



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Hydraulic Filtration and Contamination Control

Solutions for Industry



ENGINEERING YOUR SUCCESS.



- Consistent quality
- Technical innovation
- Premier customer service

Parker's technical resources provide the correct filtration technologies that conform to your requirements. That's why thousands of manufacturers and equipment users around the world rely on Parker Filtration products and people.

Worldwide Sales and Service

Parker Filtration's global reputation as a reliable supplier of superior filtration products is the result of a focused and integrated development and manufacturing system.

Parker Filtration consolidates quality filtration products, manufactured by process filtration, air and gas filtration and separation, fuel conditioning and filtration, hydraulic and lubrication filtration, fluid power products and fluid condition monitoring equipment into one broad-based range that covers many markets and most applications, as detailed here.

Hydraulic, Lubrication & Coolant Filtration

High-performance filtration systems for production machinery in industrial, mobile and military/marine applications.



Compressed Air & Gas Filtration

Complete line of compressed air/gas filtration products; coalescing, particulate and adsorption filters in many applications in many industries.



Photo courtesy of GLASBAU HAHN.

Process & Chemical Fluid Filtration

Liquid filtration systems for beverage, chemical and food processing; cosmetic, paint, water treatment; photo-processing; and micro-chip fabrication.



Racor Fuel Conditioning & Filtration

Parker air, fuel and oil filtration systems provide quality protection for engines operating in any environment, anywhere in the world.



System Contamination Monitoring

On-line dynamic particle analysis, off-line bottle sampling and fluid analysis and measurement of water content polluting the oil in a system. All important and achievable, cost-effective solutions available to equipment manufacturers and end users alike.



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Accordingly, in this new catalogue, you will find the new part number system with both a configurator and a supersedes cross reference relating to previous part numbers, issued in earlier editions of our generic catalogues. In the event that the previous reference you use is not shown in this catalogue, could we ask you to please contact our European Product Information Centre. Contact details are on the back of this catalogue.

configurator features items, which are marked in **bold** and are on a shortened delivery time. With this in mind we would ask that when making a selection using the configurator you select those items in bold to ensure the shortest lead-time.

2b. The configurator has been designed to cover not only the various models we offer but also different micron ratings, indicator options and port connections.

2c. Should you find that what you have selected is not available in the configurator, please feel free to call our European Product Information Centre (EPIC) to see if that option can be made available. Contact details are available on the back of this catalogue.

Where pressure drop graphs and ordering information are shown with a green tint, these options are 'Eco' options and environmentally friendly.

BGT11720QBPER483	BGT1S2000-S3 1X144-20 T B15 M	2000	BGT12000	Length 17	20	Nitrile	Plugged	1.5 Bar (22 PSI)	3- SAE-3000 PSI	Diffuser type 1
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Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible please make your selection from the table above.

Note: For all dual head ports for BGTS apply G^{1/2} connection for indicators

Options	
Options	Code
No diffuser required	1
Diffuser type P with perforated plate area	3
Diffuser type P without perforated plate area	4
Diffuser with integrated hose connection	on request
No magnets	5
Dipstick	6
Plugged filling port	8
Diffuser type T and no magnets	A
Diffuser type P and no magnets	B
Diffuser type T, no magnets, plugged filling port	C
Diffuser type P, no magnets, plugged filling port	D
Other combinations	on request

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

The Importance of Patented Parker Products to our customers

Innovative filter design and patented product protection brings value added benefits to our OEM customers and their end users.

Benefits that should help protect a manufacturers aftermarket as well as ensure that equipment users specify quality Parker replacement filter elements and accessories and help safeguard warranties.

Installing Parker Filtration patented filter assemblies such as the Suction and Return Series and *LEIF*® (Low Environmental Impact Filter) elements can provide the end user and OEM with some positive benefits:

- *LEIF*® can provide increased OEM spares business.
- Guaranteed Parker quality with every replacement filter element.
- Supports OEM end user loyalty to Parker elements.
- Support aftermarket sales and machinery performance.
- Parker patented elements promote quality and reliability to end users.



Providing the products and service our customers expect

A Global Product Range

With this catalogue we offer our customers an easy way to find technical specification and ordering information about Parker hydraulic filtration, fluid contamination monitoring and fluid power products.

Products shown in this catalogue have a broad range of applications. Our filter products are particularly designed for hydraulic and lubrication systems and transmissions. The fluid power products are also used in many industries and applications.

Typical applications can vary from road sweepers, fork lift trucks, agriculture harvesting machines, grass cutting equipment, lorry mounted cranes, forestry equipment, press brakes, industrial power units, waste management trucks, drilling equipment, marine, military equipment, paper mills, water treatment and filtration systems.

For more information about our products send your inquiry to your nearest sales location, see contact information at the back of this catalogue.

Important information on product ordering and part numbers

Parker Filtration has recently undertaken a review of its part numbering with a view to standardising on a common part number style for all Filtration products. As a result of the many acquisitions we have made over the past 10 years, it became clear to us that there was a need to standardise on a clear format for our part numbers.

Accordingly, in this new catalogue you will find the new part number system with a 'product configurator' and a supersedes reference relating to previous part numbers issued in earlier editions of our generic catalogues. In the event that the previous reference you have is not shown in this catalogue, could we ask you to please contact our Epic Centre, details of which are on the back cover of this catalogue.

For additional information and an example explained, turn to page 2.

BSP ports offered in this catalogue conform to ISO228.

Supply chain management, service and support

Parker is addressing operation efficiency by expanding the systematic approach called 'Lean Manufacturing. Value stream analysis, flow manufacturing, reduced set-ups, manufacturing cell flexibility and fool-proofing systems are all contributing to the continuous improvement in our manufacturing sites. 'Lean' is also expressed in our premier customer service and second-to-none customer partnerships in supply chain management.

Engineering and manufacturing excellence

Parker Filtration's Filter Division Europe (FDE) manufacturing focus is driven by a number of key elements that affect all areas of the business. People productivity, customer satisfaction, production throughput, quality and lean achievements are the drivers that help the FDE achieve ISO9001, QS9000, ISO9001 and ISO14001.

Significant investment by our parent Parker Hannifin Corporation continues to give FDE flexible manufacturing systems, automated test equipment and excellent laboratory test facilities.

New product development programmes and on-going product improvement initiatives are vital elements in maintaining a product range that meets customer demands for quality, reliability and engineering excellence.

R & D resources at the Parker Filtration locations in the UK, Finland and the Netherlands are both complementary and comprehensive. Including, as examples, Multipass Test Installations, fatigue test unit, cleanliness service (water detection, special analysis, particle counting and analysis), 3D workstations, Thermal Cycle Test Chamber, Salt Spray and Humidity chambers.

Parker Hannifin (UK) Ltd, herewith declares that Parker Hydraulic Filtration products are intended to be incorporated into machinery covered by Directive 89/392/EEC, as amended and that the following harmonised standards have been applied; EN982, EN292-1, EN292-2

We furthermore declare that, machinery incorporating Parker Hydraulic Filtration products, is not allowed to be put into service until the machinery has been found and declared to be in conformity with the provisions of Directive 89/392/EEC and with national implementing legislation.

In line with our policy of continuous product improvement, Parker Hannifin (UK) Ltd reserve the right to alter product data and specification without notice. This does not affect your statutory rights.

Notes:

1. Within this catalogue, each product has been allocated an operating temperature and pressure range.
2. The range listed for each filter is dedicated by the materials of construction and the capability of the seals specified.
3. Consideration should also be given to the characteristics of the system fluid when specifying filters for extreme temperature and/or pressure applications.
4. The use of non-Parker replacement elements and spares may invalidate your warranty.



Tanktop Mounted Return Line Filters

ETF Series

MAX 140 l/min - 6 bar



ETF Series

Features & Benefits

Features	Advantages	Benefits
Co-polymer head	Compact profile, lightweight and durable	Less weight, smaller envelope and cleaner appearance
Multiple return line ports	Flexibility related to return line hose(s) arrangement	More compact solutions can be realised
Quick release cover	No tools required to release the filter cover	Easy change of filter element
Optional magnetic pre-filtration	Removes ferro particles, even during bypass conditions	Improved fluid cleanliness levels
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis	Improved protection of system
	Only a small part of the total flow is bypassing the element	
Optional funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming

Typical Applications

- Lorry mounted cranes
- Agricultural equipment
- Container hook loaders

The Parker Filtration ETF Series Low Pressure Filters

For tank top mounting installation. The ETF Series utilises a reinforced co-polymer head equipped with two return ports and quick release cover. This filter represents an economic solution for hydraulic systems with nominal flows up to 140 l/min.



Specification

Pressure ratings:

Max. 6 bar.

Assembly:

Tank top mounted.

Connections:

Threads G1" + G1" (ISO 228), port B supplied as plugged connection.

Filter housing:

Glass reinforced co-polymer.
Funnel made from steel.

Seal material:

Nitrile.

Operating temperature range:

-20° to +80°C.

Bypass valve:

Opening pressure 1.6 bar.

Filter element:

Conventional style element with steel end caps.

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimum fatigue life is achieved.

Filtration media:

Microglass III.

Element collapse rating:

8 bar (ISO 2941).

Indicator options:

Setting 1.2 bar.

Options:

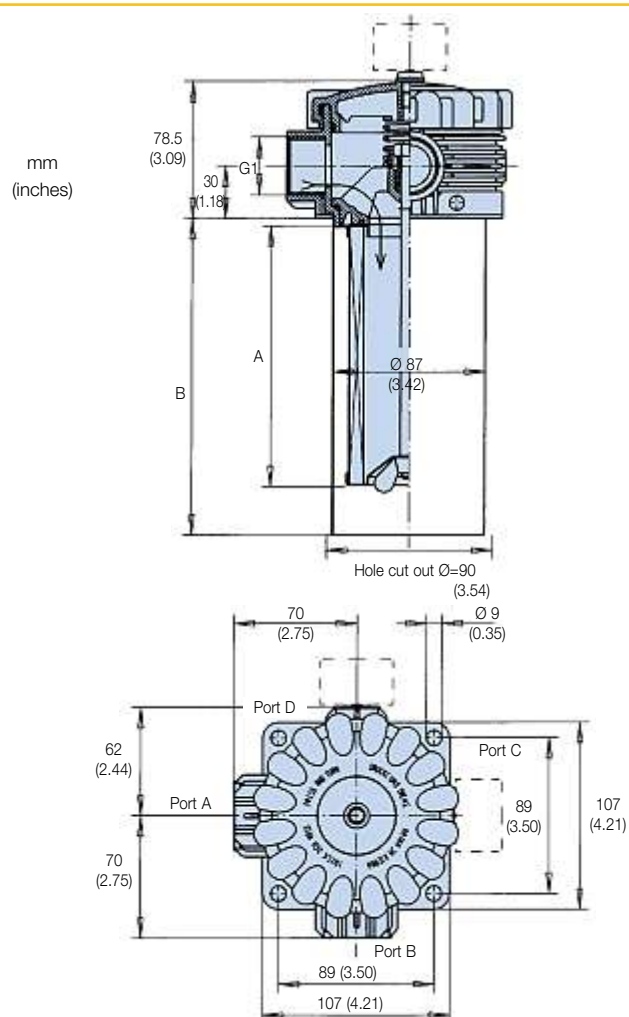
Magnetic pre-filtration.

Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

Installation Details

ETF Length	Dimensions mm (inches)	A	B
1	ETF45	82 (3.22)	100 (3.94)
2	ETF60	106 (4.17)	125 (4.92)
3	ETF90	150 (5.90)	177 (6.97)
4	ETF120	200 (7.87)	225 (8.86)
4A	ETF140	260 (10.24)	300 (11.81)

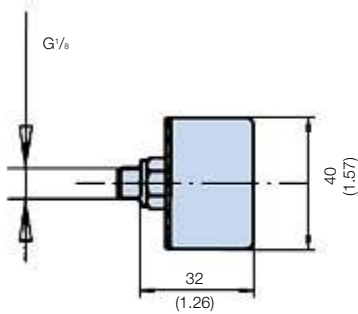


ETF Series

Indicator Details

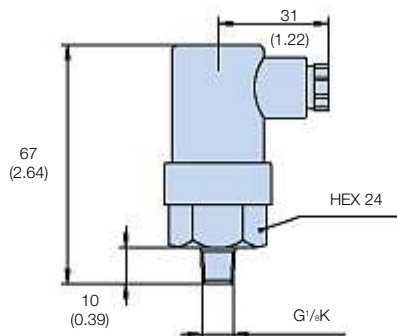
Visual pressure indicator

Code G2
mm (inches)



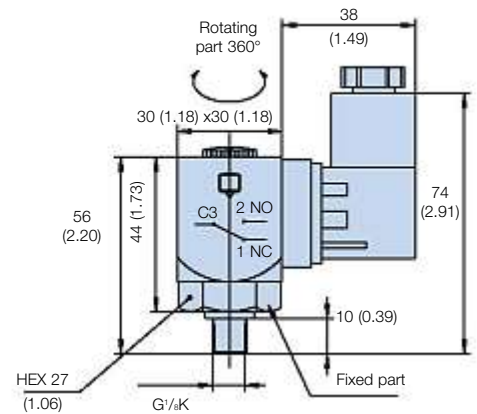
48 Vdc electrical indicator 1.2 bar

Code S2/S3
mm (inches)



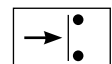
250 VAC electrical indicator 1.2 bar

Code S4
mm (inches)

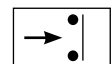


Option	Description	Connection/Voltage	Wiring	Part number
G2	Visual indicator 1.2 bar	N/A	N/A	FMUG2FBMG02L
S2/S3	Electrical indicator 1.2 bar	42 Vdc max	Select either normally open (NO) or normally closed (NC)	FMUS2FBMG02L or FMUS3FBMG02L
S4	Electrical indicator 1.2 bar	250 VAC max	1 NC 2 NO 3 C	FMUS4FBMG02L

Normally open contacts



Normally closed contacts



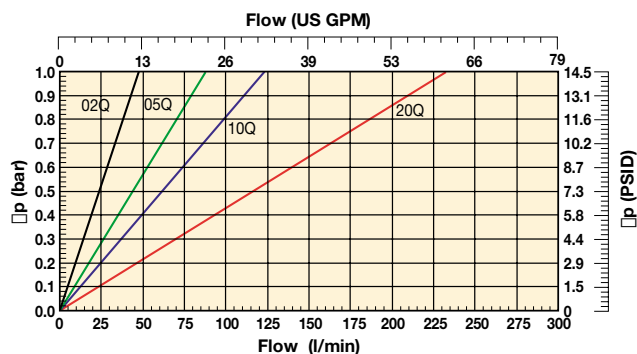
Pressure Drop Curves

The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

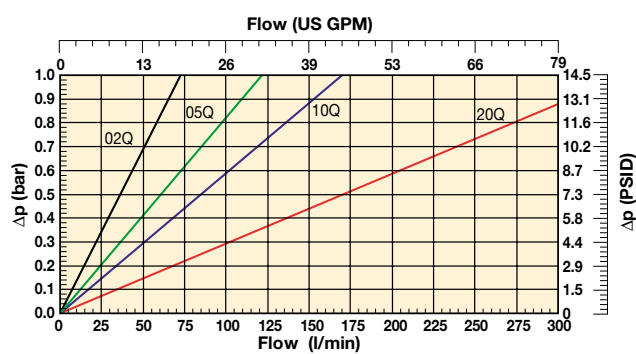
If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

$$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt.}$$

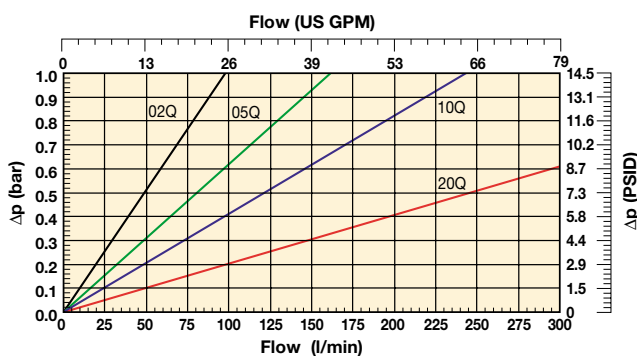
ETF45 (Element length code 1)



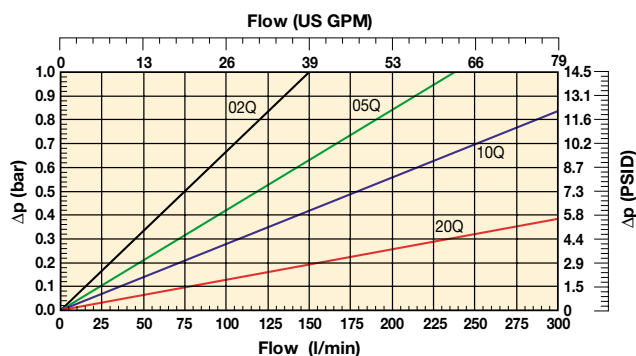
ETF60 (Element length code 2)



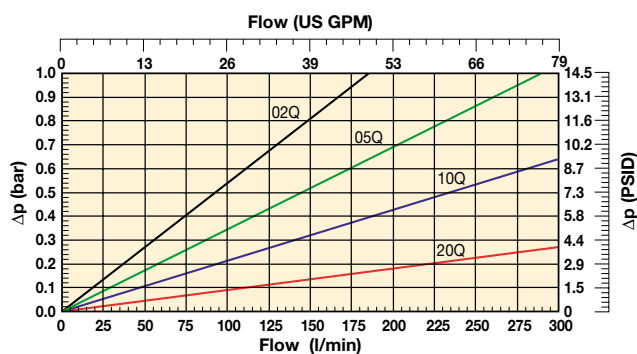
ETF90 (Element length code 3)



ETF120 (Element length code 4)



ETF140 (Element length code 4A)



Note: All pressure drop curves above show total pressure drop. i.e. they are combined housing and element curves.

Tanktop Mounted Return Line Filters

ETF Series

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
ETF210QBP2FG164	FK1230.Q010.BK16.GX16	60	ETF60	Length 2	10	Nitrile	Plugged	1.6 Bar (22 Psi)	2xG1 (one port plugged)	Diffuser type P	937950Q	FC1230.Q010.XS
ETF220QBP2FG164	FK1230.Q020.BK16.GX16	60	ETF60	Length 2	20	Nitrile	Plugged	1.6 Bar (22 Psi)	2xG1 (one port plugged)	Diffuser type P	937951Q	FC1230.Q020.XS
ETF310QBP2FG164	FK1240.Q010.BK16.GX16	90	ETF90	Length 3	10	Nitrile	Plugged	1.6 Bar (22 Psi)	2xG1 (one port plugged)	Diffuser type P	937952Q	FC1240.Q010.XS
ETF320QBP2FG164	FK1240.Q020.BK16.GX16	90	ETF90	Length 3	20	Nitrile	Plugged	1.6 Bar (22 Psi)	2xG1 (one port plugged)	Diffuser type P	937953Q	FC1240.Q020.XS

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Configurator example of an ETF Series filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
ETF	3	10Q	B	S2	F	G16	1

Box 1	Box 2	Box 3																																							
<table><tr><th>Code</th></tr><tr><td>ETF</td></tr></table>	Code	ETF	<table><tr><th colspan="2">Filter type</th></tr><tr><td>Housing</td><td>Code</td></tr><tr><td>ETF 1-45</td><td>1</td></tr><tr><td>ETF 1-60</td><td>2</td></tr><tr><td>ETF 1-90</td><td>3</td></tr><tr><td>ETF 1-120</td><td>4</td></tr><tr><td>ETF 1-140</td><td>4A</td></tr></table>	Filter type		Housing	Code	ETF 1-45	1	ETF 1-60	2	ETF 1-90	3	ETF 1-120	4	ETF 1-140	4A	<table><tr><th colspan="5">Degree of filtration</th></tr><tr><td rowspan="3"></td><td colspan="4">Glassfibre media</td></tr><tr><td colspan="4">Microglass III (for disposable elements)</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>Disposable element</td><td>02Q</td><td>05Q</td><td>10Q</td><td>20Q</td></tr></table>	Degree of filtration						Glassfibre media				Microglass III (for disposable elements)								Disposable element	02Q	05Q	10Q	20Q
Code																																									
ETF																																									
Filter type																																									
Housing	Code																																								
ETF 1-45	1																																								
ETF 1-60	2																																								
ETF 1-90	3																																								
ETF 1-120	4																																								
ETF 1-140	4A																																								
Degree of filtration																																									
	Glassfibre media																																								
	Microglass III (for disposable elements)																																								
Disposable element	02Q	05Q	10Q	20Q																																					

Box 4

Seal type	
Seal material	Code
Nitrile	B

Box 5

Indicator	
	Code
Pressure gauge, setting 1.2 bar, G $\frac{1}{8}$ for dual head ports and TSR series	G2
Pressure switch 42V, 1.2 bar setting, NO with G $\frac{1}{8}$ BSP	S2
Pressure switch 42V, 1.2 bar setting, NC with G $\frac{1}{8}$ BSP	S3
Pressure switch 250V, 1.2 bar setting NO/NC with G $\frac{1}{8}$	S4
No indicator, indicator ports L + R plugged	P2
Other settings for indicators / gauges on request	on request

Box 6

Bypass valve	
Bypass valve	Code
1.6 bar	F
Other bypass settings	on request

Box 7

Filter connection	
Ports	Code
G1"(BSP) (2 ports, one supplied as plugged connection)	G16

Box 8

Options	
Options	Code
No diffuser required	1
Diffuser type P without perforated plate area	4
Diffuser with integrated hose connection	on request
Magnets	E
Diffuser type P and magnets	F
Other combinations	on request

Note: ETF filters are standard supplied without magnets and including diffuser type P

Spare elements	
Replacement elements	Supersedes
937969Q	FC1220.Q002.XS
937970Q	FC1220.Q005.XS
937948Q	FC1220.Q010.XS
937949Q	FC1220.Q020.XS
937971Q	FC1230.Q002.XS
937972Q	FC1230.Q005.XS
937950Q	FC1230.Q010.XS

Note: ETF filters are standard supplied without magnets and including diffuser type P

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
$\beta x(c)=2$	$\beta x(c)=10$	$\beta x(c)=75$	$\beta x(c)=100$	$\beta x(c)=200$	$\beta x(c)=1000$	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q
N/A	N/A	4.5	5	6	7	05Q
N/A	6	8.5	9	10	12	10Q
6	11	17	18	20	22	20Q

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Tanktop Mounted Return Line Filters

TTF Series

MAX 500 l/min - 10 bar

AN INNOVATIVE GREEN
FILTER FEATURING
LEIF®



TTF Series

Features & Benefits

Features	Advantages	Benefits
10 bar rated filter	Can be utilised for severe return line applications	Reduced downtime due to premature filter failures
Cast aluminium head	Compact profile, lightweight and durable	Less weight, smaller envelop and cleaner appearance
LEIF® elements	Patented element safeguards the use of genuine parts	Guaranteed quality of filtration Contributes to ISO 14001 certification
Magnetic pre-filtration	Removes ferrous particles, even during bypass conditions	Improved fluid cleanliness levels Extended element life time
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
High level of customisation	Dedicated system-matched solutions can be easily made available	Improved integration of filter in system combined with lower initial system costs
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis	Improved protection of system
	Only a small part of the total flow is bypassing the element	
Standard or customised funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming

Typical Applications

- Waste management trucks
- Mobile cranes
- Power packs
- Wheeled loaders
- Drilling equipment

The Parker Filtration TTF Series Return Line Filters

TTF tank top mounted return line filters feature pre-filtration by means of a magnet column and a full flow bypass with low hysteresis. Thanks to the “In-to-Out” filter principle, contaminated oil cannot leak back into the system. TTF filters are available in versions capable of handling flow rates up to 500 l/min. They can operate up to a maximum working pressure of 10 bar. Optional filling port in filter cover, second return port and customised diffusers can be specified. Manifold type filter head (TSR Series) with four return ports is also available.



Specification

Operation pressure:

Max. 10 bar.

Assembly:

Tank top mounted.

Connections:

Threaded BSP ports.

Flanged ports on request.

Manifold filter head type TSR on request available for flows up to 250 l/min.

Filter housing:

Aluminium head and cover.

Seal material:

Nitrile, fluoroelastomer, neoprene.

Operation temperature range:

-40 to +120°C.

Bypass setting

Opening pressure 0.8 / 1.5 or 2 bar.

Other settings on request.

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimum fatigue life is achieved.

Filtration media:

Microglass III and Ecoglass III for LEIF® elements.

Also available 10µm cellulose and 40µm stainless steel mesh.

Element collapse rating:

10 bar (ISO 2941)

Pressure indicator options:

Setting 0.7 or 1.2 bar.

Other settings on request.

Visual pressure gauge.

Electrical pressure switch.

Options:

Diffuser type P (straight pipe, no perforated plate area)

Diffuser type T (with closed diffuser end cap and with perforated plate area, recommended when oil entry in reservoir is close to the reservoir bottom or to ensure oil entry under the reservoir oil level)

Magnetic pack:

Standard. TTF400 and 500 are standard supplied without magnets

Filling port in cover: (optional)

Plugged.

Filter element:

LEIF® element with reusable metal element sleeve.

Optional conventional style element with steel end caps.

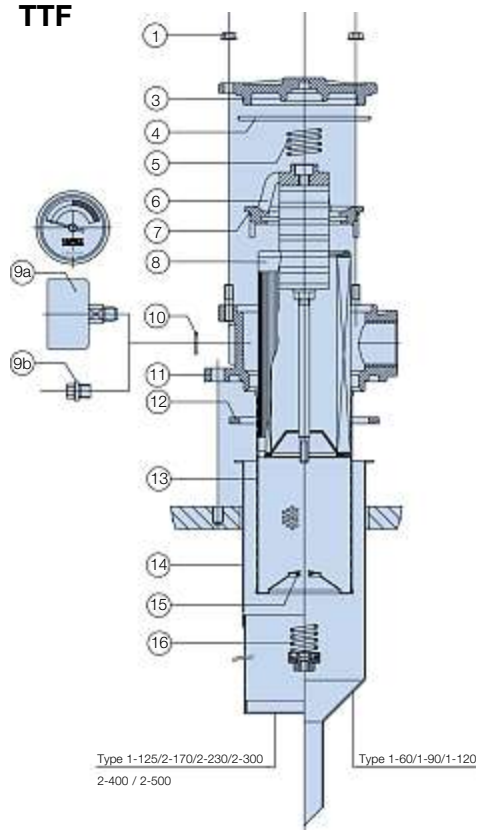
The LEIF® element is patented and safeguards the use of genuine parts.

Note: LEIF® element can be used with mineral and HEES type oils.

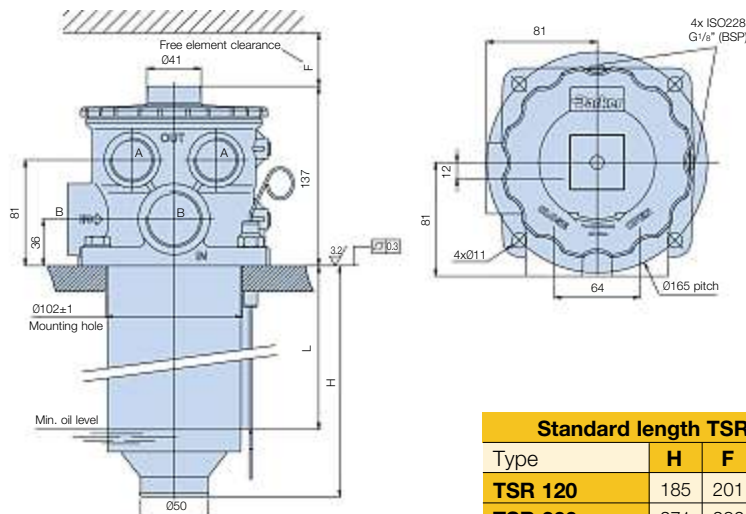
For other fluids consult Parker Filtration.

LEIF® contributes to ISO 14001 quality standards.

TTF



TSR



Standard length TSR2

Type	H	F	L
TSR 120	185	201	150
TSR 200	271	286	286
TSR 250	404	421	369

Dimensions in mm

Ports A

Ports A	Ports B
G1 (BSP)	G1 1/4 (BSP)
SAE16	SAE20

Note: All ports for return flow only

Technical specification

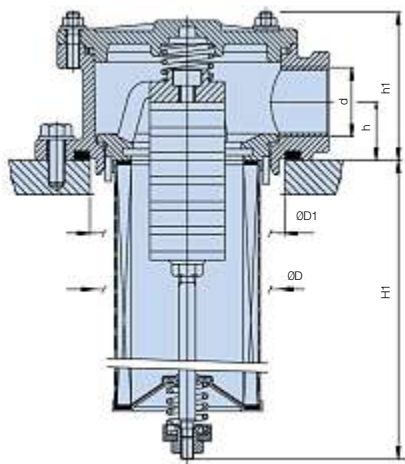
Max nominal return flow	120-200-250 l/min
Max working pressure	10 bar
Temperature range	-30°C to +100°C
Bypass pressure	1,5 bar
LEIF®-filtration ratio	2µ/5µ/10µ/20µ
Seals	NBR
Options	Dipstick
	Indicator (electrical/visual)

TTF sealkit: No. 4+7+12		
Ref.	No.	Description
1	4	Flange nut
3	1	Cover
4	1	Cover-seal
5	1	Top-spring
6	1	Insert
7	1	Insert-seal
8	1	Element
9a	0-1	Indicator
9b	0-3	Plug M10x1
10	0-3	Unit-ring
11	1	Housing
12	1	Gasket
13	1	Sleeve
14	1	Funnel/diffuser
15	1	O-ring
16	1	Bypass set

Tanktop Mounted Return Line Filters

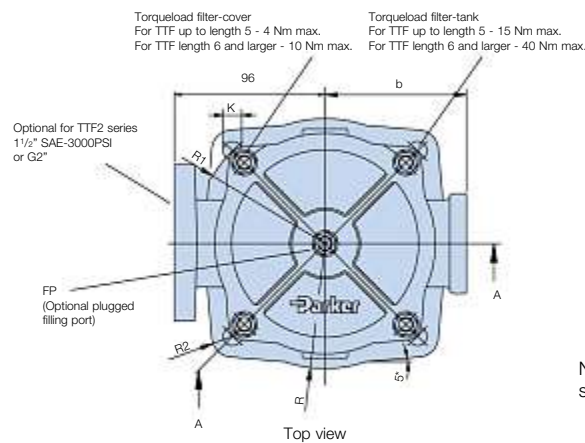
TTF Series

Specification (cont.)



Section A-A

Without Funnel

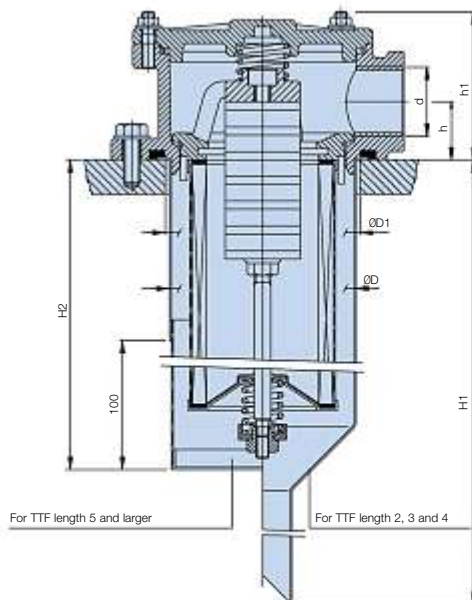


Top view

NOTE: TTF2 length 9 and 10 are standard supplied without magnets

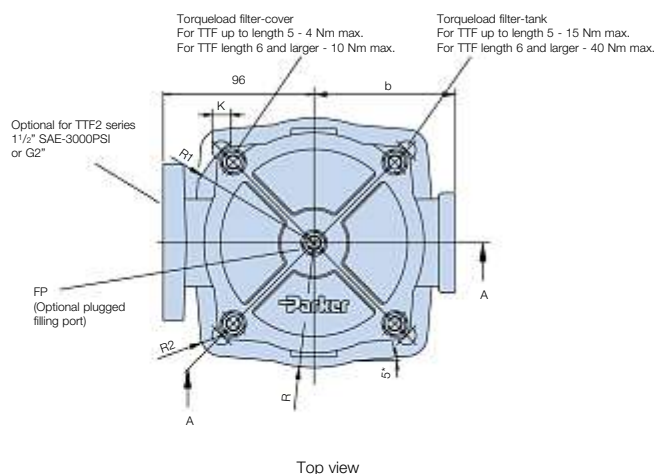
TTF length	Type	Connection Option	h	h1	□D	□D1	H1	b	R	R1	R2	K	FP				
2	TTF60	G ³ / ₄ , G1	28	73	□90	□93	131	68	60	63	10	4x□9	G ¹ / ₂				
3	TTF90						175										
4	TTF120						225										
5	TTF125						325										
6	TTF170	G1, G1 ¹ / ₄ , G1 ¹ / ₂	36 (46)	92 (107)	□132	□136	223	90 (96)	83	87.5	12	4x□11	G ³ / ₄ (G1)				
7	TTF230	(G2 Single Port)					303										
8	TTF300						508										
9	TTF400	(Dual Port)					523										
10	TTF500	(1 ¹ / ₂ SAE)					563										

Dimensions in mm



Section A-A

With Funnel



Top view

NOTE: TTF2 length 9 and 10 are standard supplied without magnets

TTF length	Type	Connection Option	h	h1	□D	□D1	H1	H2	b	R	R1	R2	K	FP			
2	TTF60	G ³ / ₄ , G1	28	73	□90	□93	235		68	60	63	10	4x□9	G ¹ / ₂			
3	TTF90						280										
4	TTF120						330										
5	TTF125							420									
6	TTF170	G1, G1 ¹ / ₄ , G1 ¹ / ₂	36 (46)	92 (107)	□132	□136	305		90 (96)	83	87.5	12	4x□11	G ³ / ₄ (G1)			
7	TTF230	(G2 Single Port)					305										
8	TTF300						510										
9	TTF400	(Dual Port)					525										
10	TTF500	(1 ¹ / ₂ SAE)					575										

Dimensions in mm

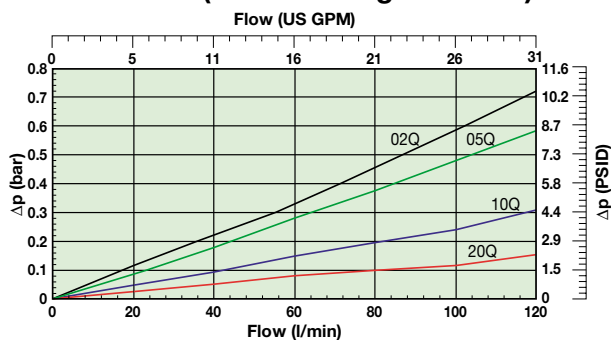
Pressure Drop Curves

The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

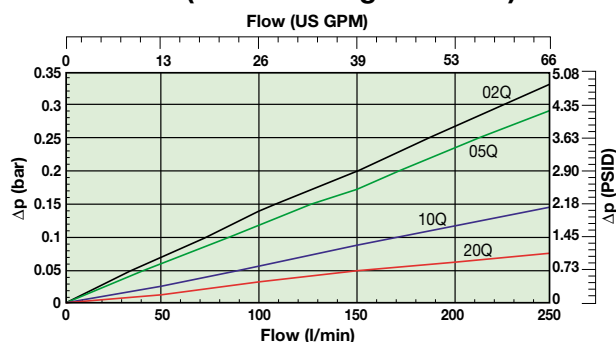
If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

$$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt.}$$

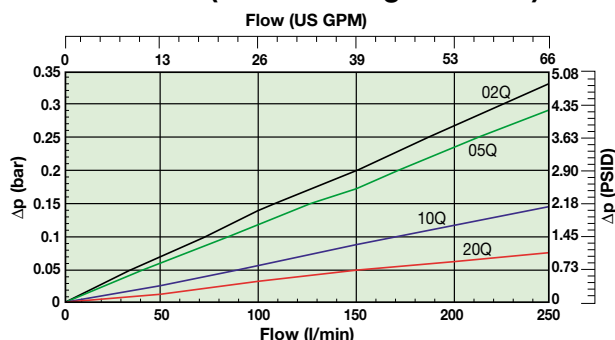
TSR120 (Element length code 1)



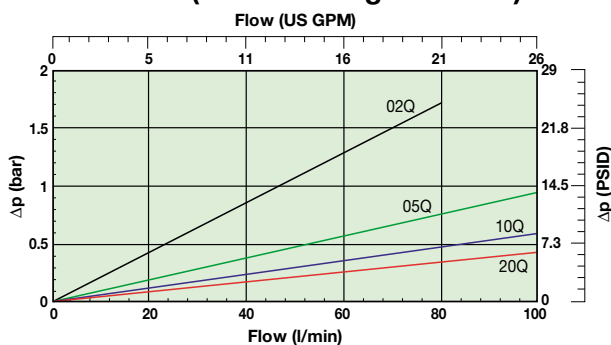
TSR (Element length code 2)



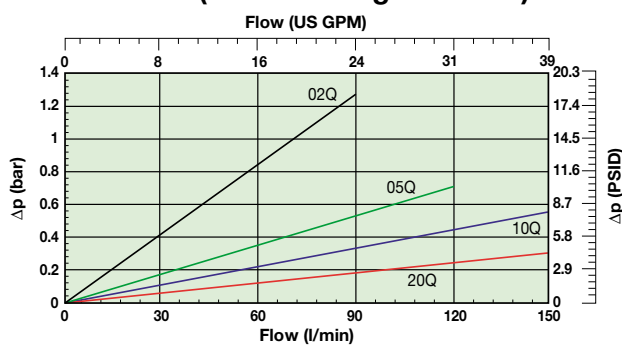
TSR250 (Element length code 3)



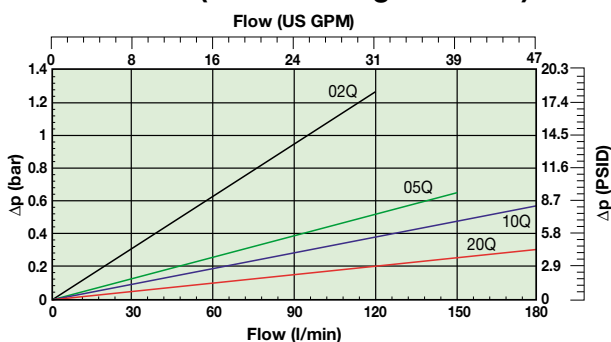
TTF60 (Element length code 2)



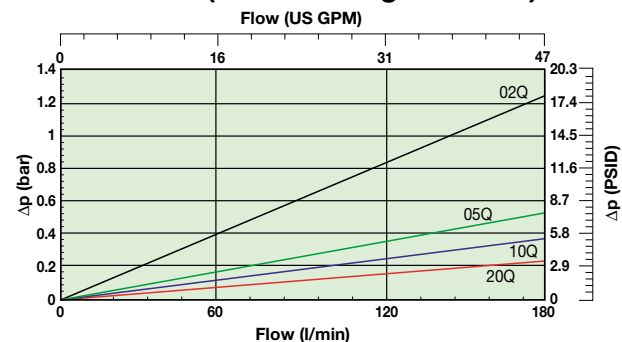
TTF90 (Element length code 3)



TTF120 (Element length code 4)



TTF125 (Element length code 5)



TTF Series

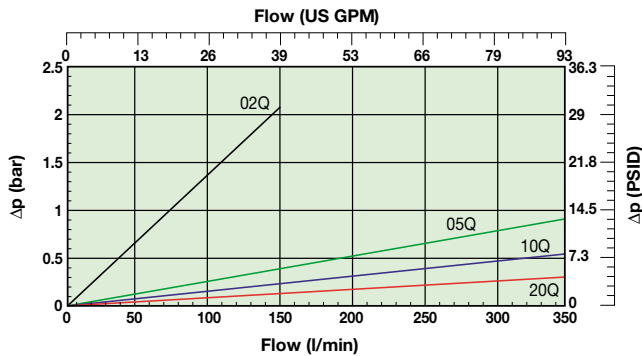
Pressure Drop Curves (cont.)

The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

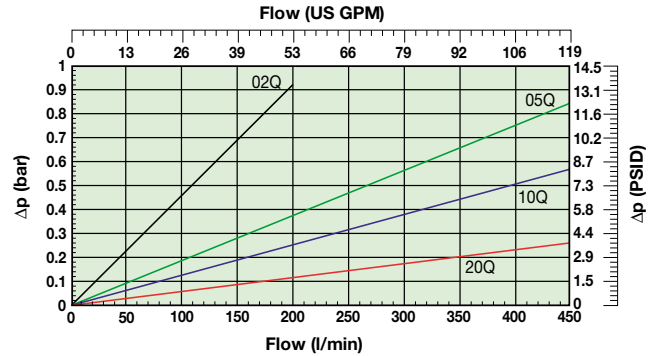
If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

$$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt.}$$

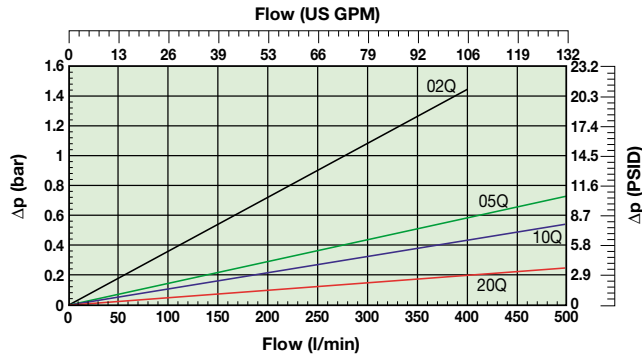
TTF170 (Element length code 6)



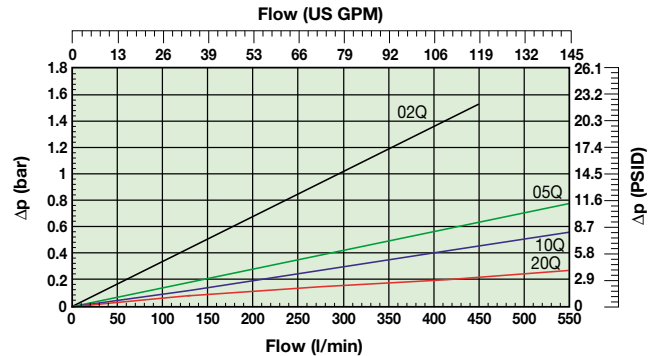
TTF230 (Element length code 7)



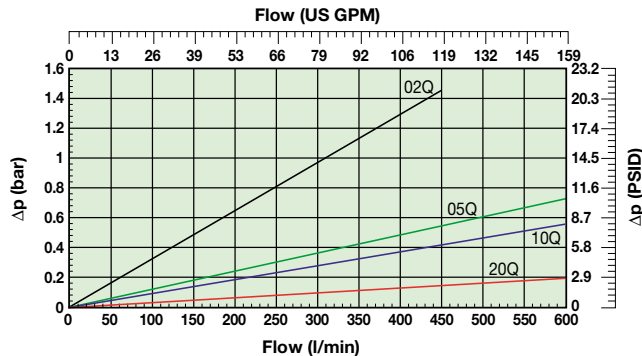
TTF300 (Element length code 8)



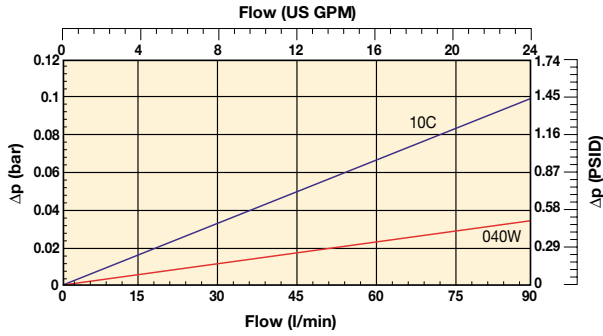
TTF400 (Element length code 9)



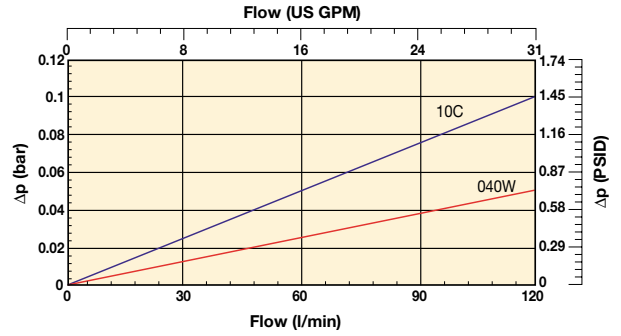
TTF500 (Element length code 10)



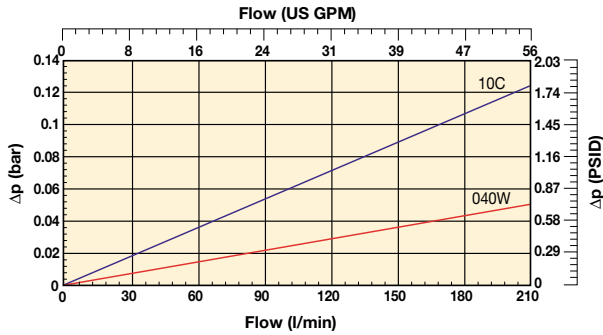
TTF60 (Element length code 2)
Cellulose & stainless steel media



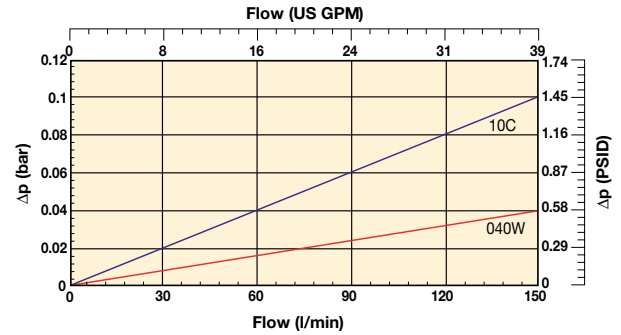
TTF90 (Element length code 3)
Cellulose & stainless steel media



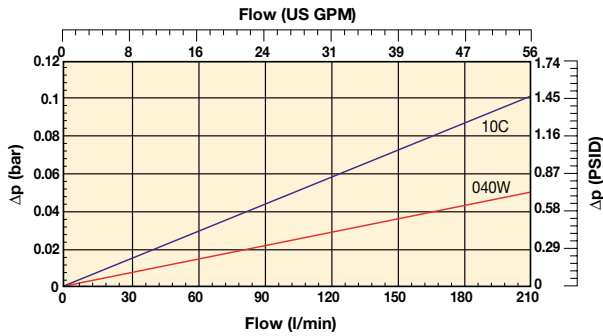
TTF120 (Element length code 4)
Cellulose & stainless steel media



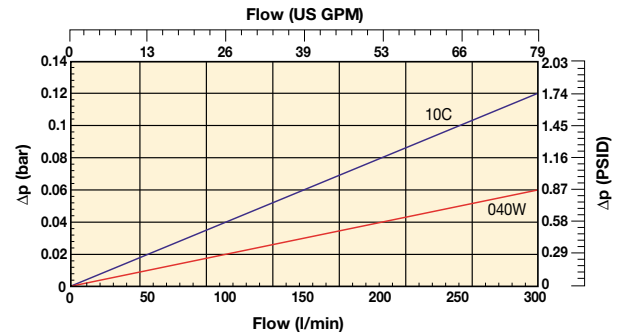
TTF125 (Element length code 5)
Cellulose & stainless steel media



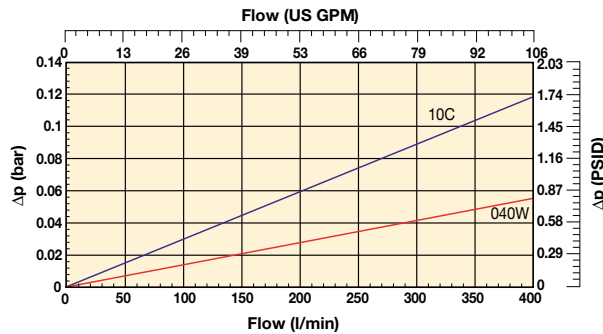
TTF170 (Element length code 6)
Cellulose & stainless steel media



TTF230 (Element length code 7)
Cellulose & stainless steel media



TTF300 (Element length code 8)
Cellulose & stainless steel media

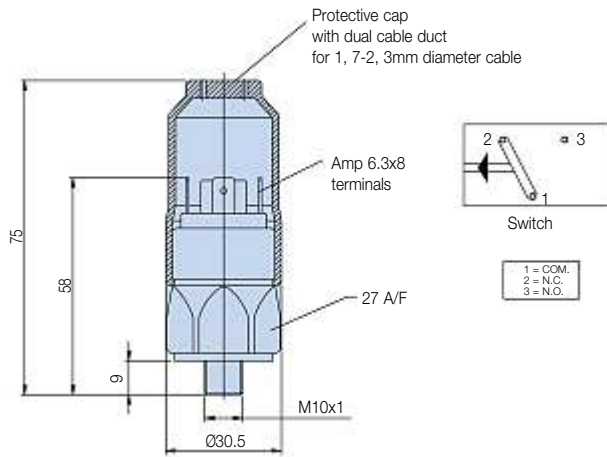


Tanktop Mounted Return Line Filters

TTF Series

Indicator Options

Indicator PS pressure switch

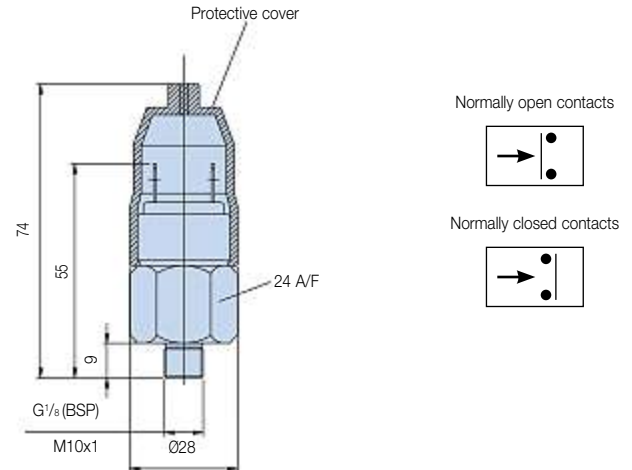


Specifications	
Elec.rating	42V / 4A
Thread connection	M10x1
Elec.connection	AMP 6.3x0.8 terminals + protective cap
Protection	IP65 (with cap) terminals IP00
Code	FMUS1EBMM10L (Switch)

Indicator Connection / Filter Head Matrix

	Port(s) Filter head	Indicator Thread
TTF	ISO 228-G ¹ / ₄ " (BSP) (TTF length 2,3,4 and 5)	M10
	ISO 228-G1" (BSP)	M10
	ISO 228-G1 ¹ / ₂ " (BSP) (TTF length 7 and larger)	M10
	2xISO 228-G1 ¹ / ₄ " (BSP) (TTF length 7 and larger)	G1/8"
	ISO 228-G1 ¹ / ₂ "(BSP) (TTF length 7 and larger)	M10
	2xISO 228-G1 ¹ / ₂ "(BSP) (TTF length 7 and larger)	G1/8"
	1 ¹ / ₂ " SAE-3000 PSI (TTF length 7 and larger)	G1/8"
	1 ¹ / ₂ " SAE-3000 PSI (2nd port) + G1 ¹ / ₂ " (TTF length 7 and larger)	G1/8"
	G2" (TTF length 7 and larger)	G1/8"
	G2" + G1 ¹ / ₂ " (TTF length 7 and larger)	G1/8"
TSR	ISO 228-G1 ¹ / ₄ " (BSP) + 2 Ports A ISO228-G1" (TSR only)	G1/8"
	2xISO 228-G1 ¹ / ₄ " (BSP) + 2 Ports A ISO228-G1" (TSR only)	G1/8"
	SAE20 + 2 Ports A SAE16 (TSR only)	G1/8"
	2xSAE20 + 2 Ports SAE16 (TSR only)	G1/8"

Indicator PS NO/NC pressure switch



Specifications	
Elec.rating	42V / 2A
Thread connection	G ¹ / ₈
Elec.connection	AMP terminal 6.3x0.8
Protection	IP65 (terminal IP00)
Switch type	NO or NC
Code	FMUS2EBMG02L (NO switch)
	FMUS3EBMG02L (NC switch)

Visual indicator	
M10: code	FMUG1EBPM10L
G ¹ / ₈ : code	FMUG2EBPG02L

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (µ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
TTF310QLBP2EG121	TTF90-G ¹ / ₄ TXWL3-10 B15 MM	90	TTF90	Length 3	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	None	937878Q	TXWL3-10
TTF320QLBP2EG121	TTF90-G ¹ / ₄ TXWL3-20 B15 MM	90	TTF90	Length 3	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	None	937877Q	TXWL3-20
TTF510QLBP2EG161	TTF125-G1 TXWL3E-10 B15 MM	125	TTF125	Length 5	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G1	None	937852Q	TXWL3E-10
TTF520QLBP2EG161	TTF125-G1 TXWL3E-20 B15 MM	125	TTF125	Length 5	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G1	None	937875Q	TXWL3E-20
TTF610QLBP2EG203	TTF170-G1 ¹ / ₄ TXWL4-10 T B15 MM	170	TTF170	Length 6	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G1 ¹ / ₄	Diffuser type T	937853Q	TXWL4-10
TTF620QLBP2EG203	TTF170-G1 ¹ / ₄ TXWL4-20 T B15 MM	170	TTF170	Length 6	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G1 ¹ / ₄	Diffuser type T	937874Q	TXWL4-20
TTF810QLBP2EG243	TTF300-G1 ¹ / ₂ TXWL5A-10 T B15 MM	300	TTF300	Length 8	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G1 ¹ / ₂	Diffuser type T	937855Q	TXWL5A-10
TTF820QLBP2EG243	TTF300-G1 ¹ / ₂ TXWL5A-20 T B15 MM	300	TTF300	Length 8	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G1 ¹ / ₂	Diffuser type T	937872Q	TXWL5A-20
TTF1010QLBP2HG24A	TTF500-G1 ¹ / ₂ TXWL5C-10 T B20 MM NMG	500	TTF500	Length 10	10	Nitrile	Plugged	2.0 Bar (29 Psi)	G1 ¹ / ₂	Diffuser type T	937857Q	TXWL5C-10
TTF1010QLBP2HG24A	TTF500-G1 ¹ / ₂ TXWL5C-20 T B20 MM NMG	500	TTF500	Length 10	20	Nitrile	Plugged	2.0 Bar (29 Psi)	G1 ¹ / ₂	Diffuser type T	937870Q	TXWL5C-20

Note: Filter assemblies ordered from the product configurator on the next page are on extended lead times. Where possible, please make your selection from the table above.

Ordering Information (cont.)

Product configurator

Configurator example of a TTF Series filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
TTF	9	05QL	V	S3	H	L24	1

Configurator example of a TSR Series filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
TSR	3	20QL	B	G2	E	2G20	3

Box 1	Box 2	Box 3
Code	Filter type	Degree of filtration
TTF	Housing	Element media
TSR	Code	Glass fibre
	TTF 1-60	Microglass III (for disposable elements)
	TTF 1-90	Ecoglass III (for Leif® elements)
	TTF 1-120	Cellulose
	TTF 1-125	Nom. rating
	TTF 2-170	Disposible element
	TTF 2-230	LEIF® element
	TTF 2-300	
	TTF 2-400	
	TTF 2-500	
	TSR2-120	
	TSR2-200	
	TSR2-250	

Box 4	Box 5	Box 6
Seal type	Indicator	Bypass valve
Seal material	Code	Bypass valve
Nitrile	Pressure gauge, setting 1.2 bar, M10x1	Code
Fluorelastomer	Pressure gauge, setting 1.2 bar, G $\frac{1}{8}$ for dual head ports and TSR series	0.8 bar
Neoprene	Pressure switch 42V, 1.2 bar setting, NO/NC, M10x1	1.5 bar
	Pressure switch 42V, 1.2 bar setting, NO with G $\frac{1}{8}$ BSP	2.0 bar for TTF series
	Pressure switch 42V, 1.2 bar setting, NC with G $\frac{1}{8}$ BSP	Blocked bypass
	Pressure switch 250V, NO/NC with G $\frac{1}{8}$	Other bypass settings
	Pressure switch 220V, NO/NC with M10	
	No indicator, indicator ports not machined	
	No indicator, indicator port R plugged	
	No indicator, indicator ports L + R plugged	
	Other settings for indicators / gauges on request	

Box 7	Box 8
Filter connection	Options
Ports	Options
ISO 228-G $\frac{1}{4}$ " (BSP) (TTF length 2,3,4 and 5)	No diffuser required
ISO 228-G1" (BSP)	Diffuser type T with perforated plate area
ISO 228-G1 $\frac{1}{2}$ " (BSP) (TTF length 7 and larger)	Diffuser type P without perforated plate area
2xISO 228-G1 $\frac{1}{2}$ " (BSP) (TTF length 7 and larger)	Diffuser with integrated hose connection for TTF lengths 2, 3 and 4
ISO 228-G1 $\frac{1}{2}$ " (BSP) (TTF length 7 and larger)	No magnets
2xISO 228-G1 $\frac{1}{2}$ " (BSP) (TTF length 7 and larger)	Dipstick
1 $\frac{1}{2}$ " SAE-3000 PSI (TTF length 7 and larger)	Plugged filling port
1 $\frac{1}{2}$ " SAE-3000 PSI (2nd port) + G1 $\frac{1}{2}$ " (TTF length 7 and larger)	Diffuser type T and no magnets
G2" (TTF length 7 and larger)	Diffuser type P and no magnets
G2" + G1 $\frac{1}{2}$ " (TTF length 7 and larger)	Diffuser type T, no magnets, plugged filling port
ISO 228-G1 $\frac{1}{2}$ " (BSP) + 2 Ports A ISO228-G1" (TSR only)	Diffuser type P, no magnets, plugged filling port
2xISO 228-G1 $\frac{1}{2}$ " (BSP) + 2 Ports A ISO228-G1" (TSR only)	Other combinations
SAE20 + 2 Ports A SAE16 (TSR only)	
2xSAE20 + 2 Ports SAE16 (TSR only)	

Note: TTF size 2-400 and 2-500 are standard supplied without magnets

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
$\beta(x)=2$	$\beta(x)=10$	$\beta(x)=75$	$\beta(x)=100$	$\beta(x)=200$	$\beta(x)=1000$	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Tanktop Mounted Return Line Filters

TTF Series

Ordering Information (cont.)

Supersedes Spare Element table (TXWL & PXWL replaced by 900000 number)

TTF60	TXWL2-2	TXWL2-5	TXWL2-10	TXWL2-20
Part number spare element	937823Q	937880Q	937881Q	937882Q
TTF90	TXWL3-2	TXWL3-5	TXWL3-10	TXWL3-20
Part number spare element	937824Q	937879Q	937878Q	937877Q
TTF120	TXWL3D-2	TXWL3D-5	TXWL3D-10	TXWL3D-20
Part number spare element	937825Q	937825Q	937851Q	937876Q
TTF125	TXWL3E-2	TXWL3E-5	TXWL3D-10	TXWL3E-20
Part number spare element	937826Q	937849Q	937852Q	937875Q
TTF170	TXWL4-2	TXWL4-5	TXWL4-10	TXWL4-20
Part number spare element	937827Q	937848Q	937853Q	937874Q
TTF230	TXWL5-2	TXWL5-5	TXWL5-10	TXWL5-20
Part number spare element	937828Q	937847Q	937854Q	937873Q
TTF300	TXWL5A-2	TXWL5A-5	TXWL5A-10	TXWL5A-20
Part number spare element	937829Q	937846Q	937855Q	937872Q
TTF400	TXWL5B-2	TXWL5B-5	TXWL5B-10	TXWL5B-20
Part number spare element	937830Q	937845Q	937856Q	937871Q
TTF500	TXWL5C-2	TXWL5C-5	TXWL5C-10	TXWL5C-20
Part number spare element	937831Q	937844Q	937857Q	937870Q
TSR120	PXWL3-2	PXWL3-5	PXWL3-10	PXWL3-20
Part number spare element	937886Q	937889Q	937892Q	937895Q
TSR200	PXWL4-2	PXWL4-5	PXWL4-10	PXWL4-20
Part number spare element	937887Q	937890Q	937893Q	937896Q
TSR250	PXWL4A-2	PXWL4A-5	PXWL4A-10	PXWL4A-20
Part number spare element	937888Q	937891Q	937894Q	937897Q

Supersedes Spare Element table (TXW & TXX replaced by 900000 number)

TTF60	TXW2-10-B	TXW2-2-B	TXW2-5-B	TXW2-10-B	TXW2-20-B	ST2-40-B
Part number spare element	937721	937751Q	937754Q	937787Q	937790Q	937820
TTF90	TXW3-10-B	TXW3-2-B	TXW3-5-B	TXW3-10-B	TXW3-20-B	ST3-40-B
Part number spare element	937722	937750Q	937755Q	937786Q	937791Q	937819
TTF120	TXW3D-10-B	TXW3D-2-B	TXW3D-5-B	TXW3D-10-B	TXW3D-20-B	ST3D-40-B
Part number spare element	937723	937749Q	937756Q	937785Q	937792Q	937818
TTF125	TXW3E-10-B	TXW3E-2-B	TXW3E-5-B	TXW3E-10-B	TXW3E-20-B	ST3E-40-B
Part number spare element	937724	937748Q	937757Q	937748Q	937793Q	937817
TTF170	TXW4-10-B	TXW4-2-B	TXW4-5-B	TXW4-10-B	TXW4-20-B	ST4-40-B
Part number spare element	937725	937747Q	937758Q	937783Q	937794Q	937816
TTF230	TXW5-10-B	TXW5-2-B	TXW5-5-B	TXW5-10-B	TXW5-20-B	ST5-40-B
Part number spare element	937726	937746Q	937759Q	937782Q	937795Q	937815
TTF300	TXW5A-10-B	TXW5A-2-B	TXW5A-5-B	TXW5A-10-B	TXW5A-20-B	ST5A-40-B
Part number spare element	937727	937745Q	937760Q	937781Q	937796Q	937814



Tanktop Mounted Return Line Filters

BGT Series

MAX 2400 l/min - 10 bar

AN INNOVATIVE GREEN
FILTER FEATURING
LEIF®



BGT Series

Features & Benefits

Features	Advantages	Benefits
10 bar rated filter	Can be utilised for severe return line applications	Reduced downtime due to premature filter failures
Cast aluminium head	Compact profile, lightweight and durable	Less weight, smaller envelop and cleaner appearance
LEIF® elements	Patented element safeguards the use of genuine parts	Guaranteed quality of filtration Contributes to ISO 14001 certification
Magnetic pre-filtration	Removes ferrous particles, even during bypass conditions	Improved fluid cleanliness levels Extended element life time
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
High level of customisation	Dedicated system-matched solutions can be easily made available	Improved integration of filter in system combined with lower initial system costs
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis	Improved protection of system
	Only a small part of the total flow is bypassing the element	
Standard or customised funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming

Typical Applications

- Mobile cranes
- Excavators
- Deck cranes
- Fire fighting equipment
- Hydraulic presses
- Waste balers
- Industrial power units
- Fork lift trucks

The Parker Filtration BGT Series Tank Mounted Return Line Filters.

BGT tanktop mounted return line filters feature pre-filtration by means of a magnet column and a full flow bypass with low hysteresis. Thanks to the 'In-to-Out' filter principle, contaminated oil cannot leak back into the system. BGT Filters are available in versions capable of handling flow rates up to 2400 l/min. They can operate with a maximum working pressure of 10 bar. LEIF® elements are available for environment-friendly filtration for versions up to 1500 l/min.



Specification

Operating pressure:

Max. 10 bar.

Assembly:

Tank top mounted.

Connections:

Flanges SAE2", 3".

Threaded ports and multiple ports available.

Filter housing:

Aluminium head and cover.

Seal material:

Nitrile, fluoroelastomer, neoprene.

Operating temperature range:

-40° to +120°C.

Bypass setting

Opening pressure 0.8 / 1.5 or 2 bar.

Other settings on request.

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimum fatigue life is achieved.

Filtration media:

Microglass III and Ecoglass III for *LEIF*® elements.

Also available 10µm Cellulose and 40µm stainless steel mesh.

Element collapse rating:

10 bar (ISO 2941).

Pressure indicator options:

Setting 0.7 or 1.2 bar.

Other settings on request.

Visual pressure gauge.

Electrical pressure switch.

Options:

Diffuser type P (straight pipe, no perforated plate area)

Diffuser type T (with closed diffuser end cap and with perforated plate area, recommended when oil entry in reservoir is close to the reservoir bottom or to ensure oil entry under the reservoir oil level)

Magnetic pack:

Standard.

Filling port in cover (optional):

Plugged G1½.

Filter element:

LEIF® element with reusable metal element sleeve.

Conventional style element with steel end caps.

The *LEIF*® element is patented and safeguards the use of genuine parts.

Note:

LEIF® element can be used with mineral and HEES type oils.

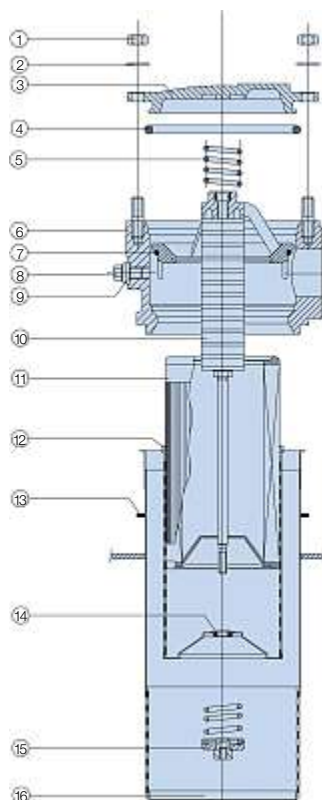
For other fluids consult Parker Filtration.

LEIF® contributes to ISO 14001 quality standards.

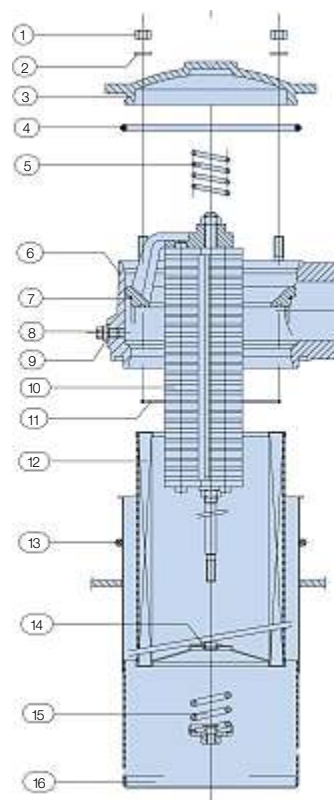
BGT-3 Length 11 and 12 (<i>LEIF</i> ® version)		
Ref.	No.	Description
1	1	Nut
2	1	Washer
3	1	Cover
4	1	Cover-seal
5	1	Top-spring
6	1	Housing
7	1	Insert-seal
8	1	Plug M10x1
9	1	Bonded seal
10	1	Insert
11	1	<i>LEIF</i> ® element
12	1	Element sleeve
13	1	Gasket
14	1	O-ring
15	1	Bypass set
16	1	Diffuser

BGT-4 Length 13 and larger (conventional element)		
Ref.	No.	Description
1	1	Nut
2	1	Washer
3	1	Cover
4	1	Cover-seal
5	1	Top-spring
6	1	Housing
7	1	Insert-seal
8	1	Plug M10x1
9	1	Bonded seal
10	1	Insert
11	1	Element seal
12	1	Element
13	1	O-ring
14	1	O-ring
15	1	Bypass set
16	1	Diffuser

BGT-3 (*LEIF*® version)



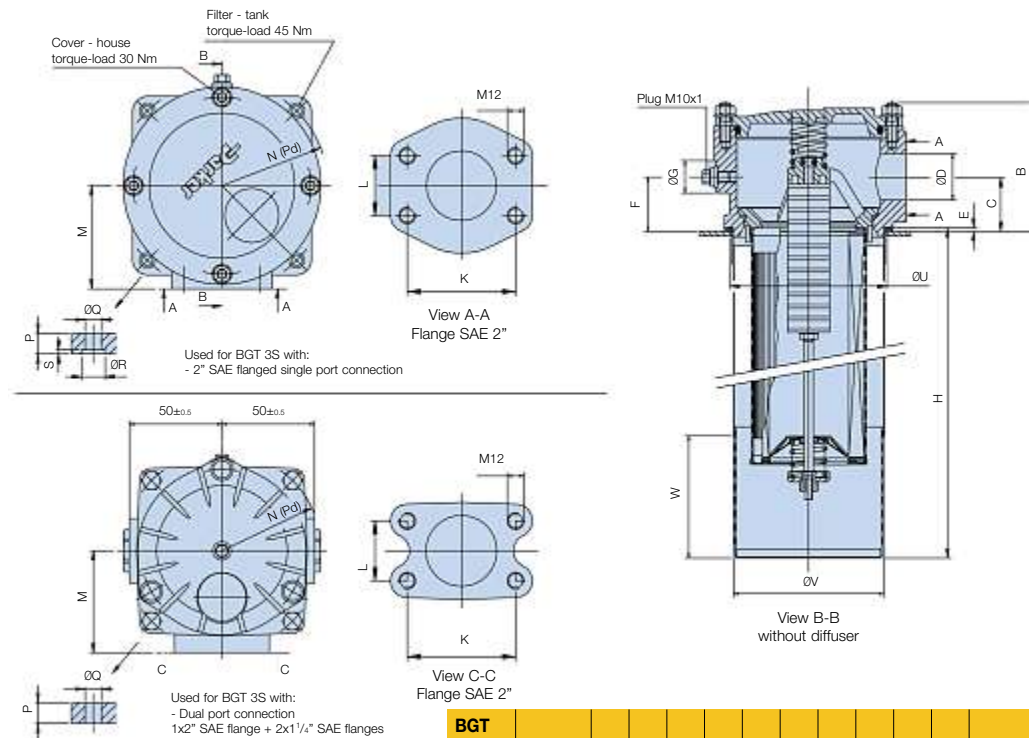
BGT-4 (conventional element)



BGT Series

Specification (cont.)

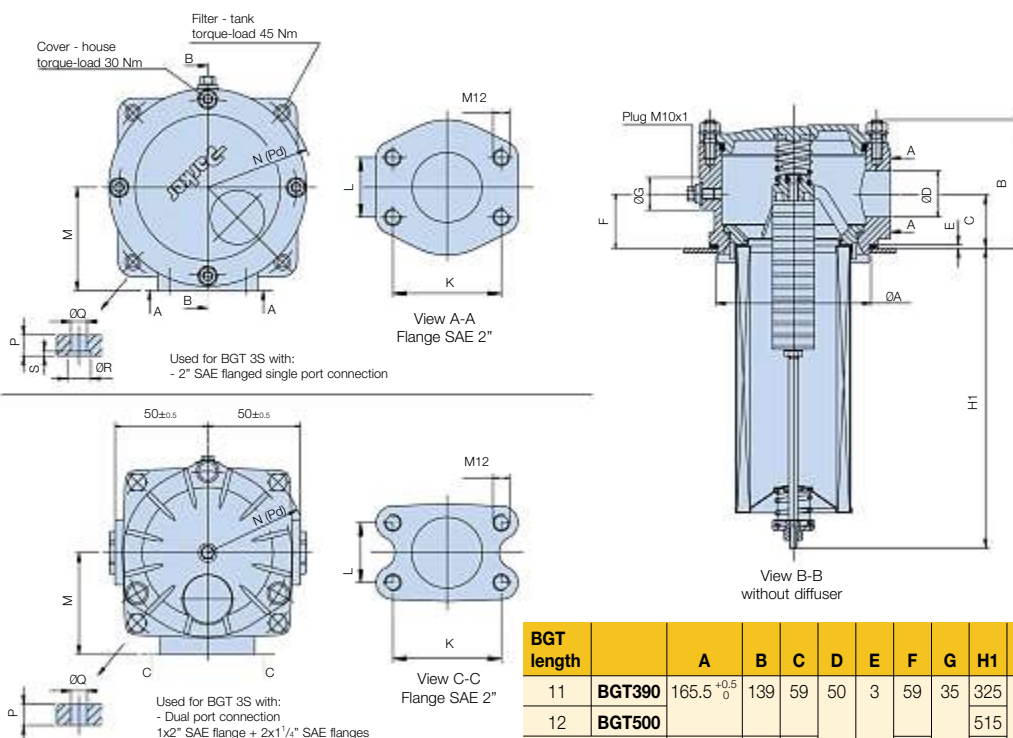
BGT-3 with diffuser



Dimensions in mm

BGT length		B	C	D	E	F	G	H1	L	K	M	N(Pd)	P	Q	R	S	U	V	W	Kg.
11	BGT390	139	59	50	3	59	35	325	43	78	105	R107.5	14	13	16	3	165.5 ^{+0.5} ₀	165	120	7.2
12	BGT500							515												8.6
Dual port connection		(131)	(55)			(55)					(110)		(15)				(166 ^{+0.5} ₀)			

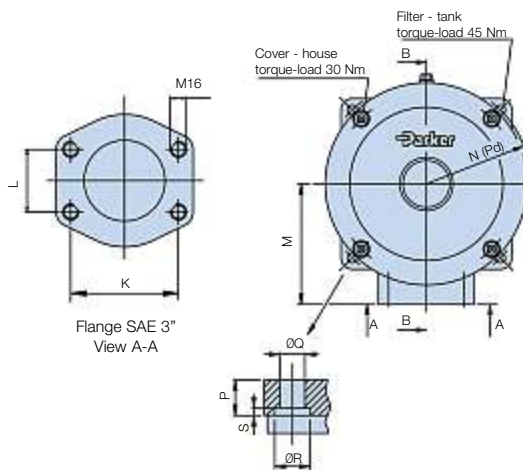
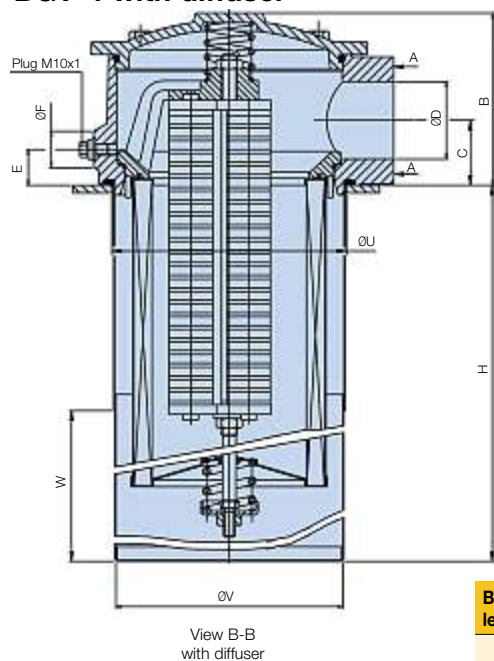
BGT-3 without diffuser



Dimensions in mm

BGT length		A	B	C	D	E	F	G	H1	L	K	M	N(Pd)	P	Q	R	S	Kg.
11	BGT390	165.5 ^{+0.5} ₀	139	59	50	3	59	35	325	43	78	105	R107.5	14	13	16	3	7.2
12	BGT500								515									8.6
Dual port connection		(166.5 ^{+0.5} ₀)	(131)	(55)			(55)					(110)		(15)				

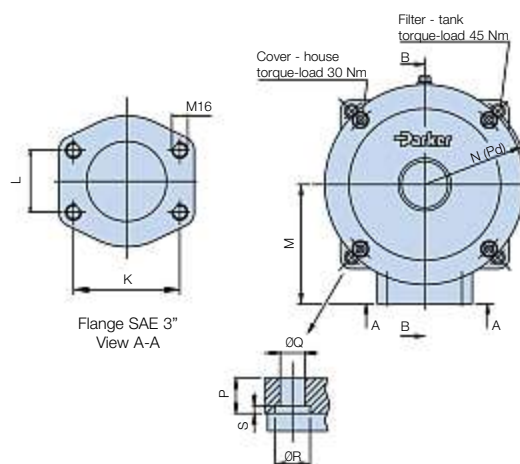
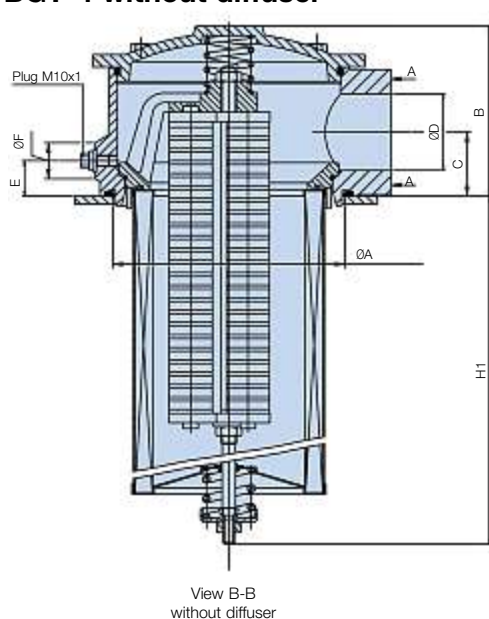
BGT-4 with diffuser



BGT length		B	C	ØD	E	ØF	H	K	L	M	N(Pd)	P	ØQ	ØR	S	ØU	ØV	W	Kg.
13	BGT600						425												20.5
14	BGT800						535												23.0
15	BGT1000	178	67	80	37	40	640	106.4	62	170	R147.5	20	14	20	4	240.5 ^{+0.5} ₀	240	170	25.5
16	BGT1500						920												30.0
17	BGT2000						1200												37.0
18	BGT2400						1200												37.0

Note: dimensions of BGT-2400 identical to BGT-2000. Dimensions in mm

BGT-4 without diffuser



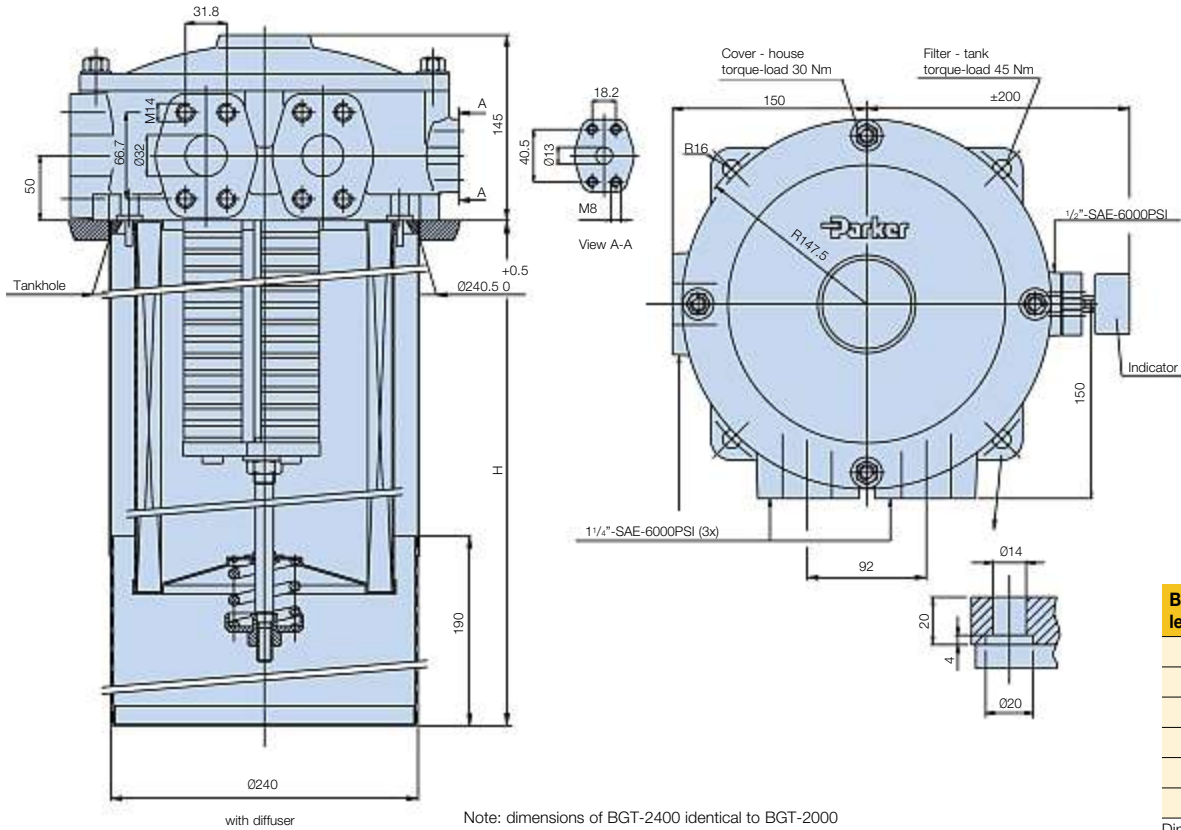
BGT length		ØA	B	C	ØD	E	ØF	H1	K	L	M	N(Pd)	P	ØQ	ØR	S	Kg.
13	BGT600							385									20.5
14	BGT800							495									23.0
15	BGT1000	239.5 ^{+0.5} ₀	178	67	80	37	40	598	106.4	62	170	R147.5	20	14	20	4	25.5
16	BGT1500							878									30.0
17	BGT2000							1143									37.0
18	BGT2400							1143									37.0

Note: dimensions of BGT-2400 identical to BGT-2000. Dimensions in mm

BGT Series

Specification (cont.)

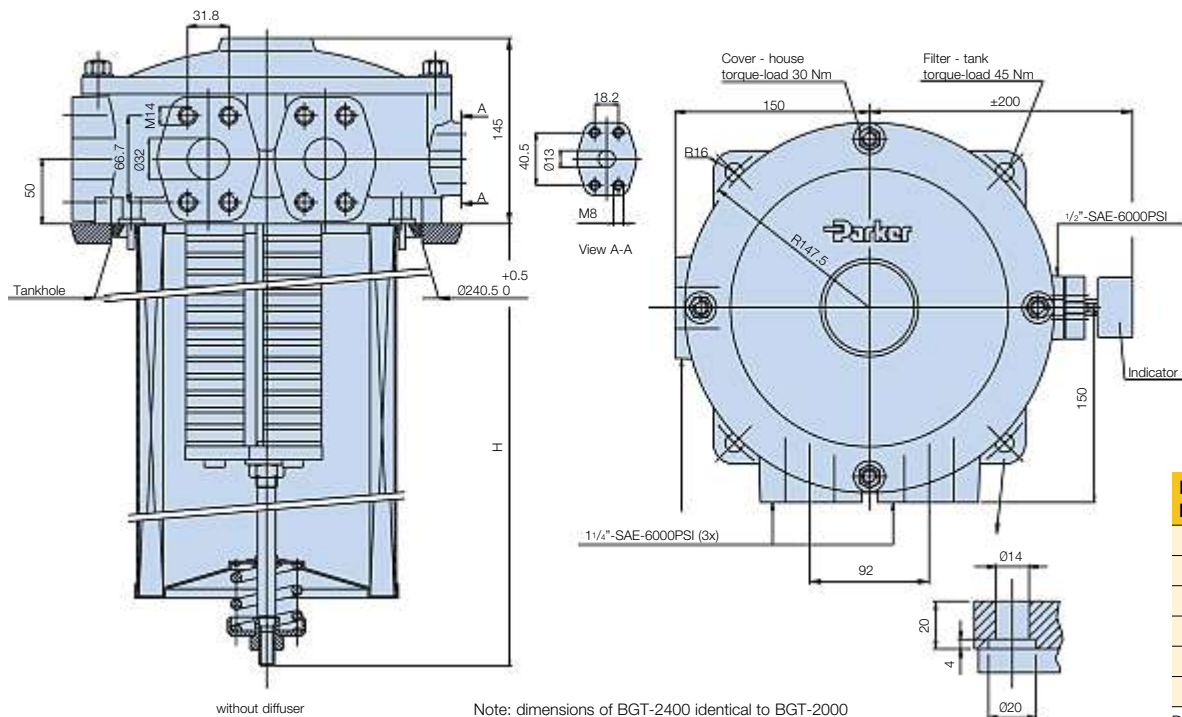
BGT F1¹/₄ manifold type - with diffuser



BGT length		H
13	BGT600L	420
14	BGT800L	530
15	BGT1000L	636
16	BGT1500L	915
17	BGT2000L	1180
18	BGT2400L	1180

Dimensions in mm

BGT F1¹/₄ manifold type - without diffuser

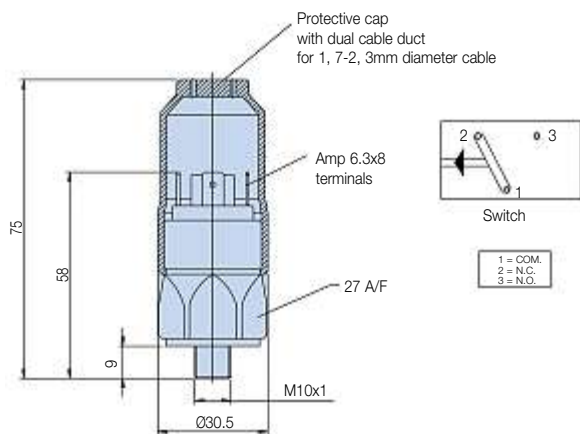


BGT length		H
13	BGT600L	385
14	BGT800L	495
15	BGT1000L	598
16	BGT1500L	878
17	BGT2000L	1143
18	BGT2400L	1143

Dimensions in mm

Indicator Options

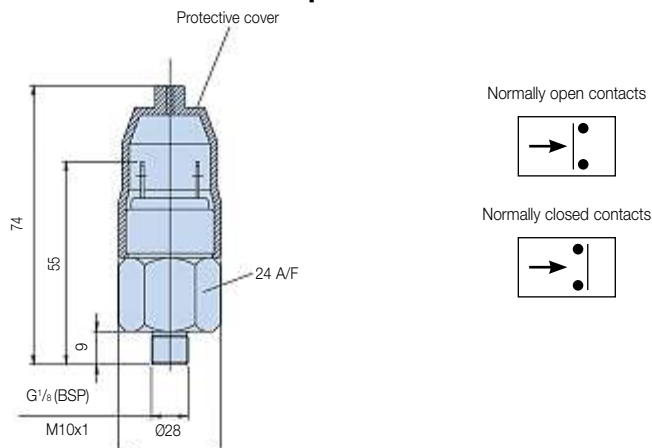
Indicator PS pressure switch



Specifications	
Elec.rating	42V / 4A
Thread connection	M10x1
Elec.connection	AMP 6.3x0.8 terminals + protective cap
Protection	IP65 (with cap) terminals IP00
Code	FMUS1EBMM10L (Switch)

Indicator Connection / Filter Head Matrix	
Port(s) Filter head	Indicator Thread
2" SAE BGT length 11 and 12	M10
3" SAE BGT Length 13 and larger	M10
1x2"SAE Flanged + 2 x 1 1/4" SAE Flanged for BGT Length 11 and 12	G 1/8"
3x1 1/4" SAE Flanges + 1x 1/2" SAE for BGT Length 13 and larger	M10

Indicator PS NO/NC pressure switch



Specifications	
Elec.rating	42V / 2A
Thread connection	G 1/8
Elec.connection	AMP terminal 6.3x0.8
Protection	IP65 (terminal IP00)
Switch type	NO or NC
Code	FMUS2EBMG02L (NO switch) FMUS3EBMG02L (NC switch)

Visual indicator	
M10 code	FMUG1EBPM10L
G 1/8 code	FMUG2EBPG02L

Pressure Drop Curves

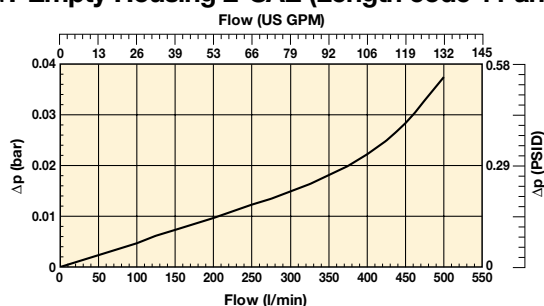
The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

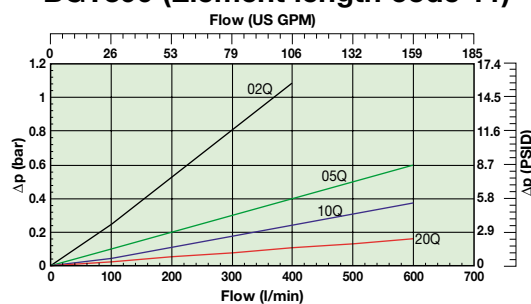
$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt}$

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

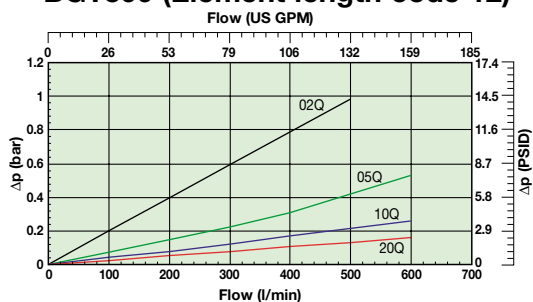
BGT Empty Housing 2"SAE (Length code 11 and 12)



BGT390 (Element length code 11)



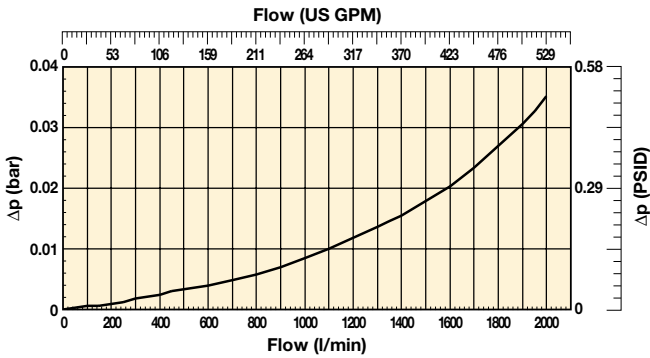
BGT500 (Element length code 12)



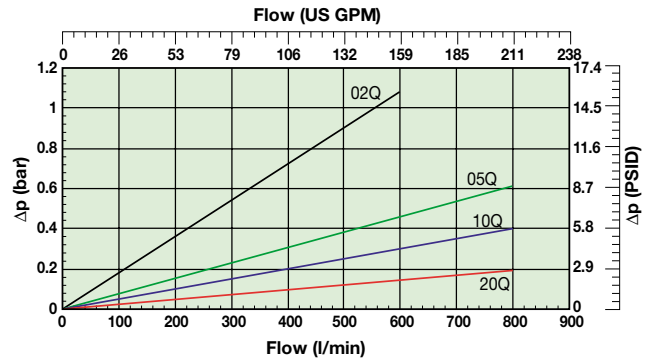
BGT Series

Pressure Drop Curves (cont.)

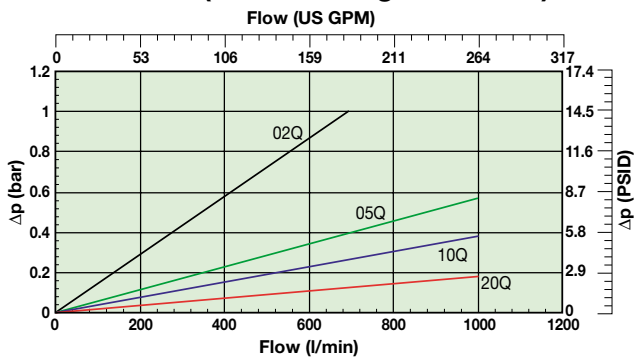
BGT Empty Housing 3"SAE (Length 13 and larger)



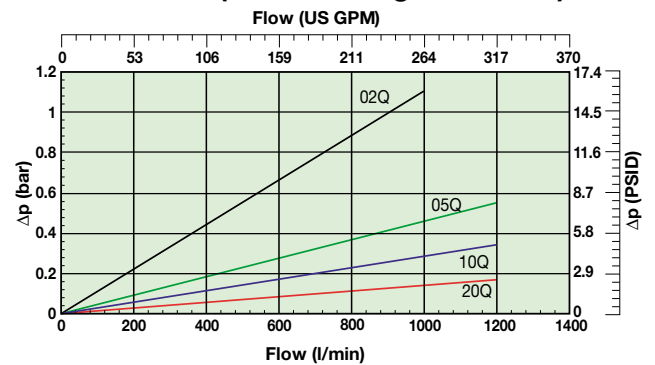
BGT600 (Element length code 13)



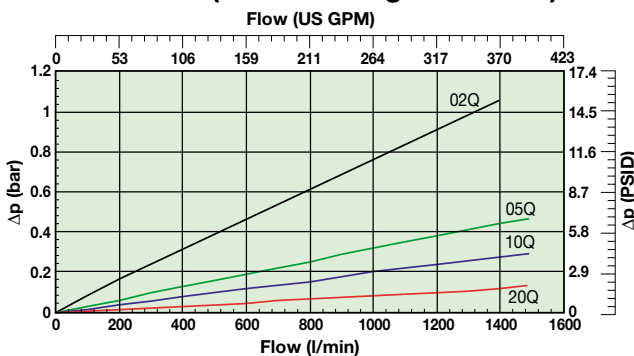
BGT800 (Element length code 14)



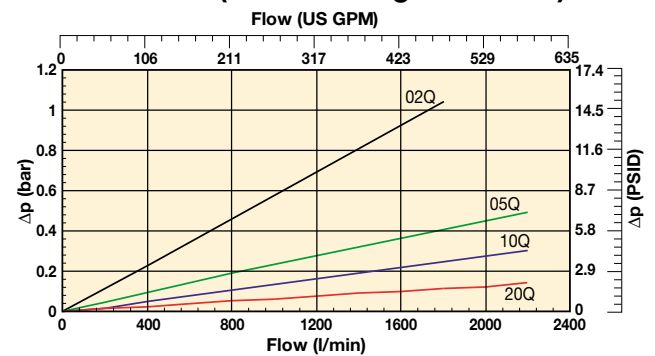
BGT1000 (Element length code 15)



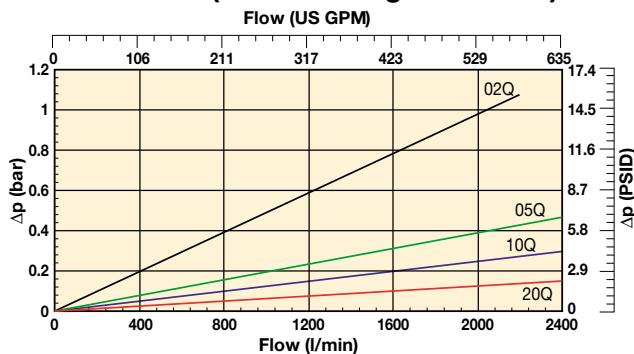
BGT1500 (Element length code 16)



BGT2000 (Element length code 17)

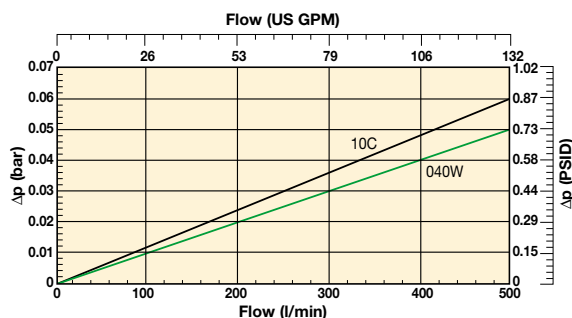


BGT2400 (Element length code 18)

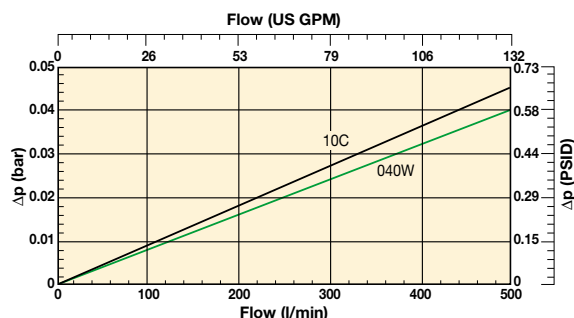


Pressure Drop Curves (cellulose and stainless steel media)

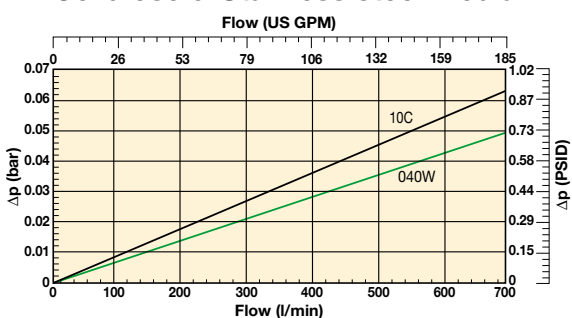
**BGT390 (Element length code 11)
Cellulose & Stainless steel media**



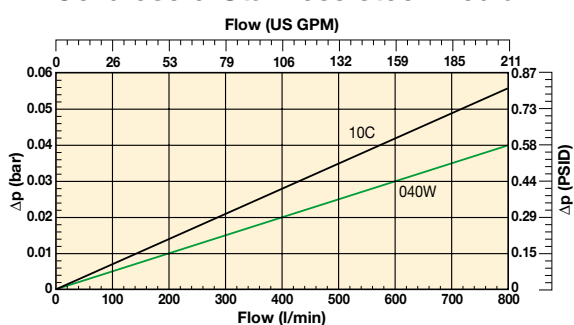
**BGT390 (Element length code 11)
Cellulose & Stainless steel media**



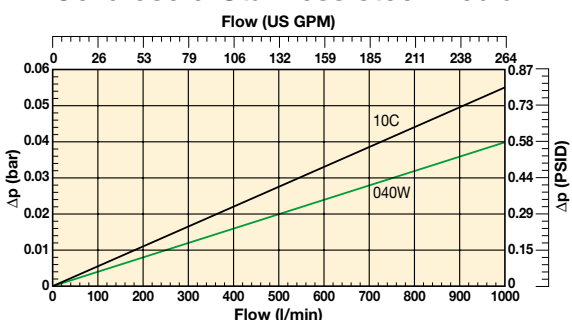
**BGT600 (Element length code 13)
Cellulose & Stainless steel media**



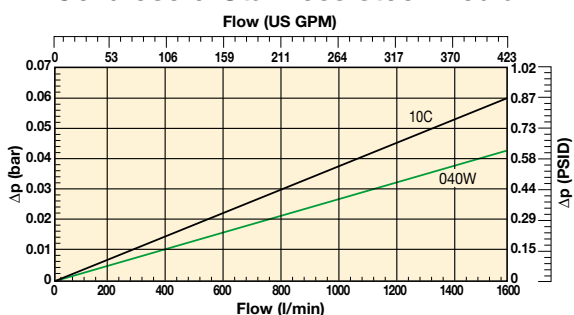
**BGT800 (Element length code 14)
Cellulose & Stainless steel media**



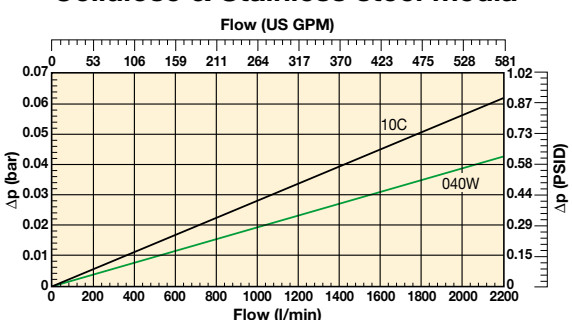
**BGT1000 (Element length code 15)
Cellulose & Stainless steel media**



**BGT1500 (Element length code 16)
Cellulose & Stainless steel media**



**BGT2000 (Element length code 17)
Cellulose & Stainless steel media**



Cellulose and stainless steel media
Example: BGT2000 Filter Element Length 17 - cellulose and stainless steel media

Tanktop Mounted Return Line Filters

BGT Series

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
BGT1210QLBPER323	BGTS500-S2 TXWL8C-10 T B15 M	500	BGT500	Length 12	10	Nitrile	Plugged	1.5 Bar (22 Psi)	2"SAE-3000 PSI	Diffuser type T	937859Q	TXWL8L-10
BGT1220QLBPER323	BGTS500-S2 TXWL8C-20 T B15 M	500	BGT500	Length 12	20	Nitrile	Plugged	1.5 Bar (22 Psi)	2"SAE-3000 PSI	Diffuser type T	937868Q	TXWL8L-20
BGT1510QLBPER483	BGTS1000-S3 TXWL12-10 T B15 M	1000	BGT1000	Length 15	10	Nitrile	Plugged	1.5 Bar (22 Psi)	3"SAE-3000 PSI	Diffuser type T	937862Q	TXWL12-10
BGT1520QLBPER483	BGTS1000-S3 TXWL12-20 T B15 M	1000	BGT1000	Length 15	20	Nitrile	Plugged	1.5 Bar (22 Psi)	3"SAE-3000 PSI	Diffuser type T	937865Q	TXWL12-20
BGT1710QBPER483	BGTS2000-S3 TXW14-10 T B15 M	2000	BGT2000	Length 17	10	Nitrile	Plugged	1.5 Bar (22 Psi)	3"SAE-3000 PSI	Diffuser type T	937772Q	TXW14-10B
BGT1720QBPER483	BGTS2000-S3 TXW14-20 T B15 M	2000	BGT2000	Length 17	20	Nitrile	Plugged	1.5 Bar (22 Psi)	3"SAE-3000 PSI	Diffuser type T	937805Q	TXW14-20B

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Configurator examples filter including *LEIF*[®] element

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
BGT	15	05QL	B	S1	E	R48	C

Configurator examples filter including conventional element

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
BGT	18	02Q	B	S4	E	3R20	4

Box 1	Box 2	Box 3																																																																			
<table><tr><th>Code</th></tr><tr><td>BGT</td></tr></table>	Code	BGT	<table><tr><th colspan="2">Filter type</th></tr><tr><th>Housing</th><th>Code</th></tr><tr><td>BGT390</td><td>11</td></tr><tr><td>BGT500</td><td>12</td></tr><tr><td>BGT600</td><td>13</td></tr><tr><td>BGT800</td><td>14</td></tr><tr><td>BGT1000</td><td>15</td></tr><tr><td>BGT1500</td><td>16</td></tr><tr><td>BGT2000</td><td>17</td></tr><tr><td>BGT2400</td><td>18</td></tr></table>	Filter type		Housing	Code	BGT390	11	BGT500	12	BGT600	13	BGT800	14	BGT1000	15	BGT1500	16	BGT2000	17	BGT2400	18	<table><tr><th colspan="7">Degree of filtration</th></tr><tr><td rowspan="3">Element media</td><td colspan="5">Glass fibre</td><td rowspan="3">Wire mesh</td></tr><tr><td colspan="5">Microglass III (for disposable elements)</td></tr><tr><td>Cellulose</td><td colspan="4">Ecoglass III (for Leif® elements)</td></tr><tr><td></td><td>Nom. rating</td><td></td><td></td><td></td><td></td><td>Abs. rating</td></tr><tr><td>Disposable element</td><td>10C</td><td>02Q</td><td>05Q</td><td>10Q</td><td>20Q</td><td>040W</td></tr><tr><td>LEIF® element</td><td></td><td>02QL</td><td>05QL</td><td>10QL</td><td>20QL</td><td></td></tr></table>	Degree of filtration							Element media	Glass fibre					Wire mesh	Microglass III (for disposable elements)					Cellulose	Ecoglass III (for Leif® elements)					Nom. rating					Abs. rating	Disposable element	10C	02Q	05Q	10Q	20Q	040W	LEIF® element		02QL	05QL	10QL	20QL	
Code																																																																					
BGT																																																																					
Filter type																																																																					
Housing	Code																																																																				
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	Nom. rating					Abs. rating																																																															
Disposable element	10C	02Q	05Q	10Q	20Q	040W																																																															
LEIF® element		02QL	05QL	10QL	20QL																																																																

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluorelastomer	V
Neoprene	N

Box 5

Indicator	
	Code
Pressure gauge, setting 1.2 bar, M10x1	G1
Pressure gauge, setting 1.2 bar, G $\frac{1}{8}$ for dual port head and TSR series	G2
Pressure switch 24V, 1.2 bar setting, NO/NC, M10x1	S1
Pressure switch 24V, 1.2 bar setting, NO with G $\frac{1}{8}$ BSP	S2
Pressure switch 24V, 1.2 bar setting, NC with G $\frac{1}{8}$ BSP	S3
Pressure switch 250V, NO/NC with G $\frac{1}{8}$	S4
Pressure switch 220V, NO/NC with M10	S5
No indicator, indicator ports not machined	N
No indicator, indicator port R plugged	P
No indicator, indicator ports L + R plugged	P2
Other settings for indicators / gauges on request	on request

Box 6

Bypass valve	
Bypass valve	Code
0.8 bar	B
1.5 bar	E
2.0 bar for BGT-3 series (length 11 and 12)	H
Blocked bypass	X
Other bypass settings	on request

Note: For all dual head ports for BGTS apply G $\frac{1}{8}$ connection for indicators

Note: For all dual head ports for BGTS apply G $\frac{1}{8}$ connection for indicators

Box 7	Box 8																																				
Filter connection	Options																																				
<table> <tr> <th>Ports</th><th>Code</th></tr> <tr> <td>2" SAE BGT length 11 and 12</td><td>R32</td></tr> <tr> <td>3" SAE BGT Length 13 and larger</td><td>R48</td></tr> <tr> <td>1x2" SAE Flanged + 2 x 1$\frac{1}{4}$" SAE Flanged for BGT Length 11 and 12</td><td>R32M</td></tr> <tr> <td>3x1$\frac{1}{4}$" SAE Flanges + 1x 1$\frac{1}{2}$" SAE for BGT Length 13 and larger</td><td>3R20</td></tr> </table>	Ports	Code	2" SAE BGT length 11 and 12	R32	3" SAE BGT Length 13 and larger	R48	1x2" SAE Flanged + 2 x 1 $\frac{1}{4}$ " SAE Flanged for BGT Length 11 and 12	R32M	3x1 $\frac{1}{4}$ " SAE Flanges + 1x 1 $\frac{1}{2}$ " SAE for BGT Length 13 and larger	3R20	<table> <tr> <th>Options</th><th>Code</th></tr> <tr> <td>No diffuser required</td><td>1</td></tr> <tr> <td>Diffuser type T with perforated plate area</td><td>3</td></tr> <tr> <td>Diffuser type P without perforated plate area</td><td>4</td></tr> <tr> <td>Diffuser with integrated hose connection</td><td>on request</td></tr> <tr> <td>No magnets</td><td>5</td></tr> <tr> <td>Dipstick</td><td>6</td></tr> <tr> <td>Plugged filling port</td><td>8</td></tr> <tr> <td>Diffuser type T and no magnets</td><td>A</td></tr> <tr> <td>Diffuser type P and no magnets</td><td>B</td></tr> <tr> <td>Diffuser type T, no magnets, plugged filling port</td><td>C</td></tr> <tr> <td>Diffuser type P, no magnets, plugged filling port</td><td>D</td></tr> <tr> <td>Other combinations</td><td>on request</td></tr> </table>	Options	Code	No diffuser required	1	Diffuser type T with perforated plate area	3	Diffuser type P without perforated plate area	4	Diffuser with integrated hose connection	on request	No magnets	5	Dipstick	6	Plugged filling port	8	Diffuser type T and no magnets	A	Diffuser type P and no magnets	B	Diffuser type T, no magnets, plugged filling port	C	Diffuser type P, no magnets, plugged filling port	D	Other combinations	on request
Ports	Code																																				
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Options	Code																																				
No diffuser required	1																																				
Diffuser type T with perforated plate area	3																																				
Diffuser type P without perforated plate area	4																																				
Diffuser with integrated hose connection	on request																																				
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Diffuser type T and no magnets	A																																				
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Diffuser type T, no magnets, plugged filling port	C																																				
Diffuser type P, no magnets, plugged filling port	D																																				
Other combinations	on request																																				

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Ordering Information (cont.)

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
$\beta x(c)=2$	$\beta x(c)=10$	$\beta x(c)=75$	$\beta x(c)=100$	$\beta x(c)=200$	$\beta x(c)=1000$	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Supersedes spare element table				
BGT390	TXWL8A-2	TXWL8A-5	TXWL8A-10	TXWL8A-20
Part number spare element	937832Q	937843Q	937858Q	937869Q
BGT500	TXWL8C-2	TXWL8C-5	TXWL8C-10	TXWL8C-20
Part number spare element	937833Q	937842Q	937859Q	937868Q
BGT600	TXWL10-2	TXWL10-5	TXWL10-10	TXWL10-20
Part number spare element	937834Q	937841Q	937860Q	937867Q
BGT800	TXWL11-2	TXWL11-5	TXWL11-10	TXWL11-20
Part number spare element	937835Q	937840Q	937861Q	937866Q
BGT1000	TXWL12-2	TXWL12-5	TXWL12-10	TXWL12-20
Part number spare element	937836Q	937839Q	937862Q	937865Q
BGT1500	TXWL13-2	TXWL13-5	TXWL13-10	TXWL13-20
Part number spare element	937837Q	937838Q	937863Q	937864Q

Supersedes spare element table						
BGT390	TXW8A-10-B	TXW8A-2-B	TXW8A-5-B	TXW8A-10-B	TXW8A-20-B	ST8A-40-B
Part number spare element	937728	937742Q	937763Q	937778Q	937799Q	937813
BGT500	TXW8C-10-B	TXW8C-2-B	TXW8C-5-B	TXW8C-10-B	TXW8C-20-B	ST8C-40-B
Part number spare element	937729	937741Q	937764Q	937777Q	937800Q	937812
BGT600	TXW10-10-B	TXW10-2-B	TXW10-5-B	TXW10-10-B	TXW10-20-B	ST10-40-B
Part number spare element	937730	937740Q	937765Q	937776Q	937801Q	937811
BGT800	TXW11-10-B	TXW11-2-B	TXW11-5-B	TXW11-10-B	TXW11-20-B	ST11-40-B
Part number spare element	937731	937739Q	937766Q	937775Q	937802Q	937810
BGT1000	TXW12-10-B	TXW12-2-B	TXW12-5-B	TXW12-10-B	TXW12-20-B	ST12-40-B
Part number spare element	937732	937738Q	937767Q	937774Q	937803Q	937809
BGT1500	TXW13-10-B	TXW13-2-B	TXW13-5-B	TXW13-10-B	TXW13-20-B	ST13-40-B
Part number spare element	937733	937737Q	937768Q	937773Q	937804Q	937808
BGT2000	TXW14-10-B	TXW14-2-B	TXW14-5-B	TXW14-10-B	TXW14-20-B	ST14-40-B
Part number spare element	937734	937736Q	937769Q	937772Q	937805Q	937807
BGT2400	-	TXWH14-2-B	TXWH14-5-B	TXWH14-10-B	TXWH14-20-B	-
Part number spare element		937735Q	937770Q	937771Q	937806Q	

Clearing the way for a greener future



ENVIRONMENTALLY-FRIENDLY FILTRATION SOLUTIONS

Trust Parker to provide you with a range of 'green' filter products that impact positively on the environment. With the new E-series your customers benefit from a solution that's smarter, safer and more responsible when it comes to filtration.

By significantly reducing waste levels, the E-Series is designed to increase the lifespan of hydraulic machinery. The Suction Return filter series features *LEIF*® elements that can be crushed and incinerated. By reducing bulk for disposal and recycling the material, this cost-effective solution contributes to a safer, cleaner environment.

Through Parker's advanced Laser CM technology, all vehicle operators can monitor fluid contamination on-site through a simple two minute test. This accurate monitoring method helps prevent catastrophic failure in critical systems instantly.

When it comes to filtration solutions you can rely on - the future is Parker.

Enjoy the benefits of 'green' filtration, email filtrationinfo@parker.com

www.parker.com/eurofilt





In-Tank Mounted Return Line Filters

IN-AGB Series

MAX 2400 l/min

AN INNOVATIVE GREEN
FILTER FEATURING
LEIF®



Low pressure filters

IN-AGB Series

Features & Benefits

Features	Advantages	Benefits
Filter integrated in tank	Compact low cost solution Filter protected by reservoir	Suitable for extreme heavy duty applications or hazardous environments No tank top parts contributes to improved esthetical design
LEIF® elements	Patented element safeguards the use of genuine parts	Guaranteed quality of filtration Contributes to ISO 14001 certification
Magnetic pre-filtration	Removes ferrous particles, even during bypass conditions	Improved fluid cleanliness levels Extended element life time
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
High level of customisation	Dedicated system-matched solutions can be easily made available	Improved integration of filter in system combined with lower initial system costs
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis Only a small part of the total flow is bypassing the element	Improved protection of system
Standard or customised funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming

Typical Applications

- Agricultural machines
- Articulated dump trucks
- Forestry equipment
- Wheeled loaders
- Lubrication systems
- Excavators

The Parker Filtration IN-AGB In-Tank Mounted Return Line Filters.

The low-cost, high-performance return line IN-AGB filter features Q3 filter media, a bypass construction with low hysteresis, magnetic pre-filtration and a high dirt-holding capacity. The range is capable of handling flow rates from 30 l/min up to 2400 l/min. LEIF® elements are available for flow rates up to 1500 l/min, meeting the most stringent demands for environmentally-friendly filtration and offering protection against poor quality pirate elements.



Specification

Assembly:

Inside tank.

Seal material:

Nitrile, fluoroelastomer, neoprene.

Operating temperature range:

-40° to +120°C.

Bypass setting:

0.8/1.5 and 2.0 bar.

Other settings on request.

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved.

Filtration media:

Microglass III, Ecoglass III for *LEIF*® elements

Also available 10µm Cellulose and 40µm stainless steel mesh.

Element collapse rating:

10 bar (ISO 2941).

Options:

Diffuser type P (straight pipe, no perforated plate area)

Diffuser type T (with closed diffuser end cap and with perforated plate area, recommended when oil entry in reservoir is close to the reservoir bottom or to ensure oil entry under the reservoir oil level)

Magnetic pack:

Standard.

Note: IN-AGB 2-400 and 2-500 are standard supplied without magnets.

Filter element:

LEIF® element with reusable metal element sleeve.

Optional conventional style element with steel end caps.

The *LEIF*® element is patented and safeguards the use of genuine parts.

Note: *LEIF*® element can be used with mineral and HEES type oils.

For other fluids consult Parker Filtration.

LEIF® contributes to ISO 14001 quality standards.

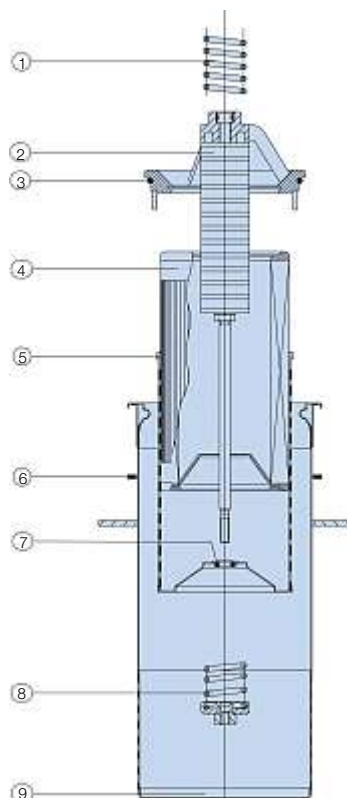
Insert-AGB *LEIF*® 3 series

Ref.	No.	Description
1	1	Top-spring
2	1	Insert
3	1	Insert-seal
4	1	<i>LEIF</i> ® Element
5	1	Sleeve
6	1	Gasket
7	1	O-ring
8	1	Bypass set
9	1	Diffuser

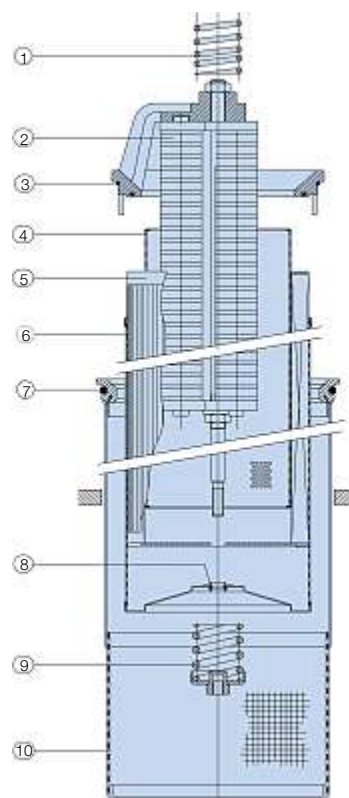
Insert-AGB *LEIF*® 4 series

Ref.	No.	Description
1	1	Top-spring
2	1	Insert
3	1	Insert-seal
4	1	Inner sleeve
5	1	<i>LEIF</i> ®-element
6	1	Outer sleeve
7	1	O-ring
8	1	O-ring
9	1	Bypass set
10	1	Diffuser

1-3 Series

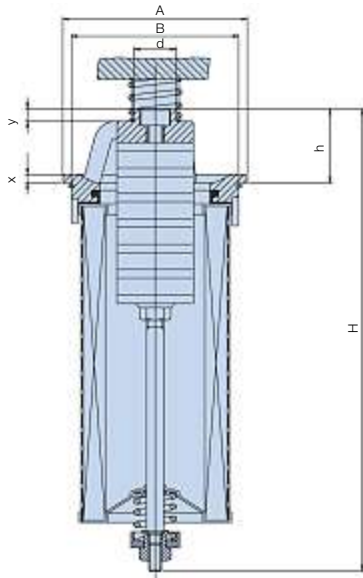


4 Series

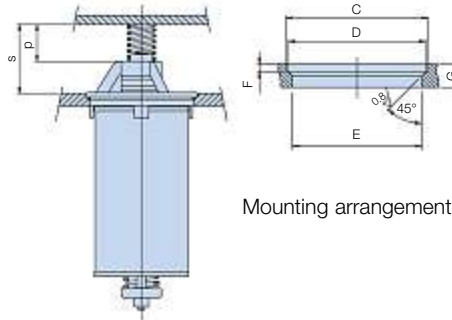


IN-AGB Series

Specification (cont.)



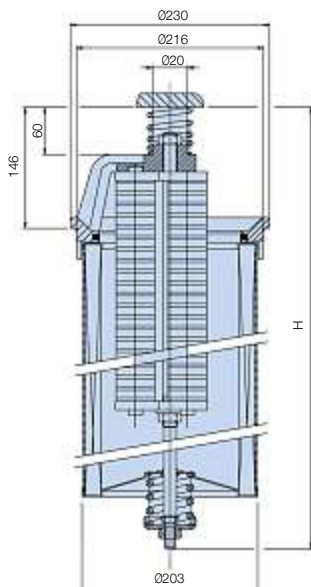
without diffuser



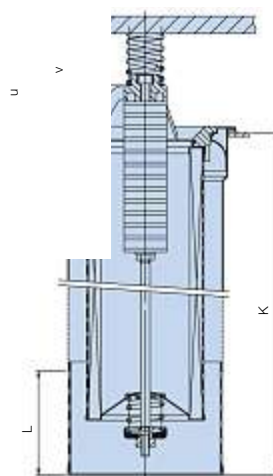
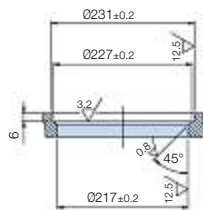
Mounting arrangement

	INAGB Length	Type	A	B	H	h	d	x	y	s	p	C	D	E	F	G
1 Series	0	IN30	87	79	122	35	20	4	6	45	20	88	85	80	4	12
	2	IN60	87	79	173	35	20	4	6	45	20	88	85	80	4	12
	3	IN90	87	79	217	35	20	4	6	45	20	88	85	80	4	12
	4	IN120	87	79	267	35	20	4	6	45	20	88	85	80	4	12
	5	IN125	87	79	381	35	20	4	6	45	20	88	85	80	4	12
2 Series	6	IN170	125	116	284	48	25	5	8	77	42	126	122	117	5	15
	7	IN230	125	116	360	48	25	5	8	77	42	126	122	117	5	15
	8	IN300	125	116	559	48	25	5	8	77	42	126	122	117	5	15
	9	IN400	125	116	579	48	25	5	8	77	42	126	122	117	5	15
	10	IN500	125	116	599	48	25	5	8	77	42	126	122	117	5	15
3 Series	11A	IN270	150	138	325	62	30	7	12	100	55	151	149	139	5	18
	11	IN390	150	138	407	62	30	7	12	100	55	151	149	139	5	18
	12	IN500	150	138	599	62	30	7	12	100	55	151	149	139	5	18

Dimensions in mm



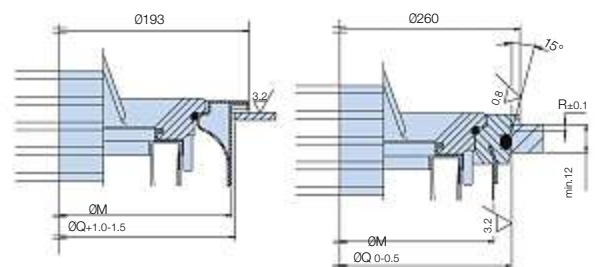
without diffuser



with diffuser

IN-AGB 3

IN-AGB 4



INAGB Length	Type	H
13	IN600	543
14	IN800	653
15	IN1000	758
16	IN1500	1038
17	IN2000	1303
18	IN2400	1303

Dimensions in mm

	INAGB Length	Type	K	L	M	U	V	Q	R
3 Series	11A	IN270	324	110	175	106	55	178	
	11	IN390	364	110	175	106	55	178	
	12	IN500(3)	554	125	175	106	55	178	
4 Series	13	IN600	445	183	239	145	60	250.5	2.5
	14	IN800	555	183	239	145	60	250.5	2.5
	15	IN1000	660	183	239	145	60	250.5	2.5
	16	IN1500	940	183	239	145	60	250.5	2.5
	17	IN2000	1220	183	239	145	60	250.5	2.5
	18	IN2400	1220	183	239	145	60	250.5	2.5

Dimensions in mm

Pressure Drop Curves

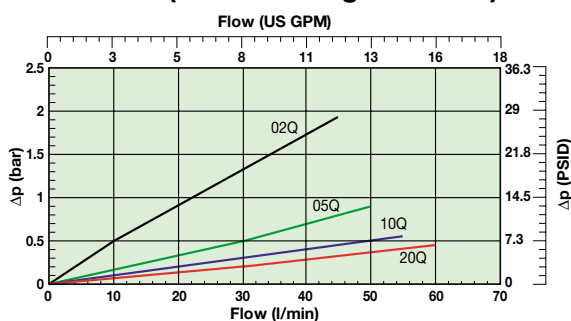
The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

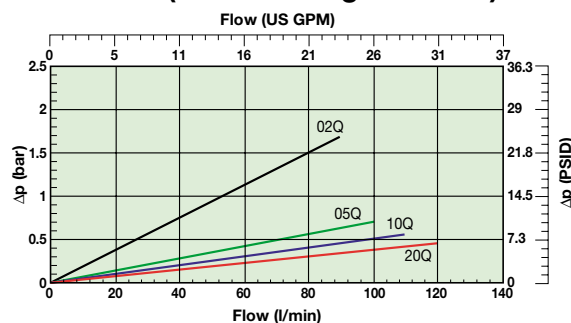
$$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt.}$$

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

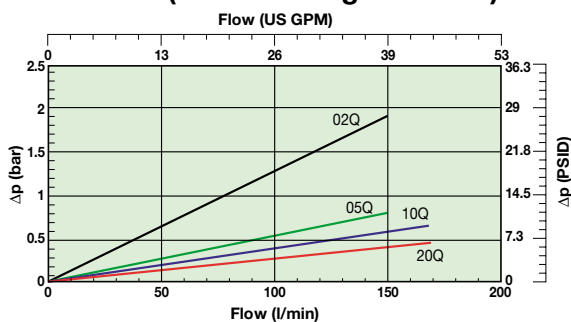
IN30 (Element length code 0)



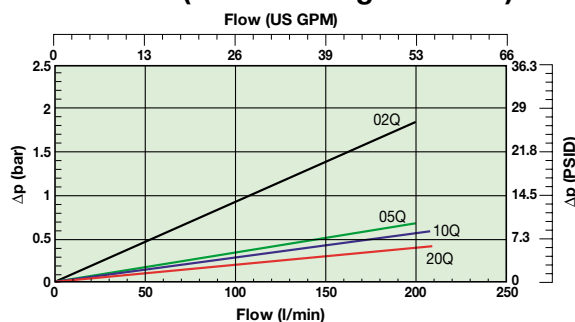
IN60 (Element length code 2)



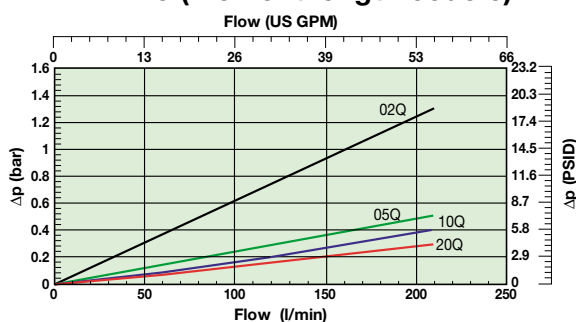
IN90 (Element length code 3)



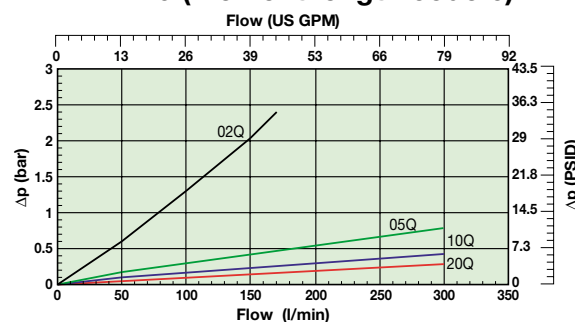
IN120 (Element length code 4)



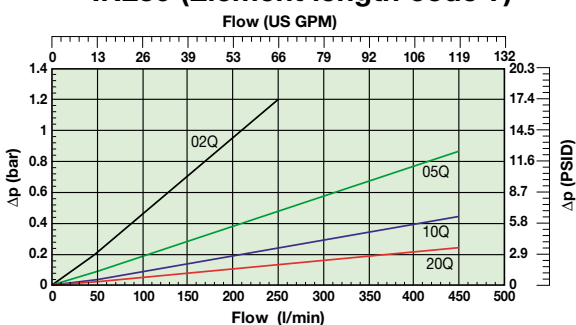
IN125 (Element length code 5)



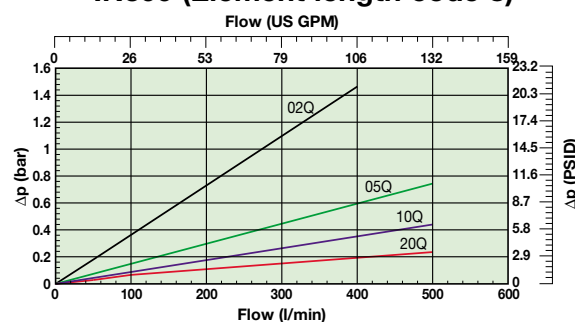
IN170 (Element length code 6)



IN230 (Element length code 7)



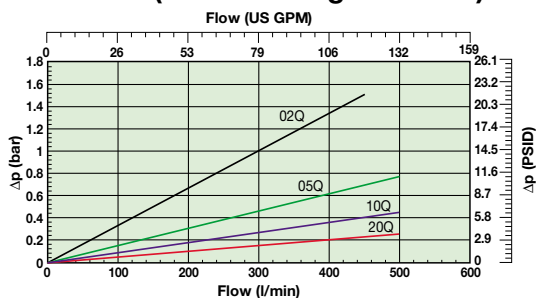
IN300 (Element length code 8)



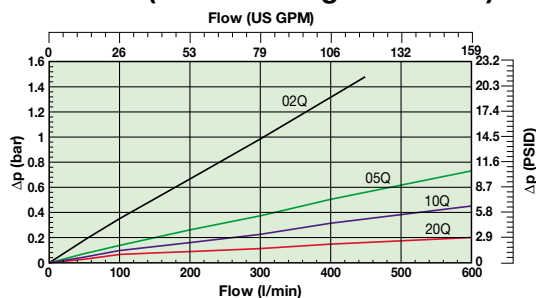
IN-AGB Series

Pressure Drop Curves (cont.)

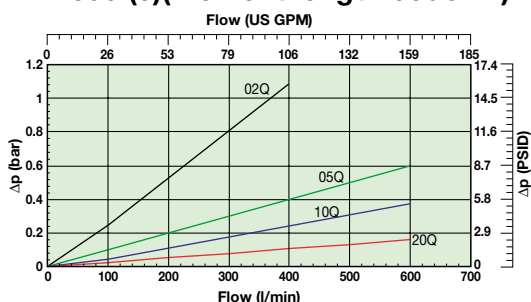
IN400 (Element length code 9)



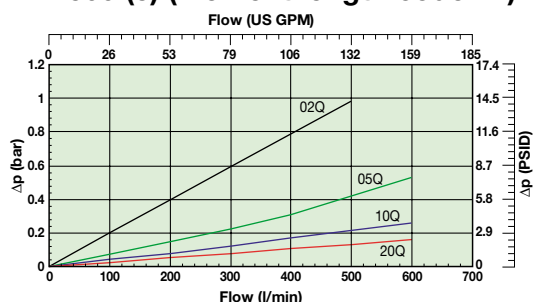
IN500 (Element length code 10)



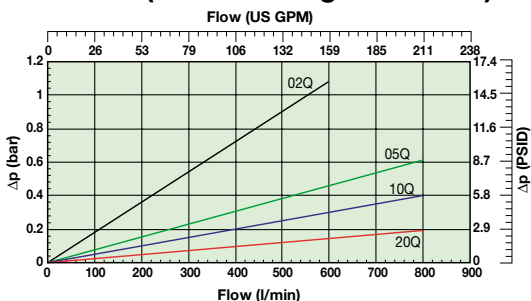
IN390 (3)(Element length code 11)



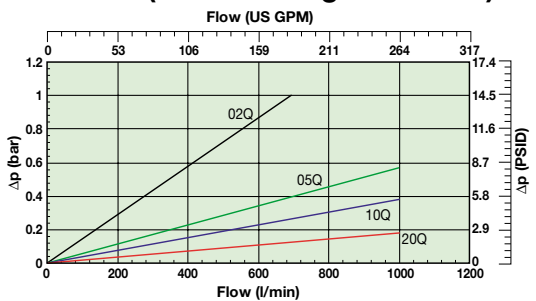
IN500 (3) (Element length code 12)



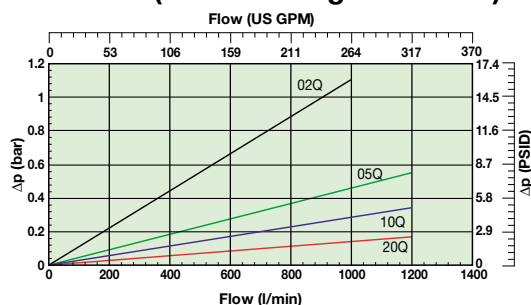
IN600 (Element length code 13)



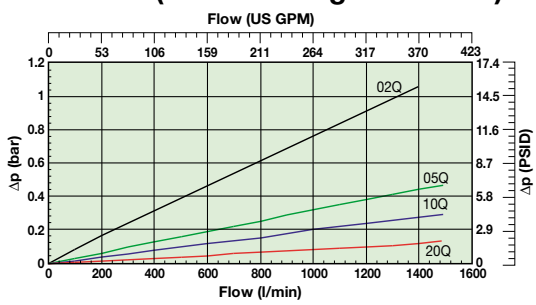
IN800 (Element length code 14)



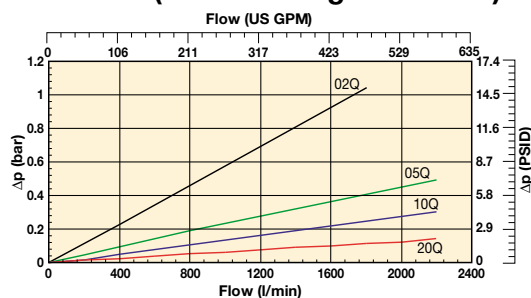
IN1000 (Element length code 15)



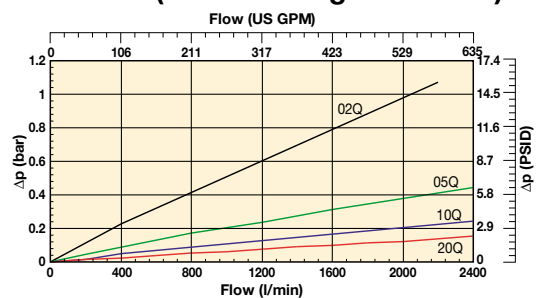
IN1500 (Element length code 16)



IN2000 (Element length code 17)

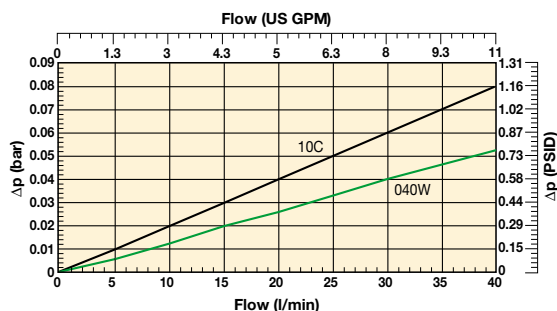


IN1500 (Element length code 18)

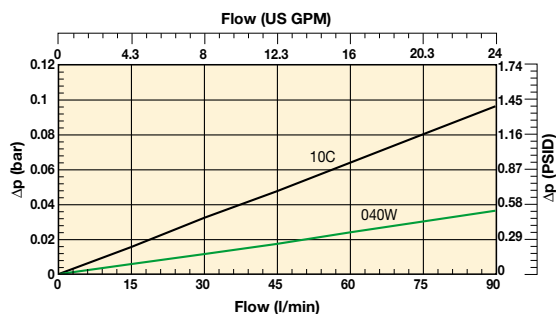


Pressure Drop Curves (cellulose and stainless steel media)

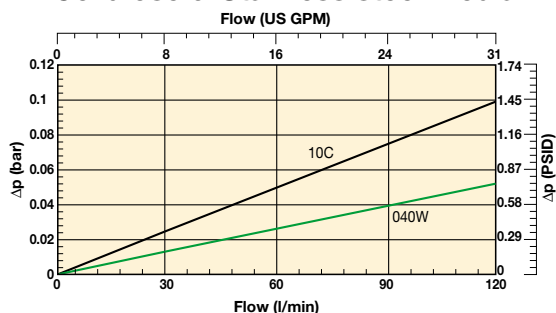
IN30 (Element length code 0)
Cellulose & Stainless steel media



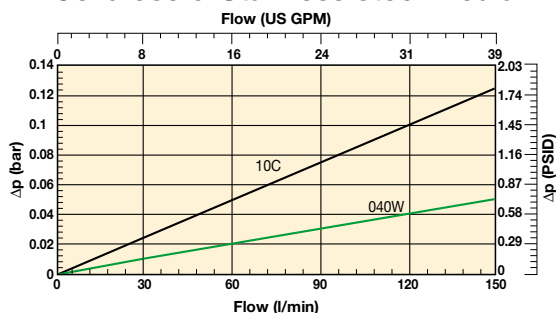
IN60 (Element length code 2)
Cellulose & Stainless steel media



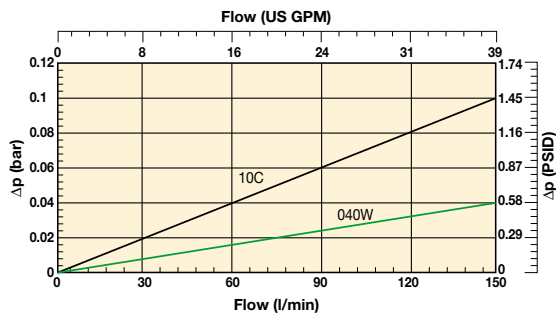
IN90 (Element length code 3)
Cellulose & Stainless steel media



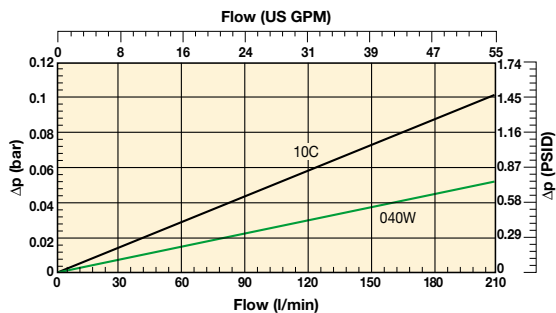
IN120 (Element length code 4)
Cellulose & Stainless steel media



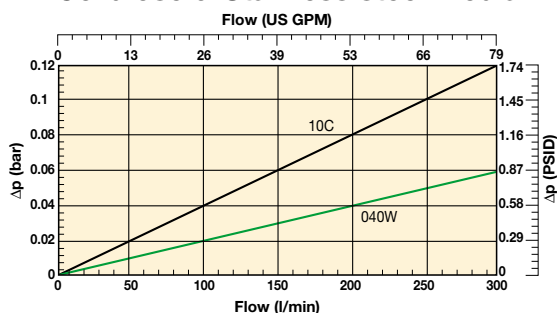
IN125 (Element length code 5)
Cellulose & Stainless steel media



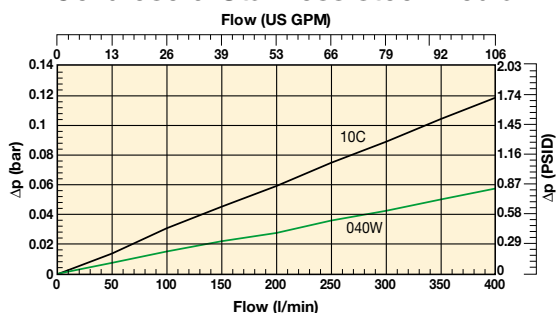
IN170 (Element length code 6)
Cellulose & Stainless steel media



IN230 (Element length code 7)
Cellulose & Stainless steel media



IN300 (Element length code 8)
Cellulose & Stainless steel media

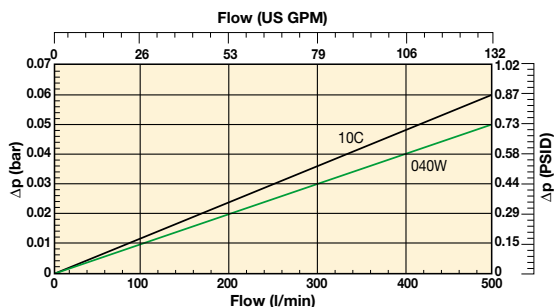


Cellulose and stainless steel media
Example: IN300 Filter Element Length 8 - Cellulose and stainless steel media

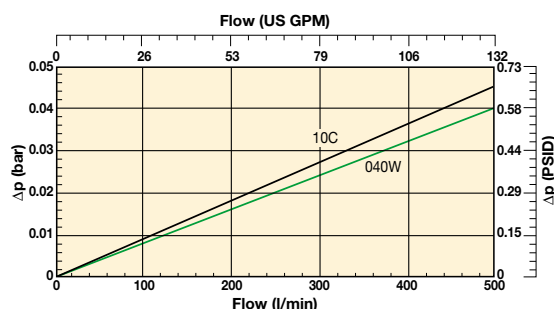
IN-AGB Series

Pressure Drop Curves (cellulose and stainless steel media)

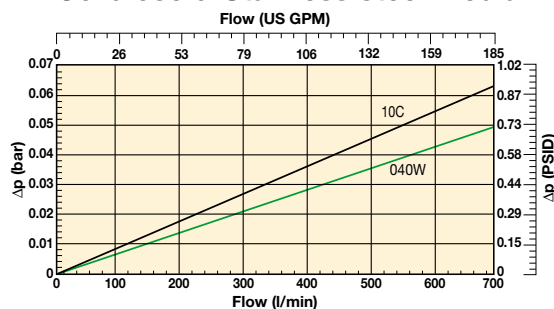
IN390 (Element length code 11)
Cellulose & Stainless steel media



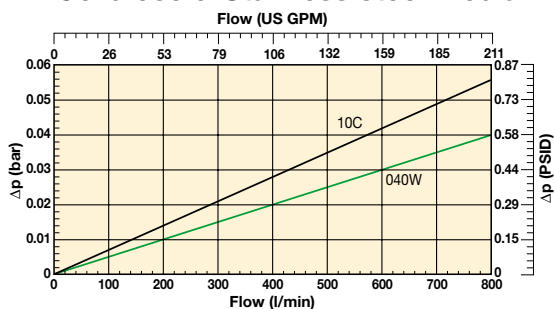
IN500 (Element length code 12)
Cellulose & Stainless steel media



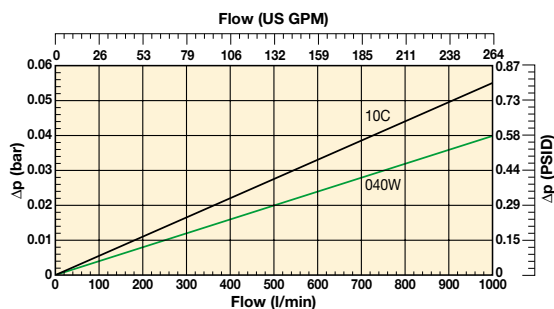
IN600 (Element length code 13)
Cellulose & Stainless steel media



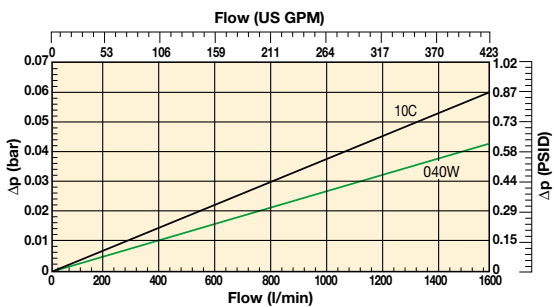
IN800 (Element length code 14)
Cellulose & Stainless steel media



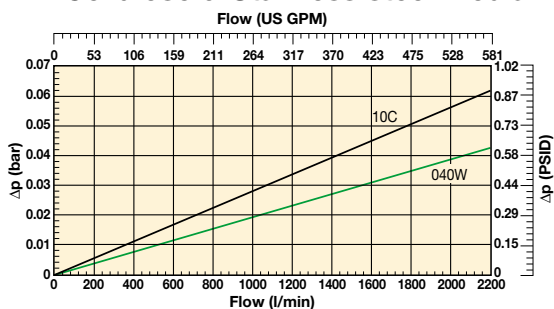
IN1000 (Element length code 15)
Cellulose & Stainless steel media



IN1500 (Element length code 16)
Cellulose & Stainless steel media



IN2000 (Element length code 17)
Cellulose & Stainless steel media



Cellulose and stainless steel media
Example: IN300 Filter Element Length 8 - Cellulose and stainless steel media

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (µ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
IN310QLBNEXXX1	IN90-TXWL3-10B15	90	IN90	Length 3	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937878Q	TXWL3-10
IN320QLBNEXXX1	IN90-TXWL3-20 B15	90	IN90	Length 3	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937877Q	TXWL3-20
IN510QLBNEXXX1	IN125-TXWL3E-10 B15	125	IN125	Length 5	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937852Q	TXWL3E-10
IN520QLBNEXXX1	IN125-TXWL3E-20 B15	125	IN125	Length 5	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937875Q	TXWL3E-20
IN610QLBNEXXX1	IN170-TXWL4-10 B15	170	IN170	Length 6	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937853Q	TXWL4-10
IN620QLBNEXXX1	IN170-TXWL4-20 B15	170	IN170	Length 6	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	None	937874Q	TXWL4-20
IN810QLBNEXXX3	IN300-TXWL5A-10 T B15	300	IN300	Length 8	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937855Q	TXWL5A-10
IN820QLBNEXXX3	IN300-TXWL5A-20 T B15	300	IN300	Length 8	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937872Q	TXWL5A-20
IN1210QLBNEXXX3	IN500-TXWL8C-10 T B15	500	IN500	Length 12	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937859Q	TXWL8C-10
IN1220QLBNEXXX3	IN500-TXWL8C-20 T B15	500	IN500	Length 12	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937868Q	TXWL8C-20
IN1510QLBNEXXX3	IN1000-TXWL12-10 T B15	1000	IN1000	Length 15	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937862Q	TXWL12-10
IN1520QLBNEXXX3	IN1000-TXWL12-20 T B15	1000	IN1000	Length 15	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937865Q	TXWL12-20
IN1710QBNEXXX3	IN2000-TXW14-10-B T B15	2000	IN2000	Length 17	10	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937772Q	TXW14-10B
IN1720QBNEXXX3	IN2000-TXW14-20-B T B15	2000	IN2000	Length 17	20	Nitrile	NA	1.5 Bar (22 Psi)	NA	Diffuser type T	937805Q	TXW14-20B

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Configurator example filter including **LEIF®** element

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
IN	10	05QL	V	N	H	XXX	1

Configurator example filter including conventional element

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
IN	18	20Q	B	N	H	XXX	3

Box 1	Box 2	Box 3
Code	Filter Rating	Degree of filtration
IN	Insert IN-AGB	Element media
	Code	Glass fibre
	IN30	0
	IN60	2
	IN90	3
	IN120	4
	IN125	5
	IN170	6
	IN230	7
	IN300	8
	IN400	9
	IN500	10
	IN390(3)	11
	IN500(3)	12
	IN600	13
	IN800	14
	IN1000	15
	IN1500	16
	IN2000	17
	IN2400	18
		Cellulose
		Nom. rating
		Disposible element
		LEIF® element
		10C
		02Q
		05Q
		10Q
		20Q
		040W
		02QL
		05QL
		10QL
		20QL
		Wire mesh
		Abs. rating

Box 4

Seal type	Code
Seal material	Code
Nitrile	B
Fluoroelastomer	V
Neoprene	N

Box 5

Indicator	Code
No indicator	N

Box 6

Bypass valve	Code
Bypass valve	Code
0.8 bar	B
1.5 bar	E
2.0 bar for IN-AGB (up to length 12)	H
Blocked bypass	X
Other bypass settings	on request

Box 7

Filter connection	Code
Ports	Code
No ports applicable	XXX

Box 8

Options	Code
Options	Code
No diffuser required	1
Diffuser type T with perforated plate area	3
Diffuser type P without perforated plate area	4
No magnets	5
Diffuser type T and no magnets	A
Diffuser type P and no magnets	B

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Note: IN-AGB size 2-400 and 2-500 are standard supplied without magnets

In-Tank Mounted Return Line Filters

IN-AGB Series

Ordering Information (cont.)

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
βx(c)=2	βx(c)=10	βx(c)=75	βx(c)=100	βx(c)=200	βx(c)=1000	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Supersedes spare element table				
IN30	TXWL-2	TXWL-5	TXWL-10	TXWL-20
Part number spare element	937822Q	937885Q	937884Q	937883Q
IN60	TXWL2-2	TXWL2-5	TXWL2-10	TXWL2-20
Part number spare element	937823Q	937880Q	937881Q	937882Q
IN90	TXWL3-2	TXWL3-5	TXWL3-10	TXWL3-20
Part number spare element	937824Q	937879Q	937878Q	937877Q
IN120	TXWL3D-2	TXWL3D-5	TXWL3D-10	TXWL3D-20
Part number spare element	937825Q	937850Q	937851Q	937876Q
IN125	TXWL3E-2	TXWL3E-5	TXWL3E-10	TXWL3E-20
Part number spare element	937826Q	937849Q	937852Q	937875Q
IN170	TXWL4-2	TXWL4-5	TXWL4-10	TXWL4-20
Part number spare element	937827Q	937848Q	937853Q	937874Q
IN230	TXWL5-2	TXWL5-5	TXWL5-10	TXWL5-20
Part number spare element	937828Q	937847Q	937854Q	937873Q
IN300	TXWL5A-2	TXWL5A-5	TXWL5A-10	TXWL5A-20
Part number spare element	937829Q	937846Q	937855Q	937872Q
IN400	TXWL5B-2	TXWL5B-5	TXWL5B-10	TXWL5B-20
Part number spare element	937830Q	937845Q	937856Q	937871Q
IN500	TXWL5C-2	TXWL5C-5	TXWL5C-10	TXWL5C-20
Part number spare element	937831Q	937844Q	937857Q	937870Q
IN390	TXWL8A-2	TXWL8A-5	TXWL8A-10	TXWL8A-20
Part number spare element	937832Q	937843Q	937858Q	937869Q
IN500	TXWL8C-2	TXWL8C-5	TXWL8C-10	TXWL8C-20
Part number spare element	937833Q	937842Q	937859Q	937868Q
IN600	TXWL10-2	TXWL10-5	TXWL10-10	TXWL10-20
Part number spare element	937834Q	937841Q	937860Q	937867Q
IN800	TXWL11-2	TXWL11-5	TXWL11-10	TXWL11-20
Part number spare element	937835Q	937840Q	937861Q	937866Q
IN1000	TXWL12-2	TXWL12-5	TXWL12-10	TXWL12-20
Part number spare element	937836Q	937839Q	937862Q	937865Q
IN1500	TXWL13-2	TXWL13-5	TXWL13-10	TXWL13-20
Part number spare element	937837Q	937838Q	937863Q	937864Q

Ordering Information (cont.)

Supersedes spare element table						
IN30	TXX-10-B	TXW-2-B	TXW-5-B	TXW-10-B	TXW-20-B	ST-40-B
Part number spare element	937720	937752Q	937753Q	937788Q	937789Q	937821
IN60	TXX2-10-B	TXW2-2-B	TXW2-5-B	TXW2-10-B	TXW2-20-B	ST2-40-B
Part number spare element	937721	937751Q	937754Q	937787Q	937790Q	937820
IN90	TXX3-10-B	TXW3-2-B	TXW3-5-B	TXW3-10-B	TXW3-20-B	ST3-40-B
Part number spare element	937722	937750Q	937755Q	937786Q	937791Q	937819
IN120	TXX3D-10-B	TXW3D-2-B	TXW3D-5-B	TXW3D-10-B	TXW3D-20-B	ST3D-40-B
Part number spare element	937723	937749Q	937756Q	937785Q	937792Q	937818
IN125	TXX3E-10-B	TXW3E-2-B	TXW3E-5-B	TXW3E-10-B	TXW3E-20-B	ST3E-40-B
Part number spare element	937724	937748Q	937757Q	937784Q	937793Q	937817
IN170	TXX4-10-B	TXW4-2-B	TXW4-5-B	TXW4-10-B	TXW4-20-B	ST4-40-B
Part number spare element	937725	937747Q	937758Q	937783Q	937794Q	937816
IN230	TXX5-10-B	TXW5-2-B	TXW5-5-B	TXW5-10-B	TXW5-20-B	ST5-40-B
Part number spare element	937726	937746Q	937759Q	937782Q	937795Q	937815
IN300	TXX5A-10-B	TXW5A-2-B	TXW5A-5-B	TXW5A-10-B	TXW5A-20-B	ST5A-40-B
Part number spare element	937727	937745Q	937760Q	937781Q	937796Q	937814
IN390	TXX8A-10-B	TXW8A-2-B	TXW8A-5-B	TXW8A-10-B	TXW8A-20-B	ST8A-40-B
Part number spare element	937728	937742Q	937763Q	937778Q	937799Q	937813
IN500 (3 series)	TXX8C-10-B	TXW8C-2-B	TXW8C-5-B	TXW8C-10-B	TXW8C-20-B	ST8C-40-B
Part number spare element	937729	937741Q	937764Q	937777Q	937800Q	937812
IN600	TXX10-10-B	TXW10-2-B	TXW10-5-B	TXW10-10-B	TXW10-20-B	ST10-40-B
Part number spare element	937730	937740Q	937765Q	937776Q	937801Q	937811
IN800	TXX11-10-B	TXW11-2-B	TXW11-5-B	TXW11-10-B	TXW11-20-B	ST11-40-B
Part number spare element	937731	937739Q	937766Q	937775Q	937802Q	937810
IN1000	TXX12-10-B	TXW12-2-B	TXW12-5-B	TXW12-10-B	TXW12-20-B	ST12-40-B
Part number spare element	937732	937738Q	937767Q	937774Q	937803Q	937809
IN1500	TXX13-10-B	TXW13-2-B	TXW13-5-B	TXW13-10-B	TXW13-20-B	ST13-40-B
Part number spare element	937733	937737Q	937768Q	937773Q	937804Q	937808
IN2000	TXX14-10-B	TXW14-2-B	TXW14-5-B	TXW14-10-B	TXW14-20-B	ST14-20
Part number spare element	937734	937736Q	937769Q	937772Q	937805Q	937807
IN2400	-	TXWH14-2-B	TXWH14-5-B	TXWH14-10-B	TXWH14-20-B	-
Part number spare element		937735Q	937770Q	937771Q	937806Q	

Grab the benefits of a greener future



Image courtesy of Komatsu

ENVIRONMENTALLY-FRIENDLY FILTRATION SOLUTIONS

Trust Parker to provide you with a range of 'green' filter products that impact positively on the environment. Now with new E-series element ranges your customers benefit from a solution that's smarter, safer and more responsible when it comes to filtration.

By significantly reducing waste levels, E-Series elements are designed to increase the lifespan of hydraulic machinery. CN medium pressure filters feature Ecoglass elements that can be crushed, shredded, baled and when incinerated offer minimal residue causing little or no damage to the environment. Available in three models 15CN, 40CN and 80CN, they provide a reliable service and trouble-free operation under tough conditions.

Through Parker's advanced Laser CM technology, all vehicle operators can monitor fluid contamination on-site through a simple two minute test. This accurate monitoring method helps prevent catastrophic failure in critical systems instantly.

When it comes to filtration solutions you can rely on - the future is Parker.

Enjoy the benefits of 'green' filtration, email filtrationinfo@parker.com

www.parker.com/eurofilt





Tanktop Mounted Return Line Filters with Integrated Air Breather

Tanktopper Series I, II & III

MAX 650 l/min - 10 bar



Tanktopper Series I, II & III

Features & Benefits

Features	Advantages	Benefits
Return line filter with Integrated airbreather	All in one filter	More compact design, cost reduction due to elimination of loose airbreather
Airbreather equipped with high quality labyrinth	No oil leakage through the airbreather	Improved efficiency of airbreather No oil leakage on the tank / in the environment
Second port and dipstick available	Filler port and level glass function can be integrated in filter	Significant reduction of reservoir accessories
Airbreather element always supplied with spare return line filter elements	Both filter elements can be replaced during the service event	Improved protection of system due to change of airbreather element
LEIF® elements	Patented element safeguards the use of genuine parts	Guaranteed quality of filtration Contributes to ISO 14001 certification
Magnetic pre-filtration	Removes ferrous particles, even during bypass conditions	Improved fluid cleanliness levels Extended element life time
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis Only a small part of the total flow is bypassing the element	Improved protection of system
Standard or customised funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming

Typical Applications

TPR I

- Fork lift trucks
- Power packs
- Mini excavator

TPR II

- Gully-sucker
- Power packs
- Dredging ships

TPR III

- Mobile cranes
- Refuse vehicles

The Parker Filtration Tanktopper Series I, II & III Tanktop Mounted Return Line Filters.

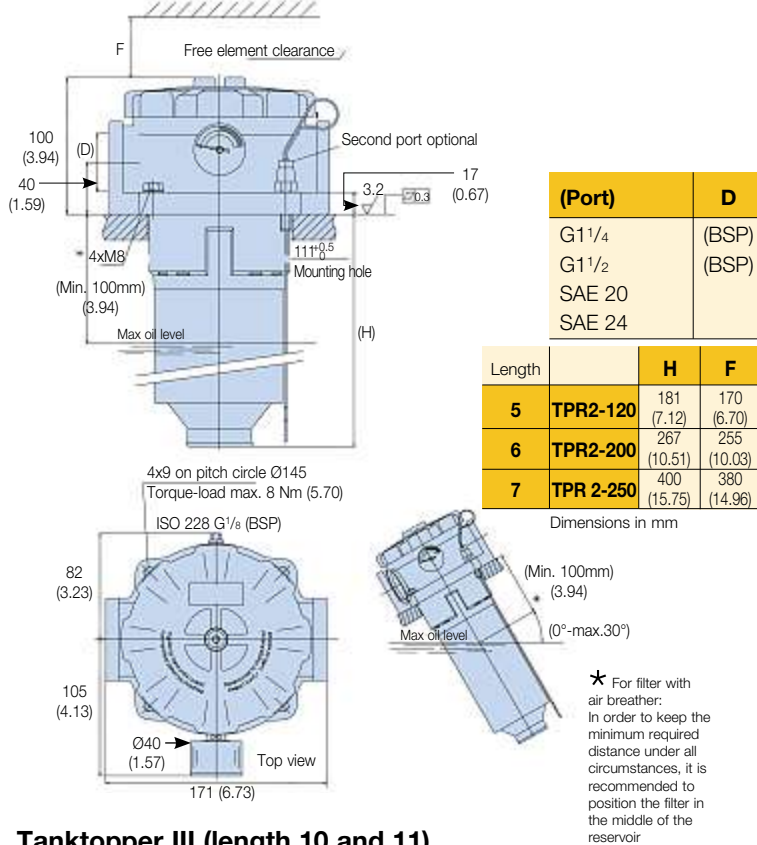
The TPR Series I, II & III offer a total filtration solution. A 10-micron Abs. air breather that is integrated into the filter housing, a magnet column for pre-filtration, 'In-to-Out' filtration, a full-flow bypass with low hysteresis, and the high performance Q3 filter element materials are all proven success factors in efficient return-line filtration for flow rates up to 650 l/min. Several pressure gauges and switches can be applied, combined or not with a dipstick. The all-in-one, easy-to-mount cost-saving TPR solution allows for a more compact tank design.



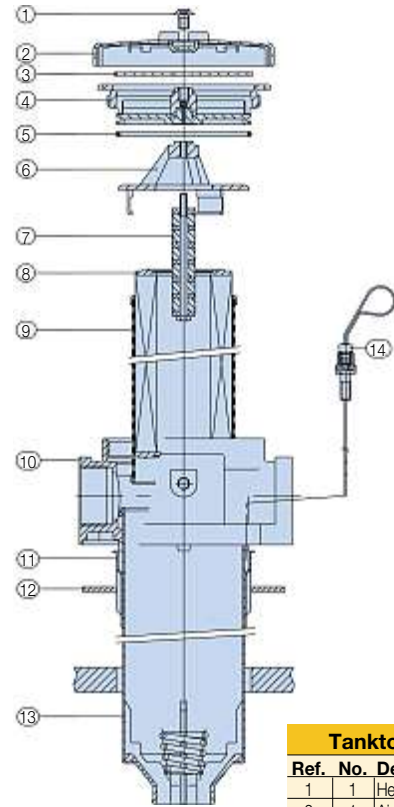
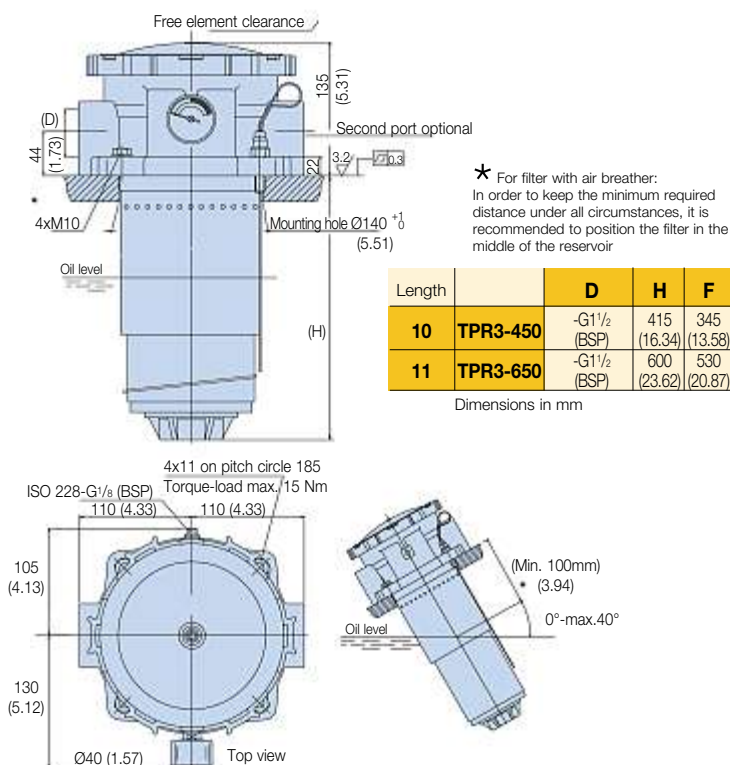
Tanktopper Series I, II & III

Specification (cont.)

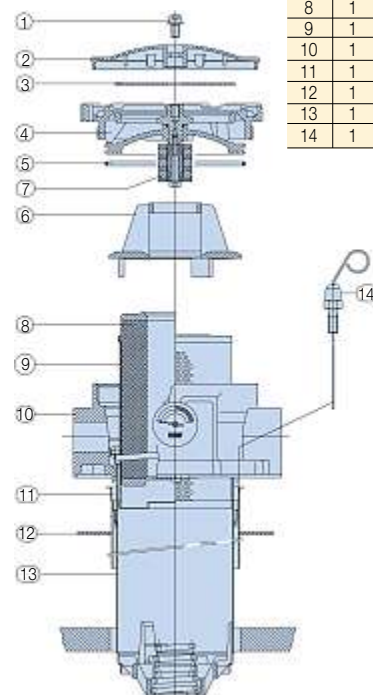
Tanktopper II (length 5, 6 and 7)



Tanktopper III (length 10 and 11)



Tanktopper II & III		
Ref.	No.	Description
1	1	Hexagon socket bolt M8
2	1	Air breather cap
3	1	Air breather filter medium
4	1	Cover (assembly)
5	1	Cover seal
6	1	Bridge
7	1	Magnet set
8	1	Element
9	1	Sleeve
10	1	Filter house
11	1	Airguide
12	1	Tank gasket
13	1	Funnel
14	1	Dipstick assembly

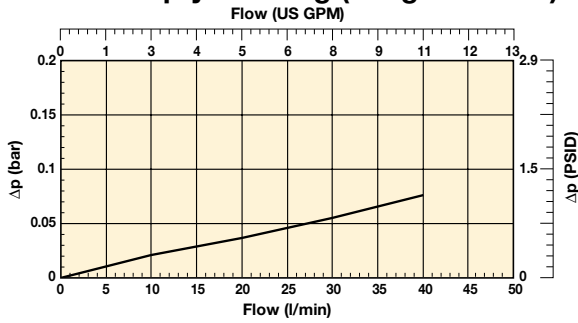


Tanktopper Series I & II

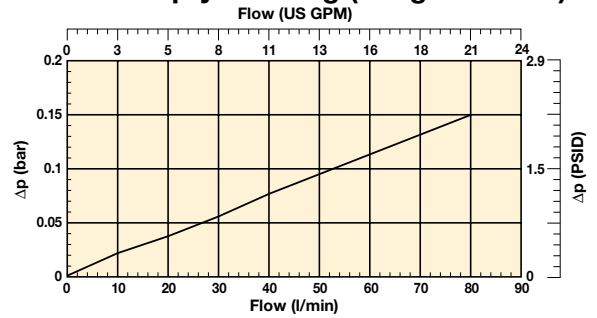
Pressure Drop Curves - Tanktopper I

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

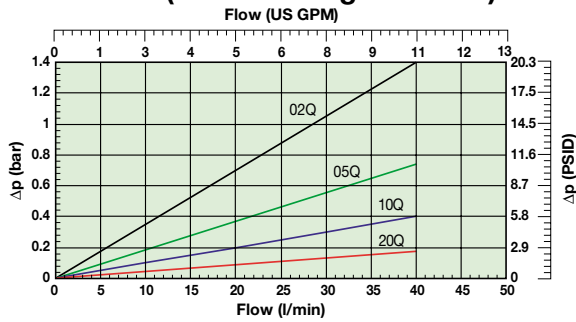
TPR40 Empty Housing (Length code 1)



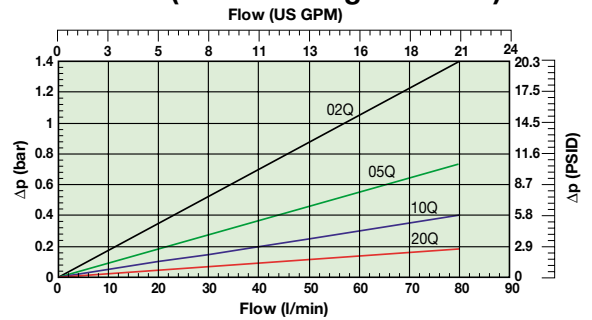
TPR80 Empty Housing (Length code 2)



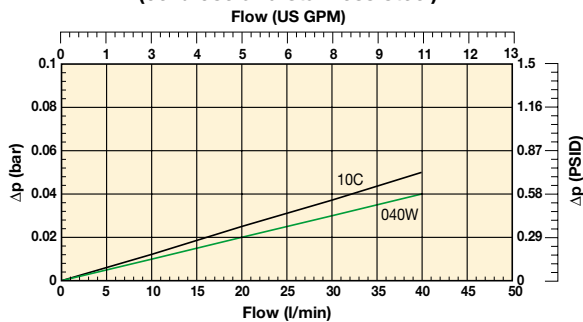
TPR40 (Element length code 1)



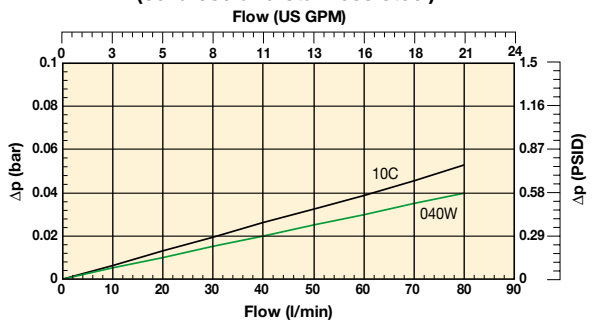
TPR80 (Element length code 2)



**TPR40 (Element length code 1)
(cellulose and stainless steel)**



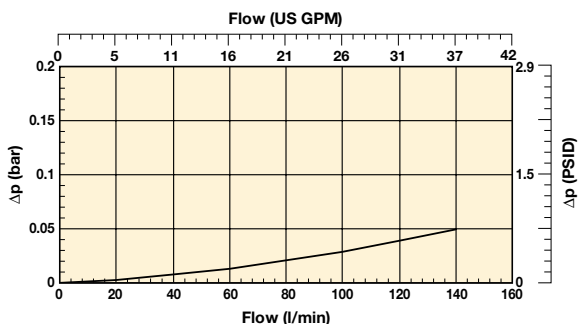
**TPR80 (Element length code 2)
(cellulose and stainless steel)**



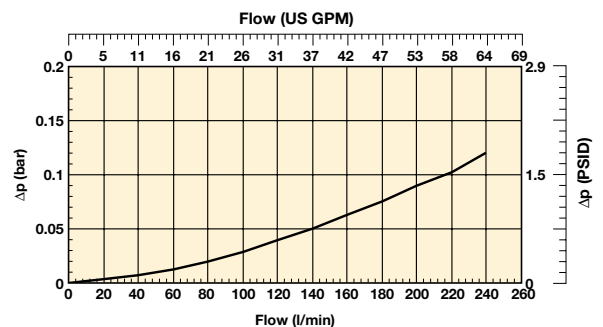
Pressure Drop Curves - Tanktopper II

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

**TPR II Empty Housing with G1¹/₄" ports
(Length code 5, 6 and 7)**



**TPR II Empty Housing with G1¹/₂" ports
(Length code 5, 6 and 7)**

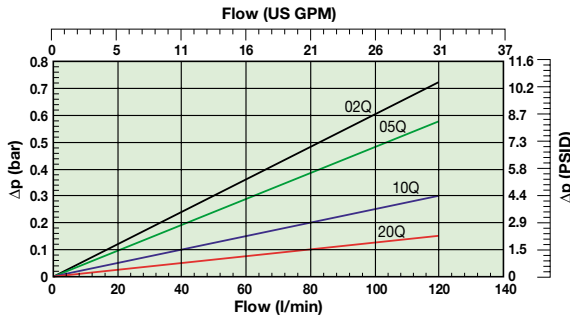


Tanktopper Series II & III

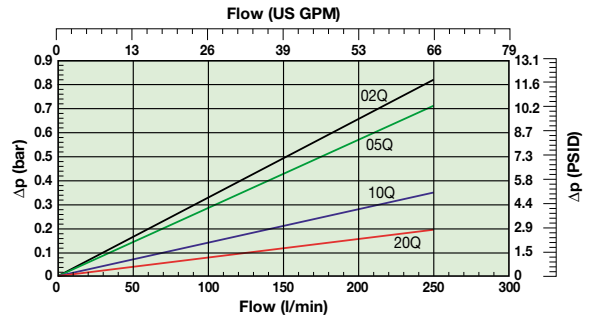
Pressure Drop Curves - Tanktopper II (cont.)

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

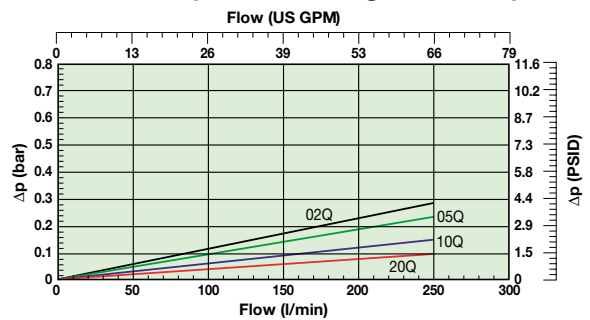
TPR120 (Element length code 5)



TPR200 (Element length code 6)



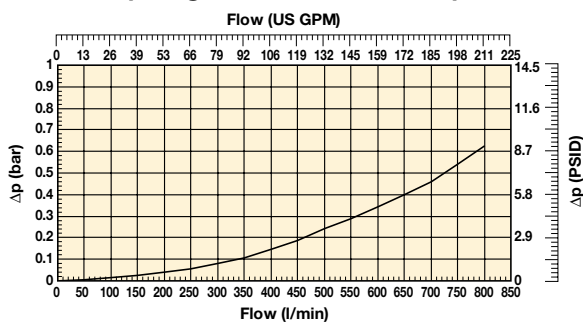
TPR250 (Element length code 7)



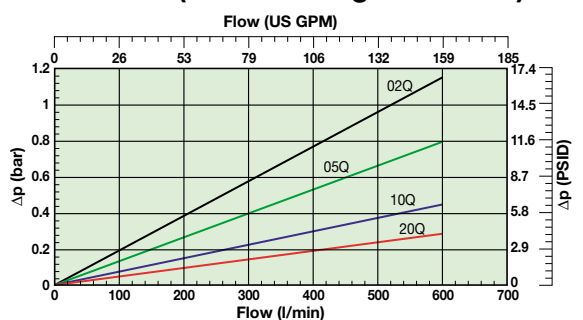
Pressure Drop Curves - Tanktopper III

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

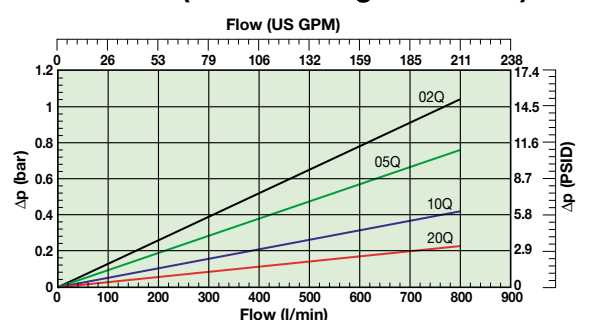
**TPR III Empty Housing with G1½" ports
(Length code 10 and 11)**



TPR450 (Element length code 10)



TPR650 (Element length code 11)



Tanktop Mounted Return Line Filters

Tanktopper Series I, II & III

Ordering Information

Standard products table

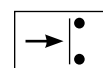
Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
TPR110QLBP2EG12E	TPR40-G ¹ / ₄ PXWL1-10 B15 MM MA	40	TPR40	Length 1	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	Magnets	937902Q	PXWL1-10
TPR120QLBP2EG12E	TPR40-G ¹ / ₄ PXWL1-20 B15 MM MA	40	TPR40	Length 1	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	Magnets	937904Q	PXWL1-20
TPR210QLBP2EG12L	TPR80-G ¹ / ₄ PXWL2-10 AB15 MM MA	80	TPR80	Length 2	10	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	Aluminium funnel, magnets	937903Q	PXWL2-10
TPR220QLBP2EG12L	TPR80-G ¹ / ₄ PXWL2-20 AB15 MM MA	80	TPR80	Length 2	20	Nitrile	Plugged	1.5 Bar (22 Psi)	G ¹ / ₄	Aluminium funnel, magnets	937905Q	PXWL2-20
TPR510QLBP2EG20I	TPR120-2G1 ¹ / ₂ PXWL3-10 B15 MM	120	TPR120	Length 5	10	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937892Q	PXWL3-10
TPR520QLBP2EG20I	TPR120-2G1 ¹ / ₂ PXWL3-20 B15 MM	120	TPR120	Length 5	20	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937895Q	PXWL3-20
TPR710QLBP2EG24I	TPR250-2G1 ¹ / ₂ PXWL4A-10 B15 MM	250	TPR250	Length 7	10	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937894Q	PXWL4A-10
TPR720QLBP2EG24I	TPR250-2G1 ¹ / ₂ PXWL4A-20 B15 MM	250	TPR250	Length 7	20	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937897Q	PXWL4A-20
TPR1110QLBP2EG24I	TPR650-2G1 ¹ / ₂ PXWL8-10 B15 MM	650	TPR650	Length 11	10	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937914Q	PXWL8-10
TPR1120QLBP2EG24I	TPR650-2G1 ¹ / ₂ PXWL8-20 B15 MM	650	TPR650	Length 11	20	Nitrile	Plugged	1.5 Bar (22 Psi)	2xG1 ¹ / ₂	None	937917Q	PXWL8-20

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

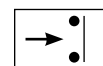
Visual indicator	
Thread connection	G ¹ / ₈
Code	FMUG2EBPG02L

Specifications	
Elec.rating	42V / 2A
Thread connection	G ¹ / ₈
Elec.connection	AMP terminal 6.3x0.8
Protection	IP65 (terminal IP00)
Switch type	NO or NC
Code	FMUS2EBMG02L (NO switch)
	FMUS3EBMG02L (NC switch)

Normally open contacts



Normally closed contacts



Product configurator

Configurator example TPR filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
TPR	2	05QL	B	S2	I	G12	L

Box 1	Box 2	Box 3																																																														
<table><tr><th>Code</th></tr><tr><td>TPR</td></tr></table>	Code	TPR	<table><tr><th colspan="2">Filter type</th></tr><tr><th>Housing</th><th>Code</th></tr><tr><td>TPR 1-40</td><td>1</td></tr><tr><td>TPR 1-80</td><td>2</td></tr><tr><td>TPR 2-120</td><td>5</td></tr><tr><td>TPR 2-200</td><td>6</td></tr><tr><td>TPR 2-250</td><td>7</td></tr><tr><td>TPR 3-450</td><td>10</td></tr><tr><td>TPR 3-650</td><td>11</td></tr></table>	Filter type		Housing	Code	TPR 1-40	1	TPR 1-80	2	TPR 2-120	5	TPR 2-200	6	TPR 2-250	7	TPR 3-450	10	TPR 3-650	11	<table><tr><th colspan="6">Degree of filtration</th></tr><tr><td rowspan="4">Element media</td><td colspan="5">Glass fibre</td><td rowspan="4">Wire mesh</td></tr><tr><td colspan="5">Microglass III (for disposable elements)</td></tr><tr><td>Cellulose</td><td colspan="4">Ecoglass III (for Leif® elements)</td></tr><tr><td>Nom. rating</td><td></td><td></td><td></td><td></td></tr><tr><td>Disposable element (TPR I only)</td><td>10C</td><td>02Q</td><td>05Q</td><td>10Q</td><td>20Q</td><td>040W</td></tr><tr><td>LEIF® element (for all TPR Filters)</td><td></td><td>02QL</td><td>05QL</td><td>10QL</td><td>20QL</td><td></td></tr></table>	Degree of filtration						Element media	Glass fibre					Wire mesh	Microglass III (for disposable elements)					Cellulose	Ecoglass III (for Leif® elements)				Nom. rating					Disposable element (TPR I only)	10C	02Q	05Q	10Q	20Q	040W	LEIF® element (for all TPR Filters)		02QL	05QL	10QL	20QL	
Code																																																																
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Housing	Code																																																															
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TPR 2-120	5																																																															
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LEIF® element (for all TPR Filters)		02QL	05QL	10QL	20QL																																																											

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	on request

Indicator	
	Code
Pressure gauge, setting 1.2 bar, G ¹ / ₈	G2
Pressure switch 42V, 1.2 bar setting, NO with G ¹ / ₈	S2
Pressure switch 42V, 1.2 bar setting, NC with G ¹ / ₈	S3
Pressure switch 250V, NO/NC with G ¹ / ₈	S4
No indicator, indicator ports not machined	on request
No indicator, indicator port R plugged	on request
No indicator, indicator ports L + R plugged	P2
Other settings for indicators / gauges on request	on request

Bypass valve	
Bypass valve	Code
0.8 bar	B
1.5 bar	E
2.5 bar (TPR 1 Series only)	I
Blocked bypass	on request
Other bypass settings	on request

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Filter connection	
Ports	Code
G ¹ / ₄ (BSP) (TPR 1 Series)	G12
SAE12 (TPR 1 Series)	S12
G ¹ / ₄ (BSP) (TPR 2 Series)	G20
2 x ISO 228-G ¹ / ₄ (BSP) (TPR 2 Series)	2G20
SAE 20 (TPR 2 Series)	S20
2 x SAE 20 (TPR 2 Series)	2S20
SAE 24 (TPR 2 Series)	S24
2 x SAE 24 (TPR 2 Series)	2S24
G ¹ / ₂ (BSP) (TPR 2 and 3 Series)	G24
G ¹ / ₂ (BSP) (TPR 2 and 3 Series)	2G24

Options	
Options	Code
Standard	1
Dipstick	6
Aluminium funnel for TPR 1-80	J
Magnets for TPR 1 Series	E
Magnets + Dipstick for TPR 1 Series	K
Magnets + Aluminium Diffuser for TPR 1 Series	L
Magnets + Aluminium Diffuser + Dipstick for TPR 1 Series	M
Other combinations	on request

Note: Tanktopper I Series are standard supplied with POM type diffuser. Aluminium funnel is recommended for heavy duty applications, sensitivity for electrostatically charging or high fluid temperatures. Tanktopper II and III Series are always supplied with metal diffuser.

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Tanktopper Series I, II & III

Ordering Information (cont.)

Degree of filtration						Media code
Average filtration beta ratio B (ISO 16889) / particle size µm [c]						
Bx(c)=2	Bx(c)=10	Bx(c)=75	Bx(c)=100	Bx(c)=200	Bx(c)=1000	
% efficiency, based on the above beta ratio (Bx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Supersedes spare element table				
TPR 1-40	PXWL1-2	PXWL1-5	PXWL1-10	PXWL1-20
Part number spare element	937898Q	937900Q	937902Q	937904Q
TPR 1-80	PXWL2-2	PXWL2-5	PXWL2-10	PXWL2-20
Part number spare element	937899Q	937901Q	937903Q	937905Q
TPR 2-120	PXWL3-2	PXWL3-5	PXWL3-10	PXWL3-20
Part number spare element	937886Q	937889Q	937892Q	937895Q
TPR 2-200	PXWL4-2	PXWL4-5	PXWL4-10	PXWL4-20
Part number spare element	937887Q	937890Q	937893Q	937896Q
TPR 2-250	PXWL4A-2	PXWL4A-5	PXWL4A-10	PXWL4A-20
Part number spare element	937888Q	937891Q	937894Q	937897Q
TPR 3-250	PXWL6-2	PXWL6-5	PXWL6-10	PXWL6-20
Part number spare element	937906Q	937909Q	937912Q	937915Q
TPR 3-450	PXWL7-2	PXWL7-5	PXWL7-10	PXWL7-20
Part number spare element	937907Q	937910Q	937913Q	937916Q
TPR 3-650	PXWL8-2	PXWL8-5	PXWL8-10	PXWL8-20
Part number spare element	937908Q	937911Q	937914Q	937917Q

Supersedes spare element table						
TPR 1-40	PXX1A-10	PXW1A-2	PXW1A-5	PXW1A-10	PXW1A-20	PS1A-40
Part number spare element	937918	937920Q	937925Q	937930Q	937935Q	937940
TPR 1-80	PXX2A-10	PXW2A-2	PXW2A-5	PXW2A-10	PXW2A-20	PS2A-40
Part number spare element	937919	937921Q	937926Q	937931Q	937936Q	937941
TPR 3-160		PXW5-2	PXW5-5	PXW5-10	PXW5-20	
Part number spare element		937922Q	937927Q	937932Q	937937Q	
TPR 3-250		PXW6-2	PXW6-5	PXW6-10	PXW6-20	
Part number spare element		937923Q	937928Q	937933Q	937938Q	
TPR 3-450		PXW7-2	PXW7-5	PXW7-10	PXW7-20	
Part number spare element		937924Q	937929Q	937934Q	937939Q	



Tanktop Mounted Suction & Return Line Filters - Types SR1 & SR2

Suction Return Series

MAX 250 l/min - 10 bar



Suction Return Series

Features & Benefits

Features	Advantages	Benefits
Compact design	Less space required to apply SR Series	Improved flexibility during system design
Bypass valve mounted in series with back-pressure valve	Pressurisation of filtered oil for hydrostatic drive ensured during bypass	Lower risk of pump cavitation No direct bypass in the tank reducing the additional risk of oil foaming
LEIF® elements	Patented element safeguards the use of genuine parts	Guaranteed quality of filtration Contributes to ISO 14001 certification
Strainer located in filter head	Strainer filters all bypass fluid by using a system-matched degree of filtration	Improved protection of system Strainer can be inspected and cleaned during service events
High level of customisation	Dedicated system-matched solutions can be easily made available	Improved integration of filter in system combined with lower initial system costs
Full flow bypass with low hysteresis	Reduction of bypass period due to low hysteresis Only a small part of the total flow is bypassing the element	Improved protection of system
Standard or customised funnel	Ensures that oil enters the tank under the oil level	Significant reduction of oil foaming
Multiple ports availability	Flexibility related to suction- and return line hose(s) arrangement	More compact solutions can be realised The use of manifold blocks can be avoided Easy to integrate with cooler circuit

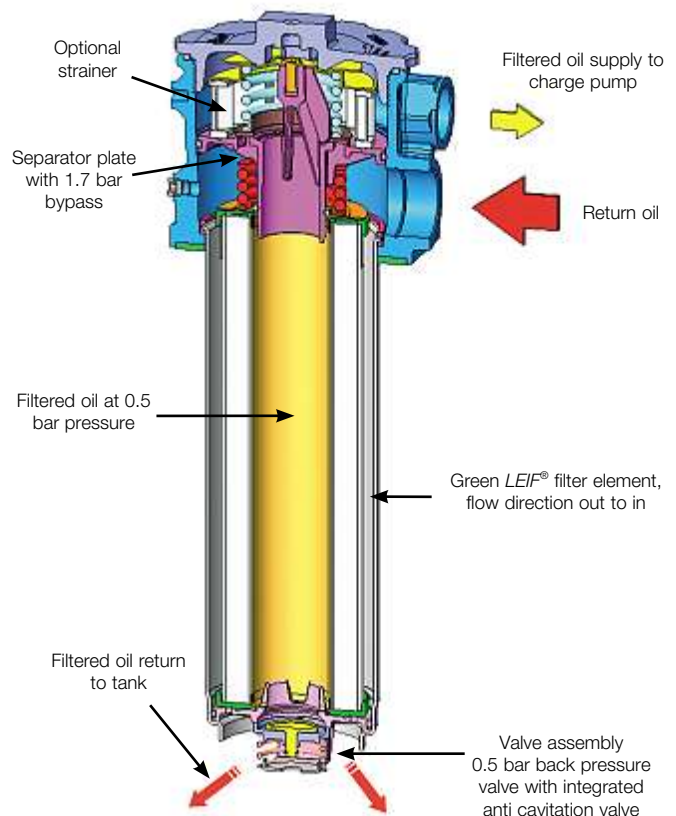
Typical Applications

Mobile equipment with both open and closed hydraulic circuits. For example:

- Road sweepers
- Road rollers
- Fork lift trucks
- Loading shovels
- Telescopic handlers
- Dump trucks
- Skid steers
- Agricultural harvesting machines
- Mini excavators

The Parker Filtration Tank Top Mounted Suction & Return Line Filters.

A tank top mounted return filter capable of feeding filtered oil under positive pressure to the suction side of the boost pump, thereby filtering both open and closed loop oil systems through one filter. The Parker SR filters use the patented LEIF® element for environmental-friendly filtration and offers protection against the use of pirate elements. Several options including integrated suction strainer and dipstick are available.



Specification

Pressure ratings:

Max. 10 bar.

Assembly:

Tank top mounted filters.

Connections:

Return port G1 (to BS 2779). } SR1
Suction port G $\frac{3}{4}$ (to BS 2779).

Return port G1 $\frac{1}{4}$ (ISO 228) or SAE20: } SR2
Optional second return port type SR2.
Suction port G1 (ISO 228) or SAE16:
Standard two suction ports.

Seal material:

Type SR1 – Nitrile.
Type SR2 – Nitrile, Fluoroelastomer.
Other seal material on request.

Operating temperature range:

-30° to +110°C.

Bypass valve system:

Main system bypass valve.
Type SR1 – 1.7 bar (2.5 bar optional).
Type SR2 – 1.7 bar (2.5 bar optional).

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media designed to optimise fatigue life.

Filtration media:

Type SR1 and SR2 –
Ecoglass III for LEIF® elements. See table 1 and 2 on the following page.
- High dirt holding capacity.
- Low pressure drop.
- Extended service life.

Element collapse rating:

Type SR1 – 10 bar (ISO2941).
Type SR2 – 10 bar (ISO2941).

Suction line:

Back-pressure valve setting 0.5 bar (nominal).

Anti-cavitation:

Emergency suction valve fitted as standard.

Construction:

Type SR1 and Type SR2

Precision pressure die casting

Filter

Housing:

Cover:

Glass reinforced nylon (high impact and temperature resistant)

Weight:

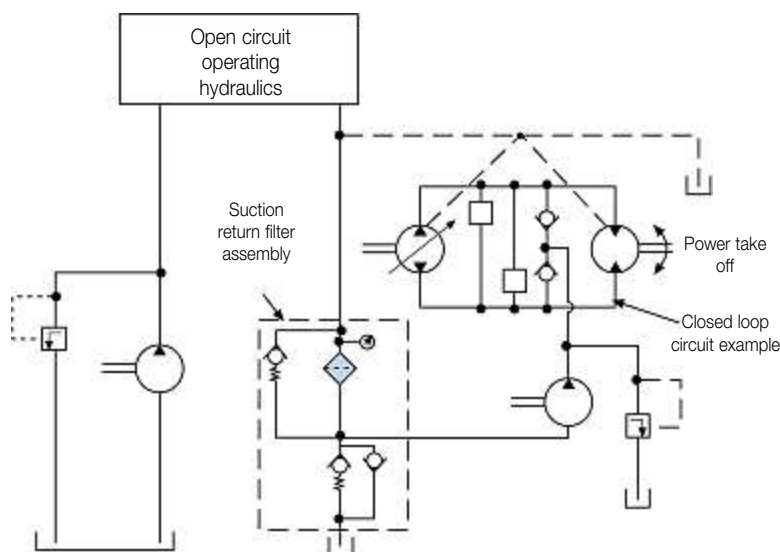
1.4Kg 3.3Kg

Filter

element:

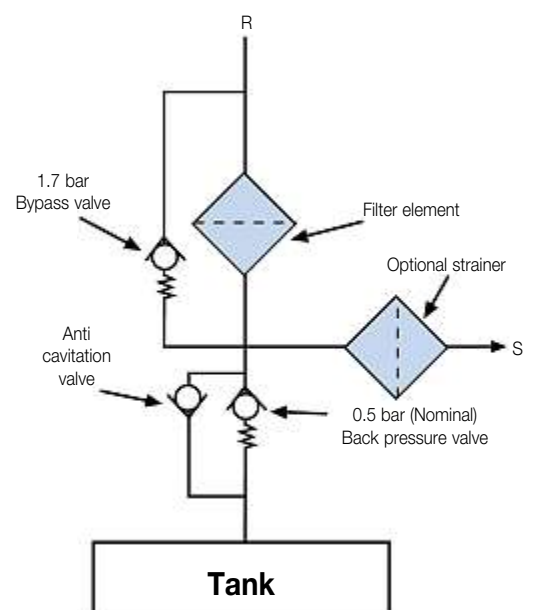
LEIF® element with reusable metal element sleeve.
The patented LEIF® concept contributes to ISO14001 and can be applied with mineral and HEES type fluids. } SR1 & SR2
For other fluid types consult Parker Filtration.

Circuit Application Example



Note: Suction return filter without optional strainer.

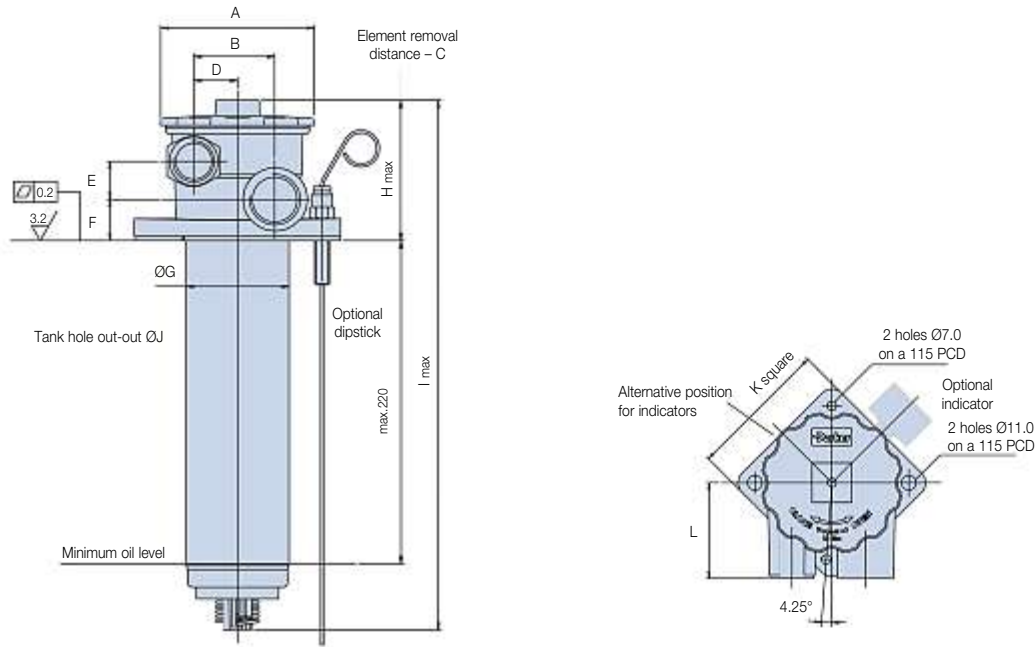
Suction Return Filter: Hydraulic Circuit



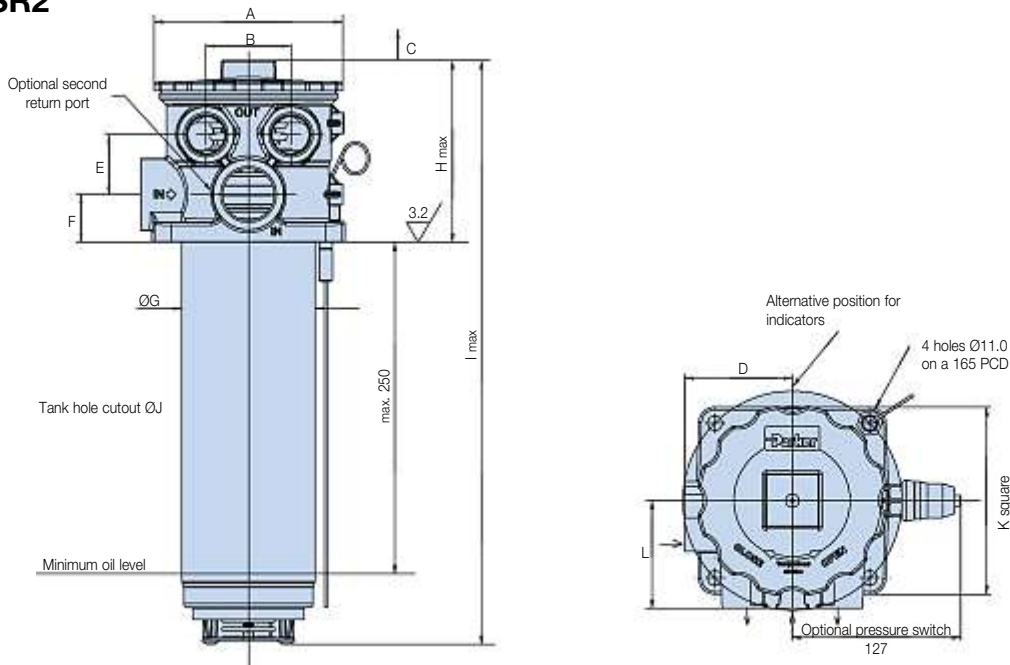
Note: Suction return filter with optional strainer.

Suction Return Series

SR1



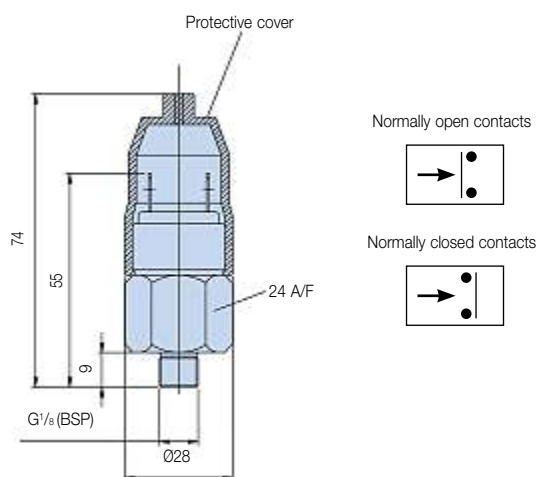
SR2



Dimensions mm (inches)	A	B	C	D	E	F	G	H	I	J	K	L
Type SRL1	106 (4.17)	55 (2.17)	280 (11.0)	29.75 (1.17)	26 (1.02)	28 (1.10)	70 (2.76)	96 (3.78)	361 (14.21)	71 to 73 (2.8 to 2.87)	105 (4.13)	72 (2.83)
Type SRL2	142 (5.59)	64 (2.52)	380 (14.96)	81 (3.19)	45 (1.77)	36 (1.42)	100 (3.94)	137 (5.39)	440 (17.32)	101 to 103 (3.98 to 4.06)	145 (5.71)	81 (3.19)

Element removal distance for dimension C.

Indicator Details



Visual indicator	2 bar
Thread connection	G1/8
Code	FMUG5HBMG02L

Pressure switch	
Elec.rating	42V / 2A
Thread connection	G1/8
Elec.connection	AMP terminal 6.3 x 0.8
Protection	IP65 (terminal IP00)
Setting	2 bar
Switch type	NO or NC
Code	FMUS6HBMG02L (NO switch)
	FMUS7HBMG02L (NC switch)

Note: Vacuum indicators visual or electrical are available on request for filter type SR2 only.

Principles of Operation

Suction Return Series filter

This one filter assembly is designed to carry out two specific functions:

- (1) Filter system return line oil.
- (2) Supply filtered oil under positive pressure to the closed loop hydrostatic circuits.

Principles of operation

- (1) Return oil from both the open and closed circuits* is fed into the Suction Return Series Filter at port 'R'.
- (2) The filtered oil is maintained at a nominal 0.5 bar by the unique back pressure valve assembly and fed into the closed loop hydrostatic circuit via port 'S'.
- (3) Surplus filtered oil is fed back to the tank via the back pressure valve assembly.
- (4) Emergency suction (anti-cavitation) valve: This valve is fitted as standard to ensure oil is always available to the closed loop system, even on emergency occasions when the return flows do not meet the flow demands of the closed loop circuit.

Additional installation guidance notes

- (1) Return oil flow should always be greater than the oil flow rate demanded by the closed loop charge pump.
- (2) Oil level at all times should not fall below valve assembly at the base of the filter bowl.

Benefits

- (1) Only one filter is required to supply filtered oil to both open and closed loop circuits.
- (2) Feeding the closed loop circuit with filtered oil at a nominal pressure of 0.5 bar ensures excellent cold start characteristics, thus reducing the risk of cavitation.
- (3) Four hole mounting with gasket seal.
- (4) Microglass III filter element materials ensure; low pressure drop, high dirt holding capacity and extended service life.
- (5) Type Parker SR filters with patented *LEIF*® element, unique drain construction, quick element replacement concept.

*CAUTION:

Back pressure in pump and motor drain lines should always be kept at a minimum thus protecting shaft seals etc.

If case drain oils are to be fed through the return line filter please consult the pump/motor manufactures for details on maximum allowable back pressure.

Ensure filter elements are replaced when element condition indicators show that the bypass setting has been reached.

Failure to observe the above operation and guidance notes, or use of non genuine Parker specified filter elements could cause damage to the system. System designers should always ensure that adequate cooling capacity is available.

Suction Return Series

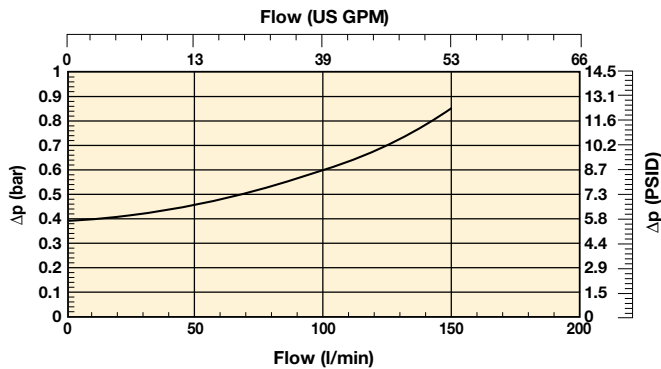
Pressure Drop Curves (Type SR1)

The recommended level of the initial pressure drop is approximately 1 bar.

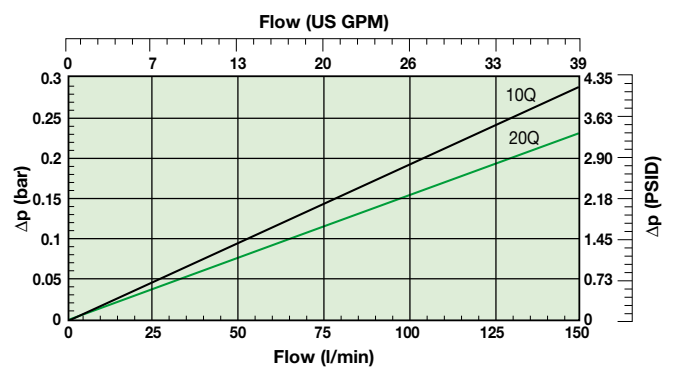
If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

The total $\Delta p = \text{Housing } \Delta p_h + (\text{Element } \Delta p_e \times \text{working viscosity}/32)$.

SRL1 Empty Housing (Length Code 2)



SRL1 (Element Length Code 2)

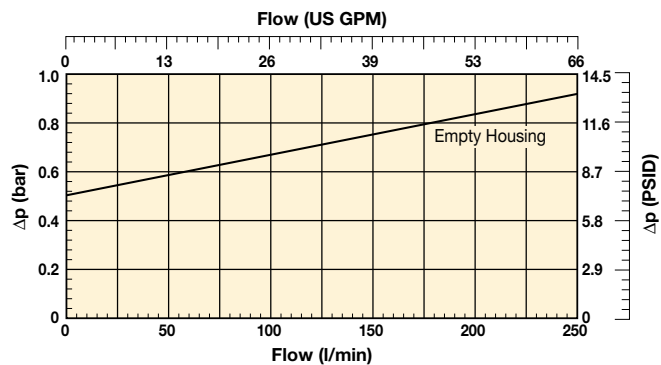


Curves are based on 32cSt fluid viscosity and 0.87 Kg/l density.

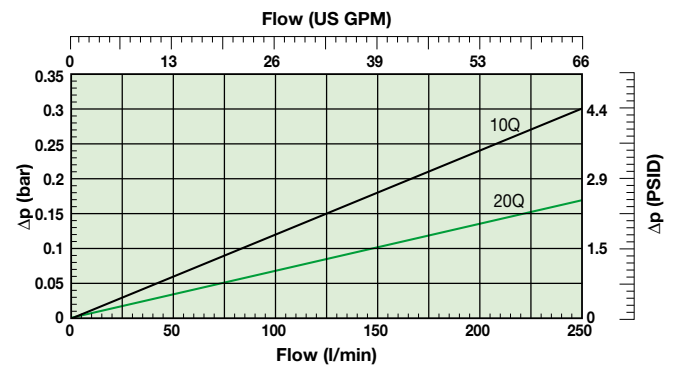
Pressure Drop Curves (Type SR2)

Curves are based on 32cSt fluid viscosity and 0.87 Kg/l density.

SRL2 Empty Filter Housing



SRL2 Filter Element Length 2



Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports return	Ports suction	Included options	Replacement elements	Supersedes
SRL1210QLBPGG161		130	SRL1	Length 2	10	Nitrile	Plugged	1.7 Bar (25 Psi)	G1	G ³ / ₄	None	937984Q	SRE12Q10
SRL1220QLBPGG161		130	SRL1	Length 2	20	Nitrile	Plugged	1.7 Bar (25 Psi)	G1	G ³ / ₄	None	937985Q	SRE12Q20
SRL2210QLBPGG201	SRL22Q10NP1B10	250	SRL2	Length 2	10	Nitrile	Plugged	1.7 Bar (25 Psi)	G1 ¹ / ₄	2xG1 ¹ / ₄	None	937946Q	SRE22Q10
SRL2220QLBPGG201	SRL22Q20NP1B10	250	SRL2	Length 2	20	Nitrile	Plugged	1.7 Bar (25 Psi)	G1 ¹ / ₄	2xG1 ¹ / ₄	None	937947Q	SRE22Q20

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Configurator example SR filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
SRL2	2	05QL	B	S6	G	2G20	I

Box 1

Code	
Model	Code
SR1 Series with LEIF[®] element	SRL1
SR2 Series with LEIF[®] element	SRL2

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Box 2

Filter type	
Housing	Code
Reduced length	on request
Standard length	2
Extended length	on request

Box 3

Degree of filtration				
Element				
	LEIF[®]			
	Q3 glassfibre 6x(c) >200			
	Code	Code	Code	Code
LEIF[®]	02QL	05QL	10QL	20QL

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Pressure gauge, setting 2.0 bar, G ³ / ₄	G5
Pressure switch 42V, 2.0 bar setting, NO with G ³ / ₄ BSP	S6
Pressure switch 42V, 2.0 bar setting, NC with G ³ / ₄ BSP	S7
Pressure switch 250V, NO/NC with G ³ / ₄	on request
No indicator, indicator ports not machined	N
No indicator, indicator port R plugged	P
No indicator, indicator ports L + R plugged	on request
Vacuum switch / vacuum gauge	on request
Other settings for indicators / gauges on request	on request

Box 6

Bypass valve	
Bypass valve	Code
1.7 bar	G
2.5 bar	I
Blocked bypass	on request
Other bypass settings	on request

Box 7

Filter connection		
Ports	Code	Note
Return port 1 x G1 (ISO228) + Suction port 1 x G ³ / ₄ (ISO228)	G16	SRL1
Return port 1 x G1 ¹ / ₄ (ISO228) + Suction port 2 x G1 (ISO228)	G20	SRL2
Return port 2 x G1 ¹ / ₄ (ISO228) + Suction port 2 x G1 (ISO228)	2G20	SRL2
Return port 1 x SAE20 + Suction port 2 x SAE16	S20	SRL2
Return port 2 x SAE20 + Suction port 2 x SAE16	2S20	SRL2

Box 8

Options	
Options	Code
None	1
Strainer 120 micron	G
Dipstick	6
Plugged vent port in cover	H
Strainer 120 micron, dipstick and plugged vent port	I
Customized options	on request

Degree of filtration						Media code
Average filtration beta ratio B (ISO 16889) / particle size µm [c]						
Bx(c)=2	Bx(c)=10	Bx(c)=75	Bx(c)=100	Bx(c)=200	Bx(c)=1000	
% efficiency, based on the above beta ratio (Bx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	
N/A	N/A	4.5	5	6	7	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Spare elements		
Replacement elements	Supersedes	
937942Q	SRR12Q05N	Semi standard
937943Q	SRR12Q10N	Standard
937944Q	SRR12Q20N	Standard
937945Q	SRE22Q05	Semi standard
937946Q	SRE22Q10	Standard
937947Q	SRE22Q20	Standard
937983Q	SRE12Q05	Semi standard
937984Q	SRE12Q10	Standard
937985Q	SRE12Q20	Standard



LEIF®



Ecoglass III

Parker E-Series

Ensure that the impact for the environment is minimized.

The development of filter products for Parker is an on-going process driven by the needs of the customer and the protection of our fragile planet.

E-Series filters are Parker's positive contribution to help minimize the impact on the environment with **LEIF®** Low Environmental Impact Filters and the Ecoglass III elements. Product ranges that together will help reduce disposal volumes and costs.

For more information on Parker Filtration's hydraulic environmental solutions, contact us today.

E-Series

Low Pressure Filters **LEIF®** elements

- Up to 1500 l/min
- Patented design
- Re-usable element sleeve
- Contributes to ISO 14001
- **LEIF®** elements contain Ecoglass III media

Medium & High Pressure Filters **Ecoglass III** elements

- Medium pressure up to 1400 l/min
- High pressure up to 450 l/min
- Re-usable support tube
- Contributes to ISO 14001
- Ecoglass III media

For information on Parker Filtration products and technology:
Tel: +44(0)1924 487000 Fax: +44(0)1924 487001 Email: filtrationinfo@parker.com





Spin-on Filters

Maxiflow Series

MAX 360 l/min - 10 bar



Low pressure filters

Maxiflow Series

Features & Benefits

Features	Advantages	Benefits
Integrated indicator	Compact and robust durable construction	Easy identification of element status
High quality paint for canisters	Long term protection against corrosion	Improved protection of filter medium
Spin-on filters available for suction and return line filtration	Flexible product offering	Standardisation of components
High quality filter medium	Filter medium suitable for fatigue load due to high frequent flow fluctuation	Extended element life time

Typical Applications

- Telescopic handlers
- Refuse vehicles
- Road sweepers
- Compactors
- Industrial power units
- Grass cutters
- Press brakes

The Parker Filtration Maxiflow Full Flow Filters for Suction or Return.

Maxiflow type MXA8 and MXA9 feature two integral red/green indicators incorporated into the head. Fitted as standard, they ensure maximum indicator visibility and early warning of filter condition.

Maxiflow type MXA7 features one integral indicator.

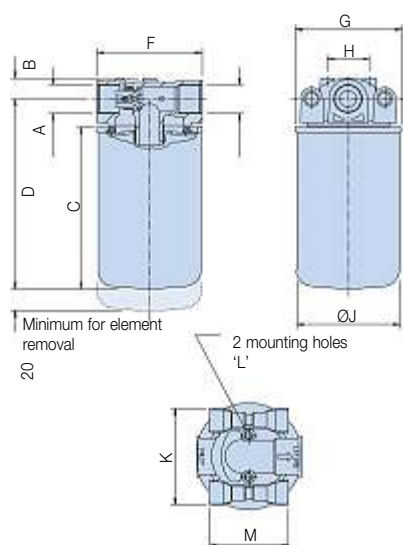


Specification

Maximum working pressure:	Preferred Series MXA 10 bar	PS Series 10 bar
Filter head material:	Aluminium LM24	Aluminium alloy
Filter bowl material:	Steel	Steel
Seal material:	Nitrile	Buna (nitrile)
Operating temperature range:	-30°C to +90°C	-30°C to +110°C
Bypass:	Return line 1.05 bar Suction line 0.17 bar No bypass option	Return line 1.5 bar Suction line 0.10 bar No bypass option
Fluids:	Mineral oils	Mineral oils
Element media:	Microglass III media Cellulose media	Microglass III media Cellulose media

Installation Details

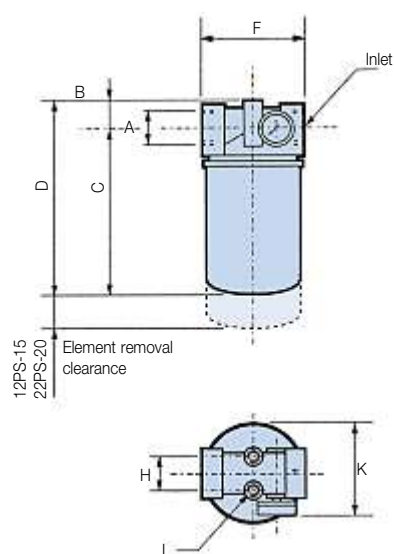
MXA.8/MXA.9***



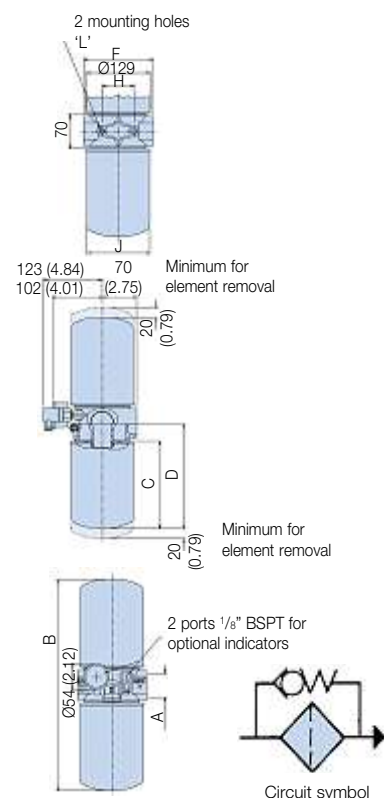
Filter selection

To select the correct filter use the appropriate pressure drop graphs. For details and an example of how to select the correct filter, see next page.

12PS/22PS



MXA.7***



Type	A	B	C	D	F	G	H	J	K	L	M
MXA.8	G ^{3/4}	19 (0.75)	147 (5.79)	173 (6.81)	95 (3.74)	97 (3.82)	38 (1.49)	94 (3.7)	88 (3.46)	M8 x 1.25 x 16 full depth	72 (2.83)
12PS		22 (0.86)	165 (6.49)	187 (7.36)	95 (3.74)	N/A	38 (1.49)	93 (3.66)	107 (4.21)		N/A
MXA.9	G1 ^{1/4}	30 (1.18)	179 (7.04)	213 (8.38)	133 (5.24)	129 (5.08)	50 (1.97)	127 (5.0)	130 (5.12)		72 (2.83)
22PS		28 (1.10)	208 (8.19)	236 (9.29)	133 (5.23)	N/A	50 (1.97)	130 (5.12)	N/A	M10 x 1.5	N/A
MXA.7	G1 ^{1/2}	430 (16.93)	179 (7.05)	214 (8.42)	140 (5.51)	N/A	65 (2.56)	127 (5.0)			

Maxiflow Series

Pressure Drop Curves

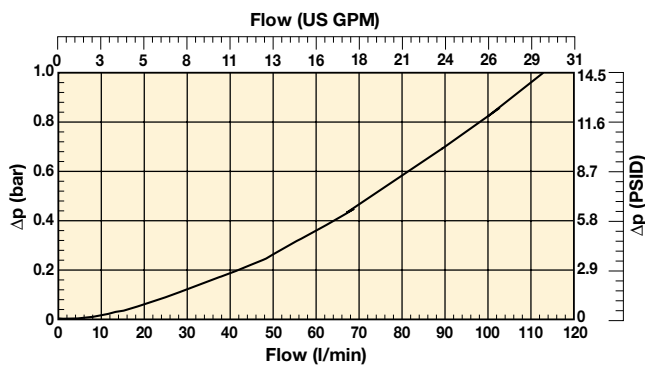
The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.

If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:

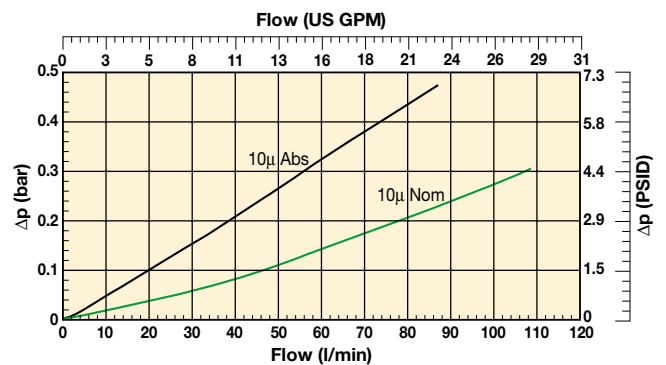
$$\Delta p = (\Delta p_{30} \times \text{viscosity of medium used}) / 30\text{cSt.}$$

Maxiflow (MXA.8*** Series) and 12PS Series

Filter Housing

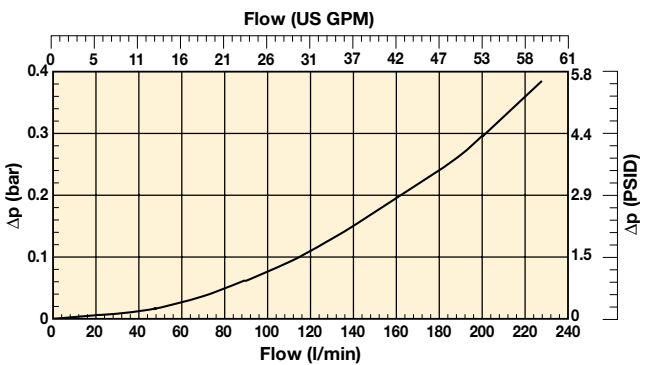


Filter Element

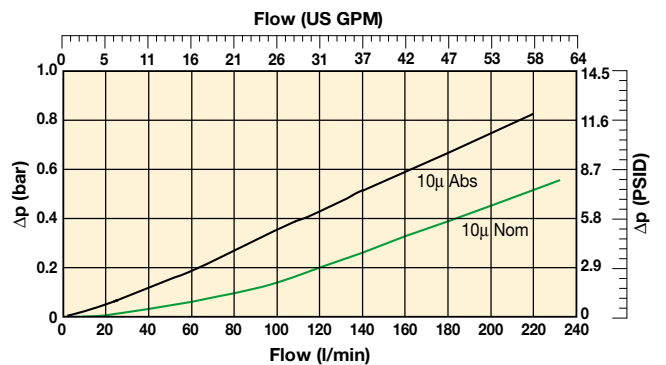


Maxiflow (MXA.9*** Series) and 22PS Series

Filter Housing

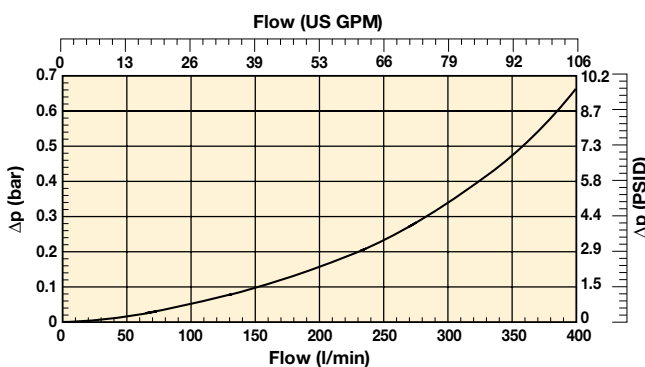


Filter Element

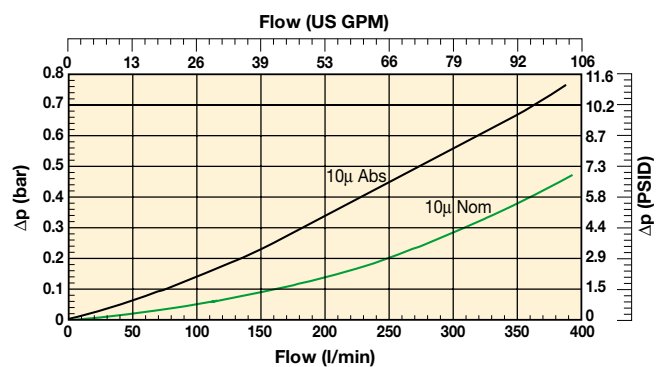


Maxiflow (MXA.7*** Series)

Filter Housing



Filter Element



Note: All above data is calculated at 30cSt Rel density 0.856.

Ordering Information

Type	Part number	Description	MAOP (bar)	Flow (l/min)	Media rating	Ports	Replacement element
------	-------------	-------------	------------	--------------	--------------	-------	---------------------

MXA.8*** & 12PS Return Line Filters

MXA	MXA8551424	Assembly with bypass & dual visual indicators	10	70	10 micron abs.	G ³ / ₄	MXR8550
PS	12PS10BT1R2B	Assembly with bypass & gauge type visual indicators					
MXA	MXA8511424	Assembly with bypass & dual visual indicators	10	70	10 micron nom.	G ³ / ₄	MX1518410 (x4*)
PS	12PS10CTV1R2B	Assembly with bypass & gauge type visual indicators					
	12PS10CTE2R2B	Assembly with bypass & electrical pressure indicator					
	12PS10CTPR2B	Assembly with bypass & no indicator					

MXA.8*** & 12PS Suction Line Filters

MXA	MXA8511223	Assembly with bypass & dual visual indicators	10	20	10 micron nom.	G ³ / ₄	MX1518410 (x4*)
PS	12PS10CTV1S4B	Assembly with bypass & gauge type visual indicator					
MXA	MXA8510223	Assembly without bypass, with dual visual indicators					
PS	12PS10CTV1SX4B	Assembly without bypass, with gauge type visual indicator					

MXA.9*** & 22PS Return Line Filters

MXA	MXA9561424	Assembly with bypass & dual visual indicators	10	30	3 micron abs.	G1 ¹ / ₄	MXR9560
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3 Micron abs. filtration for Off-Line and Bypass System Clean Up

Maxiflow 3 micron elements are ideal for off-line or bypass clean up applications. These can be specified for the 9*** and 7*** series return line filters

MXA	MXA9551424	Assembly with bypass & dual visual indicators	10	180	10 micron abs.	G1 ¹ / ₄	MXR9550
PS	22PS10BT1R2D	Assembly with bypass & gauge type visual indicators					
PS	22PS10BTE2R2D	Assembly with bypass & electrical pressure indicator					
PS	22PS10BTPR2D	Assembly with bypass & no indicator					
MXA	MXA9511424	Assembly with bypass & dual visual indicators	10	180	10 micron nom.	G1 ¹ / ₄	MX1591410 (x4*)
PS	22PS10CTV1R2D	Assembly with bypass & gauge type visual indicator					
PS	22PS10CTE2R2D	Assembly with bypass & electrical pressure indicator					
PS	22PS10CTPR2D	Assembly with bypass & no indicator					

MXA.9*** & 22PS Suction Line Filters

MXA	MXA9511223	Assembly with bypass & dual visual indicators	10	48	10 micron nom.	G1 ¹ / ₄	MX1591410 (x4*)
PS	22PS10CTV2S4D	Assembly with bypass & gauge type visual indicator					
MXA	MXA9511023	Assembly without bypass, with visual indicators					
PS	22PS10CTPSX4D	Assembly without bypass, no indicator					

MXA.7*** Return Line Filters

MXA	MXA7551424	Assembly with bypass & dual visual indicators	10	300	10 micron abs.	G1 ¹ / ₂	MXR9550
MXA	MXA7511424	Assembly with bypass & dual visual indicators	10	350	10 micron nom.	G1 ¹ / ₂	MX1591410 (x4*)

MXA.7*** Suction Line Filters

MXA	MXA7551223	Assembly with bypass & visual indicators	10	80	10 micron abs.	G1 ¹ / ₂	MXR9550
	MXA7551023	Assembly without bypass with visual indicators					
MXA	MXA7511223	Assembly with bypass & visual indicators	10	80	10 micron nom.	G1 ¹ / ₂	MX1591410 (x4*)
	MXA7511023	Assembly without bypass with visual indicators					

The Maxiflow Series 7*** can be specified with additional visual or electrical indicators. Please consult Parker Filtration for details

Note: Elements marked with (x4*) are only available in packs of 4

The PAR FIT™ Fit



THERE'S **ONLY ONE** SOLUTION

When it comes to replacement hydraulic filter elements there is only one solution: The ParFit interchange element range.

With over 10,000 standard, off-the-shelf variations, there's a ParFit element to fit most sizes and makes of OEM filters on mobile, construction, agricultural and industrial plant.

Every ParFit filter element is manufactured in Europe to the highest standards and is backed by our unrivalled technical support and money-back guarantees.

That means that you can reduce stockholdings, cut costs and be sure of the ultimate performance, with long, trouble-free operating life.

ParFit filters are available from ParkerStores and authorised distributors throughout the UK. To find your nearest ParkerStore Email filtrationinfo@parker.com or find the ParFit you need using our element selector at www.parker.com/parfit.

www.parker.com/parfit



ATZ Series

MAX 300 l/min



ATZ Series

Features & Benefits

Features	Advantages	Benefits
Cast aluminium construction	Compact and robust durable construction	Suitable for heavy duty industrial applications
Integrated check valve	Filter element can be changed when the filter housing is submerged under the oil in the tank	Improved protection of sophisticated pumps
Magnetic pre-filtration	Removes ferrous particles, even during bypass conditions	Improved fluid cleanliness levels Extended element life time
In-to-Out filtration	All captured contamination retains inside the element	No recontamination of system during change of elements
Wide range of vacuum measurement devices	Continuous filter condition monitoring	Contributes to just-in-time service Improved protection of pump when pressure measurement device connected with pump drive management

Typical Applications

- Wool untangling machine
- Hydraulic winch
- Power packs with sophisticated pumps
- Drilling blocks

The Parker Filtration ATZ Series Submersible Suction Filters.

ATZ Filters are located below the tank's oil level, offering maximum protection for the hydraulic system pump. When removing the element, the check valve closes automatically, eliminating any chance of oil leakage. Pre-filtration takes place by means of a magnet column. Thanks to the 'In-to-Out' filter principle, contaminated oil cannot leak back into the system. ATZ Filters are capable of handling flow rates up to 300 l/min.



Specification

Operating pressure:

Vacuum.

Assembly:

Suction line filter, mounted horizontally against tank side.

Connections:

Threads G1 $\frac{1}{2}$ (ISO 228) or flanges 2" SAE-300PSI.

Filter housing:

Aluminium.

Seal material:

Nitrile, neoprene, fluoroelastomer.

Operating temperature range:

-40° to +120°C.

Bypass valve:

Blocked.

Degree of filtration:

Determined by multipass test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved.

Filtration media:

Microglass III.

10µ cellulose and 40µ Stainless Steel.

Element collapse rating:

10 bar (ISO 2941).

Pressure indicator options:

0.15 bar or 0.30 bar (vacuum gauge).

125-250VAC (LI-0, 5A, Lr-2, 0A) (electrical vacuum switch).

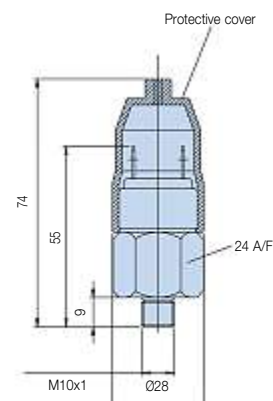
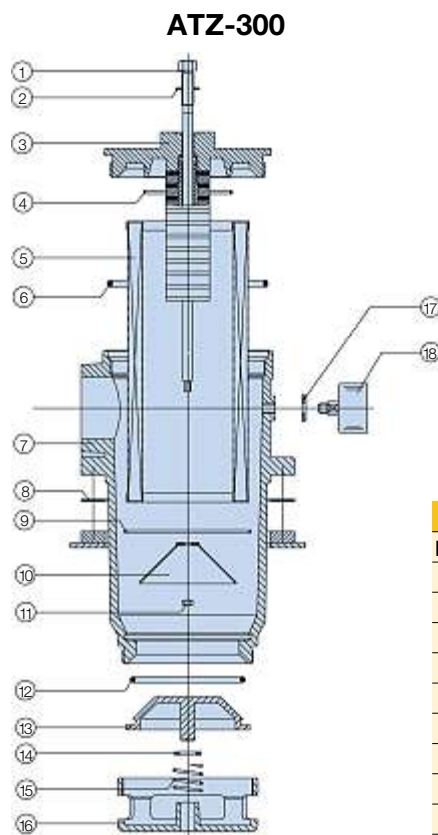
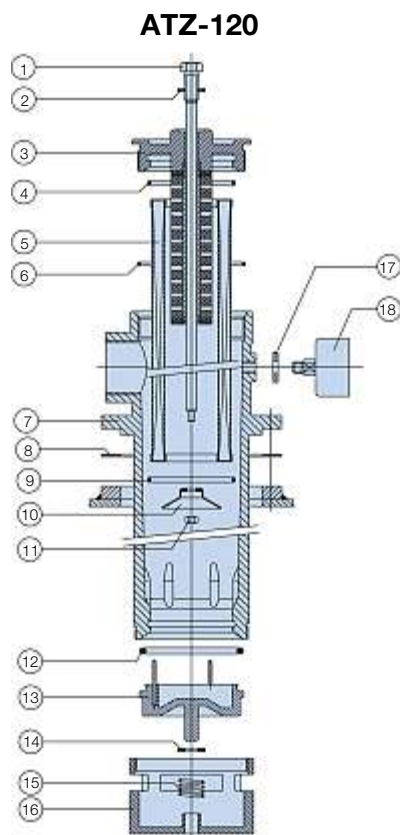
12-28Vdc (Li-1, 0A, Lr-3, 0A) (electrical vacuum switch).

Features:

Unique check valve, enabling element change below oil level.

Filter element:

Element with steel end caps.



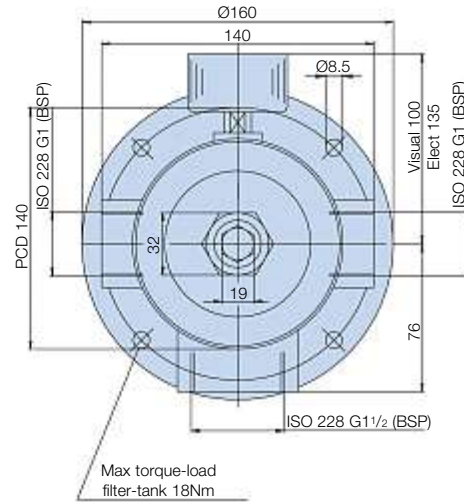
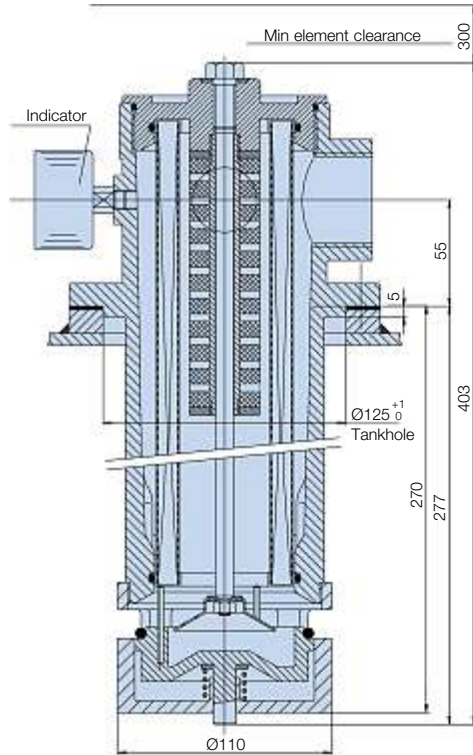
ATZ-120 & ATZ-300

Ref. No.	Description	Ref. No.	Description
1	1 Bolt	10	1 Valve support
2	1 Seal ring	11	1 Nut
3	1 Insert	12	1 O-ring
4	1 O-ring	13	1 Valve
5	1 Element	14	1 Ring
6	1 O-ring	15	1 Spring
7	1 Filter-housing	16	1 Valve-housing
8	1 Gasket	17	1 Bonded seal
9	1 O-ring	18	1 Indicator

ATZ Series

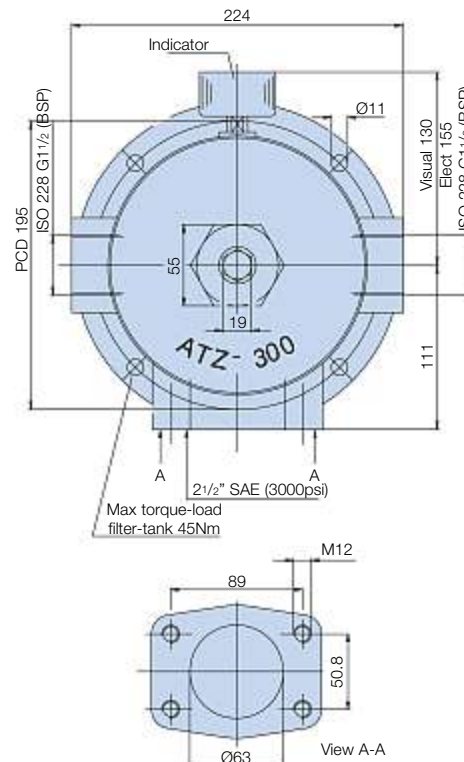
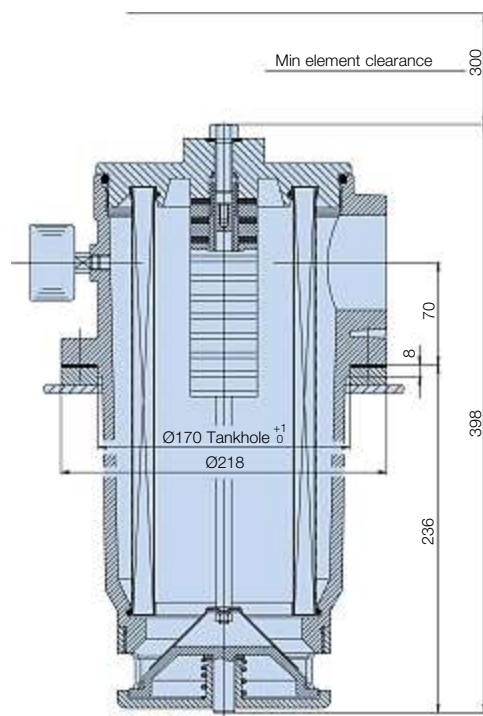
Specification (cont.)

ATZ-120



The Parker suction filters, type ATZ, are designed for submerged operation. The filters contain a unique check valve which automatically closes when the filter insert is removed from the housing, thus enabling element change below oil level. Construction is based on the field proven Parker Filter System.

ATZ-300



Pressure Drop Curves

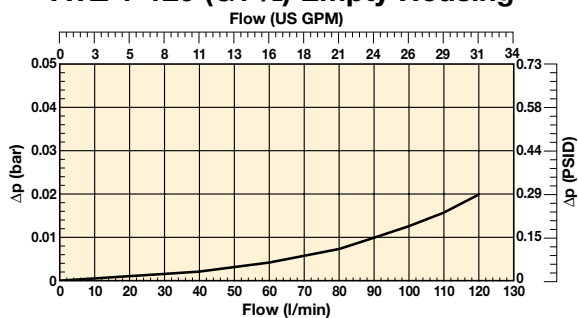
The recommended level of the initial pressure drop for suction filters is 0.03 bar.

If the medium used has a viscosity different from 32cSt, pressure drop over the filter can be estimated as follows:

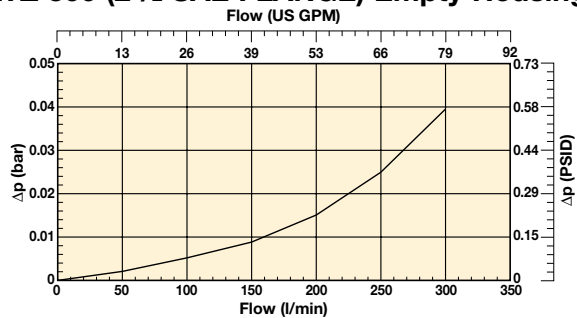
$$\Delta p = (\Delta p_{32} \times \text{viscosity of medium used}) / 32\text{cSt.}$$

Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

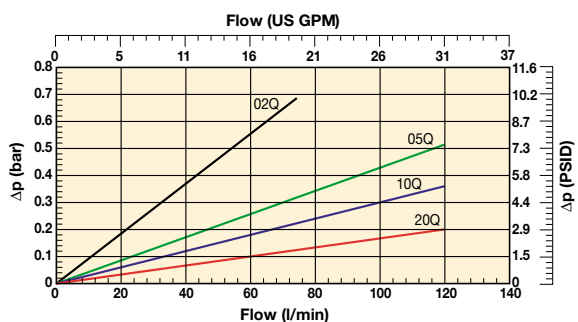
ATZ 1-120 (G1^{1/2}) Empty Housing



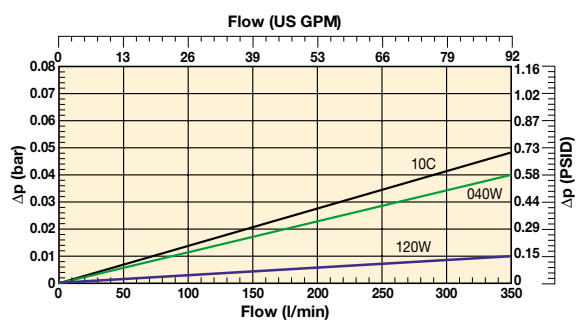
ATZ 300 (2^{1/2} SAE FLANGE) Empty Housing



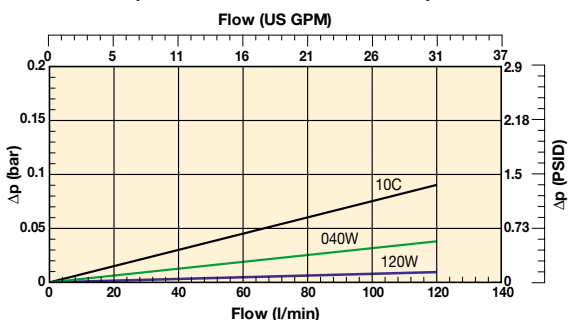
ATZ120 Filter Element Length 1



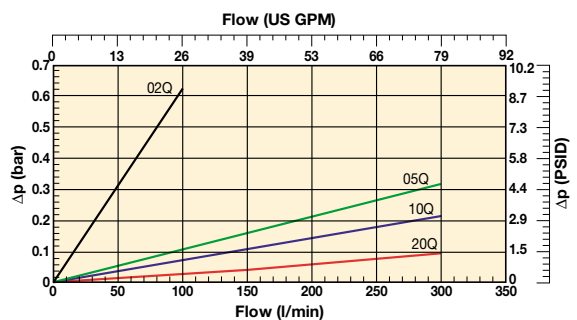
**ATZ300 Filter Element Length 2
(cellulose and stainless steel)**



**ATZ120 Filter Element Length 1
(cellulose and stainless steel)**



ATZ300 Filter Element Length 2



Suction Filters

ATZ Series

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Included options	Replacement elements	Supersedes
ATZ110CBP1XG241	ATZ120-G1½ FXX1-R-10 B M	120	ATZ120	Length 1	10 NOM	Nitrile	Plugged	Blocked	G1½"	None	937958	FXX1-R-10
ATZ110QBP1XG241	ATZ120-G1½ FXW1-R-10 B M	120	ATZ120	Length 1	10 ABS	Nitrile	Plugged	Blocked	G1½"	None	937964Q	FXW1-R-10
ATZ210CBP1XR481	ATZ300-S2½-C FXX3-10 B M	300	ATZ300	Length 2	10 NOM	Nitrile	Plugged	Blocked	2½" SAE-3000 PSI	None	937959	FXX3-10
ATZ210QBP1XR481	ATZ300-S2½-C FXW3-10 B M	300	ATZ300	Length 2	10 ABS	Nitrile	Plugged	Blocked	2½" SAE-3000 PSI	None	937965Q	FXW3-10

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Configurator example ATZ filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
ATZ	2	10C	B	U2	X	R48	1

Box 1	Box 2	Box 3							
Code	Filter type		Degree of filtration						
ATZ	Housing	Code	Element media		Glass fibre			Wire mesh	
	ATZ 1-120	1			Microglass III (for disposable elements)				
	ATZ 2-300	2							
				Cellulose					
				Nom. rating					Abs. rating
			Disposable element	10C	02Q	05Q	10Q	20Q	040W

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V
Neoprene	N

Box 5

Indicator	
	Code
Vacuum gauge, setting -0.15 bar, M10x1	U1
Vacuum gauge, setting -0.3 bar, M10x1	U2
Vacuum switch 42V, -0.15 bar setting, NO/NC, M10 x 1	V1
Vacuum switch 42V, -0.30 bar setting, NO/NC, M10 x 1	V2
Vacuum switch 250 VAC, -0.15 bar setting, NO/NC, M10 x 1	V3
Vacuum switch 250 VAC, -0.30 bar setting, NO/NC, M10 x 1	V4
No indicator, indicator ports not machined	N
No indicator, indicator port plugged	P
Other settings for indicators / gauges on request	on request

Box 6

Bypass valve	
Bypass valve	Code
Blocked bypass	X

Box 7

Filter connection	
Ports	Code
G1½" + 2 x G1" (For ATZ 1-120 only)	G24
2½" SAE-3000 PSI +2 x G1½" (For ATZ 2-300 only)	R48

Box 8

Options	
Options for ATZ 1-120	Code
1 x G1½" + 1 x G1" plugged	1
Not plugged	Q
1 x G1" right plugged	R
2 x G1" left & right plugged	P
Special	on request
Options for ATZ 2-300	
1 x SAE16 plugged	1
Not plugged	Q
Special	on request

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
βx(c)=2	βx(c)=10	βx(c)=75	βx(c)=100	βx(c)=200	βx(c)=1000	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q
N/A	N/A	4.5	5	6	7	05Q
N/A	6	8.5	9	10	12	10Q
6	11	17	18	20	22	20Q

Spare element table						
ATZ 1-120	FXX1-R-10	FXW1-R-2	FXW1-R-5	FXW1-R-10	FXW1-R-20	SF1-R-40
Part number spare element	937958	937960Q	937962Q	937964Q	937966Q	937967
ATZ 2-300	FXX3-10	FXW3-2	FXW3-5	FXW3-10	FXW3-20	SF3-40
Part number spare element	937959	937961Q	937963Q	937965Q	937966Q	937968

Visual indicator	
Setting	-0.3 bar
Thread connection	M10x1
Code	FMUV2VBMM10L

Electrical switch	
Setting	-0.3 bar
Thread connection	M10x1
Switch type	NO or NC
Elec.connection	AMP terminal 6.3x0.8
Protection	IP54 (terminal IP00)
Performance	125-250 VAC (Li 0,5A, Lr 2,0A max)
	12-28 Vdc (Li 1,0A, Lr3,0A max)
Code	FMUU2VBMM10L

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Medium Pressure Filters

15/40/80CN Series

MAX 600 l/min - 70 bar



15/40/80CN Series

Features & Benefits

Features	Advantages	Benefits
56 bar fatigue rating (eight times that of a spin-on)	Ability to provide reliable service under tough cyclic operating conditions	Reduced downtime due to premature filter failures
	Can be utilised in applications where high pressure filters may have been only option	Reduced costs, better "fit" for the application
Diametral (side) seal between head and bowl	Proven reliability in cyclic applications	No downtime, no leaks
Dust seal	Reduced importance of bowl torque	Performs with "real world" service
40CN-2 meets automotive HF3 standard	Automotive industry acceptance	Easier service, eliminates thread galling
15CN meets automotive HF2 standard		Satisfies specifications without need for further testing and/or approval
Cast aluminium head	Low profile, lightweight and durable	Less weight, smaller envelop and cleaner appearance
Reinforced Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
	Wire support reduces pleat bunching, keeps performance consistent	Reliable performance throughout element life
Complete performance data disclosure	All pertinent information is provided in an easy-to-compare format	Reduces downtime, maximises element life
		No hidden deficiencies
Visual, electrical or electronic indicators available	Check element condition at a glance	Easy selection of proper filtration
	Right style for the application	Optimise element life, prevent bypassing
Coreless Ecoglass III replacement elements	No metal content in element	Matches your system electrical connections
	Reduced overall weight of 50%	Environmentally friendly disposal by incineration
	Easy compaction of used elements	Lower element replacement costs
	Conversion kits available: new bowl with permanent core	Lower disposal cost
		Retrofit coreless design to housings already installed

Typical Applications

- Compressor lube oil
- Off-line filter loops
- Machine tools (Automotive standard)
- Hydrostatic drive charge pumps
- Mobile equipment
- Pilot lines for servo controls
- Oil patch drilling equipment
- Injection moulding

The Parker Filtration 15/40/80CN Series Medium Pressure Filters.

This partial list of applications for Parker "CN" Series Filters has a common factor, the need for an economical, medium pressure range filter with excellent fatigue pressure ratings. Prior to the availability of the "CN" filter, applications such as those listed were restricted by limitations of a spin-on can, or forced into the higher-cost range of high pressure filters.

The "CN" Series fills this gap and is now available with environmentally friendly Ecoglass III elements.



Specification

Pressure ratings:

Maximum allowable operating pressure: 70 bar
Rated fatigue pressure: 56 bar

Connections:

Several threaded port options available, flange faced ports available on 80CN.

Connection style	Model	40CN	80CN
BSPF(G)	15CN	1 1/4", 1 1/2"	1 1/2", 2"
SAE	12, 16	16, 24	24, 32
ISO 6149	M27	M33	M42, M48
Metric 3000-M			2"

Filter housing:

Head material aluminium.
Bowl material hard anodized aluminium.

Seal material:

Nitrile or fluoroelastomer.

Operating temperature range:

-20°C to +100°C.

Bypass valve & indicator settings:

Table following gives bypass valve and corresponding indicator setting.

Bypass	Indicator
1.7 bar	1.2 bar
3.5 bar	2.5 bar

Filter element:

Degree of filtration:

Determined by Multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III (available by request)

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core.
Collapse rating 20 bar (ISO 2941).

Ecoglass III

Supported with plastic net, end cap material reinforced composite.
No metal parts. Collapse rating 10 bar (ISO 2941).
Filter element can only be used together with bowl including Eco-adaptor.
Note: Ecoglass III contributes to ISO 14001 quality.

Indicator options:

- visual M3.
 - electrical T1.
 - electronic F1(PNP).
 - electronic F2(NPN).
- For indicator details see catalogue section 6.

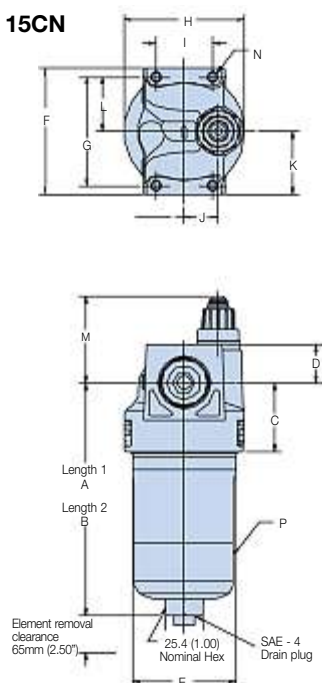
Weights (kg):

Model	Length 1	Length 2
15CN	1.1	1.6
40CN	2.0	2.5
80CN	5.6	6.9

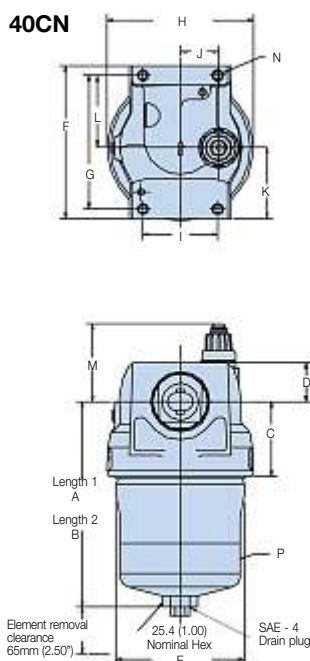
Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

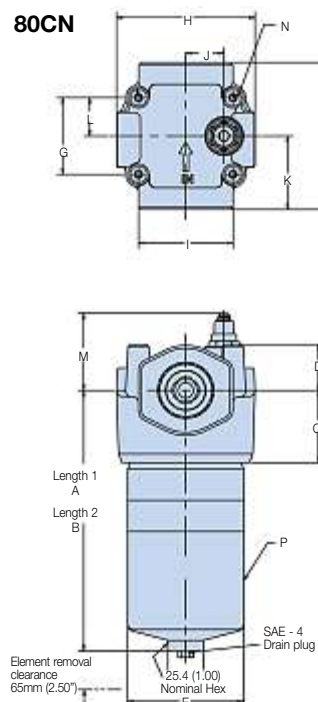
15CN



40CN



80CN



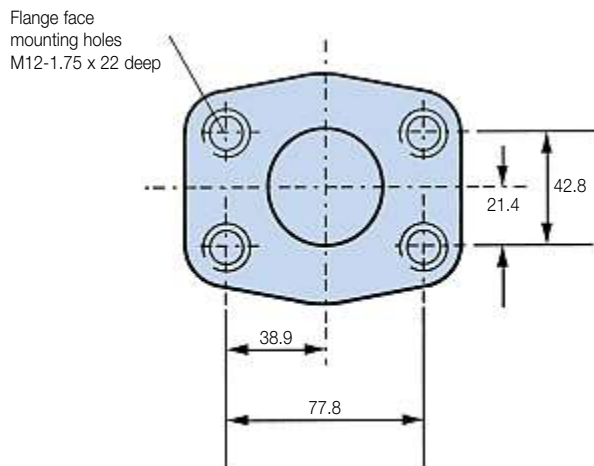
Dimensions in mm (inch)

Model	A	B	C	D	E	F	G	H	I	J	K	L	M*	N	P
15CN	156.6 (6.17)	250.7 (9.87)	46.5 (1.83)	25.4 (1.09)	71.1 (2.80)	85.9 (3.38)	73.2 (2.88)	82.6 (3.25)	38.1 (1.50)	22.9 (0.90)	42.9 (1.69)	36.6 (1.44)	53	4xM6-1.0x7.9 deep	20-27 Nm
40CN	170.8 (6.73)	262.4 (10.33)	62.0 (2.44)	32.6 (1.28)	107.2 (4.22)	127.0 (5.00)	111.0 (4.37)	121.9 (4.80)	62.0 (2.44)	31.8 (1.25)	58.8 (2.32)	60.2 (2.37)	53	4xM8-1.25x13 deep	57-68 Nm
80CN	280.9 (11.06)	401.6 (15.81)	77.7 (3.06)	49.5 (1.95)	124.8 (4.91)	158.7 (6.25)	82.6 (3.25)	151.4 (5.96)	101.6 (4.00)	41.1 (1.62)	79.4 (3.12)	41.3 (1.63)	69	4xM8-1.25x16 deep	80-95 Nm

Note: add 45mm for T and F indicators

15/40/80CN Series

80CN Flange Face Details (SAE 2" 3000-M)



Pressure Drop Curves

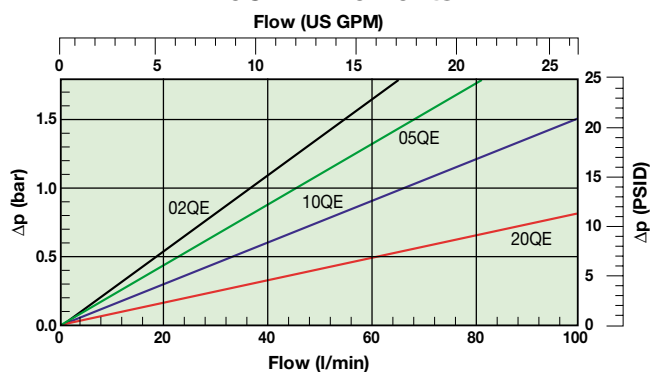
With 1.7 bar bypass the recommended initial pressure drop is max 0.5 bar.

With 3.5 bar bypass the recommended initial pressure drop is max 1.0 bar.

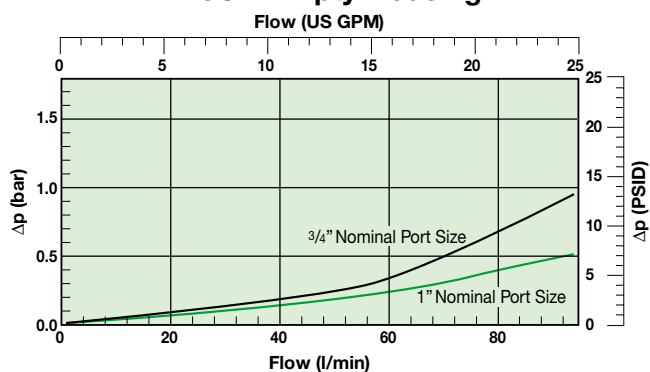
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

The total $\Delta p = \Delta p_{ph} + (\text{element } \Delta p_{pe} \times \text{working viscosity}/30)$.

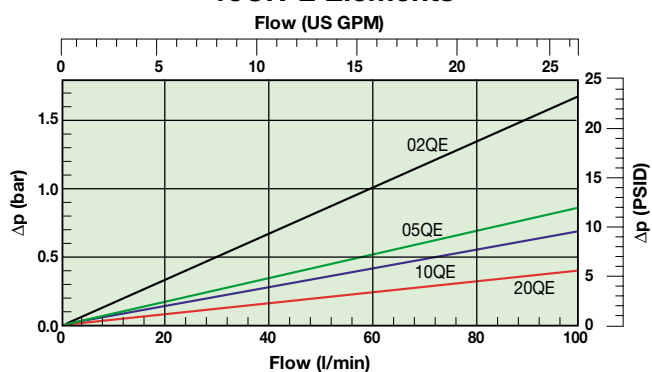
15CN-1 Elements



15CN Empty Housing

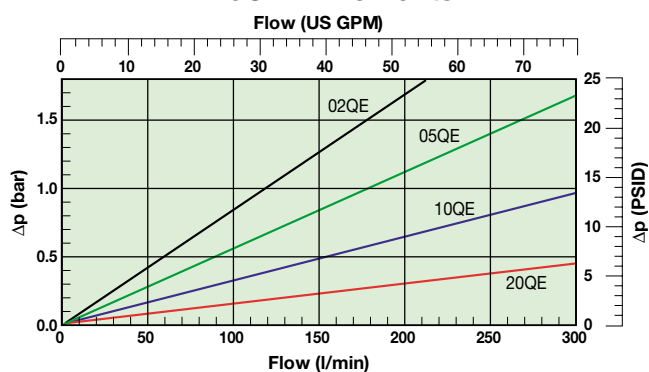


15CN-2 Elements

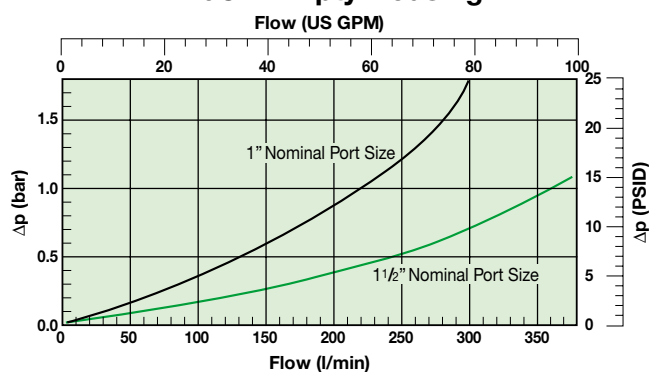


Pressure Drop Curves

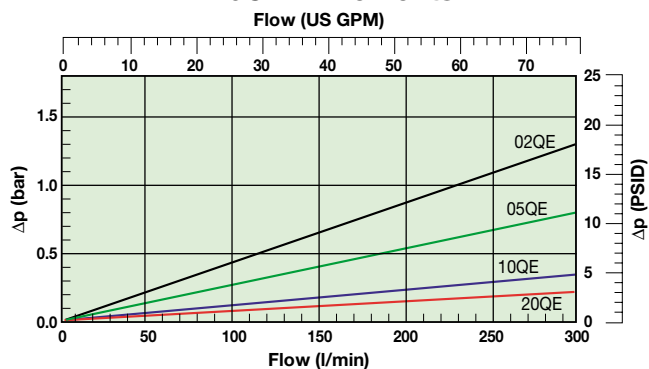
40CN-1 Elements



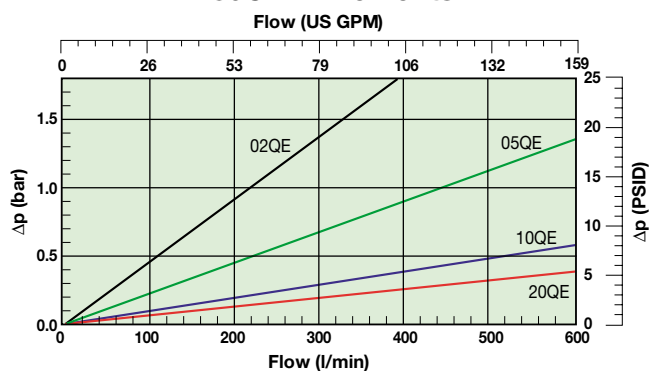
40CN Empty Housing



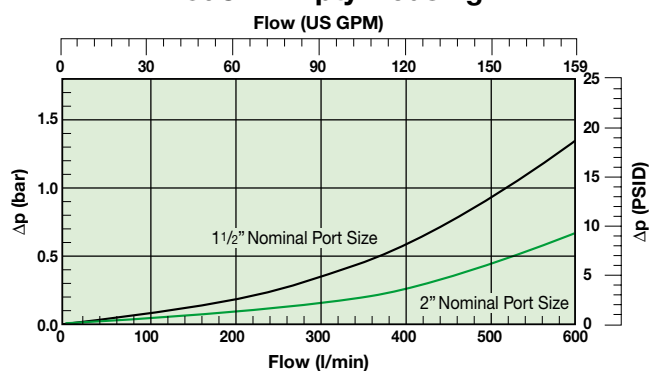
40CN-2 Elements



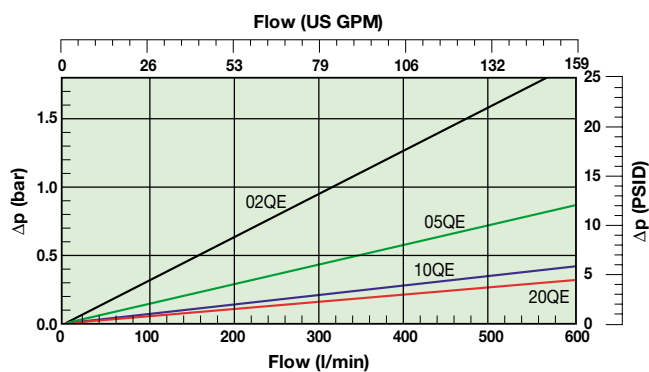
80CN-1 Elements



80CN Empty Housing



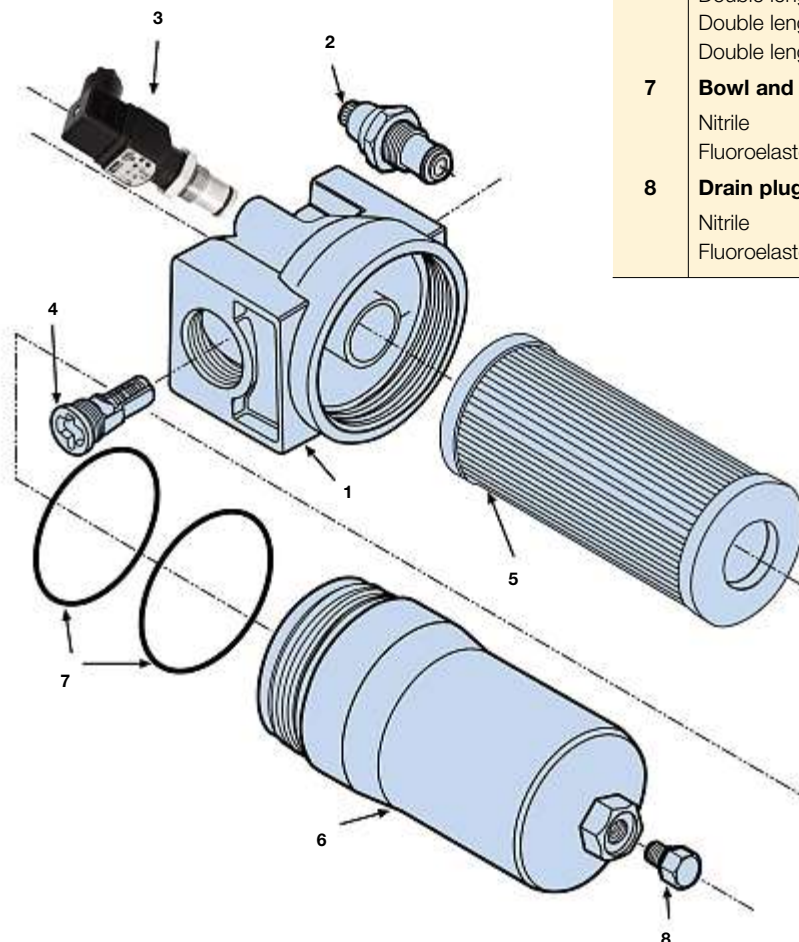
80CN-2 Elements



15/40/80CN Series

Element Service

- A. Stop the system's power unit.
- B. Relieve any system pressure in the filter line.
- C. Drain the filter bowl if drain port option is provided.
- D. Loosen and remove bowl.
- E. Remove element by pulling downward with a slight twisting motion and discard.
- F. Check bowl o-ring and anti-extrusion ring for damage and replace if necessary.
- G. Lubricate element o-ring with system fluid and place on post in filter head.
- H. Install bowl by rotating counter clockwise and tighten to specified torque.
 - 15CN – 20-27 Nm (15-20ft. lbs)
 - 40CN – 57-68 Nm (42-50ft. lbs)
 - 80CN – 80-95 Nm (60-70ft. lbs)
- I. Confirm there are no leaks after powering the system.



CN Filters Parts List

Index	Description
1	Head
2	Indicators M3-visual auto reset: 1.2 bar M3-visual auto reset: 2.5 bar
3	T1-electrical: 1.2 bar c/w DIN 43650 connector T1-electrical: 2.5 bar c/w DIN 43650 connector F1-electronic PNP with 4 LEDs: 1.2 bar F1-electronic PNP with 4 LEDs: 2.5 bar F2-electronic NPN with 4 LEDs: 1.2 bar F2-electronic NPN with 4 LEDs: 2.5 bar
4	Bypass valve 1.7 bar assembly 3.5 bar assembly
5	Element (see replacement element part numbers)
6	Bowl Single length with drain Single length with reusable core and drain Single length without drain Double length with drain Double length with reusable core and drain Double length without drain
7	Bowl and dust seal Nitrile Fluoroelastomer
8	Drain plug: SAE-4 Nitrile Fluoroelastomer

Ordering Information

Standard products table

Part numbers	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements
15CN110QEVT1KG164	F315CN1R10QETW350C2C219	50	15CN	Length 1	10	Fluoroelastomer	Electrical	3.5 bar	G1"	936700Q
15CN110QEV3M3KG164	F315CN1R10QEM250C2C219	50	15CN	Length 1	10	Fluoroelastomer	Visual	3.5 bar	G1"	936700Q
15CN120QEVT1KG164	F315CN1R20QETW350C2C219	80	15CN	Length 1	20	Fluoroelastomer	Electrical	3.5 bar	G1"	936701Q
15CN120QEV3M3KG164	F315CN1R20QEM250C2C219	80	15CN	Length 1	20	Fluoroelastomer	Visual	3.5 bar	G1"	936701Q
15CN210QEVT1KG164	F315CN2R10QETW350C2C219	80	15CN	Length 2	10	Fluoroelastomer	Electrical	3.5 bar	G1"	936704Q
15CN210QEV3M3KG164	F315CN2R10QEM250C2C219	80	15CN	Length 2	10	Fluoroelastomer	Visual	3.5 bar	G1"	936704Q
15CN220QEVT1KG164	F315CN2R20QETW350C2C219	100	15CN	Length 2	20	Fluoroelastomer	Electrical	3.5 bar	G1"	936705Q
15CN220QEV3M3KG164	F315CN2R20QEM250C2C219	100	15CN	Length 2	20	Fluoroelastomer	Visual	3.5 bar	G1"	936705Q
40CN105QEVT1KG244	F340CN1R05QETW350E2E219	120	40CN	Length 1	5	Fluoroelastomer	Electrical	3.5 bar	G1½"	936707Q
40CN105QEV3M3KG244	F340CN1R05QEM250E2E219	120	40CN	Length 1	5	Fluoroelastomer	Visual	3.5 bar	G1½"	936707Q
40CN110QEVT1KG244	F340CN1R10QETW350E2E219	180	40CN	Length 1	10	Fluoroelastomer	Electrical	3.5 bar	G1½"	936708Q
40CN110QEV3M3KG244	F340CN1R10QEM250E2E219	180	40CN	Length 1	10	Fluoroelastomer	Visual	3.5 bar	G1½"	936708Q
40CN120QEVT1KG244	F340CN1R20QETW350E2E219	260	40CN	Length 1	20	Fluoroelastomer	Electrical	3.5 bar	G1½"	936709Q
40CN120QEV3M3KG244	F340CN1R20QEM250E2E219	260	40CN	Length 1	20	Fluoroelastomer	Visual	3.5 bar	G1½"	936709Q
40CN205QEVT1KG244	F340CN2R05QETW350E2E219	200	40CN	Length 2	5	Fluoroelastomer	Electrical	3.5 bar	G1½"	936711Q
40CN205QEV3M3KG244	F340CN2R05QEM250E2E219	200	40CN	Length 2	5	Fluoroelastomer	Visual	3.5 bar	G1½"	936711Q
40CN210QEVT1KG244	F340CN2R10QETW350E2E219	280	40CN	Length 2	10	Fluoroelastomer	Electrical	3.5 bar	G1½"	936601Q
40CN210QEV3M3KG244	F340CN2R10QEM250E2E219	280	40CN	Length 2	10	Fluoroelastomer	Visual	3.5 bar	G1½"	936601Q
40CN220QEVT1KG244	F340CN2R20QETW350E2E219	320	40CN	Length 2	20	Fluoroelastomer	Electrical	3.5 bar	G1½"	936712Q
40CN220QEV3M3KG244	F340CN2R20QEM250E2E219	320	40CN	Length 2	20	Fluoroelastomer	Visual	3.5 bar	G1½"	936712Q
80CN110QEVT1KG324	F380CN1R10QETW350F2F219	370	80CN	Length 1	10	Fluoroelastomer	Electrical	3.5 bar	G2"	936602Q
80CN110QEV3M3KG324	F380CN1R10QEM250F2F219	370	80CN	Length 1	10	Fluoroelastomer	Visual	3.5 bar	G2"	936602Q
80CN120QEVT1KG324	F380CN1R20QETW350F2F219	420	80CN	Length 1	20	Fluoroelastomer	Electrical	3.5 bar	G2"	936715Q
80CN120QEV3M3KG324	F380CN1R20QEM250F2F219	420	80CN	Length 1	20	Fluoroelastomer	Visual	3.5 bar	G2"	936715Q
80CN210QEVT1KG324	F380CN2R10QETW350F2F219	530	80CN	Length 2	10	Fluoroelastomer	Electrical	3.5 bar	G2"	936718Q
80CN210QEV3M3KG324	F380CN2R10QEM250F2F219	530	80CN	Length 2	10	Fluoroelastomer	Visual	3.5 bar	G2"	936718Q
80CN220QEVT1KG324	F380CN2R20QETW350F2F219	600	80CN	Length 2	20	Fluoroelastomer	Electrical	3.5 bar	G2"	936719Q
80CN220QEV3M3KG324	F380CN2R20QEM250F2F219	600	80CN	Length 2	20	Fluoroelastomer	Visual	3.5 bar	G2"	936719Q

Note: Filter assemblies ordered from the product configurator on next page are on extended lead times. Where possible, please make your selection from the table above.

Medium Pressure Filters

15/40/80CN Series

Ordering Information (cont.)

Product Configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
40CN	2	10QE	V	M3	K	G24	4

Box 1

Code	
Model	Code
Small size MP filter, T-port	15CN
Medium size MP filter, T-port	40CN
Large size MP filter, T-port	80CN

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Box 3

Degree of filtration				
Element media	Glass fibre			
	Media code			
Ecoglass III element	02QE	05QE	10QE	20QE

Note: When using Ecoglass III elements a bowl with reusable Eco-adaptor is required.
Filter assemblies with Microglass III elements are available by request

Box 4

Seal type	
Seal material	Code
Fluoroelastomer	V
Nitrile	B

Box 5

Indicator	
	Code
No indicator port	N
Visual indicator	M3
Electrical indicator	T1
Plugged with steel plug	P
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass valve		
Bypass valve	Indicator	Code
1.7 bar	1.2 bar	G
3.5 bar	2.5 bar	K

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Ports	Code
15CN: Thread G $\frac{3}{4}$	G12
Thread G1	G16
Thread SAE 12	S12
Thread SAE 16	S16
Thread M27, ISO6149	M27
40CN: Thread G1 $\frac{1}{4}$	G20
Thread G1 $\frac{1}{2}$	G24
Thread SAE 16	S16
Thread SAE 24	S24
Thread M33, ISO6149	M33
80CN: Thread G1 $\frac{1}{2}$	G24
Thread G2	G32
Thread SAE 24	S24
Thread SAE 32	S32
Thread M42, ISO6149	M42
Thread M48, ISO6149	M48
SAE flange 2" 3000-M	R32

Box 8

Options	
Options	Code
Standard drain port on bowl	4

Ecoglass III elements (Fluoroelastomer seals)				
Model	02QE	05QE	10QE	20QE
15CN-1	936698Q	936699Q	936700Q	936701Q
15CN-2	936702Q	936703Q	936704Q	936705Q
40CN-1	936706Q	936707Q	936708Q	936709Q
40CN-2	936710Q	936711Q	936601Q	936712Q
80CN-1	936713Q	936714Q	936602Q	936715Q
80CN-2	936716Q	936717Q	936718Q	936719Q

Seal kits		
Model	Nitrile	Fluoroelastomer*
15CN	S04449	S04450
40CN	S04447	S04448
80CN	S04458	S04459

Replacement element part numbers for conventional assemblies

Conversion bowl assembly (to retrofit existing CN filter housings to use coreless elements)	
936758	15CN-1 coreless element bowl assembly
936759	15CN-2 coreless element bowl assembly
936760	40CN-1 coreless element bowl assembly
936761	40CN-2 coreless element bowl assembly
936763	80CN-1 coreless element bowl assembly
936764	80CN-2 coreless element bowl assembly

Elements with nitrile seals				
Model	02Q	05Q	10Q	20Q
15CN-1	928935Q	G04041Q	928934Q	930367Q
15CN-2	928953Q	G04169Q	928952Q	930368Q
40CN-1	926696Q	G04048Q	926835Q	930099Q
40CN-2	926697Q	G04167Q	926837Q	930118Q
80CN-1	932656Q	932657Q	932658Q	929899Q
80CN-2	932662Q	932663Q	932664Q	929923Q

Elements with Fluoroelastomer seals				
Model	02Q	05Q	10Q	20Q
15CN-1	932610Q	G04189Q	932612Q	930369Q
15CN-2	932616Q	G04190Q	932618Q	930370Q
40CN-1	926716Q	G04191Q	926836Q	930100Q
40CN-2	926717Q	G04192Q	926838Q	930119Q
80CN-1	932659Q	932660Q	932661Q	929903Q
80CN-2	932665Q	932666Q	932667Q	929927Q

Degree of filtration						Code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$	
% efficiency, based on the above beta ratio (β_x)						Metal free
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Ecoglass III
N/A	N/A	N/A	N/A	N/A	4.5	02QE
N/A	N/A	4.5	5	6	7	05QE
N/A	6	8.5	9	10	12	10QE
6	11	17	18	20	22	20QE

Nominal flow (l/min) for filter assembly at viscosity 30cSt

Housing, port size	02QE	05QE	10QE	20QE
15CN-1, G1	10	30	50	80
15CN-2, G1	30	70	80	100
40CN-1, G1 $\frac{1}{2}$	60	120	180	260
40CN-2, G1 $\frac{1}{2}$	80	200	280	320
80CN-1, G2	150	300	370	420
80CN-2, G2	180	420	530	600

* Fluoroelastomers are available under various registered trademarks, including Viton (a registered trademark of DuPont) and Fluorel (a registered trademark of 3M)

Please note the bolded options reflect standard options with a reduced lead-time of (4) weeks or less. Consult Parker Filtration on all other lead-time options.



Medium Pressure Filters

45M/45M Eco Series

MAX 260 l/min - 40 bar



45M/45M Eco Series

Features & Benefits

Features	Advantages	Benefits
Cast iron head, steel bowl	Can be used in applications where aluminium is not allowed	Approved for engine rooms and mines
	Rugged construction	Reliable filtration in all conditions
Reinforced Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
	Wire support reduces pleat bunching, keeps performance consistent	Reliable performance throughout element life
Visual, electrical or electronic indicators available	Check element condition at glance	Reduces downtime, maximises element life
	Right style for the application	Optimise element life, prevent bypassing
Test points in the filter head	Pressure measurement and Δp possible	Matches your system electrical connections
Coreless Ecoglass III replacement elements	No metal content in element	Quick testing and maintenance
	Reduced overall weight of 50%	Environmentally friendly disposal by incineration
	Easy compaction of used elements	Lower element replacement costs
	Eco adaptors available	Lower disposal costs
		Retrofit coreless design to housings already installed

Typical Applications

- Industrial power units
- Mobile construction equipment
- Forestry equipment

The Parker Filtration 45M/45 Eco Series Medium Pressure Filters.

The 45M/45 Eco Series of medium pressure filters offer an ideal solution to the problem of protecting system components at lower pressures.

These filters are a realistic, high quality alternative to low specification spin-on filters. The 45M/45 Eco Series offers high dirt holding capacity, 40 bar capability and rapid element replacement.



Specification

Pressure ratings:

Maximum allowable operating pressure 40 bar.

Filter housing pressure pulse fatigue tested: 10⁶ pulses 0-40 bar.

Connections:

Threads G1, G1¹/₄ (ISO 228/1) or flange SAE 1¹/₂" 3000-M.

Filter housing:

Head material cast iron (GSI).

Bowl material steel.

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

-20° to +100°C

Bypass valve:

Opening pressure 3.5 bar.

Filter element:

Degree of filtration:

Determined by Multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core.

Collapse rating 20 bar (ISO 2941).

Ecoglass III:

Supported with plastic net, end cap material reinforced composite.

No metal parts. Collapse rating 10 bar (ISO 2941).

Filter element can only be used together with reusable FEA Eco-adaptor.

Note: Ecoglass III contributes to ISO 14001 quality.

Indicator options:

Indicating differential pressure: 2.5 ± 0.3 bar.

- visual M3.

- electrical T1.

- electronic F1(PNP).

- electronic F2(NPN).

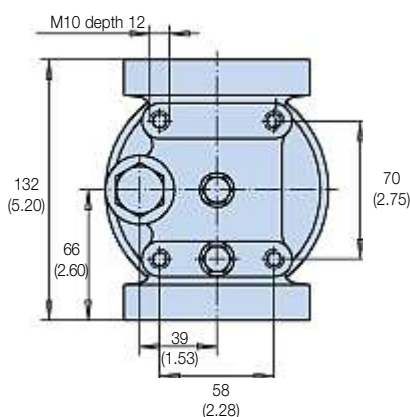
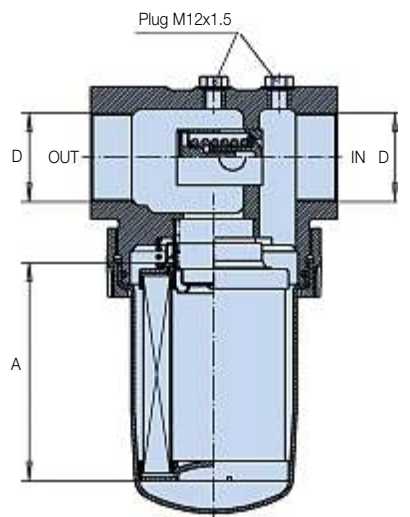
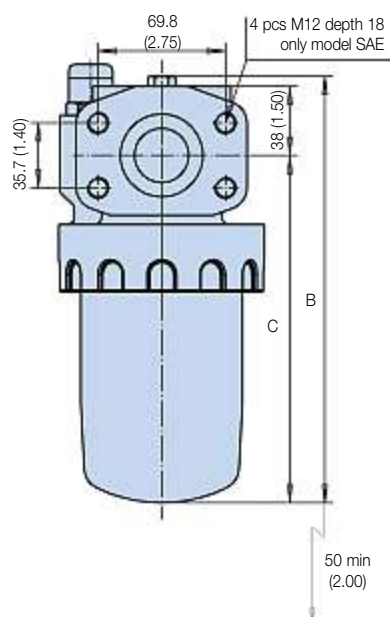
For indicator details see catalogue section 6.

Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

Installation Details

Type	A	B	C	Weight (kg)	D
Length 1	116 (4.57)	237 (9.33)	192 (7.56)	5.9	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , Flange SAE 1 ¹ / ₂ " 3000-M
Length 2	208 (8.20)	330 (13.00)	285 (11.22)	6.2	
Length 3	329 (13.00)	450 (17.72)	405 (15.94)	6.6	
Length 4	428 (16.85)	550 (21.65)	505 (19.90)	7.0	



45M/45M Eco Series

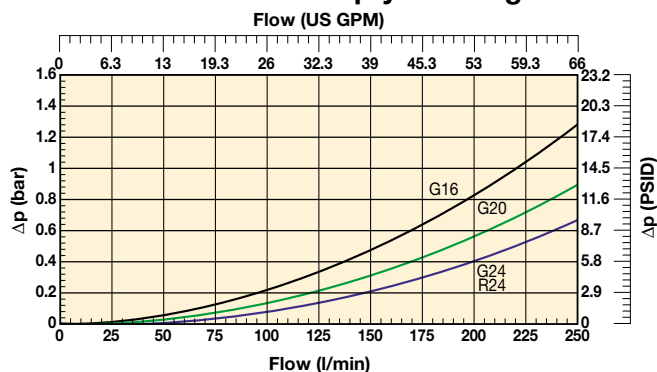
Pressure Drop Curves

The recommended level of the initial pressure drop is max 1.0 bar.

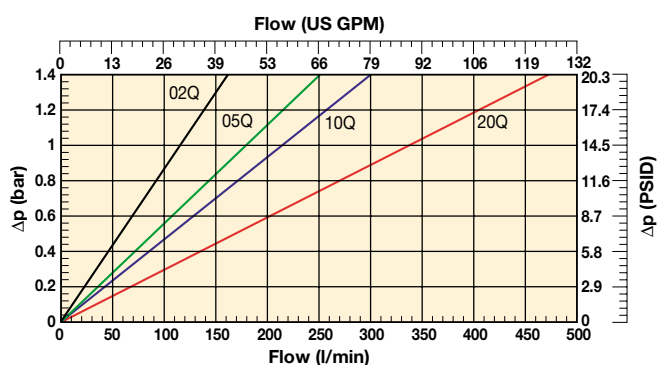
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

The total Δp = housing Δp_h + (element $\Delta p_e \times \text{working viscosity}/30$).

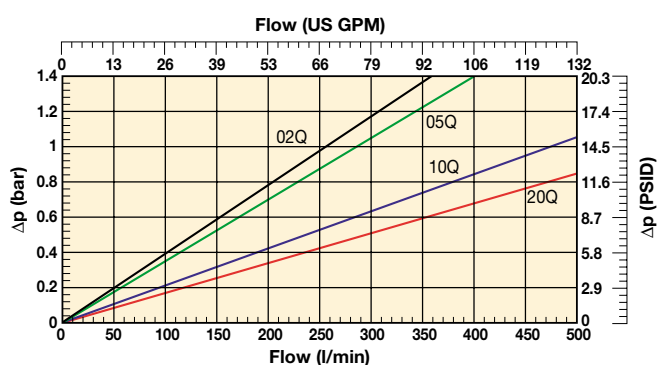
45M Series Empty Housing



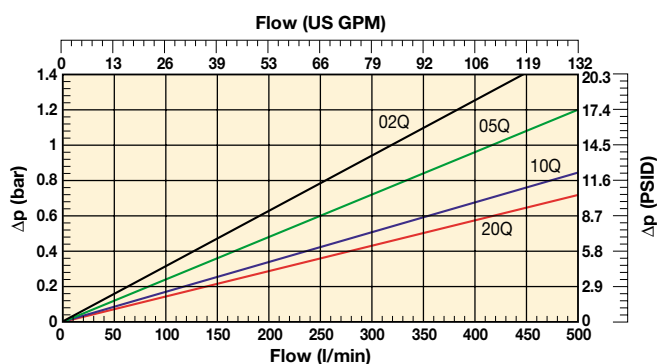
45M-1 Element with Microglass III



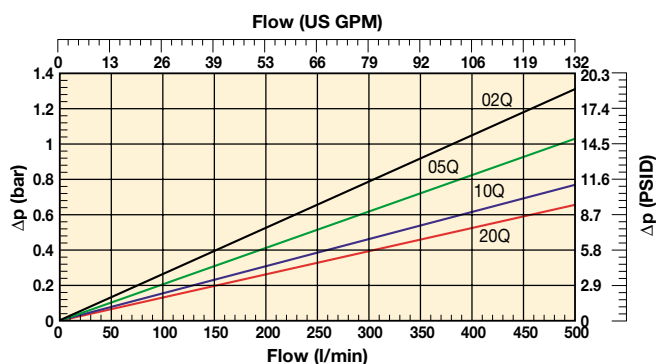
45M-2 Element with Microglass III



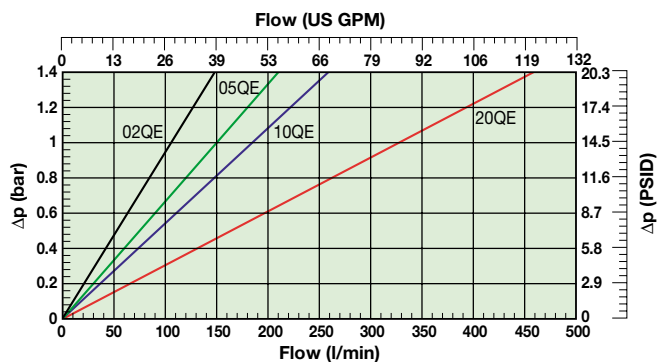
45M-3 Element with Microglass III



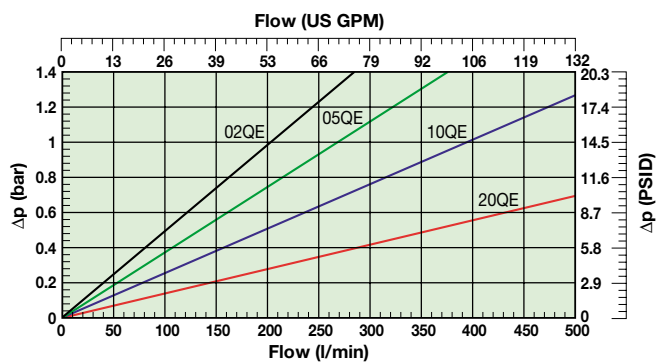
45M-4 Element with Microglass III



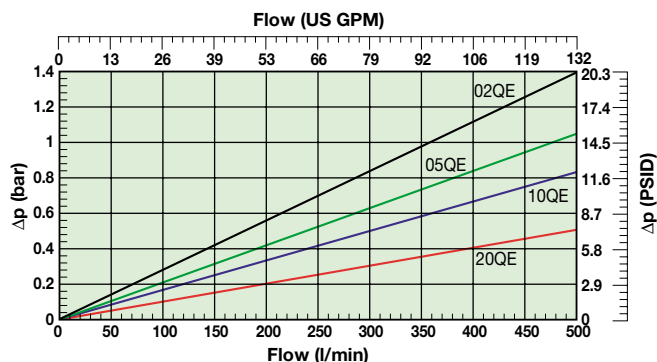
45M-1 Element with Ecoglass III



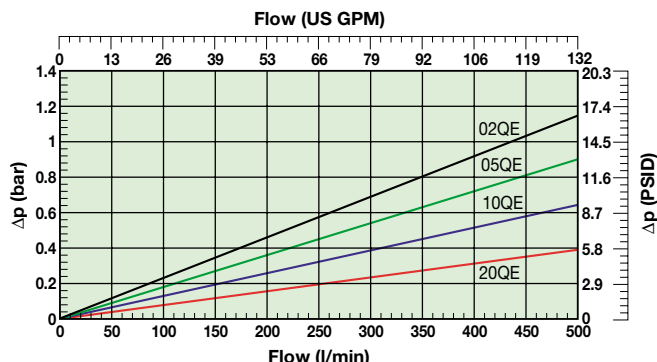
45M-2 Element with Ecoglass III



45M-3 Element with Ecoglass III



45M-4 Elements with Ecoglass III



Ordering Information

Standard products table

Product numbers	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements	Supersedes
45M110QBPKG161	FF1145.Q010.BS35.GT16	140	45M	Length 1	10	Nitrile	Plugged	3.5 bar	G1"	938962Q	FC7005.Q010.BK
45M120QBPKG161	FF1145.Q020.BS35.GT16	160	45M	Length 1	20	Nitrile	Plugged	3.5 bar	G1"	938963Q	FC7005.Q020.BK
45M110QEBPKG161	FF1145.QE10.BS35.GT16	140	45M	Length 1	10	Nitrile	Plugged	3.5 bar	G1"	938978Q	FC7005.QE10.BK
45M120QEBPKG161	FF1145.QE20.BS35.GT16	160	45M	Length 1	20	Nitrile	Plugged	3.5 bar	G1"	938979Q	FC7005.QE20.BK
45M210QBPKG201	FF1146.Q010.BS35.GT20	200	45M	Length 2	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938966Q	FC7006.Q010.BK
45M220QBPKG201	FF1146.Q020.BS35.GT20	220	45M	Length 2	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938967Q	FC7006.Q020.BK
45M210QEBPKG201	FF1146.QE10.BS35.GT20	200	45M	Length 2	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938982Q	FC7006.QE10.BK
45M220QEBPKG201	FF1146.QE20.BS35.GT20	220	45M	Length 2	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938983Q	FC7006.QE20.BK
45M310QBPKG241	FF1147.Q010.BS35.GT24	230	45M	Length 3	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938970Q	FC7007.Q010.BK
45M320QBPKG241	FF1147.Q020.BS35.GT24	250	45M	Length 3	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938971Q	FC7007.Q020.BK
45M310QEBPKG241	FF1147.QE10.BS35.GT24	230	45M	Length 3	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938986Q	FC7007.QE10.BK
45M320QEBPKG241	FF1147.QE20.BS35.GT24	250	45M	Length 3	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938987Q	FC7007.QE20.BK

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Medium Pressure Filters

45M/45M Eco Series

Ordering Information (cont.)

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
45M	2	10Q	B	M3	K	G20	1

Box 1

Code	
Model	Code
Medium pressure filter, T-port	45M

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2
Length 3	3
Length 4	4

Box 3

Degree of filtration				
Element media		Glass fibre		
		Media code		
Microglass III element		02Q	05Q	10Q
Ecoglass III element		02QE	05QE	10QE

Note: When using Ecoglass III elements a bowl with reusable Eco-adaptor is required.

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Plugged with steel plug	P
Visual indicator	M3
Electrical indicator	T1
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass valve		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K
No bypass*	7.0 bar	N
No bypass*	No indicator (P)	X

* High collapse element must be used if MAOP is higher than element collapse pressure.
When filter includes a bypass valve but not an indicator, code denotes bypass setting.

+ Box 8: code 2
+ Box 8: code 2

Box 7

Filter connection					
Connections	Code	Length 1	Length 2	Length 3	Length 4
Thread G 1	G16	S	S	S	x
Thread G 1 1/4	G20	S	S	S	S
Thread G 1 1/2	G24	x	S	S	S
SAE flange 1 1/2" 3000-M	R24	x	x	x	x

Availability: **S** = standard option
x = non-standard, ask for availability

Box 8

Options	
Options	Code
Standard	1
No bypass	2

Replacement elements with nitrile seals				
Media	Length 1	Length 2	Length 3	Length 4
02Q	938960Q	938964Q	938968Q	938972Q
05Q	938961Q	938965Q	938969Q	938973Q
10Q	938962Q	938966Q	938970Q	938974Q
20Q	938963Q	938967Q	938971Q	938975Q
02QE	938976Q	938980Q	938984Q	938988Q
05QE	938977Q	938981Q	938985Q	938989Q
10QE	938978Q	938982Q	938986Q	938990Q
20QE	938979Q	938983Q	938987Q	938991Q

Nominal flow (l/min) at viscosity 30 cSt - connection size				
Filter length	Media	G16	G20	G24 & R24
Length 1	02Q/02QE	80	80	80
	05Q/05QE	120	120	120
	10Q/10QE	140	150	150
	20Q/20QE	160	180	200
Length 2	02Q/02QE	130	150	170
	05Q/05QE	150	170	190
	10Q/10QE	170	200	230
	20Q/20QE	190	220	250
Length 3	02Q/02QE	150	170	190
	05Q/05QE	170	190	210
	10Q/10QE	190	210	230
	20Q/20QE	200	230	250
Length 4	02Q/02QE	170	190	210
	05Q/05QE	180	210	230
	10Q/10QE	190	220	240
	20Q/20QE	200	230	260

Degree of filtration						Code	
Average filtration beta ratio β (ISO 16889) / particle size μm [c]							
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$		
% efficiency, based on the above beta ratio (β_x)							
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Disposable Microglass III	Metal free Ecoglass III
N/A	N/A	N/A	N/A	N/A	4.5	02Q	02QE
N/A	N/A	4.5	5	6	7	05Q	05QE
N/A	6	8.5	9	10	12	10Q	10QE
6	11	17	18	20	22	20Q	20QE



Medium Pressure Filters

130 Eco Series

MAX 1000 l/min - 30 bar

FEATURING
EC GLASS III



130 Eco Series

Features & Benefits

Features	Advantages	Benefits
Modular filter system	Sizing and performance can be optimised	Best filter for every lube application
Duplex type systems with selecting valve	Element change during operation	Continuous filtration
Bypass assembly in the filter cover	Sediment and other particles at the bottom are away from the flow entering the system	No contamination passing into the system if filter in bypass
Large filtration area	High dirt holding capacity	Long element life
Air bleed valve	Easy air removal after element change	Protects bearings and other sensitive components
Two indicator locations, visual indicator as standard	Easy to detect when element replacement needed	Reliable filtration
Coreless Ecoglass III replacement elements	No metal content in element	Environmentally friendly disposal by incineration
	Reduced overall weight of 50%	Lower element replacement costs
	Easy compaction of used elements	Lower disposal costs
	Conversion kits available: new bowl with permanent core	Retrofit coreless design to housings already installed

Typical Applications

- Paper production plants
- Steel mills
- Aluminium mills
- Industrial power packs
- Lubrication systems
- Power generation

The Parker Filtration 130 Eco Series Medium Pressure Filters.

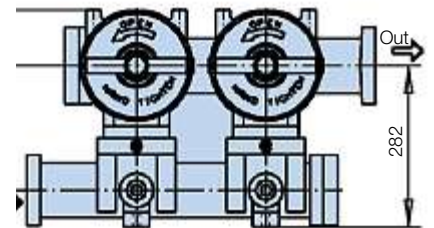
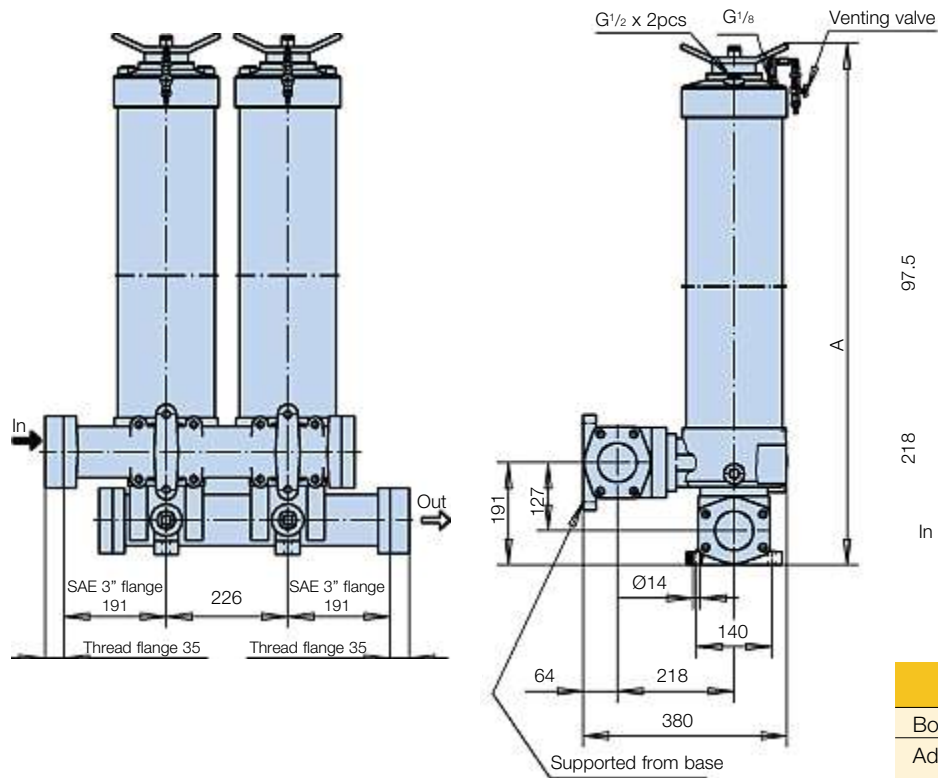
These high flow return filters are ideal for industrial applications on hydraulic or lubrication systems with pressures up to 30 bar and flows up to 1000 l/min in single units. Multiple filter systems with pressures up to 16 bar and flows up to 1400 l/min.

The ability to bank multiple filters together in a “duplex” format enables continuous filtration during element changes.



130 Eco Series

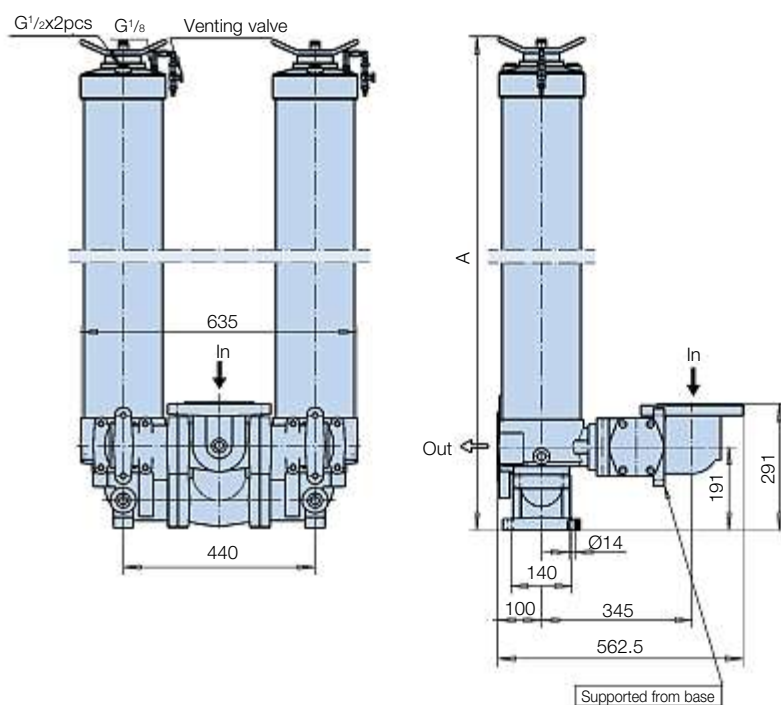
Dual System 130D



Connection options

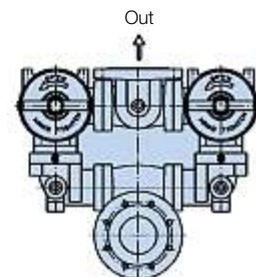
Body flange	SAE 3" 3000-M
Adaptor flange thread	G1½
	G2

Parallel System 130N



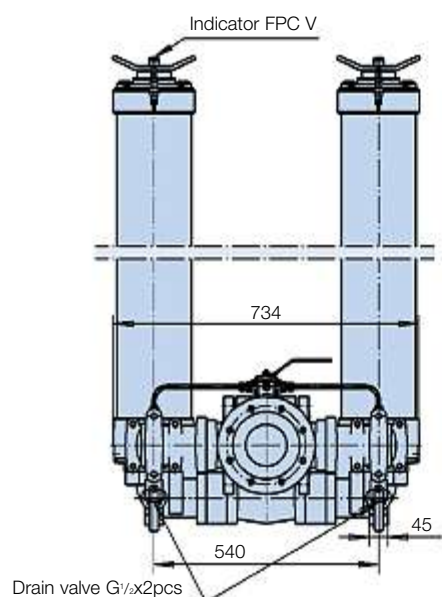
Type	A
Length 2	780
Length 3	1340

Dimensions in mm

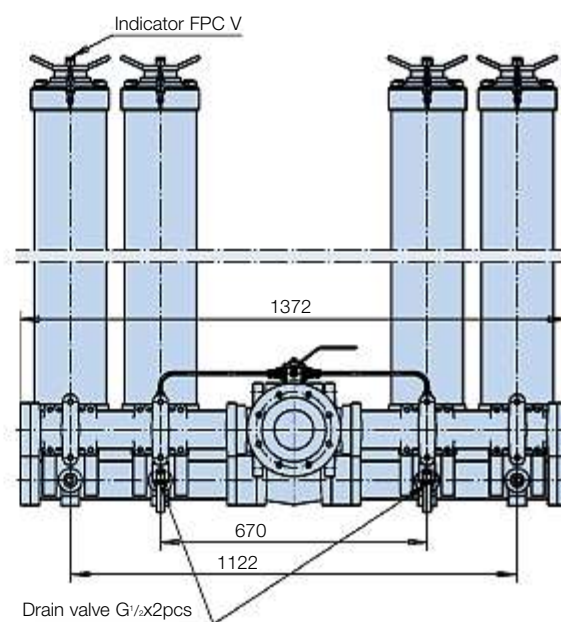


Port Sizes DN80/PN16 or DN100/PN16

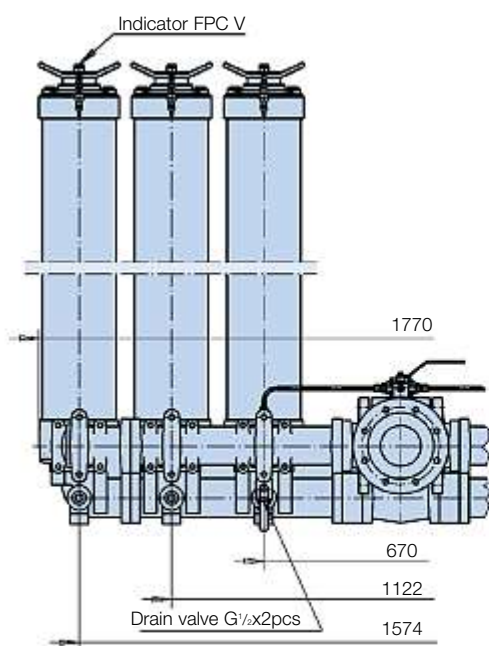
130S System 1+1 units



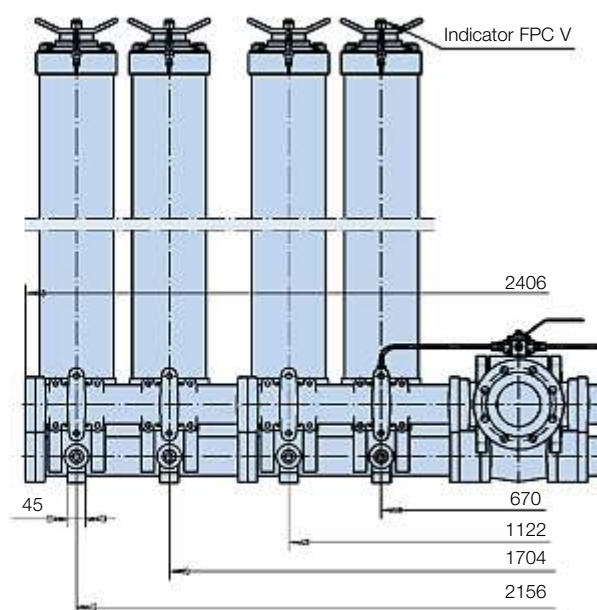
130S System 2+2 units



130S System 3+3 units

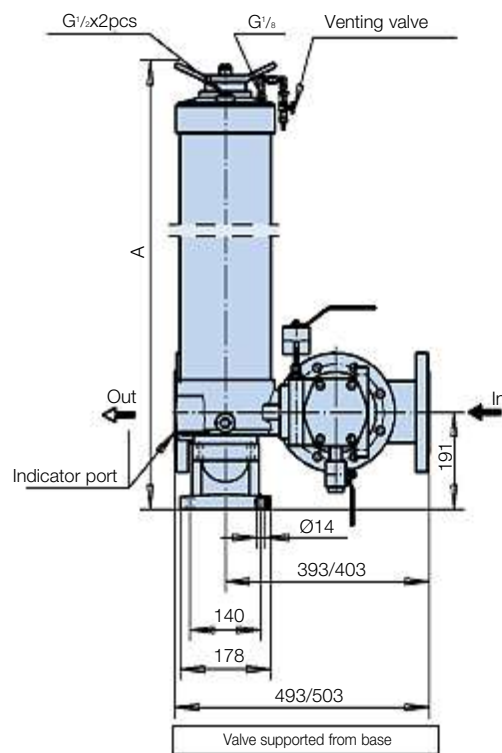


130S System 4+4 units



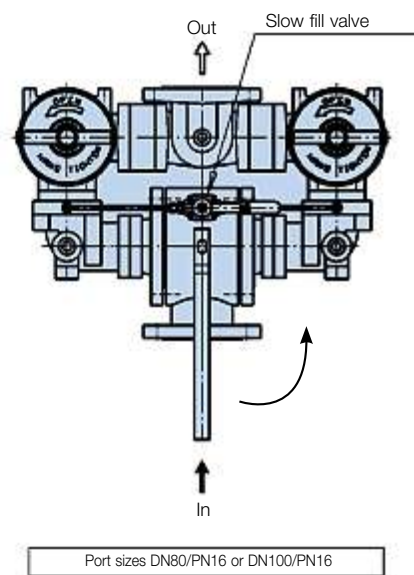
130 Eco Series

Valve Assembly Connection - T-Model

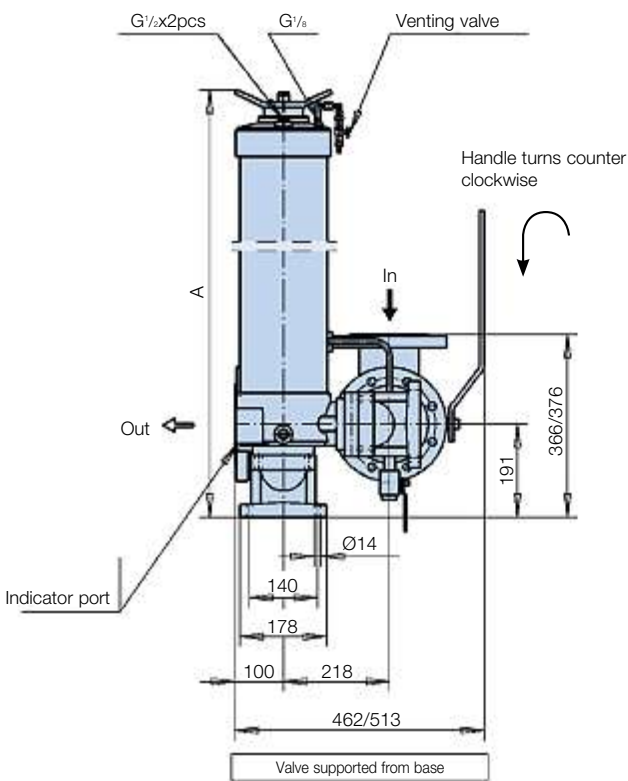


Type	A
Length 2	780
Length 3	1340

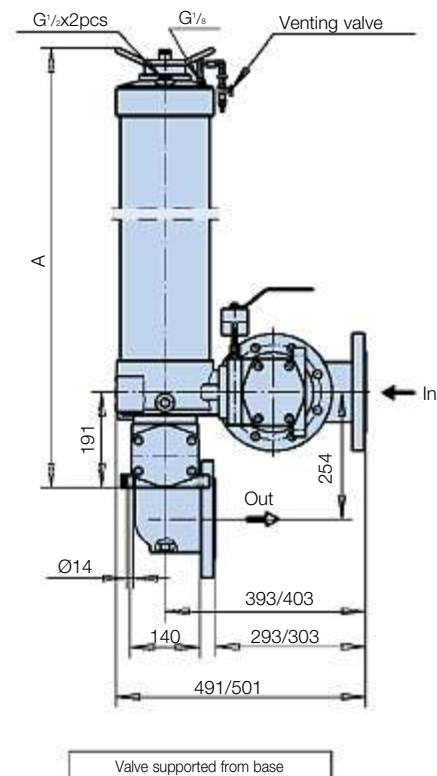
Dimensions in mm



L-Model



C-Model



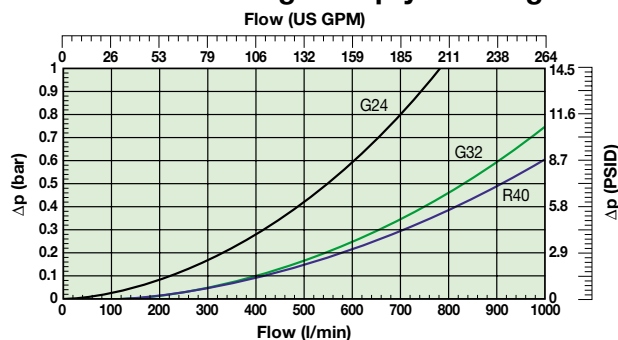
Pressure Drop Curves

The recommended level of the initial pressure drop is max 0.8 bar.

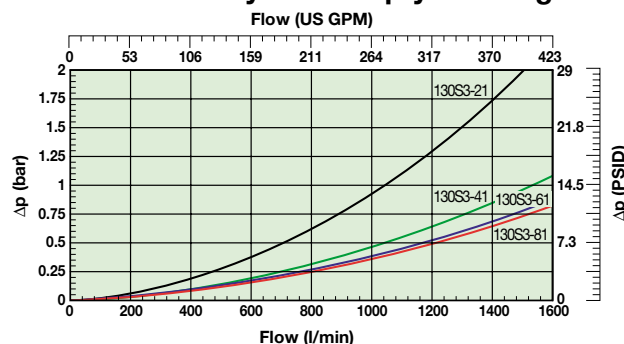
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

The total Δp = housing Δp_h + (element $\Delta p_e \times \text{working viscosity}/30$).

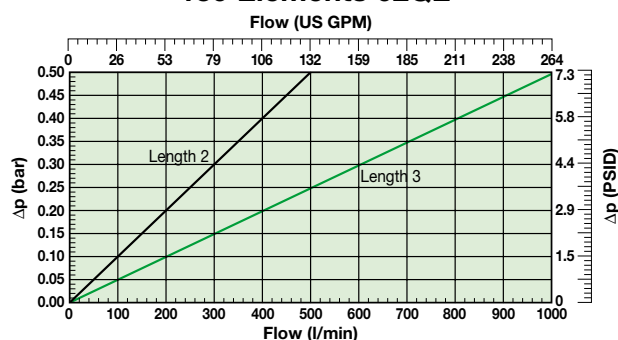
130M Eco Single Empty Housing



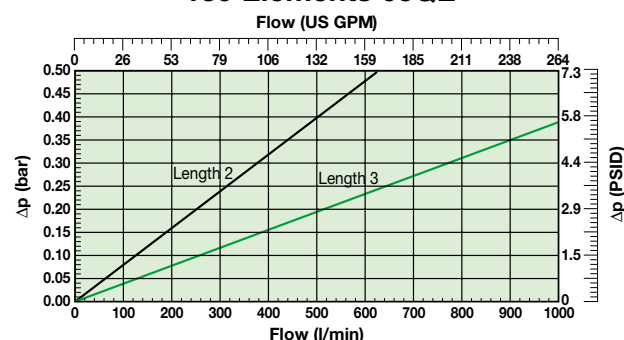
130S Eco System Empty Housing



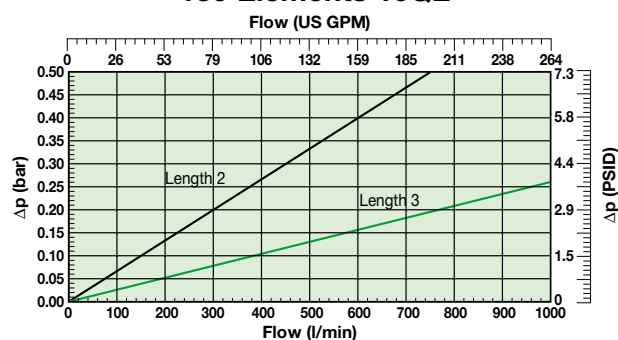
130 Elements 02QE



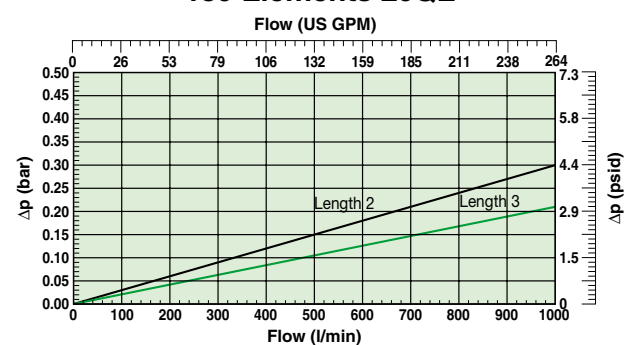
130 Elements 05QE



130 Elements 10QE



130 Elements 20QE



Ordering Information

Standard products table

Part numbers	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements	Supersedes
130M210QEBM3KR401	FF1302.QE10.BA35.SL40	700	130M	Length 2	10	Nitrile	Visual	3.5 bar	SAE flange 2 1/2" 3000-M	938723Q	FC1302.QE10.BK
130M220QEBM3KR401	FF1302.QE20.BA35.SL40	800	130M	Length 2	20	Nitrile	Visual	3.5 bar	SAE flange 2 1/2" 3000-M	938724Q	FC1302.QE20.BK
130M310QEBM3KR401	FF1303.QE10.BA35.SL40	950	130M	Length 3	10	Nitrile	Visual	3.5 bar	SAE flange 2 1/2" 3000-M	938727Q	FC1303.QE10.BK
130M320QEBM3KR401	FF1303.QE20.BA35.SL40	1000	130M	Length 3	20	Nitrile	Visual	3.5 bar	SAE flange 2 1/2" 3000-M	938728Q	FC1303.QE20.BK

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Medium Pressure Filters

130 Eco Series

Ordering Information (cont.)

Product configurator

Configurator example, single unit:

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
130M	3	10QE	B	M3	K	R40	1

Configurator example, 2+2 system:

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
130S	3	10QE	B	M3	K	D100	41

Box 1

Code	
Model	Code
Single unit	130M
Dual unit	130D
Parallel unit	130N
System	130S

Box 2

Filter type	
Length	Code
Length 2	2*
Length 3	3

* = This option is semi standard on single units (130M) only

Box 3

Degree of filtration			
Element media		Glass fibre	
		Media code	
Ecoglass III element		02QE*	05QE
		10QE	20QE

* = This option is semi standard on single units (130M) only
Filter assemblies with Microglass III elements are available by request

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Visual indicator	M3
Electrical indicator	T1
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2

Visual M3 indicator always as standard
Other indicator options are additional and the indicator must be mounted to lower indicator port.

Box 6

Bypass valve		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K

Box 7

Filter connection					
Connections	Code	130M	130D	130N	130S
Thread G1½	G24	S	x	-	-
Thread G2	G32	S	x	-	-
SAE flange 2" 3000-M	R32	x	-	-	-
SAE flange 2½" 3000-M	R40	S	-	-	-
SAE flange 3" 3000-M	R48	-	S	-	-
DN80 flange	D80	-	-	S	S
DN100 flange	D100	-	-	S	S

Availability: **S** = standard option
x = non-standard, ask for availability
- = not available

Box 8

Options	
Options	Code
130M: standard	1
130D: 2 units	21
3 units	31
130N: 1+1 units: L-port	21
2+2 units: L-port	41
130S: 1+1 units: T-port	21
2+2 units: T-port	41
3+3 units: T-port	61
4+4 units: T-port	81
1+1 units: L-port	27
2+2 units: L-port	47
3+3 units: L-port	67
4+4 units: L-port	87

Replacement elements with nitrile seals		
Media	Length 2	Length 3
02QE	938721Q	938725Q
05QE	938722Q	938726Q
10QE	938723Q	938727Q
20QE	938724Q	938728Q

Replacement Microglass III elements with nitrile seals		
Media	Length 2	Length 3
02Q	938733Q	938737Q
05Q	938734Q	938738Q
10Q	938735Q	938739Q
20Q	938736Q	938740Q

Nominal flow (l/min) at viscosity 30 cSt				
Single unit 130M		Connection size		
Filter length	Media	G24	G32	R40
Length 2	02QE	400	500	500
	05QE	500	600	600
	10QE	550	650	700
	20QE	600	750	800
Length 3	02QE	550	750	800
	05QE	600	800	850
	10QE	630	900	950
	20QE	650	950	1000

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Degree of filtration						Code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
Bx(c)=2	Bx(c)=10	Bx(c)=75	Bx(c)=100	Bx(c)=200	Bx(c)=1000	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Metal free
N/A	N/A	N/A	N/A	N/A	4.5	Ecoglass III
N/A	N/A	4.5	5	6	7	02QE*
N/A	6	8.5	9	10	12	10QE
6	11	17	18	20	22	20QE

15P/30P Series

MAX 200 l/min - 207 bar



High Pressure Filters

15P/30P Series

Features & Benefits

Features	Advantages	Benefits
Compact aluminium housing	Light weight but still robust design	Reliable and continuous operation both in mobile and industrial applications
Two head sizes and two bowl lengths	Optimised sizing	Efficient filtration
		Right filter for each application
Large ports and wide flow paths	Low differential pressure across housing and element	Higher flow rates possible
		Less lost energy
Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
		Reliable performance throughout element life
Visual, electrical and electronic indicators available	Wire support reduces pleat bunching, keeps performance consistent	Reduces downtime, maximises element life
	Check element condition at a glance	Optimise element life, prevent bypassing
	Right style for the application	Matches your system electrical connections

Typical Applications

- Saw mills
- Aircraft ground support equipment
- Asphalt pavers
- Hydraulic fan drives
- Power steering circuits
- Domestic refuse vehicles
- Cement trucks
- Servo control protection
- Logging equipment



The Parker Filtration 15P/30P Series High Pressure Filters.

These application examples have one thing in common...the need for clean hydraulic fluid.

Modern high pressure hydraulic systems are demanding. Better controls and long component life are expected. To deliver the high standards of performance, hydraulic components are built with tighter tolerances which increases their sensitivity to contamination.

That's where Parker pressure filters come into play. They filter out ingressed contamination before it jams a valve or scores a cylinder. They block pump generated debris before it gets to servo or proportional valves. Parker pressure filters are a key ingredient in meeting today's system demands.

Put your hydraulic systems in the care of Parker Filtration. We are committed to designing and building the best filters available to industry.

Specification

Pressure ratings:

Maximum allowable operating pressure 207 bar.
Filter housing pressure pulse fatigue tested: 138 bar.

Connections:

Inlet and outlet connections are threaded.

Connection style	Model	
BSPF(G)	15P	30P
ISO 6149	3/4"	1"
	M27	M33

Filter housing:

Head material extruded aluminium (anodised 6061-T6).
Bowl material impacted aluminium (anodised 6061-T6).

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

-20°C to +100°C.

Bypass valve:

Opening pressure 3.5 bar.

Filter element:

Degree of filtration:

Determined by multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core. Collapse rating 24 bar (ISO 2941).

High collapse elements:

High collapse elements available. For details please contact Parker Filtration.

Indicator options:

Indicating differential pressure: 2.5 ± 0.3 bar.

- visual M3.
 - electrical T1.
 - electronic F1 (PNP).
 - electronic F2 (NPN).
- For indicator details see catalogue section 6.

Weights (kg):

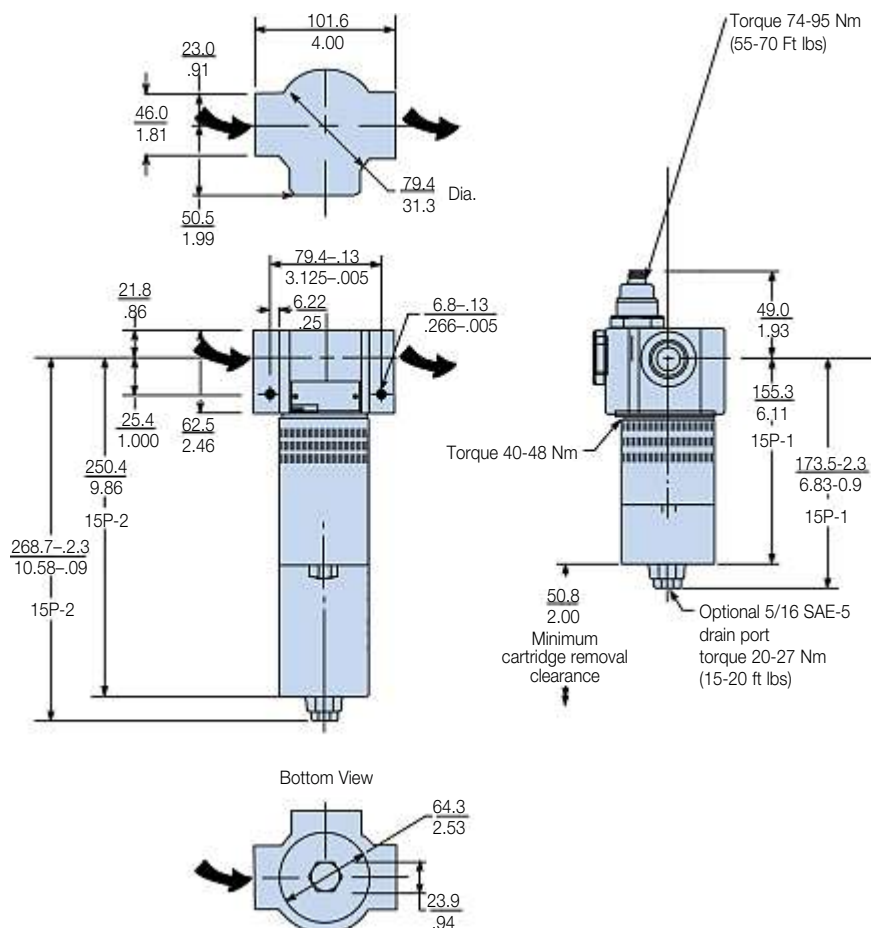
Model	Length 1	Length 2
15P	1.6	2.1
30P	2.9	3.9

Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

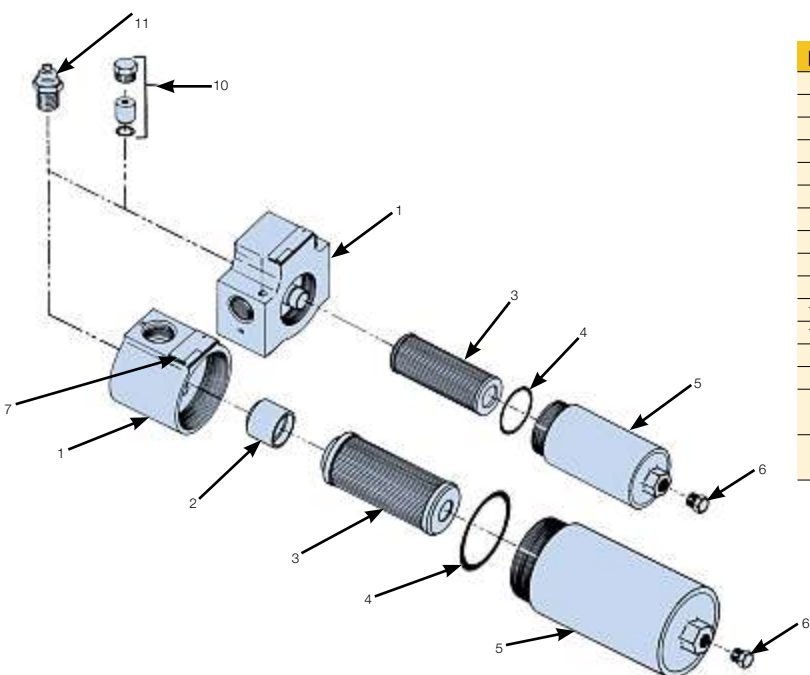
Installation Details

15P Series



15P/30P Series

30P Series



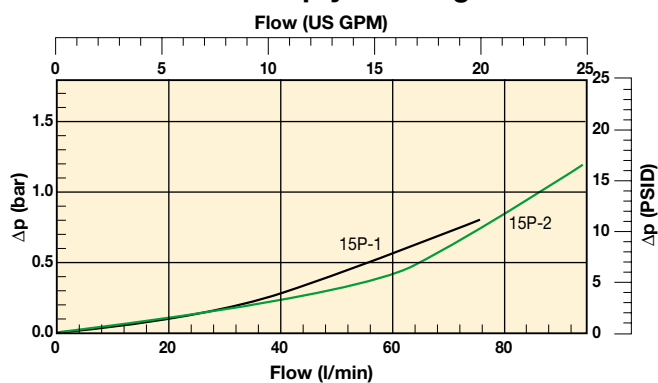
Pressure Drop Curves

The recommended level of the initial pressure drop is max. 1.2 bar.

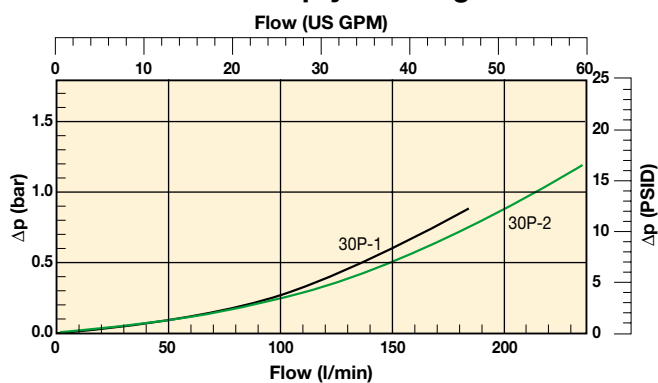
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

$$\Delta p = (\Delta p_{30} \times \text{viscosity of medium used}) / 30 \text{ cSt.}$$

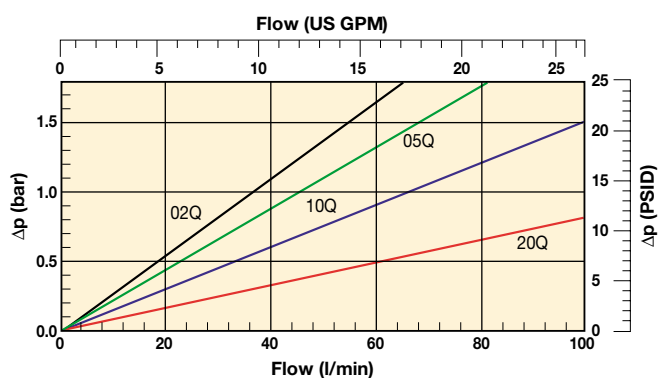
15P Empty Housing



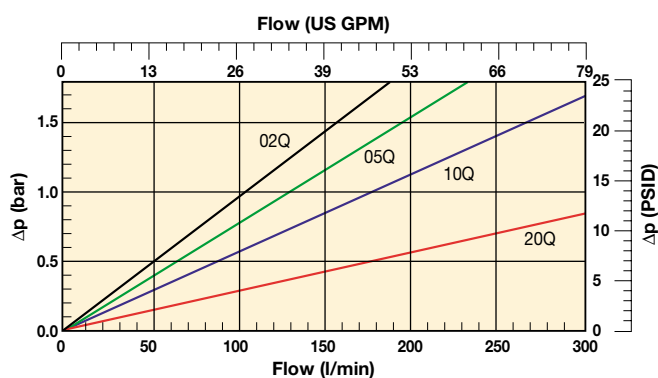
30P Empty Housing



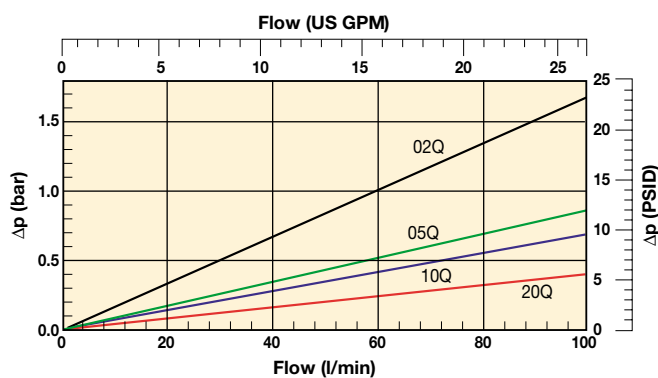
15P-1 Elements



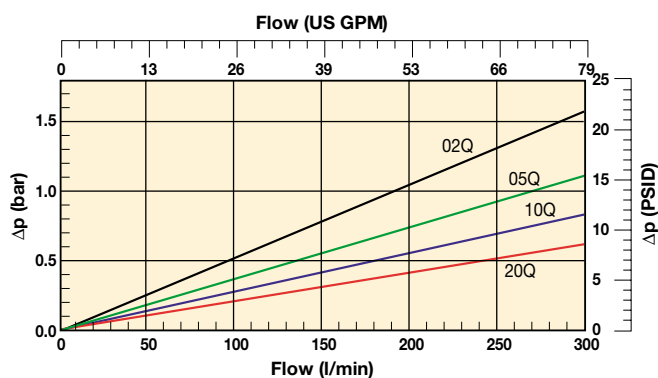
30P-1 Elements



15P-2 Elements



30P-2 Elements



15P/30P Series

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements
15P110QBM3KG121	15P-1-10Q-M2-50-B2B2-1	45	15P	Length 1	10	Nitrile	Visual	3.5 bar	G $\frac{1}{4}$ "	939102Q
15P110QBT1KG121	15P-1-10Q-TW3-50-B2B2-1	45	15P	Length 1	10	Nitrile	Electrical	3.5 bar	G $\frac{1}{4}$ "	939102Q
15P210QBM3KG121	15P-2-10Q-M2-50-B2B2-1	70	15P	Length 2	10	Nitrile	Visual	3.5 bar	G $\frac{1}{4}$ "	939106Q
15P210QBT1KG121	15P-2-10Q-TW3-50-B2B2-1	70	15P	Length 2	10	Nitrile	Electrical	3.5 bar	G $\frac{1}{4}$ "	939106Q
30P110QBM3KG161	30P-1-10Q-M2-50-C2C2-1	120	30P	Length 1	10	Nitrile	Visual	3.5 bar	G1"	939110Q
30P110QBT1KG161	30P-1-10Q-TW3-50-C2C2-1	120	30P	Length 1	10	Nitrile	Electrical	3.5 bar	G1"	939110Q
30P210QBM3KG161	30P-2-10Q-M2-50-C2C2-1	170	30P	Length 2	10	Nitrile	Visual	3.5 bar	G1"	939114Q
30P210QBT1KG161	30P-2-10Q-TW3-50-C2C2-1	170	30P	Length 2	10	Nitrile	Electrical	3.5 bar	G1"	939114Q

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
15P	1	10Q	B	M3	K	G12	1

Box 1

Code	
Model	Code
High pressure filter, T-port	15P
High pressure filter, T-port	30P

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2

Box 3

Degree of filtration			
Element media		Glass fibre	
		Media code	
Microglass III element		02Q	05Q
		10Q	20Q

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Plugged with steel plug	P
Visual indicator	M3
Electrical indicator	T1
No indicator port	N
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass and indicator settings		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Connections	Code
15P: Thread G $\frac{1}{4}$	G12
Thread M27, ISO 6149	M27
30P: Thread G 1	G16
Thread M33, ISO 6149	M33

Box 8

Options	
Options	Code
Standard	1
Drain port on bowl	4

Replacement elements with nitrile seals				
Media	15P-1	15P-2	30P-1	30P-2
02Q	939100Q	939104Q	939108Q	939112Q
05Q	939101Q	939105Q	939109Q	939113Q
10Q	939102Q	939106Q	939110Q	939114Q
20Q	939103Q	939107Q	939111Q	939115Q

Nominal flow (l/min) at viscosity 30 cSt

Filter model	02Q	05Q	10Q	20Q
15P-1	25	30	45	70
15P-2	40	60	70	90
30P-1	70	90	120	170
30P-2	120	150	170	200

Degree of filtration						Code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
βx(c)=2	βx(c)=10	βx(c)=75	βx(c)=100	βx(c)=200	βx(c)=1000	
% efficiency, based on the above beta ratio (βx)						Disposable
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Microglass III
N/A	N/A	N/A	N/A	N/A	4.5	02Q
N/A	N/A	4.5	5	6	7	05Q
N/A	6	8.5	9	10	12	10Q
6	11	17	18	20	22	20Q



High Pressure Filters

100P Series

MAX 1000 l/min - 414 bar



100P Series

Features & Benefits

Features	Advantages	Benefits
High 414 bar pressure rating	Strong and robust housing for heavy duty applications	Reliable and continuous operation for open and closed loop applications
Flow rates up to 1000 l/min	Pressure filtration possible for high flow rates	Excellent protection of high performance machinery
Optional reverse flow valve	Allows reverse flow and prevents back wash of element	Ideal for applications where back flow is expected
Bottom access bowl	Only bottom of the bowl must be opened for element change	Easy service
Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
		Reliable performance throughout element life
Visual and electrical indicators available	Wire support reduces pleat bunching, keeps performance consistent	Reduces downtime, maximises element life
	Check element condition at a glance	Optimises element life, prevents bypassing
	Right style for the application	Matches your system electrical connections

Typical Applications

- Drilling rigs
- Power packs
- Oil/gas industry
- Flight simulators
- Test rigs

The Parker Filtration Model 100P High Pressure Filters.

The 100P Series is designed to meet the growing demand for high-pressure filters with a flow rate capacity of up to 1000 l/min at 414 bar working pressure. For systems where reverse flow can be expected, an optional integrated reverse flow valve avoids back wash of contamination. When changing the element, only the end cap of the bowl has to be removed. The filter is ideal for applications where space is at a premium. The filter media used in the elements is high quality Microglass III glass fibre.



Specification

Pressure ratings:

Maximum allowable operating pressure 414 bar.

Filter housing pressure pulse fatigue tested: 3×10^6 pulses 0 - 276 bar.

Connections:

Inlet and outlet connections are threaded internally or flange faced.

Threads G1½", G2" (ISO 228/1), SAE 24, SAE 32.

or flanges 1½" SAE 6000, 2" SAE 6000, 1½" SAE 6000-M,

2" SAE 6000-M.

*6000-M is a SAE style with appropriate metric fixing threads.

Filter housing:

Head material cast iron (GSI).

Bowl material extruded steel, max torque 200 Nm.

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

- 20°C to +100°C.

Bypass valve:

Opening pressure 7.0 bar.

Options:

Reverse flow valve, which directs back flow from port to port.

Filter element:

Degree of filtration:

Determined by Multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core.

Collapse rating 20 bar (ISO 2941).

High collapse elements:

High collapse elements available. For details please contact Parker Filtration.

Indicator options:

Indicating differential pressure: 5.0 bar.

- visual indicator.

- electrical indicator.

Weights (kg):

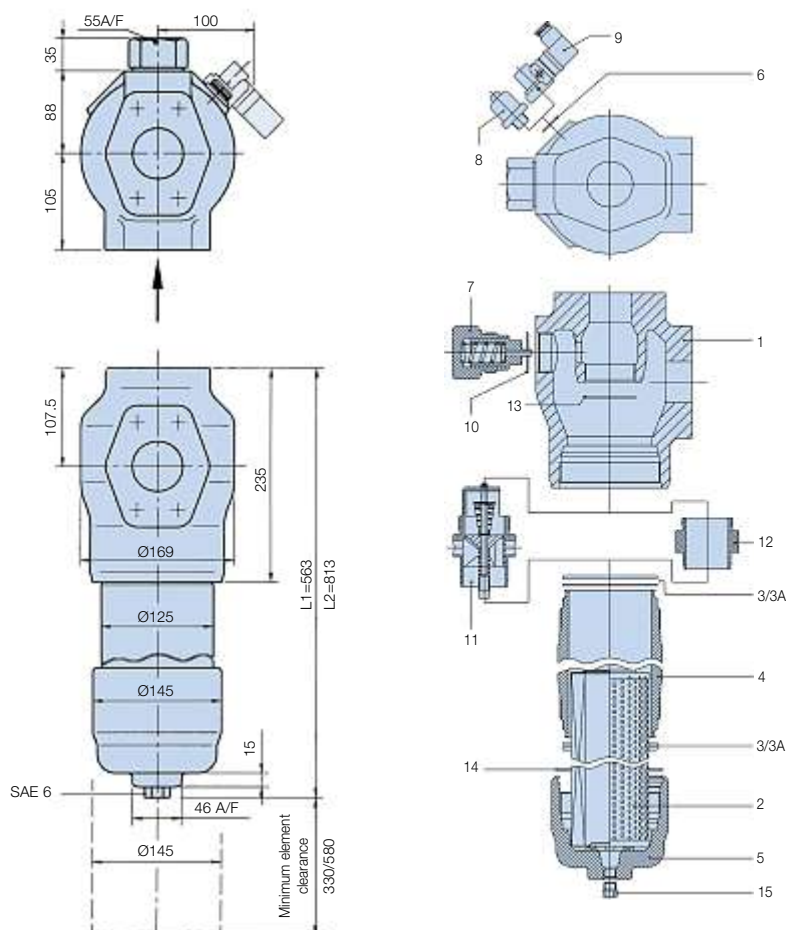
100P-1: 37 kg.

100P-2: 47 kg.

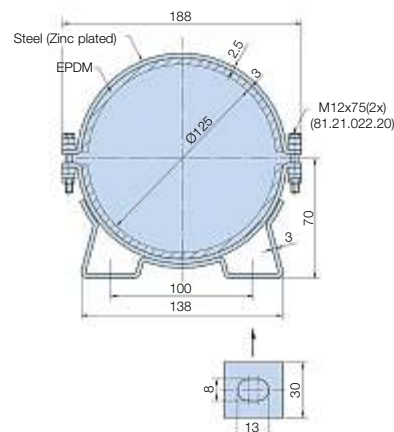
Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

Installation Details



Mounting Clamp Item 16

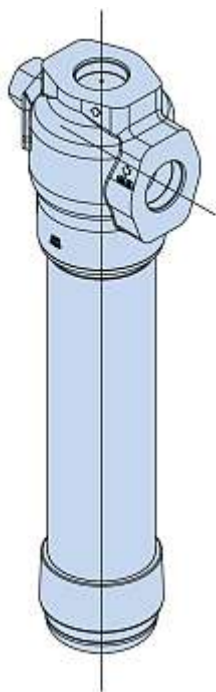


Type H model 1000

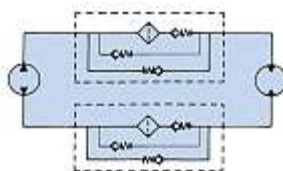
1	Filter head
2	Filter element
3	Bowl seal
3A	Bowl back-up ring
4	Housing
5	Cover
6	Indicator seal
7	Bypass set
8	Visual indicator
9	Electrical indicator
10	Bypass seal
11	Reverse flow set
12	Adaptor
13	Adaptor/reverse flow seal
14	Cover seal
15	Drain plug
16	Mounting clamp

100P Series

Additional Information

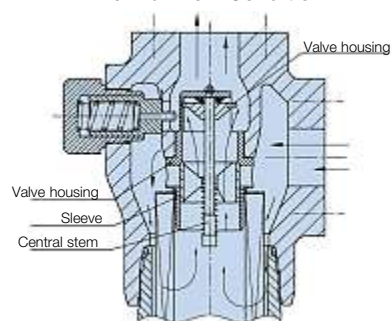


Filter with Reverse Flow Valve

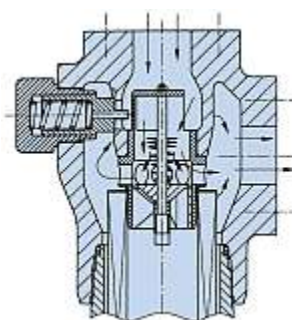


Circuit symbol

Normal Flow Condition



Reverse Flow Condition



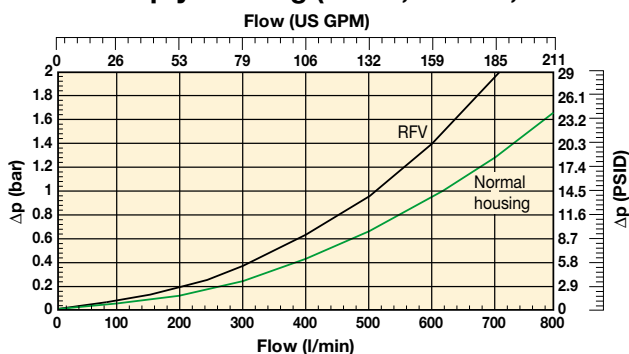
Pressure Drop Curves

The recommended level of the initial pressure drop is max. 2.3 bar.

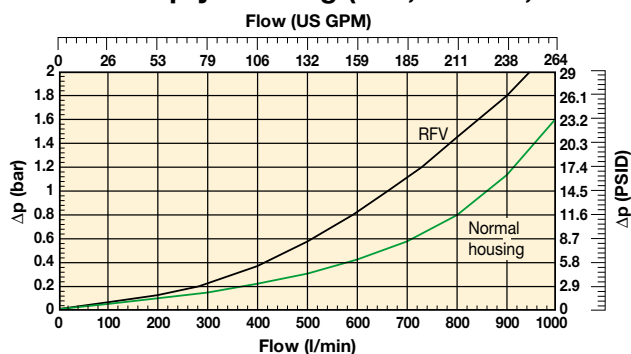
If the medium used has a viscosity different from 30 cSt, pressure drop can be estimated as follows:

The total $\Delta p = \Delta p_{ph} + (\Delta p_{pe} \times \text{working viscosity}/30)$.

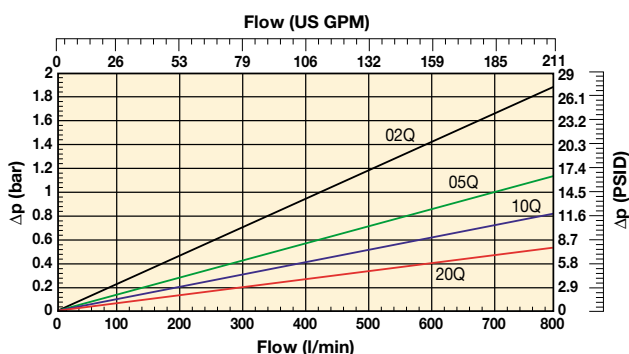
100P-1 Empty Housing (G1½", SAE 24, SAE 1½")



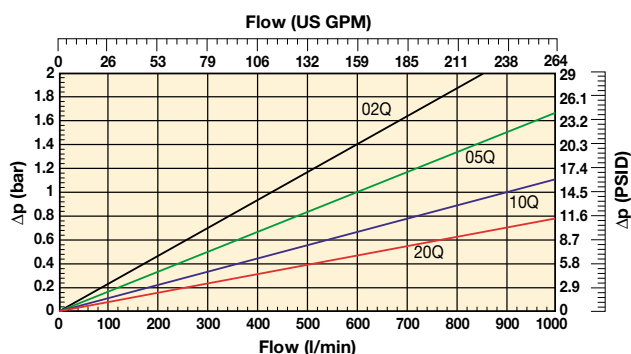
100P-2 Empty Housing (G2", SAE 32, SAE 2")



100P-1 Elements



100P-2 Elements



Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (µ)	Seals	Indicator	Bypass settings	Ports	Replacement elements	Supersedes
100P105QBM4MF241	1074A.2HN70.FZ1210	600	100P	Length 1	5	Nitrile	Visual	7.0 bar	SAE flange 1 1/2" 6000	939061Q	1070Z121A
100P110QBM4MF241	1074A.2HN70.FZ1220	700	100P	Length 1	10	Nitrile	Visual	7.0 bar	SAE flange 1 1/2" 6000	939062Q	1070Z122A
100P120QBM4MF241	1074A.2HN70.FZ1230	800	100P	Length 1	20	Nitrile	Visual	7.0 bar	SAE flange 1 1/2" 6000	939063Q	1070Z123A
100P205QBM4MF321	1074A.2HN70.TZ2210	840	100P	Length 2	5	Nitrile	Visual	7.0 bar	SAE flange 2" 6000	939065Q	1070Z221A
100P210QBM4MF321	1074A.2HN70.TZ2220	920	100P	Length 2	10	Nitrile	Visual	7.0 bar	SAE flange 2" 6000	939066Q	1070Z222A
100P220QBM4MF321	1074A.2HN70.TZ2230	1000	100P	Length 2	20	Nitrile	Visual	7.0 bar	SAE flange 2" 6000	939067Q	1070Z223A

Note: Filter assemblies ordered from the product configurator below are on extended lead times. Where possible, please make your selection from the table above.

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
100P	2	10Q	B	M4	M	F32	1

Box 1

Code	
Model	Code
Large HP filter, L-port	100P

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2

Box 3

Degree of filtration				
Element media		Glass fibre		
		Media code		
Microglass III element		02Q	05Q	10Q
				20Q

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Indicator port plugged	P
Visual indicator	M4
Electrical indicator	T2
Electrical indicator with red lamp 28 Vdc, N.O.	T3
Electrical indicator with red lamp 110 VAC, N.O.	T4
Electrical indicator with red lamp 250 VAC, N.O.	T5

Box 6

Bypass and indicator settings		
Bypass valve	Indicator	Code
7.0 bar	5.0 bar	M

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Connections	Code
Thread G 1 1/2	G24
Thread G 2	G32
Thread SAE 24	S24
Thread SAE 32	S32
SAE flange 1 1/2" 6000	F24
SAE flange 1 1/2" 6000-M	H24
SAE flange 2" 6000	F32
SAE flange 2" 6000-M	H32

Box 8

Options	
Options	Code
Standard	1
Reverse flow valve	3

Replacement elements with nitrile seals		
Media	Length 1	Length 2
02Q	939060Q	939064Q
05Q	939061Q	939065Q
10Q	939062Q	939066Q
20Q	939063Q	939067Q

Nominal flow (l/min) at viscosity 30 cSt				
Filter port size	02Q	05Q	10Q	20Q
100P-1, 1 1/2"	540	600	700	800
100P-2, 2"	700	840	920	1000

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Seal kit (nitrile) order code: 8069000070
Mounting clamp order code: 84.47.265.01

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Degree of filtration						Code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
βx(c)=2	βx(c)=10	βx(c)=75	βx(c)=100	βx(c)=200	βx(c)=1000	
% efficiency, based on the above beta ratio (βx)						Disposable
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Microglass III
N/A	N/A	N/A	N/A	N/A	4.5	02Q
N/A	N/A	4.5	5	6	7	05Q
N/A	6	8.5	9	10	12	10Q
6	11	17	18	20	22	20Q

The PAR FIT™ Fit



THERE'S **ONLY ONE** SOLUTION

When it comes to replacement hydraulic filter elements there is only one solution: The ParFit interchange element range.

With over 10,000 standard, off-the-shelf variations, there's a ParFit element to fit most sizes and makes of OEM filters on mobile, construction, agricultural and industrial plant.

Every ParFit filter element is manufactured in Europe to the highest standards and is backed by our unrivalled technical support and money-back guarantees.

That means that you can reduce stockholdings, cut costs and be sure of the ultimate performance, with long, trouble-free operating life.

ParFit filters are available from ParkerStores and authorised distributors throughout the UK. To find your nearest ParkerStore Email filtrationinfo@parker.com or find the ParFit you need using our element selector at www.parker.com/parfit.

www.parker.com/parfit





High Pressure Filters

18/28/38P Series

MAX 700 l/min - 414 bar



18/28/38P Series

Features & Benefits

Features	Advantages	Benefits
Fatigue tested to full pressure rating	Strong and robust housing for heavy duty applications	Reliable and continuous operation both in mobile and industrial applications
Several head sizes	Optimised sizing	Efficient filtration Covers wide flow range
Several connection options	Easy mounting	Global design, global acceptance Right filter for each application
Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
	Wire support reduces pleat bunching, keeps performance consistent	Reliable performance throughout element life Reduces downtime, maximises element life
Visual, electrical and electronic indicators available	Check element condition at a glance	Optimises element life, prevents bypassing
	Right style for the application	Matches your system electrical connections

Typical Applications

- Injection moulding
- Die casting
- Servo controls
- Machine tools
- Mobile equipment

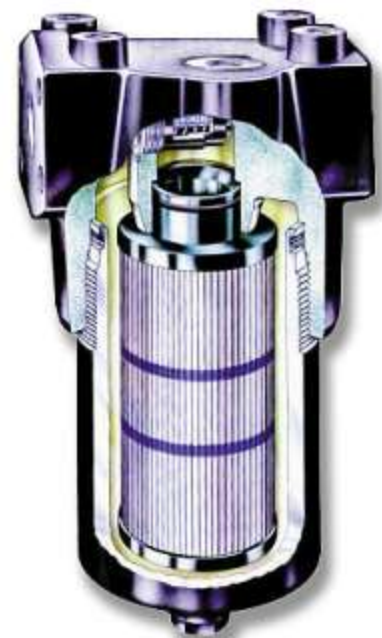
The Parker Filtration 18/28/38P Series High Pressure Filters

Parker Filtration engineered the 18/28/38P series of high pressure filters to satisfy demanding applications in the mobile and industrial markets throughout the world. With metric mounting and optional ISO 6149 ports, this new series is truly a global design.

Installed downstream of the pump, this new series with their wide range of high capacity Microglass III elements, offer excellent protection to system components.

Standard filters come complete with industry proven spool type bypass valve. For more critical applications such as servo or proportional controls, a no bypass high strength element combination ensures maximum protection.

The modular low hysteresis differential pressure indicator fitted to this series is unrivaled in its performance. Tests prove its accuracy and foolproof design to be a major advance in indicator technology.



Specification

Pressure ratings:

Maximum allowable operating pressure 414 bar.

Filter housing pressure pulse fatigue tested: 10⁶ pulses 0 - 414 bar.

Connections:

Inlet and outlet connections are threaded internally or flange faced.

Connection style	Model	18P	28P	38P
BSPF(G)		3/4"	1"	1 1/4", 1 1/2"
SAE		12	16	20, 24
ISO 6149		M27	M33	M42, M48
Flange SAE 6000		3/4"	1"	1 1/4"
Flange SAE 6000-M*		3/4"	1"	1 1/4"

*6000-M is a SAE style with appropriate metric fixing threads.

Filter housing:

Head material cast iron (GSI).

Bowl material steel.

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

-20°C to +100°C.

Bypass valve & indicator settings:

Table below gives bypass valve and corresponding indicator setting.

Bypass	Indicator
3.5 bar	2.5 bar
7.0 bar	5.0 bar

Filter element:

Degree of filtration:

Determined by multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core. Collapse rating 20 bar (ISO 2941).

High collapse elements:

(To be used when no bypass function in filter housing).

Microglass III media supported with epoxy coated metal wire mesh on upstream and stainless steel on downstream, end cap material steel. Strong metal inner core. Collapse rating 210 bar (ISO 2941).

Indicator options:

Indicating differential pressure: 2.5 ± 0.3 bar or 5.0 ± 0.5 bar.

- visual M3.
- electrical T1.
- electronic F1(PNP).
- electronic F2(NPN).

For indicator details see catalogue section 6.

Weights (kg):

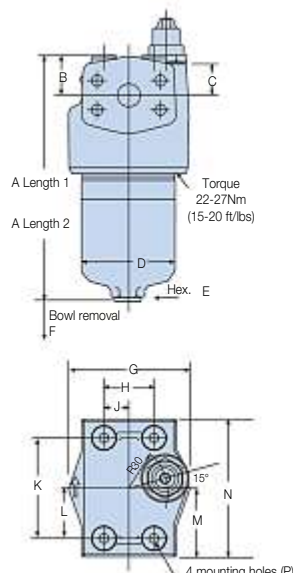
Model	Length 1	Length 2
18P	4.2	5.7
28P	6.7	9.2
38P	15.8	20.3

Fluid compatibility:

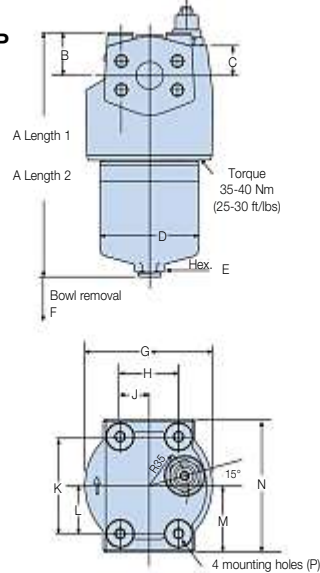
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

Model	A	B	C	D	E (A/F)	F	G	H	J	K	L	M	N	P
18P-1	198 (7.79)	32 (1.26)	26 (1.02)	75 (2.95)	24 (0.94)	100 (3.94)	98 (3.86)	40 (1.57)	20 (0.79)	80 (3.15)	40 (1.57)	55 (2.16)	110 (4.33)	M8 x 1.25 x12 deep
18P-2	293 (11.53)													
28P-1	228 (8.97)	40 (1.57)	29 (1.14)	93 (3.66)	24 (0.94)		120 (4.72)	55 (2.16)	27.5 (1.07)	90 (3.54)	45 (1.77)	62 (2.44)	124 (4.88)	M10 x 1.5 x11 deep
28P-2	337 (13.26)													
38P-1	329 (12.95)	44 (1.73)	35 (1.38)	128 (5.04)	36 (1.42)		160 (6.30)	50 (1.97)	25 (0.98)	120 (4.72)	60 (2.36)	81 (3.19)	162 (6.38)	M10 x 1.5 x12 deep
38P-2	448 (17.64)													

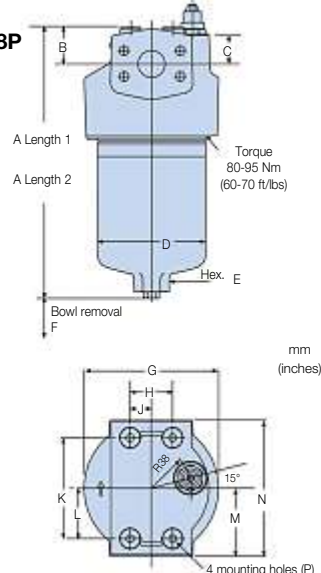
18P



28P

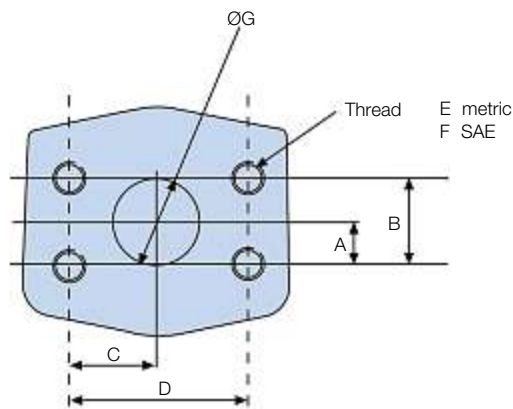


38P



18/28/38P Series

Flange Face Details



Model mm (inches)	A	B	C	D	E	F	G
18P (3/4")	11.9 (0.47)	23.8 (0.94)	25.4 (1.00)	50.8 (2.0)	M10 x 1.5-6H x 18 Deep	3/8-16 UNC-2B x 18 deep	19.0 (0.75)
28P (1")	14 (0.55)	27.8 (1.09)	28.0 (1.10)	57.1 (2.25)	M12 x 1.75-6H x 20 Deep	7/16-14 UNC-2B x 20 deep	25.4 (1.0)
38P (1 1/4")	15.7 (0.62)	31.7 (1.25)	33.0 (1.30)	66.7 (2.62)	M14 x 2-6H x 20 Deep	1/2-13 UNC-2B x 20 deep	31.8 (1.25)

Pressure Drop Curves

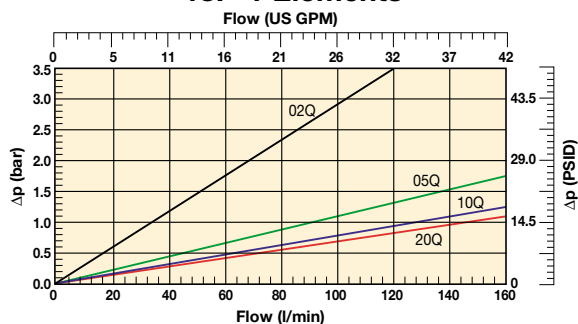
With 3.5 bar bypass the recommended initial pressure drop is max 1.2 bar.

With 7.0 bar bypass the recommended initial pressure drop is max 2.3 bar.

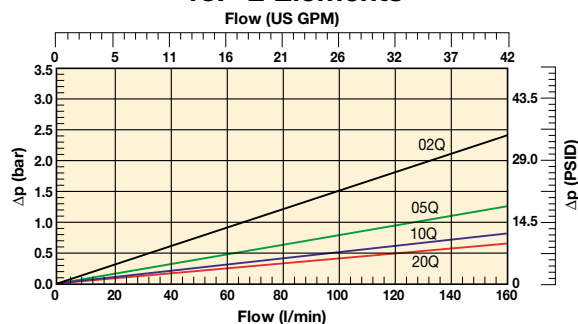
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

The total Δp = housing Δp_h + (element $\Delta p_e \times \text{working viscosity}/30$).

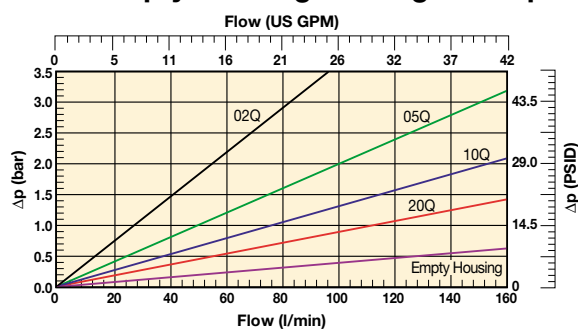
18P-1 Elements



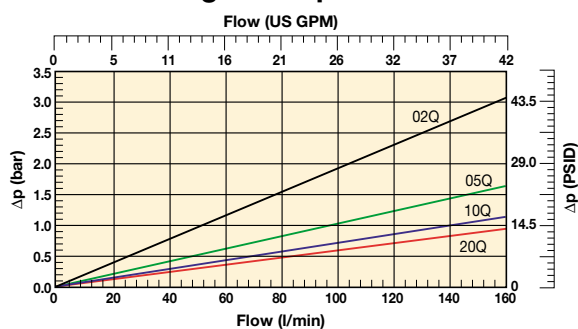
18P-2 Elements



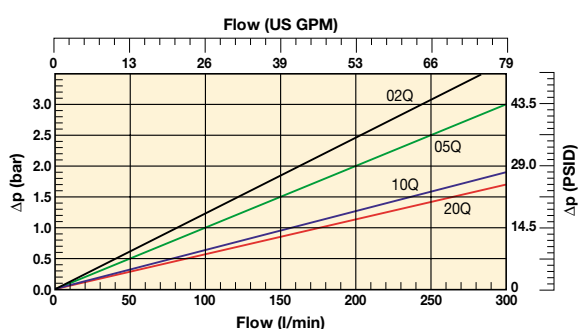
18P-1 Empty Housing and High Collapse



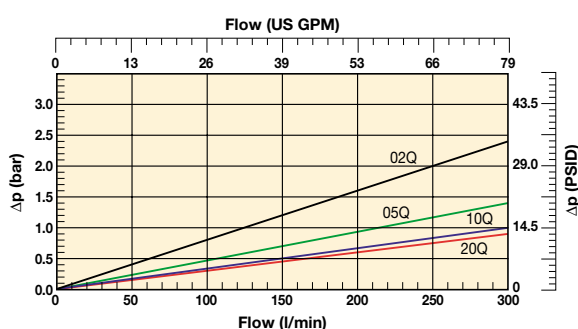
18P-2 High Collapse Elements



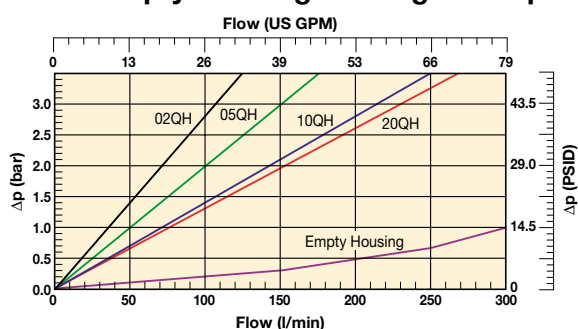
28P-1 Elements



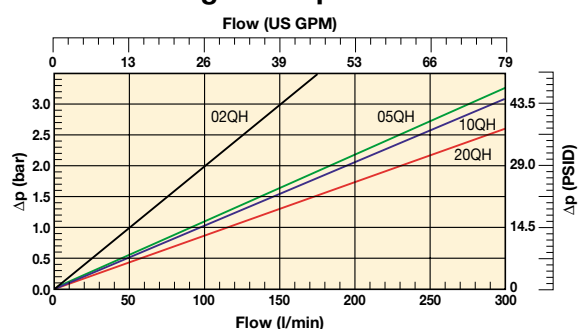
28P-2 Elements



28P-1 Empty Housing and High Collapse



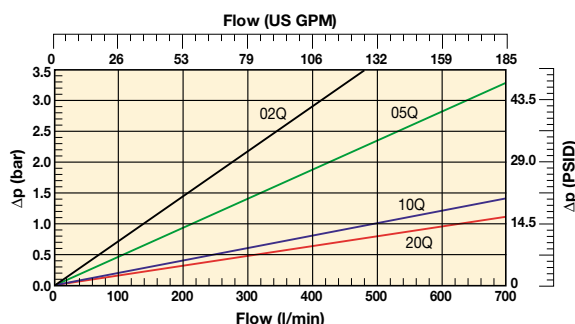
28P-2 High Collapse Elements



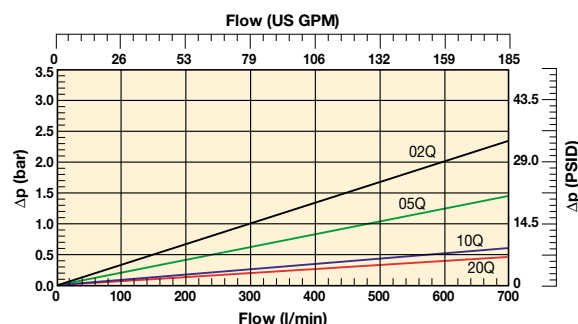
18/28/38P Series

Pressure Drop Curves (cont.)

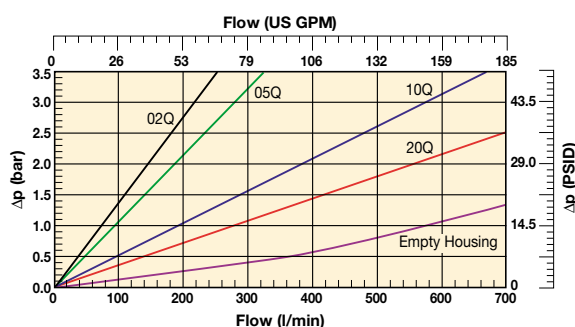
38P-1 Elements



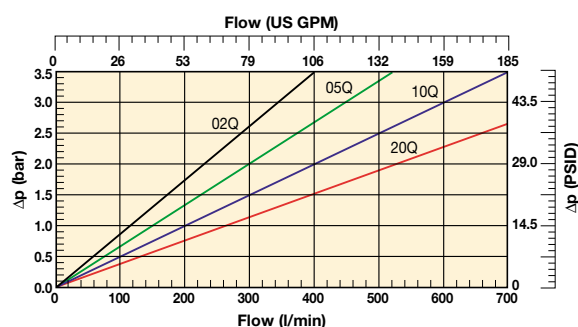
38P-2 Elements



38P-1 Empty Housing and High Collapse



38P-2 High Collapse Elements



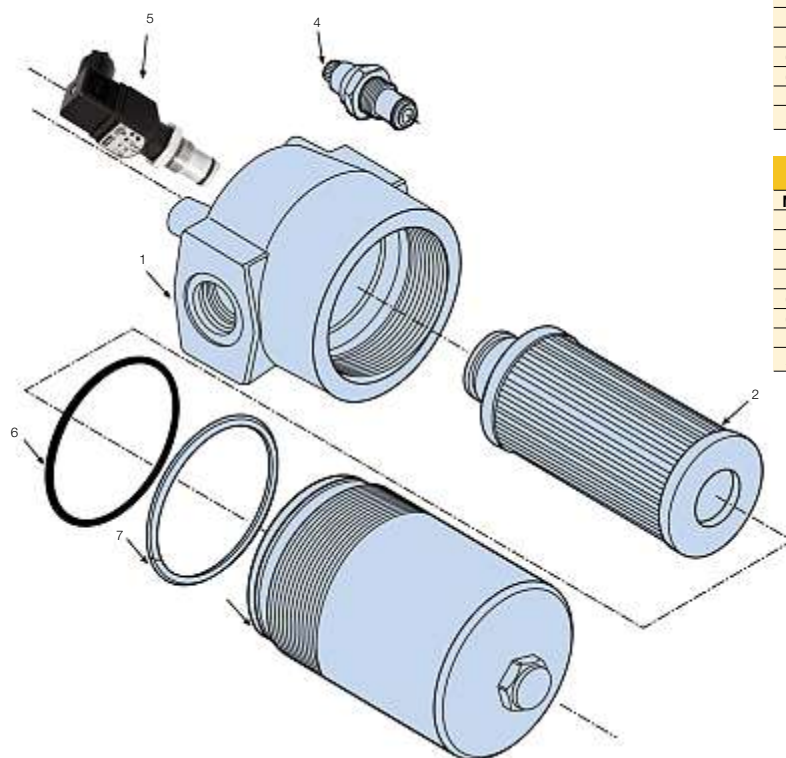
Element Service

- Stop the system's power unit.
- Relieve any system pressure in the filter line.
- Drain the filter bowl if drain port option is provided.
- Rotate the bowl clockwise (left) and remove.
- Remove element by pulling downward with a slight twisting motion and discard.
- Check bowl o-ring and anti-extrusion ring for damage and replace if necessary.
- Lubricate element o-ring with system fluid and locate element in filter head.
- Install bowl by rotating counter-clockwise (right) and tighten to specified torque.
 - 18P - 22-27 Nm (16-20 ft. lbs.)
 - 28P - 35-40 Nm (25-30 ft. lbs.)
 - 38P - 80-95 Nm (60-70 ft. lbs.)
- Confirm there are no leaks after powering the system.

Parts List

Index	Description	Part number
1	Head Assembly	
2	Element	see table on next page
3	Bowl	
	Indicators	
4	M3 – Visual auto reset; 2.5 bar	
	M3 – Visual auto reset; 5.0 bar	
5	T1 – Electrical; 2.5 bar with DIN 43650 Connector	
	T1 – Electrical; 5.0 bar with DIN 43650 Connector	
	F1 – Electronic PNP; 2.5 bar with 4 LED	
	F2 – Electronic NPN; 2.5 bar with 4 LED	
	F1 – Electronic PNP; 5.0 bar with 4 LED	
	F2 – Electronic NPN; 5.0 bar with 4 LED	
6	Bowl Seal	
7	Bowl Anti-extrusion Ring	
	Seal Kits	
	Seal kit 18P (std) – Nitrile	S04350
	Seal kit 18P (F3) – Fluoroelastomer	S04351
	Seal kit 28P (std) – Nitrile	S04352
	Seal kit 28P (F3) – Fluoroelastomer	S04353
	Seal kit 38P (std) – Nitrile	S04354
	Seal Kit 38P (F3) – Fluoroelastomer	S04355

Element Service (cont.)



Replacement element part numbers

Elements with Nitrile seals						
Model	18P-1	18P-2	28P-1	28P-2	38P-1	38P-2
02Q	G04242	G04250	G04258	G04266	G04274	G04282
05Q	G04243	G04251	G04259	G04267	G04275	G04283
10Q	G04244	G04252	G04260	G04268	G04276	G04284
20Q	G04245	G04253	G04261	G04269	G04277	G04285
02QH	G04290	G04298	G04306	G04314	G04322	G04330
05QH	G04291	G04299	G04307	G04315	G04323	G04331
10QH	G04292	G04300	G04308	G04316	G04324	G04332
20QH	G04293	G04301	G04309	G04317	G04325	G04333

Elements with Fluoroelastomer seals						
Model	18P-1	18P-2	28P-1	28P-2	38P-1	38P-2
02Q	G04246	G04254	G04262	G04270	G04278	G04286
05Q	G04247	G04255	G04263	G04271	G04279	G04287
10Q	G04248	G04256	G04264	G04272	G04280	G04288
20Q	G04249	G04257	G04265	G04273	G04281	G04289
02QH	G04294	G04302	G04310	G04318	G04326	G04334
05QH	G04295	G04303	G04311	G04319	G04327	G04335
10QH	G04296	G04304	G04312	G04320	G04328	G04336
20QH	G04297	G04305	G04313	G04321	G04329	G04337

Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements
18P110QBT1MG121	18P-1-10Q-TW6-98-B2B2-1	80	18P	Length 1	10	Nitrile	Electrical	7.0 bar	G ^{3/4} ."	G04244
18P110QBM3MG121	18P-1-10Q-M2-98-B2B2-1	80	18P	Length 1	10	Nitrile	Visual	7.0 bar	G ^{3/4} ."	G04244
18P120QBT1MG121	18P-1-20Q-TW6-98-B2B2-1	100	18P	Length 1	20	Nitrile	Electrical	7.0 bar	G ^{1/2} ."	G04245
18P120QBM3MG121	18P-1-20Q-M2-98-B2B2-1	100	18P	Length 1	20	Nitrile	Visual	7.0 bar	G ^{1/2} ."	G04245
18P210QBT1MG121	18P-2-10Q-TW6-98-B2B2-1	130	18P	Length 2	10	Nitrile	Electrical	7.0 bar	G ^{3/4} ."	G04252
18P210QBM3MG121	18P-2-10Q-M2-98-B2B2-1	130	18P	Length 2	10	Nitrile	Visual	7.0 bar	G ^{3/4} ."	G04252
18P220QBT1MG121	18P-2-20Q-TW6-98-B2B2-1	150	18P	Length 2	20	Nitrile	Electrical	7.0 bar	G ^{1/2} ."	G04253
18P220QBM3MG121	18P-2-20Q-M2-98-B2B2-1	150	18P	Length 2	20	Nitrile	Visual	7.0 bar	G ^{1/2} ."	G04253
28P110QBT1MG161	28P-1-10Q-TW6-98-C2C2-1	120	28P	Length 1	10	Nitrile	Electrical	7.0 bar	G1"	G04260
28P110QBM3MG161	28P-1-10Q-M2-98-C2C2-1	120	28P	Length 1	10	Nitrile	Visual	7.0 bar	G1"	G04260
28P120QBT1MG161	28P-1-20Q-TW6-98-C2C2-1	150	28P	Length 1	20	Nitrile	Electrical	7.0 bar	G1"	G04261
28P120QBM3MG161	28P-1-20Q-M2-98-C2C2-1	150	28P	Length 1	20	Nitrile	Visual	7.0 bar	G1"	G04261
28P210QBT1MG201	28P-2-10Q-TW6-98-C2C2-1	250	28P	Length 2	10	Nitrile	Electrical	7.0 bar	G1"	G04268
28P210QBM3MG201	28P-2-10Q-M2-98-C2C2-1	250	28P	Length 2	10	Nitrile	Visual	7.0 bar	G1"	G04268
38P110QBT1MG201	38P-1-10Q-TW6-98-D2D2-1	340	38P	Length 1	10	Nitrile	Electrical	7.0 bar	G1 ^{1/2} ."	G04276
38P110QBM3MG201	38P-1-10Q-M2-98-D2D2-1	340	38P	Length 1	10	Nitrile	Visual	7.0 bar	G1 ^{1/2} ."	G04276
38P120QBT1MG201	38P-1-20Q-TW6-98-D2D2-1	420	38P	Length 1	20	Nitrile	Electrical	7.0 bar	G1 ^{1/2} ."	G04277
38P120QBM3MG201	38P-1-20Q-M2-98-D2D2-1	420	38P	Length 1	20	Nitrile	Visual	7.0 bar	G1 ^{1/2} ."	G04277
38P210QBT1MG201	38P-2-10Q-TW6-98-D2D2-1	560	38P	Length 2	10	Nitrile	Electrical	7.0 bar	G1 ^{1/2} ."	G04284
38P210QBM3MG201	38P-2-10Q-M2-98-D2D2-1	560	38P	Length 2	10	Nitrile	Visual	7.0 bar	G1 ^{1/2} ."	G04284
38P220QBT1MG201	38P-2-20Q-TW6-98-D2D2-1	700	38P	Length 2	20	Nitrile	Electrical	7.0 bar	G1 ^{1/2} ."	G04285
38P220QBM3MG201	38P-2-20Q-M2-98-D2D2-1	700	38P	Length 2	20	Nitrile	Visual	7.0 bar	G1 ^{1/2} ."	G04285

Note: Filter assemblies ordered from the product configurator on the next page are on extended lead times. Where possible, please make your selection from the table above.

High Pressure Filters

18/28/38P Series

Ordering Information (cont.)

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
38P	1	10Q	B	M3	M	G20	1

Box 1

Code	
Model	Code
Small size high pressure filter, T-port	18P
Medium size high pressure filter, T-port	28P
Large size high pressure filter, T-port	38P

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2

Box 3

Degree of filtration				
Element media		Glass fibre		
		Media code		
Microglass III element		02Q	05Q	10Q
High collapse element		02QH	05QH	20QH

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
No indicator port	N
Visual indicator	M3
Electrical indicator	T1
Plugged with steel plug	P
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass and indicator settings		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K
7.0 bar	5.0 bar	M
No bypass	5.0 bar	M
No bypass	No indicator	X

+ Box 8: code 2

+ Box 8: code 2

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Ports	Code
18P: Thread G 3/4	G12
Thread SAE 12	S12
Thread M27, ISO 6149	M27
SAE flange 3/4" 6000-M	H12
SAE flange 3/4" 6000	F12
28P: Thread G 1	G16
Thread SAE 16	S16
Thread M33, ISO 6149	M33
SAE flange 1" 6000-M	H16
SAE flange 1" 6000	F16
38P: Thread G 1 1/4	G20
Thread G 1 1/2	G24
Thread SAE 20	S20
Thread SAE 24	S24
Thread M42, ISO 6149	M42
Thread M48, ISO 6149	M48
SAE flange 1 1/4" 6000-M	H20
SAE flange 1 1/4" 6000	F20

Box 8

Options	
Options	Code
Standard	1
No bypass	2

Nominal flow (l/min) at viscosity 30 cSt

Filter model	02Q	05Q	10Q	20Q
18P-1	35	60	80	100
18P-2	70	110	130	150
28P-1	80	100	120	150
28P-2	140	200	250	300
38P-1	140	220	340	420
38P-2	320	440	560	700

Degree of filtration						Code	
Average filtration beta ratio β (ISO 16889) / particle size μm [c]							
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$		
% efficiency, based on the above beta ratio (β_x)						Disposable Microglass III	High collapse element
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%		
N/A	N/A	N/A	N/A	N/A	4.5		
N/A	N/A	4.5	5	6	7		
N/A	6	8.5	9	10	12		
6	11	17	18	20	22	02Q	02QH

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



High Pressure Filters

70/70 Eco Series

MAX 450 l/min - 420 bar



70/70 Eco Series

Features & Benefits

Features	Advantages	Benefits
Fatigue tested to full pressure rating	Strong and robust housing for heavy duty applications	Reliable and continuous operation both in mobile and industrial applications
Several head options and connection sizes	Easy mounting	Reduced space and piping Right filter for each application
Several bowl lengths	Optimised sizing	Efficient filtration
Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value
	Wire support reduces pleat bunching, keeps performance consistent	Reliable performance throughout element life Reduces downtime, maximises element life
Coreless Ecoglass III replacement elements	No metal content in element	Environmentally friendly disposal by incineration
	Reduced overall weight of 50%	Lower element replacement costs
	Easy compaction of used elements	Lower disposal costs
	Eco adaptors available	Retrofit coreless design to housings already installed
Visual, electrical and electronic indicators available	Check element condition at a glance	Optimise element life, prevent bypassing
	Right style for the application	Matches your system electrical connections

Typical Applications

- Forestry equipment
- Industrial power units
- Pulp and paper
- Port handling equipment
- Mining and quarrying equipment

The Parker Filtration 70/70 Eco Series High Pressure Filters.

High quality 420 bar in-line pressure filters designed to offer high levels of protection at flows up to 450 l/min.

Dirt sensitive systems can be protected with confidence using the 70 Series high pressure filters.

The 70 Series also available with environmentally friendly Ecoglass III elements.



Specification

Pressure ratings:

Maximum allowable operating pressure 420 bar.

Filter housing pressure pulse fatigue tested: 10^6 pulses 0 - 414 bar.

Connections:

Threads G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$ (ISO 228/1).

or flanges 1 $\frac{1}{4}$ " SAE 3000-M, 1 $\frac{1}{2}$ " SAE 3000-M, 1 $\frac{1}{4}$ " SAE 6000-M, 1 $\frac{1}{2}$ " SAE 6000-M.

Filter housing:

Head material cast iron (GSI).

Bowl material steel. Max torque 40 Nm.

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

- 20°C to +100°C.

Bypass valve:

Opening pressure 3.5 bar.

Filter element:**Degree of filtration:**

Determined by Multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core.

Collapse rating 20 bar (ISO 2941).

Ecoglass III:

Supported with plastic net, end cap material reinforced composite.

No metal parts.

Collapse rating 10 bar (ISO 2941).

Filter element can only be used together with reusable FEA Eco-adapter.

Note: Ecoglass III contributes to ISO 14001 quality.

High collapse elements:

(To be used when no bypass function in filter housing).

Microglass III media supported with epoxy coated metal wire mesh on upstream and stainless steel on downstream, end cap material steel. Strong metal inner core. Collapse rating 210 bar (ISO 2941).

Indicator options:

Indicating differential pressure: 2.5 ± 0.3 bar or 7.0 ± 0.5 bar.

2.5 bar indicators to be used with 3.5 bar bypass valve and 7.0 bar indicators with no bypass function.

- visual M3.

- electrical T1.

- electronic F1(PNP).

- electronic F2(NPN).

For indicator details see catalogue section 6.

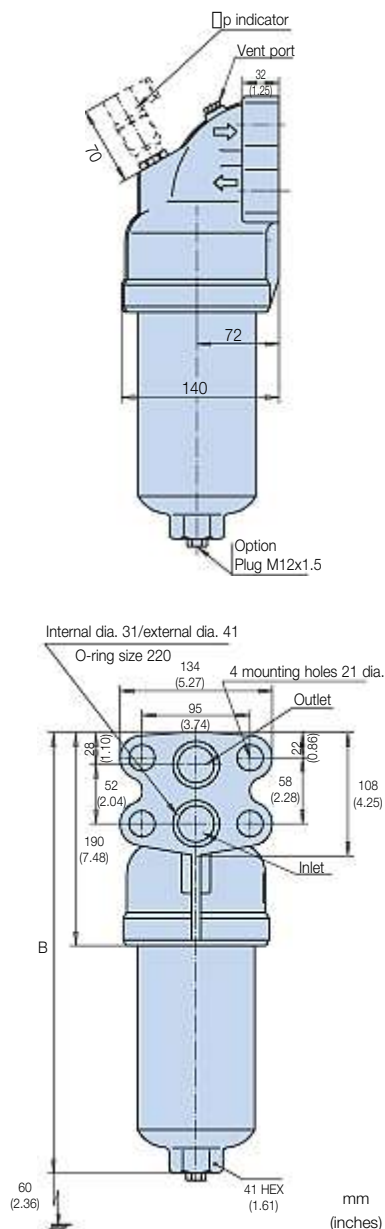
Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

70/70 Eco Series

Specification

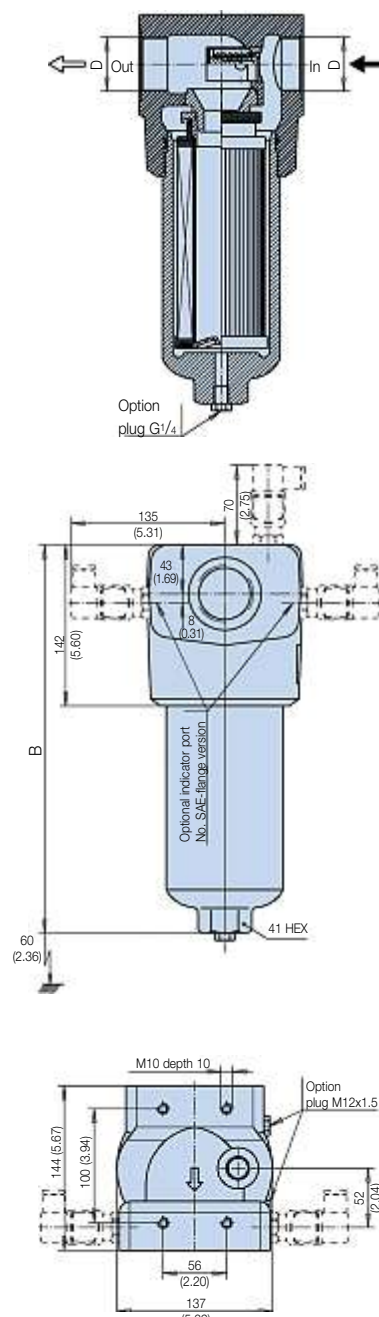
70B



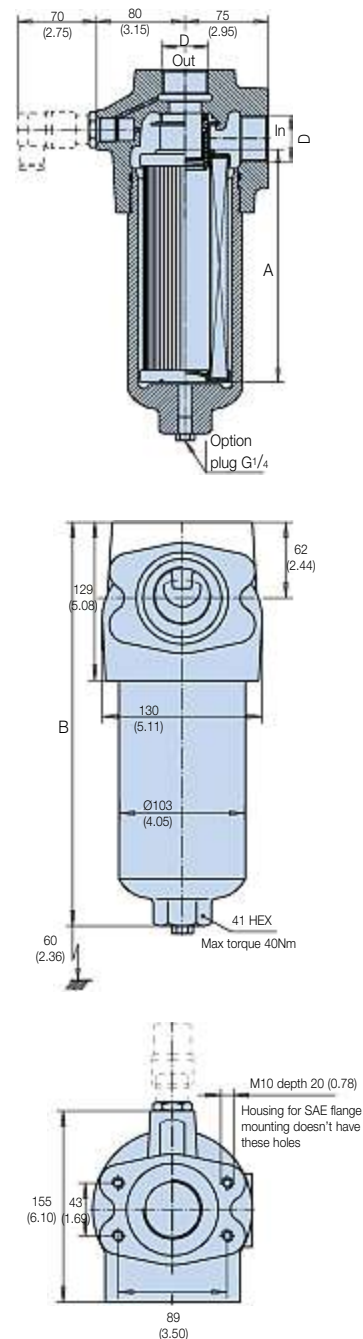
Weights (kg)

Type	70T	70L	70B
Length 1	14	10.5	11.5
Length 2	16.5	13	14
Length 3	19	15.5	16.5
Length 4	22	18.5	19.5

70T



70L



Type	A	B 70T	B 70B	B 70L	Max working pressure	Port D
Length 1	116 (4.57)	249 (9.80)	295 (11.61)	235 (9.25)	420 bar	G1, G1 ¹ / ₄ or G1 ¹ / ₂
Length 2	208 (8.19)	342 (13.46)	390 (15.35)	330 (13.00)	420 bar	Flange 1 ¹ / ₂ SAE 3000-M
Length 3	329 (12.95)	462 (18.19)	510 (20.08)	450 (17.72)	420 bar	Flange 1 ¹ / ₄ SAE 3000-M
Length 4	428 (16.85)	562 (22.12)	610 (24.01)	550 (21.65)	350 bar	Flange 1 ¹ / ₂ SAE 6000-M
						Flange 1 ¹ / ₄ SAE 6000-M

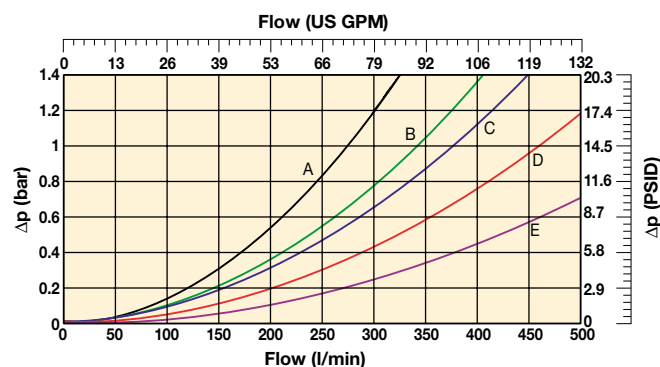
Pressure Drop Curves

With 3.5 bar bypass the recommended initial pressure drop is max 1.2 bar.

If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

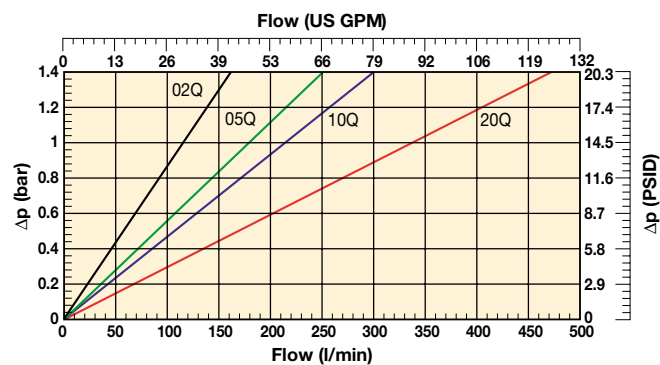
The total $\Delta p = \text{housing } \Delta p_h + (\text{element } \Delta p_e \times \text{working viscosity}/30)$.

70 Series Empty Housing

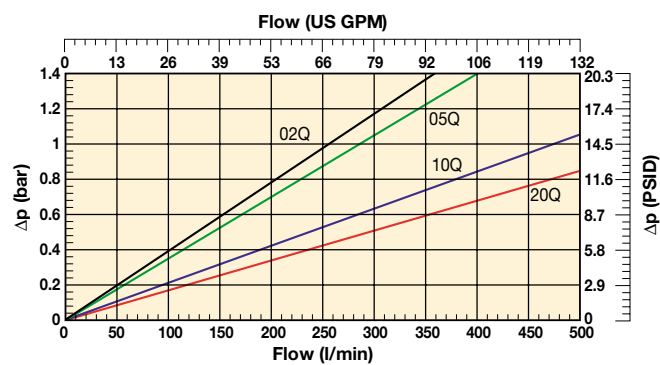


- A: 70T with G16 connections
- B: 70T with G20 connections
- C: 70L with G16 connections
- D: 70L with G20 connections
- E: 70B with G24 connections

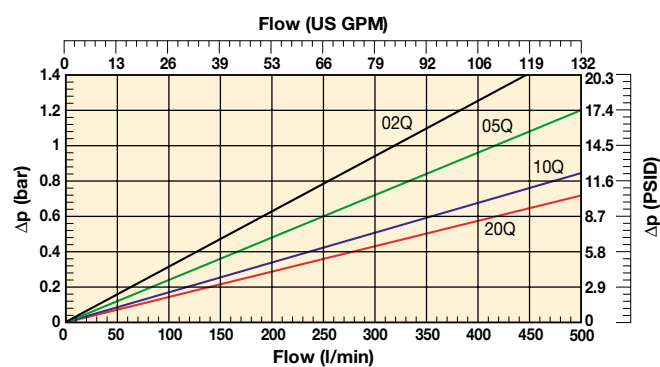
70-1 Elements with Microglass III



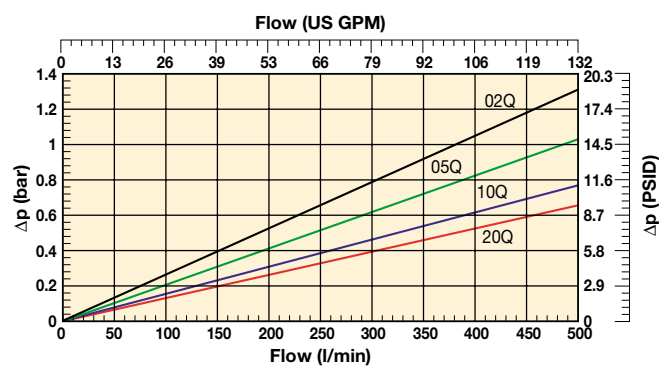
70-2 Elements with Microglass III



70-3 Elements with Microglass III



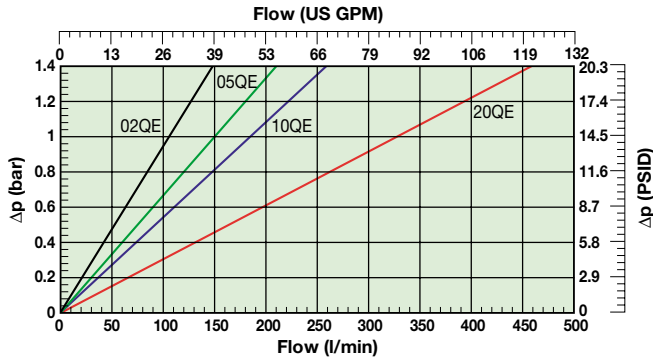
70-4 Elements with Microglass III



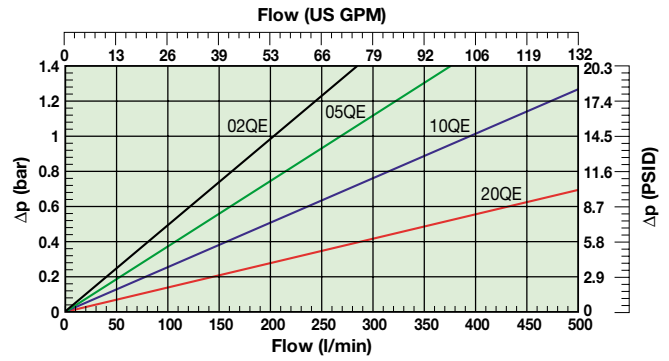
70/70 Eco Series

Pressure Drop Curves (cont.)

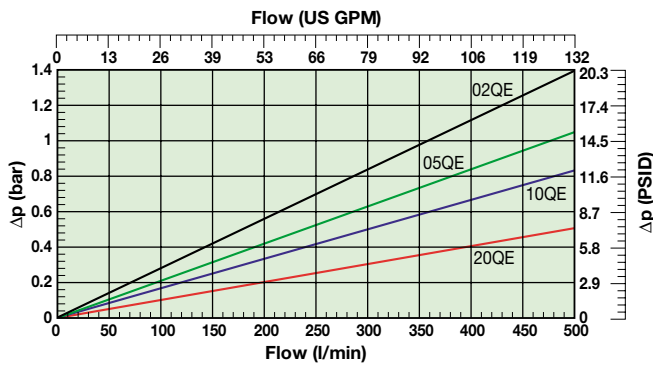
70-1 Elements with Ecoglass III



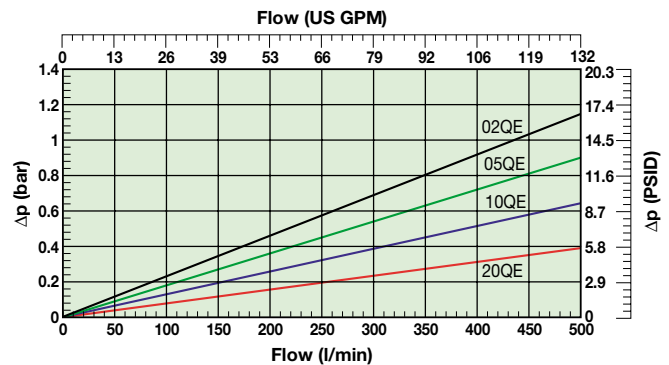
70-2 Elements with Ecoglass III



70-3 Elements with Ecoglass III



70-4 Elements with Ecoglass III



Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements	Supersedes
70L110QBPKG161	FF7005.Q010.BS35.GL16	150	70L	1	10	Nitrile	Plugged	3.5 bar	G1"	938773Q	FC7005.Q010.BK
70L120QBPKG161	FF7005.Q020.BS35.GL16	230	70L	1	20	Nitrile	Plugged	3.5 bar	G1"	938774Q	FC7005.Q020.BK
70L210QBPKG201	FF7006.Q010.BS35.GL20	280	70L	2	10	Nitrile	Plugged	3.5 bar	G1 1/4"	938777Q	FC7006.Q010.BK
70L220QBPKG201	FF7006.Q020.BS35.GL20	300	70L	2	20	Nitrile	Plugged	3.5 bar	G1 1/4"	938778Q	FC7006.Q020.BK
70L310QBPKG241	FF7007.Q010.BS35.GL24	400	70L	3	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938781Q	FC7007.Q010.BK
70L320QBPKG241	FF7007.Q020.BS35.GL24	430	70L	3	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938782Q	FC7007.Q020.BK
70L410QBPKG241	FF7008.Q010.BS35.GL24	430	70L	4	10	Nitrile	Plugged	3.5 bar	G1 1/2"	938785Q	FC7008.Q010.BK
70L420QBPKG241	FF7008.Q020.BS35.GL24	450	70L	4	20	Nitrile	Plugged	3.5 bar	G1 1/2"	938786Q	FC7008.Q020.BK
70L110QEBPKG161	FF7005.QE10.BS35.GL16	150	70L	1	10	Nitrile	Plugged	3.5 bar	G1"	938789Q	FC7005.QE10.BK
70L120QEBPKG161	FF7005.QE20.BS35.GL16	230	70L	1	20	Nitrile	Plugged	3.5 bar	G1"	938790Q	FC7005.QE20.BK
70L210QEBPKG201	FF7006.QE10.BS35.GL20	280	70L	2	10	Nitrile	Plugged	3.5 bar	G1 1/4"	938793Q	FC7006.QE10.BK
70L220QEBPKG201	FF7006.QE20.BS35.GL20	300	70L	2	20		Plugged	3.5 bar	G1 1/4"	938794Q	FC7006.QE20.BK
70L310QEBPKG241	FF7007.QE10.BS35.GL24	400	70L	3	10		Plugged	3.5 bar	G1 1/2"	938797Q	FC7007.QE10.BK
70L320QEBPKG241	FF7007.QE20.BS35.GL24	430	70L	3	20		Plugged	3.5 bar	G1 1/2"	938798Q	FC7007.QE20.BK
70L410QEBPKG241	FF7008.QE10.BS35.GL24	430	70L	4	10		Plugged	3.5 bar	G1 1/2"	938801Q	FC7008.QE10.BK
70L420QEBPKG241	FF7008.QE20.BS35.GL24	450	70L	4	20		Plugged	3.5 bar	G1 1/2"	938802Q	FC7008.QE20.BK
70T110QBPKG161	FF7005.Q010.BS35.GT16	150	70T	1	10		Plugged	3.5 bar	G1"	938773Q	FC7005.Q010.BK
70T120QBPKG161	FF7005.Q020.BS35.GT16	200	70T	1	20		Plugged	3.5 bar	G1"	938774Q	FC7005.Q020.BK
70T210QBPKG201	FF7006.Q010.BS35.GT20	260	70T	2	10		Plugged	3.5 bar	G1 1/4"	938777Q	FC7006.Q010.BK
70T220QBPKG201	FF7006.Q020.BS35.GT20	280	70T	2	20		Plugged	3.5 bar	G1 1/4"	938778Q	FC7006.Q020.BK
70T310QBPKG241	FF7007.Q010.BS35.GT24	360	70T	3	10		Plugged	3.5 bar	G1 1/2"	938781Q	FC7007.Q010.BK
70T320QBPKG241	FF7007.Q020.BS35.GT24	380	70T	3	20		Plugged	3.5 bar	G1 1/2"	938782Q	FC7007.Q020.BK
70T410QBPKG241	FF7008.Q010.BS35.GT24	360	70T	4	10		Plugged	3.5 bar	G1 1/2"	938785Q	FC7008.Q010.BK
70T420QBPKG241	FF7008.Q020.BS35.GT24	380	70T	4	20		Plugged	3.5 bar	G1 1/2"	938786Q	FC7008.Q020.BK
70T110QEBPKG161	FF7005.QE10.BS35.GT16	150	70T	1	10		Plugged	3.5 bar	G1"	938789Q	FC7005.QE10.BK
70T120QEBPKG161	FF7005.QE20.BS35.GT16	200	70T	1	20		Plugged	3.5 bar	G1"	938790Q	FC7005.QE20.BK
70T210QEBPKG201	FF7006.QE10.BS35.GT20	260	70T	2	10		Plugged	3.5 bar	G1 1/4"	938793Q	FC7006.QE10.BK
70T220QEBPKG201	FF7006.QE20.BS35.GT20	280	70T	2	20		Plugged	3.5 bar	G1 1/4"	938794Q	FC7006.QE20.BK
70T310QEBPKG241	FF7007.QE10.BS35.GT24	360	70T	3	10		Plugged	3.5 bar	G1 1/2"	938797Q	FC7007.QE10.BK
70T320QEBPKG241	FF7007.QE20.BS35.GT24	380	70T	3	20		Plugged	3.5 bar	G1 1/2"	938798Q	FC7007.QE20.BK
70T410QEBPKG241	FF7008.QE10.BS35.GT24	360	70T	4	10		Plugged	3.5 bar	G1 1/2"	938801Q	FC7008.QE10.BK
70T420QEBPKG241	FF7008.QE20.BS35.GT24	380	70T	4	20		Plugged	3.5 bar	G1 1/2"	938802Q	FC7008.QE20.BK

Note: Filter assemblies ordered from the product configurator on next page are on extended lead times. Where possible, please make your selection from the table above.

70/70 Eco Series

Ordering Information (cont.)

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
70L	3	10Q	B	M3	K	G24	1

Box 1

Code	
Model	Code
High pressure filter with L-port	70L
High pressure filter with T-port	70T
High pressure filter with side manifold mounting	70B

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2
Length 3	3
Length 4	4

Box 3

Degree of filtration				
Element media	Glass fibre			
	Media code			
Microglass III element	02Q	05Q	10Q	20Q
Ecoglass III element	02QE	05QE	10QE	20QE
High collapse element	02QH	05QH	10QH	20QH

Note: When using Ecoglass III elements reusable Eco-adaptor is required

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Plugged with steel plug	P
Visual indicator	M3
Electrical indicator	T1
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass and indicator settings		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K
No bypass	7.0 bar	N
No bypass	No indicator (P)	X

+ Box 8: code 2
+ Box 8: code 2

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection					
Connections	Code	Length 1	Length 2	Length 3	Length 4
Thread G 1	G16	S	S	x	x
Thread G 1 1/4	G20	S	S	S	S
Thread G 1 1/2	G24	x	S	S	S
SAE flange 1 1/4" 3000-M	R20	x	x	x	x
SAE flange 1 1/2" 3000-M	R24	x	x	x	x
SAE flange 1 1/4" 6000-M	H20	x	x	x	x
SAE flange 1 1/2" 6000-M	H24	x	x	x	x
Side manifold (70B only)	X32	x	x	x	x

Availability: **S** = standard product
x = non-standard, ask for availability

Box 8

Options	
Options	Code
Standard	1
No bypass	2
Drain port	4
70T: side indicator ports	6
70T: options 2 + 6	8

Options 6 and 8: in 70T model there is an option for 2 x indicator ports on filter outlet flange (standard indicator port not machined)
P: both side indicator ports plugged with steel plug
M3 or other indicator chosen: right side (in flow direction) port plugged with a plastic plug, left with a steel plug

Nominal flow (l/min) at viscosity 30 cSt						
Filter length	Media	G16 T-port	G16 L-port & G20 T-port	G20 L-port & Side manifold	G24 T-port	G24 L-port
Length 1	02Q/02QE	80	80	80	80	80
	05Q/05QE	120	120	120	120	120
	10Q/10QE	150	150	150	150	150
	20Q/20QE	200	230	230	230	230
Length 2	02Q/02QE	160	160	160	160	160
	05Q/05QE	180	200	200	200	200
	10Q/10QE	220	260	280	300	320
	20Q/20QE	240	280	300	330	350
Length 3	02Q/02QE	200	220	220	220	220
	05Q/05QE	220	250	280	280	280
	10Q/10QE	240	280	300	350	400
	20Q/20QE	250	300	320	380	430
Length 4	02Q/02QE	220	250	270	270	270
	05Q/05QE	230	260	300	330	330
	10Q/10QE	250	280	330	360	430
	20Q/20QE	260	300	350	380	450

Replacement elements with nitrile seals				
Media	Length 1	Length 2	Length 3	Length 4
02Q	938771Q	938775Q	938779Q	938783Q
05Q	938772Q	938776Q	938780Q	938784Q
10Q	938773Q	938777Q	938781Q	938785Q
20Q	938774Q	938778Q	938782Q	938786Q
02QE	938787Q	938791Q	938795Q	938799Q
05QE	938788Q	938792Q	938796Q	938800Q
10QE	938789Q	938793Q	938797Q	938801Q
20QE	938790Q	938794Q	938798Q	938802Q
02QH	938803Q	938807Q	938811Q	938815Q
05QH	938804Q	938808Q	938812Q	938816Q
10QH	938805Q	938809Q	938813Q	938817Q
20QH	938806Q	938810Q	938814Q	938818Q

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Degree of filtration						Code		
Average filtration beta ratio β (ISO 16889) / particle size μm [c]								
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$			
% efficiency, based on the above beta ratio (β_x)						Disposable	Metal free	High collapse
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	Microglass III	Ecoglass III	element
N/A	N/A	N/A	N/A	N/A	4.5	02Q	02QE	02QH
N/A	N/A	4.5	5	6	7	05Q	05QE	05QH
N/A	6	8.5	9	10	12	10Q	10QE	10QH
6	11	17	18	20	22	20Q	20QE	20QH

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

22PD/32PD Series

MAX 260 l/min - 210 bar



22PD/32PD Series

Features & Benefits

Features	Advantages	Benefits
Duplex design	Element service possible during operation	Allows to keep machine running with full contamination protection
Integrated balancing valve	No external piping required	Safety and reliability
Vent ports	Purges all trapped air in filter	Get the maximum performance from the elements Prevents a "flabby" system
Microglass III replacement elements	Multi-layered design produced high capacity and efficiency	Great performance value Reliable performance throughout element life
	Wire support reduces pleat bunching, keeps performance consistent	Reduces downtime, maximises element life
Visual, electrical and electronic indicators available	Check element condition at a glance	Optimises element life, prevents bypassing
	Right style for the application	Matches your system electrical connections

Typical Applications

- Ship steering systems
- Continuous operation industrial systems
- High flow flushing systems

The Parker Filtration 22PD/32PD Series High Pressure Duplex Filters.

Specially designed to offer continuous operation, even during element change.

A changeover valve operates on the upstream side of the filter, ensuring a contamination free system.



Specification

Pressure ratings:

Maximum allowable operating pressure 210 bar.

Filter housing pressure pulse fatigue tested: 10^6 cycles 210 bar.

Connections:

Inlet and outlet connections are threaded.

Connection style	Model	
	22PD	32PD
BSPF(G)	1"	1 1/4"
Flange SAE 3000-M	1 1/4"	1 1/2"

*3000-M is a SAE style with appropriate metric fixing threads.

Filter housing:

Head material cast iron (GSI).

Bowl material steel.

Seal material:

Nitrile or Fluoroelastomer.

Operating temperature range:

-20°C to +100°C.

Bypass valve:

Opening pressure 3.5 bar

Filter element:

Degree of filtration:

Determined by multipass-test according to ISO 16889.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved (ISO 3724).

Microglass III:

Supported with epoxy coated metal wire mesh, end cap material reinforced composite and metal inner core. Collapse rating 20 bar (ISO 2941).

High collapse elements:

(to be used when no bypass function in filter housing).

Microglass III media supported with epoxy coated metal wire mesh on upstream and stainless steel on downstream, end cap material steel. Strong metal inner core. Collapse rating 210 bar (ISO 2941).

Indicator options:

Indicating differential pressure: 2.5 ± 0.3 bar.

- visual M3.
- electrical T1.
- electronic F1(PNP).
- electronic F2(NPN).

For indicator details see catalogue section 6.

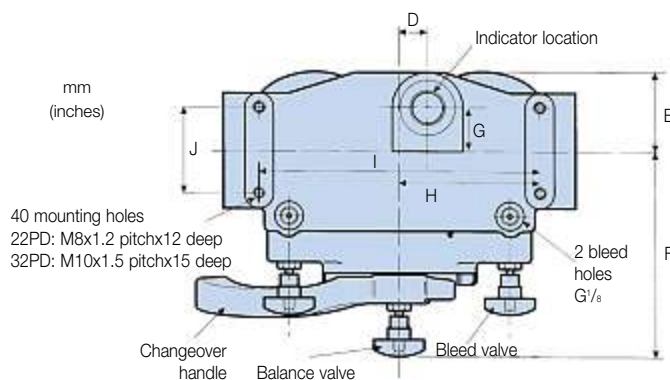
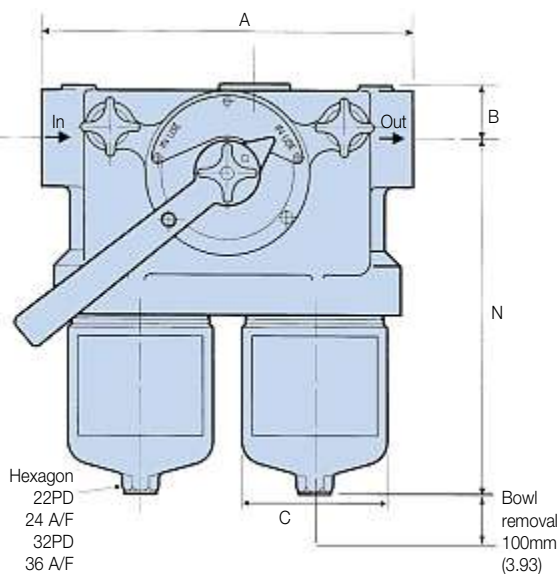
Weights (kg):

Model	Length 1	Length 2
22PD	22	27
32PD	44	50

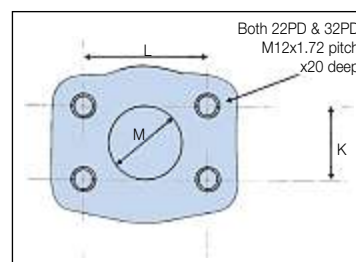
Fluid compatibility:

Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

Dimensions mm (inches)													
Model	A	B	C	D	E	F	G	H	I	J	K	L	N
22PD-1	240	35	92	18	55	150	150	96	192	60	30	59	30.75Ø
22-PD-2	(9.45)	(1.38)	(3.62)	(0.71)	(2.16)	(5.91)	(5.90)	(3.70)	(7.56)	(2.36)	(1.18)	(2.32)	236 (9.29)
32PD-1	306	42	130	20	78	170	165	120	240	75	36	70	38Ø
32PD-2	(12.05)	(1.65)	(5.12)	(0.79)	(3.07)	(6.69)	(6.49)	(4.72)	(9.45)	(2.95)	(1.42)	(2.75)	437 (17.20)



Flange face detail



22PD/32PD Series

Pressure Drop Curves

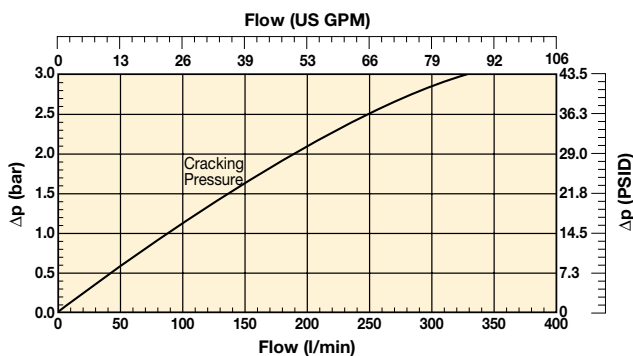
The recommended level of initial pressure drop is max. 1.2 bar.

If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:

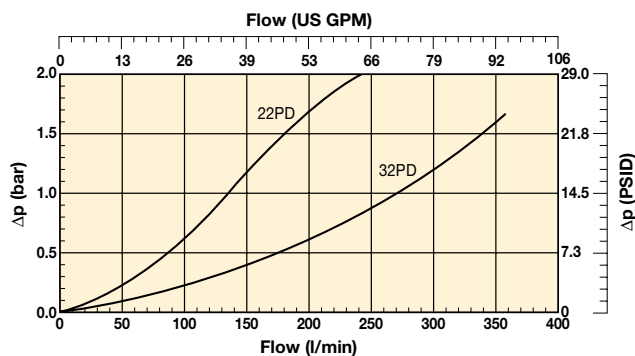
$\Delta p = (\Delta p_{30} \times \text{viscosity of medium used}) / 30 \text{ cSt}$.

The total Δp = housing Δp + (element $\Delta p_e \times \text{working viscosity}/30$).

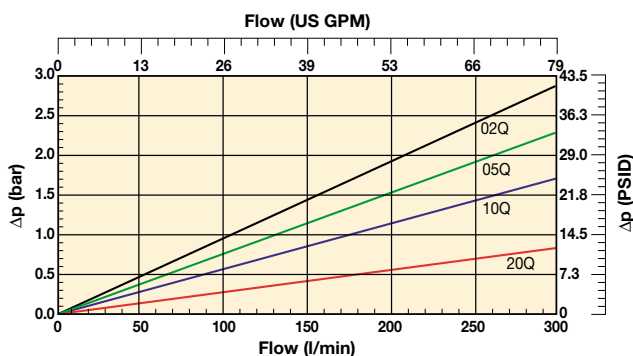
22PD/32PD Bypass Valve



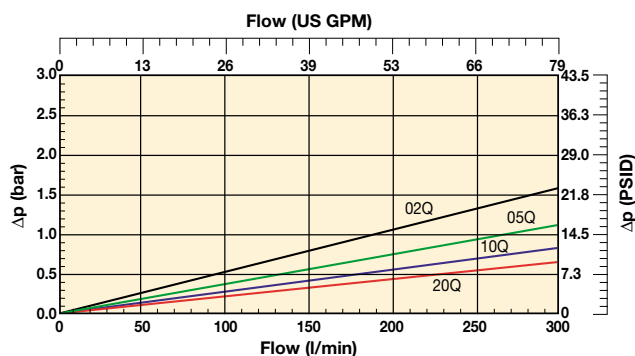
22PD/32PD Empty Housing



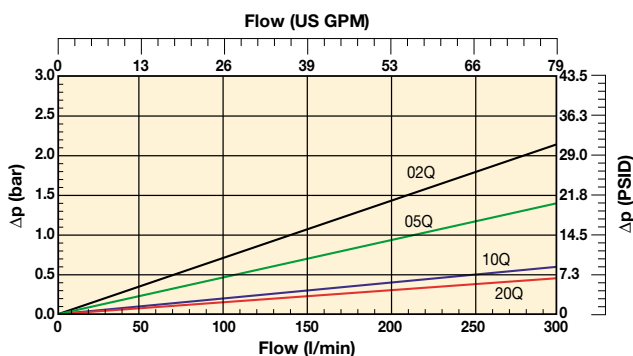
22PD-1 Elements



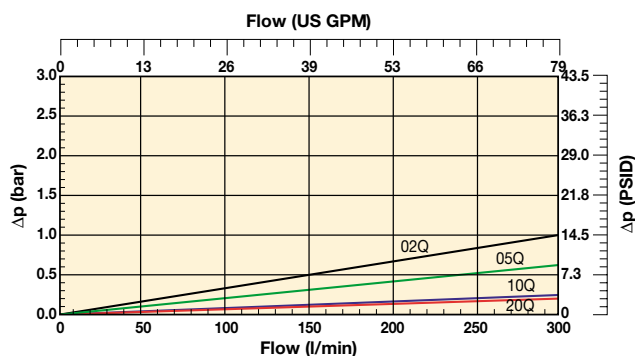
22PD-2 Elements



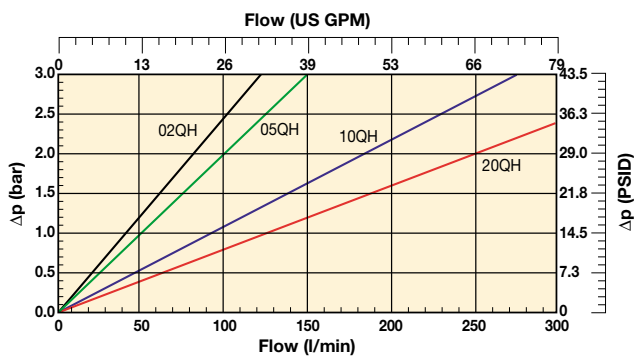
32PD-1 Elements



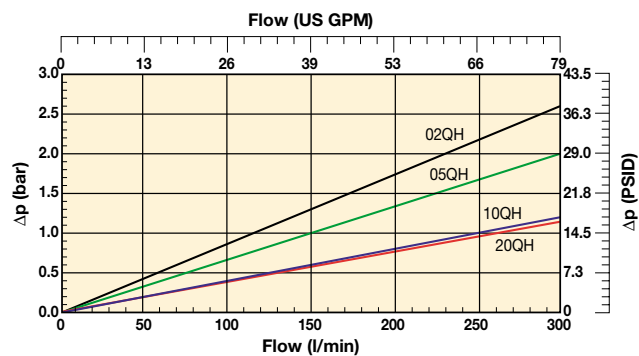
32PD-2 Elements



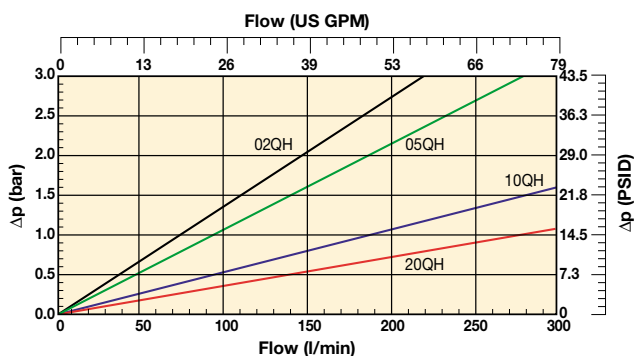
22PD-1 High Collapse Elements



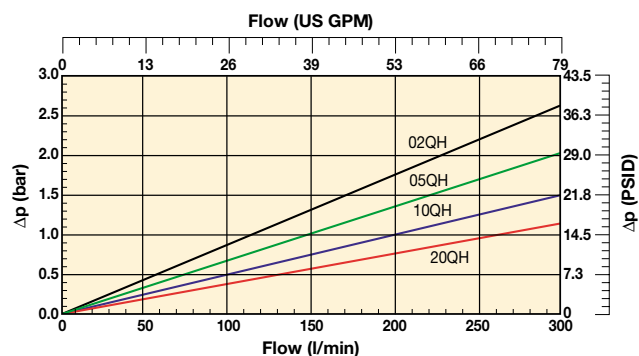
22PD-2 High Collapse Elements



32PD-1 High Collapse Elements



32PD-2 High Collapse Elements



Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (μ)	Seals	Indicator	Bypass settings	Ports	Replacement elements
22PD210QBM3KG161	0-22-PD-2-10Q-V-50-C-1	120	22PD	Length 2	10	Nitrile	Visual	3.5 bar	G1"	G01315Q
22PD210QBT1KG161	0-22-PD-2-10Q-TW3-50-C-1	120	22PD	Length 2	10	Nitrile	Electrical	3.5 bar	G1"	G01315Q
22PD220QBM3KG161	0-22-PD-2-20Q-V-50-C-1	140	22PD	Length 2	20	Nitrile	Visual	3.5 bar	G1"	G01938Q
22PD220QBT1KG161	0-22-PD-2-20Q-TW3-50-C-1	140	22PD	Length 2	20	Nitrile	Electrical	3.5 bar	G1"	G01938Q
32PD210QBM3KG201	0-32-PD-2-10Q-V-50-D-1	240	32PD	Length 2	10	Nitrile	Visual	3.5 bar	G1 1/2"	G01098Q
32PD210QBT1KG201	0-32-PD-2-10Q-TW3-50-D-1	240	32PD	Length 2	10	Nitrile	Electrical	3.5 bar	G1 1/2"	G01098Q
32PD220QBM3KG201	0-32-PD-2-20Q-V-50-D-1	260	32PD	Length 2	20	Nitrile	Visual	3.5 bar	G1 1/2"	G01954Q
32PD220QBT1KG201	0-32-PD-2-20Q-TW3-50-D-1	260	32PD	Length 2	20	Nitrile	Electrical	3.5 bar	G1 1/2"	G01954Q

Note: Filter assemblies ordered from the product configurator on the next page are on extended lead times. Where possible, please make your selection from the table above.

22PD/32PD Series

Ordering Information (cont.)

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
22PD	2	10Q	B	M3	K	G16	1

Box 1

Code	
Model	Code
Small high pressure duplex filter	22PD
Large high pressure duplex filter	32PD

Box 2

Filter type	
Length	Code
Length 1	1
Length 2	2

Box 3

Degree of filtration				
Element media	Glass fibre			
	Media code			
Microglass III element	02Q	05Q	10Q	20Q
High collapse element	02QH	05QH	10QH	20QH

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V

Box 5

Indicator	
	Code
Visual indicator	M3
Electrical indicator	T1
Plugged with steel plug	P
No indicator port	N
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass and indicator settings		
Bypass valve	Indicator	Code
3.5 bar	2.5 bar	K
No bypass	5.0 bar	M
No bypass	No indicator	X

+ Box 8: code 2
+ Box 8: code 2

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Ports	Code
22PD: Thread G 1	G16
SAE flange 1 1/4" 3000-M	R20
32PD: Thread G 1 1/4	G20
SAE flange 1 1/2" 3000-M	R24

Box 8

Options	
Options	Code
Standard	1
No bypass	2

Replacement elements with nitrile seals				
Media	22PD-1	22PD-2	32PD-1	32PD-2
02Q	G01282Q	G01316Q	G01069Q	G01099Q
05Q	G02721Q	G02724Q	G02567Q	G02727Q
10Q	G01281Q	G01315Q	G01068Q	G01098Q
20Q	G01930Q	G01938Q	G01946Q	G01954Q
02QH	G01442Q	G01448Q	G01454Q	G01460Q
05QH	G03737Q	G03738Q	G03739Q	G03740Q
10QH	G01441Q	G01447Q	G01453Q	G01459Q
20QH	G01932Q	G01940Q	G01948Q	G01956Q

Nominal flow (l/min) at viscosity 30 cSt				
Filter model	02Q	05Q	10Q	20Q
22PD-1	70	80	100	120
22PD-2	100	110	120	140
32PD-1	100	150	210	230
32PD-2	180	210	240	260

Seal kits		
Filter model	Nitrile	Fluoroelastomer
22PD	S04233	S04234
32PD	S02373	S02375

Replacement elements with fluoroelastomer seals				
Media	22PD-1	22PD-2	32PD-1	32PD-2
02Q	G01302Q	G01336Q	G01089Q	G01119Q
05Q	G02723Q	G02726Q	G02569Q	G02729Q
10Q	G01301Q	G01335Q	G01088Q	G01118Q
20Q	G01934Q	G01942Q	G01950Q	G01958Q
02QH	G01446Q	G01452Q	G01458Q	G01464Q
05QH	G04235Q	G04236Q	G04237Q	G04238Q
10QH	G01445Q	G01451Q	G01457Q	G01463Q
20QH	G01935Q	G01943Q	G01951Q	G01959Q

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Degree of filtration						Code	
Average filtration beta ratio β (ISO 16889) / particle size μm [c]							
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$		
% efficiency, based on the above beta ratio (β_x)						Disposable Microglass III	High collapse element
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%		
N/A	N/A	N/A	N/A	N/A	4.5	02Q	02QH
N/A	N/A	4.5	5	6	7	05Q	05QH
N/A	6	8.5	9	10	12	10Q	10QH
6	11	17	18	20	22	20Q	20QH

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Portable Hydraulic Filtration Systems

Guardian[®]

MAX 15 l/min - 2 bar



Features & Benefits

Features	Advantages
Portable and robust design	Guardian is designed to be used anywhere. Take it to the system or transfer new oil from the drum.
Lightweight design	Only 10.6 kg
Quick disconnect hose connections	Storage is simple. Guardian's compact design means it is easily stowed.
Visual indicator	Operational condition is constantly monitored
110VAC or 220/240VAC options	Guardian's power flexibility means it can be used anywhere.
A range of clean-up elements	A user can specify the media that will best achieve his clean up/filtering requirements.
Water removal element option	Water removal from the system is an important requirement for fluid efficiency.

Note: 15 l/min / Fluid transfer at a controlled rate

Application Example

A hydraulic system reservoir had become heavily contaminated and the hydraulic system was in danger of a catastrophic failure from particulate and water contamination. These contaminants were introduced from various points – airborne, wear and introduction of new 'dirty' fluids. The Guardian filtration system was installed into the hydraulic systems reservoir and run completely off-line for a period of time until acceptable contamination levels were achieved.

This off-line attachment allowed the hydraulic system to continue operating without costly downtimes. Additionally a Water Removal (WR) Element was also fitted to the Guardian, which radically reduced the water contamination within the entire system.

This customer will 'only now' introduce new fluids into his hydraulic application by using the Guardian filtration system and in addition utilises the Guardian off-line option to maintain and protect his system.

Contamination levels are monitored by an LCM202021 which controls the Guardians operation.

Result: reliability and complete confidence restored.

Typical Applications

- Fluid transfer
- Offline reservoir clean-up
- Injection moulding machines
- Royal navy surface fleet systems
- Paper mills
- Industrial equipment
- Mobile equipment
- Marine system support

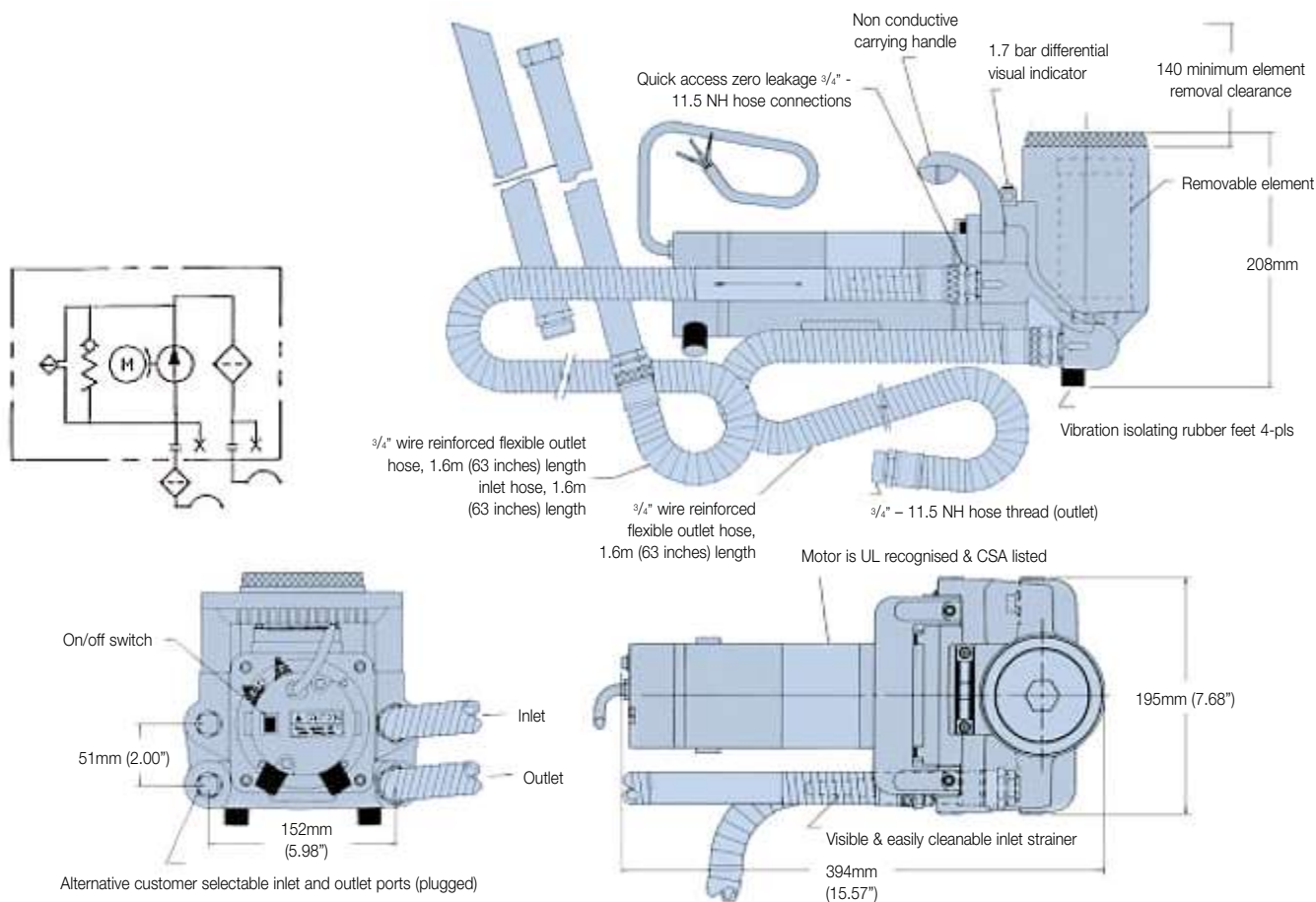
The Parker Filtration Guardian® portable filtration systems.

Guardian is a portable filtration system with two main functions: to ensure that new 'dirty' fluid often contaminated during handling, is delivered to the system at a specific cleanliness; and to permit periodic clean up of existing fluid to original condition.

Recommended fluids: Petroleum based oils, water emulsions and diesel fuels.



Specification



Ordering Information and Product Configurator

Standard products table

Part number	Supersedes	Model (fluorocarbon)	Motor option	Element (μ)	Options	Plug type	Replacement element
GT4E110Q1UK	F3-GT4E-1-10Q-1-UK	GT4E	1	10Q	1	UK	G04396Q
GT4E110Q1EUR	F3-GT4E-1-10Q-1-EUR	GT4E	1	10Q	1	EUR	G04396Q
GT4E210Q1IND	F3-GT4E-2-10Q-1-IND	GT4E	2	10Q	1	IND	G04396Q

Product configurator

Model (fluorocarbon)	Motor options		Element (μ)		Options		Plug type	
GT4E	1	220/240 VAC	10Q	Microglass	1	None	UK	United Kingdom
	2	* 110 VAC	02Q		6	Quick disconnect hose connections	EUR	Europe
	3	~ 24 Vdc	05Q				IND	Industrial 3 pin *110 version only
			20Q	Wire mesh			CL	~ Battery clamps (24Vdc Only)
			25W					
			40W					
			74W					
			WR	Water removal				

Replacement elements

Guardian replacement elements to ISO16889		
Part number	Micron rating	Media type
G04396Q	10	Microglass III
G04394Q	4.5	Microglass III
G04395Q	6	Microglass III
G04397Q	20	Microglass III
G04400	25	Wire mesh
G04401	40	Wire mesh
G04402	74	Wire mesh
G04403	WR	Water removal

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Filtration Unit

MAX 15 l/min - 6 bar



Filtration Unit

Features & Benefits

Features	Advantages	Benefits
Single phase and three phase motor options	Flexibility of power output	End user choice dependent on application
15 l/min flow	Fluid transfer at a controlled rate	Reliable fluid transfer from drum to system
Red/green visual indicator	Clear indication of condition during operation	High visibility during operation
Robust construction	Reliability designed in	Designed to be used even in the most demanding conditions
Spin-on element	Easy change element	10 micron Abs. elements
Lightweight design	Easy to locate when and where required	Take the unit to the application. It's that easy

Typical Applications

- Fluid transfer
- Small lubrication systems
- Constant flushing loops
- Maintenance flushing
- Offline filtration in circuits where pressure and flow pulses are expected

The Parker Filtration Service Equipment.

Designed to offer both permanent offline cleaning where higher levels of contamination are expected and portable additional clean-up capability as part of your preventative maintenance package.



Specification

Electric motor

Frame Size: IEC Frame 63. Foot and flange 'D' (Flange IEC.F115). Totally enclosed fan cooled.

Windings: 380/420 volt 3 ph/50 Hz, 220 Volt 1 ph/50 Hz 110 Volt 1 ph/50 Hz.

Power: 0.18 kW (1/4 hp).

Speed: 1400 rev/min.

It is recommended that the Unit is wired independently from the main system when permanently installed, to facilitate the simple changing of the filter element without interrupting the main system.

Filtration unit description

The Parker 'Filtration Unit' consists of an electric motor directly coupled to a hydraulic pump, which has a built in bypass fitted and spin on filter element. Fluid drawn in at pump inlet is circulated through the filter element and is thus cleaned before being delivered from the outlet port. A built in bypass valve safeguards the element in the event of blockage and returns oil to the pump inlet, this ensures that all fluid output from the unit is filtered, whatever the operating conditions. A visual element condition indicator is fitted to the pump. A unit is available without electric motor for customers who prefer to supply their own. See installation notes and part numbers for ordering.

Pump and bypass valve

Pump: Lobe type for quiet running.

Flow: 15 l/min.

Connections: Inlet G¹/₂ (1/2" BSP).
Outlet G³/₈ (3/8" BSP).

Bypass Valve: Cracks at 1.5 bar approximately. Bypassed oil is recirculated within the pump. Bypassed oil is reintroduced into the inlet port and does not pass the filter. Bypass operates when the element is contaminated

and needs replacing. This condition will be made clear by the visual indicator. The Bypass Valve could also open when being used with high viscosity fluids, thus effectively reducing the unit output.

Filter and condition indicator

Filter Type: Rapid replacement spin-on can with 10µ cellulose element. Ensure that end clearance (20mm) is available to permit element withdrawal. 10µ nominal. MXR8550

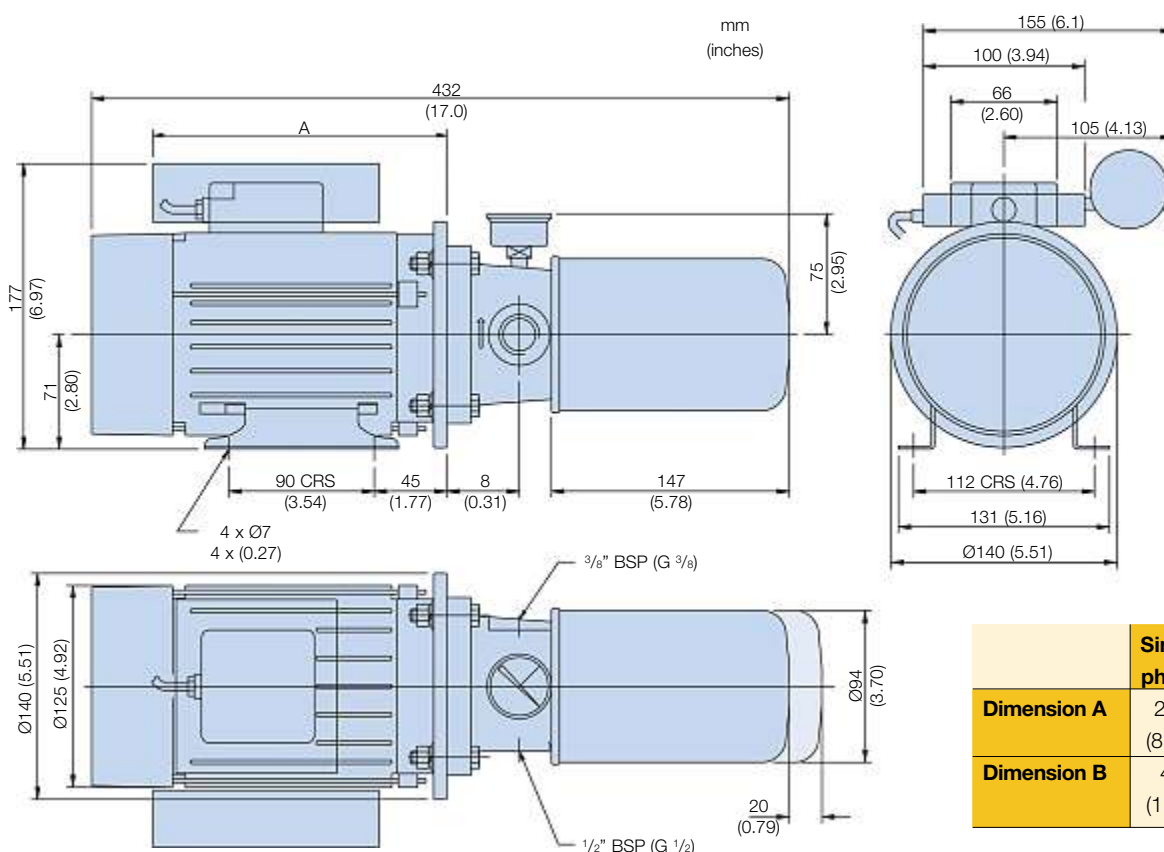
Visual indicator

Has green and red zones on the dial. Needle in the green zone indicates normal operation. When the needle enters the red zone, the bypass valve will permit a flow of oil to return to the pump inlet – The element will then need to be replaced. The bypass is fully open when the needle is at the extreme of the red sector.

Sound level

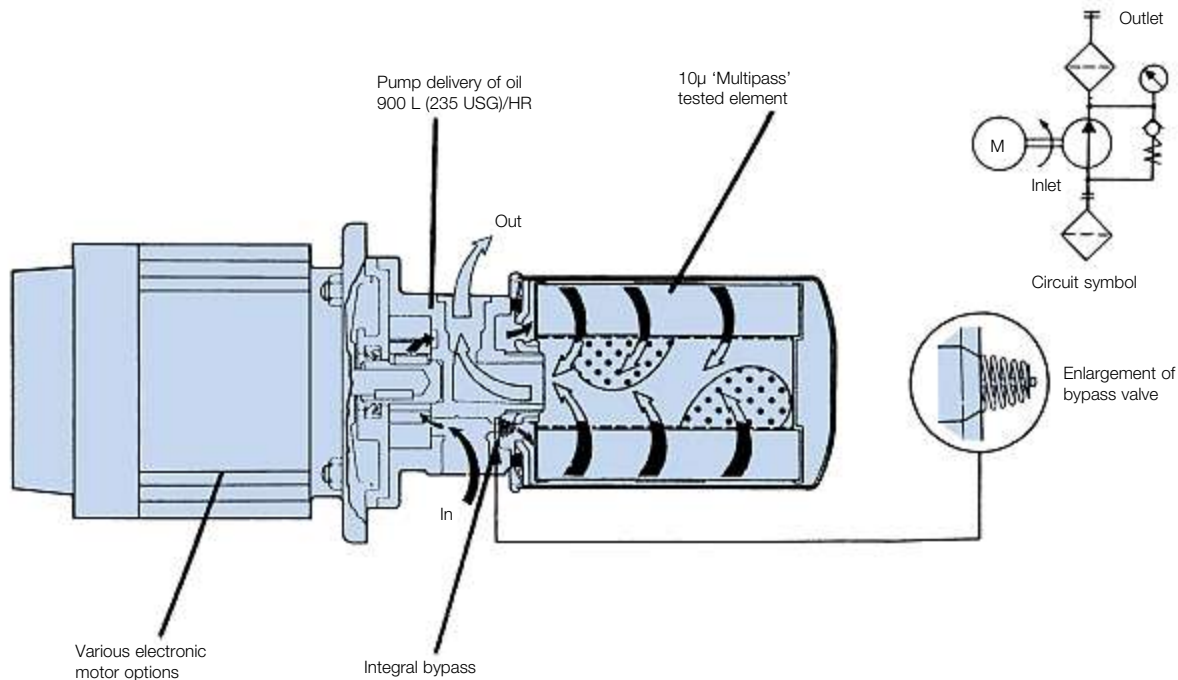
The Filtration Unit under normal conditions will operate at a sound pressure level of approximately 65 dBA.

Installation Details



Filtration Unit

Sectioned Detail



Installation and Operational Notes

The Filtration Unit is suitable for mineral based oils. Maximum viscosity at start up condition 850 centistokes-minimum viscosity 8 centistokes. Note that at 850 centistokes output will be reduced due to opening of bypass. Maximum operating temperature +90°C (194°F).

The inlet pipe should be as large and as short as convenient to reduce inlet depression to a minimum. It should not be less than 12mm (0.47") internal diameter.

Suction element SE75111110 is supplied with all assemblies and must be installed. Ensure that a minimum 75mm (2.95") head of oil is maintained above the suction element.

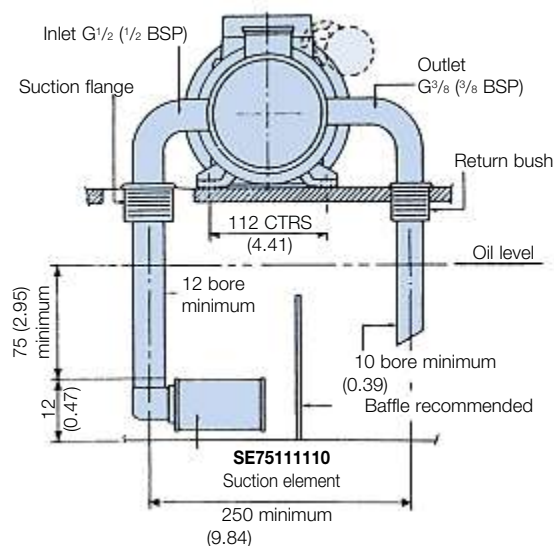
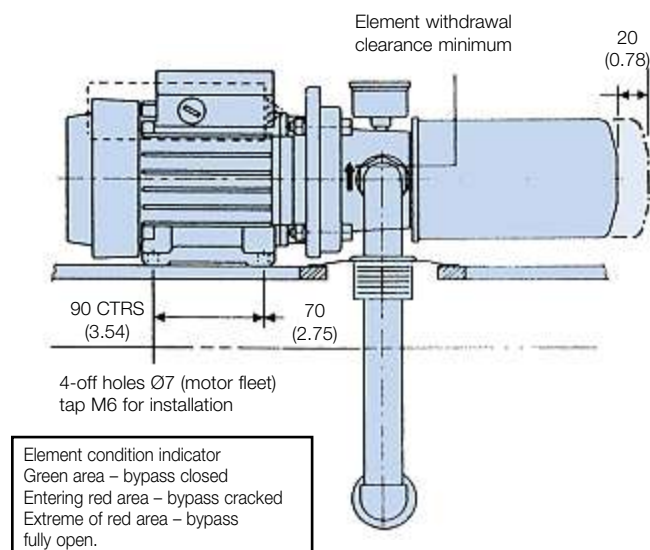
The outlet pipe should be as large as possible to reduce the possibility of delivery pressure exceeding the bypass valve setting. It should not be less than 10mm (0.39") internal diameter. The discharge end of this pipe should always be below the oil surface to minimise aeration. It is equally important, to ensure the ends of the inlet and outlet pipes are as far apart as possible. It is recommended that a baffle be positioned between the suction and return pipes, to give maximum circulation of oil.

Installation details – 2742

The Filtration Unit is available without an electrical motor, any type motor may be used of identical frame, flange and shaft size to that stated in the specification. Remove the key, fitted to electric motor shaft. There are four nuts and bolts M8-1.25mm thread supplied loose, the pump housing is complete with a shaft adaptor with internal drive pin.

To fit pump to electric motor simply insert drive shaft of motor into the pump drive adaptor ensuring the drive pin engages in shaft keyway and that the locating spigot are correctly engaged. Complete the assembly by fitting the four nuts, bolts and washers.

Ideal Application



Ordering Information

Standard products table

Part number	Description	Weight	Replacement elements
2741	10μ nom filtration pump complete with 3 phase electric motor (380/420/50 Hz H.E.F.C class F) visual indicator	5.92 Kg (13.02 lbs)	MXR8550 (10μ nominal)
2742	10μ nom filtration pump without electric motor (supplied with 4 x nuts, bolts and washers) visual indicator	1.50 Kg (3.3 lbs)	
2743	10μ nom filtration pump complete with single phase electric motor (220/50 Hz T.E.F.C class F) visual indicator	6.20 Kg (13.64 lbs)	
2744	10μ nom filtration pump complete with single phase electric motor (110/50 Hz T.E.F.C class F) visual indicator	6.20 Kg (13.64 lbs)	

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for Availability

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is no handwriting or other markings on the paper.

A full-page sheet of white graph paper featuring a light gray grid. The grid consists of small, equal-sized squares covering the entire area. There are no margins, text, or other markings on the page.

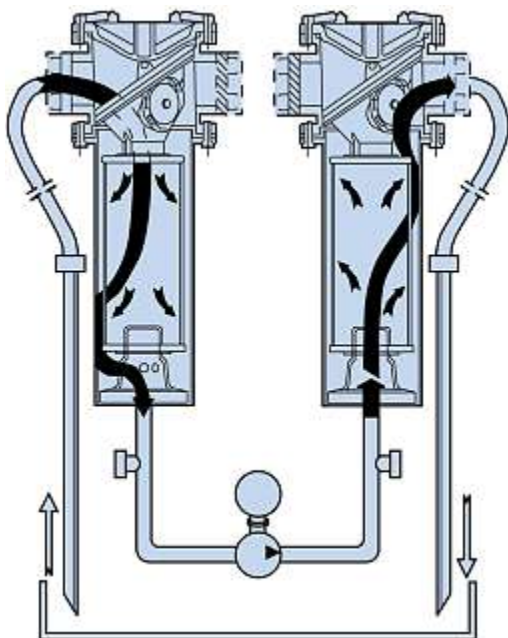
10MF Series

MAX 38 l/min



10MF Series

Features & Benefits



Fluid flow path through 10MF portable filtration system when viewed from front, electrical switch to rear

The 10MF Portable Filtration System is ideal for:

- Off-line contamination control of fluid systems
- Replenishing installations with filtered fluid
- Emptying waste fluid quickly

The 10MF Filter system is designed for on-site preventive maintenance of fluid systems. Two high capacity filters are used, with fluid passing through a primary clean-up filter and then through the final polishing filter giving highly effective and reliable contamination control.

- Two high capacity filters, complete with indicators element condition
- Filters incorporate standard Parker media.
- 38 l/min pressure balanced gear pump
 - 0.75kW @ 3450rpm electric motor with thermal overload protection
- Robust all welded steel trolley, complete with drip tray and rubber tyred wheels
- Complete with stowable hoses

Typical Applications

- Paper mills
- Injection and blow moulding equipment
- Industrial & mobile equipment
- Transferring fluid from drums or storage tanks to system reservoirs
- Off-line conditioning of existing fluids
- Complimenting existing system filtration

The Parker Filtration 10MF portable filtration system.

Parker's portable filtration units are designed for on-site preventative maintenance of fluid systems. An internal pump draws fluid through a primary clean-up filter and then pushes the fluid through a high quality polishing filter to remove particulate contamination down to 4µm (c) absolute.

Water can also be removed by installing Parker's Par-Gel™ water removal elements to the outlet filter. Once the water comes into contact with the Polymer element it will be removed from the fluid. An all round solution for contamination control in your critical system



Specification

Pump drive options:

0.75kW Electric motor 220/240v A.C. Single phase 50HZ
0.75kW Electric motor 110V A.C. Single phase 50HZ.

Pump:

38 l/min pressure balanced gear pump.

Filters:

Moduflow CF2.1 & RF2.1 filters.

Electrical details:

On/Off switch. 2 metre cable.

Weight:

45.4 kg.

Fluid compatibility:

Suitable for use with mineral oils. For other fluids, please consult Parker Filtration.

Max recommended fluid viscosity:

108 cSt.

Seals:

Nitrile.

Filter elements:

Inlet - synthetic, stainless steel mesh optional.

Outlet - 10Q Microglass III, other μ ratings and WR optional.

Filter bypass valve settings:

Inlet - 0.2 bar (3 psi).

Outlet - 1.7 bar (25 psi).

Visual indicator:

3 band visual differential (clean, change, bypass).

Construction:

Cart frame - steel, filter head - aluminium.

Filter bowl - steel, hoses - PVC standard.

Motor options:

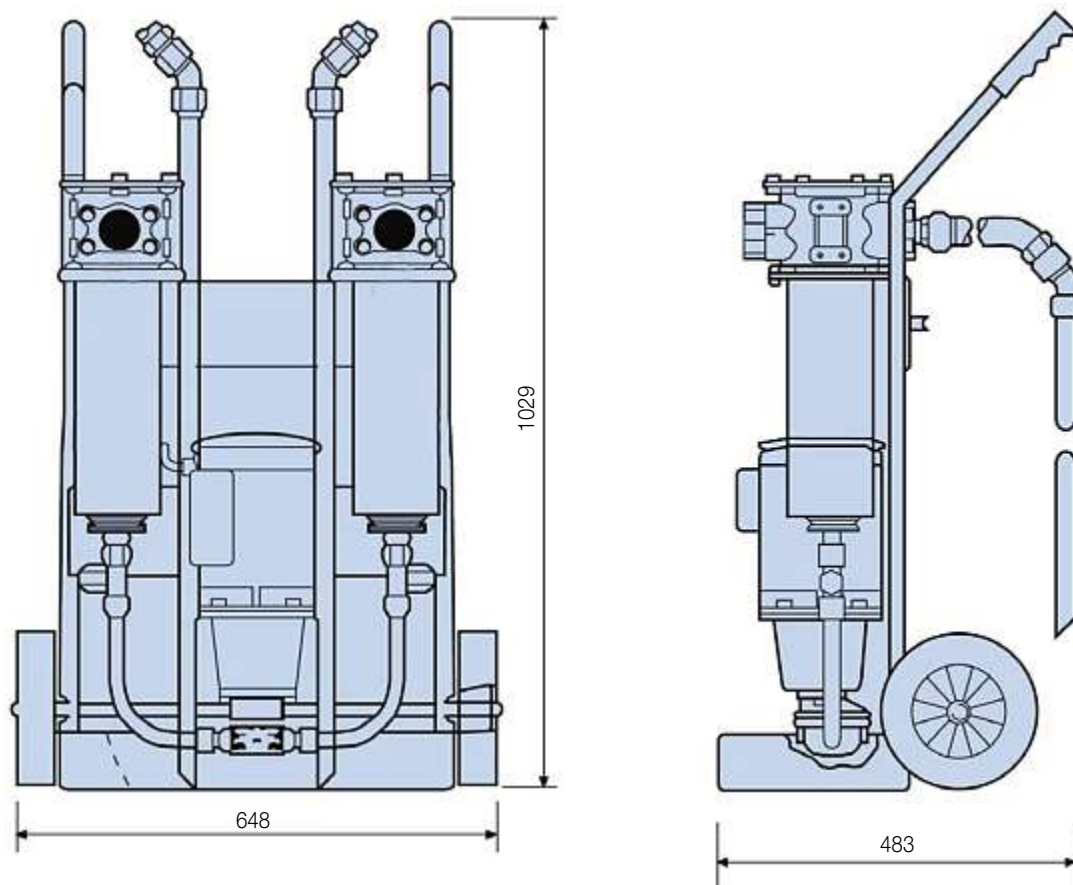
220/240 VAC.

110 VAC.

Operating temperatures:

-40°C to 66°C Nitrile.

Installation Details



10MF Series

Ordering Information

Standard products table

Part number	Supersedes	Model (fluorocarbon)	Motor option	Inlet element (924448)	Outlet element (924453Q)	Options	Plug type	Replacement elements	
								Inlet	Outlet
10MF140SA10Q1UK	10MF-1-40SA-10Q-1-UK	10MF	1	40SA	10Q	1	UK	924448	G00973Q
10MF140SA10Q1EUR	10MF-1-40SA-10Q-1-EUR	10MF	1	40SA	10Q	1	EUR	924448	G00973Q
10MF240SA10Q1IND	10MF-2-40SA-10Q-1-IND	10MF	2	40SA	10Q	1	IND	924448	G00973Q

Product configurator

Model (fluorocarbon)	Motor options		Inlet element options (μ)		Outlet element options (μ)		Options		Plug type	
10MF	1	220/240 VAC	40SA	Synthetic	10Q	Microglass III	1	None	UK	Moulded 3 pin
	2	* 110 VAC	40W	Stainless steel mesh	02Q	Microglass III	3	Magnet pack	EUR	Moulded 2 pin
			20Q	Stainless steel mesh	05Q	Microglass III			IND*	3 pin industrial
			74W	Stainless steel mesh	20Q	Microglass III				
					WR	Par<>Gel water removal				

Replacement elements

10MF replacement inlet elements		
Nitrile seals		
Part number	Micron rating μm(c)	Media type
924448	40	Synthetic
G02525Q	20	Microglass III
G00968	40	Stainless steel
G00967	74	Stainless steel

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
 Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

10MF replacement outlet elements		
Nitrile seals		
Part number	Micron rating μm(c)	Media type
G00973Q	10	Microglass III
G04687Q	4.5	Microglass III
G00974Q	6	Microglass III
G02525Q	20	Microglass III
927584	WR	Water removal



PVS Series - Models 185, 600, 1200, 1800 and 2700



PVS Series

Effects of Water Contamination

Water is one of the most common and destructive contaminants in a fluid system. When water contaminates a system, it can cause serious problems such as:

- Corrosion by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

Typical saturation points

Fluid type	PPM	%
Hydraulic fluid	300	.03%
Lubrication fluid	400	.04%
Transformer fluid	50	.005%

Free water occurs when oil becomes saturated and cannot hold any more water. This water is usually seen as cloudy oil or puddles of water at the bottom of an oil reservoir. Water which is absorbed into the oil is called dissolved water. At higher temperatures, oil has the ability to hold more water in the dissolved stage due to the expansion of oil molecules. As the oil cools, this ability reverses and free water will appear where not visible before. In addition to temperature, fluid type also determines the saturation point for your system (see chart above).

Principles of Operation

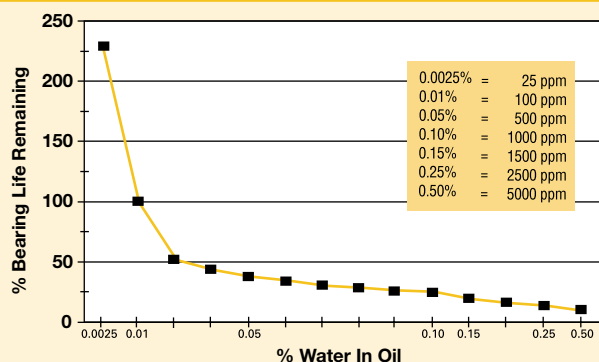
Contaminated oil is drawn into the Parker portable purification system by a vacuum of 25 In/Hg. The oil passes through the in-line low watt density heater/s where the oil is heated to an optimum temperature of 66°C (150°F).

The oil then enters the distillation column where it is exposed to the vacuum through the use of dedicated dispersal elements. This increases the exposed surface area of the oil and converts the water to a vapor form, which is then drawn through the condenser by the vacuum pump. The vapour returns to water and drops into the condensate holding tank - this can then be drained off at a later stage.

The water-free oil falls to the bottom of the vacuum chamber and is passed through a final particulate removal filter by a heavy duty lube oil pump.

Clean dry oil re-enters the reservoir/system via the outlet port.

Effect Of Water In Oil On Bearing Life



Effect of water in oil on bearing life (based on 100% life at .01% water in oil.)
Reference: "Machine Design" July 86, "How Dirt And Water Effect Bearing Life" by Timken Bearing Co.

Applications for PVS Portable Purification Systems

- **Paper mills**

- Dryer lubrication
- Hydraulic
- Compressor lubrication
- Calenders

- **Steel mills**

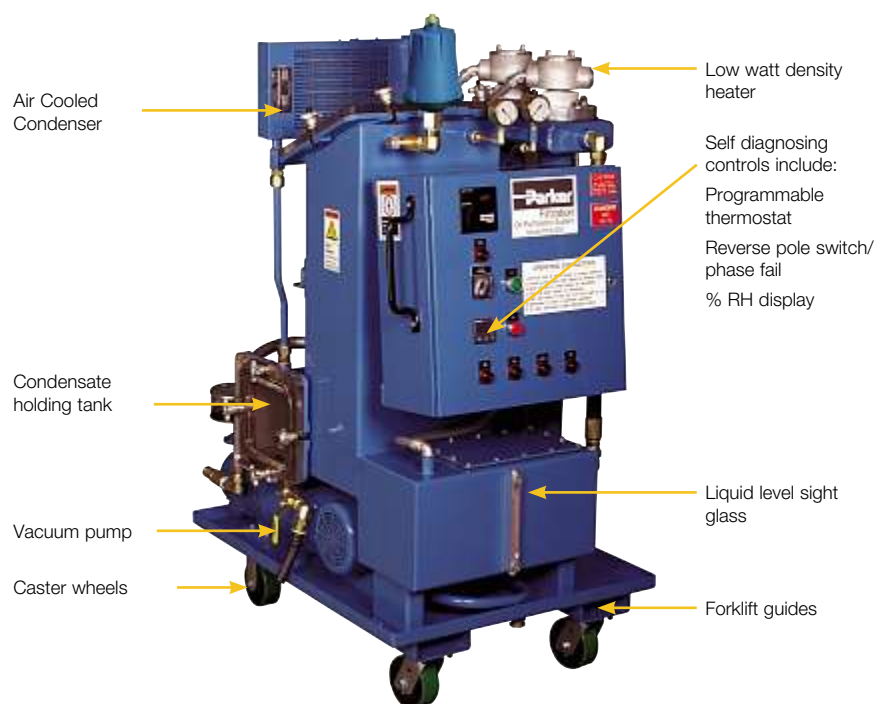
- Bearing lubrication
- Continuous casters
- Press roll lubrication

- **Power generation**

- Turbine oil
- Transformer oil
- EHC systems

- **Industrial/aerospace**

- Test stands
- Machine tools



Features	Advantages	Benefits
Variable flow circuit	Allows oil to heat to required temperature quickly	Starts removing water quickly
Moisture sensor	Real-time water content indication	Indicates when safe water content level is obtained
Condensate holding tank	Captures removed water/solvents Large enough to provide long service interval	Eliminate potential hazard of exhausting to atmosphere Reduced maintenance costs
Compact size	Smallest envelope in the industry Ease of portability	Fits through doorways and down narrow aisles Increased use
Forklift guides Lifting eyes	Provides safe and secure method to lift unit	Employee safety Easily transported
Programmable thermostat	Maintains oil within 1°C Prevents overheating oil	Unattended operation Increases oil life
Automatic operation	Unattended use	Reduced labour costs Increased running time
Reverse pole switch/phase fail	Change motor rotation for different power source locations	Flexibility, less maintenance Prevents incorrect rotation
High temperature safety circuit	Shuts down heater if primary contactors fail Oil can never exceed 120°C (250°F)	Prevents system damage Worker safety
Circuit breakers utilised in electrical panel	No fuses to replace Simple diagnostics	Fewer spare parts, increased uptime Reduced maintenance
Available with EPR seals and stainless steel	Phosphate ester compatible	Specifically designed for application
Solid state heater contactor	Longer more reliable service life	Reduced downtime

PVS Series

Potential contaminant	PVS performance
Solid particulate	ISO cleanliness code* 14/13/10 attainable
Water	Removes 100% of free water, 80-90% of dissolved water.
Air	Removes 100% of free air, 90% of dissolved air.
Gases	Removes 100% of free gases, 90% of dissolved gases.

* When utilising 2Q media

PVS (Vacuum dehydration) compared to other technologies

Centrifuge units – Removes free water only; has difficulty breaking stable emulsions; larger envelope dimensions but lower flows; higher initial and operating costs.

Desiccant units – Have limited water removal capability due to absorbing material; only removes air ingressed particles; expensive compared to the volume of water removed.

Coalescer units – Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>23cSt); much larger in size compared to PVS.

Typical Performance

Tank size	227 litres (50 gallons)
Run time	62 minutes
Parker model	PVS 600 (37.9 l/min)
Water content (ppm)	Start: 10,000 PPM (1.0%) Stop: 50 PPM(0.005%)
Contamination level	Start: ISO 21/18/16 Stop: ISO 16/14/11

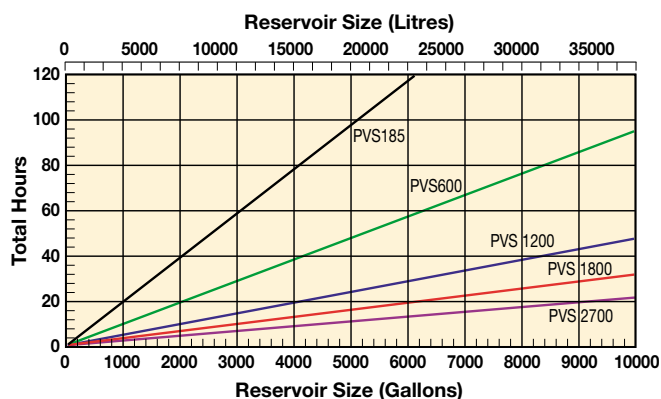


Start



Stop

Estimated Water Removal Time 5000 ppm (0.5%) to 150 ppm (0.015%)



PVS 185

Specification

Flow rate:
19 lpm (4.2 gpm).

Height:
1651mm (65").

Width:
825.5mm (32.5").

Length:
1206.5mm (47.5").

Weight:
294.8 kg (650 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
15.5 ltrs (3.4 gals).

Dispersal elements:
1.

Minimum operating capacity:
18.9 ltrs (4.2 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
3/4" JIC (male) inlet.
3/4" JIC (male) outlet.

FLA (full load amps):
15-41 amps.
(Depending on voltage used).



Replacement elements

Particulate

2Q	(2 micron)	932665Q
5Q	(5 micron)	932666Q
10Q	(10 micron)	932667Q
20Q	(20 micron)	929927Q

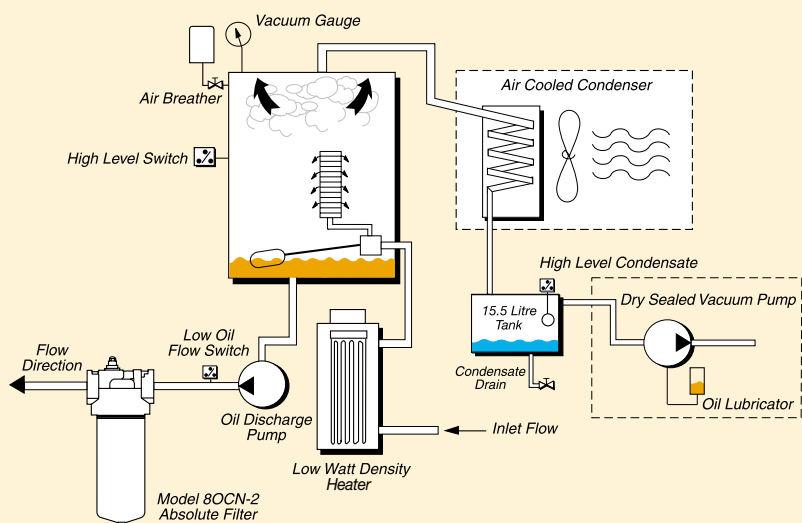
Dispersal

Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless

02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 185 flow diagram



PVS 600

Specification

Flow rate:

38 lpm (8.3 gpm).

Height:

1638.3mm (64.5").

Width:

1117.6mm (44").

Length:

1549.4mm (61").

Weight:

408.2 kg (900 lbs).

Seal material:

Fluorocarbon (EPR opt.).

Condensate tank:

15.5 ltrs (3.4 gals).

Dispersal elements:

2.

Minimum operating capacity:

22.7 ltrs (5.0 gals).

Vacuum (max):

25 In/Hg.

Viscosity (max):

108 cSt (500sus) – disposable.

460 cSt (2150 sus) – packed tower.

Outlet pressure (max):

4.1 bar (60 psi).

Ports:

1" JIC (male) inlet.

1" JIC (male) outlet.

FLA (full load amps):

24-38 amps.

(Depending on options & voltages).



Replacement elements

Particulate

2Q	(2 micron)	932665Q
5Q	(5 micron)	932666Q
10Q	(10 micron)	932667Q
20Q	(20 micron)	929927Q

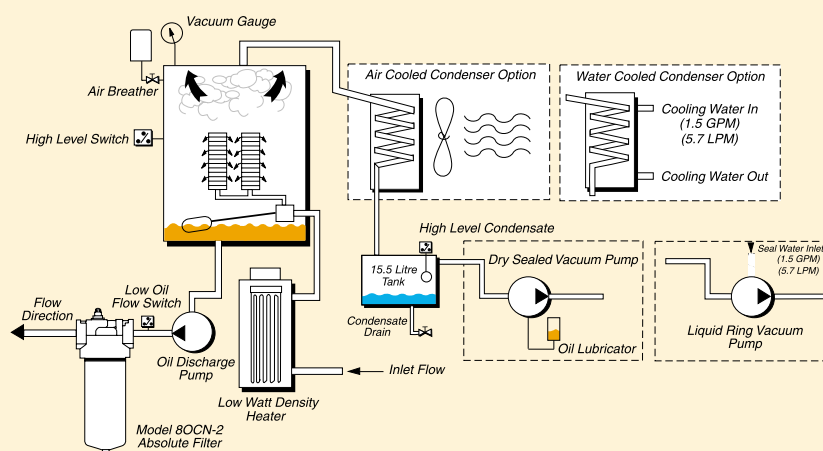
Dispersal

Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless

02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 600 flow diagram



PVS 1200

Specification

Flow rate:
76 lpm (16.7 gpm).

Height:
1651mm (65").

Width:
1117.6mm (44").

Length:
1549.4mm (61").

Weight:
703.1 kg (1550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
4.

Minimum operating capacity:
41.6 ltrs (9.1 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
1½" NPTF inlet.
1" JIC (male) outlet.

FLA (full load amps):
30-48 amps.
(Depending on options & voltages).



Replacement elements

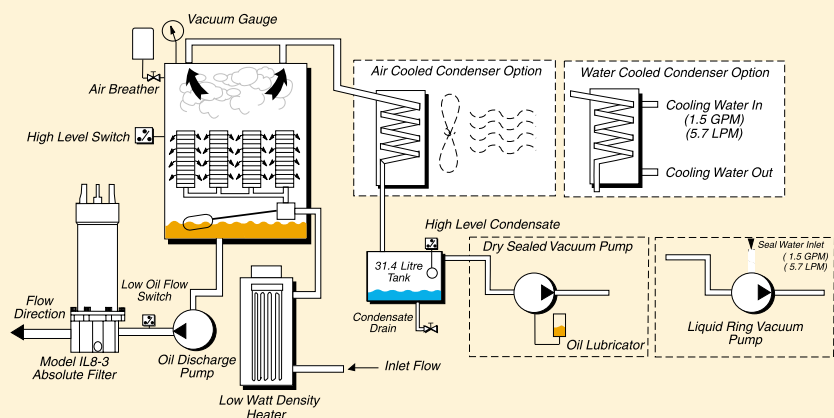
Dispersal

Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless

02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 1200 flow diagram



PVS 1800

Specification

Flow rate:
114 lpm (25 gpm).

Height:
1651mm (65").

Width:
1066.8mm (42").

Length:
1943.1mm (76.5").

Weight:
1156.7 kg (2550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
8.

Minimum operating capacity:
68.1 ltrs (14.98 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
2" NPTF inlet.
1.5" JIC (male) outlet.

FLA (full load amps):
40-65 amps @ 460 V/60hz.



Replacement elements

Dispersal

Disposable 933180
(coalescing)

Packed tower 933553
(cleanable)

Coreless

02QE 933734Q

05QE 933612Q

10QE 933735Q

20QE 933736Q

PVS Specification Worksheet - Section 1

Note: The following information will be required before a PVS order can be processed.

- Application.....
- Fluid type..... Brand.....
Grade Specific Gravity.....
- Viscosity Min SUS/cSt @..... °F/°C
Max..... SUS/cSt @..... °F/°C
Normal SUS/cSt @..... °F/°C
- Contamination level Current ISO level ____ / ____ / ____
Desired PPM level ____ / ____ / ____
- Water concentration Current ISO level.....
Desired PPM level.....
- Suction Head Positive/Negative Ft./metres.....
- Operating distance Ft./metres
- System fluid operating temperature: °F/°C
Is there a cooler?
- Operating environment air temperature: (air cooled model)
Min °F/°C
Max °F/°C
Normal..... °F/°C

PVS 2700

Specification

Flow rate:
170 lpm (37.4 gpm).

Height:
1651mm (65").

Width:
1066.8mm (42").

Length:
1943.1mm (76.5").

Weight:
1156.7 kg (2550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
8.

Minimum operating capacity:
68.1 ltrs (14.98 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
3" NPTF inlet.
2" NPTF outlet.

FLA (full load amps):
50-70 amps @ 460 V/60hz.



Replacement elements

Dispersal

Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless

02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS Specification Worksheet - Section 2

10. Water supply temperature: (liquid ring model)

Min°F/°C

Max°F/°C

Normal.....°F/°C

11. Operating environment above/below sea level: Ft./metres

12. Voltage Options: 230Vac, 3p, 60Hz (185,600)

380Vac, 3p, 50Hz (185,600,1200,1800,2700)

460Vac,3p,60Hz (185,600,1200,1800,2700)

575vac, 3p 60Hz (185,600,1200,1800,2700)

13. Available amperage:.....

14. System volume:

15. Special requirements:

.....

16. Any previous filtration problems with application:.....

17. PVS model selected:

Specification sheet must be completed before order can be entered

Portable Purification Systems

PVS

Ordering Information

Product configurator

Select the desired symbol (in the correct position) to construct a model code.

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8	Box 9	Box 10	Box 11
-	PVS	600	460	DS	D	5Q	-	12	AC	DFL

Box 1

Seals	
Description	Code
Fluorocarbon	None
EPR	E8

Box 2

Basic assembly	
Description	Code
Portable Purification System	PVS

Box 3

Flow rate	
Description	Code
19 lpm (4.2 gpm)	185
38 lpm (8.3 gpm)	600
76 lpm (16.7 gpm)	1200
114 lpm (25.0 gpm)	1800
170 lpm (37.4 gpm)	2700

Box 4

Power supply		
Model	Description	Code
185	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	575VAC, 3P, 60HZ	550
600	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
1200	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
1800	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
2700	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550

Box 5

Vacuum pump	
Pressure setting	Code
Dry sealed	DS
Liquid ring	LR

Box 6

Dispersal element	
Description	Code
Disposable (coalescing)	D
Packed tower (cleanable – for use with viscous or highly contaminated fluids)	P

Box 7

Particulate element µm (c)	
Description	Code
4 micron Microglass III	2Q
6 micron Microglass III	5Q
10 micron Microglass III	10Q
20 micron Microglass III	20Q

Note: Above elements are rated for Beta 200+ (99.5% efficiency)

Box 8

Filter housing	
Description	Code
80CN-2	None
IL8 (39") Ecoglass III upgrade	E

Note: IL8 option is available on 600 models, and is standard on 1200 models and larger

Box 9

Heater		
Model	Description	Code
185	12 KW (3 phase)	12
	12 KW	12
600	24 KW	24
	24 KW	24
1200	36 KW	36
	48 KW	48

Box 10

Condenser	
Description	Code
Air cooled	AC
Liquid cooled	LC

Box 11

Options	
Description	Code
Pneumatic wheels	PW
Auto condensate drain	ACD
Dirty filter light	DFL
Resettable hour meter	RHM
Sight flow indicator	SFI
Inlet control valve	ICV
CE marked	CE
CSA marked	CSA
Explosion proof	EXP

(Class I, Division II, Zone I and II)

Note 1: Contact parker for part number profile availability

Par-Gel



Par-Gel

Par-Gel filter elements are an effective tool in controlling water related problems in hydraulic power and lubrication systems.

There is more to proper fluid maintenance than just removing particulate matter. You need to remove water as well. Parker has developed Par-Gel water removal elements to be used in combination with particulate filters to provide significant benefits.

- Less component wear, consequently less component generated contaminants.
- Significant reduction of costly downtime and replacement of failed components.
- Increased efficiency of the system, thereby improving machine productivity.
- Less frequent replacement and disposal of contaminated fluid.
- Reduced chance of catastrophic failure.



Water as a contaminant.

Whether you used a mineral-base or synthetic fluid, each will have a water saturation point. Above this point, the fluid cannot dissolve or hold any more water. This excessive water is referred to as 'free' or emulsified water. As little as .03% (300 ppm) by volume can saturate an hydraulic fluid. Many mineral-base and synthetic fluids, unless specifically filtered or treated in some way, will contain levels of water above their saturation point.

Water is everywhere!

Storage and handling. Fluids are constantly exposed to water and water vapour while being handled and stored. For instance, outdoor storage of tanks and drums is common. Water settles on top of tanks and drums and infiltrates the container, or is introduced when the container is opened to add or remove fluid.

In-service. Water can get into the system via worn cylinder and actuator seals, or through reservoir openings. Water can come into contact with these entry points through water based cutting fluids or when water and/or steam are used for cleaning.

Specification



Condensation is also a prime water source. As fluid cools in a reservoir, the temperature drop condenses water vapour on interior surfaces, which in turn causes rust. Rust scale in the reservoir eventually becomes particulate contamination in the system.

Microbial growth as a contaminant.

Once water enters a system, growth of micro-organisms begins. Since water is one of the end products of the breakdown of hydrocarbon fluid, once started, the process is somewhat self-sustaining.

Slime is evidence of microbial growth, as is the apparent increase in viscosity of the fluid, obnoxious odour and discoloured fluid. The results are: short fluid life, degraded surface finish and rapid corrosion.

Water generated damage and operating problems.

- Corrosion
- Accelerated abrasive wear
- Bearing fatigue
- Additive breakdown
- Increased acid level
- Viscosity variance
- Electrical conductivity
- Forms of water in fluid
- Dissolved water – below saturation point
- Free water – emulsified or in droplets*.

Water in the system creates oxides, slimes and resins. Corrosion is an obvious by-product and creates further contaminants in the system.

The effect is compounded, as you now have both particulate contaminant and water working together.

The particulate contamination can be as simple as rust flaking from reservoir walls. Anti-wear additives break down in the presence of water and form acids. The combination of water, heat and dissimilar metals encourages galvanic action. Pitted and corroded metal surfaces and finishes result.

Further complications occur as temperature drops and the fluid has less ability to hold water. As the freeze point is reached, ice crystals form, adversely affecting total system function. Operating functions may become slowed or erratic.

Electrical conductivity becomes a problem when water contamination weakens insulating properties of fluid (decreases dielectric kV strength).

Testing your fluid for water.

A simple 'crackle test' will tell you if there is water in your fluid. Simply take a metal dish or spoon with a small amount of fluid. Apply a flame under the container with a match. If bubbles rise and 'crackle' from the point of applied heat, you have free water.



ParTest™ fluid analysis. For complete analysis, Parker offers Par-Test fluid analysis. Your Parker representative can supply you with a fluid container, mailing carton and appropriate forms to identify your fluid and its use. An independent lab performs complete spectrometric analysis, particle counts, viscosity and water content.

Results are sent directly to the requester.

* Excessive free water must be removed from the system before filtering is attempted. In systems with gross amounts of water (1% to 2% by volume), settling or vacuum dehydration should be considered before using Par-Gel filter elements.

Par-Gel

Features & Benefits

Removing water.

Using a Par-Gel water removal element is an effective way of removing free water contamination from your hydraulic system. It is highly effective at removing free water from mineral-base and synthetic fluids.

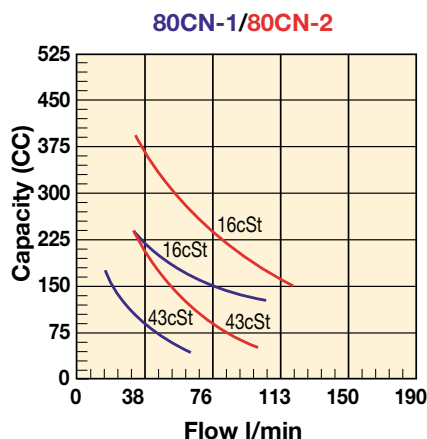
The Par-Gel filter media is a highly absorbent copolymer laminate with an affinity for water. However, hydraulic or lubrication fluid passes freely through it and the water is bonded to the filter media.



Photo above shows 'dry' Par-Gel filter media and the same media swollen with absorbed water.

Parker technology and expertise at your disposal.

Choosing the correct filters can save money and minimise problems caused by particulate and water contaminants in hydraulic and lubricating fluids. Parker provides hard data and advice on choosing from a wide range of filter configurations, flow patterns and flow pressure capabilities.



How many filter elements will I need?

Suppose you would like to remove water from contaminated oil stored in a 750 litre tank. The tank is found to have 1000 ppm of water (very contaminated). The circulation rate will be 40 lpm for the 40cSt fluid.

Example: How many single length Modulflow™ elements will be needed to reduce the water to normal saturation levels. To find the answer, use the conversion charts and capacity curves for the Modulflow element.

- 1000 ppm start – 300 ppm finish = 700 ppm removed
- 700 ppm water x 0.001 = .07%
.07% x 750 litres = 0.53 litres water total
- Use the capacity curve for Modulflow element P/N 927584.
Capacity = 80cc at 40cSt & 40 lpm to pressure drop of 1.7 bar.
(See graph below)
$$80\text{cc} \times 0.0001 \frac{\text{lpm}}{\text{CC}} = 0.076 \text{ lpm/element}$$
- $$\frac{0.53 \text{ litres total water}}{0.076 \text{ lpm/element}} = 7 \text{ elements*}$$

* The replacement value of this fluid may range from €1500.00 to €4500.00 (€0.50 to €1.25 litre). An estimated element cost of €150.00 each, the saving could be as much as €3000.00!

Using Par-Gel filter elements saves money in fluid and replacement component costs. Also, the frequency of fluid disposal and the problems associated with it are greatly reduced.

Filter capacity. There are no accepted and approved water capacity testing or reporting standards. Consequently, there is virtually no way to compare one element capacity with another. It is also difficult to simulate a specific application in testing... making it hard to predict field performance.

Why the discrepancies? Water removal media capacity is the result of the interplay of four variables: flow rate, viscosity, bypass setting and the media itself.

Here's an example: two identical elements, testing the same fluid, varying only the flow rate.

	Element A	Element A'
Flow rate:	11 lpm	38 lpm
Viscosity:	15 cSt	15 cSt
Test capacity:	425 ml	360 ml

This is a 15% reduction in capacity, due to changing only the flow rate! Now, look at what happens when the test flow rate is the same and the viscosity is changed.

	Element B	Element B'
Flow rate:	76 lpm	76 lpm
Viscosity:	40 cSt	15 cSt
Test capacity:	250 ml	550 ml

Twice the capacity can be achieved just by manipulating the test viscosity!

Naturally, having a lower bypass valve setting limits the capacity. Since the life of the element is measured in pressure drop, using higher bypass valve settings will increase apparent life (all other conditions equal).

We recommend 1.7 bar bypass valves to get adequate life from Par-Gel filter elements.

Capacity also depends on the media itself. That's why Parker spent two years researching the media used in Par-Gel filter elements. We tested all known media, and worked closely with our suppliers to achieve maximum water absorbency.

Specification

How we report:

Our goal is to give our customers usable data. Why show test results at a lower viscosity (13cSt for example), if the typical application uses 41cSt fluid? So, we report at 41cSt to give typical field application capacity, and 15cSt for competitive comparisons. But keep in mind when comparing, you still have to consider flow rate.

What it all means:

You deserve to know how an element will work for you in your applications. So, we test and report our data in such a way that it helps you predict element performance and life.

Be wary of claims that say... "this element holds one litre (or 5 litres) of water". What was the test flow rate? fluid viscosity? bypass valve setting? Was it run as a 'single pass' or 'multipass' test?

Rely on Parker to give you the facts and data you need. Our goal is to better protect your systems and components...and we start up-front by telling you what you need to know.

Is there any other way to do business?

Add it all up.

Broad selection, competitive prices, off-the-shelf availability, on-time delivery, high-efficiency filter media, reduced system contaminant and longer component life. When you add it all up, we think you'll agree...

Conversion Factors

If you have:	Multiply by:	To get:
mg/l	0.00009	%
ppm	0.0001	%
ml	1.0	cc
gallons	4.54	litres

Typical Saturation Points

Fluid type	PPM	%
Hydraulic	300	0.03
Lubrication	400	0.04
Transformer	50	0.005

Parker Par-Gel water removal filter elements are available in these standard Parker filter housings:

Fluid model series	Length	Element part number
40CN-1	Single	931412
40CN-2	Double	931414
80CN-1	Single	931416
80CN-2	Double	931418
Guardian®	Single	932019
Moduflow RF 2-1 (10MF)	Single	927584

Ideal Applications for Par-Gel filter elements



Guardian® Portable Filtration System



Filtration Trolley

The PAR FIT™ Fit



THERE'S **ONLY ONE** SOLUTION

When it comes to replacement hydraulic filter elements there is only one solution: The ParFit interchange element range.

With over 10,000 standard, off-the-shelf variations, there's a ParFit element to fit most sizes and makes of OEM filters on mobile, construction, agricultural and industrial plant.

Every ParFit filter element is manufactured in Europe to the highest standards and is backed by our unrivalled technical support and money-back guarantees.

That means that you can reduce stockholdings, cut costs and be sure of the ultimate performance, with long, trouble-free operating life.

ParFit filters are available from ParkerStores and authorised distributors throughout the UK. To find your nearest ParkerStore Email filtrationinfo@parker.com or find the ParFit you need using our element selector at www.parker.com/parfit.

www.parker.com/parfit



Indicators Series

MAX 420 bar



Indicators Series

Features & Benefits

Features	Advantages	Benefits
Indicators fatigue tested to full pressure rating	Reliable indicators for heavy duty applications	Reliable and continuous control of the filter in all applications
Cartridge screw-in type indicators	Easy mounting	Reliable sealing, no leakage
Visual, electrical and electronic indicators available	Check element condition at a glance	Optimises element life, prevents bypassing
	Right style for the application	Match your system's electrical connections
Several indication settings	Optimized for each bypass setting	Right indicator for application
Visual indicators	Local monitoring of the element condition	Reliable low cost indicator
Electrical indicator with change-over switch	Option of Normally Open (N.O.) and Normally Closed (N.C.) function	Approved for low voltage and high voltage use including machine control systems and PLC's
Electrical indicator with 4 LEDs	Thermal lock-out	No false alarm because of low temperature oil
	Visual early warning with yellow LED	Allows time to schedule element change
	Pre-alarm with yellow LED and wired output	Indicates upcoming element change
	Alarm with red LED and wired output	Clear indication for element change
Programmable and ATEX certified indicators available	Right indicators for special applications	Improved machine surveillance

Typical Applications

- Industrial equipment
- Mobile equipment
- Marine/offshore applications

The Parker FMU Series Differential Pressure Indicators

The FMU range of filter condition indicators, are designed for use on a wide range of Parker filters and suitable for competitive interchange (consult Parker Filtration for details).

Ideal for giving accurate visual, electronic or electrical feedback of filter element condition, in order to facilitate effective maintenance and ensuring hydraulic systems, marine/mobile or industrial are protected from particulate contamination.



Specification

Maximum operating pressure:

420 bar (250 bar for aluminium).

Maximum differential pressure:

210 bar.

Working temperature range:

-20°C to +85°C.

Material of housing:

Brass, aluminium or stainless steel.

Seals:

Fluoroelastomer, Nitrile or EPDM.

Mounting torque:

max. 75 Nm

(max. 50 Nm for aluminium indicator body & filter housing)

The differential pressure values of standard indicator models:

1.2 bar $\pm$ 0.2

1.5 bar $\pm$ 0.2

2.5 bar $\pm$ 0.3

5.0 bar $\pm$ 0.5

7.0 bar $\pm$ 0.5

8.5 bar $\pm$ 0.5

(Indicators for other differential pressure values are optional).

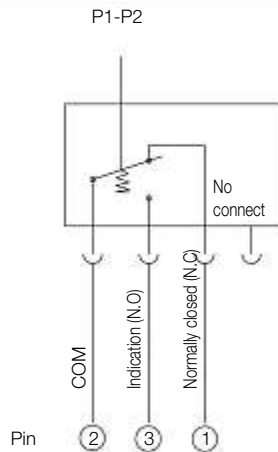
FMU $\square$ p – Indicators are typically used with the following filters:

Marine filters: 2020, 2035, 2040, 2045, 2060, 2065, 2070, 2110 and 2520. Types: 2035, 2040, 2045 and 2060 require FMU-Block for connecting indicator to the filter.	U12H	1.5 bar
Medium pressure filters series: 45M and 130M. High pressure filters series: 70L, 70T, 70B, 5000, 7100 and 7200.	U12H	2.5 bar
High pressure filters without bypass valve: 70L, 70T, 70B, 7100 and 7200.	U12H	7.0 bar
Medium and low pressure filter series; Note for PD Range only 2.5 bar indicators are available 15CN, 40CN, 80CN, 22PD, 32PD, 15P, 30P, 40RF, 50RF, IL8, 12M, 22M, 16P, 26P, 36P	U14M	1.2 and 2.5 bar
High pressure filters 18P, 28P, 38P, FDA, FDB	U14H	2.5 and 5.0 bar

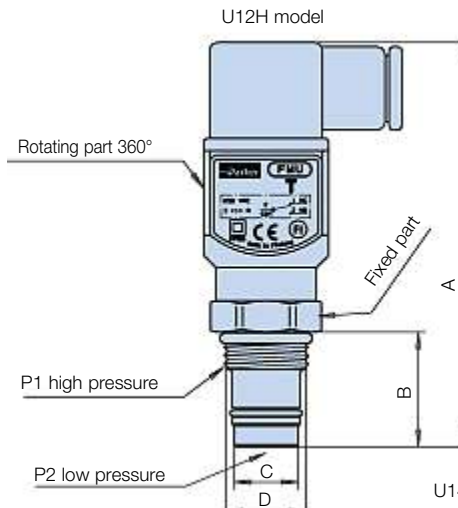
Indicators Series

FMUT Electrical

Contact configuration U12H model

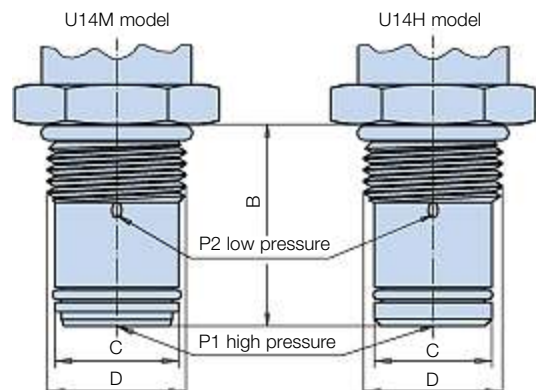
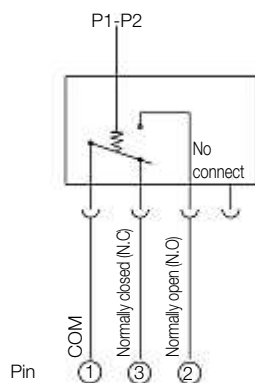


Enclosure class	IP65
Electrical connector	DIN 43650
Overvoltage category	II (EN61010-1)



	U12H	U14M	U14H
A	98	105	105
B	27.5	32	32
C	Ø16.2 ±0.05	Ø19.78 ± 0.06	Ø18.83 ± 0.06
D	3/4-16 UNF-2A	7/8-14 UNF-2A	7/8-14 UNF-2A

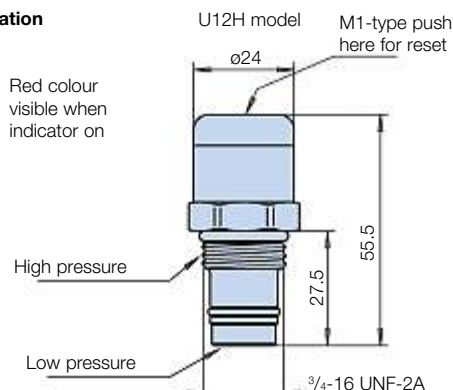
Contact configuration U14M & U14H



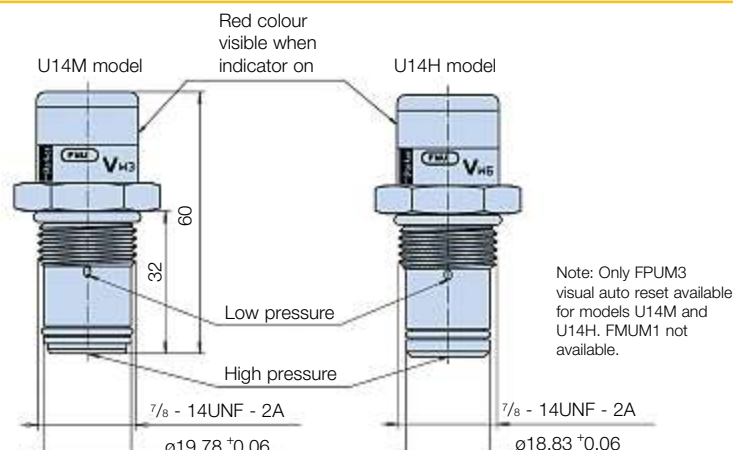
Rated voltage	Non-inductive load (A)			Inductive load (A)			Inrush current (A)	
	Resistive load		Lamp load	Inductive load		Motor load		
	N.C.	N.O.		N.C.	N.O.			
125Vac	5	1.5	0.7	3	2.5	1.3	20 max.	10 max.
250Vac	3	1.0	0.5	2	1.5	0.8		
8Vdc	5		2	5	4	3		
14Vdc	5		2	4	4	3		
30Vdc	4		2	3	3	3		
125Vdc	0.4		0.05	0.4	0.4	0.05		
250Vdc	0.2		0.03	0.2	0.2	0.03		

FMUM3 Visual Auto Reset/FMUM1 Visual Manual Reset

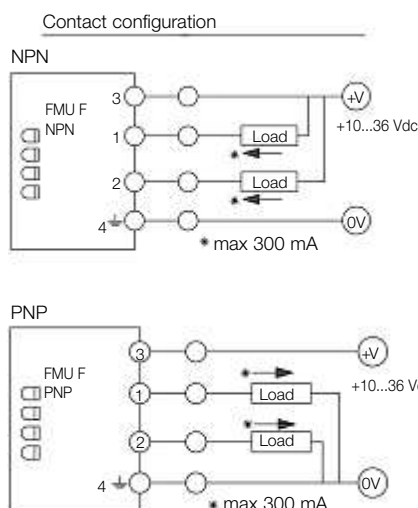
Operation



Operation



FMUF Electronic



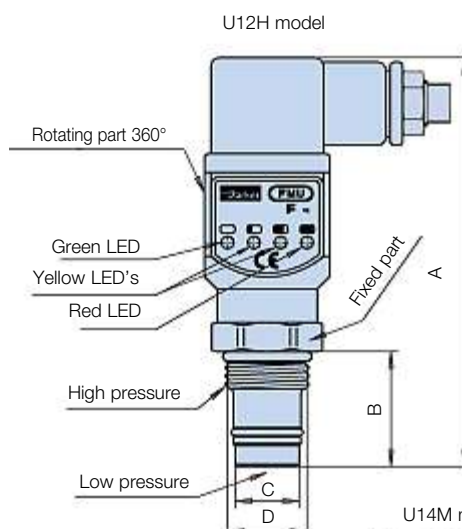
Thermal lock-out (standard setting +20°C)

- Indicator operates only when temperature is above setting.
- Green LED is blinking if temperature is lower. (not in U12H)

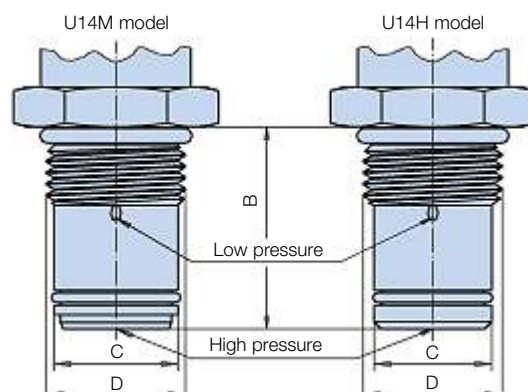
Ind. press. setting	LED status				Output
	G	Y1	Y2	R	
50%	⊗	⊗			–
75%	⊗	⊗	⊗		2 active
100%	⊗	⊗	⊗	⊗	1 active

Enclosure class	IP65
Electrical connector	DIN 43650, cable connection PG9 or optionally M12 4-pin
Input supply voltage	+10 to 36 Vdc
*Indication output	max. 300 mA/36 Vdc
Output type:	N.O. or N.C./NPN or PNP

Note: Do not connect output terminals 1 or 2 directly (without load) to power supply terminals, because this will damage the equipment.



	U12H	U14M	U14H
A	98	105	105
B	27.5	32	32
C	Ø16.2 ±0.05	Ø19.78 ± 0.06	Ø18.83 ± 0.06
D	3/4-16 UNF-2A	7/8-14 UNF-2A	7/8-14 UNF-2A



Safety feature: The 250 bar U14M indicator does not fit into the U14H cavity, which is used in 420 bar filters

FMUL1 Programmable



Dimensions: see FMUF electronic p-indicator

Programmable p-indicator

All settings adjustable (settings made via PC) Connections cable and software available from Parker

- 4 LEDs giving visual indication:
 - Green (G): Power ON
 - Yellow 1 (Y1): Pre-alarm 1 (presetting 50%)
 - Yellow 2 (Y2): Pre-alarm 2 (presetting 75%)
 - Red (R): Indication (presetting 100%)
- two independently programmable indication outputs
 - can be set independently from each other and LED setting
 - output type: NPN or PNP
 - switching type: N.O. or N.C.
- setting range: 0,5 ... 10 bar
- thermal lock-out range: 0 ... 100°C
- includes a microchip with memory logs
 - number of alarms: max 65535
 - time indication on (output 1): max 1092 hours
 - time power on (running hours): max 7 1/2 years
 - upload and reset via PC

Indicators Series

Ordering Information

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
FMU	M3	K	V	M	U14	H	

Box 1

Code	
Indicator series	Code
Filter monitoring unit	FMU

Box 2

Filter type	
Differential pressure indicator	Code
Visual manual reset	M1*
Visual autoreset	M3
Electrical	T1
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4
Programmable with memory logs	L1
Ex version	X1

* available only with U12 thread

Box 3

Indicator setting		
Indicator setting	Standard	Code
1.0 bar (14 psi)	c	F
1.2 bar (17 psi)	a	G
1.5 bar (21 psi)	c	H
2.5 bar (35 psi)	a, b, c	K
5.0 bar (70 psi)	b	M
7.0 bar (98 psi)	c	N
8.5 bar (125 psi)		P

Standard settings:
a: U14M, former -W3
b: U14H, former -W6
c: U12H, former -F6

Box 4

Seal type	
Seal material	Code
Nitrile	B
Fluoroelastomer	V
EPDM	E
Neopren	N

Box 5

Indicator body	
Indicator body	Code
Aluminium (Box 7, code M)	A
Brass (Box 7, code H)	M
Stainless steel	R

Box 6

Thread connection	
Thread connection	Code
3/4" - 16UNF-2A	U12
7/8" - 14UNF-2A	U14

Box 7

Max Pressure	
Max pressure	Code
Medium pressure housings (<250 bar)	M
High pressure housings (<420 bar)	H

Box 8

Options	
Options	Code
Standard	omit
Other options	factory supplied

Note: F and L type indicators. Non-standard thermal lockout settings shown here.

Indicator type X1: ATEX □p-indicator

Electronic indicator accordant with ATEX 94/9/EC directive: (Ex) II 2 GD Eex mII T6.
Degree of protection IP66. For details contact Parker Filtration.

Connection cable + software for programmable indicator L1

Connection cable for PC serial connection and software for indicator settings and utilising memory logs.

Ordering Code: 905075030

Seal kits (fluoroelastomer)

Indicators with thread connection U12H (former -F6)
Indicators with thread connection U14M (former -W3)
Indicators with thread connection U14H (former -W6)

Ordering code

911045078
911045086
911045087

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

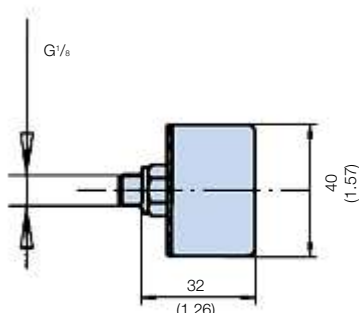
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Pressure Indicators for Low Pressure Filters

ETF Filter

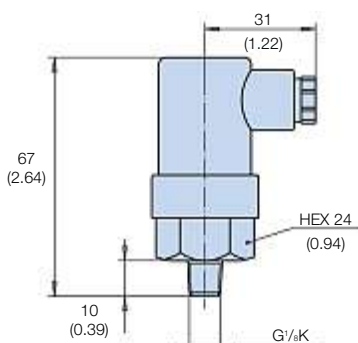
Visual pressure indicator

Code G2
mm (inches)



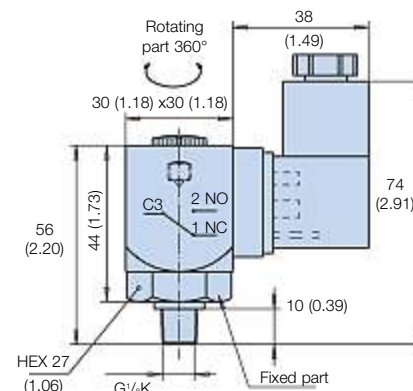
48 Vdc electrical indicator 1.2 bar

Code S2/S3
mm (inches)



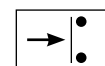
250 VAC electrical indicator 1.2 bar

Code S4
mm (inches)

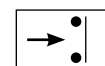


Option	Description	Connection/Voltage	Wiring	Part number
G2	Visual indicator 1.2 bar	N/A	N/A	FMUG2FBMG02L
S2/S3	Electrical indicator 1.2 bar	42 Vdc max	 Select either normally open (NO) or normally closed (NC)	FMUS2FBMG02L (NO switch) or FMUS3FBMG02L (NC switch)
S4	Electrical indicator 1.2 bar	250 Vac max	 1 NC 2 NO 3 C	FMUS4FBMG02L

Normally open contacts

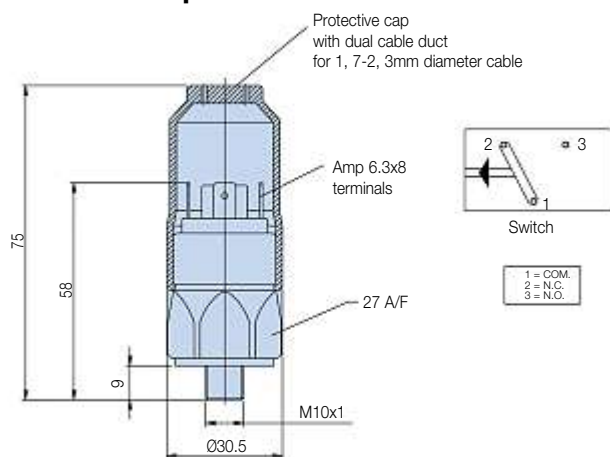


Normally closed contacts

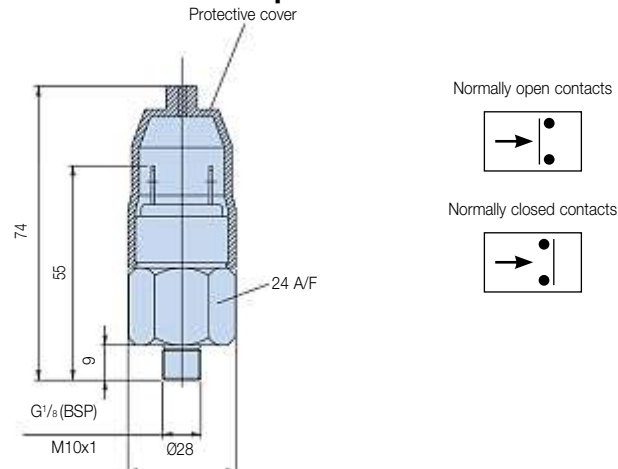


TTF, BGT and TPR

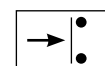
Indicator PS pressure switch



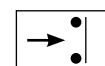
Indicator PS NO/NC pressure switch



Normally open contacts



Normally closed contacts



Specifications	
Elec.rating	42V / 4A
Thread connection	M10x1
Elec.connection	AMP 6.3x0.8 terminals + protective cap
Protection	IP65 (with cap) terminals IP00
Code	FMUS1EBMM10L (Switch)
Visual indicator	1.2 bar
M10: code	FMUS1EBMM10L
G1/8: code	FMUS4EBMG02L

Specifications	
Elec.rating	42V / 2A
Thread connection	G1/8
Elec.connection	AMP terminal 6.3x0.8
Protection	IP65 (terminal IP00)
Switch type	NO or NC
Code	FMUS2EBMG02L (NO switch)
	FMUS3EBMG02L (NC switch)

Specifications	
Visual indicator	1.2 bar
M10: code	FMUG1EBPM10L
G1/8: code	FMUG2EBPG02L

Parker Filtration for Hydraulic Reservoir Solutions



NEW

Parker offers innovative co-polymer hydraulic reservoir solutions for equipment manufacturers.

A concept that combines design flexibility to meet a customer's specifications with the benefits of integrated reservoir functions and leak-proof connections.

- A partnership in supply-chain management reduces costs.
- A reduction of component parts.
- Integrated hydraulic filter and air filter benefits.
- Patented element for Parker guaranteed filtration quality.

For more information on Parker Filtration's co-polymer and metal reservoir solutions contact:

Tel: +44 (0)1924 487000

Email: filtrationinfo@parker.com



Aerospace | Automation | Climate & Industrial Controls | Filtration
Fluid Connectors | Hydraulics | Instrumentation | Seal

Finding design solutions for reservoir requirements

Parker's Filter Division Europe manufactures innovative, lightweight co-polymer reservoirs, that can feature an integrated, patented and environmentally friendly *LEIF*[®] filter element and an ecological air filter. Ideally suited for mobile hydraulic systems, such as forklift trucks, telescopic handlers and agricultural sprayers, the all-in-one design of the reservoir means that it can be specified as a complete unit, helping mobile equipment manufacturers to cut costs, save time and increase efficiency.

The environmentally friendly *LEIF*[®] (Low Environmental Impact Filter) element has been designed to allow the outer metal filter sleeve to be re-used. As a result, only the contaminated filter medium has to be disposed of as chemical waste, helping to reduce disposal and processing costs by as much as 50%.

Connection points for support devices, such as suction pumps, drains or filler openings, can be easily incorporated into the lightweight reservoir, with metal connectors being available for hose couplings, and flange or thread attachments. Each metal connector is moulded into the co-polymer reservoir wall, ensuring a reliable, leak-proof connection between the reservoir and ancillary components. In addition, an oil level indicator can be fully integrated into the design, eliminating the need for level glasses, which are fragile and a potential source of leakage if mounted incorrectly.

The dimensions, shape and design of the lightweight reservoir can be fully adapted to meet the specific needs of each customer, with each reservoir being specified as a single unit. This can help OEMs to reduce inventory, assembly and maintenance costs.

The co-polymer reservoir forms part of a product family comprising filters and filtration products, which have been designed to combine exceptional levels of performance and reliability in robust, virtually zero maintenance units.

Co-Polymer and Steel Reservoirs



Co-Polymer & Steel Reservoirs

Features & Benefits

Parker hydraulic tank solutions are applied to a wide variety of markets

Hyd. & lube oil filtration	Co-polymer tanks	Steel tanks
Agriculture	X	X
Construction equipment	X	X
Marine		X
Material handling	X	
Mining		X
Road building equipment	X	X
Transportation	X	X
Waste management / Environmental control	X	X

An introduction to Parker Hydraulic Reservoir Solutions

Parker's experience in designing fluid power equipment will help a system designer to save costs at every stage of hydraulic system development.



Co-polymer tank example

Original Equipment Manufacturers are continually looking to reduce manufacturing costs and increase operating efficiency and it's here that Parker Hannifin's European Filtration Division offers complete solutions. Beside high quality steel tanks designed and supplied by Parker and featured in this brochure, Parker also designs and supplies revolutionary, lightweight co-polymer reservoirs with tank top mounted or integrated filter and tank air filter options.



Steel tank example

Both tank types can typically represent a significant contribution to cost savings. Because of the differing features and benefits between the metal and co-polymer tanks, Parker is able to offer customers the most appropriate tank concept to meet their specific requirements.

Saving costs with complete Parker Hydraulic Tank Solutions

- A partnership in supply chain management reduces costs
- An integration of reservoir functions
- Reduction of component parts
- Integrated hydraulic filter and air filter benefits
- Integrated oil level measurement benefits
- Standard & customised solutions offered
- Flexibility related to shape & dimension of each tank
- Leak-proof connections
- Patented element for guaranteed quality filtration

Typical Applications

Unique tank solutions designed to meet customer needs

Parker designs and supplies both co-polymer and steel reservoirs.

Today Parker steel tank solutions are typically applied to commercial vehicle applications for example waste management and the transportation market. Customers manufacturing hook-arm systems, truck manufacturing or vehicle body builders are further examples of potential customers for a complete steel tank assembly.

A more common use of co-polymer tanks can be seen in materials handling equipment, agricultural and construction equipment markets. Typical applications are warehouse trucks, smaller sized wheeled loaders, telescopic handlers, dumpers, mini excavators and agricultural machinery.

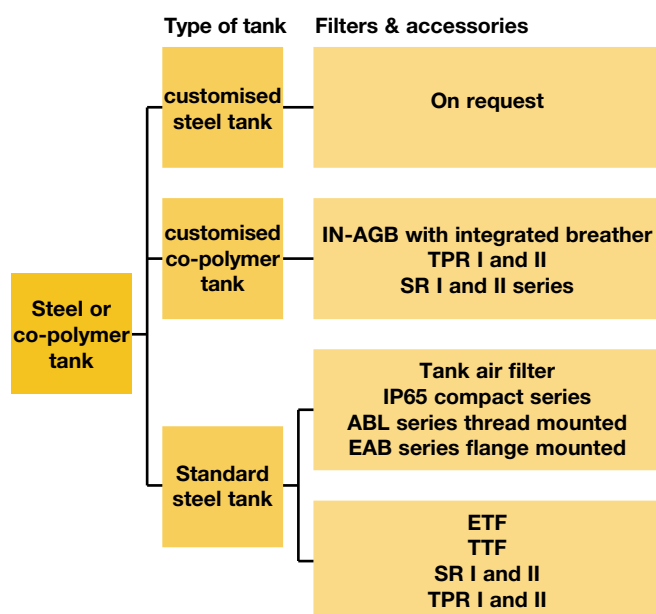


with the courtesy of Grove



Specifications

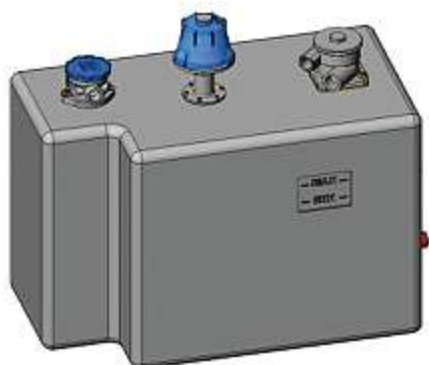
Product Architecture



Co-polymer tank with integrated filter & air filter



Steel tank with integrated options



Example of co-polymer tank with top mounted filters and air filters

Design aspects	Co-polymer reservoir	Steel reservoir
Complicated shapes	X	
Styling of reservoir meets overall styling of vehicle	X	
Weight reduction	X	
Long-term temperatures Tmin< -30°C or Tmax> +120°C	(depends of material properties)	X
High mechanical load on tank (tank contributes to strength of chassis)		X
All-in-one concept	X	
High level of tank Pressurisation		X
Suitable for heavy duty equipment	X	X

Design note: All customised tanks are engineered solutions based on detailed analysis of customer requirements and specifications. Detailed knowledge of co-polymer materials, implies that customised materials can be made available to meet specific demands. Depending on technical and commercial requirements, Parker is able to advise each customer individually, about the most suitable and economical reservoir solution, made from co-polymer or steel.

Co-Polymer Reservoirs

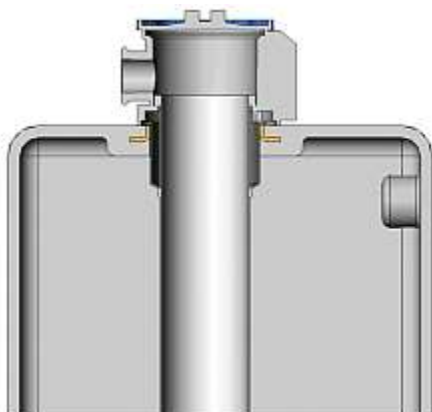
Features, Benefits & Specifications

Where a tailormade tank design is the solution

The lightweight co-polymer tank is an all-in-one solution that keeps in mind a customer's specific design requirements. Each tank is unique in terms of shape, dimensions and integrated functions. It is equipped with an integrated tank top mounted return line filter and tank air filter. All filters and air filters are supplied as standard with the patented, environmentally friendly *LEIF®* element.

Reliable connections

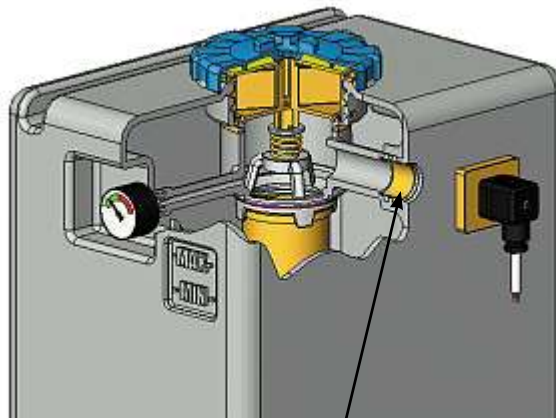
Reliable, leak-proof connections have always been a critical aspect for co-polymer tanks. Parker has developed a technology using metal attachment components. All metal attachment components are moulded in with the co-polymer tank wall, ensuring a reliable, leak-proof connection between the tank and the components that are attached to it.



Parker Filtration has designed high tech sealing solutions for tank top mounted filters.

These attached connections (e.g. a suction connection for pumps, drains, vents, or a filler opening) can easily be achieved, as well as providing indications for minimum and maximum oil levels. Metal attachment connections can be made available for hose couplings, a flange attachment or thread attachment.

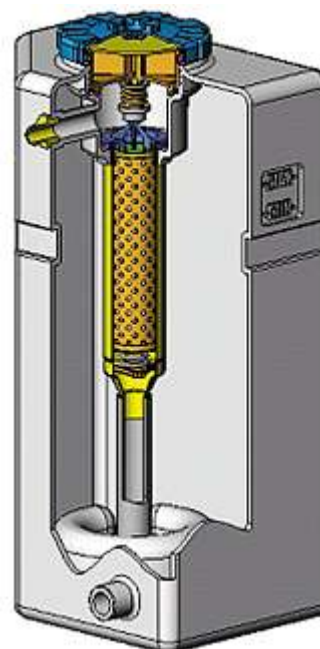
Co-polymer reservoirs are designed to meet the stringent demands of our customers. All relevant aspects are analysed, from material properties and operational conditions to dynamic load and requirements for equipment servicing.



*Customised integrated metal attachment
"Tank also features integrated level measurement"*

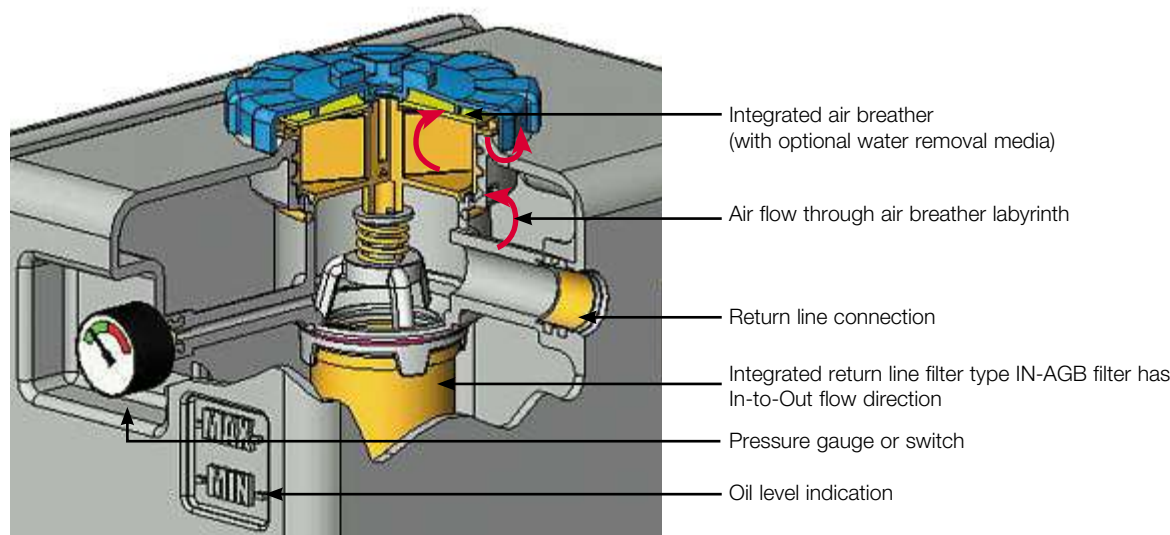
Level measurement

Oil level indication can be fully integrated into the tank design. This feature eliminates the need for level glasses, which are fragile and an additional potential source of leakage when mounted incorrectly.



Example of customised co-polymer tank

Features, Benefits & Specifications



Example of a customised tank with an integrated return line filter and air filter

The ultimate all-in-one design

A more frequent use of co-polymer tanks located on the outside of mobile equipment often results in specific requirements relating to styling.

Despite the compact design of Parker tank top mounted filters and air filters, these parts can influence aspects related to styling or cabin accessibility.

This concept is ideal for applications where space is at a premium.

Parker Filtration's unique all-in-one design, where the return line filter and air filter are both located under one cover is a concept that offers great possibilities related to tank styling. The high quality of the co-polymer material ensures a long-term stability of the chosen colour.

This all-in-one design features the IN-AGB type return line and integrated air filter with labyrinth. The labyrinth prevents oil leakage through the air filter. The connection(s) for return line(s) and filler port are integrated in the tank. This avoids having to have hydraulic hoses placed on top of the tank.

Environmentally friendly

Parker considers care for the environment as a social obligation. The environmentally friendly *LEIF*[®] element (Low Environmental Impact Filter) is applied to the return line filters and breathers type ABL and EAB.

What makes this element so special is that the metal sleeve can be re-used. As a result, this filter element component no longer ends up in the waste disposal; only the contaminated filter medium is disposed of as chemical waste. With *LEIF*[®] filter elements, the disposal and processing cost may be reduced by as much as 50%.

The *LEIF*[®] concept safeguards the use of genuine Parker parts.

LEIF[®] elements:

- Environmentally friendly filtration
- Re-usable steel element sleeve
- Patented elements result in guaranteed quality of filtration
- Saves element disposal costs typically by up to 50%
- Supports ISO 14001 certification



IN-AGB with *LEIF*[®] element

Cost-effective

The advantages of this co-polymer concept are obvious:

- Lightweight
- Flexibility with respect to tank shapes
- Characteristics of plastic material can be customised to meet specific requirements
- Integration of several functions limits the use of individual components
- The tank can be purchased and supplied as a complete unit

Steel Reservoirs

Features, Benefits & Specifications

Parker steel reservoirs designed to withstand extreme conditions

Standard steel tanks are often specified for commercial vehicle side mounting. Parker steel tanks are built to last in extreme conditions. Extreme weather conditions and heavy duty vehicle movements can be resisted by our tank design.

Quality design

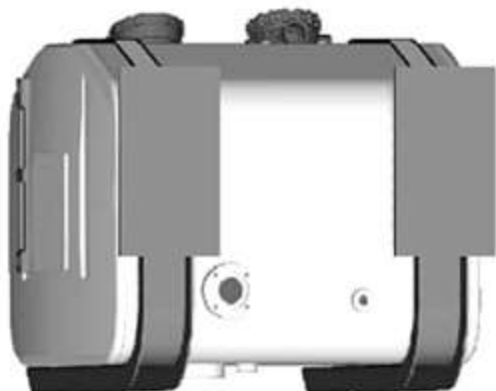
As with co-polymer tanks, steel tanks offer leak proof connections and are vigorously tested against leakage. Additionally, they are painted with primer and topcoat to ensure maximum protection against corrosion.



Steel tank with Tanktopper II filter

- Dirt, water, snow and ice will not adhere to the tank surface next to the breather and filter

Suction port(s), covered with anti-vortex plate(s), allow low oil levels giving the operator an increased operational capacity. Before delivery the steel tanks are thoroughly washed inside and ready for system assembly.



Steel tank with with customised chassis mounting straps

Diverse tank size options are available

With space at a premium in most truck chassis configurations and the need to deal with toolboxes, compressed air reservoirs and other equipment, tank dimensions are always an issue. To meet the specific environment requirements Parker Filtration offers several tank sizes.

Steel tanks are fully equipped. Our customers can choose from a wide choice of filter options. Parker considers care for the environment. The environmentally friendly *LEIF*® element is also applied to steel tank solutions. Additionally, Parker steel reservoirs are equipped with an efficient air filter, a level gauge, plugs, a suction kit and mounting brackets. The level gauge can be re-located on the other side of the tank if user visibility is an issue.

Technical data steel tanks

Material: 2mm steel plate applied for standard reservoirs

Suction connection: Suction connections at the back and the bottom of the tank swivel type nominal size 2", 2 1/2" and 3".

Air filter: Ref. product selection for types:

IP65
ABL
EAB

Tank top mounted return filter

TTF
ETF
Tanktopper I & II (with integrated air breather)
SR series (Suction & Return filters)

Support frame and fasteners

Included as standard

Holes must be drilled into the plate 160 x 280mm for attachment to the frame for standard steel reservoir



Detailed sectional view of Tanktopper II with integrated air filter

Ordering Information

Product configurator

Configurator examples SR filter

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7
S	075	R	S	TTF3	10QI	E10

Box 1

Tank type	
Material	Code
Steel (standard tank shape)	S
Steel (customised tank design)	on request
Aluminium (customised tank design)	on request
Co-polymer (customised tank design)	on request

Box 2

Tank volume			
Operating volume (L)	Gross volume (L)	H x D x W	Code
70	89	500 x 650 x 300	075
90	113	500 x 650 x 425	100
125	163	500 x 650 x 620	150
160	208	500 x 650 x 795	200
215	275	500 x 650 x 975	250

Box 3

Level glass	
Location	Code
Right hand side	R
Left hand side	L

Box 4

Suction port options	
Suction port connections	Code
Swivel type 42mm (nominal 2")	N (on request)
Swivel type 55mm (nominal 2 1/2")	W (on request)
Swivel type SAE 3"	S (standard)
G2" - Female BSP (ISO 228)	on request
G2 1/2" - Female BSP (ISO 228)	on request
G2" - Female ball valve (manual operated)	on request
G2 1/2" - Female ball valve (manual operated)	on request

Box 5

Filter model Other filter sizes are available				
Filter	Qmax	Code	Recommended tank size	Media code
ETF310QBP2FG164	90	ETF3	Code 075 and 100	10Q
TTF310QLBP2EG121	90	TTF3	Code 075 and 100	10QL
TTF610QLBP2EG203	170	TTF6	Code 150 and larger	10QL
TPR210QLBP2EG12L	80	TPR2	Code 075 and 100	10QL
TPR710QLBP2EG241	250	TPR7	Code 150 and larger	10QL
SRL1210QLBPGG161	130	SRL1	Code 075 and 100	10QL
SRL2210QLBPGG201	250	SRL2	Code 150 and larger	10QL

Note: Refer to the relevant product information to compose the required filter configuration.

Box 6

Box 7

Tank air filter	
Breather type	Code
IP65 Breather (AB98610101)	IP65
Flange mounted style (compact design)	
EAB10 (EAB10P020HC73)	E10
EAB20 (EAB20P020HC73)	E20
Anti splash style filter (threaded connection)	
ABL1 (ABL1G114QXWL3)	ABL1
ABL2 (ABL2G114QXWL13V)	ABL2

Note: filter codes are based on B(c)10≥200 glass fibre elements other degrees of filtration are standard available.

Degree of filtration						Media code
Average filtration beta ratio β (ISO 16889) / particle size μm [c]						
βx(c)=2	βx(c)=10	βx(c)=75	βx(c)=100	βx(c)=200	βx(c)=1000	
% efficiency, based on the above beta ratio (βx)						
50.0%	90.0%	98.7%	99.0%	99.5%	99.9%	
N/A	N/A	N/A	N/A	N/A	4.5	02Q/02QL
N/A	N/A	4.5	5	6	7	05Q/05QL
N/A	6	8.5	9	10	12	10Q/10QL
6	11	17	18	20	22	20Q/20QL

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is a small yellow tab at the top edge. The paper appears to be part of a notebook or binder.

A full-page view of a blank sheet of graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

Environmental Air Filters



EAB Series

Typical Applications



- Agricultural machines
- Articulated dump trucks
- Forestry equipment
- Wheeled loaders
- Lubricating systems
- Excavators
- Mobile cranes
- Industrial power units

Technical Data

The filter has been designed to achieve a low pressure drop and high dirt holding capacity with airflows up to 1500 l/min. A compact EAB10 with airflows up to 1000 l/min is also available.

Construction:

Glass reinforced composite housing with Eco-element.

Filter media options:

P020: High quality polyester media. 2µm (abs).

C015: Polyester media with water-resistant layer. 1.5µm (abs)

Q010: Glass fibre media. 1.0µm (abs)

Mounting options:

With 6 screws. Includes machine and plate screws, a strainer and gaskets.

External threads G³/₄" , G1".

Internal thread G³/₄".

Options:

Visual gauge type vacuum/pressure indicator.

Overpressure valve, pressure setting 0.2 bar.

EAB10 cannot be specified with an overpressure valve and vacuum/pressure gauge at the same time.

Advantages of the EAB filters:

Easy maintenance.

Indicator states the need for element change.

Quick and easy element change (no tools required).

Environmentally friendly:

EAB elements contains no metal parts: therefore it can be crushed and burned minimising the volume of waste material.

Other features:

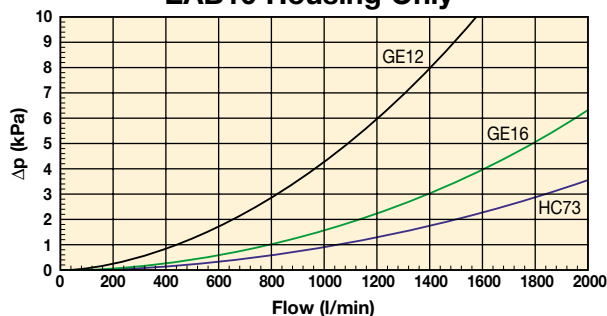
The optional indicator is located in a safe place inside the housing.

Housing includes mounting holes for a padlock, which allows you to increase the security against theft and vandalism.

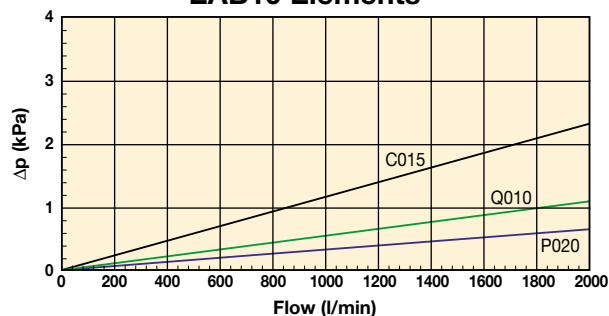
Pressure Drop Curves

$\Delta p_{\text{total}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$. The recommended level of the initial pressure drop for this filter is max 0.02 bar (2.0 kPa).

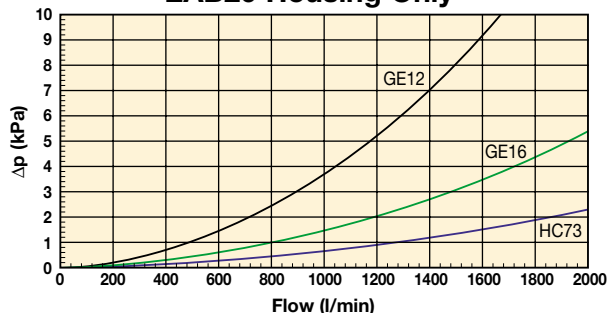
EAB10 Housing Only



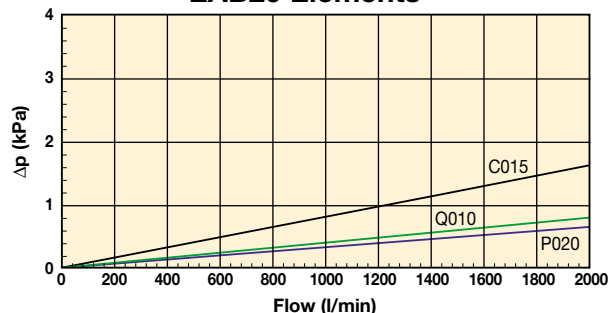
EAB10 Elements



EAB20 Housing Only

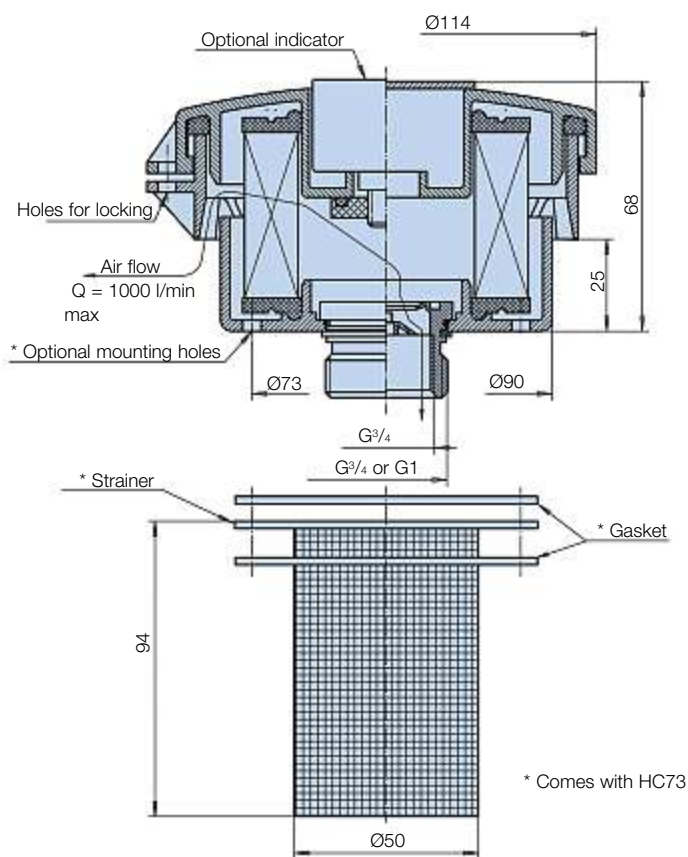


EAB20 Elements

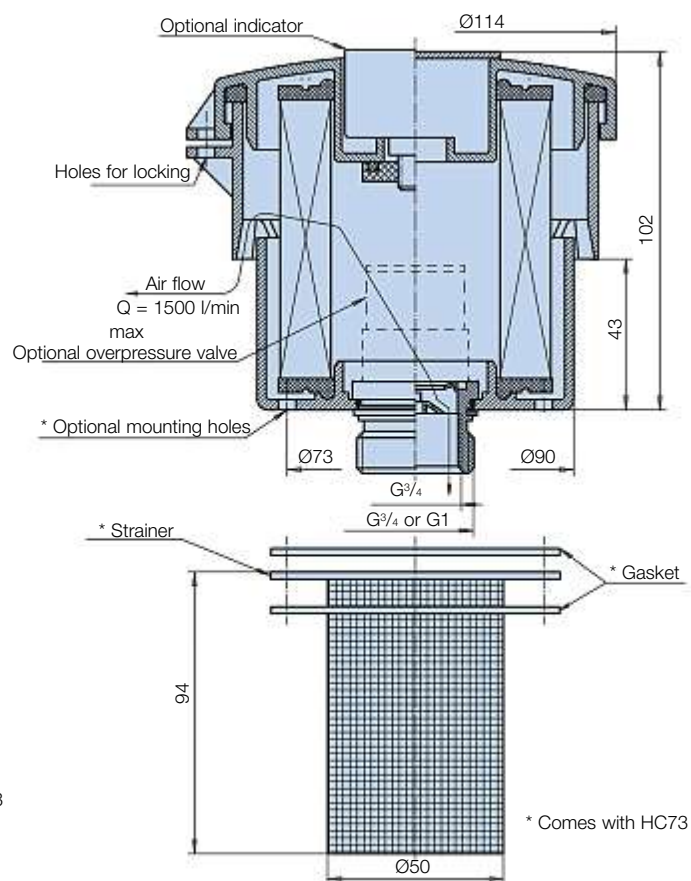


Specification

EAB10



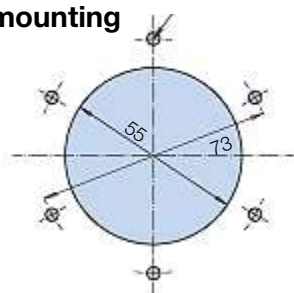
EAB20



NOTICE!

Air filters are an essential part of the system and the element needs to be replaced regularly.

6 hole fixing mounting dimensions



Mounting	Code
6 mounting holes	HC73
G1 external	GE16
G ^{3/4} external	GE12
G ^{3/4} internal	GS12

EAB Series

Ordering Information

Standard products table

Part number	Supersedes	Model	Media	Mounting	Overpressure valve	Indicator	Replacement elements
EAB20P020HC73V2	EAB20P020HC73-V2	EAB20	P020	HC73	V2		EAC20P020
EAB10P020HC73	N/A	EAB10	P020	HC73			EAC10P020
EAB20P020HC73	N/A	EAB20	P020	HC73			EAC20P020
EAB20P020GE16	N/A	EAB20	P020	GE16			EAC20P020
EAB20P020HC73A	EAB20P020HC73-A	EAB20	P020	HC73		A	EAC20P020

Product configurator

Product number	Media options		Mounting options		Overpressure valve options		Indicator options	
EAB20	P020	2µ abs polyester	HC73	6 hole fixing		No overpressure valve		No indicator
EAB10	C015	1.5µ abs water resistant	GE12	G ³ / ₄ external thread	V2	0.2 bar	A	Vacuum/pressure gauge
	Q010	1.0µ abs glass fibre	GE16	G1 external thread G ³ / ₄ internal thread				
			GS12	M33 x 2 external thread				
			ME33					

Replacement elements

Product number	Media options	
EAC20	P020	2µ abs polyester
EAC10	C015	1.5µ abs water resistant
	Q010	1.0µ abs glass fibre

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: For alternative part number options, consult Parker Filtration.

ABL Series

Typical Applications



The Parker Filtration ABL-1 and ABL-2 Series Air Filters.

- Saw mills
- Agricultural machines
- Articulated dump trucks
- Forestry equipment
- Wheeled loaders
- Lubricating systems
- Excavators
- Industrial power units
- Mobile cranes

Technical Data

Assembly:

Tank top mounted.

Connections:

Threads G1 1/4 (ISO 228), 1 1/2" (UN-16-2B).

Seal material:

Seals integrated in *LEIF*® element.

Operating temperature range:

-20° to +80°C.

Filtration media:

3 micron.

Flow fatigue characteristics:

Filter media is supported so that the optimal fatigue life is achieved.

Vacuum indicator:

ABL-1 on request only, ABL-2 0.04 bar. Visual with latch out memory.

Breather housing:

High impact strength composite.

Filter element:

LEIF® element.

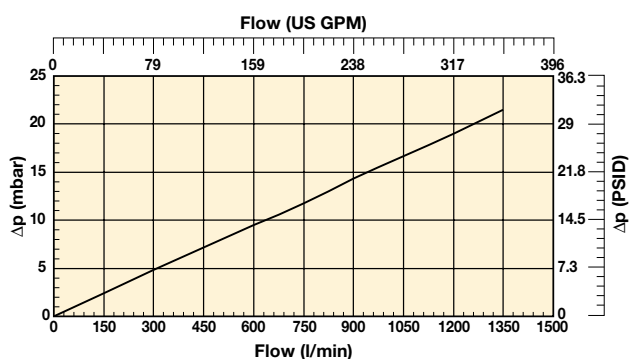
Options:

- Adaptor with filter connection.
- Single adaptor.
- Breather with integrated pressure relieve valve for pressurised tank on request only.

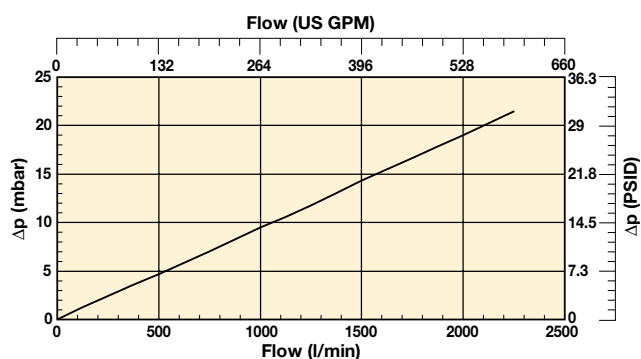
LEIF® elements can be used for hydraulic fluids and HEES type fluids only. For other fluids contact Parker Filtration.

Pressure Drop Curves

ABL1



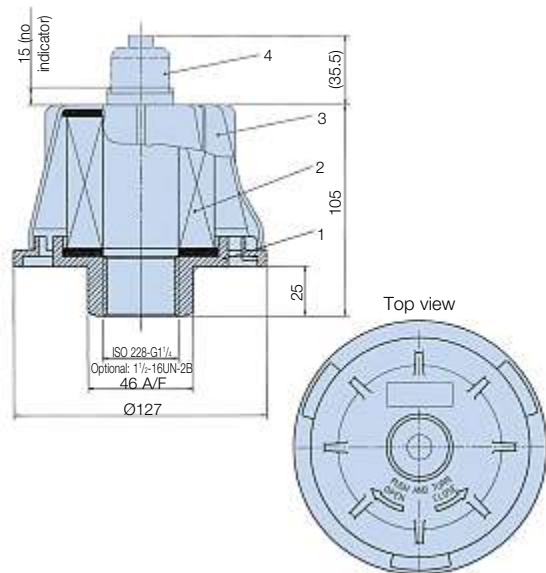
ABL2



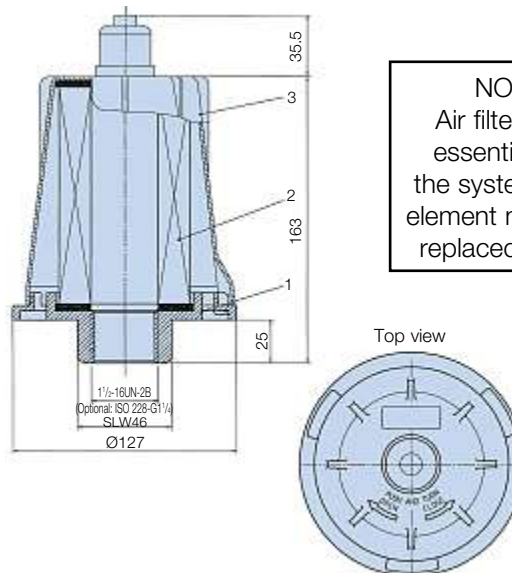
ABL Series

Specification

ABL-1



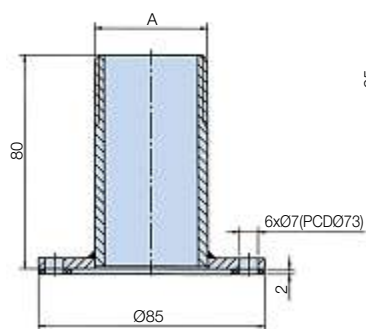
ABL-2



NOTICE!
Air filters are an essential part of the system and the element needs to be replaced regularly.

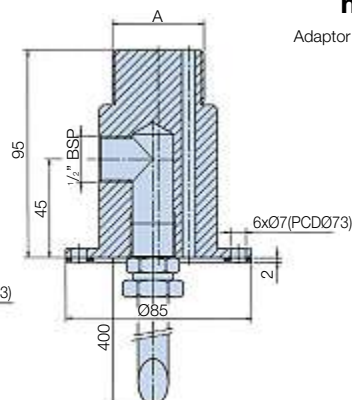
Extensions and fillings

Adaptor single



mounting adaptors

Adaptor with filler connection



Ordering Information

Standard products table

Part number	Supersedes	Replacement elements
ABL1G114QXWL3	ABL1-G1 1/4-QXWL-3	QXWL3
ABL2G114QXWL13V	ABL2-G1 1/4-QXWL-1-3-V	QXWL13
ABL2U112QXWL13V	ABL2-U1 1/2-QXWL-1-3-V	QXWL13
ADAPTORABLG114FP	ADAPTOR-ABL-G1 1/4-FP	-

Product configurator

Product number		Mounting options		Filtration (3µm)		Indicators		Options	
ABL1	1000 l/min	G114	ISO 228 - G1 1/4 (BSP)	QXWL3	ABL1 Only		None		None
ABL2	2000 l/min	U112	1 1/2 UN-16-2B	QXWL13	ABL2 Only	V	Visual	SNG	Vacuum/Pressure Gauge
								FP	Adaptor With Filler Connection

Product configurator

Product number	Mounting options		Options	
Adaptor ABL	G114	ISO 228 - G1 1/4 (BSP)	SNG	Single Adaptor
	U112	1 1/2 UN-16-2B	FP	Adaptor With Filler Connection

Replacement elements

Part number	Supersedes	Description
QXWL3	QXWL-3	3µ
QXWL13	QXWL1-3	3µ

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

A full-page view of a blank sheet of graph paper. The grid consists of thin, light gray horizontal and vertical lines forming small squares across the entire page. There are no margins, text, or other markings on the paper.

Glass-Filled Nylon and Metal Breathers

IP65 Rated, Metal, Screw-on and Lockables



IP65 Rated Filler Breathers

Specification for Single and 6 Hole Installation



Option 1

Construction:

Moulded in non-corrodible glass-filled nylon combining strength with a lightweight design.

Options:

- (1) single (63mm dia) hole
Filler breather installation that eliminates drilled and tapped holes using self-locking clamps.
- (2) 6 hole
Filler Breather Installation that uses 6 x No 10 thread forming screws.
- (3) 3 hole filler breather
utilises 3 x zinc and clear chromate plated steel screws.

Strainers:

Unique design diffuses oil flow into the reservoir.
(1) Single length in polypropylene (95mm length)
(2) 2-piece telescopic in polypropylene (195mm length max.)

Filtration element:

Expanded polyurethane foam, 10 micron nominal.

Seals:

Nitrile.

Working temperature:

-30°C to +90°C.

Pressurised filler breathers:

Available in 3 pressure options to maintain a positive pressure in a reservoir.

Pressurisation options:

0.2, 0.35 and 0.7 bar crack pressure.

Pressurisation valve:

Nylon/Nitrile.

Dipstick:

Available for use with options 1 and 2. Dipsticks are available in 2 lengths and in packs of 10.

Dipstick material:

ABS.

Hi/Lo indicators:

Acetal. Adjustable Red/Green level indicators.

Dipstick lengths:

200mm and 400mm.

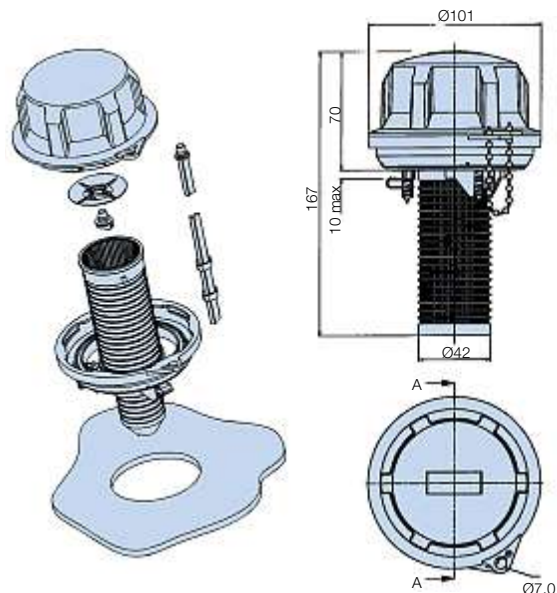
Breather weight:

0.2Kg.

Anti-splash feature:

The unique design anti-splash feature is standard on all options 1 and 2 and allows for a dipstick to be fitted if required.

Option 1 Filler Breathers (Single Hole Installation)



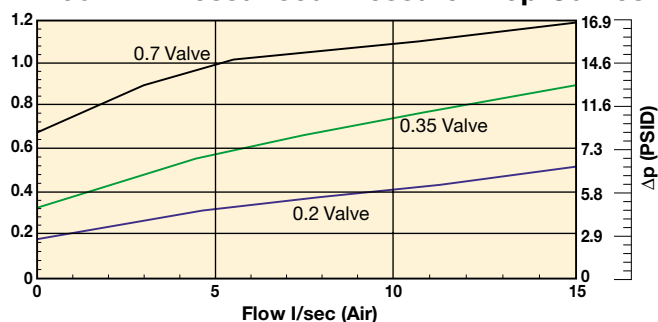
Option 1. Single Hole Filler Breathers – Pressurised

Part number	Supersedes	Description 10µ nom
AB98212011	AB.98212011.UC	Pressurised 0.2bar with 95mm strainer
AB98213011	AB.98213011.UC	Pressurised 0.35bar with 95mm strainer
AB98212001	AB.98212001.UC	Pressurised 0.2bar without strainer
AB98212021	AB.98212021.UC	Pressurised 0.2bar with telescopic strainer
AB98213001	AB.98213001.UC	Pressurised 0.35bar without strainer
AB98213021	AB.98213021.UC	Pressurised 0.35bar with telescopic strainer
AB98217001	AB.98217001.UC	Pressurised 0.7bar without strainer
AB98217011	AB.98217011.UC	Pressurised 0.7bar with 95mm strainer
AB98217021	AB.98217021.UC	Pressurised 0.7bar with telescopic strainer

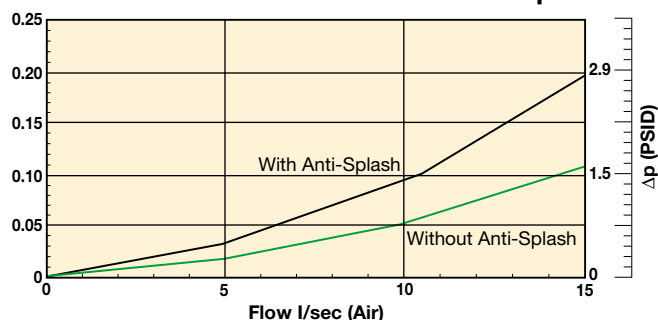
Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

AB98XXX Pressurised Pressure Drop Curves



AB98XXX Non-Pressurised Pressure Drop Curves



Option 1. Single Hole Filler Breathers – Non-Pressurised

Part number	Supersedes	Description 10µ nom
AB98210011	AB.98210011.UC	Filler breather with 95mm strainer
AB98210021	AB.98210021.UC	Filler breather with telescopic strainer
AB98210001	AB.98210001.UC	Filler breather without strainer

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Filler Breathers (6 Hole Installation)

Option 2

Note 1. Un-pressurised 6 hole fixing:

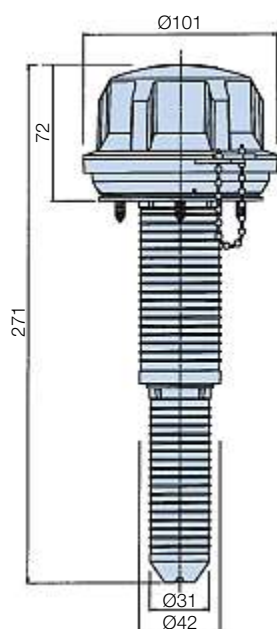
Form 6 off tank mounting holes between Ø4.0 and 4.4mm (dependent on the material and thickness – see guide below) equispaced on 70-73mm P.C.D. to suit supplied No.10 thread forming screws.

Note 2. Pressurised 6-hole fixing:

Form 6 off tank mounting holes between Ø4.0 and Ø4.4mm (dependent on the material and thickness – see guide below) equispaced on 73mm P.C.D. to suit supplied No.10 thread forming screws.

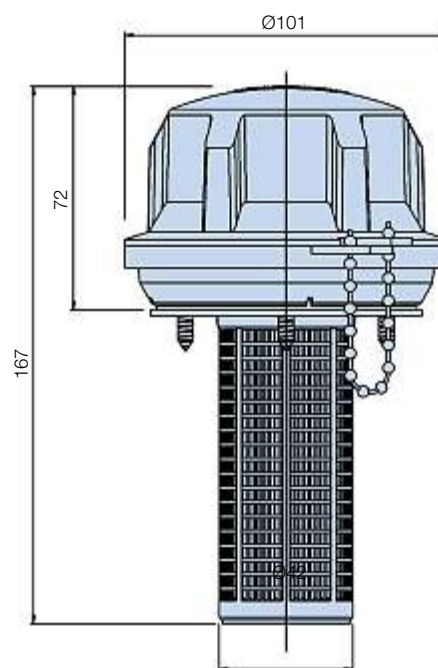
Note 3. Reservoir mounting guide

Sheet thickness mm	Hole size mm
1.2	4.0
2.0	4.10
3.15	4.30
4.0	4.30
5.0	4.40



Telescopic Strainer

The telescopic strainer design is ideal, where reservoir depth allows, to increase the surface area of the strainer, improving still further its straining ability, oil flow-through and allowing for longer dipstick lengths.



Option 2. 6 Hole Filler Breathers – Pressurised

Part number	Supersedes	Description 10µ nom
AB98817011	AB.98817011.UC	Pressurised 0.7bar with 95mm strainer
AB98812001	AB.98812001.UC	Pressurised 0.2bar without strainer
AB98812011	AB.98812011.UC	Pressurised 0.2bar with 95mm strainer
AB98812021	AB.98812021.UC	Pressurised 0.2bar with telescopic strainer
AB98813001	AB.98813001.UC	Pressurised 0.35bar without strainer
AB98813011	AB.98813011.UC	Pressurised 0.35bar with 95mm strainer
AB98813021	AB.98813021.UC	Pressurised 0.35bar with telescopic strainer
AB98817001	AB.98817001.UC	Pressurised 0.7bar without strainer
AB98817021	AB.98817021.UC	Pressurised 0.7bar with telescopic strainer

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

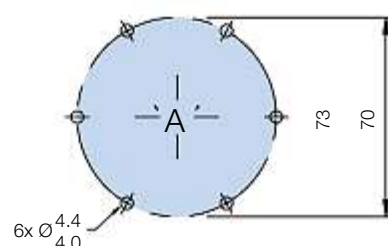
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Option 2. 6 Hole Filler Breathers – Non-Pressurised

Part number	Supersedes	Description 10µ nom
AB98810001	AB.98810001.UC	Filler breather without strainer
AB98810011	AB.98810011.UC	Filler breather with 95mm strainer
AB98810021	AB.98810021.UC	Filler breather with telescopic strainer

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



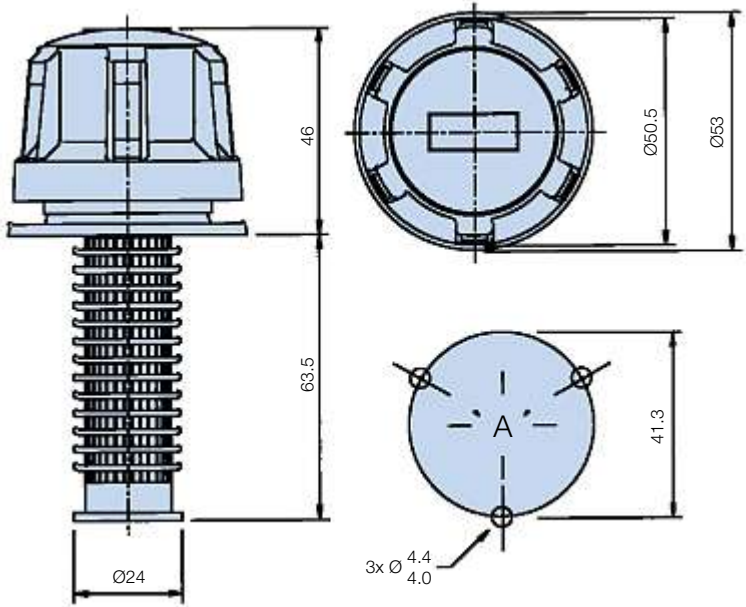
Filler Breathers

Option 3 Filler Breathers (3 Hole Installation)



New Options Fully Tested

As part of the design development programme for the new IP65 Filler Breathers, extensive performance and endurance testing was carried out to ensure durability and efficiency.



3-hole Filler Breathers (6-hole available)

Part number	Description 10µ nom
AB68110	Filler breather without strainer
AB68118	Filler breather with 95mm strainer

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
Note 3: Not suitable for use with B.68206/207
Note 4: 6-hole AB.68910/AB.68918 option available.

Note: Form 3 off tank mounting holes between Ø4.0 and Ø4.4mm (dependent on the material and thickness – see chart for guide) equispaced on 41.3 P.C.D. to suit No. 10 thread forming screws supplied.

Dipstick Options

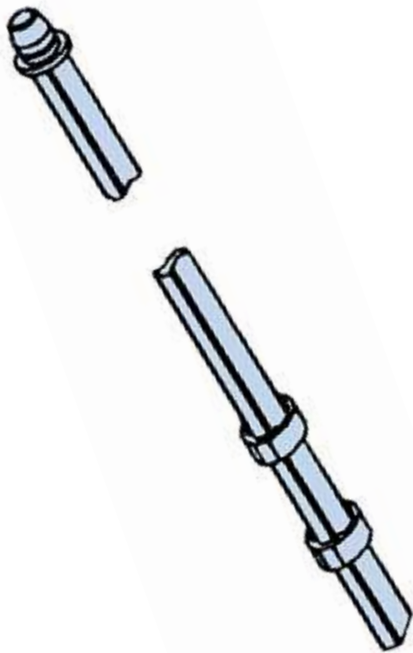
Dipstick Ordering

Part number	Supersedes	Description
B68206	DIP.206	10 x 200mm Dipsticks
B68207	DIP.207	10 x 400mm Dipsticks

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Dipsticks

The dipstick, available in 2 lengths – 200mm and 400mm, can be cut to the required length or left as it is and the Hi/Lo indicators moved and positioned on the dipstick itself by squeezing the sides of the indicator and repositioning along the dipstick.



Screw-On Type Air Breathers

Standard Screw-On Breathers - Specification



Option 1- G¹/₂ and G³/₄ (Ø101)

Construction:

Moulded in non-corrodible glass-filled nylon combining strength with a lightweight design.

Option 1:

2 screw on type air breathers are available – G¹/₂ or G³/₄ threaded base models.

Filtration element:

Expanded polyurethane foam, 10 micron nominal.

Seals:

Nitrile.

Working temperature:

-30°C to +90°C.

Pressurised air breathers:

Available in 3 pressure options to maintain a positive pressure in a reservoir.

Pressurisation options:

0.2, 0.35 and 0.7 bar crack pressure.

Pressurisation valve:

Nylon/Nitrile.

Dipstick:

Available for use with all options. Dipsticks are available in 2 lengths and in packs of 10.

Dipstick material:

ABS.

Hi/Lo indicators:

Acetal. Adjustable red/green level indicators.

Dipstick lengths:

200mm and 400mm.

Breather weight:

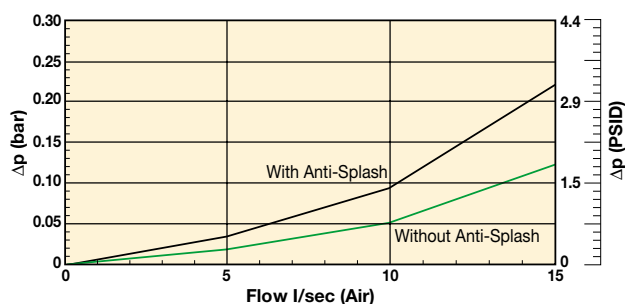
0.2Kg.

Anti-splash feature:

The unique design anti-splash feature is standard on option 1 and allows for a dipstick to be fitted if required.

Pressure Drop Flow Curve

AB98XXX Screw-on Non-Pressurised Pressure Drop Curves



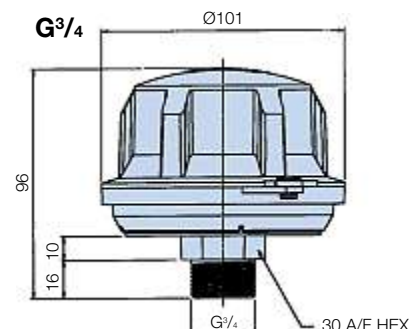
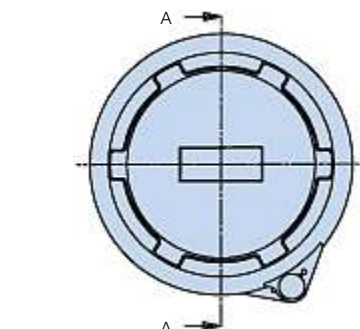
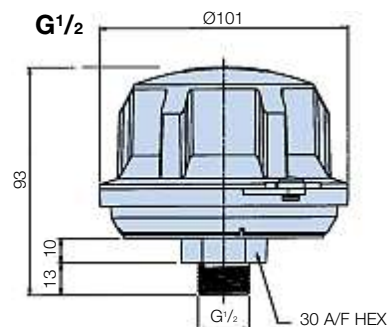
Note: For pressure drop information on the Option 1. Pressurised consult Parker Filtration.

Option 1 – G¹/₂ or G³/₄

Part number	Supersedes	Description 10μ nom
AB98610101	AB.98610101.UC	G ¹ / ₂ Un-pressurised
AB98612101	AB.98612101.UC	G ¹ / ₂ pressurised 0.2 bar
AB98613101	AB.98613101.UC	G ¹ / ₂ pressurised 0.35 bar
AB98617101	AB.98617101.UC	G ¹ / ₂ pressurised 0.7 bar
AB98410101	AB.98410101.UC	G ³ / ₄ Un-pressurised
AB98412101	AB.98412101.UC	G ³ / ₄ pressurised 0.2 bar
AB98413101	AB.98413101.UC	G ³ / ₄ pressurised 0.35 bar
AB98417101	AB.98417101.UC	G ³ / ₄ pressurised 0.7 bar

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Screw-On Type Air Breathers

Compact Screw-On Breathers - Specification

Option 2 – G¹/₄, G³/₈, R¹/₂ and R³/₄ (Ø40)

Construction:

G¹/₄, G³/₈, R¹/₂ and R³/₄ cap and base plate mouldings in nylon 66.

Element:

Expanded Polyurethane foam, 10 micron nominal.

Dipstick:

Available for use with R¹/₂ and R³/₄.

Dipstick material:

ABS.

Hi/Lo indicators:

Acetal adjustable red/green level indicators.

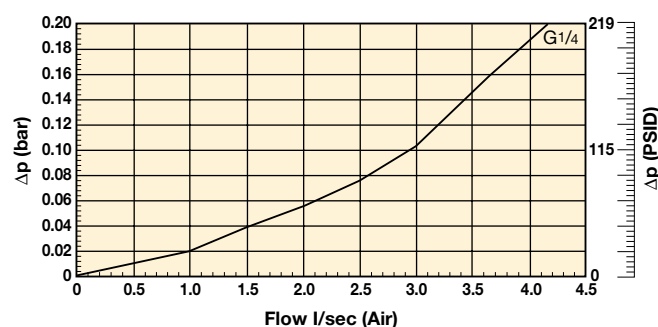
Dipstick lengths:

200mm and 400mm (packs of 10).

Breather weights:

0.028Kg

Pressure Drop Flow Curve



Note: For pressure drop information on G³/₈, R¹/₂ and R³/₄, consult Parker Filtration.

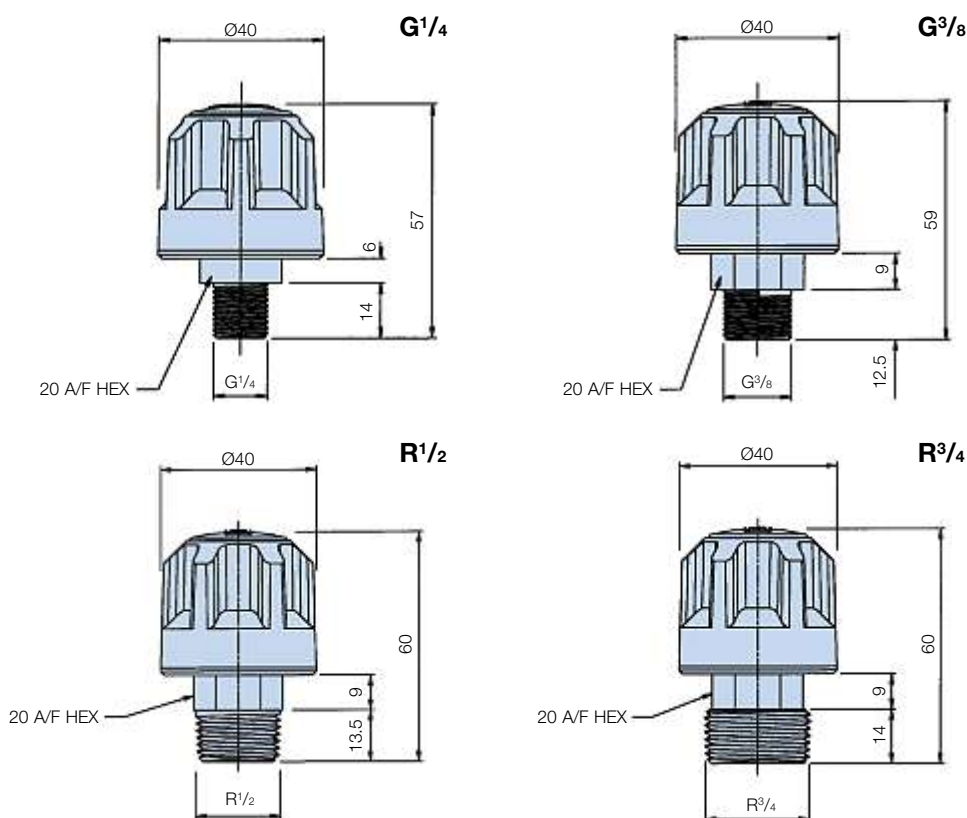
Ordering Information

Option 2 – G¹/₄, G³/₈, R¹/₂ and R³/₄ (Packs of 10 only)

Part number	Supersedes	Description 10µ nom
AB683101	AB.683101.UC	G ¹ / ₄ Un-pressurised
AB68X101	AB.68X101.UC	G ³ / ₈ Un-pressurised
AB68Y101	AB.68Y101.UC	R ¹ / ₂ Un-pressurised
AB68Z101	AB.68Z101.UC	R ³ / ₄ Un-pressurised

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Screw-On Type Air Breathers - Specification

Option 3 – G³/₈, G¹/₂ and G³/₄ (Ø70)

Construction:

Mouldings in glass-filled nylon and glass coupled polypropylene.

Element:

Expanded Polyurethane foam, 10 micron nominal.

Seals:

Nitrile.

Pressurised air breathers:

Available G³/₈, G¹/₂ and G³/₄,
3 pressure options to maintain a positive pressure in a reservoir.

Pressurisation options:

0.2, 0.35 and 0.7 bar crack pressure.

Pressurisation valve:

Nylon.

Dipstick:

Available for use with G³/₈, G¹/₂ and G³/₄.

Dipstick material:

Mini-series in brass.

Hi/Lo indicators:

Acetal adjustable red/green level indicators.

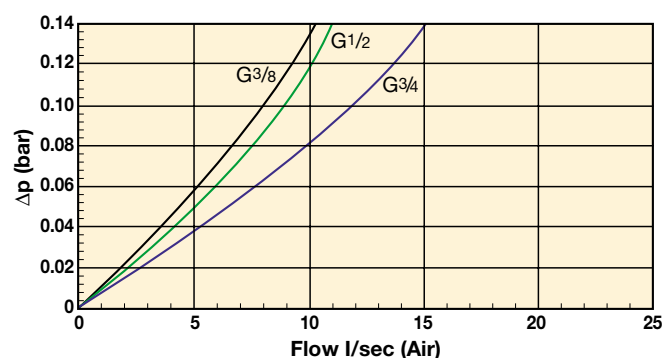
Dipstick lengths:

200mm and 400mm (packs of 10).

Breather weights:

0.075Kg, Mini-series – 0.019Kg.

Pressure Drop Flow Curve



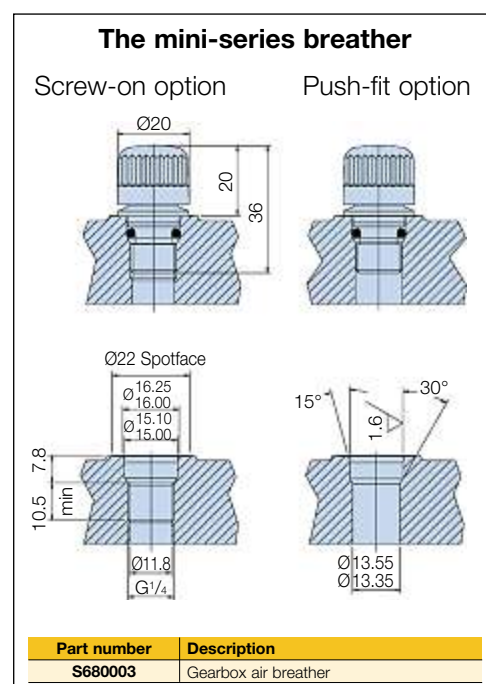
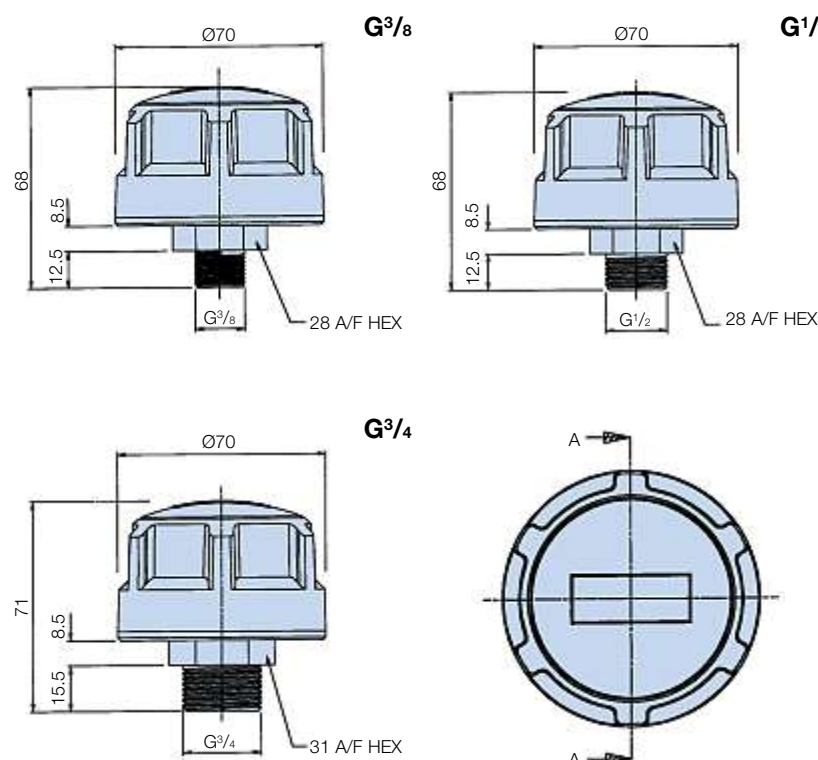
Ordering Information

Option 3 – G³/₈, G¹/₂ and G³/₄

Part number	Supersedes	Description 10μ nom
AB685101	SAB.5101	G ³ / ₈ Un-pressurised
AB687101	SAB.7101	G ¹ / ₂ Un-pressurised
AB686101	SAB.6101	G ³ / ₄ Un-pressurised

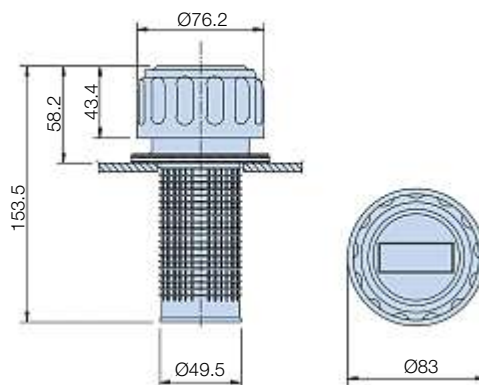
Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Filler Breathers (Metal)

Metal Airbreather/Filler breather Specification



Locking lug option (5561)

For added security, certain Parker Filtration Metal Filler Breather Filters can be specified with a locking lug option.



Ordering Information

Standard products table

Part number	Supersedes	Replacement cap	Supersedes	Displacement l/min	Crack pressure	Micron rating	Air flow m³/min	Thread	Weight
Threaded airbreather (unpressurised)									
SAB156210	SAB.1562.10	N/A	N/A	430	N/A	10µ nom	0.45	G ³ / ₄	0.20kg
SAB156310	SAB.1563.10	N/A	N/A	135	N/A	10µ nom	0.15	G ¹ / ₄	0.06kg
Filler breather - filter flange type (unpressurised)									
AB116310	AB.1163.10	CAP.116310	CAP.1163.10	430	N/A	10µ nom	0.45	N/A	0.24kg
AB138010	AB.1380.10	CAP.138010	CAP.1380.10	135	N/A	10µ nom	0.15	N/A	0.08kg
5561	N/A	N/A	N/A	430	N/A	10µ nom	0.45	N/A	0.24kg
Filler breather - filter flange type (pressurised)									
PAB1730105	PAB.1730.10.5	CAP.1730105	CAP.1730.10.5	430	0.35 bar	10µ nom	0.45	N/A	0.27kg
PAB17301010	PAB.1730.10.10	CAP.17301010	CAP.1730.10.10	430	0.70 bar	10µ nom	0.45	N/A	0.27kg
Air breather - threaded type (pressurised)									
SPA1731105	SPA.1731.10.5	N/A	N/A	430	0.35 bar	10µ nom	0.45	G ³ / ₄	0.20kg
SPA17311010	SPA.1731.10.10	N/A	N/A	430	0.70 bar	10µ nom	0.45	G ³ / ₄	0.20kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

1731 - Threaded type (Pressurised)

Displacement:
430 l/min.

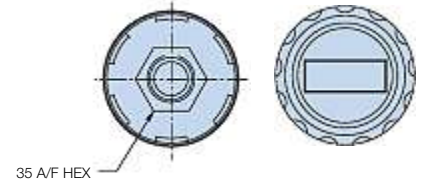
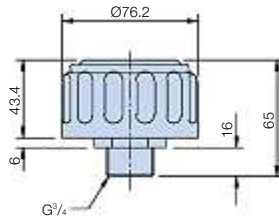
Micron rating:
10µ nominal

Air flow:
0.45m³/min.

Weight:
0.2 Kg.

Thread:
G³/₄.

Valve crack-pressure:
0.35 and
0.7 bar.



1562-1563 - Threaded type (Un-pressurised)

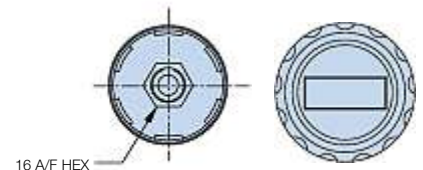
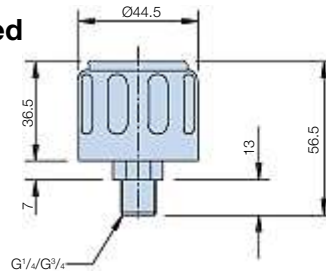
Displacement:
1562 = 430 l/min.
1563 = 135 l/min.

Micron rating:
10µ nominal

Air flow:
1562 = 0.45m³/min.
1563 = 0.15m³/min.

Weight:
1562 = 0.20 Kg.
1563 = 0.06 Kg.

Thread:
1562 = G³/₄.
1563 = G¹/₄.



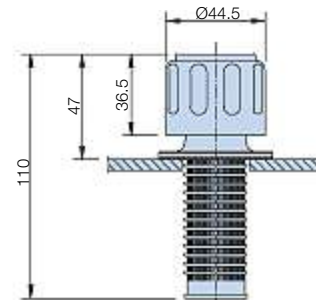
1380 - Filter flange type

Displacement:
135 l/min.

Micron rating:
10µ nominal

Air flow:
0.15m³/min.

Weight:
0.08 Kg.



Tank installation notes

1. Un-pressurised 6 hole fixing

Form off tank mounting holes between Ø4.0 and Ø4.4 (dependant on the material and thickness, consult Parker Filtration) equispaced on 70.0-73.0 P.C.D. to suit
No. 10 thread forming screws supplied.

2. Pressurised 6 hole fixing

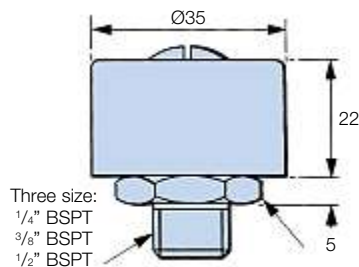
Form 6 off mounting holes between Ø4.0 and Ø4.4 equispaced on 73.0 P.C.D. to suit
No. 10 thread forming screws supplied.

3. Un-pressurised 3 hole fixing

Form 3 off tank mounting holes between Ø4.0 and Ø4.4 equispaced on 41.3 P.C.D. to suit
No. 10 thread forming screws supplied.

Breather Units

Small Breather Specification



Ordering Information

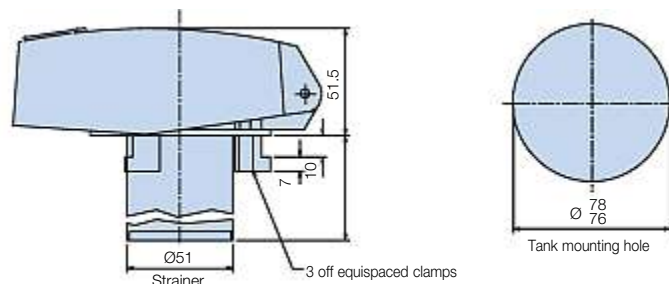
Part number	Supersedes	Description
H00279001	H00279-001	Small breather 1/4 BSPT thread
H00279002	H00279-002	Small breather 3/8 BSPT thread
H00279003	H00279-003	Small breather 1/2 BSPT thread

Lockable Filler Breather

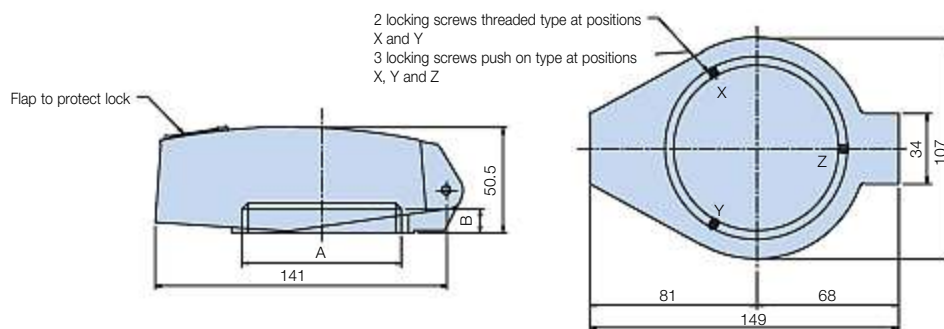
Installation Details



Tank Mounting

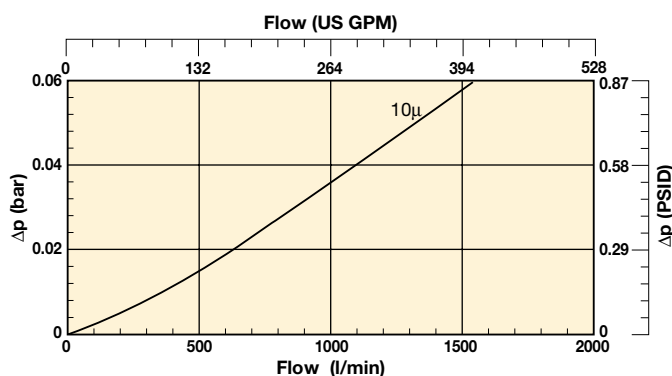


Stand Pipe Mounting



Lockable Filler Breather Selection

Total assembly pressure drop flow curve – 10 μ elements



Ordering Information

Part number	Description
LFC622142	Non-breathing (No element) Clamp mounting with strainer
LFC622212	10 μ nom element, G2 thread with strainer
LFC622242	10 μ nom element, clamp mounting with strainer
LFC622432	10 μ nom vented (air in) push on mounting with strainer
LFC622122	Non-breathing (No element) 2" BSP thread with strainer
LFC622222	10 μ nom element, G2 $\frac{1}{2}$ thread with strainer
LFC622411	10 μ nom vented (air in) G2 thread without strainer

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Spin-On Air Breathers

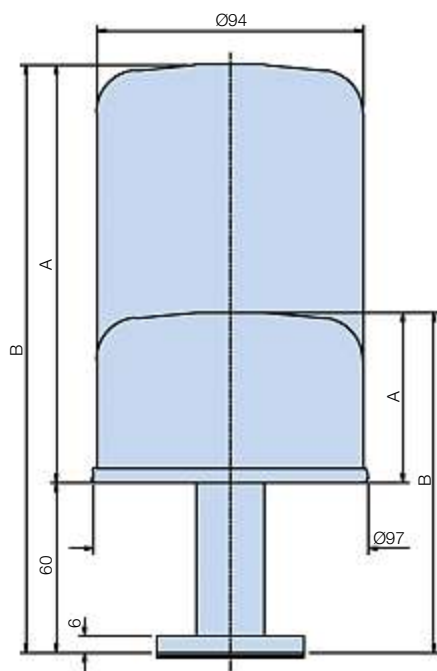


Spin-On Air Breathers

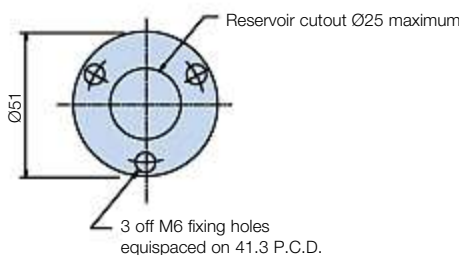
Specification



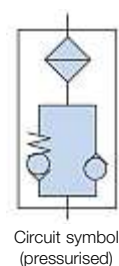
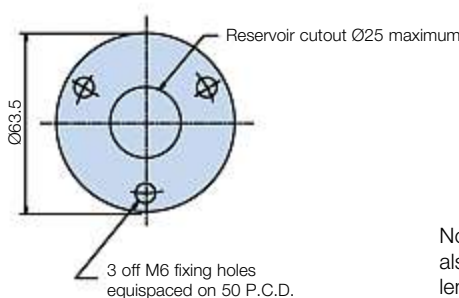
- High capacity air breathers designed for the removal of airborne contamination in hydraulic systems to support environmental maintenance.
- Ideal for high flow systems and heavily contaminated environments.
- Disposable spin-on elements quickly and easily replaced.
- 5 micron nominal quality filtration elements.
- 2 models available – 700 l/min and 1500 l/min.
- Available with a pressurised valve in the mounting adaptor.



Standard spin-on air breather stem



Pressurised spin-on air breather stem



Note: Spin-on air breather elements can also be mounted directly on to any suitable length of 3/4" BSP threaded pipe.

Ordering Information

5µ Spin-on air breathers

Part number	Supersedes	Air flow	Valve crack pressure	A mm	B mm	Weight	Replacement element
S340056	N/A	700 l/min	Unpressurised	60	120	0.6Kg	4930
S340052	N/A	1500 l/min	Unpressurised	148	208	0.75Kg	588410
S340058	*S.340058	700 l/min	0.35 Bar	60	120	0.69Kg	4930
S340059	**S.340059	700 l/min	0.70 Bar	60	120	0.69Kg	4930
S340054	*S.340054	1500 l/min	0.35 Bar	148	208	0.8Kg	588410
S340055	**S.340055	1500 l/min	0.70 Bar	148	208	0.8Kg	588410

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

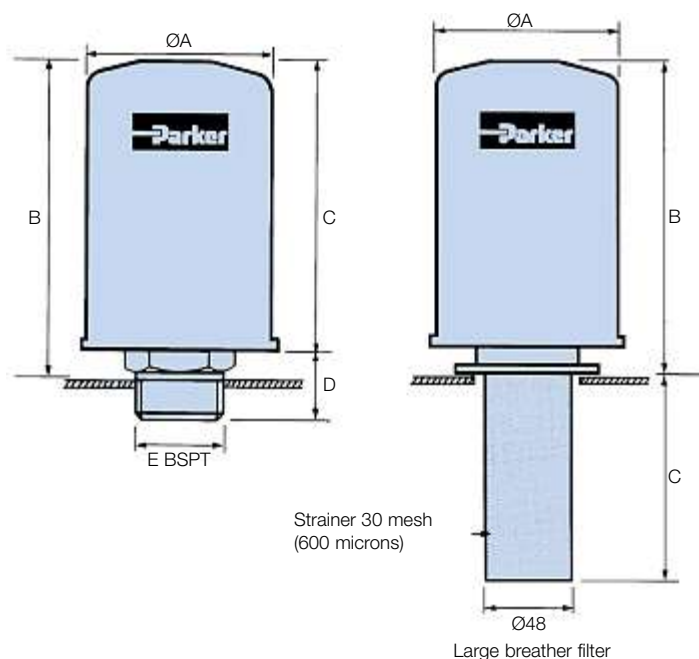
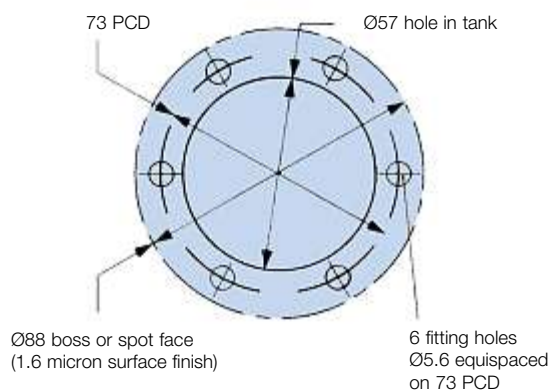
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Note 3: Reservoir must be capable of withstanding pressurisation.



- High capacity air breathers and filler/breathers designed for the removal of airborne contamination in hydraulic systems to support environmental maintenance.
- Ideal for high flow systems and heavily contaminated environments.
- Disposable spin-on elements quickly and easily replaced.
- 3 micron absolute quality filtration elements.
- Models available – 1700 l/min and 3000 l/min.

Mounting face for standard and large breather



Specification

Maximum operating temperature:
-20°C to +90°C.

Construction materials:
Epoxy coated steel components to resist corrosion.
resistant paint finish on large breathers.

Fluid compatibility:
Suitable for use with mineral oils and water oil emulsions.

Weights:

Large: H00834001 1.0 Kg
H00834002 1.65 Kg
H00834003 1.90 Kg

Each breather filler is supplied with mounting gaskets and self-tapping screws.

Ordering Information

Large breather dimensions

Part number	Supersedes	Air flow l/min	Dimensions (mm)				Ports
			A	B	C	D	
H00834004	H00834-004	1700	97	147	135	30	3/4
H00834005	H00834-005	3000	134	198	180	36	1 1/4

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Large breather filler dimensions

Part number	Supersedes	Air flow l/min	Dimensions (mm)			Replacement element complete with bayonet	Supersedes
			A	B	C		
H00834001	H00834-001	1700	97	165	114	H00834006	H00834-006
H00834002	H00834-002	3000	134	204	114	H00834007	H00834-007
H00834003	H00834-003	3000	134	204	203	H00834007	H00834-007

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is no handwriting or other markings on the paper.

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Fluid Level Measurement

Fluid Level Temperature Gauges



Fluid Level/Temperature Gauges

Specification


Construction:

Lens Transparent polyamide.
 Lens base Nylon 66.
 Shroud High impact polystyrene.
 No aluminium content.

Bolts:

Steel.

Seals:

Nitrile.

Maximum working pressure:

1 bar.

Working temperature:

-30°C to +90°C.

Fluid compatibility:

Mineral and petroleum based oils.

Note:

A 500mm model with metal shroud finished in black available.

Recommended bolt tightening torque:

10 Nm maximum.

Thermometer scale range:

+30°C to +90°C.

Temperature Indicator:

Blue alcohol.

Note:

1. Locate seals in mounting recess before fitting.
2. Select the size required by studying the installation details to determine a part number.

Size 1 Installation Details

For 'through hole' mounting:

Hole size	-Thread-	
	M10	M12
Preferred	11.0	13.0
Maximum	13.0	14.0

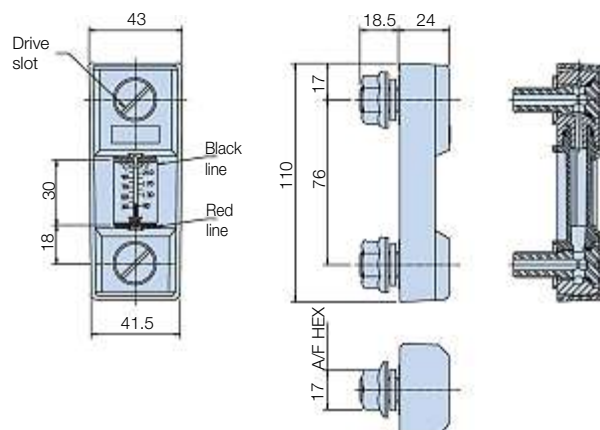
For tapped holes:

Holes to be tapped square to mounting face.

Tolerance on hole centres: +0.5
 -0.2

For welded back nuts:

The above details should be combined.



Installation and Application Information

Simple to Install

The universal fixing is designed for either front or rear fixing. Just two holes in the tank – threaded for front fixing – and the gauge is ready to install. After positioning the gauge the bolts are simply tightened to provide a secure seal. There is no fear of leakage with the square section seals and the two-point mounting system eliminates problems with tank distortion. M10 and M12 bolt thread options are available.

Easy to Read

The high-visibility lens is one-piece for added security and moulded in shatterproof, transparent polyamide for an accurate and clear oil level and temperature indication. Further gauge protection is provided by a specially designed shroud moulded in high-impact, black polystyrene.

Size 1 Ordering Information

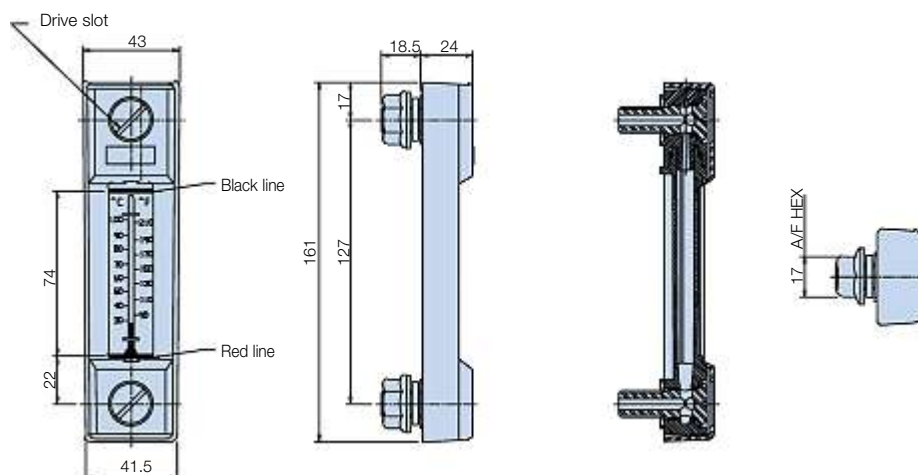
Standard products table

Part number	Supersedes	Description	Centres	Thread	Max temp	Weight
FL69121	FLT.121	Fluid level/temp	76mm	M10	90°C	0.13Kg
FL69123	FLT.123	Fluid level/temp	76mm	M12	90°C	0.13Kg
FL69111	FL.111	Fluid level	76mm	M10	90°C	0.13Kg
FL69113	FL.113	Fluid level	76mm	M12	90°C	0.13Kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Size 2 Installation Details



Size 2 Ordering Information

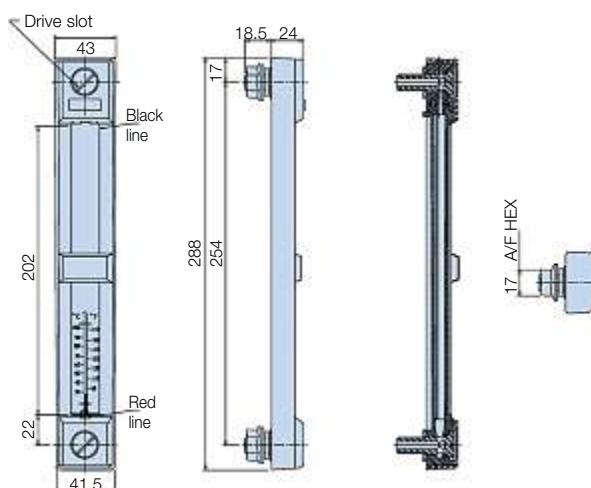
Standard products table

Part number	Supersedes	Description	Centres	Thread	Max temp	Weight
FL69221	FLT.221	Fluid level/temp	127mm	M10	90°C	0.15Kg
FL69223	FLT.223	Fluid level/temp	127mm	M12	90°C	0.15Kg
FL69211	FL.211	Fluid level	127mm	M10	90°C	0.15Kg
FL69213	FL.213	Fluid level	127mm	M12	90°C	0.15Kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Size 3 Installation Details



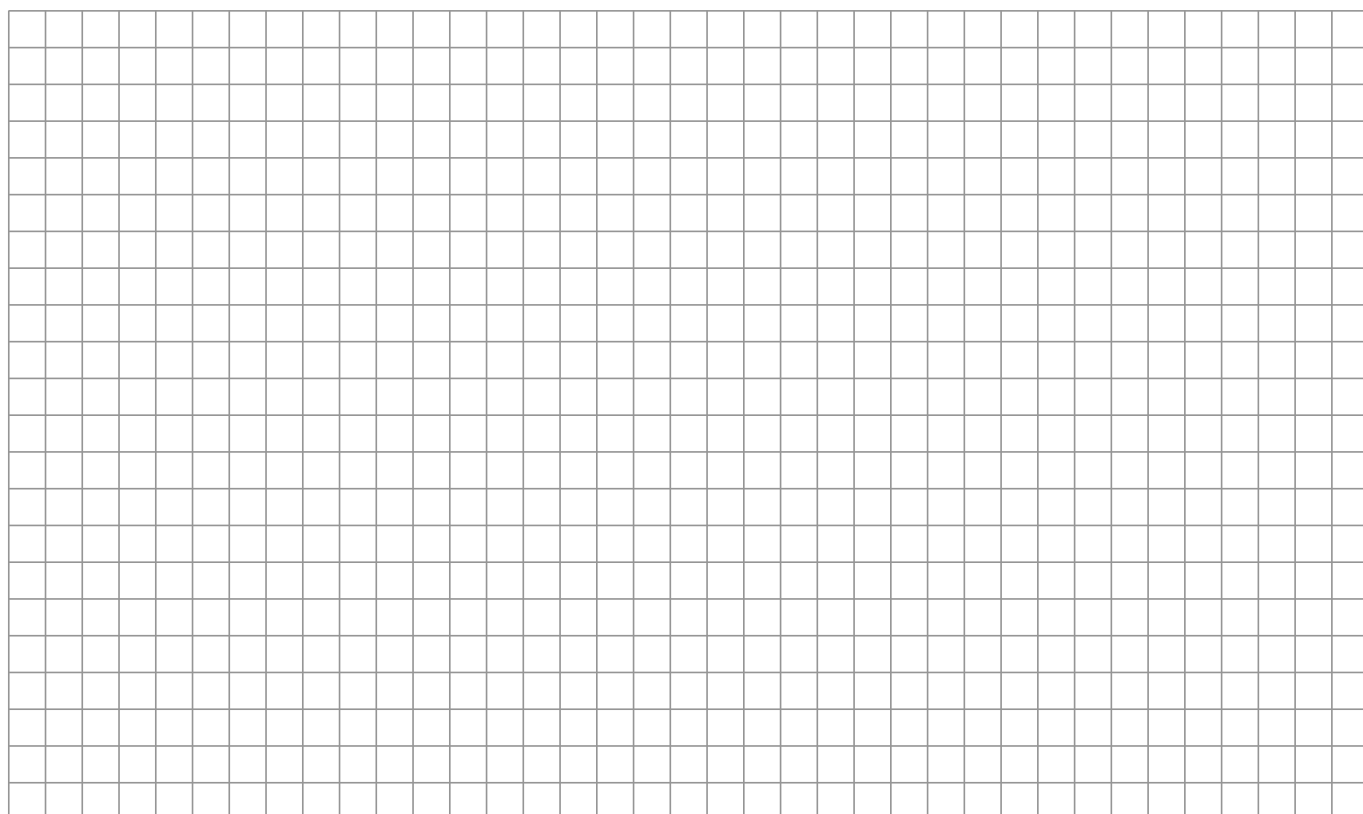
Size 3 Ordering Information

Standard products table

Part number	Supersedes	Description	Centres	Thread	Max temp	Weight
FL69321	FLT.321	Fluid level/temp	254mm	M10	90°C	0.23Kg
FL69323	FLT.323	Fluid level/temp	254mm	M12	90°C	0.23Kg
FL69311	FL.311	Fluid level	254mm	M10	90°C	0.23Kg
FL69313	FL.313	Fluid level	254mm	M12	90°C	0.23Kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

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Reservoir Float & Level Switches



Reservoir Equipment

FL Series

Adjustable Float Switch

Features & Benefits



The **FL Series** is a range of vertically mounted, single float level switches operating on the proven reed switch and magnet principle.

The **FL Series** float switch can be tailored by the user for a particular application, by adjusting the length of the float switch tube. It is also possible for the user to select the switching configuration by inverting the float, giving either open on rise or close on rise operation.

The unit is supplied part assembled, with detailed instructions for the user to complete assembly to the specifications of the application and to install the unit.

Float Switch Features Include:

- Float switches can be adjusted on site
- Reliable design using reed switches
- 3 lengths available, 500mm, 1000mm and 1500mm

The **FL Series** is designed to be adjusted by the user to fit their tank. The unit consists of a stem with the reed switch, thermal switch (if fitted) and float already set in position. The customer can cut the stem to fit their tank, and assemble it to the header. The unit is then ready to be fitted to the tank.

The unit has a factory set "Open On Rise" switching configuration, but this can be changed by reversing the float. The common temperature switches used are 60°C "Open On Rise" or 60°C "Close On Rise". However, other temperature specifications may be obtained on request. A standard DIN 43650 connector is supplied with the unit.

Typical Specification

Installation

Mounting: 1" BSP threaded header
Gasket: 2.0mm thick sealing washer
Length: Adjustable up to 1500mm

Electrical specification

Supply voltage: 240 Vac maximum
300 Vdc maximum
Switching current: 0.5A

Thermostat ratings

Normal voltage: 250V
Current rating: 4A (10A max)

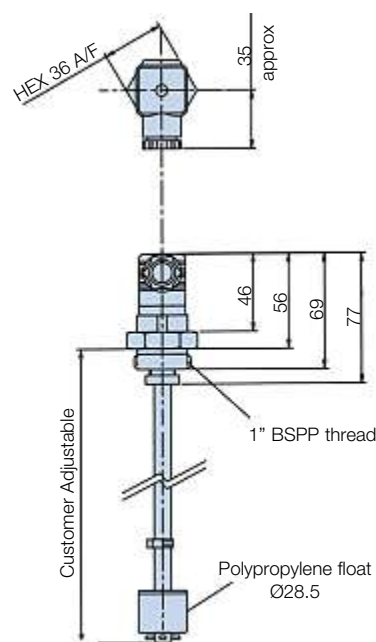
Material specification

Header: Brass
Float: Polypropylene
Stem: Brass
Gasket: Klingsil grade C4324 to BS7531 grade Y

Other parameters

Fluid types: Any liquids compatible with brass and polypropylene

Installation Drawing



Ordering Information

Standard products table

Part number	Supersedes	Description
FL050010R	FL-0500-1-0R	500mm long float level switch
FL100010R	FL-1000-1-0R	1000mm long float level switch
FL150010R	FL-1500-1-0R	1500mm long float level switch

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

CLS46

Capacitive Level Switch

Features & Benefits



The **CLS46 Liquid Level Switch** is an active device which is designed to give an alarm signal if fluid falls below a preset level. It will only give an output signal after a few seconds of low level to eliminate false alarms due to turbulence. The fact that the **CLS46 Series** has no moving parts and incorporates a built in delay means that it is ideal in applications where mechanically operated switches mis-trigger due to vibration and fluid turbulence.

Features Include:

- Rugged construction
- Simple to install
- Delay circuitry prevents false alarms
- Purely electronic, no moving components
- Integrated test feature

The **CLS46 Capacitive Level Switch** is designed to detect the loss of fluid below its position in the tank.

The **CLS46 Series** has no moving parts and it is therefore suitable for all applications, particularly where space and access inside a vessel is at a minimum.

The **CLS46 Series** compliments the existing range of level measurement instrumentation supplied by Parker Hannifin.

Technical Specification

Dimensions: See drawing

Electrical rating:

Supply voltage: 7-40 Vdc Supply current: 3.0mA
Max. load current: 1.0A Alarm delay time: 10.0 seconds

Connections:

V+: Positive power supply
GND: Negative power supply or GND
Output: Transistor switched to GND on alarm
Test: Ground to operate
Body: Connected to ground

Fluid types:

Water based fluids compatible with brass, PTFE and fluoro silicone

Construction:

Body: Brass Probe: PTFE
Terminals: SAE CA210 brass, tin plated
Seals: Fluoro silicone
Connector: 30% glass filled nylon 6

Environmental ratings

Max. pressure: 5.0 bar (72 PSI)
Temp. ranges: Fluid: -40°C to +130°C
Ambient: -40°C to +100°C
Storage: -50°C to +140°C

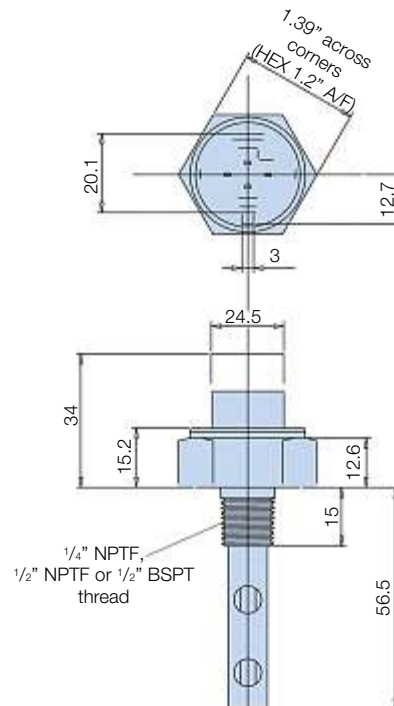
Sealing: IP67

Vibration: 6g 10-50Hz (600-3000rpm)

Shock: 50g, 6.3ms

Weight: 53g

Installation Details



Ordering Information

Standard products table

Part number	Description
CLS46	Capacitive fluid level sensor
CLS46Connector	Capacitive fluid level sensor connector

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Fluid Power Products



Hydraulic system protection from Parker is further confirmed with a quality range of fluid power products that include suction strainers, check valves pressure gauges and a pipe clamping system that will ensure secure pipe installations.

For information on Parker Filtration products and technology:

Tel: +44(0)1924 487000 Fax: +44(0)1924 487001 Email: filtrationinfo@parker.com

Suction Elements



Suction Elements

Specification



Construction:

Stainless steel media 30% glass filled nylon head. Zintec centre tube. Epoxy adhesives.

Maximum working temperature:
90°C.

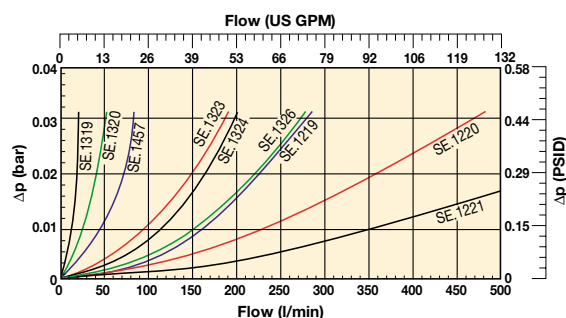
Filtration media:
125 micron*.

Flow range:
15-500 l/min.

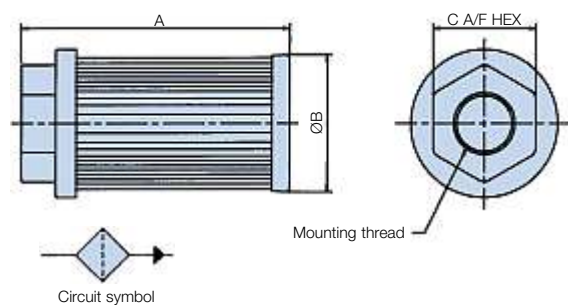
Bypass rating:
0.17 bar.

Mounting threads:
G $\frac{1}{2}$ up to G3.

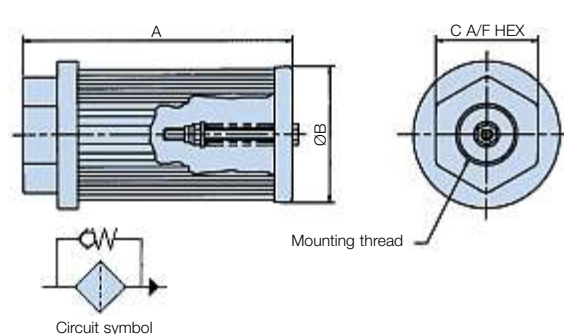
* Non-standard elements are available to order. Consult Parker Filtration.



Installation - Suction Elements Without Bypass



Installation - Suction Elements with Bypass



Ordering Information - Without Bypass

Standard products table

Part number	Supersedes	Air flow l/min	Ports BSP	Micron rating	Dimensions (mm)			Weight kg	Bypass rating
					A	B	C		
SE75111110	SE.1319	15	1/2	125	105.5	46	36	0.08	N/A
SE75221110	SE.1320	25	3/4	125	109.5	64	46	0.15	N/A
SE75231210	SE.1457	50	1	125	139.5	64	55	0.17	N/A
SE75351210	SE.1323	95	1 1/2	125	140	86	65	0.28	N/A
SE75351310	SE.1324	130	1 1/2	125	200	86	65	0.33	N/A
SE75361410	SE.1326	180	2	125	260	86	75	0.40	N/A
SE75461210	SE.1219	225	2	125	150	150	70	0.64	N/A
SE75471310	SE.1220	350	2 1/2	125	212	150	90	0.72	N/A
SE75481410	SE.1221	500	3	125	272	150	100	0.92	N/A

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Ordering Information - With Bypass

Standard products table

Part number	Supersedes	Air flow l/min	Ports BSP	Micron rating	Dimensions (mm)			Weight kg	Bypass rating
					A	B	C		
SE75111111	SE.5100	15	1/2	125	105.5	46	36	0.11	0.17 bar
SE75221111	SE.5101	25	3/4	125	109.5	64	46	0.18	0.17 bar
SE75231211	SE.5102	50	1	125	139.5	64	55	0.21	0.17 bar
SE75351211	SE.5103	95	1 1/2	125	140	86	65	0.31	0.17 bar
SE75351311	SE.5104	130	1 1/2	125	200	86	65	0.36	0.17 bar
SE75361411	SE.5105	180	2	125	260	86	75	0.43	0.17 bar
SE75461211	SE.5106	225	2	125	150	150	70	0.67	0.17 bar
SE75471311	SE.5107	350	2 1/2	125	212	150	90	0.75	0.17 bar
SE75481411	SE.5108	500	3	125	272	150	100	0.95	0.17 bar

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Diffusers

Installation Details



Specification

Construction:

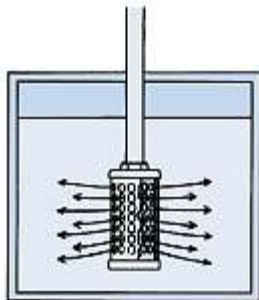
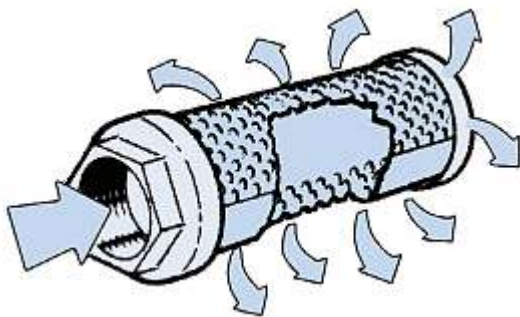
Zintec body.
30% glass-filled nylon head.
Zintec end cap.
Epoxy adhesives.

Flow range:

50 l/min up to 454 l/min.

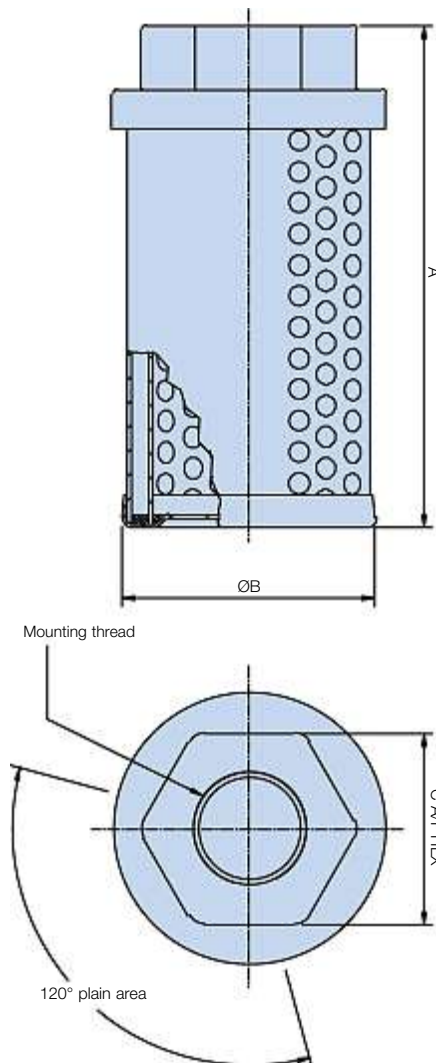
Mounting threads:

G³/₄ up to G2.



The effect of fitting a diffuser

Note: When installing a diffuser the plain area on the outside must be facing the pump inlet.



The benefits of specifying a Parker Filtration Diffuser

Installing a Parker Filtration Diffuser in a hydraulic reservoir is a simple operation that can make a big difference to system efficiency.

With its special concentric tubes designed with discharge holes 180° opposed fluid aeration, foaming and reservoir noise are reduced and pump life extended by reducing cavitation to the pump inlet.

Diffusers manufactured to customer specifications and other sizes of diffusers are available.

Ordering Information

Standard products table

Part number	Flow l/min	Ports BSP	Dimensions (mm)			Weight kg
			A	B	C	
2201	114	1	127	86	55	0.42
2202	227	1½	178	86	65	0.56
2210	50	¾	120	62	46	0.27
2203	454	2	242	86	75	0.69

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Inline Filters

Metal Inline Filter - Specification



Construction:
Head – zinc.
Bowl – Aluminium
BS1470/1050A. 1987.
Element:
Zintec/Stainless steel.
125 micron*.

Max. flow:
90 l/min.

Max working pressure:
7 bar.

Thread:
G1.

Working temperature:
-30°C to +80°C.

Seal:
Nitrile.

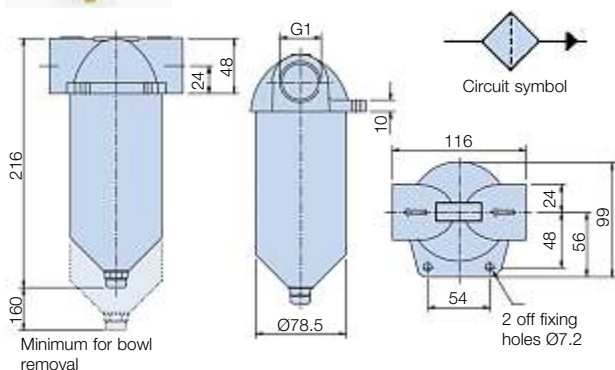
Bowl tightening torque:
12 Nm.

Flow direction:
From outside to inside.

Weight:
1.5 Kg.

*Alternative media can be specified.

Installation Details

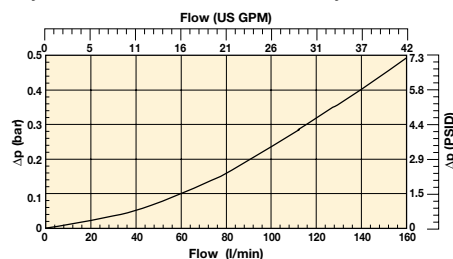


Filter Selection

Total assembly pressure drop flow curve

Oil Viscosity 30 cSt

Relative density 0.856



Ordering Information

Standard products table

Part number	Flow l/min	Thread BSP	Micron rating	Replacement element	Supersedes
IL1115	90	G1	125	EIL1115	E.IL.1115

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Non-Corrodible Inline Filter - Specification



Construction:
Housing and bowl moulded in polyester.

Element:
Stainless steel mesh.
125 micron*.

Max. flow:
120 l/min.

Max working pressure:
7 bar.

Thread:
G1.

*For alternative media consult Parker Filtration
Note: When using with water, protect from

freezing.

Working temperature:
-30°C to +80°C.
(+60°C water).

Seal:
Nitrile.

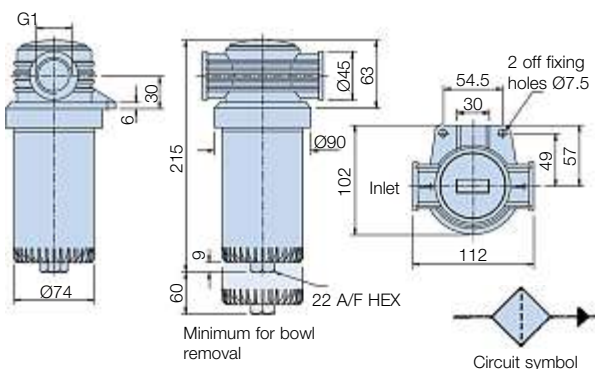
Bowl tightening torque:
12 Nm.

Bowl tightening note:
A box or ring spanner is recommended.

Flow direction:
From outside to inside.

Weight:
0.5 Kg.

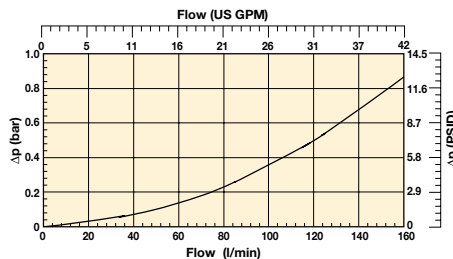
Installation Details



Total assembly pressure drop flow curve

Oil Viscosity 30 cSt

Relative density 0.856



Ordering Information

Standard products table

Part number	Supersedes	Thread BSP	Appliance	Micron rating	Weight	Replacement element
IL761151	IL.1151	1	Oil	125	0.5	R.76115
IL761251	IL.1251	1	Water	125	0.5	R.76125

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Drive Couplings

Technical Data



Materials

Coupling halves

Sintered Steel

Sleeve

Nylon 66

Max temp sleeve

83°C

To select coupling model check application to establish running load condition.

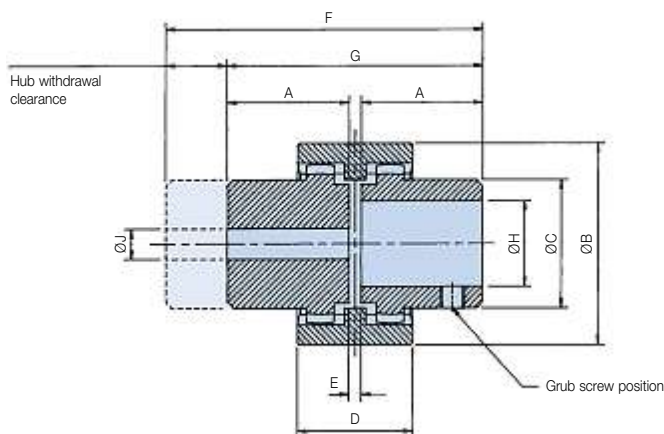
Check chart for factor (F) and apply factor (F) to *Rating of coupling formulae. This answer you now apply to *Rating/100 rev/min below.

It is advisable always to check shaft sizes being used on application and check with dimension 'H'.

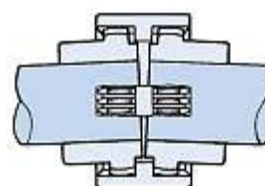
Application	Factor (F)	
	Electric motor	Petrol/diesel engine
Uniform load	1.00	1.20
Medium shock	1.25	1.50
Heavy shock	1.75	2.00

$$\text{*Rating of coupling} = \frac{\text{HP of application} \times 100 \times F}{\text{rev/min of application}}$$

Installation Details



Sectioned detail



Part number prefix	Max speed rev/min	*Rating/ 100 rev/min kW	hp	Weight	A mm	B mm	C mm	D mm	E mm	F mm	G mm	max bore	H-min bore	J pilot bore
DC28*	5000	0.75	1.00	0.4	40.0	66.0	44.5	38.0	4.0	104.0	84.0	28.0	10.0	7.0
DC42*	5000	1.32	1.75	0.75	42.0	90.0	60.0	42.0	4.0	115.0	88.0	42.0	14.0	10.5
DC55*	4000	6.00	8.00	2.05	59.0	125.0	83.0	65.0	4.0	158.0	122.0	55.0	19.0	16.0 min 38.1 max

Height of keyway from base of bore

	Metric	Imperial
Standard bore	BS 4500, (1985)	BS 1916, Part 1, (1985)
Standard keyway	BS 4325, Part 1 (1980)	BS 46, Part 1, (1985)

Assembly data

- Maximum angular misalignment is $\pm 2^\circ$. Maximum radial misalignment is ± 0.4 mm.
- Ensure that the Parker Filtration drive coupling gear hubs are an easy fit to their respective shafts. Do not use heavy blows to force the hubs on.
- When in position, the hubs should have a gap of 4mm as denoted by 'E' dimension.
- Tighten grub screws to locate both gear hubs on to their respective shafts.

Ordering Examples

Parker Filtration drive coupling components are ordered separately. Here are three examples of complete assemblies ordered this way.

- Complete assembly – **DC28M14B04K**
Made up of a **DC28M14**
DC28B04K
DC28.S (Sleeve)

Complete model **DC28** drive coupling: One gear hub has 14mm bore with 5mm wide keyway and other hub has a $\frac{1}{2}$ " bore with 0.125" wide keyway.

Both hubs supplied with locating grub screw.

- Complete assembly – **DCR42PBPB**
Made up of 2x **DCR42PB's**
DC42S (Sleeve)

Complete model **DC42** drive coupling: Both gear hubs have pilot bore of 10.5mm. Not supplied with grub screws.

- Complete assembly – **DCR55PBB12K**
Made up of a **DCR55PB**
DC55B12K
DC55S (Sleeve)

Complete model **DC55** drive coupling: One gear hub pilot bored $\frac{5}{8}$ ", the other hub pilot bored $1\frac{1}{2}$ ". Latter only supplied with grub screw.

Drive Couplings

Ordering Information

Model DC.28

Part number	Supersedes	Dimensions (mm)			Weight
		Ø Bore	Width	Height	
DC28M16	DC.28.M16	16.0mm	5.0mm	18.4mm	Range from 0.259Kg to 0.411Kg
DC28M19	DC.28.M19	19.0mm	6.0mm	21.9mm	
DC28M20	DC.28.M20	20.0mm	6.0mm	22.9mm	
DC28M22	DC.28.M22	22.0mm	6.0mm	24.9mm	
DC28M24	DC.28.M24	24.0mm	8.0mm	27.5mm	
DC28M25	DC.28.M25	25.0mm	8.0mm	28.5mm	
DC28M28	DC.28.M28	28.0mm	8.0mm	31.5mm	
DCR28PB	DCR.28.PB	N/A	8.0mm	N/A	
DC28S	DC.28.S	N/A	N/A	N/A	
DC28M10	DC.28.M10	10.0mm	3.0mm	11.5mm	
DC28M11	DC.28.M11	11.0mm	4.0mm	12.9mm	
DC28M14	DC.28.M14	14.0mm	5.0mm	16.4mm	
DC28M18	DC.28.M18	18.0mm	6.0mm	20.9mm	
DC28B03K	DC.28.B03K	$\frac{7}{16}$	0.125 ins	0.50 ins	
DC28B04K	DC.28.B04K	$\frac{1}{2}$	0.125 ins	0.57 ins	
DC28B05K	DC.28.B05K	$\frac{5}{8}$	0.188 ins	0.72 ins	
DC28B06K	DC.28.B06K	$\frac{3}{4}$	0.188 ins	0.84 ins	
DC28B07K	DC.28.B07K	$\frac{7}{8}$	0.250 ins	0.99 ins	
DC28B08K	DC.28.B08K	1	0.250 ins	1.12 ins	
DC28B09K	DC.28.B09K	$1\frac{1}{8}$	0.313 ins	1.24 ins	

Model DC.42

Part number	Supersedes	Dimensions (mm)			Weight
		Ø Bore	Width	Height	
DC42M25	DC.42.M25	25.0mm	8.0mm	28.5mm	Range from 0.436Kg to 0.753Kg
DC42M28	DC.42.M28	28.0mm	8.0mm	31.5mm	
DC42M30	DC.42.M30	30.0mm	8.0mm	33.5mm	
DC42M35	DC.42.M35	35.0mm	10.0mm	38.5mm	
DC42M38	DC.42.M38	38.0mm	10.0mm	41.5mm	
DC42M42	DC.42.M42	42.0mm	12.0mm	45.5mm	
DCR42PB	DCR.42.PB	N/A	12.0mm	N/A	
DC42S	DC.42.S	N/A	N/A	N/A	
DC42M18	DC.42.M18	18.0mm	6.0mm	20.9mm	
DC42M19	DC.42.M19	19.0mm	6.0mm	21.9mm	
DC42M20	DC.42.M20	20.0mm	6.0mm	22.9mm	
DC42M22	DC.42.M22	22.0mm	6.0mm	24.9mm	
DC42M24	DC.42.M24	24.0mm	8.0mm	27.5mm	
DC42M32	DC.42.M32	32.0mm	10.0mm	35.5mm	
DC42B05K	DC.42.B05K	$\frac{5}{8}$	0.188 ins	0.72 ins	
DC42B06K	DC.42.B06K	$\frac{3}{4}$	0.188 ins	0.84 ins	
DC42B07K	DC.42.B07K	$\frac{7}{8}$	0.250 ins	0.99 ins	
DC42B08K	DC.42.B08K	1	0.250 ins	1.12 ins	
DC42B09K	DC.42.B09K	$1\frac{1}{8}$	0.313 ins	1.24 ins	
DC42B10K	DC.42.B10K	$1\frac{1}{4}$	0.313 ins	1.37 ins	
DC42B11K	DC.42.B11K	$1\frac{3}{8}$	0.375 ins	1.49 ins	
DC42B12K	DC.42.B12K	$1\frac{1}{2}$	0.375 ins	1.61 ins	
DC42B13K	DC.42.B13K	$1\frac{5}{8}$	0.439 ins	1.76 ins	

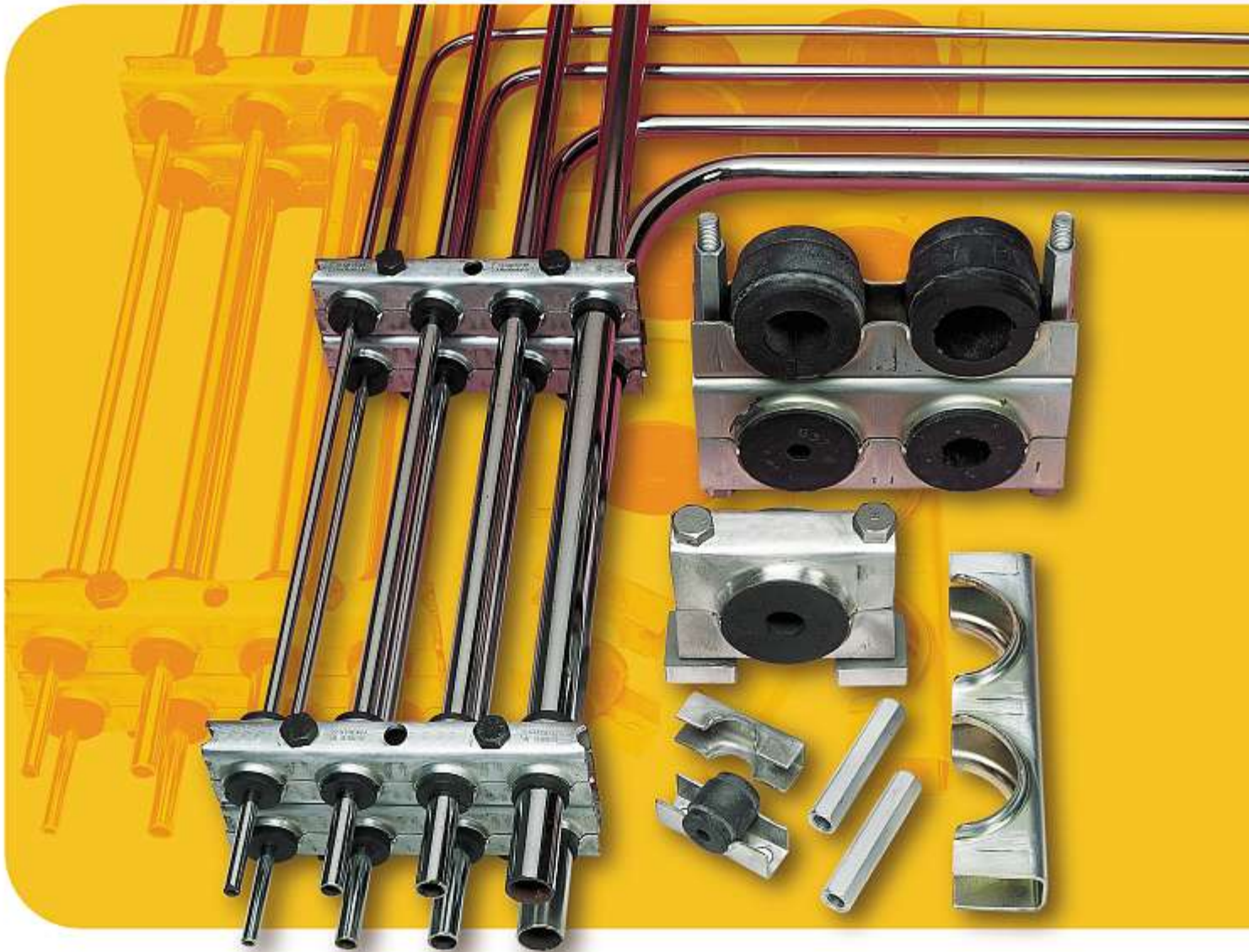
Model DC.55

Part number	Supersedes	Dimensions (mm)			Weight
		Ø Bore	Width	Height	
DCR55PB	DCR.55.PB	N/A	16.0mm	N/A	Range from 1.248 Kg – 2.046 Kg
DC55S	DC.55.S	N/A	N/A	N/A	
DC55M25	DC.55.M25	25.0mm	8.0mm	28.5mm	
DC55M28	DC.55.M28	28.0mm	8.0mm	33.5mm	
DC55M30	DC.55.M30	30.0mm	8.0mm	33.5mm	
DC55M32	DC.55.M32	32.0mm	10.0mm	35.5mm	
DC55M35	DC.55.M35	35.0mm	10.0mm	38.5mm	
DC55M38	DC.55.M38	38.0mm	10.0mm	41.5mm	
DC55M42	DC.55.M42	42.0mm	12.0mm	45.5mm	
DC55M55	DC.55.M55	55.0mm	16.0mm	59.5mm	
DC55B09K	DC.55.B09K	$1\frac{1}{8}$	0.313 ins	1.24 ins	
DC55B10K	DC.55.B10K	$1\frac{1}{4}$	0.313 ins	1.37 ins	
DC55B11K	DC.55.B11K	$1\frac{3}{8}$	0.375 ins	1.49 ins	
DC55B12K	DC.55.B12K	$1\frac{1}{2}$	0.375 ins	1.61 ins	
DC55B13K	DC.55.B13K	$1\frac{5}{8}$	0.439 ins	1.76 ins	
DC55B14K	DC.55.B14K	$1\frac{3}{4}$	0.439 ins	1.89 ins	
DC55B15K	DC.55.B15K	$1\frac{7}{8}$	0.501 ins	2.01 ins	
DC55B16K	DC.55.B16K	2	0.501 ins	2.13 ins	
DC55B17K	DC.55.B17K	$2\frac{1}{8}$	0.626 ins	2.31 ins	

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Multiclamp



Multiclamp



When only the best Clamping System will dospecify Multiclamp

Multiclamp is a system. A system of components, each one engineered to a high standard – that together build to provide effective, all-purpose pipework clamping. Multiclamp offers creative and cost-effective environmental benefits to the system designer and installer. Creating accurate runs of varying diameter tubes, pipes, hoses and cables in all industries.

Secure Multiclamp installations ensure a leak free, noise free and vibration free system.

The neat design of pipe line runs offers easy maintenance of machinery and plant equipment. Visual planning of line runs is straightforward with Multiclamp – accurate installations can be achieved without skilled labour – keeping costs down and quality up.

Planning with Multiclamp

These notes have been compiled to assist in planning your Multiclamp system.

Multiclamp offers considerable flexibility. For example, it can fit in with a factory installation that is being built in phases.

Should a last minute change in pipe diameter occur during installation, an alternative rubber bush is likely to be all that is required. Not a complete and expensive re-think of the installation.

Multiclamp metal components can be sprayed to match a vehicle livery or plant installation and, if installed properly, should require no maintenance.

Installation is simple and requires no experience

Anyone can use Multiclamp and only the basic, everyday tools are required.

From one pipe to almost any number – because each Multiclamp 'position' can be visually sighted and its position adjusted – an almost guaranteed straight run can be obtained. Equally, changes of plane or direction can be achieved simply and securely.

Group pipe sizes together to obtain the most economical use of three basic Multiclamp Series.

Some sites will require all pipes mounted in one single plane – either vertical or horizontal.

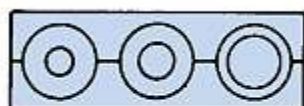
When stacked modules are preferred, the only work to be done on the Multiclamp is to saw off the desired length.

If a large number of pipe lines are to be run, it is recommended that the upper clamping unit is simply cut into two lines only, and progressively assembled by securing two pipes at a time. It will be recognised that most odd lengths on site will be used, and one man can easily cope with a large number of pipe lines by this simple progressive build up. This assembly will provide easy access for servicing and replacing pipes. This method also reduces the quantity of Stacking Nuts and Studs by 50%.

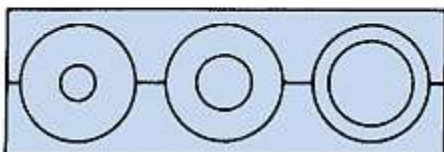
If a factory installation is being built in phases, it would be wise to leave the first phase with a lower clamping unit and Stacking Nuts in position ready to receive pipe runs for the next building phase.



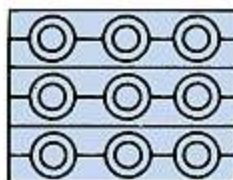
Series 10
6.0mm-20.0mm
(1/4"-3/4")



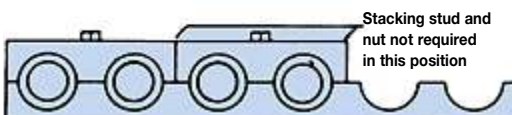
Series 16
6.0mm-28.0mm
(1/4"-1")



Series 32
10.0mm-50.0mm
(3/8"-2")



Stacked modules or single module

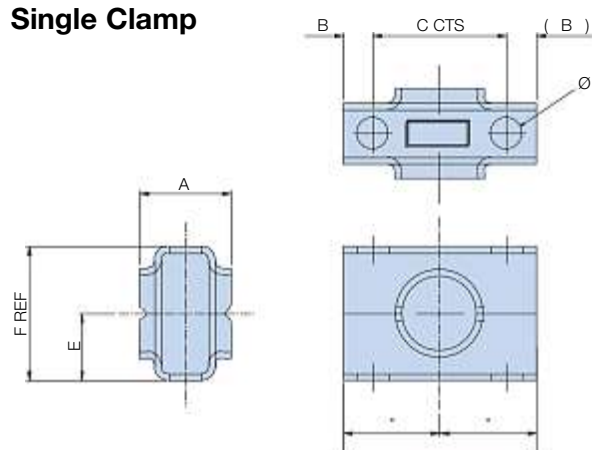


Your maximum pipe size will determine the series to use. There is a degree of versatility provided by the rubber bushes. You choose from single or multistacked Multiclamp, whichever suits your particular installation requirements.

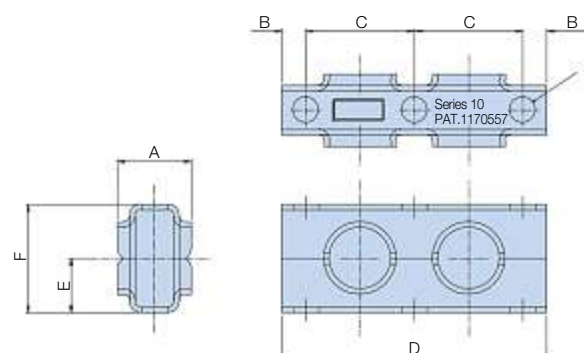
Specification

Dimension details supplied in product configurator

Single Clamp

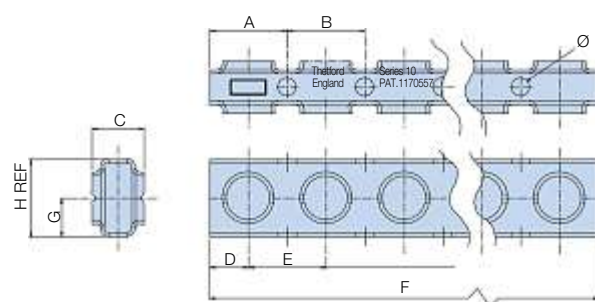


Double Clamp



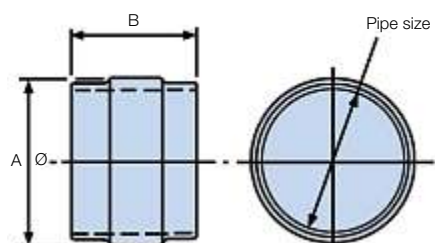
Multiclamp – 12 or 16 holes

1 set of clamping units = 1 pair



Split Bushes

Split bushes are ordered in sets only
i.e. 1 set of bushes = 10 bushes of one size



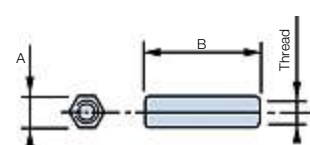
Material Specifications

Zinc plated steel with anti-corrosive, full passivate. Multiclamp can also be multi-stacked using stacking studs and nuts. Series 10 and 16 clamp is supplied in lengths of 603mm and Series 32 in lengths of 1206mm. These can be simply cut to the required lengths for installation.

Note: For stainless steel version please consult Parker.

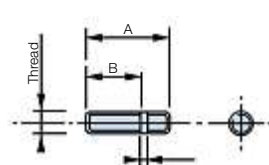
Series 10 will accept pipe or hose diameters from 6mm up to 20mm maximum. Series 16 from 6mm up to 28mm and Series 32 from 10mm up to 50mm. Across the 3 Series, there are 26 different high-quality split rubber bushes to select from to cope with any combination and number of different pipe and hose diameters in the same run.

Stacking Nuts



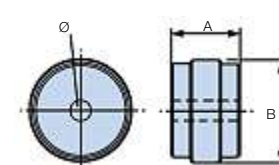
Stacking nuts are ordered in sets only.
i.e. 1 set of stacking nuts
= 50 stacking nuts of one size.

Stacking Studs



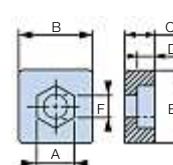
Stacking studs are ordered in sets only.
i.e. 1 set of stacking studs
= 50 stacking studs of one size.

Mounting Adaptors



Mounting adaptors are not ordered in sets.
i.e. 1 off mounting adaptors
= 1 single piece.

Weld Plate



Weld plates are ordered in sets only.
i.e. 1 set of weld plates
= 10 weld plates.

Multiclamp

Ordering Information - Series 10

Product configurator

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)									Thread	Pack weight
				A	B	C	D	E	F	G	H	Ø		
MC101	MC.10.1	Single clamp	10 pairs	25.0	8.5	38.1	55.0	19.0	38.0			9.0		0.60 Kg
MC102	MC.10.2	Double clamp	10 pairs	25.0	8.5	38.1	93.0	19.0	38.0			9.0		1.00 Kg
MC1016	MC.10.16	16 bay clamp	1 pair	34.0	38.1	25.0	15.0	38.1	601.5	19.0	38.0	9.0		0.80 Kg
MCN10	MC.N.10	Stacking nut	50	11.0	33.0								M8 x 1.25	0.80 Kg
MCS10	MC.S.10	Stacking stud	50	32.0	21.0	2.6							M8 x 1.25	0.50 Kg
MCWP10	MC.WP.10	Weld plate	10	13.3	25.0	10.0	6.3	25.0	8.5					0.35 Kg
MCSB10	MC.SB.10	Standard bolt	50										M8 x 1.25	0.55 Kg
MCB10MO	MC.B.10.MO	Mounting adaptor	1	27.0	25.0							8.7		0.02 Kg

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)		Pipe size		Pack weight
				A	B	(mm)	OD	
MCG105	MC.G.10.5	Split bush	10	25.5	27.0	8	5/16	0.13 Kg
MCG106	MC.G.10.6	Split bush	10	25.5	27.0	10	3/8	0.12 Kg
MCG108	MC.G.10.8	Split bush	10	25.5	27.0	12-14	1/2	0.12 Kg
MCG1010	MC.G.10.10	Split bush	10	25.5	27.0	15-16	5/8	0.10 Kg
MCG1012	MC.G.10.12	Split bush	10	25.5	27.0	18-20	3/4	0.90 Kg
MCG104	MC.G.10.4	Split bush	10	25.5	27.0	6	1/4	0.13 Kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Ordering Information - Series 16

Product configurator

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)									Thread	Pack weight
				A	B	C	D	E	F	G	H	Ø		
MC161	MC.16.1	Single clamp	10 pairs	25.0	7.0	50.8	65.0	23.8	47.6			9.0		0.80 Kg
MC162	MC.16.2	Double clamp	10 pairs	25.0	7.0	50.8	116.0	23.8	47.6			9.0		1.60 Kg
MC1612	MC.16.12	12 bay clamp	1 pair	47.0	50.8	25.0	21.0	50.8	608.8	25.0	51.0	9.0		1.00 Kg
MCN16	MC.N.16	Stacking nut	50	11.0	44.0								M8 x 1.25	1.06 Kg
MCS10	MC.S.10	Stacking stud	50	32.0	21.0	2.6							M8 x 1.25	0.50 Kg
MCWP10	MC.WP.10	Weld plate	10	13.3	25.0	10.0	6.3	25.0	8.5					0.35 Kg
MCSB10	MC.SB.10	Standard bolt	50										M8 x 1.25	0.55 Kg
MCB16MO	MC.B.16.MO	Mounting adaptor	1	27.0	36.0							8.7		0.06 Kg

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)		Pipe size		Pack weight
				A	B	(mm)	OD	
MCG165	MC.G.16.5	Split bush	10	35.4	27.0	8	5/16	0.28 Kg
MCG166	MC.G.16.6	Split bush	10	35.4	27.0	10	3/8	0.28 Kg
MCG168	MC.G.16.8	Split bush	10	35.4	27.0	12-14	1/2	0.26 Kg
MCG1610	MC.G.16.10	Split bush	10	35.4	27.0	15-16	5/8	0.22 Kg
MCG1612	MC.G.16.12	Split bush	10	35.4	27.0	18-20	3/4	0.20 Kg
MCG1614	MC.G.16.14	Split bush	10	35.4	27.0	22.0	7/8	0.18 Kg
MCG1616	MC.G.16.16	Split bush	10	35.4	27.0	25.0	1	0.14 Kg
MCG1618	MC.G.16.18	Split bush	10	35.4	27.0	28.0		0.16 Kg
MCG164	MC.G.16.4	Split bush	10	35.4	27.0	6	1/4	0.28 Kg

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Ordering Information - Series 32

Product configurator

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)								Thread	Pack weight
				A	B	C	D	E	F	G	H	Ø	
MC321	MC.32.1	Single clamp	10 pairs	40.0	9.4	76.2	95.0	38.0	76.2			11.1	2.25 Kg
MC322	MC.32.2	Double clamp	10 pairs	41.0	9.4	76.2	171.0	38.0	76.2			11.1	3.82 Kg
MC3216	MC.32.16	16 bay clamp	1 pair	72.0	76.2	40.0	34.0	76.2	1211.0	38.5	77.0	11.0	3.80 Kg
MCN32	MC.N.32	Stacking nut	50	13.0	71.5							M10 x 1.5	1.99 Kg
MCS32	MC.S.32	Stacking stud	50	38.0	22.0	4.0						M10 x 1.5	0.90 Kg
MCWP32	MC.WP.32	Weld plate	10	17.5	32.0	12.0	8.0	32.0	11.0				0.70 Kg
MCSB32	MC.SB.32	Standard bolt	50									M10 x 1.5	1.30 Kg
MCB32MO	MC.B.32.MO	Mounting adaptor	1	40.0	58.0							10.7	0.26 Kg

Part number	Supersedes	Description	Pack quantity	Dimensions (mm)		Pipe size		Pack weight
				A	B	(mm)	OD	
MCG3210	MC.G.32.10	Split bush	10	59.0	44.5	15-16	5/8	1.10 Kg
MCG3212	MC.G.32.12	Split bush	10	59.0	44.5	18-20	3/4	1.10 Kg
MCG3216	MC.G.32.16	Split bush	10	59.0	44.5	25	1	1.00 Kg
MCG3218	MC.G.32.18	Split bush	10	59.0	44.5	28-30		1.00 Kg
MCG3220	MC.G.32.20	Split bush	10	59.0	44.5	32-34	1 1/4	0.80 Kg
MCG3224	MC.G.32.24	Split bush	10	59.0	44.5	35-38	1 1/4	0.80 Kg
MCG3232	MC.G.32.32	Split bush	10	59.0	44.5	50	2	0.40 Kg
MCG326	MC.G.32.6	Split bush	10	59.0	44.5	10	3/8	1.30 Kg
MCG328	MC.G.32.8	Split bush	10	59.0	44.5	12-14	1/2	1.20 Kg
MCG3214	MC.G.32.14	Split bush	10	59.0	44.5	22	7/8	1.00 Kg
MCG3226	MC.G.32.26	Split bush	10	59.0	44.5	42		0.60 Kg

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Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

How to 'build' Multiclamp



Inline Check Valves

Specification



Construction:
Steel UNI 5105.

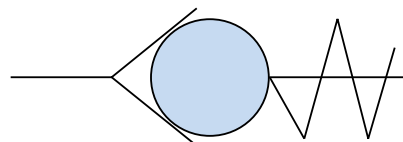
Ball and spring:
Chrome finished steel.

Retainer:
Nylon.

Flow rates:
From 20 l/min to 150 l/min.

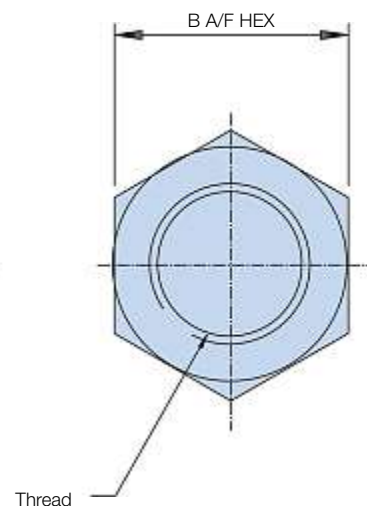
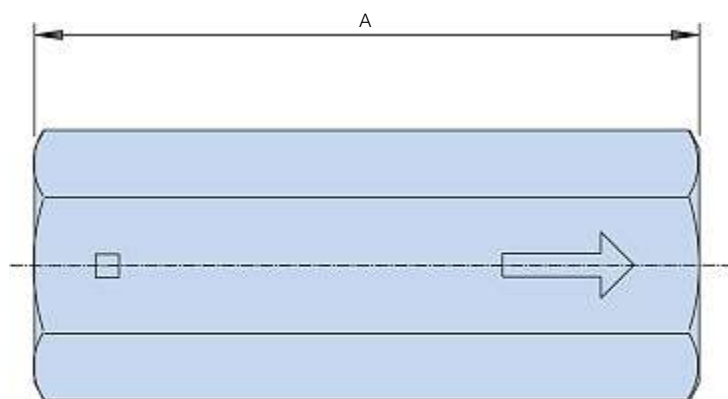
Max. working pressure:
350 bar.

Valve crack pressures:
0.35 and 4.5 bar.



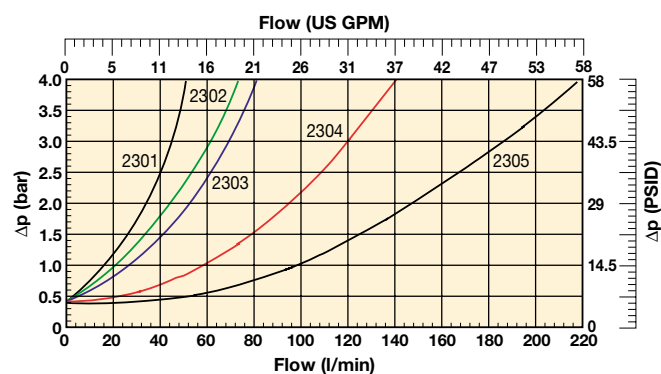
Circuit symbol

Installation Details



Technical Data

Pressure Drop Flow Curves



Ordering Information

Standard products table

Part number	Flow l/min	Cracking pressure bar	Thread G	A mm	B mm	Weight Kg
2301	20	0.35	1/4	54	19	0.09
2302	30	0.35	3/8	66	24	0.17
2303	50	0.35	1/2	77	30	0.32
2304	100	0.35	3/4	88	36	0.48
2305	150	0.35	1	108	46	0.99
2311	20	4.50	1/4	54	19	0.09
2312	30	4.50	3/8	65	24	0.17
2313	50	4.50	1/2	77	30	0.32
2314	100	4.50	3/4	88	36	0.48
2315	150	4.50	1	108	46	0.99

Single Station Gauge Isolator Valves

Specification



Construction:

Single Station: Cast iron and steel. Knurled aluminium knob with 'Twist to lock' or 'push to read' type.

Max. working pressure:

350 bar.

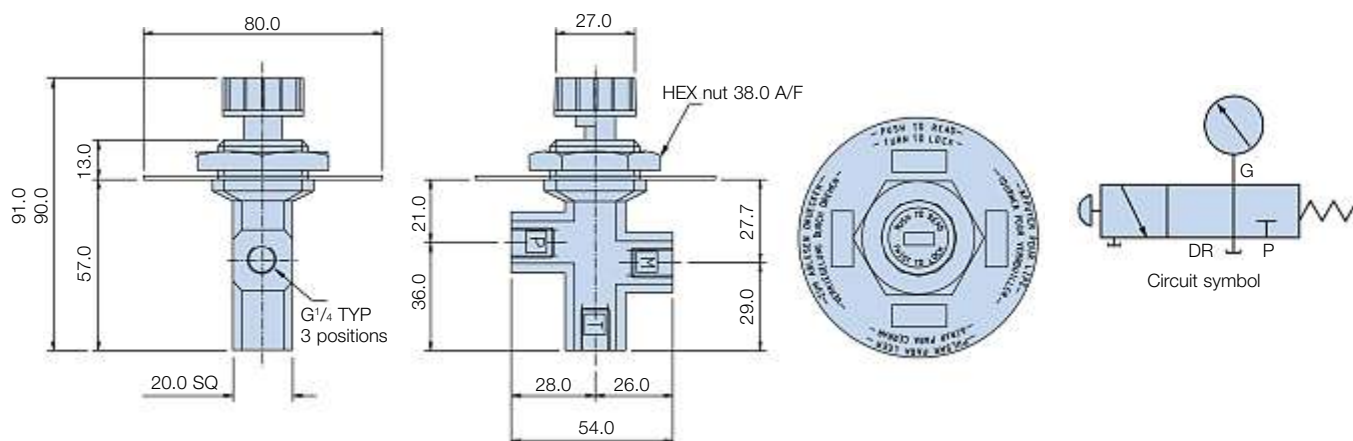
Port size:

Single Station: G¹/₄.

Weight:

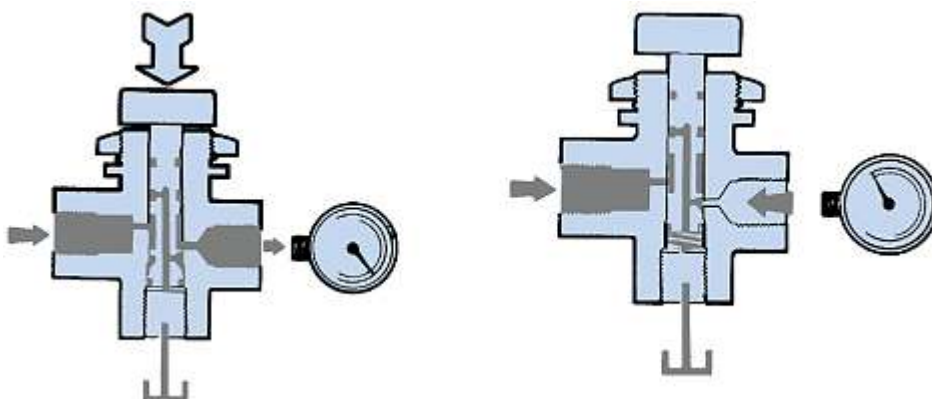
Single Station: 0.90 Kg.

Single Station Installation Details



Operation Details

Single Station



Ordering Information

Standard products table

Part number	Description	Weight
GI1486	Single station gauge isolator "twist to lock" type	0.90 Kg
GI1414	Single station gauge isolator "push to read" type	0.90 Kg

63mm Dia. Pressure Gauges

Specification



Construction:

Case: Natural finish stainless steel.

Window: Non-splintering clear acrylic glass.

Movement: Cu alloy.

Dial: White plastic, with pointer stop pin.

Pointer: Black plastic.

Liquid filling:

Glycerine 99.7%.

Working pressure:

Max 75% of the full scale value.

Process temperature:

+ 60°C maximum.

Accuracy:

1.6% FSD.

Wetted parts connector:

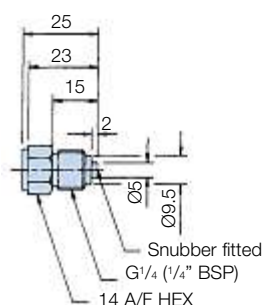
Copper alloy.

Bourdon tube:

< 60 bar = Cu alloy, C-type, soft soldered.

> 60 bar = Cu alloy, helical type, soft soldered.

Mounting Stem Detail



Note: It is recommended that all glycerine gauges should be mounted in the vertical position with gauge case relief valve uppermost. Pressure range up to 1000 bar available.

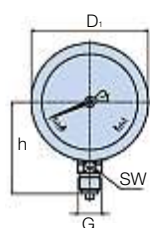
Ordering Information

Bottom Connection

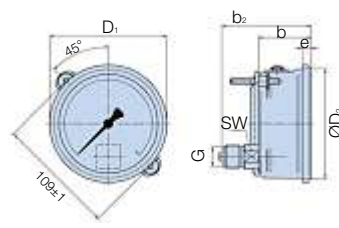
Part number	Supersedes	Pressure range	Connector type
PGB0631010	PGC.0631.010	0-10 bar	G $\frac{1}{4}$ Bottom
PGB0631016	PGC.0631.016	0-16 bar	G $\frac{1}{4}$ Bottom
PGB0631025	PGC.0631.025	0-25 bar	G $\frac{1}{4}$ Bottom
PGB0631040	PGC.0631.040	0-40 bar	G $\frac{1}{4}$ Bottom
PGB0631060	PGC.0631.060	0-60 bar	G $\frac{1}{4}$ Bottom
PGB0631100	PGC.0631.100	0-100 bar	G $\frac{1}{4}$ Bottom
PGB0631160	PGC.0631.160	0-160 bar	G $\frac{1}{4}$ Bottom
PGB0631250	PGC.0631.250	0-250 bar	G $\frac{1}{4}$ Bottom
PGB0631400	PGC.0631.400	0-400 bar	G $\frac{1}{4}$ Bottom
PGB0631600	PGC.0631.600	0-600 bar	G $\frac{1}{4}$ Bottom
PGB0631004	PGC.0631.004	0-4 bar	G $\frac{1}{4}$ Bottom

Installation Details

Bottom Connection



Panel Mounting (Lower Back)



Dimensions (mm)

a	b	D ₁	D ₂	e	G	h	SW	Weight Kg
13	32 ±0.5	68	62	6.5	G $\frac{1}{4}$	54 ±1	14	0.21

Bottom Connection

Dimensions (mm)

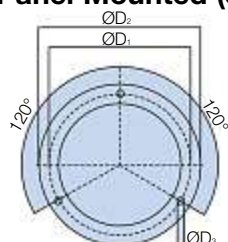
b	b ₂	D ₁	D ₂	e	G	SW	Weight Kg
32 ±0.5	56 ±1	68	62	6.5	G $\frac{1}{4}$	14	0.21

Panel Mounting (Lower Back)

Note 1: Panel cut-out 64.5 ±0.5

Note 2: 13mm on the outside radius required to allow for fixing clamp.

Panel Mounted (3-hole flange)



Note 1: Gauge dimensions as for panel mounting option above with flange as shown below.

Note 2: Panel cut-out for 3-hole mounting 67±0.3.

Dimensions (mm)

D1	D2	D3
75	85	3.6

Panel Mounting

Part number	Supersedes	Pressure range	Connector type
PGC0631010	PGC.0631.010	0-10 bar	G $\frac{1}{4}$ Panel
PGC0631016	PGC.0631.016	0-16 bar	G $\frac{1}{4}$ Panel
PGC0631025	PGC.0631.025	0-25 bar	G $\frac{1}{4}$ Panel
PGC0631040	PGC.0631.040	0-40 bar	G $\frac{1}{4}$ Panel
PGC0631060	PGC.0631.060	0-60 bar	G $\frac{1}{4}$ Panel
PGC0631100	PGC.0631.100	0-100 bar	G $\frac{1}{4}$ Panel
PGC0631160	PGC.0631.160	0-160 bar	G $\frac{1}{4}$ Panel
PGC0631250	PGC.0631.250	0-250 bar	G $\frac{1}{4}$ Panel
PGC0631400	PGC.0631.400	0-400 bar	G $\frac{1}{4}$ Panel
PGC0631004	PGC.0631.004	0-4 bar	G $\frac{1}{4}$ Panel
PGC0631600	PGC.0631.600	0-600 bar	G $\frac{1}{4}$ Panel

Panel Mounted (3-hole flange)

Part number	Supersedes	Pressure range	Connector type
PGF0631060	PGF.0631.060	0-60 bar	G $\frac{1}{4}$ Panel Flange
PGF0631100	PGF.0631.100	0-100 bar	G $\frac{1}{4}$ Panel Flange
PGF0631160	PGF.0631.160	0-160 bar	G $\frac{1}{4}$ Panel Flange
PGF0631250	PGF.0631.250	0-250 bar	G $\frac{1}{4}$ Panel Flange
PGF0631400	PGF.0631.400	0-400 bar	G $\frac{1}{4}$ Panel Flange
PGF0631004	PGF.0631.004	0-4 bar	G $\frac{1}{4}$ Panel Flange
PGF0631010	PGF.0631.010	0-10 bar	G $\frac{1}{4}$ Panel Flange
PGF0631016	PGF.0631.016	0-16 bar	G $\frac{1}{4}$ Panel Flange
PGF0631025	PGF.0631.025	0-25 bar	G $\frac{1}{4}$ Panel Flange
PGF0631040	PGF.0631.040	0-40 bar	G $\frac{1}{4}$ Panel Flange
PGF0631600	PGF.0631.600	0-600 bar	G $\frac{1}{4}$ Panel Flange

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

*Note 3: Any subsequent changes to gauge accuracy will be notified.

100mm Dia. Pressure Gauges

Specification



Construction:

Case: BS 304 S15 stainless steel.
Window: Acrylic.
Movement: Brass.
Dial: White aluminium.
Pointer: Black aluminium.

Liquid filling:

Glycerine 98%.

Working pressure:

Full scale value.

Process temperature:

+ 60°C maximum.

Accuracy:

1.0% FSD.

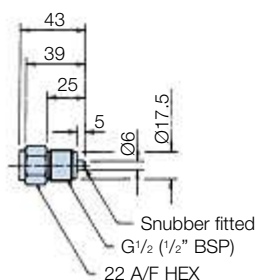
Wetted parts connector:

Copper alloy.

Bourdon tube:

< 100 bar = Cu alloy, c-type, soft soldered.
> 100 bar = stainless steel 1.4571, helical type, brazed.

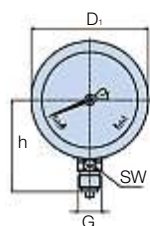
Mounting Stem Detail



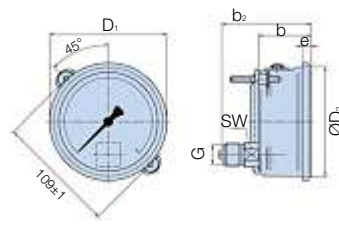
Note: It is recommended that all glycerine gauges should be mounted in the vertical position with gauge case relief valve uppermost.

Installation Details

Bottom Connection



Panel Mounting (Lower Back)



Dimensions (mm)

a	b ±0.5	D1	D2	e	G	h ±1	SW	Weight Kg
15.5	48	107	100	8	G ¹ / ₂	87	22	0.80

Bottom Connection

Dimensions (mm)

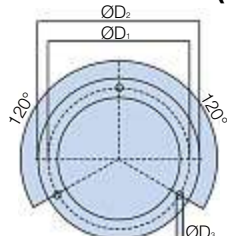
b ±0.5	b2 ±1	D1	D2	e	G	SW	Weight Kg
48	81.5	107	100	8	G ¹ / ₂	22	0.80

Panel Mounting (Lower Back)

Note 1: Panel cut-out 102 ±1.0

Note 2: 13mm on the outside radius required to allow for fixing clamp.

Panel Mounted (3-hole flange)



Note 1: Gauge dimensions as for panel mounting option above with flange as shown below.
Note 2: Panel cut-out for 3-hole mounting 104±0.5.

Dimensions (mm)

D1	D2	D3
116	132	4.8

Ordering Information

Bottom Connection

Part number	Supersedes	Pressure range	Connector type
PGB1001250	PGB.1001.250	0-250 bar	G ¹ / ₂ Bottom
PGB1001400	PGB.1001.400	0-400 bar	G ¹ / ₂ Bottom
PGB1001010	PGB.1001.010	0-10 bar	G ¹ / ₂ Bottom
PGB1001016	PGB.1001.016	0-16 bar	G ¹ / ₂ Bottom
PGB1001025	PGB.1001.025	0-25 bar	G ¹ / ₂ Bottom
PGB1001040	PGB.1001.040	0-40 bar	G ¹ / ₂ Bottom
PGB1001060	PGB.1001.060	0-60 bar	G ¹ / ₂ Bottom
PGB1001100	PGB.1001.100	0-100 bar	G ¹ / ₂ Bottom
PGB1001160	PGB.1001.160	0-160 bar	G ¹ / ₂ Bottom
PGB1001600	PGB.1001.600	0-600 bar	G ¹ / ₂ Bottom
PGB10011000	PGB.1001.1000	0-1000 bar	G ¹ / ₂ Bottom

Panel Mounting

Part number	Supersedes	Pressure range	Connector type
PGE1001010	PGE.1001.010	0-10 bar	G ¹ / ₂ Panel
PGE1001016	PGE.1001.016	0-16 bar	G ¹ / ₂ Panel
PGE1001025	PGE.1001.025	0-25 bar	G ¹ / ₂ Panel
PGE1001040	PGE.1001.040	0-40 bar	G ¹ / ₂ Panel
PGE1001060	PGE.1001.060	0-60 bar	G ¹ / ₂ Panel
PGE1001100	PGE.1001.100	0-100 bar	G ¹ / ₂ Panel
PGE1001160	PGE.1001.160	0-160 bar	G ¹ / ₂ Panel
PGE1001250	PGE.1001.250	0-250 bar	G ¹ / ₂ Panel
PGE1001400	PGE.1001.400	0-400 bar	G ¹ / ₂ Panel
PGE1001600	PGE.1001.600	0-600 bar	G ¹ / ₂ Panel
PGE10011000	PGE.1001.1000	0-1000 bar	G ¹ / ₂ Panel

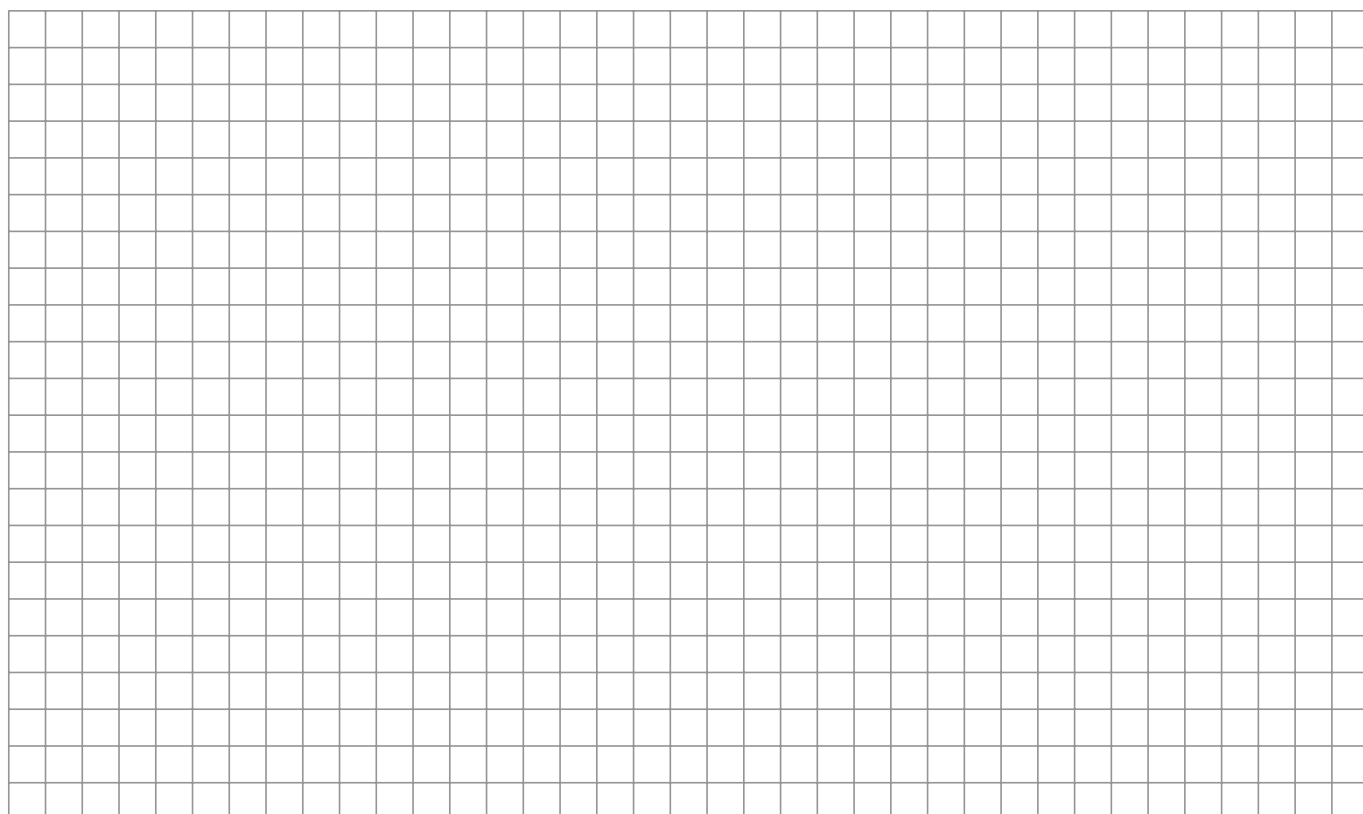
Panel Mounted (3-hole flange)

Part number	Supersedes	Pressure range	Connector type
PG.1001250	PGF.1001.250	0-250 bar	G ¹ / ₂ Panel Flange
PGF1001400	PGF.1001.400	0-400 bar	G ¹ / ₂ Panel Flange
PGF1001010	PGF.1001.010	0-10 bar	G ¹ / ₂ Panel Flange
PGF1001016	PGF.1001.016	0-16 bar	G ¹ / ₂ Panel Flange
PGF1001025	PGF.1001.025	0-25 bar	G ¹ / ₂ Panel Flange
PGF1001040	PGF.1001.040	0-40 bar	G ¹ / ₂ Panel Flange
PGF1001060	PGF.1001.060	0-60 bar	G ¹ / ₂ Panel Flange
PGF1001100	PGF.1001.100	0-100 bar	G ¹ / ₂ Panel Flange
PGF1001160	PGF.1001.160	0-160 bar	G ¹ / ₂ Panel Flange
PGF1001600	PGF.1001.600	0-600 bar	G ¹ / ₂ Panel Flange
PGF10011000	PGF.1001.1000	0-1000 bar	G ¹ / ₂ Panel Flange

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

*Note 3: Any subsequent changes to gauge accuracy will be notified.

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Portable Particle Counter

LaserCM

Fluid Condition Monitoring



LaserCM

Features & Benefits

Test time:	2 minutes
Particle counts:	2+, 5+, 15+, 25+, 50+ and 100+ microns 4+, 6+, 14+, 21+, 38+ and 70+ microns(c)
International codes:	ISO 7-22, NAS 0-12
Data retrieval:	Memory access gives test search facility
Max. working pressure:	420 bar
Max. flow rate:	400 l/min when used with system 20 Sensors. Higher with single point sampler (consult Parker)
Working conditions:	LaserCM will operate with the system working normally
Computer compatibility:	Interface via RS232 connection @ 9600 baud rate.

- Special 'diagnostics' are incorporated into the LaserCM microprocessor control to ensure effective testing.
- Routine contamination monitoring of oil systems with LaserCM saves time and saves money.
- Contamination monitoring is now possible while machinery is working - LaserCM saves on production downtime.

- Data entry allows individual equipment test log details to be recorded.
- Data retrieval of test results from memory via hand set display.
- Automatic test cycle logging of up to 300 tests can be selected via hand set display.
- Totally portable, can be used as easily in the field as in the laboratory.
- Automatic calibration reminder.
- Instant, accurate results achieved with a 2 minute test cycle.
- Data entry allows individual equipment footprint record.
- Data graphing selectable via the integral printer.
- Auto 300-test cycle logging via LCD handset input.
- RS232 serial port computer interface.
- Limit level output to control peripheral equipment such as off-line filtration via internal relay limit switches.
- Auto-testing allows for the conducting of automatic sequencing tests on flushing systems for example.
- Optional bar code swipe wand to allow handset data loading.
- Worldwide service and technical support.
- Re-calibration - Annual certification by an approved Parker Service Centre.

Typical Applications

- Construction machinery
- Industrial plant
- Hydraulic equipment & system manufacturers
- Research & testing institutes
- Offshore & power generation
- Marine
- Military equipment applications

Parker LaserCM Portable Particle Counter.

With 15 years experience in manufacturing the world's best selling 'white light' portable particle counter – CM20, the progression to the LaserCM with its opto-mechanical, continuous wave single point source laser (SPSL) is both a natural and customer driven development.



Specification

Automatic Particle Counters (APC's), have been widely used for many years in condition monitoring of hydraulic fluids. However, it is only recently that APC's have become flexible enough to enable the instruments to be taken out of the laboratory and used on-line in order to obtain the most credible form of results.

Unusually, the move from fixed laboratory use, to portable field use has not been at the expense of accuracy or user flexibility, but has actually enabled the instruments to be used over a wider range of applications and situations.

The most common monitoring technique used in APC's is that of light obscuration or light blockage. Here, a focused light source is projected through a moving column of oil, (in which the contaminants being measured are contained), causing an image of the contaminant to be projected on to a photo diode cell, (changing light intensity to an electrical output).

The electrical output of the photo diode cell will vary in accordance with the size of the particles contained in the column of oil; the larger the particle, the bigger the change in the photo diode electrical output.

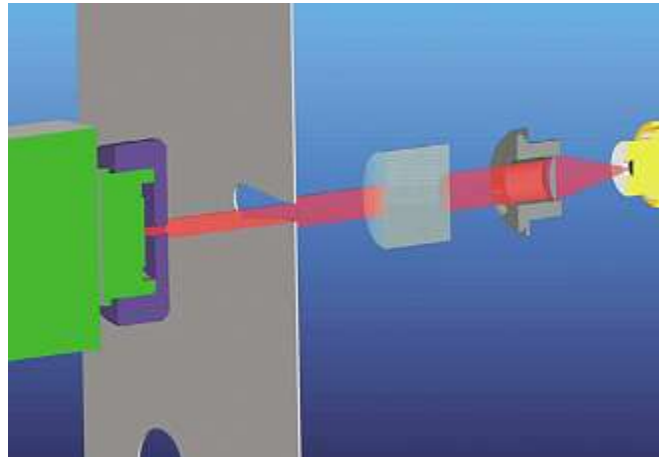
On-line APC's must be able to test the oil sample at whatever cleanliness it is delivered to the machine. Parker therefore had to develop technology to ensure the on-line APC was able to test a sample without the conventional laboratory technique which requires dilution - a practice that would have been simply impossible with a portable unit.

By careful design and window sizing, gravimetric levels as high as 310mg of dirt per litre, (equivalent to up to 4 million particles >5 micron per 100 ml), can be achieved without making the instrument susceptible to counter saturation.

These high saturation point on-line APC's, whilst losing none of the accuracy of their laboratory counterparts, enable particle counting to be carried out quickly and accurately.



A focused light source is projected through a moving column of oil.



Laser Optical Sensing

Core technology that proves itself in LaserCM

The LaserCM portable particle counter features microprocessor controlled optical scanning for accurate contaminant measurement with a calibration range from ISO 7 to ISO 22 with no counter saturation.

How does LaserCM work?

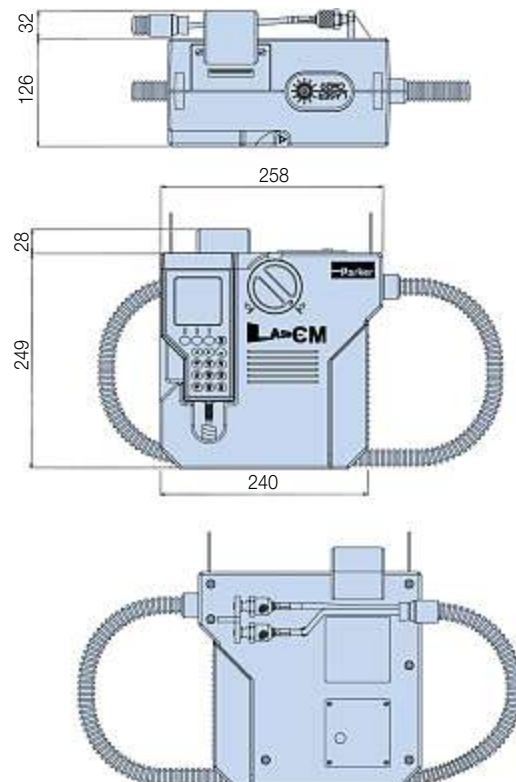
- The particles are measured by a photo diode that converts light intensity to a voltage output which is recorded against time.
- As the particle moves across the window the amount of light lost is proportional to the size of the particle. This reduction in voltage is measured and recorded.
- This “voltage” lost relates directly to the area of the particle measured, is changed into a “positive” voltage and then in turn changed into a capacitance value.
- This value is counted and stored in the LaserCM computer in one of 6 channels, >2, >5, >15, >25, >50 and >100µ according to particle size.
- Readouts are displayed on the hand-held LCD in the accepted ISO and NAS standards ready for hard copy printing or RS232 computer download.
- The on-board computer allows storage of up to 300 test results.

LaserCM

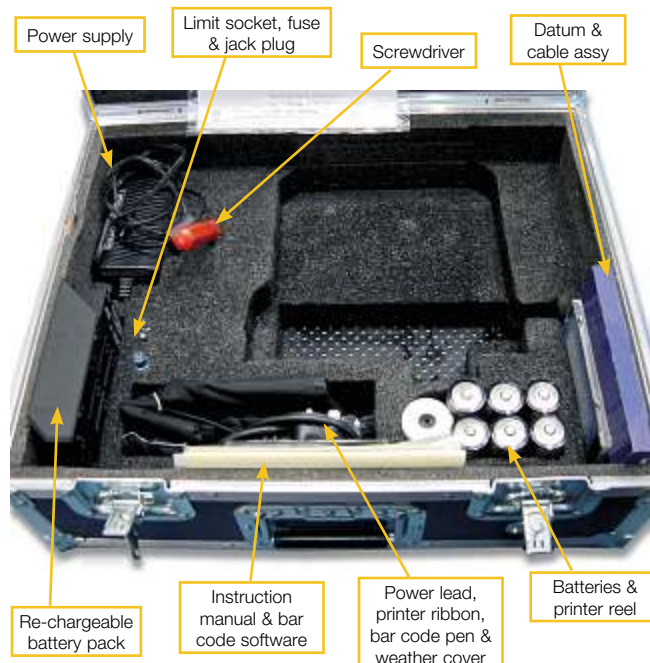
Specification

Description	LaserCM (LCM20.2021)	LaserCM (LCM20.2061)
Lexan, structural foam and ABS case	•	•
ABS handheld display	•	•
Mechanical composition – Brass, plated steel, stainless steel and aluminium	•	•
Fluorocarbon seals	•	•
Perfluoroelastomer seals	•	•
Nylon hoses (kevlar braided microbore)	•	•
Stainless steel armoured hose ends	•	•
1.2m fluid connection hose	•	•
System 20 sensors. Higher with single point sampler	•	•
Rechargeable battery pack	•	•
12Vdc power supply	•	•
Fast blow fuse	•	•
Unique optical scanning system	•	•
Bonded glass optical window enclosed in SS plate	•	•
Micron channels analysis (2+,5+,15+,25+,50+ & 100+)	•	•
Analysis range ISO 7 to 22 incl. (NAS 0 to 12)	•	•
32 character dot matrix LCD. Alpha numeric keypad	•	•
Data retrieval	•	•
Calibration to ISO standards*	•	•
Viscosity range 2 to 100 cSt. 500 cSt.with SPS	•	•
Operating temp.+5 to +80°C	•	•
Ambient temp.+5 to +40°C	•	•
2 minute test completion time	•	•
Memory store – 300 test memory	•	•
12Vdc regulated power supply input	•	•
Battery operated 6 x 1.5 D cells	•	•
Phosphate Ester group compatibility	•	•
Mineral oil & petroleum based fluid compatibility	•	•
Up to 420 bar (6000 psi)	•	•
Integral 16 column printer	•	•
RS232 computer interface	•	•
Astra board case weight – (Kg)	5	5
Unit weight – (Kg)	8	8
DATUM software and cable link pack	•	•
Weather protector cover	•	•
CE certified	•	•
Auto logging	•	•

*Note: In compliance with international standards, all Parker portable particle counters can meet the ISO Medium test dust standards. The LaserCM's, in addition to the complete range of Condition Monitoring products, are capable of achieving certification to ISO 4406:1999 and with traceability to ISO 11171 for SRM 2806, via ISO 11943.



Commissioning Kit



Operation

Switch On



Operating the Parker LaserCM is as simple as pressing the start button and turning the dial. The test procedure is automatic and in the case of the LaserCM takes no more than 2 minutes to complete.

LaserCM makes the difference in industry

Fully accredited to BS EN 60825:1992 and IEC 60825-1 (safety of laser products) Standards, accredited to USA Standards and achieving full ISO certification. LaserCM offers users advanced laser technology, a fast, dynamic and on-line 2 minute system test cycle. A LaserCM Aggressive Fluids model is also available, suitable for monitoring corrosive fluids such as phosphate ester based lubricants used in commercial aviation.

MTD calibration

Laser CM20 MTD Calibration variants are certified via a primary ISO 11171 calibrated automatic particle counter. All MTD Laser CM20's achieve ISO 4406:1999 criteria, via ISO 11943.

LCM20 Using SPS



Start Test



Understanding MTD

ACFTD (Air Cleaner Fine Test Dust) was formatted in the 1960's, but is no longer being produced. The obsolescence of this dust has led to the adoption of a new dust MTD.

MTD (Medium Test Dust) having a particle size distribution close to ACFTD was selected as a replacement. However, MTD produced results somewhat different to ACFTD, so the NIST (National Institute of Standards & Technology) undertook a project to certify the particle size distribution of ISO MTD.

The result was particle sizes below 10µm were greater than previously measured.

Particles sizes reported based on NIST would be represented as µm (c), with "c" referring to "certified". Therefore the CM20 reported sizes are as follows:

ACFTD MTD

2µ	4µ (c)
5µ	6µ (c)
15µ	14µ (c)
25µ	21µ (c)
50µ	38µ (c)
100µ	70µ (c)

MTD offers true traceability, improved particle size accuracy and better batch to batch reproduction.

LaserCM

Why On-Site Fluid Contamination Monitoring

- Certification of fluid cleanliness levels.
- Early warning instrument to help prevent catastrophic failure in critical systems.
- Immediate results with laboratory accuracy.
- To comply with customer cleanliness requirements and specifications.
- New equipment warranty compliance.
- New oil cleanliness testing.



Datum Data Management



Datum, dedicated software, provides the link between a Laser CM20, System 20 EM20 or the H₂Oil - Water in Oil and your computer management system.

Features:

- Windows based, Icon driven program
- Full graphic output
- Tables/results download
- Trend analysis and predictive maintenance
- Auto test communication allows Datum to control particle counter testing and water in oil monitoring
- Certification creator using downloaded data
- Customer customised fields



16-column printer for hard copy data. A feature of the LaserCM is the on-board printout data graphing option developed to support predictive maintenance procedures.

Laser CM Test	
ON LINE TEST	
TEST NUMBER 022	
Date	D M Y
Time	04-03-06
ISO:	15-52
	20/15/09
Count / 100ml	
>4µ (c)	820721
>6µ (c)	31564
>14µ (c)	314
>21µ (c)	64
>38µ (c)	14
>70µ (c)	0
NOTES	

ISO 4406 - 1996
(MTD calibration comes under
ISO 4406 - 1999 revised
standards)

Laser CM Test	
ON LINE TEST	
TEST NUMBER 022	
Date	D M Y
Time	04-03-06
NAS CLASS:	15-52
	7
Count / 100ml	
4/6µ (c)	789157
6/14µ (c)	31250
NAS CLASS	7
14/21µ (c)	250
NAS CLASS	3
21/38µ (c)	50
NAS CLASS	3
38/70µ (c)	14
NAS CLASS	4
>70µ (c)	0
NAS CLASS	0
NOTES	

Correlation to NAS 1638

Introducing the new LCM 'Classic'

There is a new addition to the proven range – the LCM 'Classic'. Only available from Parker, the 'Classic' retains all the technology that made the LaserCM one of the most accurate, reliable and popular portable particle counters available.

Our design engineers have re-configured the LaserCM specification in a way that has reduced our manufacturing costs. These savings have been passed onto LCM 'Classic' customers.

How have we done this?

First we talked to our existing customers and then to the engineers and maintenance operatives to find out the features that make the LaserCM a unique predictive maintenance instrument.

Then, we removed peripheral items such as the aluminium case and all the accessories, so a customer receives the monitor, with a CD user guide, professionally and securely boxed. One thing that has not altered is laser accuracy and laser reliability. Our in-house software engineers have re-configured the EPROM, removing Data programming, User ID, Automatic Testing, Data retrieval, Alarm level settings, the barcode pen and Graph printing functions to reduce costs still further without in any way reducing the efficiency of the monitor. The LCM 'Classic' is an instrument to be proud of.



Ordering Information (LaserCM and 'Classic' LaserCM)

Standard products table

Part number	Supersedes	Description
LCM202022	N/A	MTD calibrated
LCM202026	N/A	Classic unit - MTD calibrated
B84702	B.84.702	Printer paper (5 rolls)
P843702	N/A	Printer ribbon
B84729	B.84.729	12Vdc power supply
B84609	B.84.609	Re-chargeable battery pack
P849613	N/A	Weather protector cover
B84779	B.84.779	Datum software pack
B84708	B.84.708	Cable and adaptor

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Product configurator

Model	Fluid type		Options	
LCM2020	2	Hydraulic mineral	1	ACFTD calibrated
LCM2020	6	Skydrol	2	MTD calibrated
			3	ACFTD calibrated + bar code pen
			4	MTD calibrated + bar code pen
			5	Classic unit - ACFTD calibrated
			6	Classic unit - MTD calibrated

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

[illegible]This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total area of 400 square units. The grid is perfectly aligned and covers the entire page without any margins or additional markings.

Universal Bottle Sampler



Universal Bottle Sampler

Features & Benefits

- Simple operation
- Efficient testing procedure
- Clean and contamination free sampling
- Available for both mineral based and aggressive fluids
- Further advances the LCM20's flexibility into laboratory bottle sampling environments
- Can accept various different sized bottles
- Minimal working parts
- Internal auto setting fuse for overload protection
- Simple maintenance procedures

Typical Applications

- Batch sampling
- Aircraft rig certification
- Oil research
- Laboratory testing
- Transfer line monitoring

Providing The Dynamic Link To All Portable Particle / Water Counters.

The UBS off-line, has microprocessor technology to recognise and adjust to the connecting monitor including the LaserCM and Water in Oil Monitor.

Simple To Use UBS

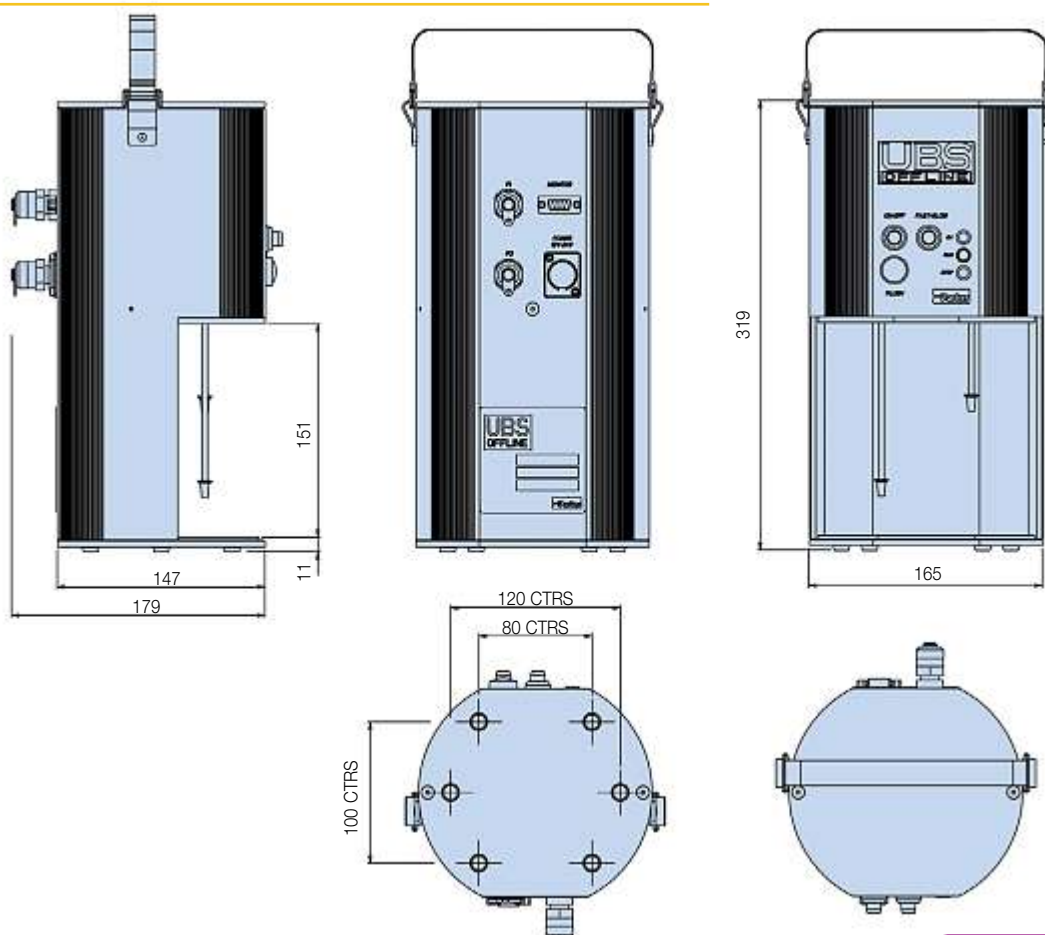
The oil sample is drawn into the UBS Off-line where it is secured, free from further contamination, in a bottle together with a clean waste bottle by a peristaltic, self-priming pump. Simple operation and efficient testing are assured once the UBS Off-line is connected to any of the CM monitors, and powered up using it's own power source. The oil sample requires agitation and de-gassing before carrying out the contamination test. A de-gassing kit option is available and consists of a vacuum chamber and pump. (Standard with UBS.9002)



Specification

Description	UBS offline
Viscosity range 2 to 250 cSt	•
Operating temp +5 to +80°C	•
Test time 2m15s / 4m15s (Flush 2m)	•
12 Vdc power supply	•
Extruded aluminium construction	•
Unit weight - (Kg)	4
Mineral oil and petroleum based compatibility	Fluorocarbon seal
Phosphate Ester group compatibility	EPDM seals
CE certified	•
Military approved	•
Manual operation	•
Bottle pack	•
De-gassing chamber	•
Manual	•
Sample tube pack	•
Interface cable to LCM20, H ₂ Oil etc.	•

Installation Details



Universal Bottle Sampler

Usage Specifications

System Flow Rate

Samples are best taken from a point in the system where the flow is TURBULENT (Reynolds No. greater than 4000). The turbulent flow creates a mixing action. Where flow is streamline or LAMINAR, larger particulate may tend to settle toward the lower pipe surface and not be sampled.

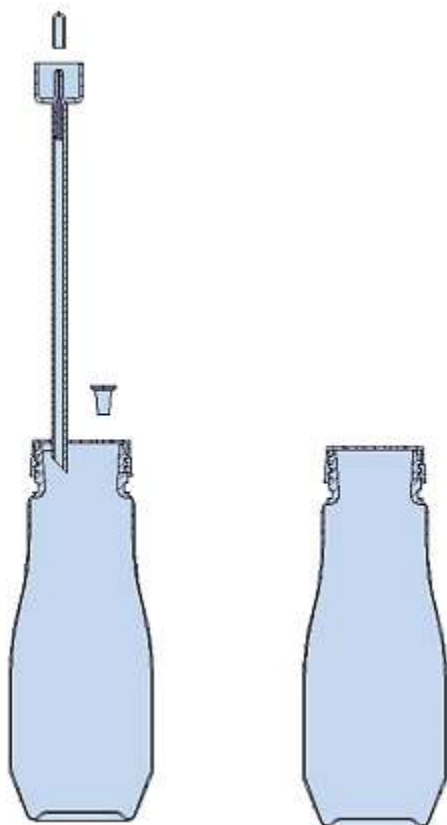
System Condition Changes

Changes in the system operating condition, flow, temperature, pressure or vibration, can result in previously sedimented contaminant being retrained into the flowing oil. It is also possible that these changes may cause partially contaminated filter elements to shed particulate into the system. Samples should, therefore, be extracted when the system is in a steady state condition and the result less likely to be distorted by contaminant peaks.

There are a number of proprietary sampling valves available which adhere to good theoretical principles. However, they do tend to generate a level of precision and cost which is unnecessary for trend monitoring.



Sampling points should enable extraction of a sample without changing the system's condition. Fine control needle valves are not desirable, as they have a tendency to silt up under some operating conditions, causing the distribution of contaminants in the fluid to be changed. The sampling port should be protected to maintain cleanliness and thoroughly flushed before collecting the sample for analysis. Allow sufficient airspace in the bottle to enable 80% fill.



B.89.911 x 50 = B.89.910

B.89.907

Bottle Cleanliness

It is preferable that bottles have sealing screw caps and both parts are cleaned to a suitable level in accordance with ISO3722.

The bottle should not contain more than one tenth the number of particles per 100ml than are expected to be monitored. Standard Parker bottles are supplied clean to ISO13/11 (NAS Class 4) and should not be used to accurately count oils cleaner than ISO 15/12 (NAS Class 6) although they may be used for "trend monitoring" at lower levels.

The bottle should remain capped until time of sample filling and re-capped immediately afterwards.

Sample Mixing

Sedimentation of contaminant in a sample will occur, the rate of which is dependent upon both fluid and particle characteristics.

Samples should be analysed, without delay, once agitated and de-gassed.

Ordering Information

Standard products table

Part number	Description
UBS9002	Universal bottle sampler (includes aluminium case and accessories)
UBS9003	Universal bottle sampler
UBS9004	Aggressive universal bottle sampler
UBS9005	Aggressive universal bottle sampler (Includes aluminium case and accessories)

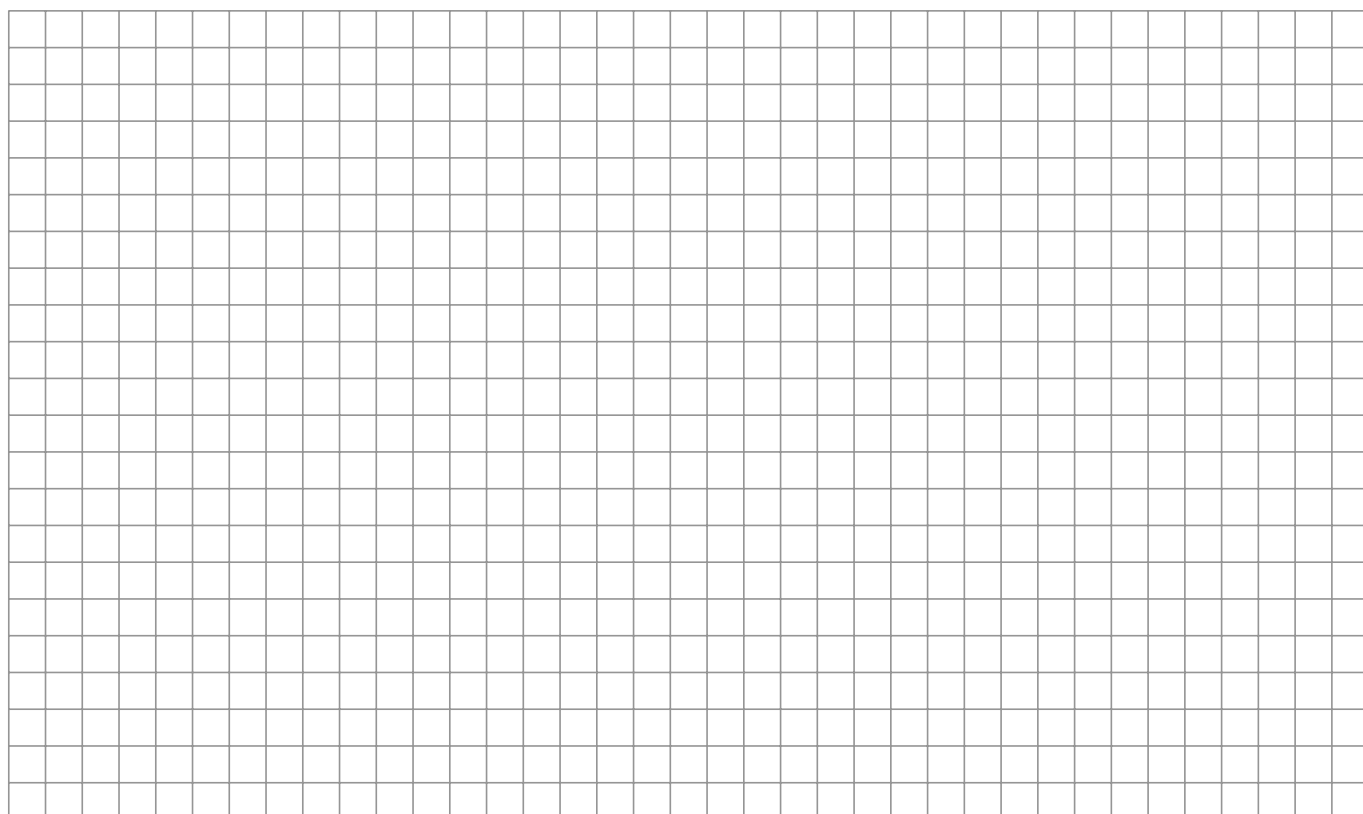
Accessories

Part number	Supersedes	Description
B89907	B.89.907	Sample bottle pair with plain cap
B89911	B.89.911	Sample bottle pair with oil extraction hose
B89910	B.89.910	Sample bottle pack (50 x B89911)
S840054	N/A	Power supply and socket
S890005	N/A	De-gassing chamber and pump
B89603	B.89.603	De-gassing chamber only
B89902	B.89.902	Cable and adaptor

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
 Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is a small yellow tab at the top right corner. The paper appears to be part of a notebook or binder.

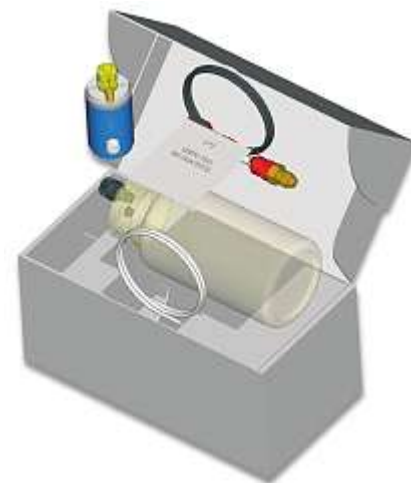




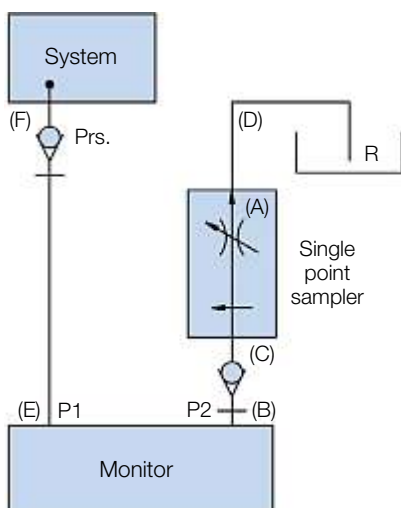
Features & Benefits

The Single Point Sampler provides a means to connect a CM20 or H₂Oil to a single pressure test point and balance the differential pressure across the system, to provide a controlled flow of oil into the monitor and away into a waste oil receptacle.

- Lightweight, compact and easy to use design
- Fingertip operated control valve even at high pressures
- 420 bar (6,000PSI) rated
- Facilitates testing from large diameter pipes
- Capability to test up to 500cSt viscosity oils (pressure permitting)
- Pressure compensated flow control mechanism
- Possible to control the valve with the same level of accuracy whether the device is operating at high or low pressure
- Capable of allowing a flow rate in excess of 10ml/min when operating at any viscosity within the product specification
- Suitable for fluid temperatures from +5°C to +80°C (+41°F to +176°F)
- High quality polished finish. (stainless steel/ aircraft grade aluminium)
- Capable of working with a CM20 or H₂Oil connected into a system via the standard one metre extension hose kit
- Suitable for use with mineral and biodegradable oils, petroleum based and phosphate ester fluids
- Phosphate ester version utilises the 5/8" BSF HSP style fitting
- Designed so that it meets the lowest possible level of magnetic permeability
- Supplied with accessories kit
- It will maintain the set flow rate between upper and lower limits within a 100 bar inline pressure change
- Clear product identification to ensure that it is connected correctly. (i.e. downstream of the CM20 or H₂Oil)



Connection Instructions



1. Ensure valve is closed (A).
2. Connect P2 on monitor (B) to P2 on Single Point Sampler (SPS) (C).
3. Connect drain line on SPS (D).
4. Connect P1 of monitor (E) to the system (F).
5. The SPS is ready to operate.
6. Open valve (A) slowly until the oil flows continuously from the drainline (D).
7. Switch on monitor and begin testing.

LCM20 Only

Carry out flow test as shown in the manual. If test is showing below Δt 3.6°C then carry out test as normal. If, however, test is above Δt 3.6°C then increase oil flow by turning valve (A) anticlockwise and then carry out flow test. Do this until Δt is below 3.6°C and carry out test as normal once this is achieved.

WARNING! Ensure that SPS valve is closed and monitor is connected to the SPS BEFORE connection to system.

Specification

Fluid compatibility:

Mineral oil and petroleum based fluids (standard version).
Aggressive fluid (dual seal version) for other fluids consult Parker Hannifin.

Seals:

Fluorocarbon or Perfluoroelastomer.

Maximum working pressure:

420 bar (6000 psi).

Weight:

500 grams max. (Not including hoses).

Packaging standard:

Cardboard carton (military usage - plastic carry case).

Unit size:

45mm dia x 123mm long.

System connection:

Standard - minimes M16 (G¹/₄" BSP) with cap,
Aggressive - 5/8" BSF HSP.

Operating temp range:

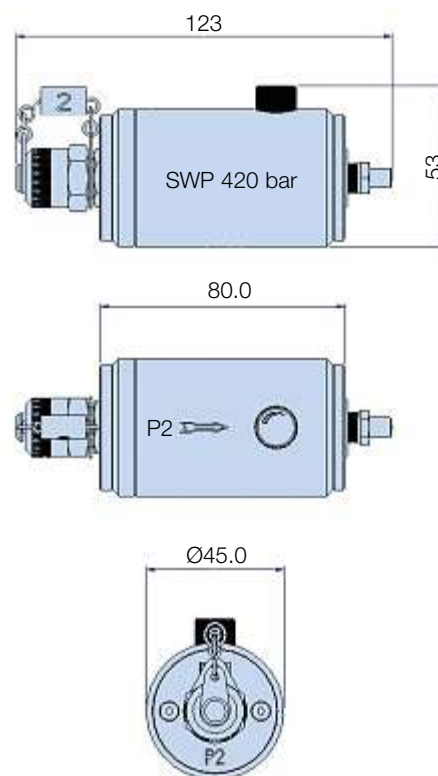
+5°C to +80°C (+41°F to +176°F).

Storage temperature range:

-26°C to +80°C (-15°F to +176°F).

Construction:

Body: Aluminium BS 1470 – pressurised end stainless steel.
Finish: Anodised blue (standard version).
Anodised red (dual seal version).



Ordering Information

Standard products table

Product number	Supersedes	Description
SPS2021	N/A	Mineral single point sampler
SPS2061	N/A	Aggressive single point sampler
B84784	B.84.784	Mineral or aggressive bottle assembly
B84224	B.84.224	Mineral oil extension hose/coupling
B84225	B.84.225	Aggressive oil extension hose/coupling
B84788	B.84.788	Mineral oil waste hose
B84787	B.84.787	Aggressive oil waste hose

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is no handwriting or other markings on the paper.

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are no margins, text, or other markings on the page.

System 20



System 20

Features & Benefits

Covering a wide range of flow rates, fluid types and applications, Parker's System 20 sensors are designed to be used with System 20 electronic or analogue monitors, contamination monitors and the H₂Oil. Specially developed System 20 sensors are available for use with aggressive fluids. (EPDM Seals)

- System 20 monitors, combined with the inline sensor, give the user accurate and instant readings of flow, pressure and temperature without the need to shut down the system.
- For use with all mineral oils, water and water/oil emulsions.
- **Analogue Monitor** utilises 3 Day-Glo dial gauges with a protective hinged cover.
- Calibrated up to 380 l/min with dual scale bar/psi & °C/°F. (US GPM also available)
- **EM20 Electronic Monitor** gives a full digital display.
- Automatically calibrated for all 3 sizes of sensor.
- Indicates line, differential and rising peak pressure.
- Easily scrolled from metric to US.
- 300 test memory.
- Capable of downloading saved data to datum.



Typical Applications

- Drilling equipment
- Mining
- Grinding and conveying
- Industrial hydraulics
- Mobile

Hydraulic system users need to ensure that lost production is kept to the absolute minimum. To ensure this, predictive maintenance and therefore routine condition monitoring of major components is essential.

System 20 inline sensors remain at the heart of condition and contamination monitoring. Whether you're mining the coal, building the new bypass, harvesting the crops, crossing the oceans or drilling offshore – whatever the industry, System 20 represents the premier system monitoring available today.



Specification: Sensors

Construction:

Machined steel body. Electroless nickel coating to minimum depth of 40 microns
Brass/stainless steel internal components

Flow capacities:

All suitable for use with oil, water and water/oil emulsion

Size 0 – 6-25 l/min (0.5-7US GPM)

Size 1 – 20-100 l/min (1.5-26 US GPM)

Size 2 – 80-380 l/min (5-100 US GPM)

Max. working pressure:

420 bar (6000psi)

Capability:

Reverse flow

Pressure drop:

At max. rated flow, Δp is 1.1 bar (mineral oil fluid at 30 cSt 140 SSU).

Ports:

Size 0 – G $\frac{3}{8}$
Size 1 – G $\frac{3}{4}$
Size 2 – G1 $\frac{1}{4}$ } (SAE threads also available)

Repeatability:

±1% FSD

Accuracy:

Flow ±2.5% full scale deflection

Weight:

Size 0 – 0.5kg (1.2lbs)

Size 1 – 3.5kg (8.4lbs)

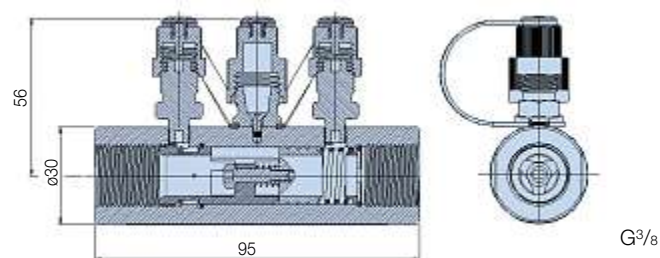
Size 2 – 4.4kg (9lbs)

Aggressive Fluid Applications:

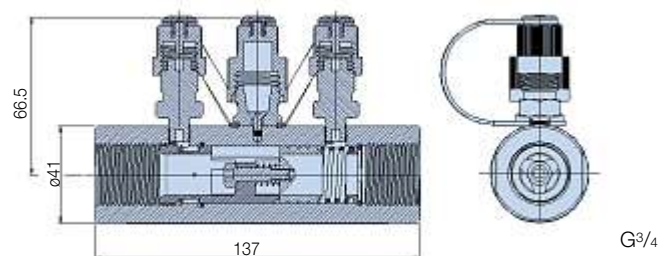
EPDM internal/external 'O'-rings and seals

Installation Details

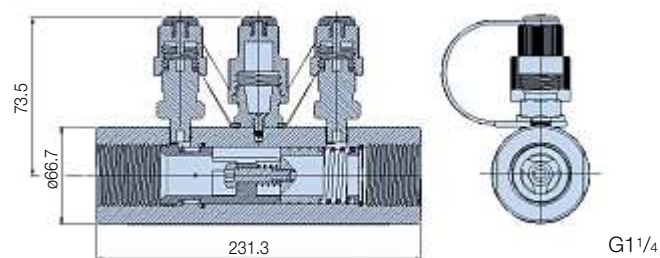
Size 0 Sensor



Size 1 Sensor



Size 2 Sensor



Ordering Information

Standard products table

Product number	Supersedes	Size	Flow range l/min	Fluid type	Port threads
STI0144100	STI.0144.100	0	6-25	Mineral	G $\frac{3}{8}$
STI1144100	STI.1144.100	1	20-100	Mineral	G $\frac{3}{4}$
STI2144100	STI.2144.100	2	80-380	Mineral	G1 $\frac{1}{4}$
STI0148100	STI.0148.100	0	6-25	Aggressive	G $\frac{3}{8}$
STI1148100	STI.1148.100	1	20-100	Aggressive	G $\frac{3}{4}$
STI2148100	STI.2148.100	2	80-380	Aggressive	G1 $\frac{1}{4}$

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Note 3: Mobile Sensors are also available - Contact Parker

System 20

A drilling equipment operation in a zinc mine has had System 20 installed for several years.

System 20 Saving £50,000 Pump Damage

Installing System 20 was part of a major restructuring plan to improve mining effectiveness and profitability. Machine operator training and oil storage operative training were essential elements of the plan. Prior to this investment, pump terminal damage could cost £10,000 for a replacement, over £1000 service costs and up to £39,000 in lost production. Add to this the difficulties of the mine's geography and it's easy to see the problems that have now been overcome.

System 20 Electronic Monitor

With System 20 inline sensors installed in a hydraulic system, faults can be predicted and remedied, all you have to do is connect the System 20 Electronic Hand Held Monitor (EM20). Designed to display flow, temperature, differential, rising peak and line pressure, System 20 Electronic can also calculate hydraulic power (kW and hp.) at a given point in a system to establish efficiency and power consumption.

System 20 electronics versatility does not end there. The EM20 is automatically calibrated for all System 20 inline sensors using water or oil and can display in l/min, US GPM, bar, psi and kg/cm².



Battery powered and completely portable, the EM20 displays readings on the LCD and can store under a test number. Data can be downloaded via an RS232 connection to Datum. A sealed keyboard and fingertip control make the unit maintenance free and simple to use anywhere.

System 20 -The Key To Predictive Maintenance

The risk of fluid contamination by intrusive test devices is eliminated. Using System 20 Sensors and the monitor together, hydraulic fluids need never be disturbed. The monitoring procedure takes only a matter of minutes. With one System 20 monitor a user can check a complete fleet of vehicles or a factory full of hydraulic plant equipment. Predicting a problem means it can be put right as part of a planned maintenance programme. Simple routine monitoring with System 20 keeps machines running at a high level of operational efficiency.

System 20 Saving £325,000 A Day Lost Production

The mining industry puts a considerable demand on hydraulics and there are others such as agricultural machinery, harvesters or tractors and, for example, cement manufacturing plants that are equally demanding of hydraulic efficiency.

A grinding and conveying plant processes in excess of 1000 tons of ore per day in the manufacture of cement products. A days lost production costs £32,000. After one year of operation the Plant Engineers decided to invest in System 20 equipment, strategically placed to allow the Engineers to 'fault-find' the major components quickly and easily. The result is that downtime and loss of production have been reduced by 80%.



System 20 -The Proven System

For operators of industrial and mobile machinery who recognise the benefits of installing System 20 in a hydraulic system, the System 20 hand-held analogue monitor offers significant advantages, particularly in intrinsically safe applications. Like the System 20 electronic, the analogue monitor is completely portable and can be connected immediately to a purpose-designed inline System 20 sensor but requires no power source.

The analogue monitor will then - provide the user with an accurate and repeatable analysis of system flow, pressure and temperature - without having to stop the machine.

Designed as a sealed assembly requiring no routine maintenance or adjustment, analogue monitors are suitable for use with all mineral oils, water/oil emulsions and water.



The lightweight monitor has 3 dayglo dial gauges and features a protective hinged cover. The flow scale features double scale calibration - up to 100 l/min and 380 l/min and has excess flow and reverse flow indication.

Electronic Monitor Specification

Construction:

A sealed assembly requiring no routine maintenance or adjustment. Body moulding in Acrylonitrile Butadiene Styrene (ABS). Key pad moulded in silicon rubber. The monitor is suitable for use with all mineral oils, water and water/oil emulsions.

LCD details

Flow section:

The analogue flow scale has reverse flow and overflow indication and provides a percentage reading of the digital full scale display automatically calibrated for all sizes of System 20 Sensor.

Pressure section:

Designed to indicate line pressure, differential pressure and rising peak pressure. Connected to a System 20 Sensor it will monitor pressure up to 420 bar (6000 psi) with an accuracy of $\pm 1\%$ FSD.

Temperature section:

Temperature reading between -10°C and $+110^{\circ}\text{C}$ (0°F to 230°F).

Dimensions:

The ABS Case is 291mm (11.46") long, 105mm (4.13") wide and 76mm (3") deep overall.

Weight:

1.4kg (3lbs).

Data logging:

Each test logs the following data:

Test number; time & date; sensor size; media tested; flow rate, pressure & temperature.

Data download:

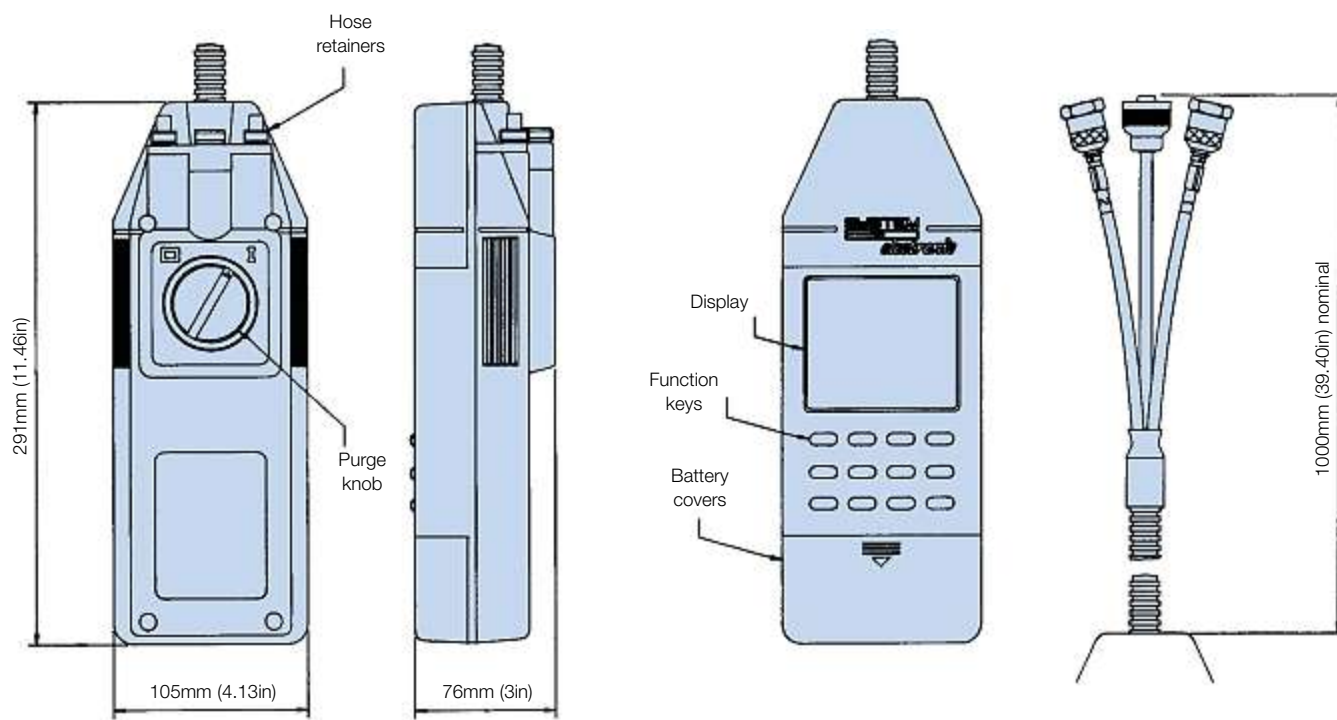
The System 20 electronic monitor is capable of downloading saved test data to a 16 column serial printer, or a compatible PC via an RS232 connection using datum.

Batteries:

6 x AA batteries.

Re-calibration:

Annual certification by an approved Parker Service Centre.



Ordering Information

Standard products table

Product number	Supersedes	Description
EM209000	N/A	System 20 electronic monitor
B84779	B.84.779	Datum download software
P653607	N/A	Monitor and sensor carrying case
B85617	B.85.617	Dongle and cable assembly

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

System 20

Analogue Monitor Specification

Construction:

A sealed assembly requiring no routine maintenance or adjustment. Body moulding in Acrylonitrile Butadene Styrene (ABS). The monitor is suitable for use with all mineral oils, water and water/oil emulsions. The monitor has 3 dayglo dial gauges and features a protective hinged cover.

Gauge details

Flow section:

The flow scale has double scales for size 1 and 2 sensors only. Calibrated up to 100 l/min (26 US GPM) and 380 l/min (100 US GPM). The flow dial has excess-flow indication.

When the system is in reverse flow or when the high pressure lines to the sensor have been transposed, a 'below zero' indication is given.

Pressure section:

Dial readings in both bar and psi up to 420 bar (6000psi).

Temperature section:

The temperature dial gives readings between -10°C and +110°C (0°F to 230°F).

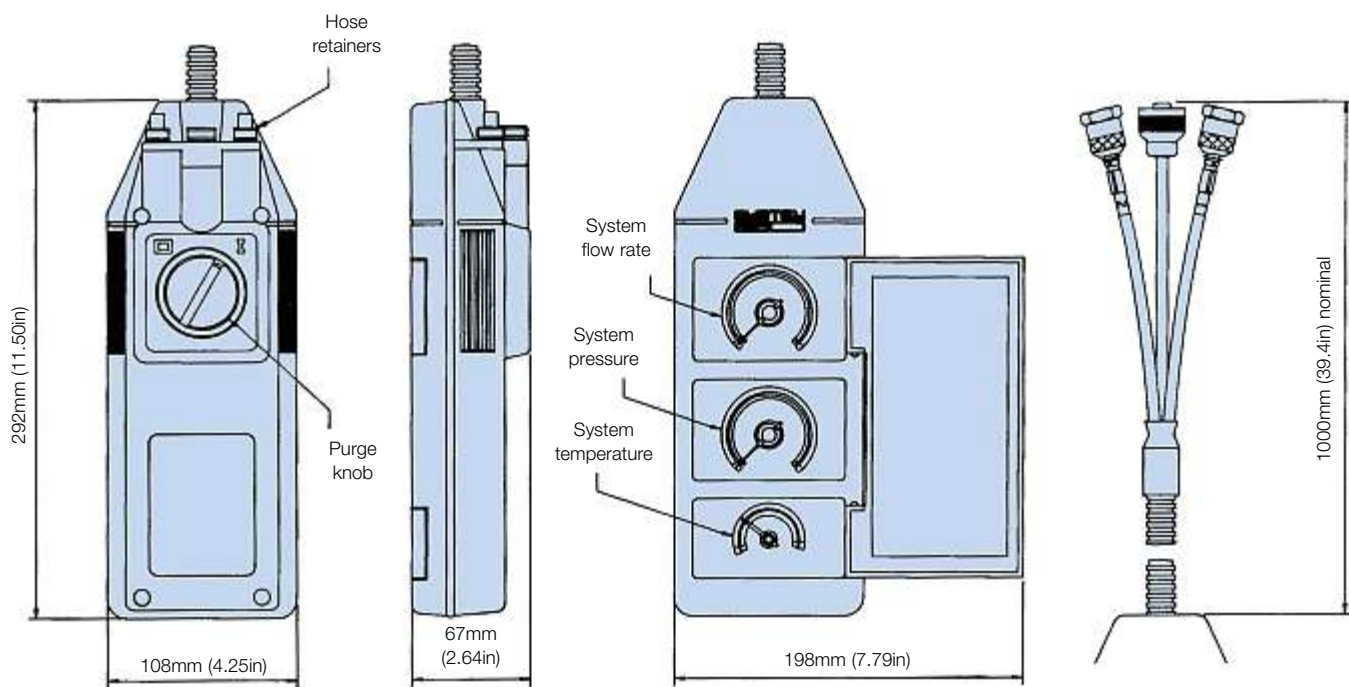
Dimensions:

The ABS Case is 292mm (11.5in) long, 108mm (4.25in) wide and 67mm (2.64in) deep overall.

Weight:

1.4kg (3lbs).

A viscosity chart is provided for mineral oil applications where monitoring is required at variable viscosities (cSt).



Ordering Information

Standard products table

Product number	Supersedes	Media type	Flow readings	Pressure readings	Temperature readings
STM6211110	STM.6211.110	Oil	l/min	Dual scale bar/PSI	Dual scale °C/°F
STM6611110	STM.6611.110	Oil	US GPM	Dual scale bar/PSI	Dual scale °C/°F
STM6211120	STM.6211.120	Water	l/min	Dual scale bar/PSI	Dual scale °C/°F
STM6611120	STM.6611.120	Water	US GPM	Dual scale bar/PSI	Dual scale °C/°F

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Accessories

Product number	Description
P653607	Monitor and sensor carrying case
P653106	Metal sensor protective cap

MCM20



MCM20

Features & Benefits

- The MCM20 is an online continuous particle counter ensuring constant system monitoring within defined parameters.
- PC/PLC controlled
- Ensures constant system monitoring.
- Can be pre-set to carry out tests at specific intervals.
- Can also be set up via detachable Handset.
- Enclosed in a metal casing, with internal workings on a removable chassis for ease of service and calibration.
- Connects permanently to a System 20 sensor via 2 meter hose assembly (supplied).
- Simple data formatting programme for trend analysis.
- User-friendly instrument improving familiarity and awareness of service and maintenance personnel.

Typical Applications

- Test rigs
- Construction machinery
- Industrial plant
- Hydraulic equipment & system manufacturers
- Paper processing
- Steel rolling mills
- Military equipment application

The Parker MCM20

Proven as a portable particle counter able to operate in any condition, MCM20 and its principles are available to users where continuous, permanent installed monitoring is required.

The MCM20 utilises the latest laser diode method of particle counting as per our standard LaserCM. The unit is enclosed in a metal casing with access to the hydraulic connection, DC input power, fuse holder and PC/PLC connection ports located on the front panel.

The internal workings are manufactured onto a removable chassis for ease of service and calibration.



Specification

Test cycle time:

Variable between 30 seconds and 3 minutes.

Repeat test time:

Continuous Mode or between 30 seconds and 1440 minutes (24 Hours).

Principle of operation:

Optical scanning analysis and measurement of actual particles.

Particle counts:

6 channels either ACFTD or MTD calibrated.

International codes:

ISO 7-22, NAS 0-12.

Storage temperature:

-40°C to +80°C.

Operating temperature:

+5°C to +60°C (hydraulic oil temperature).

Unit control connection:

Terminal protocol via RS 232 or optional handset.

Data retrieval:

Local PC / PLC program or by optional handset.

Calibration:

By accepted on-line methods confirmed by relevant International Standard Organisation procedures.

Re-calibration:

Annual certification by an approved Parker Service Centre.

Max. working pressure:

420 bar.

Minimum working pressure:

2 bar.

Fluid compatibility:

Mineral oil or petroleum based fluids.
Aggressive fluid version also available.

Sample requirements:

0.3 – 1.5 DP bar (differential pressure) via approved inline sampling concept.

System connection:

Via System 20 inline sensors / single point sampler

Computer compatibility:

Interface via RS 232 connection @ 9600 baud rate.

Size/weight:

249mm x 254mm x 191mm / 8.75kg.

Power requirement:

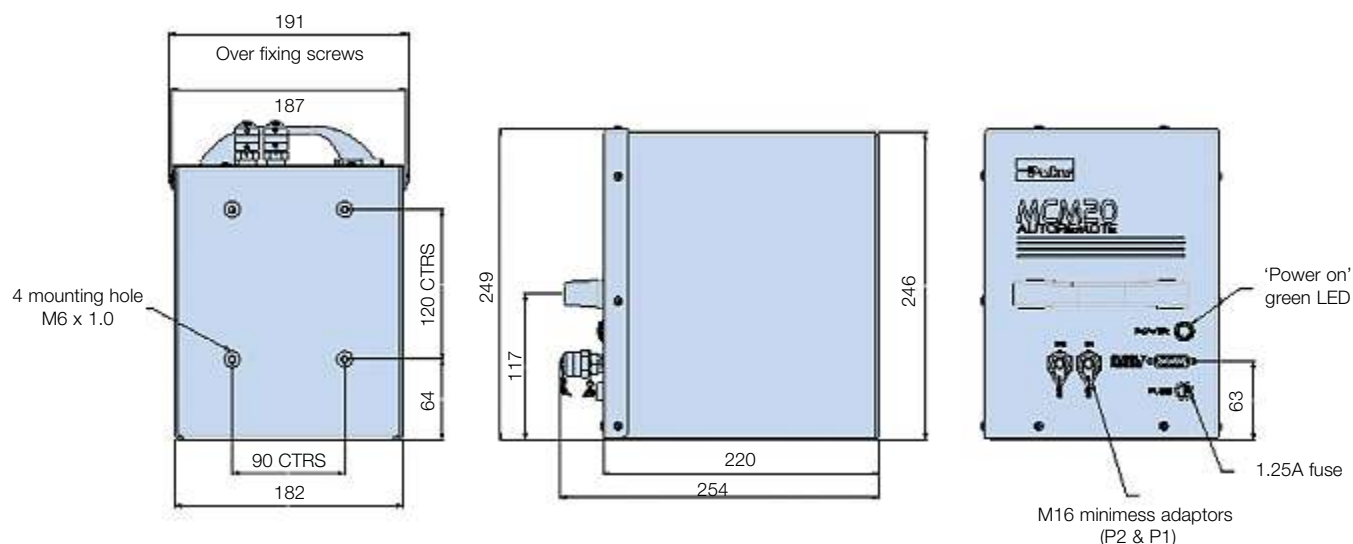
12 Vdc input. (1.25A (T) fuse). Regulated.

Installation:

Back/base M6x1.0 mounting inserts (see annotated diagrams).

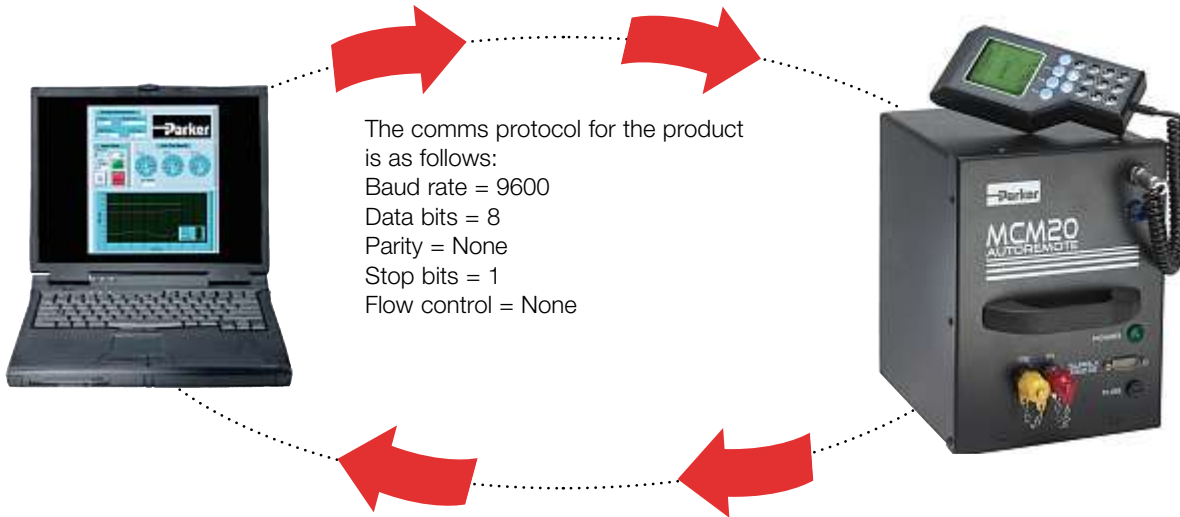
Software:

LabView demonstration software.



MCM20

Communications Protocol



Labview

Optional Remote Handset



- Customised demonstration/software for MCM operation.
- Full graphic display.
- Visual indication of limit parameters.



Optional remote handset for direct interface control. Please consult Parker for more information.

Standard products table

Product number	Supersedes	Description
MCM202022	N/A	MTD calibrated - mineral
MCM202022HS	MCM20.2022.HS	MTD calibrated - mineral - with handset
MCM202021	N/A	ACFTD calibrated - mineral
MCM202021HS	MCM20.2021.HS	ACFTD calibrated - mineral - with handset
MCM202061	N/A	ACFTD calibrated - aggressive
MCM202062	N/A	MTD calibrated - aggressive
MCM202061HS	MCM20.2061.HS	ACFTD calibrated - aggressive - with handset
MCM202062HS	MCM20.2062.HS	MTD calibrated - aggressive - with handset
B94106	B.94.106	Handset (blue)
B94107	B.94.107	Handset (red)
B94802	B.94.802	2m mineral hose assembly
B94801	B.94.801	2m aggressive hose assembly

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Online Particle Detector

Icount_{PD}

Brochure: FDCB321UK
October 2007



Icount_{PD}

Features & Benefits

Diagnostic Self Check Start-up Time:

5 seconds

Measurement Period:

5 to 180 seconds

Reporting interval through RS232:

0 to 3600 seconds

Digital LED display update time:

Every second

Limit Relay Output:

Changes occur +/- 1 ISO code at set limit (Hysteresis ON) or customer set (Hysteresis OFF)

4-20mA Output Signal:

Continuous

Principle of operation:

Laser diode optical detection of actual particulates.

Reporting Codes:

ISO 7 – 21, NAS 0 – 12, (AS 00 – 12 Contact Parker)

Icount will also report less than ISO 7, subject to the statistical uncertainty defined in ISO4406:1999, which is shown in the RS232, reporting results as appropriate e.g ">6"

Calibration:

By recognised on-line methods, confirmed by the relevant International Standard Organisation procedures.

Calibration Recommendation:

12 months

Performance:

+/- 1 ISO Code (Dependant on stability of flow)

Reproducibility / Repeatability:

Better than 1 ISO Code

Power Requirement:

Regulated 9 to 40Vdc

Maximum Current Draw:

150mA

Hydraulic Connection:

M16 x 2 hydraulic test points (5/8" BSF for aggressive version)

Flow Range through the device:

40 to 140 ml/min (Optimum Flow = 60ml/min)

Online Flow Range via System 20 Inline Sensors:

Size 0 = 6 to 25 l/min - (Optimum Flow = 15 l/min)

Size 1 = 24 to 100 l/min - (Optimum Flow = 70 l/min)

Size 2 = 170 to 380 l/min - (Optimum Flow = 250 l/min)

Required Differential Pressure across Inline Sensors:

0.4 bar (Minimum)

Viscosity Range:

10 to 500 cSt

Temperature:

Operating Environment -20°C to +60°C (-4°F to +140°F)

Storage -40°C to +80°C (-40°F to +176°F)

Operating Fluid 0°C to +85°C (+32°F to +185°F)

Working pressure:

2 to 420 bar (30 to 6,000 PSI)

Moisture sensor calibration:

±5% RH (over compensated temperature range of +10°C to +80°C)

Operating humidity range:

5% RH to 100% RH

Moisture sensor stability:

±0.2% RH typical at 50% RH in one year

Certification:

IP66 rated

EMC/RFI – EN61000-6-2:2001

EN61000-6-3:2001

Materials:

User friendly Abs construction.

Stainless Steel hydraulic block.

Viton seals.

Dimensions:

182mm x 155mm x 86mm (7.2" x 6.1" x 3.4")

Weight:

1.3kg (2.9lb)

- Independent monitoring of system contamination trends
- Early warning LED or digital display indicators for Low, Medium and High contamination levels.
- Moisture % RH LED indicator (optional)
- Cost effective solution in prolonging fluid life and reducing machine downtime.
- Visual indicators with power and alarm output warnings.
- Continuous performance for prolonged analysis
- Hydraulic, Phosphate Ester & Fuel fluid compatible construction
- Self diagnostic software
- Fully PC/PLC integration technology such as:
 - RS232 and 0-5 Volt, 4-20mA
 - (Contact Parker for other options).

Icount_{PD}

The Icount Particle Detector from Parker represents the most up to date technology in solid particle detection.

The design dynamics, attention to detail and moulding compactness of the permanently mounted, on-line particle detector module, combined with on-board, laser based, leading-edge technology, brings to all industries a truly revolutionary, particle detector as a remarkable cost effective market solution to fluid management and contamination control.

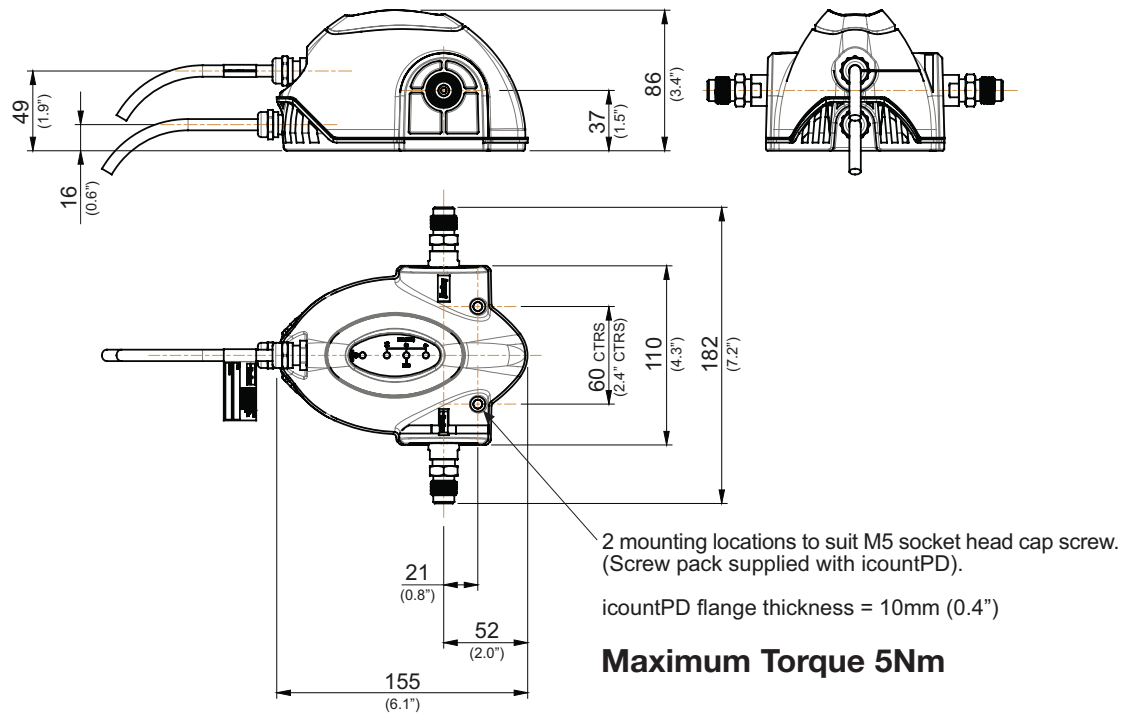


Fluid condition monitoring

Icount_{PD}

Dimensions / Installation Details

mm
(inches)



Typical Applications

• Mobile Equipment

- o Earth Moving Machinery
- o Harvesting
- o Forestry
- o Agriculture

Monitoring of the hydraulics, enabling the vehicles to function to their best capability under load conditions through pistons, servo valves, control rams and gear pumps.

• Industrial Equipment

- o Production Plants
- o Fluid Transfers
- o Pulp & Paper
- o Refineries

To monitor the cleanliness of the equipment throughout the production line, from the machine tool controlled hydraulics through to contamination of fluid transfer. Ensuring the integrity of the fluid is maintained throughout the refining process.

• Power Generation

- o Wind Turbines
- o Gearboxes
- o Lubrication Systems

With continuous monitoring the optimum level is achieved in the least amount of time.

• Maintenance

- o Test Rigs
- o Flushing Stands

To increase efficiency of your equipment by continuously monitoring the cleanliness level of the hydraulic fluid.

M12 Communication cable: wiring configuration

M12 Communication cable

Pin	4-20mA option connections	0-5v/0-3v option connections
1	NOT USED	NOT USED
2	RS232 Ground (Pin 5**)	RS232 Ground (Pin 5**)
3	Channel A, ISO 4 μ m(c)*	Channel A, ISO 4 μ m(c)*
4	Channel B, ISO 6 μ m (c)* or NAS (if selected)	Channel B, ISO 6 μ m (c)* or NAS (if selected)
5	RS232 Receive (Pin 3**)	RX232 Receive (Pin3**)
6	RS232 Transmit (Pin 2**)	RS232 Transmit (Pin 2**)
7	Moisture sensor channel (if fitted)	Moisture sensor channel (if fitted)
8	Channel C, ISO 14 μ m (c)*	Channel C, ISO 14 μ m (c)*

Important Note: It is the responsibility of the end user to ensure that the cable's braided screen is terminated to a suitable earth bonding point.

* Optional – refer to the 'IcountPD part number specifier' section in this manual.

** A standard USB serial adaptor can be used with the recommended 9-way D-type connector to convert RS232 to USB.

Limit relay alarm levels

The IcountPD can be specified with a built-in limit switch relay which can be triggered when a preset alarm level is reached. The relay contacts can be used to switch on or off an external device.

M12 Supply and Relay (if fitted) cable

Pin	Current loop options connections	0-5v/0-3v option connections
1	Product supply 9-40Vdc	Product supply 9-40Vdc
2	4-20mA Supply 12-20Vdc	0-5 / 0-3V Supply 12-24Vdc
3	Relay (Normally Closed)*** (if fitted)	Relay (Normally Closed)*** (if fitted)
4	Relay (Normally Open)*** (if fitted)	Relay (Normally Open)*** (if fitted)
5	NOT USED	NOT USED
6	NOT USED	0-5V / 0-3V Supply 0 Vdc
7	Main supply 0Vdc	Product supply 0Vdc
8	Relay (Common)*** (if fitted)	Relay (Common)*** (if fitted)

Note: If the moisture sensor is fitted without either option then the output is RS232.

Parker Hannifin recommend that the mating M12 connector cables are screened. These cables are available from Parker Hannifin – ordering information section.

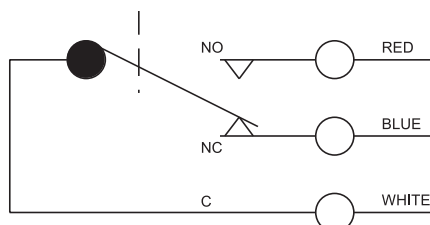
*** Optional – refer to ordering information section.

(Limit Relay Wiring Instructions)

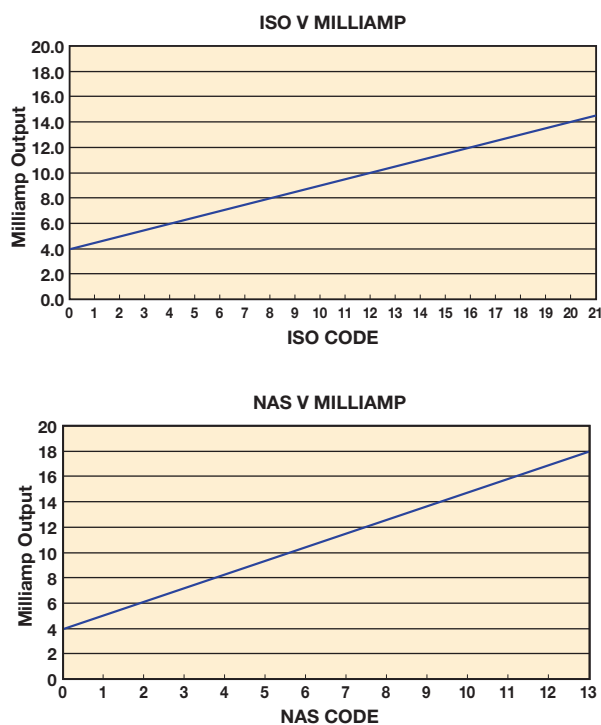
NORMALLY OPEN

NORMALLY CLOSED

COMMON



Variable mA output settings



The following table can be used to equate the analogue output to an ISO or NAS Code.

Example ISO code 12 is equal to 10mA

mA	ISO	mA	NAS
4.0	0	4	00
4.5	1	5	0
5.0	2	6	1
5.5	3	7	2
6.0	4	8	3
6.5	5	9	4
7.0	6	10	5
7.5	7	11	6
8.0	8	12	7
8.5	9	13	8
9.0	10	14	9
9.5	11	15	10
10.0	12	16	11
10.5	13	17	12
11.0	14	18	**
11.5	15	19	**
12.0	16	20	ERROR
12.5	17		
13.0	18		
13.5	19		
14.0	20		
14.5	21		
15.0	**		
15.5	**		
16.0	**		
16.5	**		
17.0	**		
17.5	**		
18.0	**		
18.5	**		
19.0	OVERRANGE		
19.5	OVERRANGE		
20.0	ERROR		

The following table can be used to equate the analogue output to an ISO or NAS Code.

Example ISO code 12 is equal to 10mA

4-20mA output settings

ISO Setting

mA current = (ISO Code / 2) + 4 eg. 10mA = (ISO 12 / 2) + 4

or

ISO Code = (mA current - 4) * 2 eg. ISO 12 = (10mA - 4) * 2

NAS Setting

mA current = NAS Code + 5 eg. 15mA = NAS 10 + 5

or

NAS Code = mA current - 5 eg. NAS 10 = 15mA - 5

Variable voltage output settings

The variable voltage output option has the capability of two different voltage ranges: a 0–5Vdc range as standard, and a user-selectable 0–3Vdc range. The 'Full list of commands' on how to change the voltage output, are available from Parker.

The following tables can be used to relate the analogue output to an ISO or NAS code.

For example, in a 0–5Vdc range, ISO code 16 is equal to an output of 3.5Vdc. In a 0–3Vdc range, ISO code 8 is equal to an output of 1.0Vdc.

Table relating ISO codes to Voltage output

ISO	Err	0	1	2	3	4	5	6	7	8	9	10	11	>
0–5Vdc	<0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	
0–3Vdc	<0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	

cont.

ISO	12	13	14	15	16	17	18	19	20	21	22	Err
0–5Vdc	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	>4.8
0–3Vdc	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	>2.45

Table relating NAS codes to Voltage output

ISO	Err	00	0	1	2	3	4	5	6	7	8	9	10	11	12	Err
0–5Vdc	<0.4	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	>4.6
0–3Vdc	<0.2	N.S.	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	>2.8

Digital display parameters (ISO 4406/NAS 1638)

Start up

- 1. Once the lcountPD has been connected to a regulated power supply, the product logo is displayed for approximately five seconds as the lcountPD performs a self system diagnostic check.
- 2. The lcountPD then automatically starts monitoring using factory default test parameters.



Digital display indication

The digital display will show the actual measured codes, the channel (μ) size and the user definable limits. Note that the channel size and limits will alternate between the two.

The Moisture Sensor reading (%RH) will also be shown – if the Moisture Sensor option is fitted.

The order of trigger for both the codes and Moisture Sensor option is:

- Solid digit(s) = code(s) that are at or below the set point (limit)
- Flashing digit(s) = code(s) that are above the set point (limit)

The display for ISO4406 and NAS1638 are identical. The ISO display is shown below.

Error detection:

In the unlikely event of a error occurring, the digital display on the lcountPD will simply display the actual error code only – i.e. ERROR 13 (A full list of error codes are detailed in the lcountPD User Manual).

Moisture sensor output settings

The Moisture Sensor is an option that can be included when specifying the lcountPD.

The Moisture Sensor reports on the saturation levels of the fluid passing through the lcountPD sensing cell. The output is a linear scale, reporting within the range of 5% saturation to 100% saturation.

Table relating Saturation levels in the sensing cell to lcountPD outputs

Saturation	4–20mA	0–3Vdc	0–5Vdc
5%	4.8	0.15	0.25
25%	8	0.75	1.25
50%	12	1.50	2.50
75%	16	2.25	3.75
100%	20	3.00	5.00



Icount_{PD}

Auxiliary Flow Device

The pressure compensated, Flow control device (Part Number S840074) has been developed to give the Icount_{PD} user greater flexibility. The Flow control device will enable testing where flow ranges are outside the Icount_{PD} specifications (40 – 140 ml/min), or where pipe diameters do not allow the Icount_{PD} to be installed.

The Flow control device fits onto the downstream (outlet) side of the Icount_{PD}, connecting through a manifold block, via a self-sealing quick connection test point and is fitted with a differential pressure valve.

This Flow control device automatically compensates for pressure and viscosity changes, whilst maintaining its setting even as the workload changes.

Simply position the valve to match the viscosity of the oil you are testing.

The chart below can be used to determine the valve position:

Valve Position	cSt Range
3	up to 100
3.8	90 - 200
4.2	190 - 320
5	310 - 500

Example:

If the fluid you wish to analyse has a viscosity of 50cSt under normal operating conditions then the control knob on the Flow Control Device should be set to valve position '3'

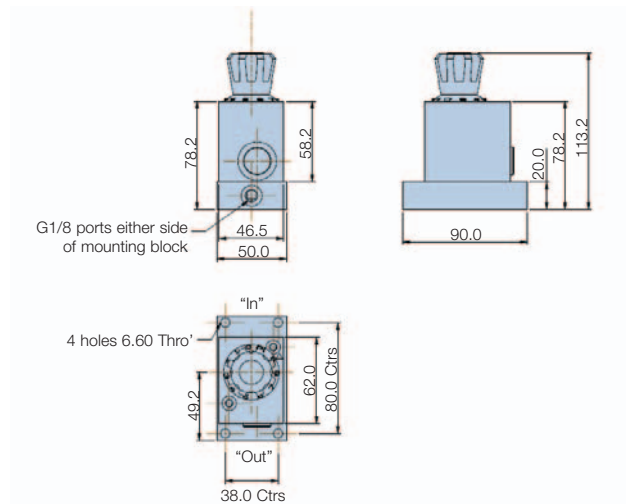
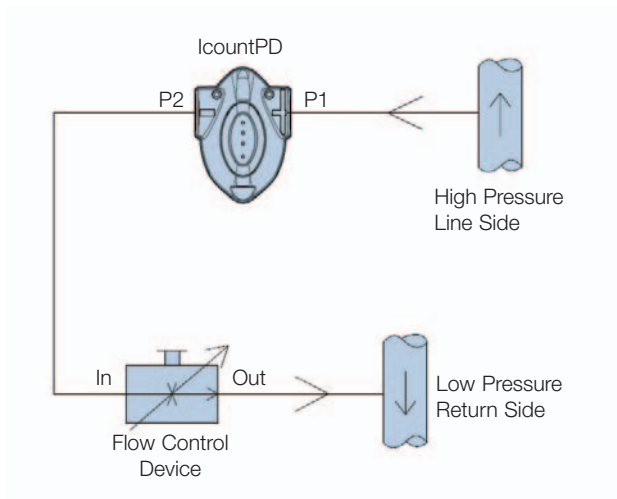
The flow device will now automatically control the flow rate through the Icount_{PD} to within its working range of 40-140ml/min.

Note: The Flow control device will still operate correctly even with the high pressure side at 200bar and the return back to an open system of 0 bar (DP = 200bar)



Hydraulic Connection Diagram

Dimensions



Actuator

Mounting Type

Mounting position

Weight

Fluid Temperature

Ambient storage temperature

Viscosity range

Differential pressure range

Maximum pressure

Flow direction

Port thread detail

Internal Seals

Manual flow rate adjustable via control knob

4 off mounting holes to suit M6 screws (not supplied)

Any

1.7kg (3.7lb)

5°C to +80°C (+41°F to 176°F)

-20°C to +40°C (-4°F to +104°F)

20cSt to 500cSt (If lower than 20cSt contact Parker)

5 to 315 bar

315 bar

'IN' to 'OUT' flow control function

1/8" BSPP (test points not supplied)

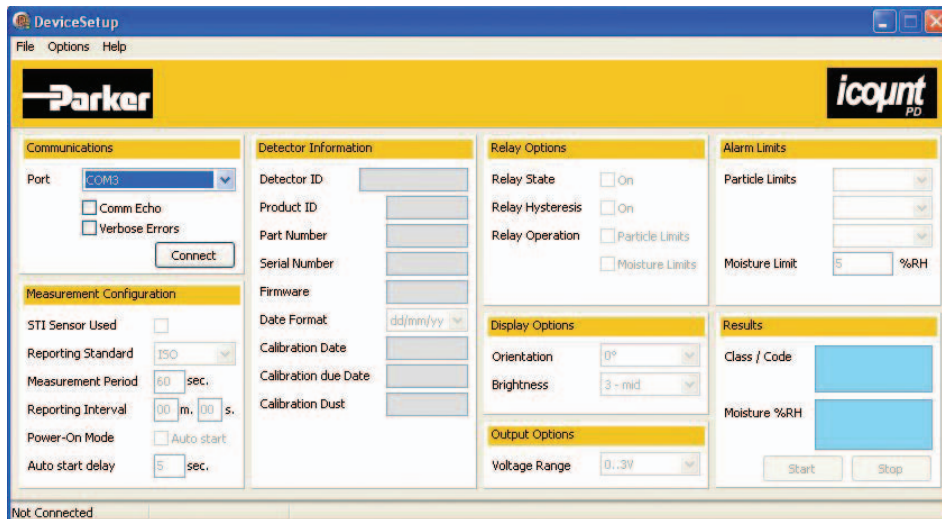
Viton



Communication Options

The IcountPD may be configured using the IcountPD Setup Utility. For more direct control of the device using its communications protocol, you may also use the Microsoft Windows® HyperTerminal program, but note that this program is not currently supplied with the Windows Vista™ operating system. These two ways of communicating with IcountPD are described in the following section.

IcountPD Setup Utility software



Communication Protocol

The Communication protocol for the serial communication link is to be used with **Microsoft Windows HyperTerminal**. The settings are as follows:

Baud rate	9600
Data bits	8
Parity	None
Stop bits	1
Flowcontrol	None

The commands used with this product are made up of Read, Set and Start / Stop commands.

- Set commands allow the value or values of parameters to be set
- Read commands allow the value or values or parameters to be read
- Start/Stop allows the user to start and stop tests.

Example:

[SDF dd/mm/yy] - sets the date format.

[RDF] - reads the product date format.

All commands are sent in ASCII characters, and the protocol accepts both upper and lower case characters as the examples below:

SDF

SdF

Note: A full list of commands are detailed in the user manual

Ordering Information

Standard Products Table

Part number	Fluid type	Calibration	Display	Limit relay	Communications	Moisture sensor	Cable connector kit	Future option
IPD12212130	Mineral	MTD	LED	No	RS232 / 4-20mA	No	M12 - 8 pin	N/A
IPD12212230	Mineral	MTD	LED	No	RS232 / 4-20mA	Yes	M12 - 8 pin	N/A
IPD12222130	Mineral	MTD	LED	Yes	RS232 / 4-20mA	No	M12 - 8 pin	N/A
IPD12222230	Mineral	MTD	LED	Yes	RS232 / 4-20mA	Yes	M12 - 8 pin	N/A
IPD12312130	Mineral	MTD	Digital	No	RS232 / 4-20mA	No	M12 - 8 pin	N/A
IPD12312230	Mineral	MTD	Digital	No	RS232 / 4-20mA	Yes	M12 - 8 pin	N/A
IPD12322130	Mineral	MTD	Digital	Yes	RS232 / 4-20mA	No	M12 - 8 pin	N/A
IPD12322230	Mineral	MTD	Digital	Yes	RS232 / 4-20mA	Yes	M12 - 8 pin	N/A

Product Configurator

Key	Fluid type	Calibration	Display	Limit relay	Communications	Moisture sensor	Cable connector kit	Future option
IPD	1 Mineral	1 ACFTD	1 None	1 No	1 RS232	1 No	0 No	0
	2 Aggressive	2 MTD	2 LED	2 Yes	2 RS232 / 4-20mA	2 Yes	1 Deutsch DT Series Connector	
	3 Aviation fuel hazardous areas	3 AS4059	3 Digital		3 RS232 / 0-5V		3 M12, 8 Pin Plug Connector*	
	4 Aviation fuel non-hazardous area		4 GSM		4 RS232 / RS485			
					5 RS232 / CANBUS			

Accessories

Description	Part number	
	Mineral	Aggressive
1 metre hose length	B84224	B84827
2 metre hose length	B94802	B94801
5 metre hose length	B84730	B84828
Minimess 1/4" BSP fitting	P653109	P843081
Minimess 1/8" BSP fitting	P653110	P853008
Minimess 1/8" NPT fitting	P653512	P853005
Single point sampler	SPS2021	SPS2061
Internal flow device	Contact Parker	Contact Parker
Power supply	B84829	
5 Metre, M12		
8 Pin Plug and Socket Cable Kit*	B84654	Contact Parker
Deutsch Connector Kit	P843130	
RS232 To USB Converter	P84011	

* M12 Cable kit consists of two 5 metre cables to enable all output options
(Communications cable and Relay/Power Supply cable)

Part number	Supercedes	Size	Flow range l/min	Fluid type	Port threads
STI0144100	STI.0144.100	0	6-25	Mineral	3/8
STI1144100	STI.1144.100	1	20-100	Mineral	3/4
STI2144100	STI.2144.100	2	80-380	Mineral	1 1/4
STI0148100	STI.0148.100	0	6-25	Aggressive	3/8
STI1148100	STI.1148.100	1	20-100	Aggressive	3/4
STI2148100	STI.2148.100	2	80-380	Aggressive	1 1/4

H₂Oil - Water in Oil Monitor



H₂Oil - Water in Oil Monitor

Features & Benefits

- Water monitoring is now possible while machinery is working - H₂Oil saves on production downtime.
- Totally portable, can be used easily in the field without the need for mains power, as well as in the laboratory.
- Connects into system at pressures up to 420 bar, via either system 20 sensor or single point sampler.
- 90 second test time.
- Scrolling memory for 500 tests plus memory for 20 different oil calibration curves.
- Routine water monitoring of oil systems with H₂Oil saves time and money, promoting oil longevity.
- Samples that are tested are truly representative of water in the system. Analysis carried out before sample hydrodynamics change.
- Data entry facility enables user to store unique data test log details with every test carried out.
- Instant, accurate results are available on the display or the built-in printer ensuring maintenance decisions can be taken immediately.
- Computer interface available for downloading data on to the computer through the RS232 serial port.
- Internal diagnostics features ensures H₂Oil will work accurately and reliably.
- Supplied in a robust aluminium carrying case.
- Optional oil delivery kit for simple offline sampling (see fig.1) .



Fig.1

Typical Applications

- Off-shore & power generation
- Marine
- Construction machinery
- Paper mills
- Hydraulic equipment & system manufacturers
- Research & testing institutes
- Military equipment application

The H₂Oil is a two channel non-dispersive absorption spectrometer, designed to measure the level of water content polluting the oil, reducing system efficiency, promoting wear and affecting safety.

The H₂Oil makes it possible for an end user or service engineer to carry out quick, accurate measurements, taken in the field instead of remote laboratory analysis.

With its secured hoses the H₂Oil connects to an in-line System 20 sensor or single point sampler and features a re-chargeable 12Vdc power pack, diagnostic computer and on-board printer for effective logging and retrieval of data.



Specification

Construction:

Case-Noryl structural foam and ABS printer cover. Key pad silicone rubber.

Mechanical composition:

Brass, plated steel, stainless steel.

Seals:

Fluorocarbon.

Hoses:

Nylon (Kevlar braided microbore).

Hose length:

Fluid connection hose 1.2 metre (3.9 feet).

Flow rate:

Up to 400 l/min (100 US GPM).
(System 20 Sensors). Higher flows with SPS.

Max. working pressure:

Up to 420 Bar (6000 psi).

Fluid compatibility:

Mineral oil and petroleum based fluids.

Power:

Re-chargeable battery pack (12Vdc trickle charger supplied).

Fuse:

5.0 amp fast blow fuse included for overload protection.

H2Oil technology:

Infrared absorption spectroscopy

Measurement and range:

PPM (0-3000) or % content.

Max operating temperature:

+5°C to +80°C (+41°F to +176°F).

Environmental temperature:

+5°C to +40°C (+41°F to +104°F).

Test completion time:

90 seconds.

Memory store:

500 TEST (scrolling memory) capacity.

Printer facility:

Integral 16 column thermal printer for hard copy data.

Computer interface RS232.

Repeatability/accuracy:

Better than 5% (typical).

Viscosity range:

2-100 cSt (9-460 SSU). 500cSt with SPS.

Commissioning kit:

Includes 2 re-chargeable battery packs (1 fitted to monitor), 2 x thermal printer rolls, spare fuse, screwdriver, 12Vdc trickle charger and user manual.

Data entry:

24 character two line back lit dot matrix LCD. Full alpha numeric keypad.

Data retrieval:

Memory access gives test search facility.

Monitor carry case:

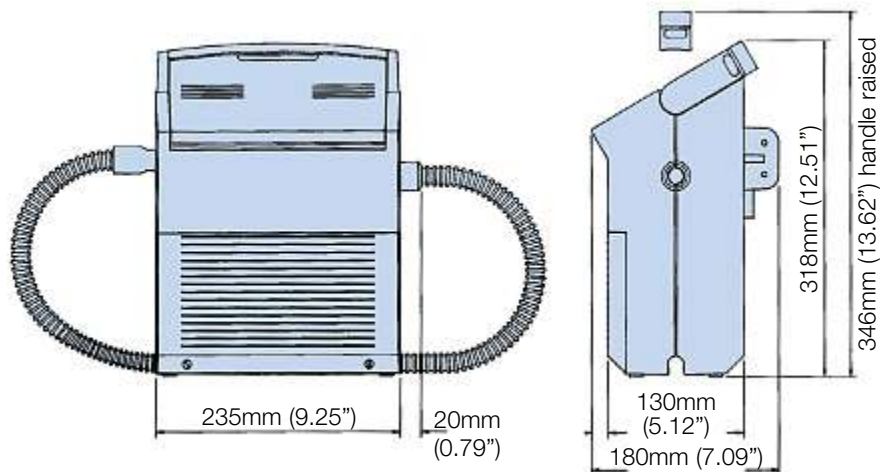
Robust padlockable aluminium presentation case.

Datum:

Condition monitoring data software pack plus cable included in commissioning kit.

Performance recheck:

Annual recheck of performance by an approved Parker Service Centre.



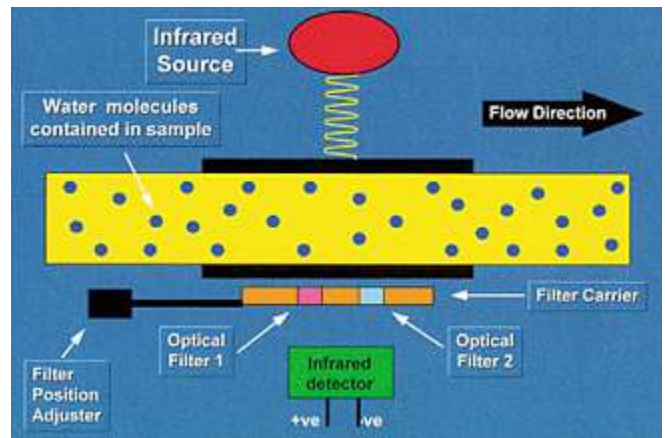
H₂Oil - Water in Oil Monitor

How the H₂Oil Works

On-line testing allows a mixed and flowing sample of oil and water to pass through the infrared measuring cell. A series of measurements can be taken and the average given as a result. With this method a representative oil sample is seen, unlike the usual reservoir samples sent for analysis. Also, by taking the test at working temperature and pressure, a true water content is taken, as both affect the way water is absorbed in oil.

The flowing sample passes through a special "water free" optical cell.

The infrared detector monitors two narrow band pass filters, one of which matches the spectral width of the water attenuation band. The second narrow wave band selected is unaffected by water and serves as a reference. By taking the transmission ratio between the two points an effective measurement of water can be made.



Core Technology

H₂Oil uses true infrared (IR) analysis technique - the principle used in all laboratory spectrometers, to measure absorbed water (before saturation point).

Channel one (2.6μ) is the reference point, whereas channel two (3μ) is H₂O.

The IR source is a tungsten halogen bulb.

Effective Oil Maintenance

Take a typical application where water can have a very detrimental effect on bearings. Cracks are generated early in life of a bearing and water, once condensed in the crack, leads to corrosion and early damage.

Loss of bearing life, due to water contamination, (see below) can be prevented by stopping the water from entering the system in the first place. Introducing a regular water content monitoring function into the programme, such as the H₂Oil, would support such efforts.

Whatever the application, whether it be offshore in the oil industry or off-road in the construction or earth moving industry, the portability of the H₂Oil makes it an essential kit for the service van or engineers tool.

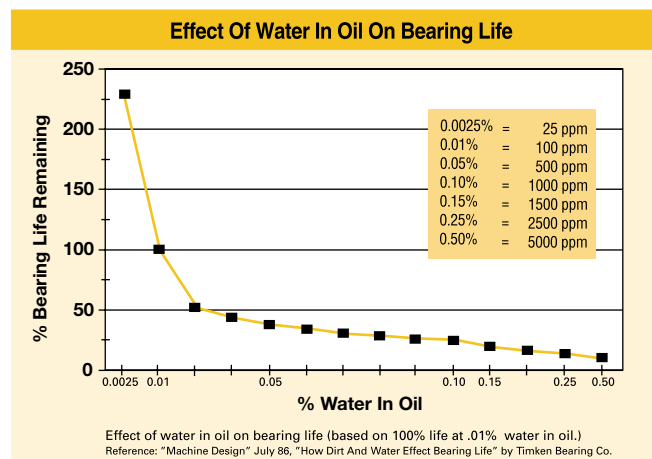
Ordering Information

Standard products table

Product number	Supersedes	Description
WOM9100	N/A	H ₂ Oil (includes aluminium case and kit)
B91701	B.91.701	Printer paper (5 rolls)
S840134	N/A	Oil delivery unit
B84779	B.84.779	Datum download software
B91706	B.91.706	Cable and adaptor

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



MS100, MS150



MS100 Moisture Sensor

Features & Benefits

- Continuous, online moisture indication, for hydraulic and lubricating systems.
- Reporting of % relative humidity of water content, giving the user information on how close to the fluids real saturation point.
- Reliable data on the rate of water absorption.
- Sensing cell technology using a laser trimmed thermoset polymer, for capacitive sensing that is capable of absorbing water molecules due to its micro porous structure.
- Uses a thermistor for temperature compensation correction. Offering total confidence in reporting the %RH relative humidity over the sensors temperature range.
- M12, IP68, 5 way moulded cable.
- +8 to +30 Vdc supply voltage.
- Adjustable alarm limit.
- A purpose designed tee adaptor allows for easy installation into an existing fluid system.
- The MS100 can also be specified with a bench top wand offering the end user greater flexibility.

Typical Applications

- Pulp and paper plants
- Marine hydraulics
- Power transmission & distribution
- Oil reclamation
- Industrial hydraulics
- Earth moving applications
- Agricultural

In-Line Moisture Measurement of Hydraulic & Lubricating Oils.

Parkers MS100 Moisture Sensor offers fast, reliable and accurate in-line detection of moisture in fluids. The MS100 transducer type technology has been especially designed with the preventative maintenance programme environment in mind.

The industry accepted sensing cell device will monitor and report Relative Humidity (RH), moisture content in oils. The water content measurement technique offers the end user benefits over the current standard form of water content reporting (PPM).

This allows for real time preventative maintenance to be undertaken and corrective actions to be made. By knowing that the water contamination is still within the oils absorbing range, less than 100%, reclaiming fluid properties before additive damage occurs can initiate calculable cost savings.



Specification

Pressure:

Maximum allowable operating pressure.
(MAOP): 420 bar (6000 psi).

Operating temperature:

Maximum: 85°C (185°F).
Minimum: -15°C (-5°F) – dependent on seal material.

Flow through sensor cell:

Installed in active flowstream.

Fluid compatibility:

Mineral oils and petroleum-based phosphate ester –
Skydrol option available.

Viscosity range:

Unlimited.

Thread form connections:

See ordering information.

Outputs:

0 - 5 Vdc (0.85 – 4.05 Vdc dynamic range).

Maximum alarm output lead:

0.5 amps (maximum continuous lead).

Supply voltage:

8 - 30 Vdc/30mA.

Calibration accuracy:

+/- 2% RH.

Compensated thermal stability:

+/- 1% RH (+10°C to +80°C).

Materials:

Stainless steel 316S11.

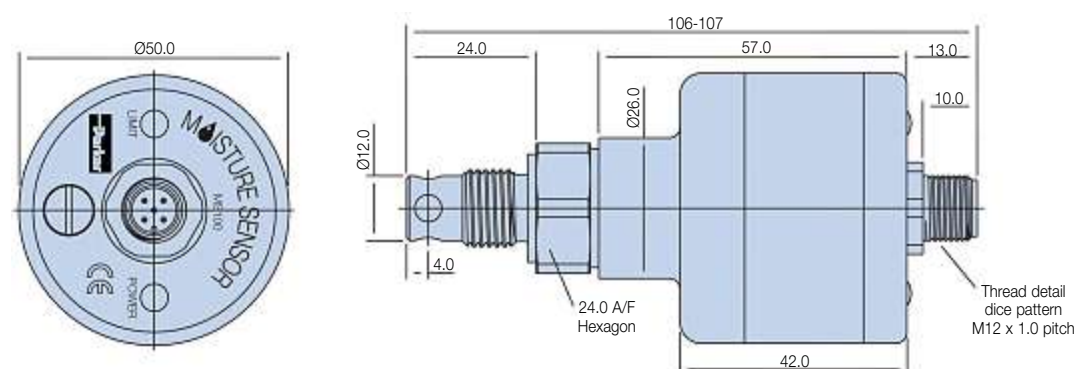
Sensor size/weight:

107mm x ø50mm/0.3kg.

IP rating:

IP68 (with specified moulded cable).

Installation Details



Usage Specifications

Interpreting the data

Oil type: Texaco Rando 46.

Saturation point: 400ppm @ 65°C (150°F).

At the above operating condition, the meter displays 100% saturation. As the meter's scale indicates a reduction in the saturation percentage, there is also a corresponding reduction in PPM at a constant temperature. In the example above, a meter reading of 50% saturation could be interpreted as 200ppm at 65°C (150°F).

Sensor

Using only the sensor as a go/no-go device, a red LED will indicate when the oil's water concentration reaches 80% saturation and trigger a corresponding voltage output. The unit also features an analogue output proportional to % saturation with a dynamic range of 0.85 to 4.05 volts.

%RH	Under 0	0	10	20	30	40	50	60	70	80	90	100	Over 100
Vdc	<0.85	0.85	1.17	1.49	1.81	2.13	2.45	2.77	3.09	3.41	3.73	4.05	>4.05

MS100 Moisture Sensor

Visual Indicators Specifications

Bar Graph Indicator (PBG8341A)

Construction:

Housing – nylon 6/6, window – acrylic,
bezel/board supports – ABS,
pins – phosphor bronze.

Power supply:

11 – 30 Vdc.

Signal input: (By dipswitch configuration)

Off – differential up to 5V.

A – single signal (Ref. 0V) up to 5V.

B – single signal (Ref. 1V) up to 6V.

Cut out size:

45.6mm x 45.6mm.

Fixing:

Push fit panel thickness 0.9mm to 3.2mm.

Sealing:

Designed to IP50 standard.

(Front face may be silicon sealed after LED configuration).

Scale:

Supplied 0 to 100% in horizontal.

Other scales, in volume, consult Parker Hannifin.

Scaling factors:

10% to 100% range. Fully adjustable.

Lamp intensity:

4mcd each.

Front viewing:

Polarised.

Weight:

29gms.



PBG8341A



DDU1001



DDU1002



The MS100 Moisture Sensor has a maximum cable length of 10 meters, before the output starts to degrade. The MS100 extension box boosts all the outputs from the MS100 Moisture Sensor. This enables the outputs to go another 10 meters.

Features

- IP67 rated container (120mm x 100mm x 60mm)
- Integrated 10 meter PVC cable already fitted.
- Complete with wall mounting kit.
- No additional power supply required.
- Universal box means it can be positioned in any orientation.

Ordering Information

Standard products table - moisture sensors

Product number	Supersedes	Model	Thread form	Seal option
MS1001P	MS100-1P	MS100	1/4" BSP with bonded seal	P
MS1005P	MS100-5P	MS100	9/16 - 18UNF 2A (SAE J514)	P
MS1002P	MS100-2P	MS100	1/4" BSP with integral seal	P
MS1003P	MS100-3P	MS100	R1/4" BSPT	P
MS1004P	MS100-4P	MS100	1/4" NPT	P
MS1006P	MS100-6P	MS100	Handheld version	P
MS1007P	MS100-7P	MS100	Inline tee version	P

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Standard products table - accessories/panel displays

Product Number	Supersedes	Description
P9732PVC02	P.9732PVC-02	2 meter M12 IP68 PVC coated cable
P9732PVC05	P.9732PVC-05	5 meter M12 IP68 PVC coated cable
DDU1002	DDU-1002	+110 to +240 Vac process indicator
PBG8341A	PBG.8341.A	+11 to +30 Vdc bar graph indicator
P9732PVC10	P.9732PVC-10	10 meter M12 IP68 PVC coated cable
P9732PUR02	P.9732PUR-02	2 meter M12 IP68 PUR coated cable
P9732PUR05	P.9732PUR-05	5 meter M12 IP68 PUR coated cable
P9732PUR10	P.9732PUR-10	10 meter M12 IP68 PUR coated cable
S970400	N/A	12 Vdc power supply
S970410	N/A	10 meter extension box
P973200	N/A	IP67 Re-wireable M12 connector
DDU1001	DDU-1001	+22 to +55 Vdc process indicator

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

MS150 Moisture Sensor

Features & Benefits

- Return line low pressure rating: Up to 10 bar (145 PSI)
- Results reported as a “% saturation” of water in your oil
- Variable signal output options
 - (+1 to +5 Vdc) (+4 to +20mA) RH%
 - (0 to +5 Vdc) Temperature
- Compatible with Parker Digital Display Units (DDU1001, DDU1002 and the bar graph indicator PBG8341A)
- Simple dynamic installation into a flow path
- Temperature compensated results
- Two thread forms (1/4” BSPT & 1/4” NPT)
- Easier and more flexible cable connection
- Independent temperature output
- 2 alarm point option with alarm module (PAM8342)

Parkers MS150 Moisture Sensor is the easy-to-fit, lightweight and cost-effective solution to accurately measure the % moisture present in operating fluids.

MS150 provides an effective early warning device when connected to an array of monitoring options to ensure continuous system protection and fluid integrity.

Typical Applications

- Earth moving machinery
- Forestry
- Agricultural (harvestors, tractors)
- Industrial factory (pulp & paper processes)
- Marine (hydraulic stabilizer systems)
- Test rig stands (critical test machines)
- Ground support vehicles (military)
- Fluid transfer systems (skids)
- Commercial aerospace and ground support systems (skids)



Detect water contamination before it shuts your application down

Dynamic moisture monitoring for today's demanding mobile hydraulic systems. The new lightweight MS150 moisture sensor is designed to produce accurate, **real time** moisture indications in petroleum - based, synthetic oils and phosphate ester (aggressive fluids) below fluid saturation levels.

Specification

Pressure:

Maximum allowable operating pressure. (MAOP): 10 bar (145 PSI).

Operating temperature:

Minimum: -20°C (-4°F).

Maximum: +85°C (+185°F).

Flow through sensor cell:

Installed in active flowstream.

Fluid compatibility:

Mineral oils, petroleum-based and Phosphate ester.

Viscosity range:

Unlimited.

Port connections:

1/4" BSPT or 1/4" NPT.

Outputs:

Variable - see sensor outputs.

Supply voltage:

+8 to +30 Vdc.

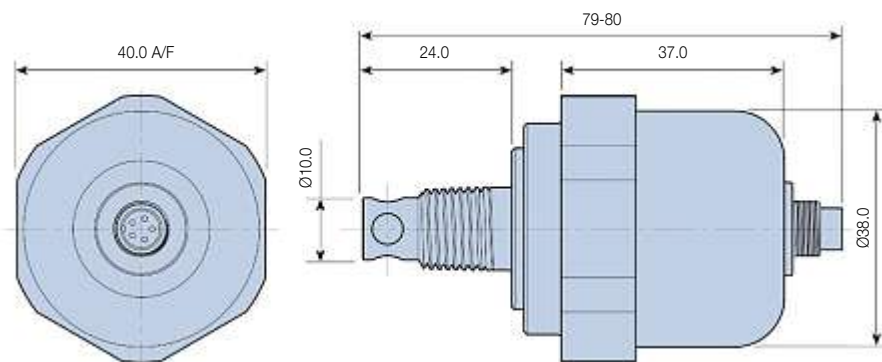
Sensor size/weight/material:

80mm x 43mm/0.1kg/Aluminium

IP ratings:

IP54

Installation Details



All dimensions in millimetres (mm)

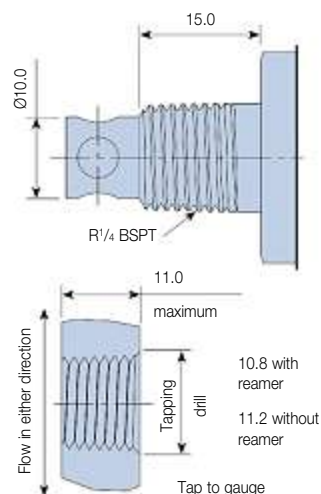
Dimensions are for reference only

Thread Form Options

MS150

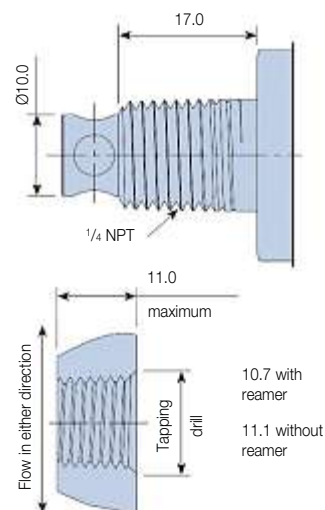
Water enters hydraulic and lubricating systems from a variety of sources. Atmospheric ingress of water vapor, as well as internal heat exchanger leaks, create unfavorable operating conditions. The MS150 Moisture Sensor eliminates the guesswork by providing real time condition monitoring. It is designed to work well in petroleum/synthetic hydraulic and lubricating oil applications.

BSPT



Installation details for R 1/4 BSPT taper

NPT



Installation details for 1/4 NPT

For alternative thread forms please contact Parker Filtration

MS150 Moisture Sensor

Interpreting Data

The Parker MS150 Moisture Sensor is designed to provide real time accurate and repeatable results reported as % saturation of water. Percent saturation is a useful measurement that offers the user a simple, quantitative method in determining how wet or dry a hydraulic or lubricating system may be. In contrast, PPM and % water by volume measurements provide little information about a fluid's free or dissolved water condition. % saturation can now easily be converted to PPM as long as the fluid's saturation point is known using the MS150 temp output.

Example

Oil type: Texaco Rando 46

Saturation point: 400ppm @ +65°C (+150°F)

At the above operating condition, the meter displays 100% saturation. As the meter's scale indicates a reduction in the saturation percentage, there is also a corresponding reduction in PPM at a constant temperature. In the example above, a meter reading of 50% saturation could be interpreted as 200ppm at +65°C (+150°F)

Sensor Outputs

MS150 moisture sensor pin designations			
Pin	Designation	I/O	Description
1	Supply	Input	Supply voltage (+8 to +30Vdc)
2	%RH	Output	% Saturation out (+1 to +5Vdc)
3	%RH	Output	% Saturation out (+4 to +20mA)
4	Temperature	Output	Temperature out (0 to +5Vdc)
5	Common	Input	Common (0Vdc) ground from power supply (not chassis ground)

Indicator Options

For specifications on the process indicator options see page 268 and 269 for ordering information.



DDU1001



DDU1002

Description	DDU1001	DDU1002
Power supply	22 - 55 Vdc	110 - 240 Vdc
Accuracy	± 0/01% typical	± 0.1% typical
Sample rate	10 per second	2.5 per second
Operating temp (°C)	0 - 55	0 - 50
Storage temp (°C)	-10 to +70	-10 to +70
Display	5 digit LED	3½ digit LED
Power output (Vdc)	24	24
Weight (kg)	0.21	0.30
Panel cutout (mm)	92x48 ±0.5	93x45 ±0.5
Dimensions (mm)	48x96x100	48x96x93

Ordering Information

Standard products table

Product number	Supersedes	Description
MS1503	MS150-3	¼" BSPT moisture sensor
DDU1002	DDU-1002	+110 to +240 Vdc process indicator
MS1504	MS150-4	½" NPT moisture sensor
DDU1001	DDU-1001	+22 to +55 Vdc process indicator
PBG8341A	PBG.8341.A	Bar graph indicator
PAM8342	PAM.8342	Alarm module

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Oilcheck



Oilcheck

Features & Benefits

- A comparator between new and used oils.
- Oilcheck gives early warning of impending engine failure.
- Cost effective solution to save money and help increase engine life.
- Completely portable, battery powered.
- Ideal for fleet owners, garages and DIY mechanics.
- Numerical display to show positive or negative increase in dielectrics.

Using Oilcheck

Following the simple sampling procedure. The Oilcheck will ensure effective and highly repeatable results. Once a clean oil sample has been placed in the 'Sensor Well' and the 'TEST' button has been pressed, the instrument will 'zero' on the sample.

Once cleaned out with a degreaser and replaced by a contaminated sample, a new reading is obtained on the LCD, which can be easily compared against the green/amber/red efficiency scale.

Typical Applications

- Fleet owners
- Construction equipment maintenance
- Vehicle service garages
- Plant hire maintenance

The Oilcheck from Parker Filtration's Condition Monitoring Centre detects and measures the dielectric constant of oil, by comparing the measurements obtained from used and unused oils of the same brand.

Used as a regular service monitoring instrument, the Oilcheck will give the engineer warning of an impending engine failure and promote increased engine life. Oilcheck is the low-cost solution that will take the guesswork out of oil changes, saving money and time.



Specification

Case construction:
ABS.

Circuitry:
Microprocessor control.

Battery:
1 x 9V alkaline.

Display:
LCD.

Suitable oil types:
Mineral and synthetic based oils.

Repeatability:
Better than 5%.

Readout:
Green/amber/red grading, Numerical value (0-100).

Battery lifetime:
>150 hours or 3,000 tests.

Dimensions:
250mm x 95mm x 34mm (9.8" x 3.7" x 1.3").

Weight:
0.4kg.

Using Oilcheck



Green/amber/red
numerical value

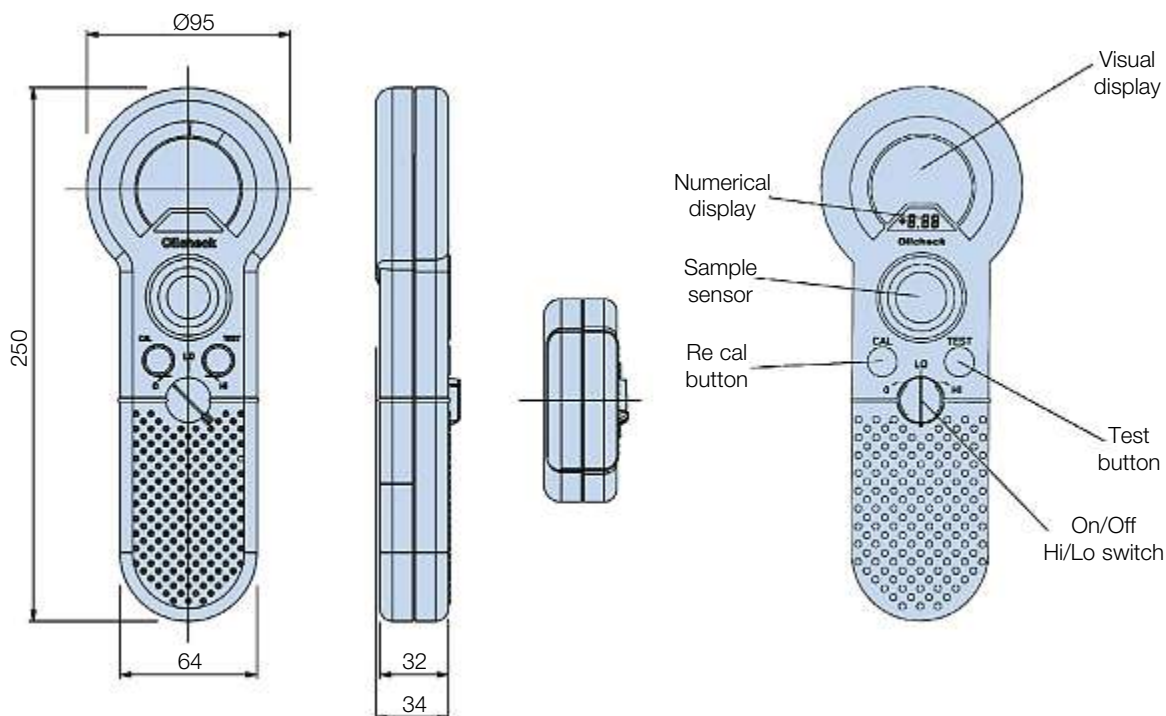


Function
buttons

The Oilcheck can remove the need for costly and time consuming laboratory analysis of mineral and synthetic oils used in engines, gearboxes and bearing lubrication systems. It detects mechanical wear and any loss of lubricating properties in the oil with a repeat accuracy of less than 5%.

The Oilcheck is able to show changes in the oil condition brought about by the ingress of water content, fuel contamination, metallic content and oxidation.

Installation Details



Ordering Information

Standard products table

Product number	Description
OLK605	Oilcheck kit with numerical readout
OLK611	Oilcheck cleaner

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

With Parker as your partner, you have access to the world's broadest line of motion control components and systems



Parker is the only company in the World to manufacture and supply a complete range of hydraulic, pneumatic and electromechanical systems and components. Whether your need is for cylinders, valves, pumps, filters, drives, controls, connectors or seals, Parker has a product to meet your needs from a range of more than 600,000 for every type of mobile and industrial application.

For further information call our Product Information Centre free on 00800 27 27 5374 or visit our web site at www.parker.com

00800 27 27 5374
www.parker.com
epic@parker.com





Changes to ISO Standards

The impact on filter performance reporting and the contamination code.

The recent changes to ISO contamination and filtration standards were brought about to solve accuracy, tracability, and availability issues. It is important to remember that both real world hydraulic system cleanliness levels and actual system filter performance remain unchanged.

However, the reporting of cleanliness levels and filter performance has changed due to the new particle counter calibration and multi-pass test procedures.

The new calibration method.

ISO 11171 is the new particle counter calibration method and utilises calibration fluid made from ISO Medium Test Dust (ISO MTD) suspended in MIL-H-5606. The calibration fluid is traceable to the National Institute of Standards and Technology (NIST) and is designated by NIST as Standard Reference Material (SRM) 2806. ISO 11171 is replacing ISO 4402 which is based on obsolete AC Fine Test Dust (ACFTD)

It is important to note that the ISO 11171 calibration method is based on a distribution of particles measured by their equivalent area diameter, whereas ISO 4402 is based on distribution of particles measured by their longest chord. Also, the NIST work utilised scanning electron microscopy for particles below 10µm in size, whereas sizing distribution on ACFTD utilised optical microscopy.

The charts to the right show the approximate particle size relationship between the calibration methods.

Chart 1 - ISO Comparison

Former two-digit ISO 4406:1987
 $\frac{5\mu\text{m} / 15\mu\text{m}}{14 / 11}$

Former three-digit ISO 4406:1987
 $\frac{2\mu\text{m} / 5\mu\text{m} / 15\mu\text{m}}{17 / 14 / 11}$

New three-digit ISO 4406:1999
 $\frac{4\mu\text{m} (c) / 6\mu\text{m} (c) / 14\mu\text{m} (c)}{18 / 14 / 11}$

Chart 2 - Particle Size Comparison

ACTFD size (per ISO 4402:1991) µm	NIST size (per ISO 11171:1999) µm (c)
1	4.2
2	4.6
3	5.1
5	6.4
7	7.7
10	9.8
15	13.6
20	17.5
25	21.2
30	24.9
40	31.7



Laboratory Analysis Service

The Par-Test service is a complete laboratory analysis performed on a small quantity of fluid supplied by the customer.

Provision of a sampling bottle of known cleanliness and a pre-addressed bottle container, both of which are designed to be suitable for mailing, is part of the service.

Most contaminant in hydraulic or lube oil systems are invisible

Damage causing particles range from 5 to 40 micrometers in size, but the limit of human visibility is only 40 micrometers. Harmful particulate matter is often invisible, even in very high concentration. Also, acids, water and other fluid oxidation by-products cannot be easily detected by human senses. Some other means must be used to monitor fluid conditions.

Fluid analysis is the only method to check fluid conditions

Fluid analysis services may be as simple as a sample batch comparison. Or, a full laboratory treatment may be used to indicate the sources and quantity of contamination. In either case, important test results are achieved. Parker offers both types of services to fit your specific needs.

Par-Test: complete laboratory analysis

Par-Test is a complete laboratory analysis, performed on a small quantity of fluid. The test results are very comprehensive, and can include the following critical analysis:

- Spectrochemical analysis of over 20 wear metals and additives.
- Particle count reported over five size ranges. The particle count is expressed as an ISO cleanliness code. It is also plotted on a graph for better comparisons.
- Viscosity at 40°C, 100°C, Viscosity Index and TAN are reported.
- Water content is expressed as a % of volume. Many hydraulic systems may tolerate up to 300 ppm (.03%) of water contamination. Some bearing or lube oil systems must strictly limit water content.
- Analysis recommendations summarises Par-Test results and indicates what action should be taken to prevent any potential problems.
- Fast turnaround—test results are mailed back to you within 24-48 hours after receiving your fluid sample. Tests including Spectro-chemical analysis allow 7 days.

Par-Test: concise and complete

The Par-Test report you receive is neatly organised. You may quickly analyse the test results — or compare them to a previous sample. Using the same “unit number” on your sample information form will allow up to four test results listed on a single Par-Test report form. Par-Test belongs in your regular maintenance program. Comprehensive and accurate fluid analysis will help you prevent major hydraulic or lube oil system problems. Order Par-Test today (see below details) and see how easy and complete—fluid analysis can be.

Ordering Information

Par-Test: laboratory fluid analysis

The purchase price for the Par-Test sample kit includes the pre-cleaned and sealed sample bottle, mailing tube with a pre-addressed label, sample information data sheet to be completely filled out by the end user and the complete laboratory analysis.

IMPORTANT

Parker Filtration has three European laboratory locations able to receive and process fluid samples. One location in the UK, one location in The Netherlands taking care of Central European analysis and a location in Finland to provide Scandinavian analysis. Decide on the Option required and contact the relevant Parker location.

Par-Test laboratory analysis service

- UK (Email: filtrationinfo@parker.com) (option 2 only)
- Holland (Email: filtration.netherlands@parker.com) (all options)
- Finland (Email: filtration.finland@parker.com) (**option 2 only**)

Option	Description
Option 1	Sample bottle plus particle/membrane/water/microscopic photo analysis (Holland only)
Option 2	Sample bottle plus particle/water/spectro-chemical analysis (Finland and UK only)
Option 3	Sample bottle plus membrane/water/microscopic photo analysis (Holland only)
Option 4	Sample bottle plus particle/membrane/water/spectro-chemical/microscopic photo analysis (Holland only)

Note: Please allow 24-48 hours of laboratory time plus mailing/shipping time to receive your test results.

Par-Test™ Charts

PAR-TEST



Fluid Analysis

PARKER NO.	CLIENT NO.	UNIT NO.
1000.	27	4714

OTHER
295

LOCATION RETURN

FILTER MANUF PARKER

PUMP MODEL

LINE TRUCK

FLUID MANUF
FLUID TYPENUMBER COPIES 2
TYPE NUMBER 2

MICRON RATING 10NOM

SAMPLE DATA

LAB#	DATE TAKEN/TESTEN	DATE FILTER SERVICE
9261	30JUN89 02JUL89	
9262	28JUL89 30JUL89	
9263	20AUG89 22AUG89	

SPECTROCHEMICAL ANALYSIS VALUES EXPRESSED IN PARTS PER MILLION (PPM) BY WEIGHT	IRON	CHROMIUM	LEAD	COPPER	TIN	ALUMINIUM	NICKEL	SILVER	MANGANESE	SILICON	BORON	SODIUM	MAGNESIUM	CALCIUM	BARIUM	PHOSPHORUS	ZINC	MOLYBDENUM	TITANIUM	VANADIUM	CADMIUM
9261	3	0	0	2	0	0	0	0	0	9	0	0	2	29	291339	233	0	0	0	0	0
9262	2	0	0	2	0	0	0	0	0	9	0	0	4	24	25	156	244	0	0	0	0
9263	1	1	0	1	0	0	0	0	0	7	0	0	1	29	24	133	207	0	0	0	0

PHYSICAL PROPERTY DATA	VIS 40°C (VIS 104 °F)	VIS 100°C (VIS 212 °F)	WATER
9261	32.7	N/A	0
9262	32.8	N/A	0
9263	32.3	N/A	0

LAB# ANALYSIS RECOMMENDATIONS

LAB#	ISO	RATING
9261	20/	17
9262	19/	14
9263	16/	12

PARTICLES PER 100 MILLILITER GREATER THAN INDICATED SIZE

>5	>15	>25	>50	>100
667,488	67,608	15,440	872	88
315,466	12,052	2,496	296	8
41,758	2,280	664	112	16

LAB# ANALYSIS RECOMMENDATIONS

9261 EXTREME LEVELS OF CONTAMINATION INDICATE POSSIBLE WEAR PROBLEMS. HIGHER PRESSURE SYSTEMS (>1500 PSI) SHOULD RECEIVE IMMEDIATE FILTRATION ATTENTION. SAMPLE AGAIN WITHIN 30 DAYS

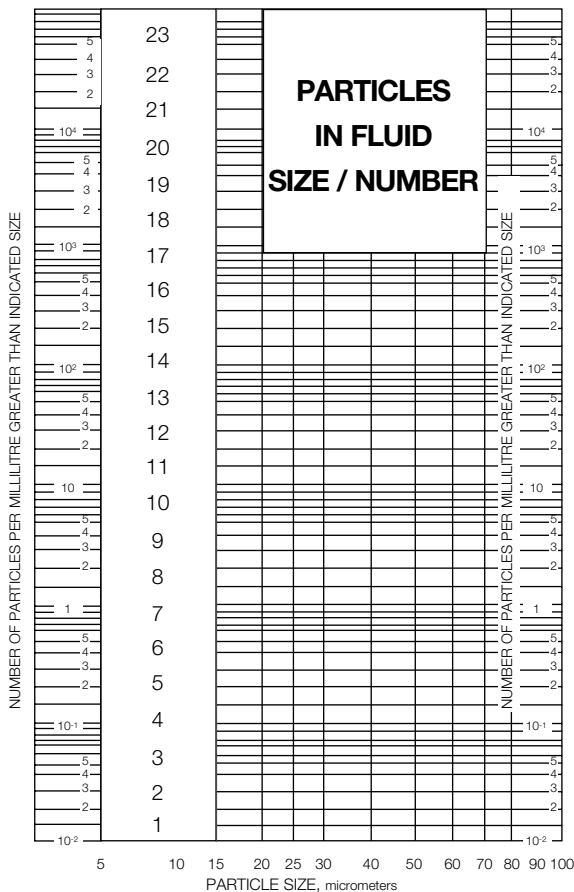
9262 EXTREME LEVEL OF CONTAMINATION INDICATE POSSIBLE WEAR PROBLEMS.

LAB# ANALYSIS RECOMMENDATIONS

HIGHER PRESSURE SYSTEMS (>1500 PSI) SHOULD RECEIVE IMMEDIATE FILTRATION ATTENTION. SAMPLE AGAIN WITHIN 30 DAYS

9263 CLEANLINESS LEVEL SUITABLE FOR MOST SYSTEMS. SERVO CONTROLS REQUIRE CLEANER FLUID. CONTINUE REGULAR PREVENTIVE MAINTENANCE. SAMPLE AGAIN IN 2 - 3 MONTHS.

Since remedial advice is based on test results provided by others, and since corrective action, if any is performed by others, remedial advice is rendered without warranty or liability of any kind.



Viscosity Conversion Chart

cSt (centistokes)	SUS (Saybolt Universal Seconds)
10	46
20	93
25	116
30	139
32.4	150
40	185
50	232
70	324
90	417

Comparisons are made at 100°F (38°C).

for other Viscosity Conversion Approximations, use the formula: $cSt = \frac{SUS}{4.635}$

Cleanliness Level Correlation Table

ISO Code	Particles/Millilitre ≥ 5 Micrometers	Particles/Millilitre ≥ 15 Micrometers	ACFTD Gravimetric Level, mg/L	NAS 1638 (1964)	Disavowed "SAE" Level (1963)
26/23	640,000	80,000	1000		
25/23	320,000	80,000			
23/20	80,000	10,000	100		
21/18	20,000	2,500		12	
20/18	10,000	2,500			
20/17	10,000	1,300		11	
20/16	10,000	640	10		
19/16	5,000	640	10		
18/15	2,500	320		9	6
17/14	1,300	160		8	5
16/13	640	80	1	7	4
15/12	320	40		6	3
14/12	160	20		5	2
14/11	160	20		5	2
13/10	80	10	0.1	4	1
12/9	40	5		3	0
11/8	20	2.5		2	
10/8	10	2.5			
10/7	10	1.3		1	
10/6	10	.64	0.01		

For more information: Contact Parker Filtration's Condition Monitoring Centre: Tel: +44 (0) 1842 763299.
Fax: +44 (0) 1842 756300. Email: commoninfo@parker.com



Pressure Transducers and Transmitters

ASIC 'Performer'

25, 60, 100, 250, 400 and 600 bar

Brochure: FDHB240UK

March 2007



ASIC 'Performer'

Applications for the ASIC Performer

- Fork lift trucks - braking and load systems.
- Truck mounted cranes - load safety systems.
- Earth moving machinery - hydraulic gearbox control.
- Racing car - gearbox, fuel, cooling and suspension systems.
- Water usage systems - pressurised systems for industrial and hi-rise usage.
- Forest Machinery - felling and logging.
- Paper mills - speed control and weighing systems.



The Parker Filtration ASIC Performer Pressure Transducers and Transmitters.

The ASIC Performer offers a wide range of pressure sensors for mobile or industrial applications.

These sensors have been designed for the requirements of industrial instrumentation systems. Accordingly, the housings and all components in contact with the medium are made of stainless steel. Thus giving compatibility with a wide range of media. There is a choice of two plug connectors of either DIN or M12. There are

six measuring ranges available and a choice of outputs in the form of either voltage or current signals. Sensors with output signals from 4...20 mA are available in two wire technology.



The built-in voltage regulator allows the sensors to be operated with a supply voltage of 12-36/9-36 Vdc. All sensors are manufactured in our own production facility, typical of Parker Hannifin's continued commitment to flexibility and quality.



The Complete Performer range utilises ASIC technology (Application Specific Integrated Circuit) programmable software.



A comprehensive range of Pressure Transducers and Transmitters are available from Parker Filtration.

- One-piece body and diaphragm machining ensures long-term product stability.
- All stainless steel construction.
- 6 transducer pressure ratings with 0-5Vdc and 1-6Vdc outputs.
- 6 transmitter pressure ratings with a 2-wire 4-20mA output.
- Microdin din plug and M12 connector options.



AC/DC display unit (DDU1002)

Specification

Pressure ranges:
25, 60, 100, 250, 400, 600 bar.

Pressure Tolerance Specifications:

Rating	Maximum Overload Pressure	Maximum Burst Pressure
25	x 6.0 (150 bar)	x 20.0 (500 Bar)
60	x 2.5 (150 Bar)	x 8.0 (500 Bar)
100	x 2.5 (250 bar)	x 5.0 (500 Bar)
250	x 4.0 (1000 Bar)	x 7.0 (1800 Bar)
400	x 2.5 (1000 Bar)	x 4.5 (1800 Bar)
600	x 1.5 (1000 Bar)	x 3.0 (1800 Bar)

Vibration resistance:
IEC 60068-2-6:
+/- 5mm/10Hz...32Hz
200m/s² / 32Hz...2kHz

Installation:
Spanner size 22A/F.
Max. (recommended) tightening torque = 30Nm.

Weight:
200 - 230g

Lifespan:
10 million cycles

Thread Forms

G¹/₄ (1/4BSP) with ED seal.
All thread forms and sensor interface are made from 1.4301 stainless steel.
Non standard threads - contact Parker CMC

Electrical

Supply voltage

12 - 36Vdc

12 - 36Vdc

9 - 36Vdc

Output

0 - 5Vdc

1 - 6Vdc

4 - 20mA

Transducer current draw = <6mA

Load impedance (ohm) = >10K

Output signal noise = 0.1%FS

Product Performance

Linearity:

Typical: 0.3%FS.
Max: 0.6%FS.

Hysteresis:

Typical: 0.1%FS.
Max: 0.25%FS.

Repeatability:

Typical: 0.2%FS.
Max: 0.4%FS.

Functional temp range:

-40°C to +85°C.

Compensated temperature:

-20°C to +85°C.

Stability:

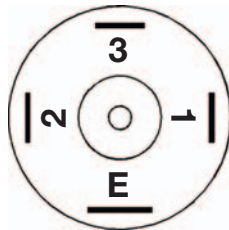
<0.1%FS/a (typ).

Response time:

= <1mS.

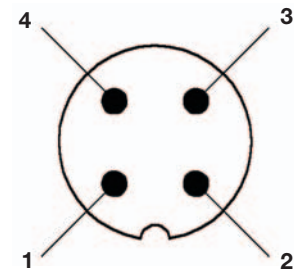
Wiring Information

Connector
Industrial Micro Din
9.4mm



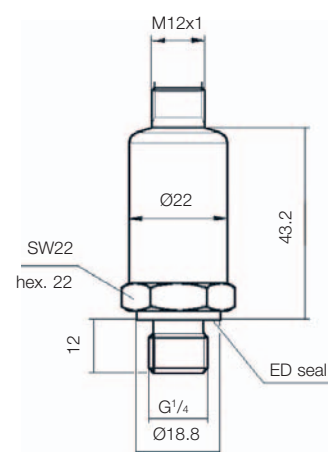
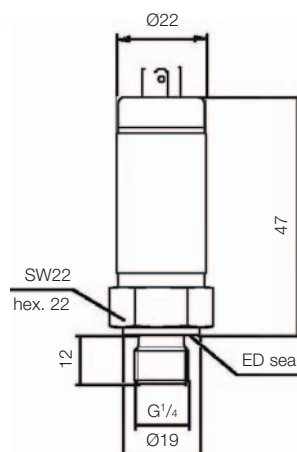
PIN	4 - 20mA	0 - 5Vdc	1 - 6Vdc
1	Do not connect	Signal output	Signal output
2	Supply +ve	Supply +ve	Supply +ve
3	Do not connect	Do not connect	Do not connect
E	Return	Supply ref. (0v)	Supply ref. (0v)

Connector
M12



PIN	4 - 20mA	0 - 5Vdc	1 - 6Vdc
1	Supply +ve	Supply +ve	Supply +ve
2	Do not connect	Signal output	Signal output
3	Return	Supply ref. (0v)	Supply ref. (0v)
4	Do not connect	Do not connect	Do not connect

Installation Details



ASIC 'Performer'

Ordering Information

Standard products table

Product number	Description - pressure transducer	Model	Output	Pressure	Thread form	Connector
PTDVB2501B1C1	0 - 5 Vdc 250 bar 1/4 BSP ED seal micro-din	PTD	VB	250	1	B1C1
PTDVB4001B1C1	0 - 5 Vdc 400 bar 1/4 BSP ED seal micro-din	PTD	VB	400	1	B1C1
PTDVB2501B1C2	0 - 5 Vdc 250 bar 1/4 BSP ED seal M12	PTD	VB	250	1	B1C2
PTDVB4001B1C2	0 - 5 Vdc 400 bar 1/4 BSP ED seal M12	PTD	VB	400	1	B1C2
PTDVB0251B1C1	0 - 5 Vdc 25 bar 1/4 BSP ED seal micro-din	PTD	VB	025	1	B1C1
PTDVB0251B1C2	0 - 5 Vdc 25 bar 1/4 BSP ED seal M12	PTD	VB	025	1	B1C2

Product number	Description - pressure transmitter	Model	Output	Pressure	Thread form	Connector
PTXB4001B1C2	4 - 20 mA 400 bar 1/4 BSP ED seal M12	PTX	B	400	1	B1C2
PTXB0251B1C1	4 - 20 mA 25 bar 1/4 BSP ED seal micro-din	PTX	B	025	1	B1C1
PTXB0251B1C2	4 - 20 mA 25 bar 1/4 BSP ED seal M12	PTX	B	025	1	B1C2
PTXB4001B1C1	4 - 20 mA 400 bar 1/4 BSP ED seal micro-din	PTX	B	400	1	B1C1
PTXB2501B1C1	4 - 20 mA 250 bar 1/4 BSP ED seal micro-din	PTX	B	250	1	B1C1
PTXB2501B1C2	4 - 20 mA 250 bar 1/4 BSP ED seal M12	PTX	B	250	1	B1C2

Accessories

Product number	Supersedes	Description
P833PVC2M	P.833PVC-2M	2 meter PVC coated 4 core cable
P833PVC5M	P.833PVC-5M	5 meter PVC coated 4 core cable
P833PVC10M	P.833PVC-10M	10 meter PVC coated 4 core cable

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Product configurator

Product number	Output options		Pressure range (bar)		Thread form		Connector	
PTD	VB	0 - 5 Vdc	025	0 - 25	1	1/4 BSP with ED seal	B1C1	Micro-din
PTX	SB	1 - 6 Vdc	060	0 - 60			B1C2	M12
	B	4 - 20mA (PTX only)	100	0 - 100				
	RB	0.5 - 4.5 ratiometric	250	0 - 250				
	PB	0.1 - 4.9	400	0 - 400				
			600	0 - 600				

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Examples of standard part number product ordering

PTDVB2501B1C1 0 - 5 volt output transducer
250 bar maximum pressure
1/4" BSP with ED seal
Industrial micro-din 9.4mm connector

PTDSB4001B1C2 1 - 6 volt output transducer
400 bar maximum pressure
1/4" BSP with ED seal
M12 connector
(See accessories for IP68 protected cable)

PTXB0251B1C2 4 - 20mA output transmitter
25 bar maximum pressure
1/4" BSP with ED seal
M12 connector
(See accessories for IP68 protected cable)



Condition Monitoring website: www.parker.com/cmc
Condition Monitoring email: conmoninfo@parker.com
For further information on other Parker Products,
call EPIC free on 00800 27 27 5374

Brochure Ref: FDHB240UK
Hydraulic Filter Division Europe

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Flowmeters & Monitors



LoFlow - Oil and Water Flowmeters

Features & Benefits



- Easy to read, permanent printed scales.
- Large scale definition for precise measurement.
- Easy panel mounting assembly.
- Negligible pressure drop characteristics.
- 10 bar pressure rating.
- Simple to use.

Specification

Construction:

Body Grillon TR55.
Back body half ABS 7020.
Ball retainer ABS 7020.
Back panel PVC.
Float See below.

Maximum working pressure:
10 bar.

Maximum working

temperature:
60°C.

Accuracy:
±2% typical.

Repeatability:
±1%.

Connections:
1/4" and 3/4" tapered threads.

Installation Details

Simple to fit, easy to use

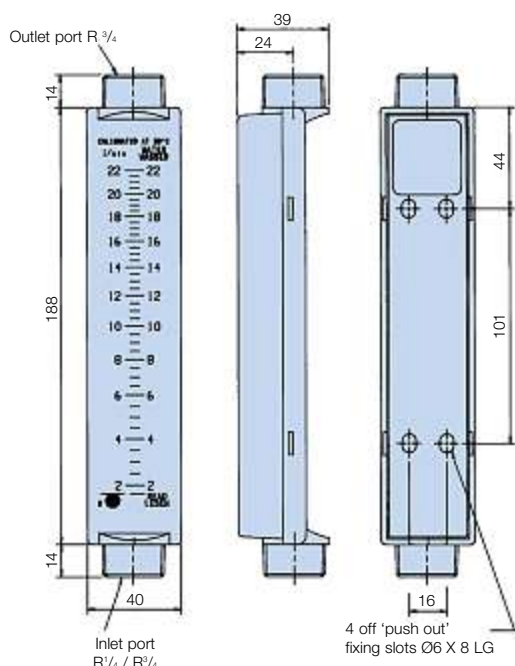
The LoFlow meter has been designed for those industries where the need exists for a low cost solution to small measurements of flow with an accurate reading. LoFlow uses the well tried and tested principle of variable area flow measurement utilising the movement of a ball or float inside a calibrated tapered bore.

Typical Applications

Pharmaceutical industry
Filtration systems
Hospital equipment
For water applications

Water treatment
Photography and X-ray
Equipment
Swimming pools

Installation Details



Ordering Information

Standard products table

Product number	Supersedes	Media	Ports (BSPT male)	Flow range (l/min)	Float material
LF802412	LF.2020	Water	3/4 - 3/4	0.2 - 2.0	Acetal
LF802413	LF.2100	Water	3/4 - 3/4	2.0 - 10.0	S/Steel
LF802414	LF.2220	Water	3/4 - 3/4	3.0 - 22.0	S/Steel
LF801431	LF.1002	Oil	1/4 - 3/4	0.010 - 0.20	S/Steel
LF802432	LF.1009	Oil	3/4 - 3/4	0.1 - 0.9	Acetal
LF802434	LF.1090	Oil	3/4 - 3/4	1.0 - 9.0	S/Steel
LF801411	LF.2005	Water	1/4 - 3/4	0.06 - 0.55	S/Steel

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Easiflow - Meters and Flowswitches

Features & Benefits



- Oil and water calibrated.
- Works in any plane.
- Pressures up to 10 bar.
- Flows from 1 to 150 l/min.
- Accuracy $\pm 5\%$ FSD.
- Repeatability $\pm 1\%$ FSD.
- Switches – fully adjustable flow rate signalling.
- Plant and equipment protection.



Easiflow Meters Specification

Construction:

Cone	Acetal
Viewing glass	Borosilicate glass
Calibrated spring	Stainless steel
Seal	Nitrile
Body	Glass filled nylon

Maximum working pressure:
10 bar.

Minimum working pressure:
1 bar.

Temperature range:
+5°C to +80°C - Oil.
+5°C to +60°C - Water.

Flow rate:

1 to 150 l/min.

Viscosity range:

10 to 200 centistokes (oil).

Accuracy:

$\pm 5\%$ FSD.

Repeatability:

$\pm 1\%$ FSD.

Connections:

1" BSP parallel threads.

Weight:

0.4kg.

Flowswitch Specifications

The Easiflow switch is a flow measuring device incorporating an AC/DC switch suitable for controlling valves or pump motors or for activating alarm signals.

General flowmeter specification:

See material details opposite.

Switch type specifications:

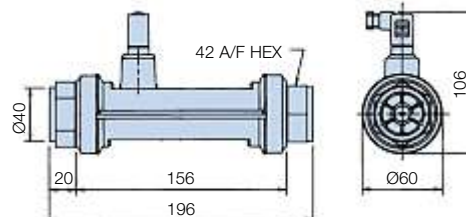
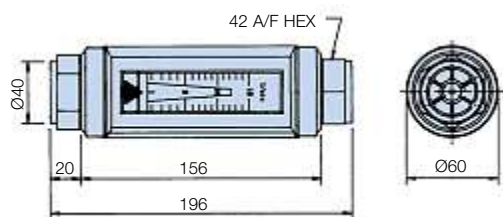
Magnetically operated reed switch.

Electrical details:

Voltage range	300Vac/dc
Maximum current	2.5Amps
Maximum load	100W resistive 70W inductive



Installation Details



Ordering Information

Standard products table

Product number	Supersedes	Media	Flow range (l/min)
EF773111220	EFW.0302	Water	2 - 30
EF773111220	EFW.0502	Water	4 - 50
EF7731113220	EFW.1002	Water	5 - 100
EF7731114220	EFW.1502	Water	10 - 150
EF7731110120	EFL.0151	Oil	1 - 15
EF7731111120	EFL.0301	Oil	2 - 30
EF7731112120	EFL.0501	Oil	4 - 50
EF7731113120	EFL.1001	Oil	5 - 100
EF7731114120	EFL.1501	Oil	10 - 150
EF7731110220	EFW.0152	Water	1 - 15

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Standard products table

Product number	Supersedes	Media	Flow range (l/min)	Switch range (l/min)
EF7731110221	EFW.015S1	Water	1 - 15	5 - 15
EF7731111221	EFW.030S1	Water	2 - 30	5 - 30
EF7731110121	EFL.015S1	Oil	1 - 15	5 - 15
EF7731111121	EFL.030S1	Oil	2 - 30	5 - 30
EF7731112121	EFL.050S1	Oil	4 - 50	10 - 50
EF7731113121	EFL.100S1	Oil	5 - 100	20 - 100
EF7731114121	EFL.150S1	Oil	10 - 150	30 - 150
EF7731112221	EFW.050S1	Water	4 - 50	10 - 50
EF7731113221	EFW.100S1	Water	5 - 100	20 - 100
EF7731114221	EFW.150S1	Water	10 - 150	30 - 150

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Flowmeters & Monitors

Dataflow - 4 to 20mA and Pulse Output Flow Transmitters

Features & Benefits



- 4 to 20mA output.
- Pulse output available for totalising/batching.
- Works in any plane.
- Accepts reverse flow.
- Maximum flow 150 l/min.
- Negligible pressure drop.
- Pressures up to 10 bar.
- Low cost. Simple to install.
- For use with most liquids.
- Factory calibrated. Accuracy $\pm 2\%$.
- DIN 43650 plug connection (included).

Specification

Construction:

Borosilicate glasstube.
Nitrile seals.
Body – Glass filled nylon.
Rotor and locator – Acetal.
Washers and shaft – Stainless steel.
Rotor tips – Stainless steel.

Max. working pressure:

10 bar oil/water.

Flow indication:

Min: 2 l/min.
Max: 150 l/min.
Accepts reverse flow.

Accuracy:

$\pm 2\%$ FSD.

Temp range:

+5°C to +80°C oil.
+5°C to +60°C water.

Connections:

1" BSP parallel threads.

Weight:

0.7Kg.

Calibration 4 to 20mA:

4mA = 0 l/min,
20mA = 100 l/min.

Calibration pulse output per litre:

'K' factors.
Oil = 51.14
Water = 44.25

Electrical details 4 to 20mA:

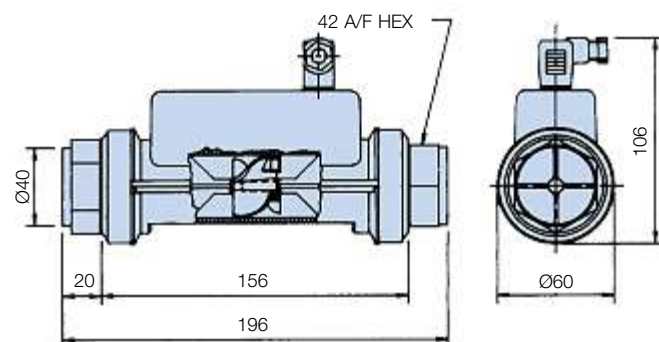
Supply = 24Vdc.

Pulse output:

Supply = 24Vdc.
(open collector transistor).



Installation Details



Ordering Information

Standard products table

Product number	Supersedes	Description
DFT980	DFT.980	Dataflow "Pulse" output transmitter
DFT990	DFT.990	Dataflow 4-20mA transmitter

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.



Dataflow 4-20mA transmitter can be connected to a Digital Display Unit (DDU1001 or DDU1002)

Digital Display Specification (DFT 990 only)

For indicator options please refer to MS150 section of the catalogue, reference DDU1001 and DDU1002 indicators

4 to 20mA On-Site Calibration

Set your system to zero flow. Connect a multimeter across terminals 1 (+20mA) and 2 (0mA) (Dia. 2). Set the zero to read 4mA on your multimeter (Dia. 1). Set your system to full flow and set the span to read 20mA on your multimeter. (Dia. 1)

Note: Minimum span setting = 30 l/min

Diagram 1

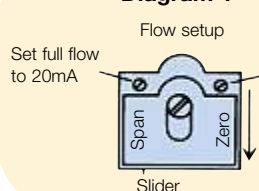
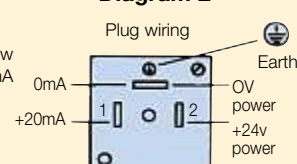


Diagram 2



Dataflow Compact - Inline Flow Transmitter

Features & Benefits



- Pulse output signal for flows up to 25 l/min.
- Lightweight and robust.
- Operates in any plane. Simple to install.
- Low cost flow measurement.
- Negligible pressure drop.
- Accepts reverse flow.
- $\frac{3}{8}$ BSP male connection.
- Water or compatible clear fluids only.
- Ideal for washing machines, showers and vending machines.

Specification

Construction:

Body Grilamid – TR55.
Rotor 18% PTFE filled nylon.
Shaft Stainless steel.
Shaft Retainers Grilamid TR55.

Operation:

Infra-red.

Maximum working pressure:
20 bar.

Pressure drop:
Max 0.1 bar at 15 l/min.

Flow range:
1 to 25 l/min.
(Accepts reverse flow).

Calibration:
'K' Factor 752 pulses per litre, typical.
Subject to application.

Accuracy:
±2% typical.

Repeatability:

±1%.

Temperature range:
+5°C to +70°C.

Overall dimensions:
52mm x 29mm x 27mm.

Weight:
16 grams.

Connections:
 $\frac{3}{8}$ BSP

Cable length:
300mm.

Power supply:
5 Vdc.

Output signal:
5 Vdc - square wave



Dataflow Compact – The Low Cost Transmitter

The Dataflow Compact Transmitter was designed to offer OEM's and end users alike a means of monitoring low flows on liquids with an electronic output signal – but at LOW COST. Fluid passes through the one piece sensor body impacting on the twin vaned turbine rotor, causing it to rotate at a speed proportional to the flow rate. Two opposing photo-transistors are mounted either side of the rotor and externally of the clear sensor body, these generate a continuous signal.

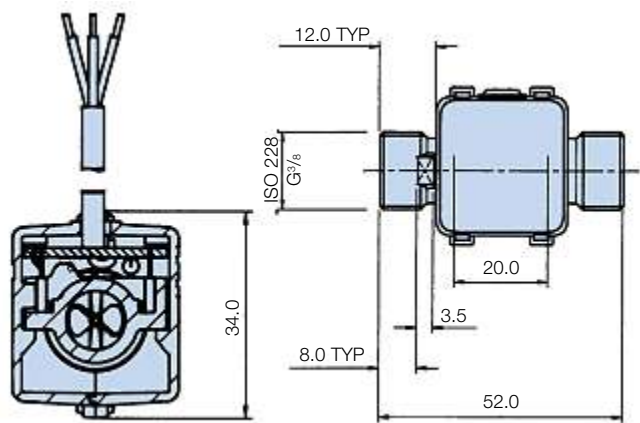
As the rotor spins each blade obscures the infra red signal. This is then converted into an industry standard pulse output signal – compatible with inexpensive display units for flow rate, totalising, batch control and large, central control systems. The lightweight Grilamid body with its virtually unrestricted flow path, offers negligible pressure drop for flows up to 25 l/min and withstanding pressures up to 20 bar.

Flow Rate • Totalising • Batch Control and applications in many industries

Dataflow Compact Transmitters are small and very robust having been developed and tested extensively in industry applications where space is a restriction. Dataflow Compact with its Grilamid body and BSP connections can be installed almost anywhere and once installed will give accurate and reliable output signalling.

Installation Details

Red wire +5V supply
Green wire Output signal
Blue wire 0V supply



Ordering Information

Standard products table

Product number	Supersedes	Description
DFC9000100	DFC.9000100	Dataflow compact transmitter

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Flowmeters & Monitors

Flowline - Oil and Water Calibrated Flowmeters (Brass Version)

Features & Benefits



- Works in any plane.
- Pressure up to 350 bar (5000 psi).
- Flows up to 360 l/min.
- Accuracy $\pm 5\%$ FSD.
- Repeatability $\pm 1\%$ FSD.
- Direct reading.
- Relatively insensitive to viscosity changes.
- Oil or water calibrated.
- Optional reed switch upgrade.

Specification

Construction:
Brass body to BS 2874 CZ114.

Maximum working pressure:
Up to 350 bar.

Minimum working pressure:
1 bar.

Temperature range:
Brass -20°C to $+90^{\circ}\text{C}$.

Calibration:
Oil Specific gravity
0.856 at 20°C .
Water Specific gravity
1.0 at 20°C .

Viscosity range:
10 to 200 cSt (oil).

Accuracy:
 $\pm 5\%$ FSD.

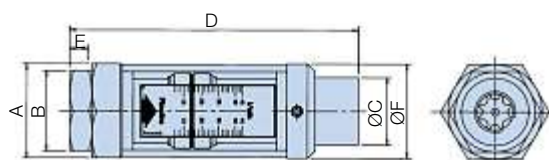
Repeatability:
 $\pm 1\%$ FSD.

Min. scale reading:
10% FSD.

Connections:
BSP parallel threads.

Wetted/non-wetted parts:
Consult Parker for information.

1/4", 1/2" and 3/4" BSP thread options



Note: To add an electrically operated reed switch to your flowmeter please order B.26307

Ordering Information - Oil

Standard products table

Brass flowmeter for oil		Ports BSP	Flow range (l/min)	Maximum pressure (bar)	Dimensions (mm)						Weight (kg)
Product number	Supersedes				A (A/F Hex)	B (A/F Hex)	C	D	E	F	
FM26122212	FM.26 122 212	1/4	0.5 - 4.5	350	32	29	19	123	7	32	0.4
FM26122312	FM.26 122 312	1/4	1 - 9	350	32	29	19	123	7	32	0.4
FM26222112	FM.26 222 112	1/2	2 - 20	350	41	38	32	165.5	12.5	46	0.9
FM26222212	FM.26 222 212	1/2	5 - 46	350	41	38	32	165.5	12.5	46	0.9
FM26322112	FM.26 322 112	3/4	5 - 55	350	58	46	43	190	15	58	1.75
FM26322212	FM.26 322 212	3/4	10 - 110	350	58	46	43	190	15	58	1.75
FM26122112	FM.26 122 112	1/4	0.2 - 2.0	350	32	29	19	123	7	32	0.4
FM26422112	FM.26 422 112	1 1/4	20 - 180	210	For installation details for 1 1/4 flowmeters see next page						8.0
FM26422212	FM.26 422 212	1 1/4	30 - 270	210							8.0
FM26422312	FM.26 422 312	1 1/4	40 - 360	210							8.0

Ordering Information - Water

Standard products table

Brass flowmeter for water		Ports BSP	Flow range (l/min)	Maximum pressure (bar)	Dimensions (mm)						Weight (kg)
Product number	Supersedes				A (A/F Hex)	B (A/F Hex)	C	D	E	F	
FM26222122	FM.26 222 122	1/2	2 - 20	350	41	38	32	165.5	12.5	46	0.9
FM26222222	FM.26 222 222	1/2	5 - 46	350	41	38	32	165.5	12.5	46	0.9
FM26322122	FM.26 322 122	3/4	5 - 55	350	58	46	43	190	15	58	1.75
FM26322222	FM.26 322 222	3/4	10 - 110	350	58	46	43	190	15	58	1.75
FM26122122	FM.26 122 122	1/4	0.2 - 2.0	350	32	29	19	123	7	32	0.4
FM26122222	FM.26 122 222	1/4	0.5 - 4.5	350	32	29	19	123	7	32	0.4
FM26122322	FM.26 122 322	1/4	1 - 9	350	32	29	19	123	7	32	0.4
FM26422122	FM.26 422 122	1 1/4	20 - 180	210	For installation details for 1 1/4 flowmeters see next page						8.0
FM26422222	FM.26 422 222	1 1/4	30 - 270	210							8.0
FM26422322	FM.26 422 322	1 1/4	40 - 360	210							8.0

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Flowline - Oil and Water Calibrated Flowmeters (Stainless Steel)

- 1 1/4" BSP option**

Construction:
Stainless steel to BS 970 316S.

Maximum working pressure:
Up to 350 bar.

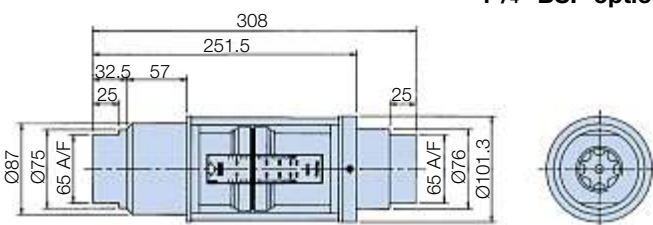
Minimum working pressure:
1 bar.

Temperature range:
-20°C to +105°C.

Calibration:

Oil	Specific gravity
	0.856 at 20°C.
Water	Specific gravity
	1.0 at 20°C.

Connections:
BSP parallel threads.



Magnet encapsulation:
Stainless steel BS970/1:1991.
:316S31.

Spring:
Stainless steel to BS 2056 EN 58J.

Seal:
Viton.

Ordering Information - Oil

Stainless steel flowmeter for oil		Ports BSP	Flow range (l/min)	Maximum pressure (bar)	Dimensions (mm)						Weight (kg)
Product number	Supersedes				A (A/F Hex)	B (A/F Hex)	C	D	E	F	
FM26232112	FM.26 232 112	½	2 - 20	350	41	38	32	165.5	12.5	46	0.9
FM26332112	FM.26 332 112	¾	5 - 55	350	58	46	43	190	15	58	1.75
FM26332212	FM.26 332 212	¾	10 - 110	350	58	46	43	190	15	58	1.75
FM26132112	FM.26 132 112	¼	0.2 - 2.0	350	32	29	19	123	7	32	0.4
FM26132212	FM.26 132 212	¼	0.5 - 4.5	350	32	29	19	123	7	32	0.4
FM26132312	FM.26 132 312	¼	1 - 9	350	32	29	19	123	7	32	0.4
FM26232212	FM.26 232 212	½	5 - 46	350	41	38	32	165.5	12.5	46	0.9
FM26432112	FM.26 432 112	1 ¼	20 - 180	350	For installation details for 1 ¼ flowmeters see above						8.0
FM26432212	FM.26 432 212	1 ¼	30 - 270	350							8.0
FM26432312	FM.26 432 312	1 ¼	40 - 360	350							8.0

[illegible]

Parker

Flowline - Flowswitches

Features & Benefits



- 'Boxed' two-switch type.
- Intrinsically safe versions.
- Maximum/minimum switching models.
- Maximum working pressure 350 bar. (min 1 bar)
- Flows from 2.0 to 110 l/min.
- Stainless steel – suitable for corrosive media.
- Stainless steel to BS970 316S16.

Ordering Information

To order the required switching unit, simply add the appropriate prefix before the part numbers shown below.

Standard products table

Product number	Supersedes	Description
FS643222112	FS.643 222 112	2 switches, 2 - 20 l/min (1/2 BSP) Oil
FS643222212	FS.643 222 212	2 switches, 5 - 46 l/min (1/2 BSP) Oil
FS643322112	FS.643 322 112	2 switches, 5 - 55 l/min (1/2 BSP) Oil
FS643322212	FS.643 322 212	2 switches, 10 - 110 l/min (1/2 BSP) Oil

Product configurator

Brass flowswitch for oil or water		Flow range and (port size)		Fluid type	
Product number					
FS643	2 switches	2221	2 - 20 l/min (1/2 BSP)	12	Oil
FS67A	Intrinsically safe high switch	2222	5 - 46 l/min (1/2 BSP)	22	Water
FS67B	Intrinsically safe low switch	3221	5 - 55 l/min (3/4 BSP)		
FS67C	Intrinsically safe hi/low switch	3222	10 - 110 l/min (3/4 BSP)		

Product configurator

Product configurator					
Stainless steel flowswitch for oil or water		Flow range and (port size)		Fluid type	
Product number					
FS643	2 switches	2321	2 - 20 l/min (1/2 BSP)	12	Oil
FS67A	Intrinsically safe high switch	2322	5 - 46 l/min (1/2 BSP)	22	Water
FS67B	Intrinsically safe low switch	3321	5 - 55 l/min (3/4 BSP)		
FS67C	Intrinsically safe hi/low switch	3322	10 - 110 l/min (3/4 BSP)		

Ordering example

Product number	Supersedes
FS64332212	FS.643 322 212

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Hydraulic Test Equipment

Features & Benefits



- Speedy diagnosis of hydraulic circuit faults.
- Flows ranging from 2 to 360 l/min.
- Measuring flow, pressure and temperature.
- Fully Portable – No power source required.
- Hydrotrac unit for flows from 2 to 110 l/min available.
- Designed for oil applications only.

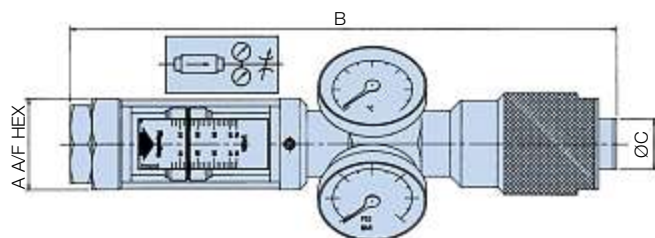
Specification

Flow range:
2 to 360 l/min.

Pressure range:
1 to 350 bar.

Temperature range:
0°C to +90°C.

Installation Details



Safety

An axial flow restrictor valve is fitted which can be adjusted under full load from open to fully closed, and to complete the specification, a safety blow-out disc, set to fail at 455 bar is fitted to the manifold in a position facing away from the operator when reading the gauges normally. Two spare blow-out discs are supplied which are easily replaced by removing the hexagonal plug on the gauge manifold.

Additional blow out discs can be ordered - 41203B (Bag of 10)

Ordering Information

Standard products table

Product number	Flow range (l/min)	Weight Kg (with case)	Dimensions (mm)		
			A	B	C
4121	10 - 110	7.4	46	350	35
4120	5 - 55	7.4	46	350	35
4123	2 - 110	11.8	46	350	35
4168	20 - 180	13.85	75	496	87
4169	30 - 270	13.85	75	496	87
4170	40 - 360	13.85	75	496	87
Part number	Supersedes	Description			
41203B	4120.3.B	Safety blow out discs x 10			

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Note 3: 4123 'Hydrotrac' unit features 2 flowmeters (2 - 20 and 10 - 110 l/min) and 1 pressure gauge and 1 thermometer.

Troubleshooting Test Units

Hydraulic Test Units are designed specifically for the speedy diagnosis of hydraulic circuit faults in mobile, marine and industrial systems using the normal range of mineral oils. Their rugged construction based mainly on mild steel, manganese bronze and acrylic materials makes them ideally suited for arduous use in the field.

Each unit is supplied in a convenient carrying case providing full protection and additional storage space for fittings. Because they need no power source such as batteries etc, they are always ready for instant use.

6 models are available to cover flow capacities up to 360 l/min and each incorporates a direct reading, uni-directional flow meter. The meter, which is both self cleaning and reasonably tolerant of contaminated fluids is coupled to a manifold that houses a glycerine-filled pressure gauge calibrated 0 to 350 bar and a dial-type thermometer with a 0°C to 100°C range.

Unit can only operate up to 90°C.

For further convenience the scale on the flow meter can be rotated to ensure visibility in any situation and the installed attitude of the assembly is not critical, though whenever possible the unit should be mounted with pressure gauge vertical and gauge case relief valve uppermost. The unit is designed for flow to be in the direction of the arrow on the flowmeter scale and must not be installed with the flow reversed.

Flow Products - For Compressed Air Applications

Features & Benefits



Ⓐ Flowline Flowswitches and Flowmeters

- Calibrated for direct reading of compressed air at 7 bar.
- Works in any plane.
- Brass or stainless steel models available in 4 sizes.
- Calibrated at 7 bar and 20°C.
- Flow ranges from 2 to 600 SCFM.
- Pressure 1-41 bar max.
- Optional reed switch upgrade.

Ⓑ Loflow Air Flowmeters

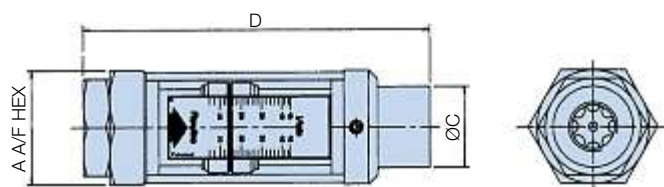
- Flow measurement from 1.1 to 720 l/min. Max 10 bar rating.

Ⓒ Compressed Air Test Equipment

- 6 models available – 1/4", 3/4" and 1 1/4" BSP.
- Air flow range 2 to 600 SCFM.
- Pressure 1-41 bar max.

Specification

Full technical specifications for the Flowmeter, Flowswitch, LoFlow and test equipment products are provided in the respective pages for these products.



Note: To add an electrically operated reed switch to your flowmeter please order B.26307

Ordering Information

Standard products table

Brass flowmeter for air		Ports BSP	Flow range		Maximum working pressure (bar)
Product number	Supersedes		SCFM	l/sec	
FM26123332	FM.26 123 332	1/4	2 - 20	1 - 10	41
FM26223132	FM.26 223 132	1/2	5 - 50	2 - 25	41
FM26223232	FM.26 223 232	1/2	10 - 110	5 - 50	41
FM26323132	FM.26 323 132	3/4	15 - 125	6 - 60	41
FM26323232	FM.26 323 232	3/4	20 - 225	10 - 100	41
FM26423132	FM.26 423 132	1 1/4	40 - 400	20 - 200	25
FM26423232	FM.26 423 232	1 1/4	60 - 600	30 - 300	25

Standard products table - LoFlow

Product number	Supersedes	Ports (BSPT male)	Flow range	Float material
LF801450	LF.3007E	1/4 - 3/4	1.1 - 8.0 l/min	Acetal
LF802455	LF.3050E	3/4 - 3/4	10 - 50 l/min	Acetal
LF802452	LF.3135E	3/4 - 3/4	20 - 135 l/min	Acetal
LF802454	LF.3720E	3/4 - 3/4	2 - 12 l/sec	S/Steel
LF801451	LF.3021E	1/4 - 3/4	4 - 22 l/min	S/Steel
LF802453	LF.3330E	3/4 - 3/4	1.0 - 5.5 l/sec	S/Steel

Standard products table

Stainless steel flowmeter for air		Ports BSP	Flow range		Maximum working pressure (bar)
Product number	Supersedes		SCFM	l/sec	
FM26133332	FM.26 133 332	1/4	2 - 20	1 - 10	41
FM26233132	FM.26 233 132	1/2	5 - 50	2 - 25	41
FM26233232	FM.26 233 232	1/2	10 - 110	5 - 50	41
FM26333132	FM.26 333 132	3/4	15 - 125	6 - 60	41
FM26333232	FM.26 333 232	3/4	20 - 225	10 - 100	41
FM26433132	FM.26 433 132	1 1/4	40 - 400	20 - 200	41
FM26433232	FM.26 433 232	1 1/4	60 - 600	30 - 300	41

Product configurator

Brass flowswitch for air		Flow range SCFM and (l/sec)	Ports (BSP)	Fluid type	
Product number					
FS643	2 switches	2231 5 - 50 (2 - 25)	1/2	32	Air
FS67A	Intrinsically safe high switch	2232 10 - 110 (5 - 50)	1/2		
FS67B	Intrinsically safe low switch	3231 15 - 125 (6 - 60)	3/4		
		3232 20 - 225 (10 - 100)	3/4		

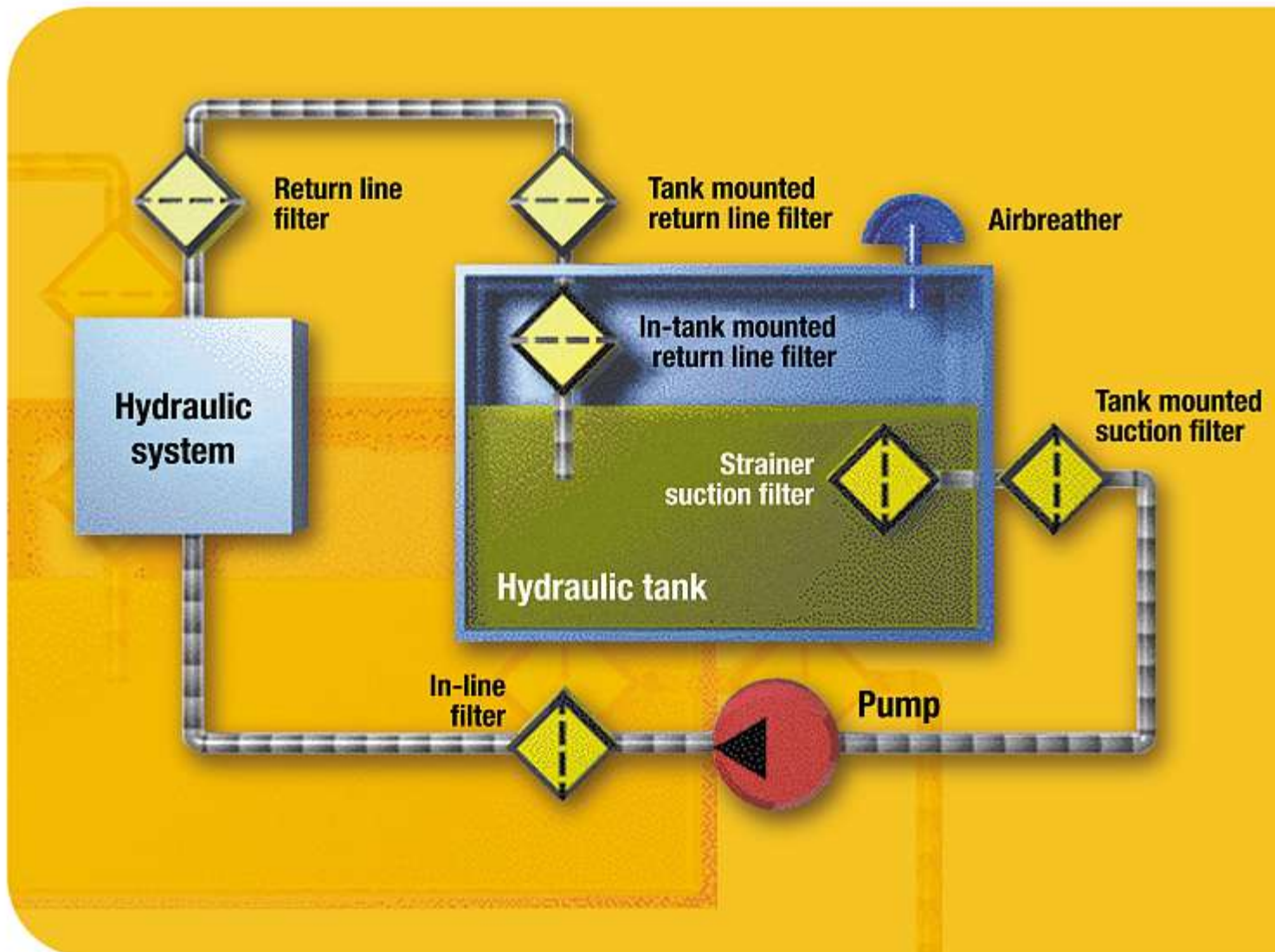
Ordering example

Product number	Supersedes
FS643323232	FS.643 323 232

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.

Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Guide to Contamination Control



Guide to Contamination Control

The Threat of Contamination

Industry requirements with regard to hydraulic and oil lubrication systems emphasise reliability, long lifetime and reduced energy use. Depending on the circumstances, some 70 - 80% of system failures are due to contamination. Cleanliness monitoring is essential in contamination control, as is selecting the right filter components. The first step, however, is understanding the specific system requirements and local operating conditions.

This guide to contamination control describes:

- Types of failures
- Sources of contamination
- Fluid cleanliness level
- Condition monitoring equipment
- Cleanliness service
- Filtration: parameters and facts
- Filter selection and filter types

Types of Failures

Component failure is often an invisible process. In general three types of failure can be distinguished:

1. Catastrophic Failures

This failure occurs suddenly and without warning; it is of a permanent nature. It is often caused by larger sized particles entering a component and obstructing the relative movement between surfaces, resulting in seizure of the component.

2. Transient Failures

Generally speaking, this type of failure is short-lived and goes unnoticed, although the consequences rarely do. It is caused by particles that momentarily interfere with the function of a component. The particles lodge in a critical clearance between matching parts, only to be washed away during the next operation cycle. As a result, components become less predictable and thus unsafe.

3. Degradation Failures

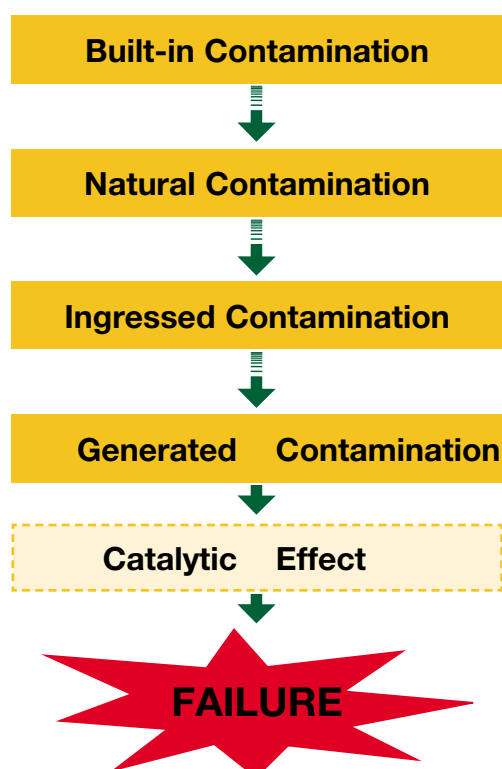
Gradual deterioration in the performance of a component results in its eventual repair or replacement. This failure is caused by the effect of wear induced by contamination. Additional generated contamination can lead to a catastrophic failure. Failures or reduced system performance have a direct impact on the cost of ownership, the efficiency rate and the perceived quality perception of the end users.



Sources of Contamination

Finding the balance

What does it take to implement system-matched filtration? A review of the sources of contamination is the first step in finding the balance between the performance of the filtration system and the system demands.



Sources of Contamination

Several sources of contamination must be taken into account when it comes to the effective implementation of system-matched filtration. Without adequate filtration, the protection of the system is jeopardised and component or system failure is imminent. System-matched filtration changes the deterioration into a balanced situation, representing the continuously controlled process that is needed to achieve system reliability. Realising this is only possible when the required fluid cleanliness levels are maintained.

1. Built-in Contamination

Residual contamination from the manufacturing and assembly processes cannot be avoided. Examples are machining debris, weld spatters, casting sand, paint, pipe sealant or fibres from cleaning rags. Flushing system components prior to assembly and decent housekeeping during the various stages of the assembly process are a must to reduce the amount of built-in contamination.



Filter media pleating

2. Natural Contamination

In general, the cleanliness level of new oil does not always meet the requirements of the system. Despite the efforts to control the fluid cleanliness level during the production processes, transport and distribution may contaminate the oil. Depending on the requirements for system cleanliness, we advise that you filter new oil before usage.

3. Ingressed Contamination

Systems are always under attack from contamination. Unfortunately it is not possible to avoid ingress contamination. Air breathers, cylinder rod seals, wiper seals, component seals or poorly fitted covers are a few examples of system parts that may have an important influence on the amount of ingress contamination.

4. Generated Contamination

Particles generate particles. This phenomenon is known as abrasion. Other processes like cavitation, corrosion, erosion, fatigue and metallic contact between moving parts generates particles and thus influences the contamination that is already present in the system. Even though these processes cannot always be avoided, their impact is strongly influenced by effective filtration.

5. Catalytic Effect

During the filter selection process, attention is generally given to the removal of solid, hard-type contamination only. The performance of hydraulic and lubrication fluids is influenced by the catalytic effect. As a result of the catalytic effect, the lifetime of the oil is significantly reduced.

Guide to Contamination Control

Lifetime of Oil

Selecting the Right Oil

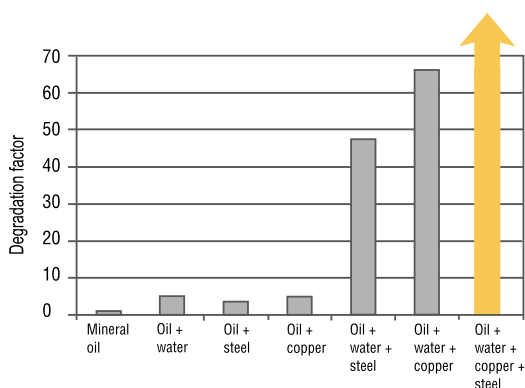
Oils are selected based on their unique performance with regard to:

- Energy transfer
- Corrosion protection
- Cooling (transfer of heat)
- Lubrication

The lifetime of oils is influenced by the amount of oxygen, oil temperature, water content and presence of catalyst type elements. The allowed water content varies for each type of oil. Due to, for example, seal leakage or condensation, the water content can easily reach concentrations far above the allowed water content value. The combination of water and wear elements like iron or copper causes a catalytic effect and as a result, reduces the lifetime of the oil. The lifetime of oil is also influenced by the amount of generated static electrics.

Lifetime Reduction

The lifetime reduction of oil is expressed by the degradation factor. The influence of the catalytic effect of the degradation factor is shown below.



Source: Diagnostics Inc.

Oil degradation can reduce the protection against corrosion and lubrication performance.

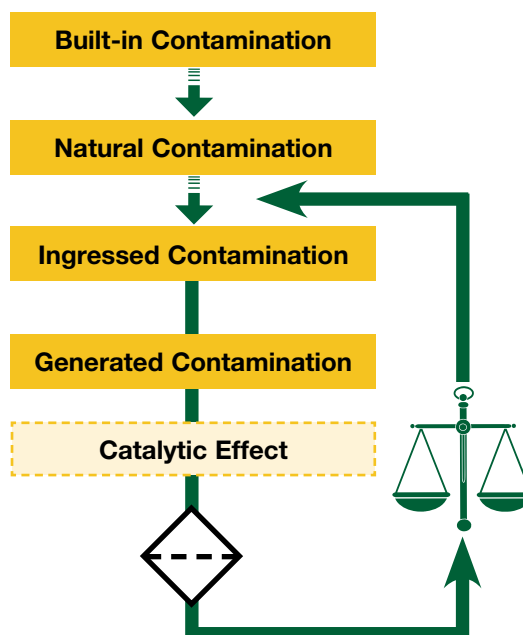
Regular oil analysis is important to monitor the condition of the hydraulic or lubrication fluid. This analysis is also used to obtain information related to the process of selecting system-matched filter components.



Tanktopper II return line filter with integrated air breather and patented LEIF® element

The Balance between System Requirements and Filtration System Performance

Parker's philosophy exceeds the traditional approach of protecting the system by means of filtration.



System-matched filtration is not limited to a filter alone. The process of system-matched filtration is based on the correct implementation of suitable filtration products, taking into account the requirements from the hydraulic or lubrication fluids, system components and customer expectations.

Contamination Control

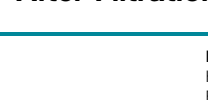
Achieving the required system protection implicates a correct understanding of the system. Today filters are selected based on several parameters like β -values, pressure drop and dirt holding capacity.

Filtration is built-in safety, meant to achieve and maintain the required fluid cleanliness level during a defined period. This implicates a more detailed approach, which can only be realised when several filtration parameters are considered.

Before Filtration



After Filtration

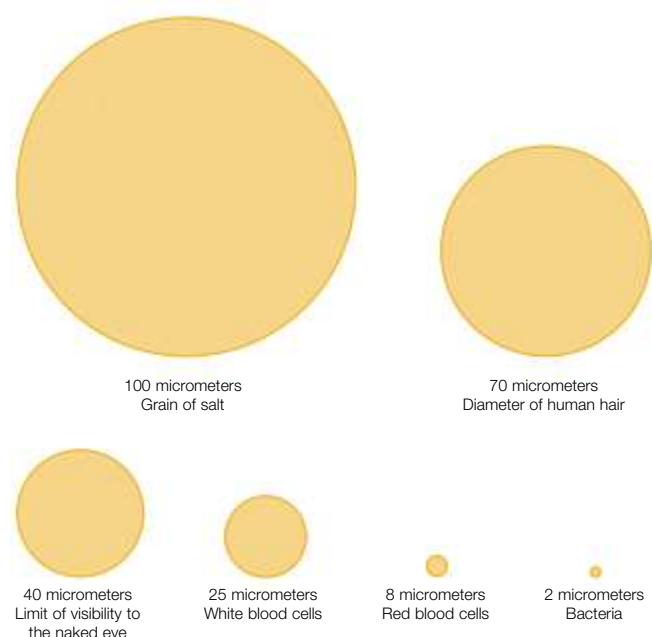


Contamination & Cleanliness Level

Sizes of Contamination

Filters are selected to capture contamination from hydraulic and lubrication fluids.

Contamination is an invisible enemy. The human eye cannot see particles smaller than 40 micron. For the correct understanding a comparison is given below.



Fluid Cleanliness Level

Component	Microns
Anti-friction bearings	0.5
Vane pump (vane tip to other ring)	0.5 - 1
Gear pump (gear to side plate)	0.5 - 5
Servo valves (spool to sleeve)	1 - 4
Hydrostatic bearings	1 - 25
Piston pump (piston to bore)	5 - 40
Servo valves flapper wall	18 - 63
Actuators	50 - 250
Servo valve orifice	130 - 450

Typical hydraulic component clearances are given as an indication only

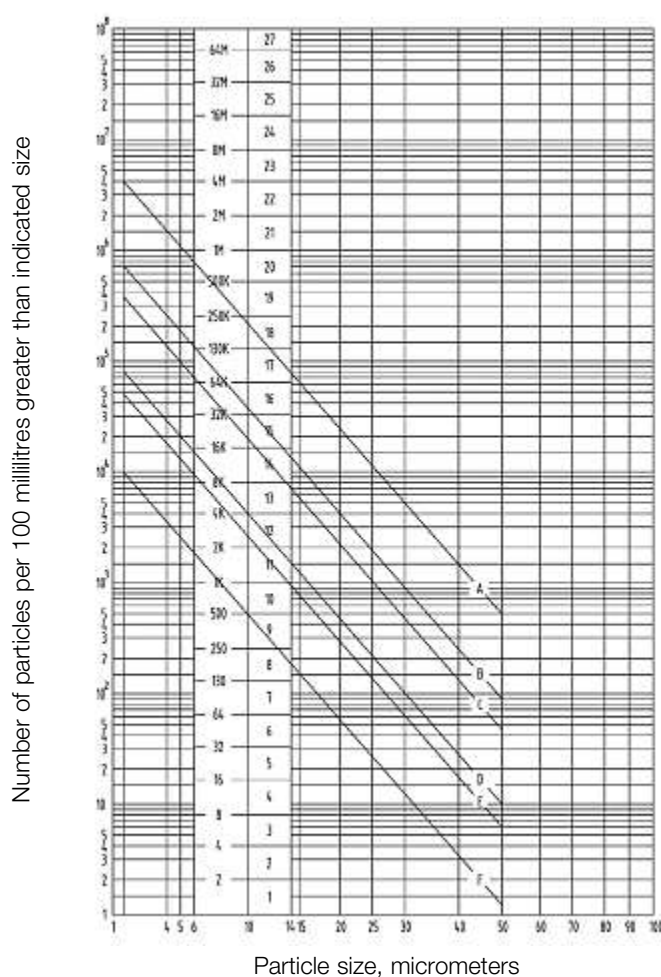
The ISO 4406:1999 standard is an important code to define the fluid cleanliness level using a solid contamination code.

This ISO code is determined by allocating a first scale number to the total number of particles larger than 4µm, allocating a second scale number to all particles larger than 6µm and allocating a third scale number to the total number of particles larger than 14µm.

In the recent past, the fluid cleanliness level code was determined using the ISO 4406:1987 standard. Instead of counting particles sizes 4, 6 and 14µm, the fluid cleanliness level was determined by counting particles larger than 5 and 15µm. The particle size 2µm was added later.

As a result of upgrading the ISO standards, new particle sizes have been defined. In general, the fluid cleanliness code will not change as a result of this new standard. Built-up historic data remains directly comparable to new data.

ISO 4406:1999 cleanliness classes



Guide to Contamination Control

Cleanliness Level

Examples of cleanliness level are given in the ISO graph. These lines represent:

- A. Low-pressure systems (code 21/20/17)
- B. Low-pressure control systems (code 19/18/14)
- C. Sophisticated pumps/motors control valves (code 18/17/13)
- D. Highly sophisticated systems and hydrostatic transmissions (code 16/15/11)
- E. Sensitive servo systems (code 15/14/10)
- F. High performance sensitive systems (code 12/11/8)

We recommend verifying the required cleanliness level based on the components used for the system. Manufacturers of system components often provide information related to the required fluid cleanliness level for their products.

Condition Monitoring Equipment

Over the years, fluid condition monitoring has become increasingly important. By offering system-matched filtration solutions, the stringent customer demands related to extended component lifetime or improved system reliability can be met. Parker has developed a complete range of instruments and components for maintenance programmes and local fluid condition analysis such as the LaserCM below.



Parker's particle counters are well known for their accurate performance in the field or in a production line environment. Lightweight portable particle counters can be used for temporary fluid cleanliness measurements.

The MCM20, designed for permanent installation, is meant for continuous fluid monitoring. The compact MS100 and MS150 moisture sensor together with the H₂Oil means a complete solution is available to measure the water content in hydraulic or lubrication fluids.

Solid Contaminant Codes

In addition to ISO 4406: 1999, other standards are used to express the fluid cleanliness level. A comparison between the codes is given below.

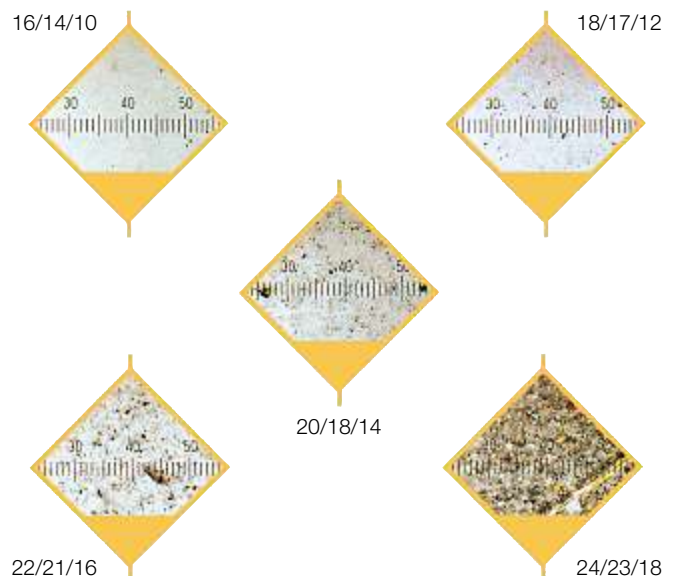
ISO 4406: 1999	ISO 4406: 1987	NAS 1638 CLASS
13/11/8	11/8	2
14/12/9	12/9	3
15/13/10	13/10	4
16/14/9	14/9	-
16/15/11	14/10	5
17/15/9	15/9	-
17/15/10	15/10	-
17/15/12	15/12	6
18/16/10	16/10	-
18/16/11	16/11	-
18/16/13	16/13	7
19/17/12	17/12	-
19/17/14	17/14	8
20/18/12	18/12	-
20/18/13	18/13	-
20/18/15	18/15	9
21/19/13	19/13	-
21/19/16	19/16	10
22/20/13	20/13	-
22/20/17	20/17	11

Note:

ISO 4406: 1987 is based on particle sizes larger than 5 and 15µm

ISO 4406: 1999 is based on particles sizes larger than 4, 6 and 14µm

Several Cleanliness Levels



Cleanliness Service

Cleanliness Service to Prevent Failures

As Parker has no financial interest in the oil industry, the company can operate as an independent laboratory. The development laboratory at Parker Filtration BV in Arnhem - the only laboratory of its kind in Belgium, the Netherlands and Luxembourg - has at its disposal all the facilities for its extensive R & D department. In addition, the services are offered on a commercial basis to third parties.

Equipment

The laboratory uses state-of-the-art test equipment. The company has invested in the latest Karl Fischer coulometric equipment, that prevents tests from being influenced by, among other things, additives in the oil. The particle-counting equipment is calibrated according to the recent ISO 11171 standard. It is now possible to indicate the measured cleanliness according to ISO 4406:1999.

Standard Test

The high-quality standard test, carried out in Parker's laboratory, consists of a water analysis and a cleanliness calculation according to ISO 4406, the new ISO 4406:1999 and the NAS 1638 standard, as part of which particles from 2 to 100µm are measured and reported. Membrane research and digital photography of the membrane are also part of the standard test. The results of each test are described in a report that contains clear conclusions. It is also possible to conduct a spectral analysis.

In Practice

How do the laboratory services work? Only three days after receipt of the oil sample, the standard analysis is completed. The results of a spectral analysis are known after seven days. The reports can be sent directly and completely by e-mail. A free sample bottle is available upon request.

Filtration: Parameters and Facts

Generally speaking, fibre-type materials like cellulose and glass fibre are applied for hydraulic and lubrication fluid filtration. Filters are selected based on the following parameters:

- Required protection of system components
- Location of filter(s) in the system
- Flow rate and allowed pressure loss
- Desired filter element life time
- Hydraulic or lubrication fluid type

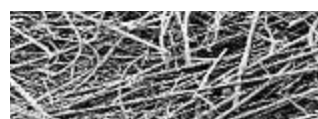
The dirt holding capacity is the amount of solid contamination a filter can hold before the filter material is plugged. This value is measured in accordance to ISO 16889 using ISO MTD test dust. The filter element lifetime strongly depends on the contamination conditions that are present in the system and its environment.

Predicting the filter element lifetime in the system is complicated, because of the variety in contamination (e.g. metal, sand and fibres, each with a certain distribution of particle sizes) in relation to the specified dirt holding capacity.

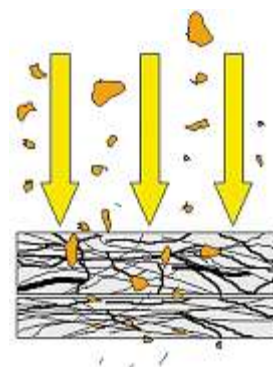
Degree of Filtration

Parker's filtration philosophy is based on the optimum distribution of several particle sizes by using the complete thickness of glass fibre layers.

Pre-layer



Main layer

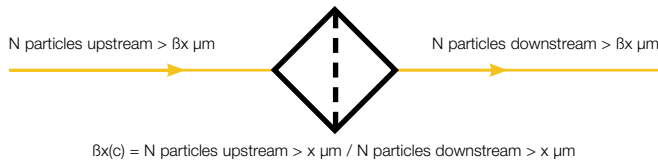


Each selected filter layer has a unique performance for the removal of solid contamination. System-matched filtration implicates the removal of harmful particles. For some systems an improved removal efficiency for smaller sized particles is more important compared to other systems using components. The combination of pre- and main layers results in an achievable fluid cleanliness level. The complete package of filter and support layers is indicated as pleat pack.

Guide to Contamination Control

Degree of Filtration

The β -value is used to express the removal efficiency for a defined particle size.



The ISO 4572 standard formerly required only the $\beta_{x>75}$ value. That standard has now been upgraded and replaced by ISO 16889, reporting the β -value of 2, 10, 75, 100, 200 and 1000 for each filter medium or pleat pack. The corresponding efficiencies are given below.

β -value	2	10	75	100	200	1000
Efficiency	50,00%	90,00%	98,67%	99,00%	99,50%	99,99%

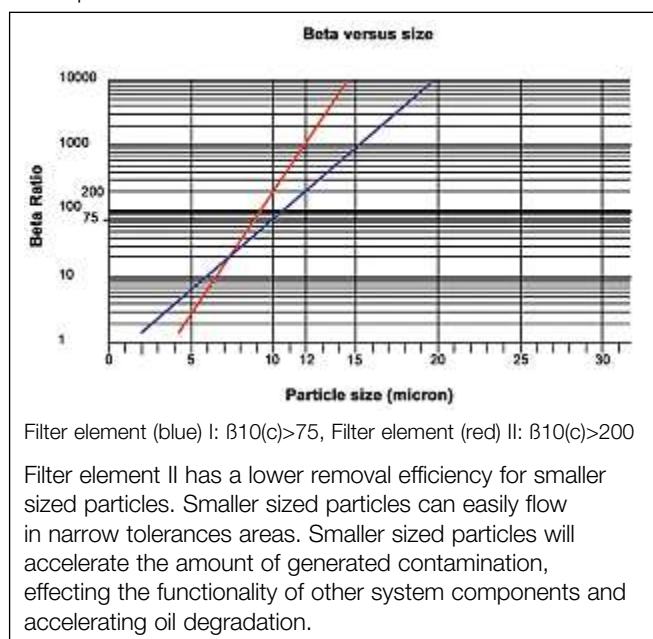
Taking into account a $\beta_{75(c)>10}$ element, the removal efficiency is 98.67% of particles larger than 10 micron.

Too often filter elements are compared by looking at one β -value only. The focus on high β -values is misleading and does not always provide the required information.

Comparison β -value	Filter element I	Filter element II
Beta-value	$\beta_{75(c)>10}$	$\beta_{200(c)>10}$
Number of particles at upstream of filter >10 micron	5,000,000	5,000,000
Removal efficiency	98,67%	99,50%
Number of particles at downstream of filter >10 micron	66,500	25,000

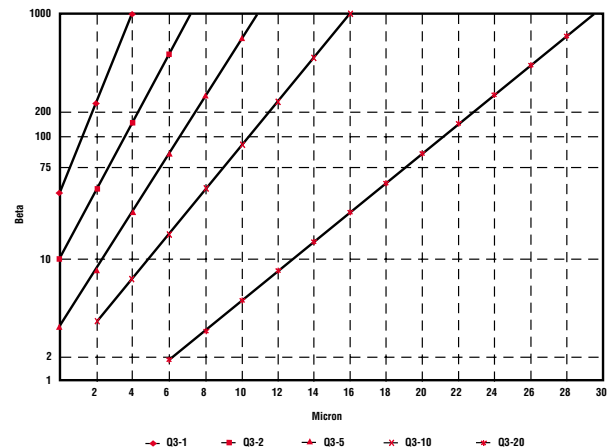
Statements that a β_{200} filter improves the fluid cleanliness level by a factor 2.6 (66,500/25,000) are misleading. Fluid cleanliness codes are based on several particle sizes. More information is needed to determine the overall removal performance of filter media.

A comparison between two 10-micron filter medias.



The overall removal efficiency of the element forms the core of fluid cleanliness levels

The correct degree of filtration is chosen based on the required fluid cleanliness level, not based on one β -value.



An indication of recommended fluid cleanliness levels is given in this table. It is common use in the industry that manufacturers of components prescribe required fluid cleanliness level for the reliable functioning of their products.

Components	ISO Code
Servo control valves	16/14/11
Proportional valves	17/15/12
Valve & piston pumps/motors	18/16/13
Directional & pressure control valves	18/16/13
Gear pumps/motors	19/17/14
Flow control valves	20/18/15
Cylinders	20/18/15

The ISO codes are indicative values only.



Filter media composition

Flow Rate & Pressure Lost

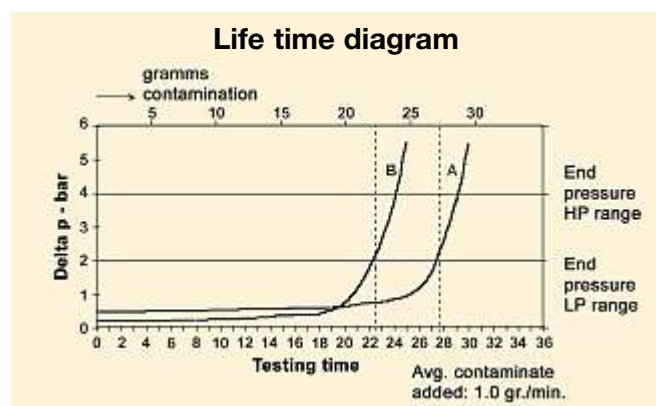
Flow Rate and Allowable Pressure Lost

Each filter element is designed to handle a nominal flow rate. The allowed flow rate depends on fluid viscosity, degree of filtration, and the amount of pressure that is lost. Indirectly, the required element lifetime is an important parameter. A larger sized element with a more effective filter element area has a positive influence on the element lifetime.

Media	Degree of filtration	Upper range	Lower range
Q3	3	16/14/10	13/11/8
Q3	6	18/16/13	17/15/9
Q3	10	20/18/15	19/17/12
Q3	20	22/20/17	21/19/13

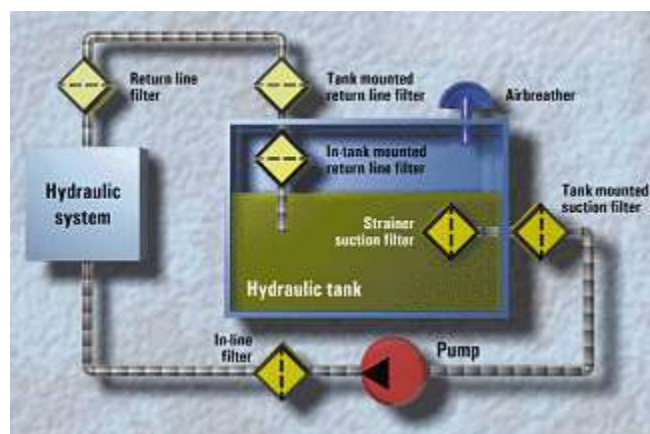
The given cleanliness levels are indicative values only, based on average values

Filter elements are chosen based on their initial clean element pressure drop. It is preferred to apply a ratio of at least three between element bypass settings and element initial pressure drops.



Comparing filter elements with different filter media based on the initial clean element pressure drop does not give a reliable indication of the element dirt holding capacity. In this example the filter media A has a higher initial pressure drop. However, during its lifetime the pressure lost is more constant compared to media B. This results in a longer element lifetime. The difference in performance is caused by a more effective distribution of captured particles in media A.

Filter Types and Locations



Depending on the filter type and corresponding location, a general pressure lost recommendation can be given

Suction Line: 0.03-0.05 bar

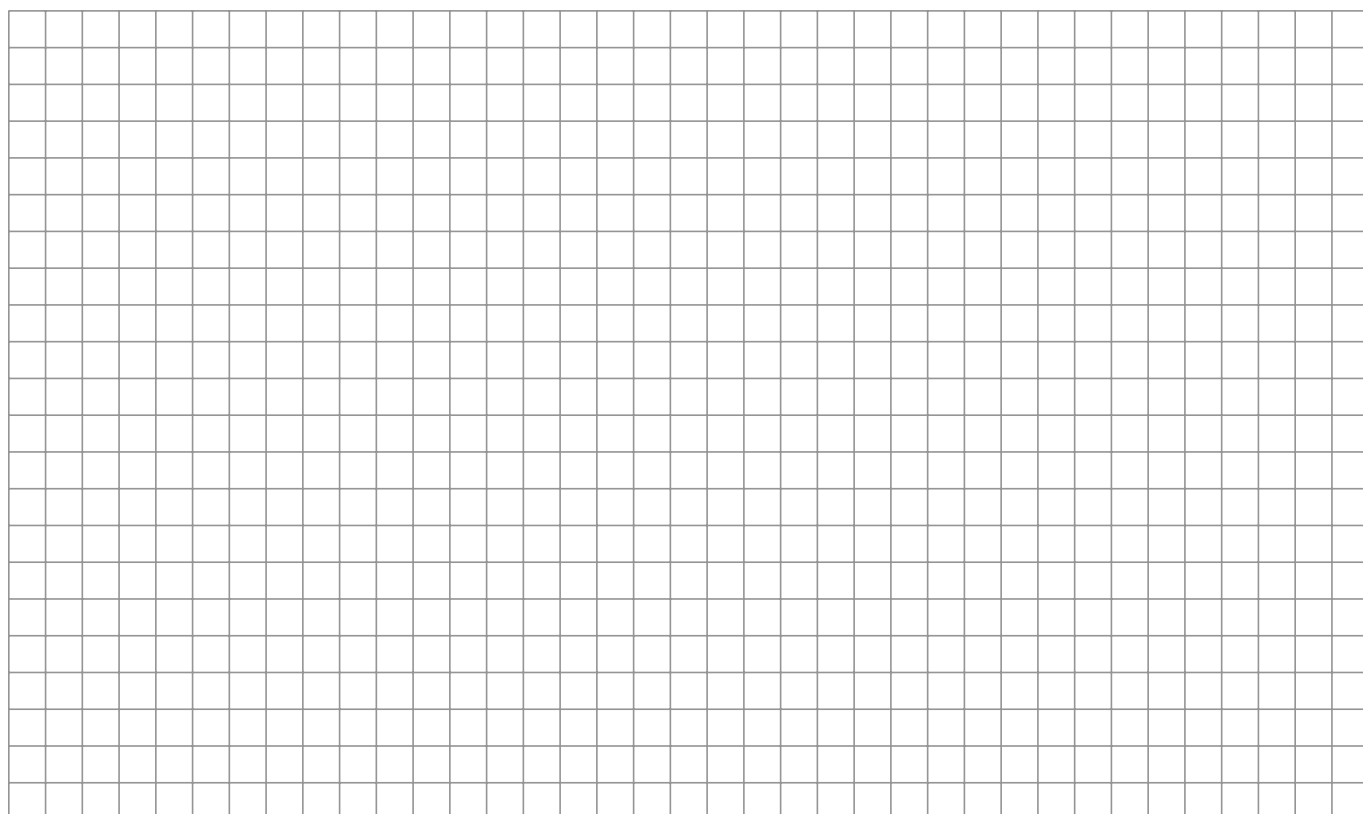
Pressure Line: 1 bar

Return Line: 0.3-0.5 bar

Suction Return Filter: 1 bar

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is a small yellow tab at the top edge. The paper appears to be part of a notebook or binder.

A full-page view of a blank sheet of graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

[illegible]



WARNING-USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through their own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the applications are met.

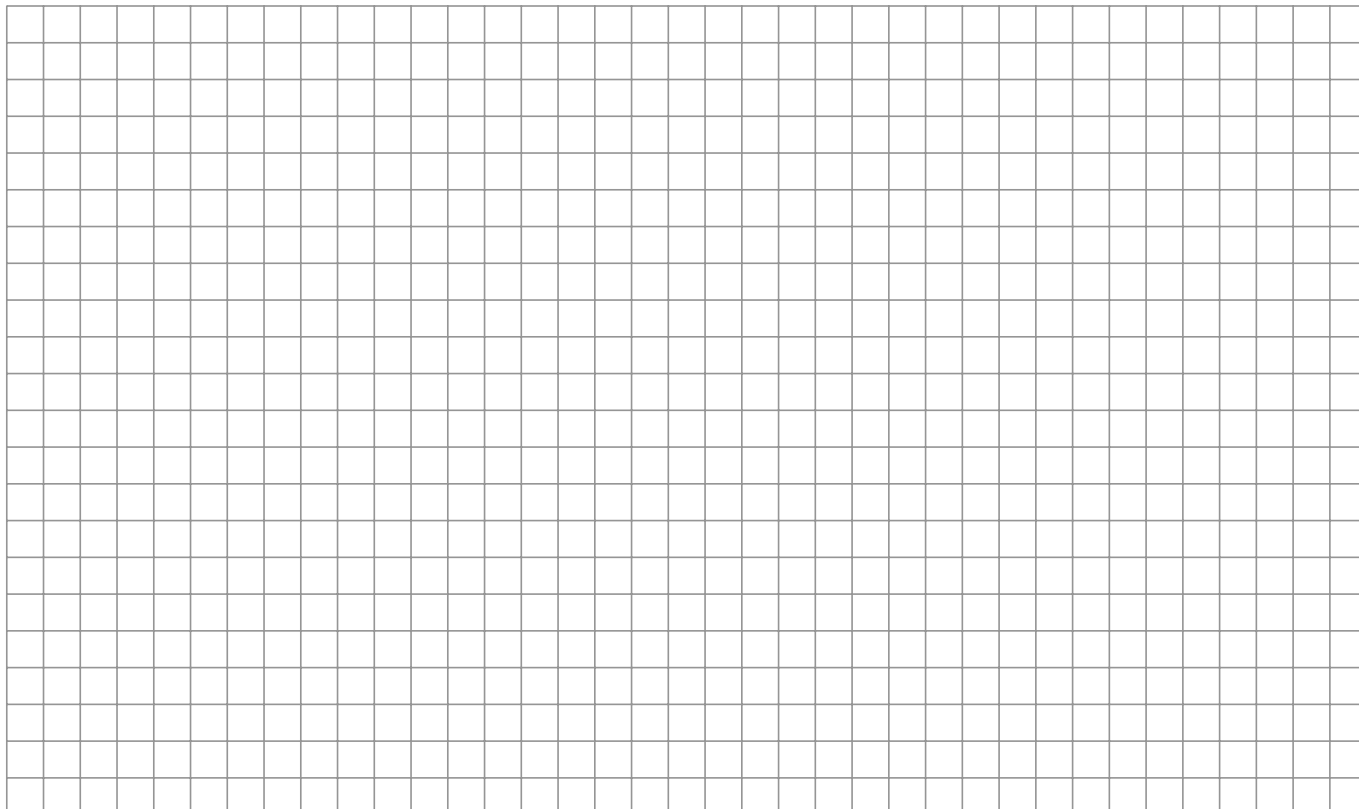
The user must analyse all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalogue and in any other materials provided from Parker or its subsidiaries or authorized distributors.

- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

The operation of the products described here in is subject to the operating and safety procedures details of which are available upon request.

Sales conditions

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered into by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request)



Throughout the world, Parker is serving more than 400,000 customers to improve productivity and reliability in thousands of industries. Parker motion and control systems are in operation on satellites orbiting the Earth, in machine tools and mobile equipment, on oil rigs and refineries, in hospitals and laboratories, in fact, wherever there's a need for motion and control, you'll find Parker components and system solutions hard at work. For more information, visit Parker's web site at www.parker.com/eu or call freefone 00800 27 27 5374



Aerospace

Key Markets

- Commercial transports
- Military aircraft
- Regional transports
- Aircraft engines
- Business and general aviation

Key Products

- Flight control systems and components
- Hydraulic systems and components
- Fuel systems and components
- Pneumatic systems and components
- Inert oxygen generating systems
- Fluid metering, delivery and atomization devices
- Wheels and brakes
- Couplings, fittings, hoses and tubes



Automation

Key Markets

- Factory automation
- Transportation and automotive
- Life sciences and medical
- Machine tools
- Semiconductor and electronics

Key Products

- Pneumatic motion and control
- Air preparation
- Vacuum controls and sensors
- Electromechanical stepper and servo motors, drives, and controls
- Human machine interface
- Electric actuators, gantry robots, slides and linear motors
- Structural extrusion



Climate & Industrial Controls

Key Markets

- Refrigeration and air conditioning
- Transportation/mobile
- Process
- Industrial machinery
- Medical/life sciences
- Fuel cells
- Precision cooling

Key Products

- Pressure regulators
- Check, ball and service valves
- Value-added systems
- Thermostatic and expansion valves
- Electronic controllers
- Contaminant controls
- Heating/air conditioning hose
- Gerotors



Filtration

Key Markets

- Industrial machinery
- Process
- Mobile
- Marine
- Oil & gas
- Power generation and energy
- Transportation
- Food and beverage

Key Products

- Hydraulic, lubrication and coolant filters
- Process, chemical, water and microfiltration filters
- Compressed air and gas purification filters
- Condition monitoring
- Analytical gas generators
- Nitrogen, hydrogen and zero air generators
- Engine air, fuel, oil filtration and systems



Fluid Connectors

Key Markets

- Construction machinery
- Agriculture
- Transportation
- Mobile
- Industrial machinery
- Oil & gas

Key Products

- Rubber and thermoplastic hose
- Industrial hose
- Tube fittings and adaptors
- Tubing and plastic fittings
- Brass fittings and valves
- Hose couplings
- Quick disconnects



Hydraulics

Key Markets

- Construction machinery
- Agriculture
- Industrial machinery
- Oil & gas
- Truck hydraulics
- Power generation and energy

Key Products

- Hydraulic cylinders and accumulators
- Hydraulic valves and controls
- Hydraulic motors and pumps
- Power take-offs
- Hydraulic systems



Instrumentation

Key Markets

- Power generation
- Oil & gas
- Petrochemical
- Microelectronics
- Biopharmaceutical

Key Products

- Medium/high pressure fittings and valves
- Instrumentation fittings, valves, manifolds and regulators
- High purity fittings, valves and regulators
- Fluoropolymer fittings, valves, pumps and regulators
- Analytical systems



Seal

Key Markets

- Transportation
- Energy, oil & gas
- Semiconductor
- Aerospace
- Fluid power
- Life sciences
- Telecommunications

Key Products

- Elastomeric O-rings
- Homogeneous and inserted elastomeric shapes and diaphragms
- Metal and plastic retained composite seals
- Polymeric and plastic dynamic seals
- Rubber and plastic boots/bellows
- Extruded and precision-cut/fabricated elastomeric seals
- Thermoplastic engineered seals

Sales Offices

AE – United Arab Emirates,
Abu Dhabi
Tel: +971 2 67 88 587

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0

AT – Austria, Wiener Neustadt
(Eastern Europe)
Tel: +43 (0)2622 23501 970

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458

BE – Belgium, Nivelles
Tel: +32 (0)67 280 900

BR – Brazil, Cachoeirinha RS
Tel: +55 51 3470 9144

BY – Belarus, Minsk
Tel: +375 17 209 9399

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

CH – Switzerland
See Germany

CN – China, Shanghai
Tel: +86 21 5031 2525

CN – China, Beijing
Tel: +86 10 6561 0520

CZ – Czech Republic, Klecany
Tel: +420 284 083 111

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0

DK – Denmark, Ballerup
Tel: +45 43 56 04 00

ES – Spain, Madrid
Tel: +34 902 33 00 01

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500

FR – France,
Contamine-sur-Arve
Tel: +33 (0)4 50 25 80 25

GR – Greece, Athens
Tel: +30 210 933 6450

HK – Hong Kong
Tel: +852 2428 8008

HU – Hungary, Budapest
Tel: +36 1 220 4155

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370

IN – India, Mumbai
Tel: +91 22 6513 7081-85

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21

JP – Japan, Fujisawa
Tel: +(81) 4 6635 3050

KR – South Korea, Seoul
Tel: +82 2 559 0400

KZ – Kazakhstan, Almaty
Tel: +7 3272 505 800

LV – Latvia, Riga
Tel: +371 74 52601

MX – Mexico, Apodaca
Tel: +52 81 8156 6000

MY – Malaysia, Subang Jaya
Tel: +60 3 5638 1476

NL – The Netherlands,
Oldenzaal
Tel: +31 (0)541 585 000

NO – Norway, Ski
Tel: +47 64 91 10 00

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00

PT – Portugal, Leca
da Palmeira
Tel: +351 22 999 7360

RO – Romania, Bucharest
Tel: +40 21 252 1382

RU – Russia, Moscow
Tel: +7 495 645-2156

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00

SG – Singapore
Tel: +65 6887 6300

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650

SK – Slovakia
See Czech Republic

TH – Thailand, Bangkok
Tel: +662 717 8140

TR – Turkey, Merter/Istanbul
Tel: +90 212 482 91 06 or 07

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

UA – Ukraine, Kyiv
Tel: +380 44 494 2731

UK – United Kingdom,
Warwick
Tel: +44 (0)1926 317 878

US – USA, Cleveland
(Industrial)
Tel: +1 216 896 3000

US – USA, Lincolnshire
(Mobile)
Tel: +1 847 821 1500

US – USA, Miami
(Pan American Division)
Tel: +1 305 470 8800

VE – Venezuela, Caracas
Tel: +58 212 238 5422

ZA – South Africa,
Kempton Park
Tel: +27 (0)11 961 0700

