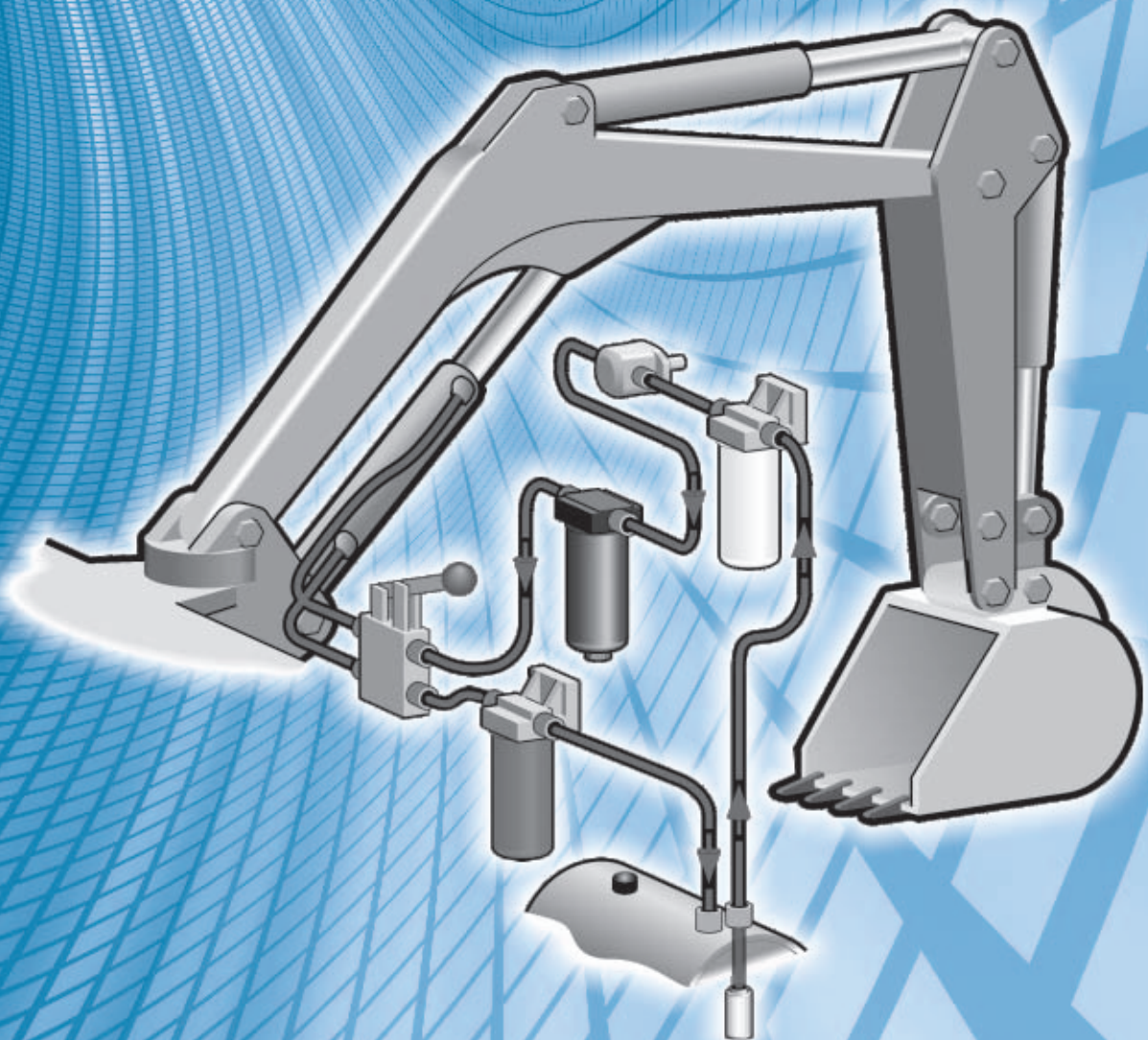


# Hydraulic Service Parts and Accessories Guide

May 2008

# HYDRAULIC



Donaldson®

*Filtration Solutions*



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## Hydraulic Filtration Products and Accessories

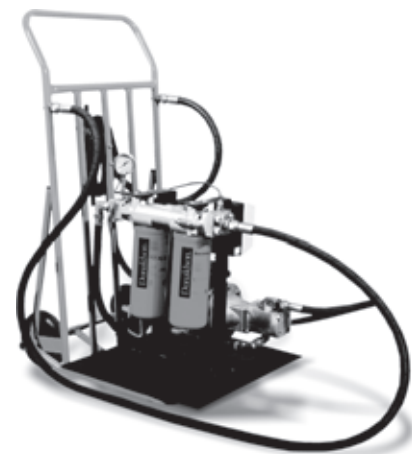
Along with our complete line of hydraulic filter heads and housings for low, medium, and high pressure applications, Donaldson offers a comprehensive line of suction strainers, gauges, breathers and replacement filters. Spin-ons and cartridges are available in a variety of media options.

- Hydraulic filter service indicators: these are electrical and visual indicators used to monitor the service life of an element and to ensure that a system is not run in bypass mode (i.e. filter is blocked).
- Tank breathers and filler caps: a 10µm air breather/filter. For example, breather P171855 includes drilled flanges with attaching screws. As fluid levels rise and fall inside the reservoir, air flows through the breather and airborne contaminant is prevented from entering the reservoir.
- Suction strainers: strainers fitted inside reservoir or between the reservoir and pump to prevent contaminant from entering the pump. Suction strainers are zinc-plated with stainless steel mesh screens and rugged steel core centres epoxy bonded to heavy gauge connectors and end caps. They are cleanable and reusable, and should be cleaned in non-caustic solvent and blown dry from inner diameter to outer diameter.
- Tank / reservoir level gauges: these accurately monitor the oil level in tanks and reservoirs. The transparent lens material is protected by a metal frame. Gauges are rated to withstand a 1 bar max working pressure, and temperature range of 30°C to 90°C. They are available in oil level and temperature, or oil level only.
- In-tank return line filters: economical, space saving filters with simple screw-on covers, ideal for low pressure, in-tank applications. This is a heavy duty filter, with die cast aluminium head and steel canister. The head (and inlet) sit above the tank, with the housing (outlet) in the tank.



## Filter Buggy - DFF 0017

- Starter and overload protection
- 1.5 KW Electric motor (220V)
- 3m suction and delivery hose
- 10m electric cord
- Selection of filters from 2 micron to 150 micron
- Dual Filter Head
- Maximum flow - 40 litres/min
- All mounted on a mobile trolley





## Bulk Liquid Filtration

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

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

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



## Low Pressure Filter Assemblies - LPS04 and SP15/25 low pressure spin-on filters

The LPS04 and SP15/25 are low pressure filters with spin-on convenience and easy serviceability.

Max working pressure	10 bar
Max return flow	114 litres/min
Max suction flow	38 litres/min

### Element Choices

Media type	$\beta_{X(c)} = 200$ Rating	$\beta_{X(c)} = 1000$ Rating	Length (in./ mm)	Part no.
Cellulose # 10		23	5.35/136	P551551
Cellulose # 10		23	8.6/218	P550255
Cellulose # 25	32		5.35/136	P551553
Wiremesh # 149	150		5.68/144	P550274

### Head Choices

Port size	Bypass range	Gauge ports	Gauge port location	DCI Part no.
3/4" NPT	25 psi / 172.5 kPa / 1.72 bar	1/8" NPT	Upstream side	P561131
3/4" NPT	None	None	na	P561136





## HBK05, SP50/60 and SP80/90

The HBK05 is a strong and durable low pressure filter with a spin-on design that simplifies servicing and reduces maintenance costs. Its heavy duty steel canister has a rigid steel attachment plate for added strength, and the head is made of die-cast aluminium. Available with synthetic media.

### Single Head

Port size	Bypass range	Gauge ports	Gauge port location	Part no.
1 1/4" NPT	25 psi 172.5 kPa 1.72 bar	(2) 1/8" NPT	Upstream side	P563268

### Dual Head

Port size	Bypass range	Gauge ports	Gauge port location	Part no.
1 1/2" NPT & 2" SAE 4 Bolt	15 psi 103.4 kPa 1.34 bar	(4) 1/8" NPT	Upstream & downstream sides	P563273

Max working pressure	10 bar
Max return flow	227 l/min
Max suction flow	114 l/min



Media Type	$\beta_x = 1000$	Length (in./mm)	Part no.
Synteq #1	6 $\mu$ m	6.7 / 170	P169430
		10.7 / 271	P167832
Synteq #2	9 $\mu$ m	6.7 / 170	P167162
		10.7 / 271	P165762
Synteq #2 1/2	10 $\mu$ m	6.7 / 170	P165875
		10.7 / 271	P165876
Synteq #9	23 $\mu$ m	6.7 / 170	P165877
		10.7 / 271	P165878
Synteq #20	>50 $\mu$ m	6.7 / 170	P165879
		10.7 / 271	P165880
Cellulose #3	24 $\mu$ m	6.7 / 169	P550386
Cellulose #10	23 $\mu$ m	6.7 / 169	P550388
		10.7 / 271	P550251
Cellulose #25	32 $\mu$ m	6.7 / 169	P550387
Water absorbing	10 $\mu$ m water absorption	10.7 / 271	P561183
Wiremesh	150 $\mu$ m nominal	6.7 / 169	P550275
		10.7 / 271	P550276

## FIK - In-tank assemblies and replacement elements

The FIK in-tank return line filters are economical and space saving with simple screw-on covers, ideal for low pressure, in-tank applications. This is a heavy duty filter, with die cast aluminium head and steel canister. The head (and inlet) sit above the tank, with the housing (outlet) in the tank.

Port size	FIK Assembly model	Flow range
SAE-16 O-ring	K040812*	95 l/min
1 1/4" SAE O-ring	K051204*	152 l/min
1 1/2" SAE O-ring	K070248*	227 l/min
2" SAE 4-Bolt Flange	K070250*	800 l/min

\*Models have  $\beta_{10} = 2$

\*Models have service indicator port available

\*Models have 22 psi / 150kPa / 1.5 Bar bypass rating

Note: Bypass valve is integral part of replacement filter

Max working pressure	10 bar
Max return flow	800 litres/min

### Replacement element choices

Media type	Beta rating	K051204	K070248	K070250	K040812
Synthetic	10 $\mu$ m absolute	P171537	P171555	P171579	P171531
Cellulose	10 $\mu$ m nominal		P171557	P171581	
Cellulose	10 $\mu$ m nominal	P171540		P171582	P171534
Wiremesh	60 $\mu$ m absolute	P171541			





### Medium Pressure Filter Assemblies - HMK Series

The HMK series of spin-on hydraulic filters feature high performance, high flow and medium pressure. They are designed for return line and side loop systems. Applications include fluid conditioning, process systems, lube oil systems, power transmission, case drains, hydrostatic charge pumps and cooling systems. The element has a heavy-duty steel body with die-cast top plate and the head is made from die-cast aluminium.

Hydraulic Series	Flow Range Return	Working Pressure	Porting Types	Media
HMK03	0-25 gpm 0-95 l/min	1000 psi 6895 Kpa 69 bar	SAE-12 O-Ring	SYNTEQ or Cellulose
HMK04	0-35 gpm 0-132 l/min	500 psi 3448 Kpa 34.05 bar	SAE-12,-16 O-Ring or 1" NPT, 3/4 NPT	SYNTEQ or Cellulose or Water Removal
HMK05	0-50 gpm 189 l/min	350 psi 2413Kpa 24 bar	SAE-20 O-Ring 1 1/4 NPT	SYNTEQ or Cellulose Wiremesh, or Water Removal
HMK24 dual head, dual elements	0-060 gpm 0-230 l/min	500 psi 3450 kPa 34.5bar	SAE-20 O-Ring or 1 1/4 SAE 4-Bolt Flange	SYNTEQ or Cellulose or Water Removal
HMK25 dual head dual elements	0-100 gpm 378 l/min	350 psi 2413 Kpa 24 bar	1 1/2 SAE4-Bolt Flange or SAE-24 O-Ring or 1 1/2 NPT	SYNTEQ or Cellulose Wiremesh, or Water Removal

### HMK03 - Element Choices

Media No	Media type	$\beta_{X(c)} = 1000$ Rating	Length		Part No.	Seal Material
			in.	mm		
No.1	Synteq	6 $\mu$ m	5.5	140	P170306	BunaN
			9.5	242	P170307	BunaN
No.2	Synteq	9 $\mu$ m	5.5	140	P170308	BunaN
			9.5	242	P170309	BunaN
No.2 1/2	Synteq	10 $\mu$ m	9.5	242	P176107	BunaN
No.3	Synteq	14 $\mu$ m	9.5	242	P173702	BunaN
No.4	Synteq	20 $\mu$ m	5.5	140	P170310	BunaN
			9.5	242	P170311	BunaN
No.9	Synteq	23 $\mu$ m	5.5	140	P170312	BunaN
			9.5	242	P170313	BunaN
No.10	Cellulose	29 $\mu$ m	5.5	140	P170480	BunaN
			9.5	242	P170089	BunaN





## Head Choices for HMK03 (Single)

Port Size	Bypass Rating	Indicator	Head Part No.
3/4"SAE-12 O-RING	50 psi / 345 KPa	None	P170773
3/4"SAE-12 O-RING	50 psi / 345 KPa	'D' (refer p.12)	P179460

## Spin-On Element for HMK04

Media Number	$\beta_{x(c)} = 1000$ Rating	Media Type	Length		Part No
			(in)	(mm)	
No.1/2	<3 $\mu$ m	Synteq	9.4	240	P165185 Viton Seal
No.1	6 $\mu$ m	Synteq	9.4	240	P167590
No.2	9 $\mu$ m	Synteq	6.0	52	P165354
No.2 1/2	10 $\mu$ m	Synteq	6.0	152	P176565
			9.4	240	P176566
No.4	20 $\mu$ m	Synteq	6.0	152	P164375
			9.4	240	P164378
No.7	33 $\mu$ m	Synteq	6.0	152	P164381
			9.4	240	P164384
No.10	23 $\mu$ m	Cellulose	6.0	152	P163419
No.20	>50 $\mu$ m	Synteq	9.4	240	P165338
	NA	Water Removal	9.4	240	P560584



## Head Choices for HMK04 (Single)

Port size	Bypass Rating	Indicator (supplied)	Indicator Options	Head Part No
3/4" NPT	25 psi 172 Kpa	'D' (refer p.12)	None	P169310
	No Bypass	'D' (refer p.12)	None	P169320
1" NPT	25 psi 172 Kpa	'D' (refer p.12)	A,C (refer p.11)	P166086
		'D' (refer p.12)	None	P166416
SAE-16 O-Ring	25 psi 172 Kpa	'D' (refer p.12)	None	P166417
		'D' (refer p.12)	A,C (refer p.11)	P166088



## Head Choices for HMK24 (Double)

Port Size	Bypass Rating	Indicator	Head Part No.
SAE-20 O-RING	None	A & C (refer p.11)	P179609
1 1/4 "4-BOLT	50 psi	A & C (refer p.11)	P179582





## Spin-On Elements for HMK05 and HMK25

Media Number	Media Type	$\beta_{X(c)} = 1000$ Rating	Length (in) / (mm)	Part No
No.1	Synteq	6 $\mu$ m	11.6/294	P170906
No.2	Synteq	9 $\mu$ m	11.6/294 14.2/361	P165675 P179763
No.2 <sup>1/2</sup>	Synteq	10 $\mu$ m	11.6/294	P176567
No.3	Synteq	14 $\mu$ m	14.2/361	P170949
No.4	Synteq	20 $\mu$ m	11.6/294	P165659
No.9	Synteq	23 $\mu$ m	11.6/294	P165569
No.20	Synteq	>50 $\mu$ m	11.6/294	P165672
No.149	Water Removal	na	11.6/294	P179075



## Head Choices for HMK05 (Single)

Port Size	Bypass Rating	Indicator	Indicator Options	Head Part No.
1 1/4 "NPT	172 KPa 25 psi	'D' (refer p.12)	'D' (refer p.12)	P167622

## Head Choices for HMK25 (Double)

Port Size	Bypass Rating	Indicator	Indicator Options	Head Part No.
1 1/2 SAE 4-BOLT FLANGE	25 psi 172 KPa	'D' (refer p.12) Both Sides	A, C & D (refer p.11-12)	P167296



## High Pressure Hydraulic Assemblies

The following are high pressure hydraulic assemblies used on in-plant and mobile hydraulic systems. Applications include hydrostatic transmissions and high pressure circuit systems. They are made from ductile iron for strength and durability and are available with a reverse flow bypass valve which allows bi-directional flow through the filter head.

### FPK02 - FPK025041-4", FPK027183-8"

Head			
Port Size	Bypass Rating	Indicator	Part No
3/4" O Ring	87 psi	Refer p.11-12	P762766

Element Choices				
Media Number	$\beta_{x(c)} = 1000$ Rating	Length (in./mm)	Part No	Comments
No.1	6 $\mu$ m	4.37/111	P167180	Fluorocarbon Seal High collapse
		8.12/203	P167838	BunaN Seal
			P167182	Fluorocarbon Seal High Collapse
No.2	9 $\mu$ m	4.37/111	P165041	BunaN Seal
		8.12/203	P195043	BunaN seal
No.2 1/2	10 $\mu$ m	4.37/111	P165006	BunaN Seal
			P167181	Fluorocarbon Seal High Collapse
		8.12/203	P167183	Fluorocarbon Seal High collapse
No.9	23 $\mu$ m	4.37/111	P165136	BunaN Seal
		8.12/203	P165138	BunaN seal



Housing Choices	
Length (in) / (mm)	Part No
4 / 102	P762769
8 / 203	P762770
Note: Head assemblies include head to-housing seal	

<b>Max working pressure</b>	420 bar
<b>Max flow 4" assembly</b>	50 litres/min
<b>Max flow 8" assembly</b>	95 litres/min

### HPK03

Head			
Port Size	Bypass Rating	Indicator	Part No
SAE-16 O Ring	50 psi	Refer p.11-12	P166353

Element Choices (8" / 203 mm)				
Media Number	$\beta_{x(c)} = 1000$ Rating	Part No	Seal	Comments
No.1	6 $\mu$ m	P167842	BunaN	
No.1	6 $\mu$ m	P167185	Viton	High Collapse for No Bypass application
No.2	9 $\mu$ m	P164594	BunaN	
No.2	9 $\mu$ m	P164601	Viton	
No.2 1/2	10 $\mu$ m	P164166	BunaN	
No.2 1/2	10 $\mu$ m	P167186	Viton	High Collapse for No Bypass application
No.9	23 $\mu$ m	P164174	BunaN	
No.74	75 $\mu$ m nominal	P162233	BunaN	Wire Mesh Media



Housing	
Length (in) / (mm)	Part No
10.73 / 273	P179579
Note: Head assemblies include head to-housing seal	

<b>Max working pressure</b>	207 bar
<b>Max flow 8" assembly</b>	227 litres/min



## HPK04

Head Choices				
Port Size	Working Pressure	Bypass Rating	Indicators	Part No
1 1/2" SAE 4 Bolt Flange (code 62)	6000 psi	60 psi	Refer p.11-12	P164346
1 1/4" SAE 4 Bolt Flange (code 62)	6000 psi	90 psi with reverse flow check valve	Refer p.11-12	P170058

Max working pressure	410 bar
Max flow 8" assembly	227 litres/min
Max flow 13" assembly	360 litres/min
Max flow 16" assembly	454 litres/min



Element Choices				
Media Number	$\beta_{x(c)} = 1000$ Rating	Length (in) / (mm)	Part No.	Comments
1	6 $\mu$ m	8/203	P167842	High Collapse
			P167185	
		16/406	P169433	High Collapse
	P167187			
2	9 $\mu$ m	8/203	P164594	Viton Seal
			P164601	
		13/324	P164596	
	16/406	P164598		
2 1/2	10 $\mu$ m	8/203	P164166	
			P164168	
		16/406	P164170	
9	23 $\mu$ m	8/203	P164174	
			P164176	
		16/406	P164178	
74	--/--/75	8/203	P162233	200 wiremesh screen

Housing Choices	
Length (in) / (mm)	Part No
8/203	P162451
16/406	P162452
Note: Head assemblies include head to-housing seal	

## HPK05

Complete Assemblies					
Part Size	Bypass Rating	Indicator Style/Location	Assembly Number	Media Number	Element Part No
2" SAE4 Bolt Flange (Code61)	60 psi / 414 Reverse flow check valve	refer p.11-12	K052024	No.9	P164229

Element Choices				
Media Number	$\beta_{x(c)} = 1000$ Rating	Length (in) / (mm)	Part No.	Comments
1	6 $\mu$ m	25.5/648	P167841	BunaN
2	9 $\mu$ m	25.5/648	P164585	BunaN
2 1/2	10 $\mu$ m	25.5/648	P164227	BunaN

Max working pressure	207 bar
Max flow 8" assembly	757 litres/min





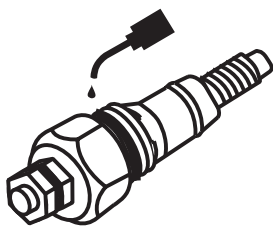
### Service Indicators

Service indicators are used to monitor the service life of an element and to ensure that a system is not run in bypass mode, that is, with the filter blocked. They are available as visual (non-electric), electrical and pressure gauges.

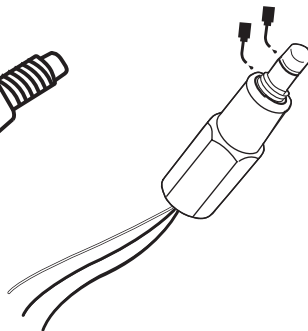
### Electrical Service Indicators

Part No.	Use with Bypass Valve Pressure of:	Description	Where Used	Illustration
P162400	25 psi / 172 kPa	DC/Single post. Normally open.	HBK04, HBK05, HMK04/24, HMK05/25	Style A
P166298	50 psi / 345 kPa	AC/DC 3-wire. Red: normally open; blue: normally closed; white: common.	HPK02, HPK03, HPK04, HPK05	See diagram
P171966	22 psi / 150 kPa	AC/DC. 0.5A resistive, 0.2A inductive.	FIK	See photo
P173944	25 psi / 172 kPa	AC/DC 3-wire. Silver alloy contacts. White: normally open; red: normally closed; black: common.	HBK04, HBK05, HMK03, HMK04.24, HMK05.25	Style C
P174396	50 psi / 345 kPa	AC/DC 3-wire. Silver alloy contacts. White: normally open; red: normally closed; black: common.	HMK03, HMK04/24, HMK05/25	Style C
P171947	87 psi / 592 kPa	AC/DC Normally open or closed. 250 VAC or 30 VDC max. 0.5A resistive, 0.2A inductive.	FPK02	See photo

Style A



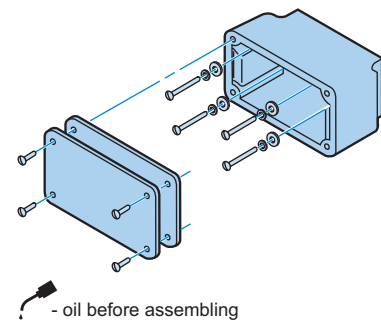
Style C



P171966  
P171947



P166298

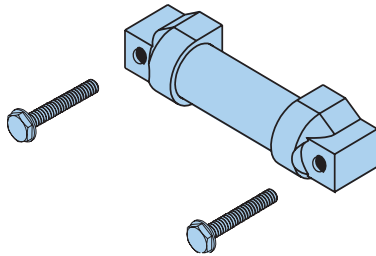




### Visual Service Indicators (non-electrical)

Part No.	Use with Bypass Valve Pressure of:	Where Used	Illustration
P162696	25 psi / 172 kPa	HMK04/24, HMK05/25	Style D
P164315	50 psi / 345 kPa	HPK02, HPK03, HPK04, HPK05	Style D
P165965	50 psi / 345 kPa	HMK03	Style D
P171958	17 psi / 116 kPa	FIK	See photo
P171945	50 psi / 345 kPa	FPK02	
P563298	Return function with range: 0 to 100 PSI Color Coded (25 PSI)	LPS04, HBK05, SP50/60, SP80/90	See photo

Style D



P171958



P563298



### T.R.A.P. Breather (Thermally Reactive Advanced Protection)

T.R.A.P. Breathers eliminate water and dirt from hydraulic reservoirs faster than silica gel breathers! They provide fast-acting protection for hydraulic reservoirs against airborne moisture, condensation and particulate contamination. Moisture is prevented from entering and is actually "pumped" out with each flow cycle. The patented media reduces dewpoint temperatures to prevent condensation inside tanks and reservoirs to help prevent corrosion, maintain fluid quality, and extend fluid life. Reverse flow through media allows moisture to exit the tank or reservoir.

The optional visual indicator is actuated by pressure differential, and flashes red to indicate a change out is required (1 PSID). Mechanical visual indicator is available on request. T.R.A.P. stops particles down to 3µm and is suitable for both stationary and mobile applications.



Part No.	Construction	Connection	Airflow	Indicator
P566151	Glass-filled ABS	1"NPT	45 CFM Max	No indicator
P564669	Glass-filled ABS	1"NPT	45 CFM Max	Electronic
P565616	Glass-filled ABS	Bayonet	45 CFM Max	Electronic
P566037	Epoxy-coated Steel	3/4" BSP	25 CFM Max	No indicator

Donaldson – World leaders in Filtration Solutions

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