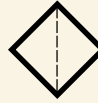




**Donaldson**  
Filtration Solutions

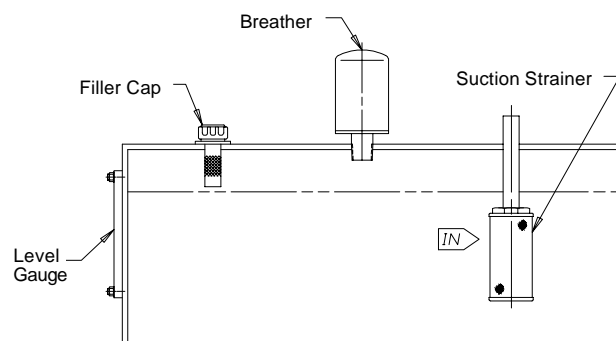


# Hydraulic Filtration System Accessories



## Look Inside For:

- Tank Breather Adapters for Hydraulic Reservoirs
- Suction Strainers
- Filler Breather Caps
- Tank/Reservoir Level Gauges
- Hydraulic Filter Service Indicators



**Brochure #F112085**  
(Rev. 8/00)

# Threaded Adapters for Creating Tank Breather Requirement



## Application

Adapting your hydraulic reservoir with a Donaldson breather filter...

- Reduces your parts inventory;
- Improves your filtration to extend equipment life;
- Lengthens filter service intervals.

To create a tank breather, choose either of the two threaded adapters below, then select a breather spin-on filter based on your desired efficiency level, filter dimensions and the maximum rate of reservoir drawdown or air exchange rate. As a rule of thumb, clean pressure drop should be limited to 0.18 *psi*/5" H<sub>2</sub>O.

## Installation Tips

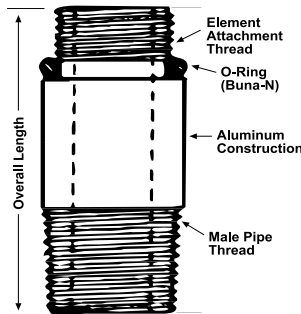
A pipe flange, weld collar, or half coupling may be used to connect the breather adapter to the reservoir. Make sure that air cannot leak around the adapter. When mounting on the side of the reservoir, make sure the installation is as high as possible to stay above the surface of the fluid.

## Maintenance Tips

Change the filter after each 500 hours of operation. More frequent replacement may be required when operating in heavily contaminated areas such as grinding operations, primary metal mills, and on mobile equipment. Under such conditions, Donaldson recommends replacement every 250 hours.

## Breather Adapters

Part Number	Length in mm	Male Pipe Thread	Element Attachment Thread
P173544	2½ 57	¾" NPT	1"-12 UNF-2A
P173545	3 76	1¼" NPT	1½"-16 UN-2A



## Breather Spin-on Filters

Efficiency & Media Type	Part Number	Filter Series	Length in mm	Outer Dia. in mm	Flow <sup>1</sup> scfm gpm
<b>for P173545 Adapter</b>					
3μ Nominal, Cellulose	P550386	LPS05	7 178	5 172	35 262
	P550250	LPS05	11 279	5 172	42 314
3μ Absolute, Synteq®	P169430	HBK05	7 178	5 172	35 262
	P167832	HBK05	11 279	5 172	42 314
5μ Absolute, Synteq®	P167162	HBK05	7 178	5 172	59 440
	P165762	HBK05	11 279	5 172	64 479
10μ Nominal, Cellulose	P550388	LPS05	7 178	5 172	59 440
	P550251	LPS05	11 279	5 172	64 479
	P550253 <sup>2</sup>	LPS05	11 279	5 172	43 321
13μ Absolute, Synteq	P165875	HBK05	7 178	5 172	59 440
	P165876	HBK05	11 279	5 172	64 479
<b>for P173544 Adapter</b>					
3μ Nominal, Cellulose	P551550	LPS04	5 172	3.7 96	15 112
10μ Nominal, Cellulose	P551551	LPS04	5 172	3.7 96	23 172
	P550255	LPS04	9 229	3.7 96	28 216
25μ Nominal, Cellulose	P551554 <sup>2</sup>	LPS04	5 172	3.7 96	10 77

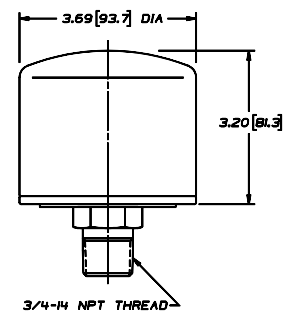
### NOTES:

- (1) Based on a maximum pressure drop of 5" H<sub>2</sub>O/ 0.18 *psi* through a clean filter.  
 (2) Water Absorbing Filter. Absorbs approximately 6.6 oz/198 ml of water @ 5 *gpm* to 10 *psi*

## Replacement for Schroeder ABF3/10



P538455 Spin-on Breather & Adapter  
 P538532 Spin-on Breather only



# Suction Strainers for Filtering Hydraulic Reservoirs



## Features

- Flow Range:  
0-100 gpm/0-389.5 l/min

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- ½" NPTF to 3" NPTF

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- Meets J.I.C. Standards

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- One piece construction

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- Available with or without relief valve

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- Stainless steel pleated 100 mesh/140µ screen

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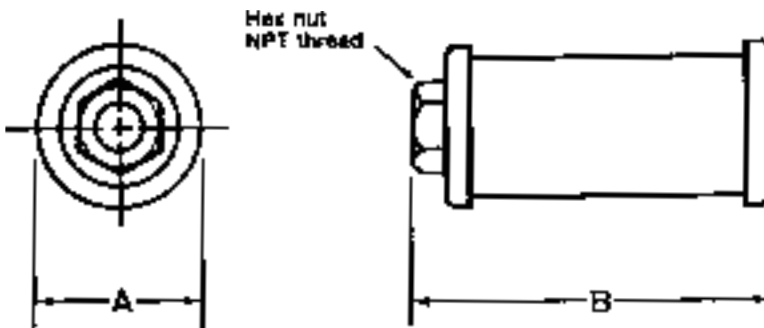
- Plated perforated steel center core epoxy bonded to heavy gauge connector and end caps

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- Reusable! Clean by swishing in non-caustic solvent, then blow from inner diameter to outer diameter with compressed air.

## Application

The Donaldson Suction Strainer filters petroleum-based hydraulic fluids, phosphate esters, water glycols, lubricating oils, coolants, fuels and water in fluid reservoirs, sumps, and similar applications.



## Suction Strainer Dimensional Specifications & Performance

with NO relief valve	with 3 psi relief valve	NPTF Pipe Size	A (Diameter)		B (Length)		Screen Area (sq. in.)	Weight		Flow <sup>1</sup>	
			in	mm	in	mm		lbs	kg	gpm	l/min
P169012		½"	2.63	66	3.10	79	62	0.4	.88	5	19
P169013	P173910	¾"	2.63	66	3.55	80	68	0.5	1.1	8	30
P169014	P173911	1"	2.63	66	5.35	136	110	0.7	1.5	10	38
P169015	P173912	1¼"	3.38	86	6.85	174	162	1.0	2.2	20	76
P169016	P173913	1½"	3.38	86	8.01	203	225	1.2	2.6	30	114
P169017	P173914	1½"	3.94	100	9.8	250	340	1.4	3.1	50	189
P169018	P173915	2"	3.94	100	9.8	250	340	1.8	4.0	50	189
P169019	P173916	2½"	5.12	130	10.1	256	400	2.3	5.0	75	284
P169020	P173917	3"	5.12	130	11.78	299	500	3.0	6.6	100	379

### NOTES:

(1) On suction lines in hydraulic systems, the recommended flow velocity is 5 ft./sec. maximum. A clean filter with 225 SSU oil @ 100°F and a flow velocity of 5 ft./sec. will not exceed a pressure drop of 0.35 psi.

# Filler Breather Assemblies



## Features

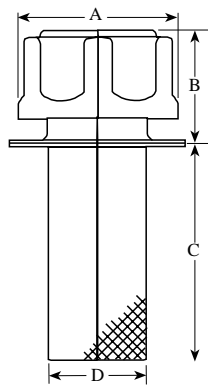
Removable 500 $\mu$  mesh strainer.  
(Except model P171848, which has a non-removable strainer.)

10 $\mu$  air breather/filter.

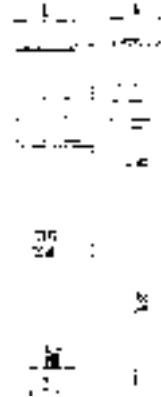
Models P171855 & P171848 include drilled flanges with attaching screws.

## How A Filler/Breather Cap Works

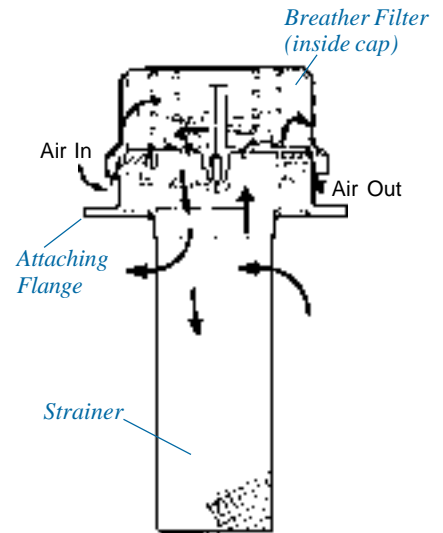
As fluid levels rise and fall inside the reservoir, air flows in and out through the strainer and breather as shown below. The breather filter inside the cap removes contaminants as small as 10 $\mu$  from the air to keep airborne contaminant from entering the fluid. The strainer removes large particles from fluid as it is added to the reservoir.



P171848  
P171855  
P171856



P171859



## Filler Breather Specifications

Part Number	FLANGE SPECIFICATIONS				FILLER BREATHER SPECIFICATIONS									
	Outer Dia.	No. of Holes	Hole Dia.		Flow		A		B		C		D	
	in	m m	in	m m	gpm	lpm	in	m m	in	m m	in	m m	in	m m
P171848	2.01	51	3	.22 6	70	270	1.81	45	1.38	35	2.48	63	1.10	28
P171855	3.31	84	6	.22 6	124	470	2.76	70	1.81	46	3.94	100	1.15	38
P171856	3.31	84	n/a	n/a	124	470	2.76	70	1.81	46	3.94	100	1.15	38
P171859	n/a - weldable				124	470	2.76	70	n/a		7.09	180	2.50	64

# Tank/Reservoir Level Gauges



## Applications

To accurately monitor the oil level in your tanks and reservoirs, choose Donaldson level gauges. Three models indicate oil level and temperature, 35° to 210°F (30° to 90°C). Two models indicate oil level only.

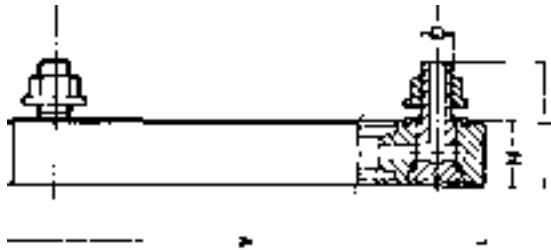
## Features

Transparent lens material is protected by metal bar with BunaN seals.

Maximum working pressure for all models is 14.5 psi / 1 bar / 100 kPa for pressurized tanks.

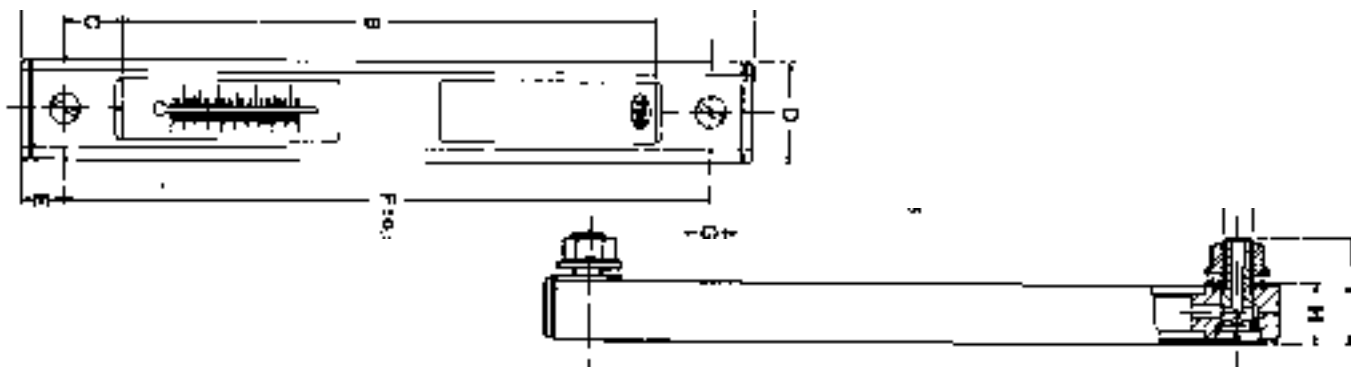
Recommended bolt tightening torque is 10 lbs-ft, with inside nut for tightening directly on the tank.

Suggested mounting hole diameter: 11mm or 13mm.



## Oil Level Gauge Specifications

Part Number	A		B		C		D		E		F		G	H		I	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm	in	mm
P171918	6.22	158	3.23	82	.89	22.5	1.57	40	.61	15.5	5	127	m12	.78	20	1.57	40
P171921	11.22	285	8.23	209	.89	22.5	1.57	40	.61	15.5	10	254	m12	.78	20	1.57	40




## Oil Level/Temperature Gauge Specifications (35°- 210°F/ 30°- 90°C)

Part Number	A		B		C		D		E		F		G	H		I	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm	in	mm
P171913	4.21	107	1.22	31	.89	22.5	1.57	40	.61	15.5	3	76	m10	.78	20	1.57	40
P171920	6.22	158	3.22	82	.89	22.5	1.57	40	.61	15.5	5	127	m12	.78	20	1.57	40
P171922	11.22	285	8.23	209	.89	22.5	1.57	40	.61	15.5	10	254	m12	.78	20	1.57	40

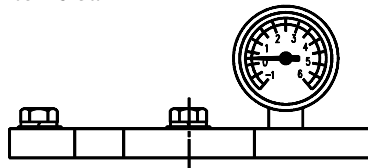
# Filter Service Indicators

## Indicators for Donaldson FIK, FHK, FRK & FSK In-Tank Assemblies



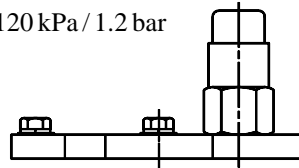
**P171956**  
Pressure Gauge

14.5 to 87 *psi* / 100 to 600 kPa /  
1 to +6 bar



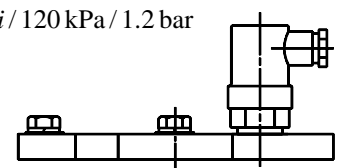

**P171958**  
Visual Indicator

17.4 *psi* / 120 kPa / 1.2 bar



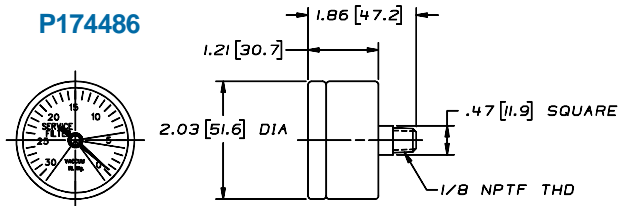

**P171966**  
AC Electrical Indicator

17.4 *psi* / 120 kPa / 1.2 bar

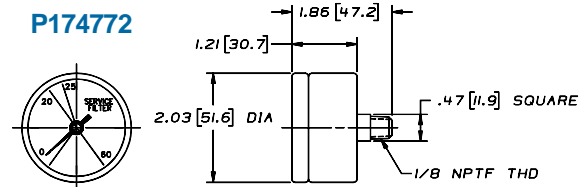


Note: All indicators have G 1/8 thread size.

## Pressure Gauges for Donaldson LPS04 & LPS05 Assemblies



Filter Bypass Rating	Part No.
5 <i>psi</i> / 34.5 kPa / 0.3 bar	P174486
25 <i>psi</i> / 172.5 kPa / 1.7 bar	P174772



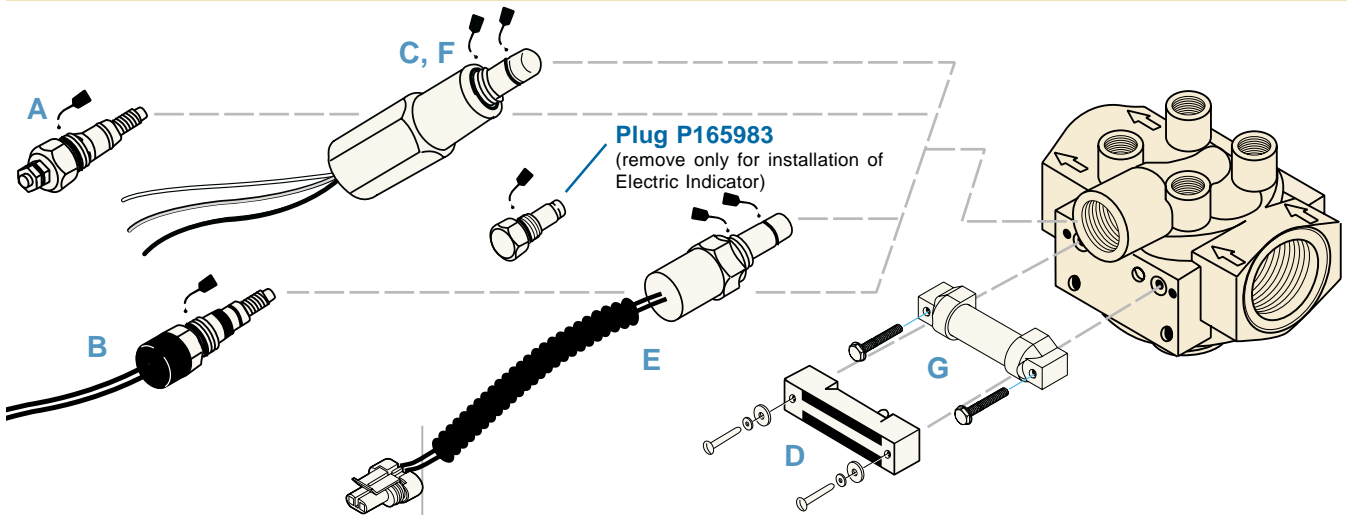
## Remote Mount Differential Gauge for Low or Medium Pressure Assemblies



- Easy 'quick-glance' check zones:  
Green = filter is clean  
Red = time to change filter
- Maximum working pressure:  
500 *psi* / 3450 kPa / 34.5 bar
- Burst pressure: Exceeds 2000 *psi* / 13,795 kPa / 137.9 bar

Filter Bypass Rating	Part No.
3 <i>psi</i> / 20.7 kPa / 0.2 bar	P161778
5 <i>psi</i> / 34.5 kPa / 0.3 bar	P161779
15 <i>psi</i> / 103.5 kPa / 1 bar	P161780
25 <i>psi</i> / 172.5 kPa / 1.7 bar	P162037

# Filter Service Indicators



## In-Oil Electric & Visual Indicator Specifications

Use with Bypass Valve Pressure of:	Indicator Part No.	Style	Description
<b>In-Oil Electric Models<sup>1</sup></b>			
5 psi / 34.5 kPa	P163642	A	Single post DC. Color-coded washer: black. Normally open.
15 psi / 103 kPa	P163601	A	Single post DC. Color-coded washer: blue. Normally open.
25 psi / 172.5 kPa	P163839	A	Single post DC. Color-coded washer: red. Normally closed.
25 psi / 172.5 kPa	P162400	A	Single post DC. Color-coded washer: green. Normally open.
25 psi / 172.5 kPa	P171143	B	DC 2-wire. Cannon connector. Normally open.
25 psi / 172.5 kPa	P173944	C	AC/DC 3-wire. White wire = normally open; red = normally closed; black = common.
50 psi / 345 kPa	P165194	A	Single post DC. Color-coded washer: red/white. Normally open.
50 psi / 345 kPa	P167455	A	Single post DC. Color-coded washer: red/green. Normally closed.
50 psi / 345 kPa	P171087	B	DC 2-wire. Packard Weatherpack connector. Normally open.
50 psi / 345 kPa	P170926	E	DC 2-wire. Compatible with microprocessors. Normally closed. Gold contacts.
50 psi / 345 kPa	P173893	F	DC 3-wire. Compatible with microprocessors. White wire = normally open; red = normally closed; black = common.
50 psi / 345 kPa	P174396	C	AC/DC 3-wire. White wire = normally open; red = normally closed; black = common.

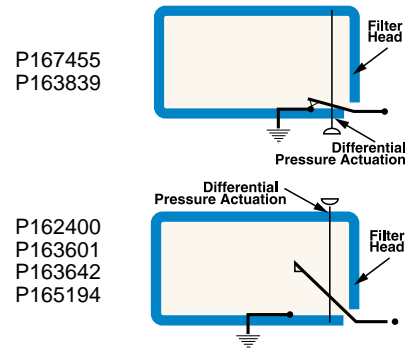
<b>Visual Models (Non-Electric)<sup>2</sup></b>			
5 psi / 34.5 kPa	P162694	D	PSI is marked on face.
15 psi / 103 kPa	P162642	G	PSI is marked on face.
25 psi / 172. kPa	P162696	G	PSI is marked on face.
50 psi / 345 kPa	P167580	G	PSI is marked on face.
n/a	P165984	n/a	Blank Plate

### Notes

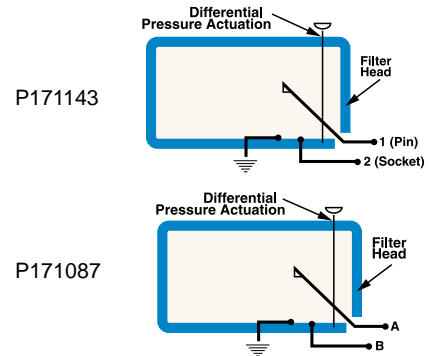
- <sup>(1)</sup>All electric models have maximum operating temperature of 250°F/ 114°C.  
<sup>(2)</sup>All non-electric models have maximum operating temperature of 180°F/ 82°C.

## Electrical Schematics

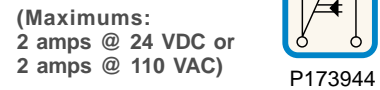
### Style A: Single Post DC Indicator (Maximum: 200 mA DC @ 30 VDC)



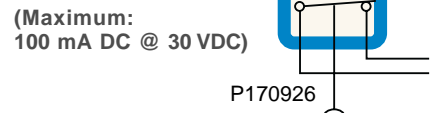
### Style B: DC 2-Wire Indicator (Maximum: 200 mA DC @ 30 VDC)



### Style C, F: AC/DC 3-Wire Indicator (Maximums: 2 amps @ 24 VDC or 2 amps @ 110 VAC)

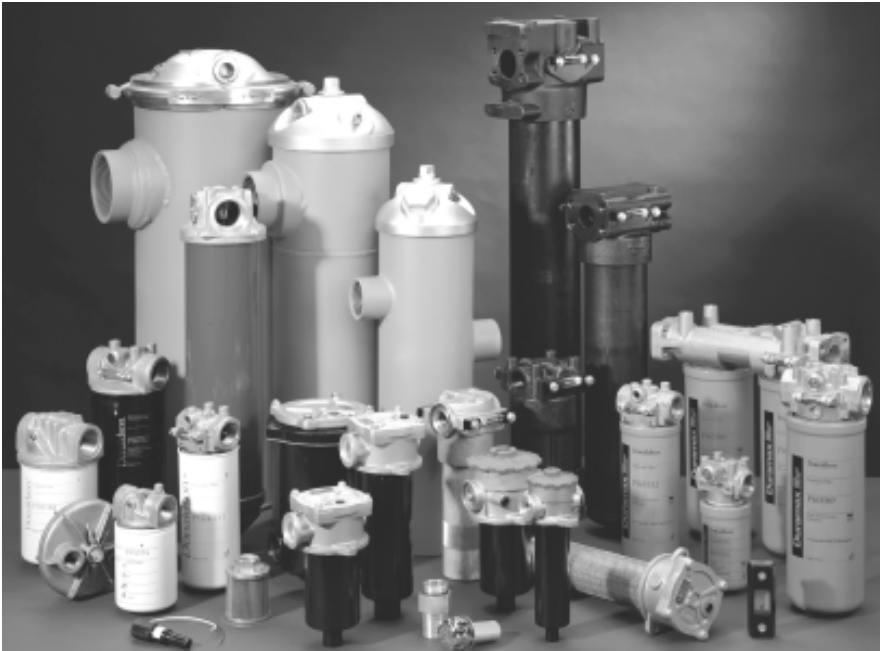


### Style E: DC 2-Wire Indicator (Maximum: 100 mA DC @ 30 VDC)





# Donaldson's Full Line of Hydraulic Filters: Complete Assemblies, Heads, Bowls, Cartridges, Spin-ons



## High Pressure Filters

Hydraulic Series	Flow Ranges	Pressure (NFPA/t2.6.1)		Porting Types
		Working	Static	
HPK02	0-30 gpm 0-114 l/min	2000 psi 13790 kPa 137.9 bar	4500 PSI 31028 kPa 310.3 bar	SAE-12 (3/4") O-Ring Port Boss
HPK03	0-60 gpm 0-227 l/min	3000 psi 20685 kPa 206.9 bar	6000 psi 41370 kPa 413.8 bar	SAE-12 & -16 (3/4" & 1") O-Ring Port Boss
HPK04	0-100 gpm 0-378 l/min	6000 psi 41370 kPa 206.9 bar	12000 psi 82740 kPa 827.6 bar	SAE-20 & -24 O-Ring Port Boss, or SAE 4-Bolt Flange
HPK05	0-200 gpm 0-757 l/min	3000 psi 20685 kPa 206.9 bar	6000 psi 41370 kPa 413.8 bar	2" SAE 4-Bolt Flange

## Low Pressure Filters

Hydraulic Filter Series	Flow Ranges		Pressure (NFPA/t2.6.1)		Porting Types
	Return	Suction	Working	Static	
HBK04	0-30 gpm 0-114 l/min	0-10 gpm 0-38 l/min	150 psi 1034 kPa 10.3 bar	300 psi 2068 kPa 20.7 bar	SAE-16 (1") O-Ring Port Boss; or 1" NPT; or SAE-12 (3/4") NPT
LPS04	0-40 gpm 0-150 l/min	0-10 gpm 0-38 l/min	150 psi 1034 kPa 10.3 bar	250 psi 1724 kPa 17.2 bar	3/4" NPT
HSK02	0-35 gpm 0-132 l/min	0-10 gpm 0-38 l/min	100 psi 690 kPa 6.9 bar	n/a	3/4" NPT
HBK05	0-60 gpm 0-227 l/min	0-30 gpm 0-114 l/min	150 psi 1034 kPa 10.3 bar	250 psi 1724 kPa 17.2 bar	SAE-20 (1 1/4") O-Ring Port Boss, or 1 1/4" NPT
LPS05	0-60 gpm 0-227 l/min	0-20 gpm 0-76 l/min	150 psi 1034 kPa 10.3 bar	250 psi 1724 kPa 17.2 bar	1 1/4" NPT
HAK05	0-120 gpm 0-454 l/min	0-30 gpm 0-114 l/min	500 psi 3448 kPa 34.5 bar	1000 psi 6895 kPa 69 bar	SAE-20 & -24 (1 1/4" & 1 1/2") O-Ring Port Boss, or 1 1/4" & 1 1/2" NPT
HDK06	0-150 gpm 0-568 l/min	0-50 gpm 0-189 l/min	350 psi 2413 kPa 24 bar	500 psi 3448 kPa 34.5 bar	2 1/2" NPT
HFK08	0-300 gpm 0-1136 l/min	0-100 gpm 0-378 l/min	350 psi 2413 kPa 24 bar	500 psi 3448 kPa 34.5 bar	3" NPT
HEK11	0-600 gpm 0-2271 l/min	0-200 gpm 0-757 l/min	150 psi 1034 kPa 10.3 bar	250 psi 1724 kPa 17.2 bar	4" NPT
Intake Suction Strainer	n/a	0-100 gpm 0-378 l/min	n/a	n/a	3/8" to 3" NPT Hex Nuts

## Medium Pressure Filters

Hydraulic Filter Series	Flow Ranges	Pressure (NFPA/t2.6.1)		Porting Types
		Working	Static	
HMK03	0-25 gpm 0-95 l/min	1000 psi 6895 kPa 69 bar	2000 psi 13790 kPa 137.9 bar	SAE-12 (3/4") O-Ring Port Boss
HMK04	0-35 gpm 0-132 l/min	500 psi 3448 kPa 34.5 bar	1000 psi 6895 kPa 69 bar	SAE-16 (1") O-Ring Port Boss; 1" NPT; or SAE-12 (3/4")
HMK05	0-50 gpm 0-189 l/min	350 psi 2413 kPa 24 bar	800 psi 5516 kPa 55 bar	SAE-20 (1 1/4") O-Ring Port Boss, or 1 1/4" NPT
HMK25	0-100 gpm 0-378 l/min	350 psi 2413 kPa 24 bar	800 psi 5516 kPa 55 bar	1 1/2" SAE 4-Bolt Flange, or SAE-24 (1 1/2") O-Ring, or 1 1/2" NPT.

## In-Tank Filters

Hydraulic Filter Series	Flow Ranges		Pressure (NFPA/t2.6.1)		Porting Types
	Return	Suction	Working	Static	
FSK	0-40 gpm 0-150 l/min	n/a	145 psi 1000 kPa 10 bar	218 psi 1500 kPa 15 bar	SAE-8, -12, -16, -20 (1/2", 3/4", 1", 1 1/4") O-Ring Port Boss
FRK	0-61 gpm 0-230 l/min	n/a	145 psi 1000 kPa 10 bar	218 psi 1500 kPa 15 bar	SAE-12, -16, -20 (3/4", 1", 1 1/4") O-Ring Port Boss
FHK	0-132 gpm 0-500 l/min	0-66 gpm 0-250 l/min	145 psi 1000 kPa 10 bar	218 psi 1500 kPa 15 bar	SAE-12, -16, -20, -24, -32 (3/4", 1", 1 1/4", 1 1/2", 2") O-Ring Port Boss
FIK	0-211 gpm 0-800 l/min	n/a	145 psi 1000 kPa 10 bar	218 psi 1500 kPa 15 bar	SAE-16, -20, -24 (1", 1 1/4", 1 1/2") O-Ring, or 2" SAE 4-Bolt Flange

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