteq®, our synthetic filter media designed especially for liquid filtration.

Beta Rating

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

T-Type Porting Sizes

- SAE-12 O-Ring

Assembly Weight

- 4.3 lbs / 1.95 kg (short)
- 5.5 lbs / 2.49 kg (long)

Replacement Filter Lengths

- 4.37" / 111mm
- 8.12" / 206mm

Standard Bypass Ratings

- 50 *psi* / 345 kPa / 3.5 bar
- No Bypass

Operating Temperatures

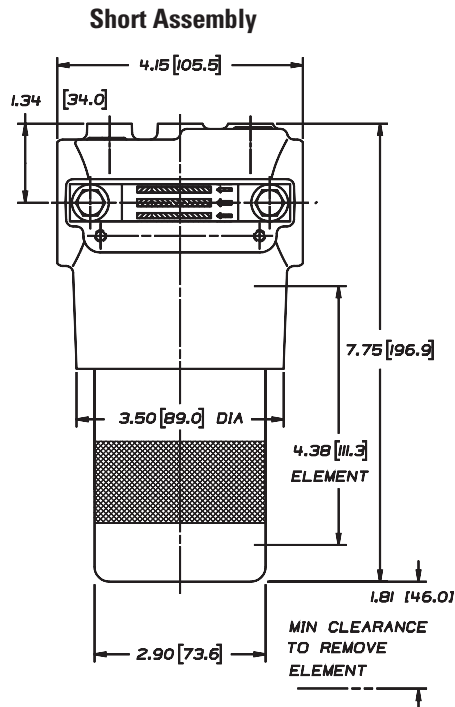
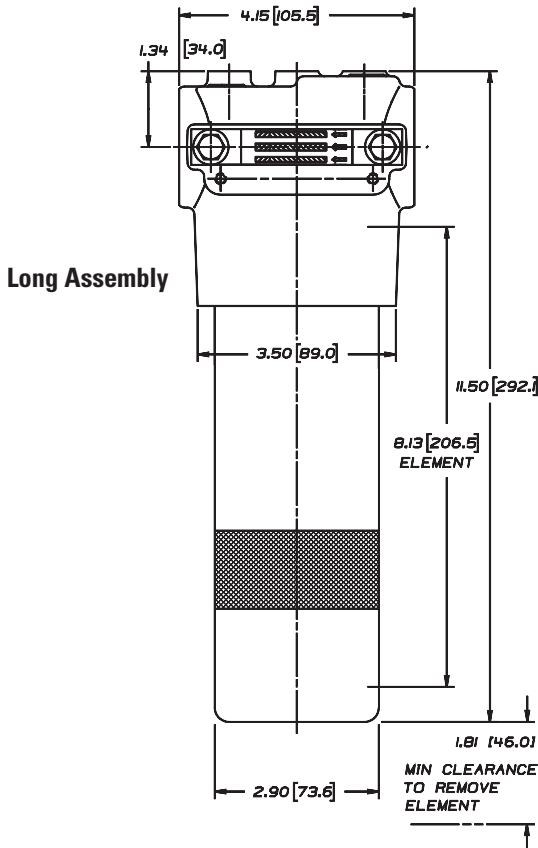
- -20°F to 250°F / -29°C to 121°C

Element Collapse Ratings

- 150 *psi* / 1035 kPa / 10.6 bar (standard)
- 3000 *psi* / 20,700 kPa / 206.9 bar (high collapse)

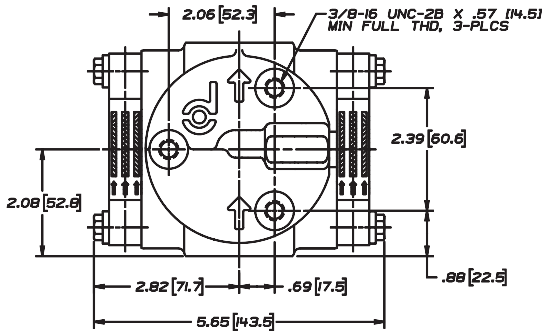
Assembly - Side View

for: Servo Valve Circuits
 In-Plant & Mobile Equipment
 Meets HF2 Specification
 Power Steering Circuits
 High Pressure Circuits

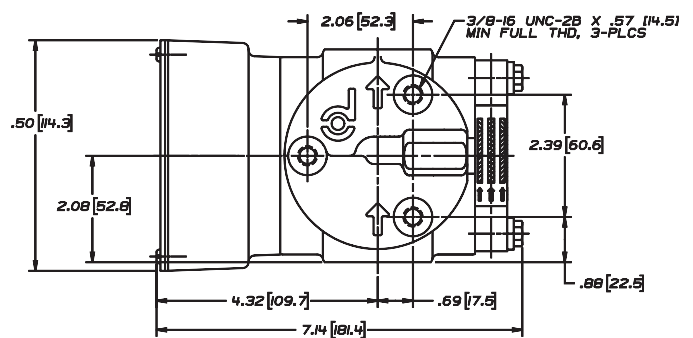


Head - Top View

with Visual Service Indicator on both sides



with Electrical Service Indicator on left side and Visual Indicator on right side



All dimensions above are shown in inches [millimeters]

High Pressure Filters

HPK02 Components

Element Choices

Media Number	B _{5(c)} = 1000 Rating	Length (in./mm)	Part No.	Comments
No. 1	6µm	4.37/111	P169429	BunaN Seal
			P167180	Fluorocarbon Seal High Collapse
		8.12/203	P167838	BunaN Seal
			P167182	Fluorocarbon Seal High Collapse
No. 2	9µm	4.37/111	P165041	BunaN Seal
		8.12/203	P165043	BunaN Seal
No. 2½	10µm	4.37/111	P165006	BunaN Seal
			P167181	Fluorocarbon Seal High Collapse
		8.12/203	P165015	BunaN Seal
			P167183	Fluorocarbon Seal High Collapse
No. 9	23µm	4.37/111	P165136	BunaN Seal
		8.12/203	P165138	BunaN Seal

Filter Notes

- Synteq® filter media, which is in all FPK02 filter cartridges, is compatible with petroleum based fluids, as well as with most phosphate esters, water oil emulsions, and HWCF (high water content fluids).
- If filtering petroleum-based oil, filters with seals made of **BunaN** are appropriate for most applications.
- If filtering diester, phosphate ester fluids, water glycol, water/oil emulsions, or 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.
- Donaldson "high collapse" elements, with their steel endcaps and wire-backed media, are rated to withstand up to 3000 psi/ 20,700 kPa before collapsing.

Housing Choices

Length*	Part No.
short	P167443
long	P167452

* See dimensional drawings on page 77.

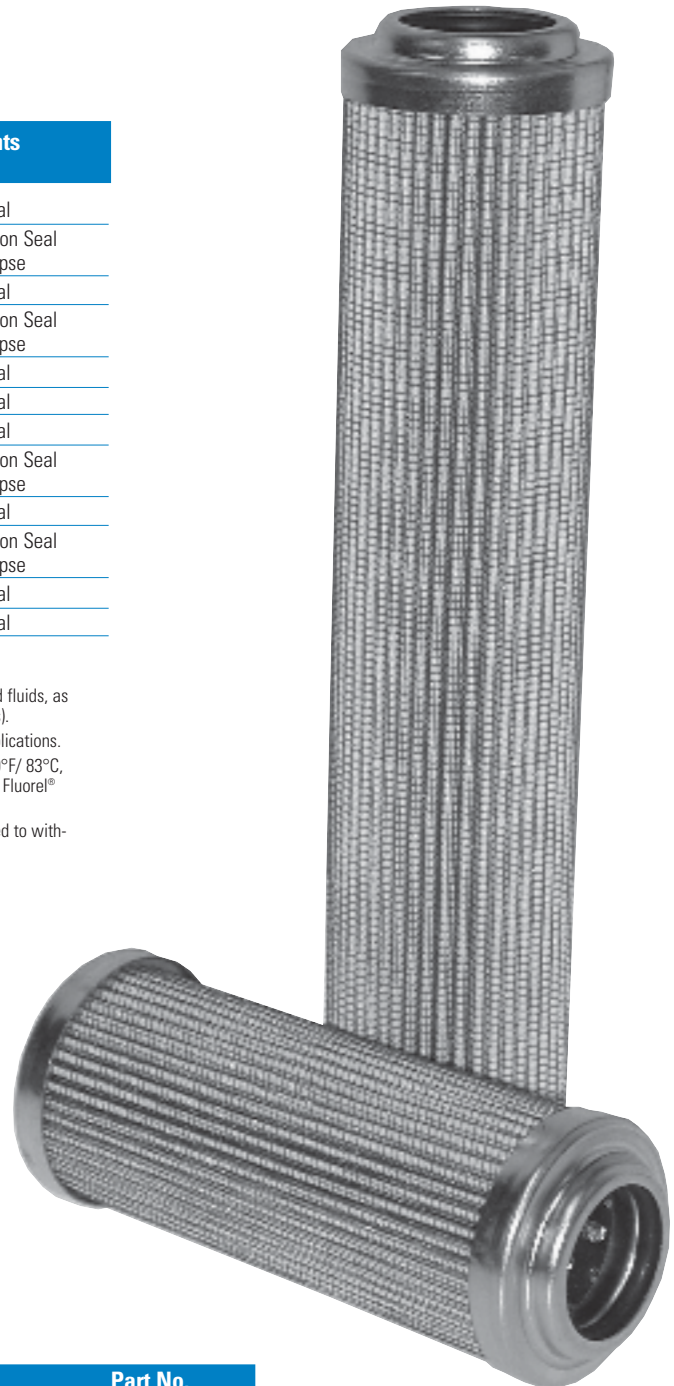
Head Choices

Port Size	Bypass Rating	Indicators ¹	Part No.
SAE-12 O-Ring	50 psi	Visual indicator, left side ^{1,2}	P167728
SAE-12 O-Ring	No bypass	Visual indicator, left side ^{1,2}	P167730

Notes on Indicators

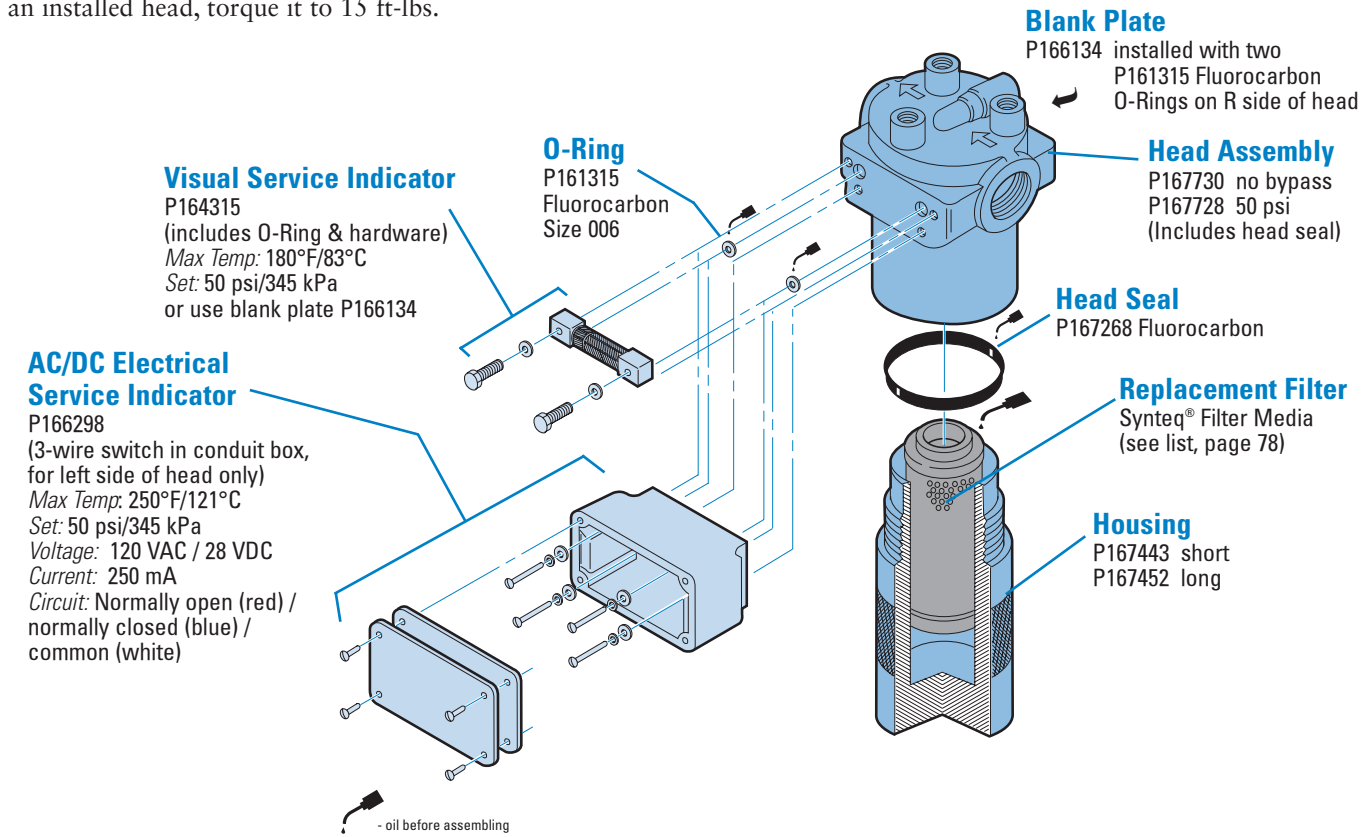
¹ Donaldson uses the inlet port as the reference point. "Left side," for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.

² Alternate indicator choice: Electrical Indicator (P166298, illustrated on pages 56-57) mounts in place of the visual indicator on the left side. Visual indicator can then be moved to the right side of the head, which is drilled and tapped with blank plate installed.



HPK02 Service Parts

When installing the HPK02 housing onto an installed head, torque it to 15 ft-lbs.

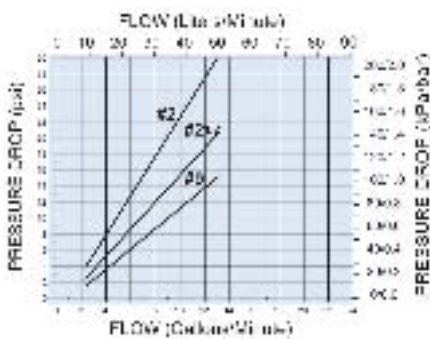


High Pressure Filters

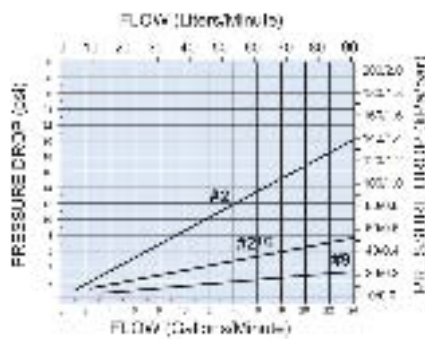
Performance Data

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

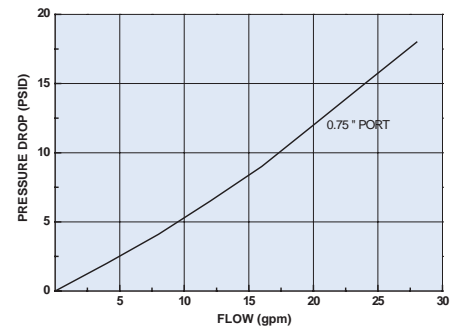
HPK02 4" Element Only



HPK02 8" Element Only



HPK02 Housing Only



HPK03 Highlights

Working Pressures to: 3000 *psi*
20,700 kPa
206.9 bar

Rated Static Burst to: 6000 *psi*
41,400 kPa
413.8 bar

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



Features

The sturdy HPK03 filter is constructed of ductile iron for durability in high pressure applications. Standard bowl drain plug means simplified servicing. Bowl includes a fluoroelastomer head-to-housing seal. Meets HF3 specification.

Take advantage of our Mix 'n Match system of in-stock heads and cartridges—so you can get exactly what you need! HPK03 is available with your choice of visual or AC/DC electrical indicators. Likewise, choose the bypass option that's right for your application—50 *psi* or no bypass. Seals made of fluorocarbon (such as Viton® and Fluorel®) or BunaN are available with HPK03.

All HPK03 filters contain Synteq®, our synthetic filter media designed especially for liquid filtration.

Beta Rating

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

T-Type Porting Sizes

- SAE-12 O-Ring
- SAE-16 O-Ring

Assembly Weight

- 26 lbs / 11.8 kg

Replacement Filter Lengths

- 8" / 203mm

Standard Bypass Ratings

- 50 *psi* / 345 kPa / 3.5 bar
- No Bypass

Operating Temperatures

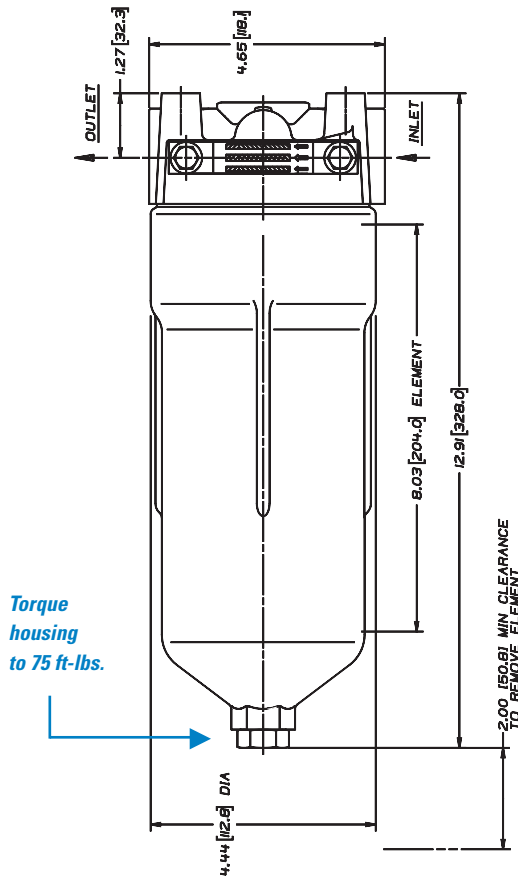
- -20°F to 250°F / -29°C to 121°C

Element Collapse Ratings

- 200 *psi* / 1380 kPa / 13.8 bar (standard)
- 3000 *psi* / 20,700 kPa / 206.9 bar (high collapse)

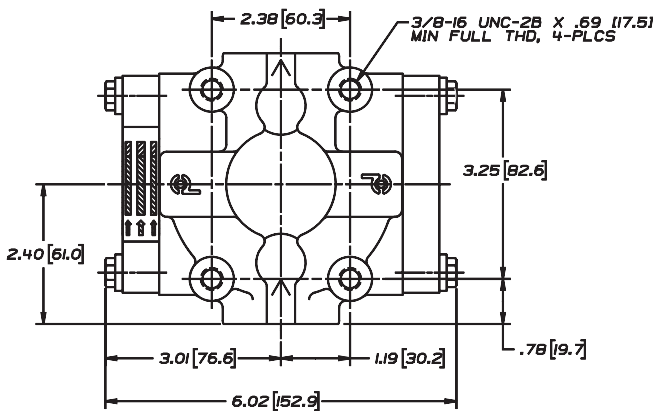
Assembly - Side View

for: High Pressure Circuits
 In-Plant & Mobile Equipment
 Servo Valve Circuits
 Meets HF3 specifications

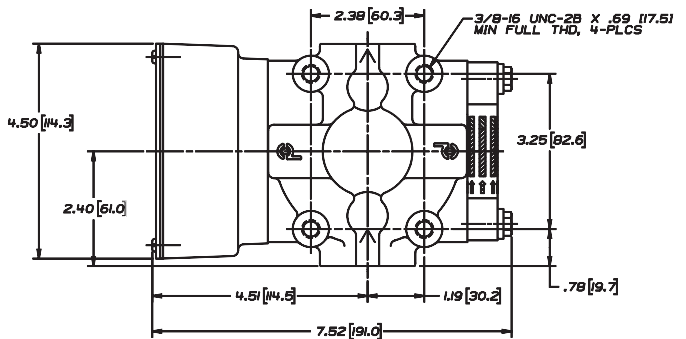


Head - Top View

Standard Head - Top View
 with Visual Service Indicator left side,
 blank plate right side



Alternate Head - Top View
 with Electrical Service Indicator left side



All dimensions above are shown in inches [millimeters]

HPK03 Components

Element Choices

Media Number	B _{5(c)} = 1000 Rating	Part No.	Seal	Comments
No. 1	6µm	P167842	BunaN	
No. 1	6µm	P167185	Viton	High Collapse for No Bypass applications.
No. 2	9µm	P164594	BunaN	
No. 2	9µm	P164601	Viton	
No. 2½	10µm	P164166	BunaN	
No. 2½	10µm	P167186	Viton	High Collapse for No Bypass applications.
No. 4	20µm	P164365	Viton	
No. 9	23µm	P164174	BunaN	
No. 20	>50µm	P165319	BunaN	
Media Number		Part No.	Seal	Comments
No. 74	75µm nominal	P162233	BunaN	Wire Mesh Media

Filter Notes

- SEALS: Filters with seals made of **BunaN** are appropriate for most applications involving petroleum oil. Filters with seals made of **Viton**® (a fluorocopolymer) 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 Dow Elastomers.)
- SYNTHETIC MEDIA: Synteq® filter media is compatible with petroleum based fluids, most phosphate esters, water oil emulsions, and HWCF (high water content fluids).
- Donaldson high collapse filters are physically designed to withstand up to 3000 psi / 20,700 kPa before collapsing.

Housing

The **P179579** housing is 10.73 inches (273mm) long and accepts the filter element that is 8 inches (203mm) long. It includes a head-to-housing seal.

Head Choices

Port Size ⁴	Bypass Rating	Indicators ¹	Part No.
SAE-16 O-Ring	50 psi	Visual indicator, left side ^{1,2}	P166353
SAE-12 O-Ring	50 psi	Visual indicator, left side ^{1,2}	P170489
SAE-12 O-Ring	No bypass	Visual indicator, left side ^{1,2}	P170491

Notes

¹ 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.

² Alternate indicator choice: electrical indicator (P166298) mounts in place of the visual indicator on the left side. Visual indicator can then be moved to the right side of the head, which is drilled and tapped with blank plate installed.



All HPK03 filters contain Synteq®, our synthetic media specially-developed for liquid filtration. Find out more on [page 8](#) !



HPK03 Service Parts

Visual Service Indicator
 P164315
 (includes O-Ring & hardware)
 Max Temp: 180°F/83°C
 Set: 50 psi/345 kPa
 or use blank plate P166134

AC/DC Electrical Service Indicator
 P166298
 (3-wire switch in conduit box, for left side of head only)
 Max Temp: 250°F/121°C
 Set: 40 psi/276 kPa
 Voltage: 120 VAC / 28 VDC
 Current: 250 mA
 Circuit: Normally open (red) / normally closed (blue) / common (white)

O-Ring
 P161315 Viton
 Size 006

Head Assembly
 (3 choices, listed in table on p.86)

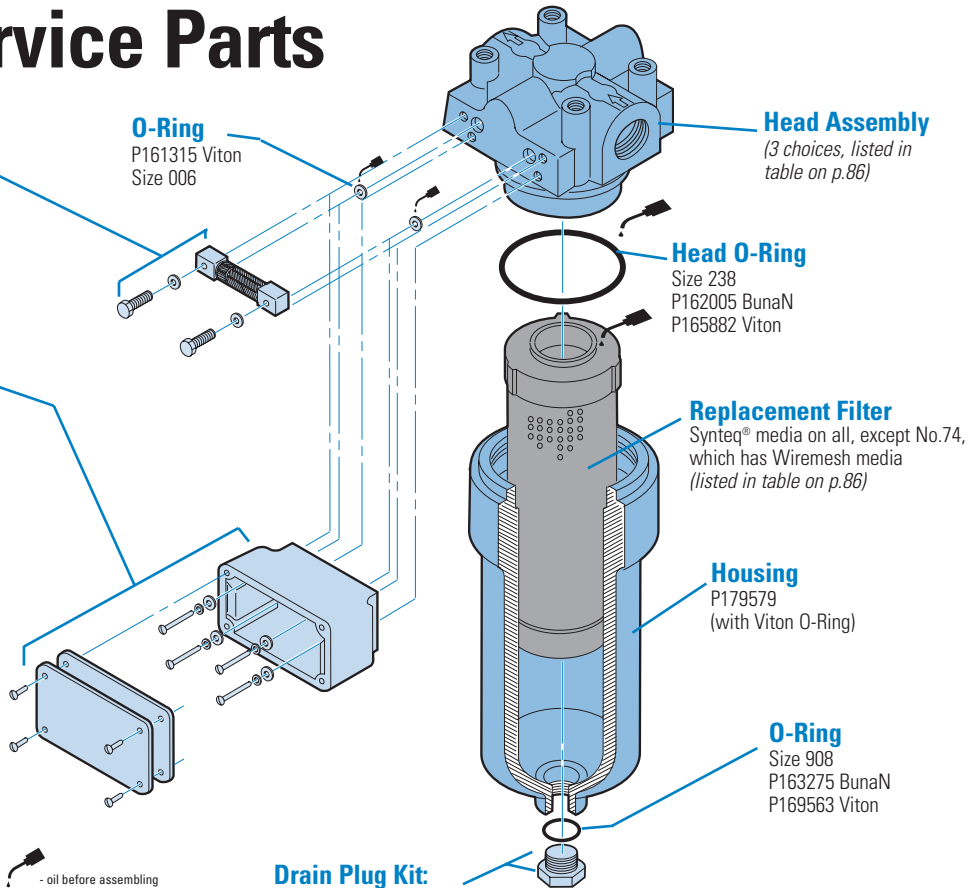
Head O-Ring
 Size 238
 P162005 BunaN
 P165882 Viton

Replacement Filter
 Synteq® media on all, except No.74, which has Wiremesh media (listed in table on p.86)

Housing
 P179579
 (with Viton O-Ring)

O-Ring
 Size 908
 P163275 BunaN
 P169563 Viton

Drain Plug Kit:
 P169564
 (with Viton O-Ring)



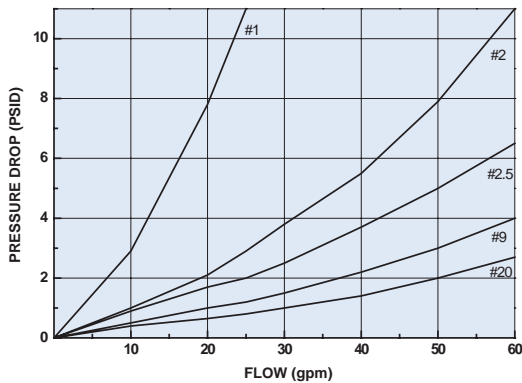
- oil before assembling

High Pressure Filters

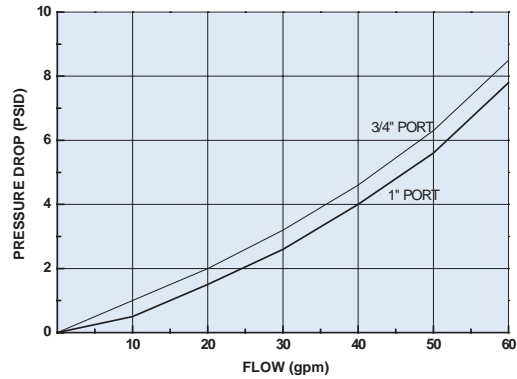
Performance Data

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

HPK03 Element Only



HPK03 Housing Only



HPK04 Highlights

Working Pressures to: 6000 *psi*
41,400 kPa
413.8 bar

Rated Static Burst to: 12000 *psi*
82800 kPa
827.6 bar

Flow Range to: 120 *gpm*
454 *l/min*



Features

The HPK04 high pressure filter series is made of ductile iron for strength and durability. Machined bypass valves are case-hardened at critical points to provide maximum strength and reliability. Reverse flow bypass valve allows bi-directional flow through the filter head, and filter changeout is simplified with standard bowl drain plug. Meets HF3 specification.

Take advantage of our Mix 'n Match system of in-stock heads, housings & cartridges—so you can get exactly what you need! Likewise, choose the media type and configuration that's best for your application. Filter cartridges for HPK04 contain Synteq®, Donaldson's exclusive synthetic fiber media formulated specially for liquid filtration.

Beta Rating

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

T-Type Porting Sizes

- SAE-20 O-Ring
- 1¼" & 1½" SAE 4-Bolt Flange (codes 61, 62)

Assembly Weight

- 8" Assembly: 26 lbs / 12 kg
- 16" Assembly: 39.5 lbs / 18 kg

Replacement Filter Lengths

- 8" / 203mm
- 16" / 406mm

Standard Bypass Ratings

- 60 *psi* / 414 kPa / 4.1 bar
- 90 *psi* / 621 kPa / 6.2 bar with reverse-flow check valve
- No Bypass

Operating Temperatures

- -20°F to 250°F / -27°C to 121°C

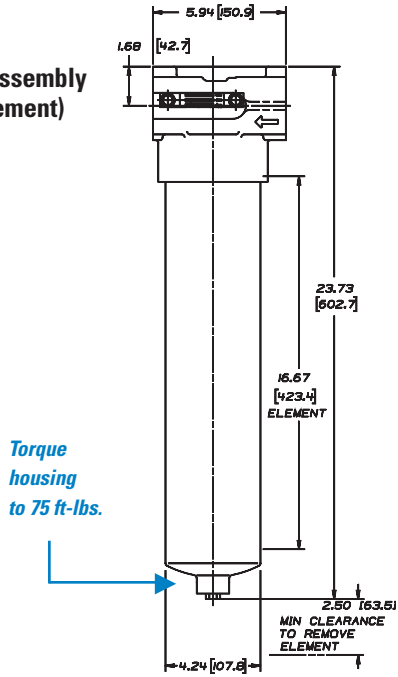
Element Collapse Ratings

- 200 *psi* / 1380 kPa / 13.8 bar (standard)
- 3000 *psi* / 20,700 kPa / 206.9 bar (high collapse)

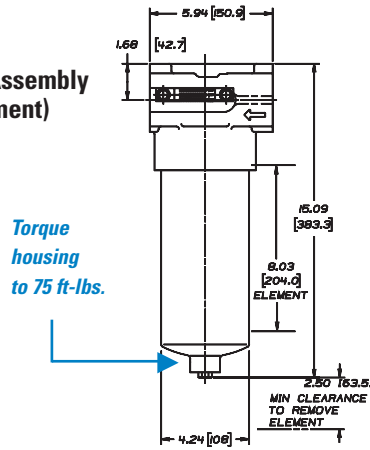
Assembly - Side View

for: High Pressure Circuits
Hydrostatic Transmissions
Servo Valve Circuits
Meets HF3 Specifications

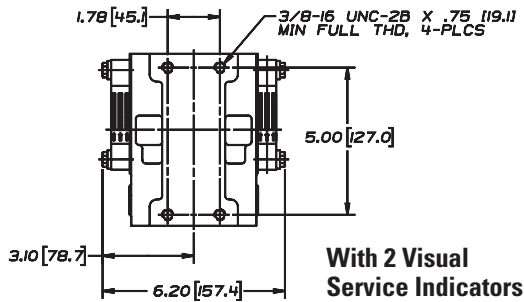
**Long Assembly
(16" element)**



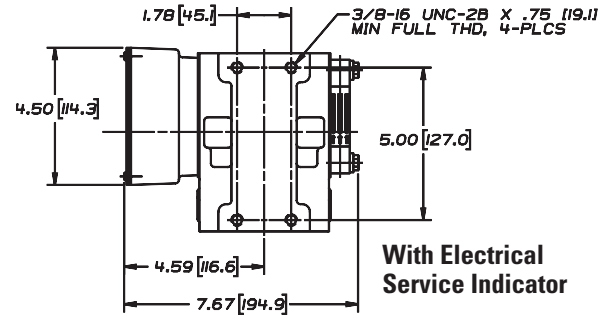
**Short Assembly
(8" element)**



Head - Top View

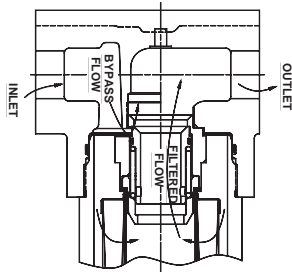


**With 2 Visual
Service Indicators**

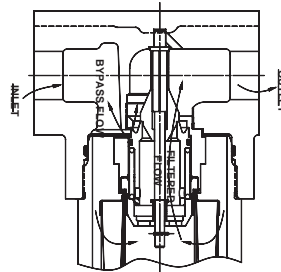


**With Electrical
Service Indicator**

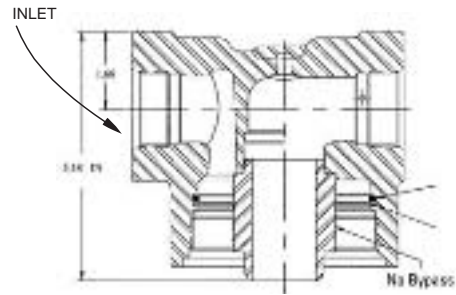
Bypass Valve Alternatives



**60 psi / 414 kPa
Bypass Valve**



**90 psi / 621 kPa
Bypass Valve with
Reverse Flow Check Valve**



No Bypass

All dimensions above are shown in inches [millimeters]

HPK04 Components

Element Choices

Media Number	B _{5(c)} = 1000 Rating	Length (in./mm)	Part No.	Comments
1	6µm	8/203	P167842	
			P167185	High Collapse
		16/406	P169433	
			P167187	High Collapse
2	9µm	8/203	P164594	
			P164601	Viton Seals
		16/406	P164598	
			P164603	Viton Seals
2½	10µm	8/203	P164166	
			P167186	High Collapse
		16/406	P164170	
			P164367	Viton Seals
4	20µm	8/203	P167188	High Collapse
			P164365	Viton Seals
			P164174	
9	23µm	8/203	P164174	
			P164178	
20	>50µm	8/203	P165319	
			P162233	200 wiremesh screen
74	—/—/75	8/203	P162233	200 wiremesh screen



Filter Notes

- **SEALS:** Filters with seals made of **BunaN** are appropriate for most applications involving petroleum oil. Filters with seals made of **Viton**® (a fluorocopolymer) 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 Dow Elastomers.)
- **SYNTHETIC MEDIA:** Synteq® filter media is compatible with petroleum based fluids, and most phosphate esters, water oil emulsions, and HWCF (high water content fluids.)
- Donaldson high collapse filters are physically designed to withstand up to 3000 psi/ 20,700 kPa before collapsing.

Housing Choices

Length (in./mm)	Part No.
8/203	P162451
16/203	P162452

Note: Head assemblies include head-to-housing seal.

Head Choices

Port Size ⁴	Working Pressure	Bypass Rating	Indicators ¹	Part No.
1½" SAE 4-Bolt Flange (code 61) and SAE-20 O-Ring	3000 psi	60 psi	visual LH, blank plate RH ²	P166127
1½" SAE 4-Bolt Flange (code 61) and SAE-20 O-Ring	3000 psi	90 psi with reverse flow check valve	visual LH, blank plate RH ²	P166149
1½" SAE 4-Bolt Flange (code 61) and SAE-20 O-Ring	3000 psi	no bypass	visual LH, blank plate RH ²	P169754
1½" SAE 4-Bolt Flange (code 62)	6000 psi	60 psi	visual LH only ²	P164346
1½" SAE 4-Bolt Flange (code 62)	6000 psi	90 psi with reverse flow check valve	visual LH, blank plate RH ²	P170057
1¼" SAE 4-Bolt Flange (code 62)	6000 psi	90 psi with reverse flow check valve	visual LH, blank plate RH ²	P170058
1¼" SAE 4-Bolt Flange (code 62)	6000 psi	90 psi with reverse flow check valve	blank plate LH, drilled, tapped, ³ plugged RH for P173929	P173887

Head Notes

- On all HPK04 heads where an indicator is NOT installed, a blank plate or a plug is there.
- ¹ 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.
 - ² Alternate indicator: Electrical indicator (P166298) mounts in place of visual model on left side only.
 - ³ Alternate indicator: Electrical indicator (P173929) mounts on right side of head only.
 - ⁴ CAUTION: Consult fitting manufacturers for maximum allowable operating pressures.

HPK04 Service Parts

Visual Service Indicator

(includes O-Ring & hardware)
 Max Temp: 180°F/83°C
 Set: 50 psi/345 kPa
 P164315 Normal Flow model
 P166603 Reverse Flow model
 P166134 Blank plate

AC/DC Electrical Service Indicators

P166298 (3-wire switch in conduit box, for left side of head only)
 Max Temp: 250°F/121°C
 Set: 40 psi/276 kPa
 Voltage: 120 VAC / 28 VDC
 Current: 250 mA
 Circuit: Normally open (red)
 normally closed (blue)
 common (white)

O-Ring

(Size 006)
 P161315 Viton

Head Assemblies

See Head Assembly Options table

Head O-Ring & Back-up Kit

(Size 240)
 P162742 BunaN O-Ring, Teflon back-up
 P163619 Viton O-Ring, Teflon back-up

Replacement Filter

Synteq® media on all, except No. 74 which has Wiremesh media (listed in table on p. 90)

Housing

See housing assembly options table on page 90.

O-Ring

(Size 904)
 P161551 BunaN
 P163616 Viton

Drain Plug Kit

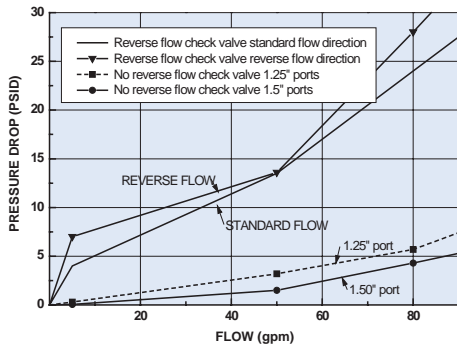
P161550
 (with BunaN O-Ring)

- oil before assembling

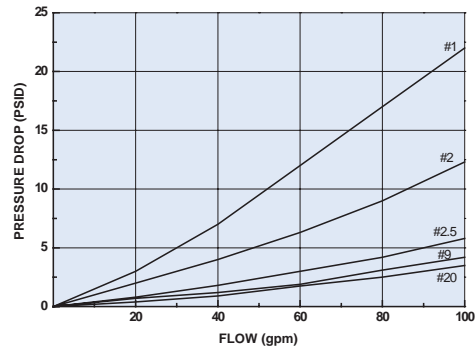
Performance Data

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

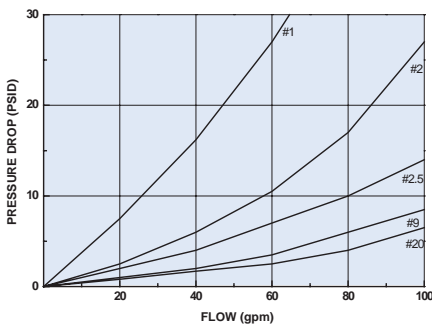
HPK04 Housing Only



HPK04 16" Element Only



HPK04 8" Element Only



HPK05 Highlights

Working Pressures to: 3000 *psi*
20,700 kPa
20.6 bar

Rated Static Burst to: 6000 *psi*
41,400 kPa
413.8 bar

Flow Range to: 200 *gpm*
757 *l/min*



Features

The HPK05 high pressure filter series is made of ductile iron for strength and durability. Machined bypass valves are case-hardened at critical points to provide maximum strength and reliability!

Reverse flow bypass valve allows bi-directional flow through the filter head, with head up or head down mounting capabilities.

Available with your choice of visual or AC/DC electrical service indicator; choose Viton® or BunaN seals. The HPK05 filters contain Synteq®, Donaldson's exclusive synthetic fiber media formulated especially for liquid filtration!

Beta Rating

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

T-Type Porting Sizes

- 2" SAE 4-Bolt Flange (code 61)

Assembly Weight

- 63 lbs / 28.5

Replacement Filter Length

- 25.53"/648mm

Standard Bypass Ratings

- 60 *psi* / 414 kPa / 4.1 bar with reverse-flow check valve
- No Bypass

Operating Temperatures

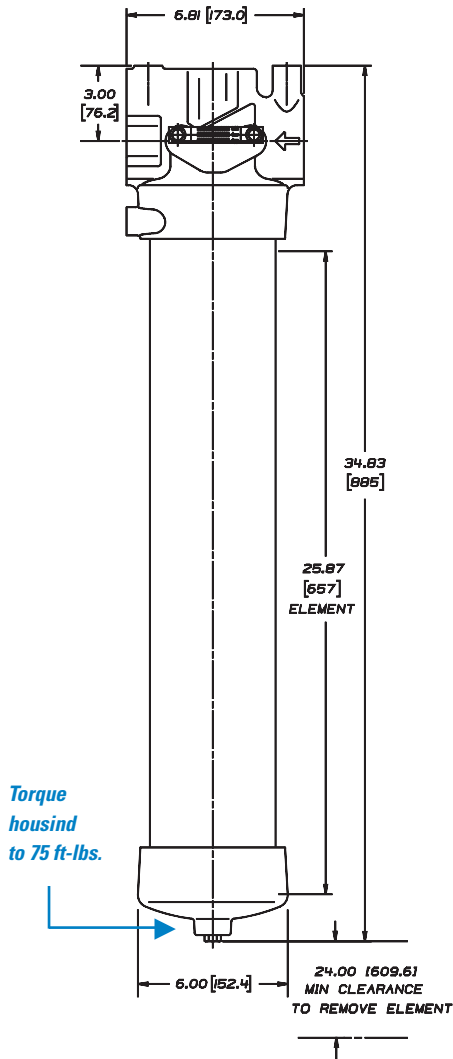
- -20°F to 250°F / -29°C to 121°C

Element Collapse Ratings

- 200 *psi* / 1380 kPa / 13.8 bar (standard)
- 3000 *psi* / 20,700 kPa / 206.9 bar (high collapse)

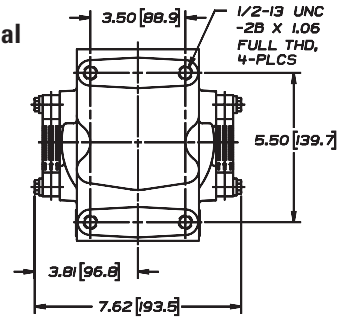
Assembly Side View

for: High Pressure Circuits
In-Plant & Mobile Equipment
Hydrostatic Transmissions
Centralized Lube Systems

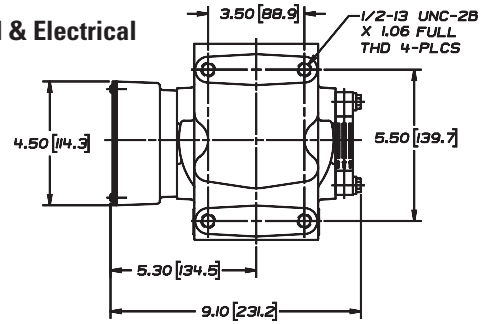


Head Top View

With 2 Visual Indicators

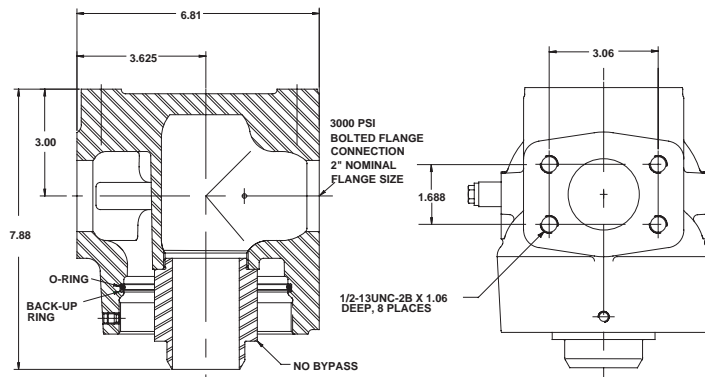
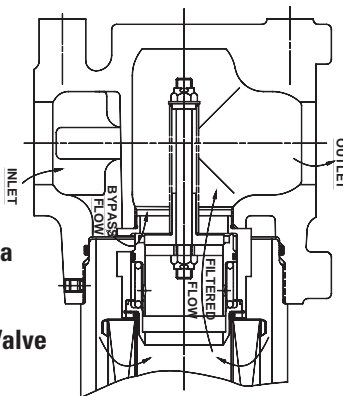


With Visual & Electrical Indicators



Bypass Valve Alternatives

60 psi /414 kPa Bypass Valve with Reverse Flow Check Valve



No Bypass

All dimensions above are shown in inches [millimeters]

High Pressure Filters

HPK05 Components

Head Assemblies

Port Size ⁴	Bypass Rating	Indicator Style/Location ¹	Assembly Number	Media Number	Element Part No.
2" SAE 4-Bolt Flange (Code 61)	60 psi / 414 kPa Reverse flow check valve	Visual, Left side ²	K052024	No. 9	P164229
	No Bypass	Visual & Electrical ³	K052039	No. 9	P171037 ⁴

Assembly Notes

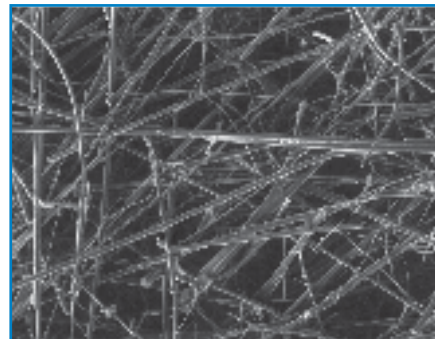
- ¹ Donaldson uses the inlet port as the reference point. "Left side," for instance, means that the indicator mounts on the side of the filter head that is on your left when you face the inlet port.
- ² Alternate choice: Electrical indicator (P166298) is available for mounting in place of the visual indicator on either side.
- ³ Visual indicator is mounted on left side of the head; electrical indicator (P170365) is mounted on the right side.
- ⁴ Rated as high collapse (3000 psi / 20700 kPa); has Viton® seals.

Synteq® Element Choices

Media Number	B _{w(c)} = 1000 Rating	Length (in./mm)	Part No.	Seal & Comments
No. 1	6µm	25.5 / 648	P167841	BunaN
No. 2	9µm	25.5 / 648	P164585	BunaN
No. 2½	10µm	25.5 / 648	P164227	BunaN
			P164435 Built to order	Viton
No. 9	23µm	25.5 / 648	P164229	BunaN
			P171037	Viton High Collapse

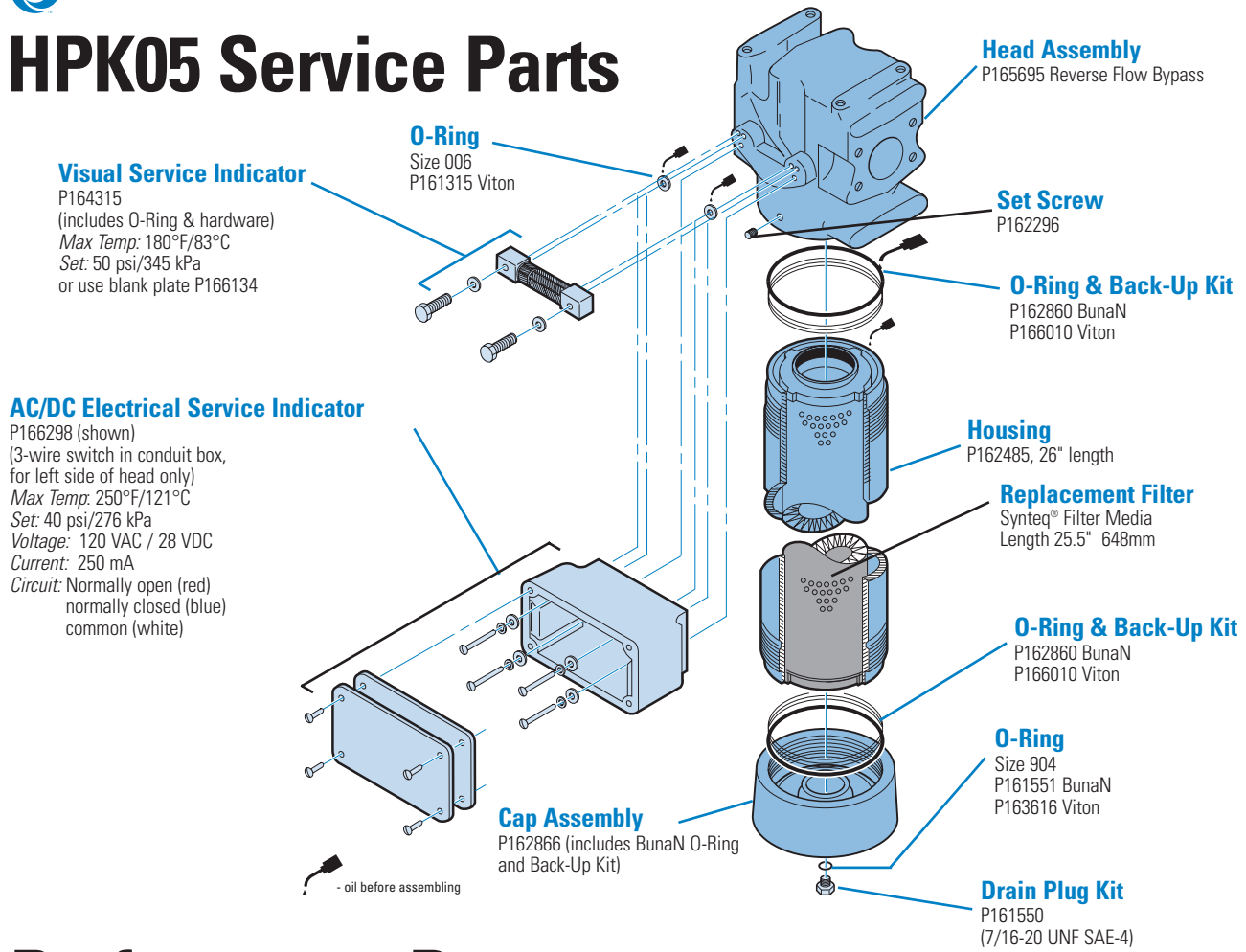
Element Notes

- Filters with seals made of **BunaN** are appropriate for most applications involving petroleum oil. Filters with seals made of fluoroelastomer (such as Viton® or Fluorel®) 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 Dow Elastomers and Fluorel is a registered trademark of the 3M Company.*)
- Synteq® filter media is compatible with petroleum based fluids, and most phosphate esters, water oil emulsions, and HWCF (high water content fluids).
- Donaldson high collapse filters, with their steel endcaps and reinforcing wire-backed media, are rated to withstand up to 3000 *psi* / 20,700 kPa before collapsing.



In this photo from our scanning electron microscope that shows Donaldson Synteq® filter media magnified hundreds of times, you can see the rounded fibers that are specially designed for low resistance to flow. Filters made with Donaldson Synteq® maintain low pressure drop over the life of the filter.

HPK05 Service Parts



AC/DC Electrical Service Indicator
P166298 (shown)
(3-wire switch in conduit box, for left side of head only)
Max Temp: 250°F/121°C
Set: 40 psi/276 kPa
Voltage: 120 VAC / 28 VDC
Current: 250 mA
Circuit: Normally open (red)
normally closed (blue)
common (white)

High Pressure Filters

Performance Data

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

