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

# Hydraulic Filtration and Contamination Control

## Solutions for Industry

Parker

ENGINEERING YOUR SUCCESS.

- Consistent quality
- Technical innovation
- Premier customer service

Parkers 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.

**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK.

Hydraulic Filtration and Contamination Control Products

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Hydraulic Filtration and Contamination Monitoring Products

# Important changes to our product ordering information

## Standard Product Tables and a Product Configurator

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 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.

**The examples below using the BGT Series Ordering Information, are included to explain how the Standard products are presented in the Ordering Information section of the catalogue and also how the new Product Configurator works.**

### Explanation

### Example 1. The Standard Products Table

We have created a new catalogue ordering code and included in this table are details of these new part numbers.

Alongside this we have put the part number that has been superceded from previous catalogues. It is our intention that all items printed in the **Standard Products Table** will be available from our central warehouse for ex-stock delivery.

### Example 2. The Product Configurator

2a. As part of our new catalogue ordering code we have introduced an **8-box part number configurator**. This 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.

### Green shaded graphs and ordering information

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

**Example 1. The 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 | 937869Q | 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.

**Example 2. The 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

| Code |
|---|
| BGT |

Box 2

| Filter type | |
|---|---|
| Housing | Code |
| 3-390 l/min | 11 |
| 3-500 l/min | 12 |
| 4-600 l/min | 13 |
| 4-800 l/min | 14 |
| 4-1000 l/min | 15 |
| 4-1500 l/min | 16 |
| 4-2000 l/min | 17 |
| 4-2400 l/min | 18 |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| Element | | Glass fibre | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | Cellulose | Ecoglass II (for Leif® elements) | | | | Wire mesh |
| | 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 | |
|---|---|
| Pressure gauge, setting 1.2 bar, M10x1 | G1 |
| Pressure gauge, setting 1.2 bar, G¼ for dual port head and TSR series | G2 |
| Pressure switch 42V, 1.2 bar setting, NO/NC, M10x1 | S1 |
| Pressure switch 42V, 1.2 bar setting, NO with G¼ BSP | S2 |
| Pressure switch 42V, 1.2 bar setting, NC with G¼ BSP | S3 |
| Pressure switch 250V, NO/NC with G¼ | 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 |

Note: For all dual head ports for BGTS apply G¼ connection for indicators

Box 6

| Bypass valve | |
|---|---|
| Bypass valve | Code |
| 0.8 bar | B |
| 1.5 bar | E |
| 2.0 bar for BGT-3 series | H |
| Blocked bypass | X |
| Other bypass settings | on request |

Box 7

| Filter connection | |
|---|---|
| Ports | Code |
| 2" SAE BGT-3 | R32 |
| 3" SAE BGT-4 | R48 |
| 1x2" SAE flanged + 2x1"/2" SAE flanged for BGT-3 | R32M |
| 3x1"/2" SAE flanges + 1x1"/2" SAE for BGT-4 | 3R20 |

Box 8

| Options | |
|---|---|
| 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 |

### 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



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK.

## 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.

Hydraulic Filtration and Contamination Monitoring Products

# 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.



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Parker

Tanktop Mounted Return Line Filters

# ETF Series

*MAX 140 l/min - 6 bar*

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Tanktop Mounted Return Line Filters

# 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.

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## 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.

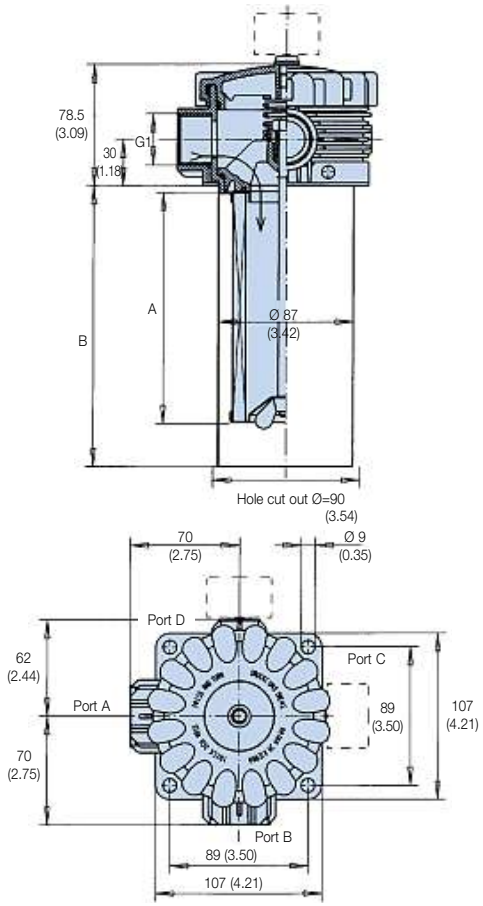
**Options:**
Magnetic pre-filtration.

**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) |

mm
(inches)



Tanktop Mounted Return Line Filters

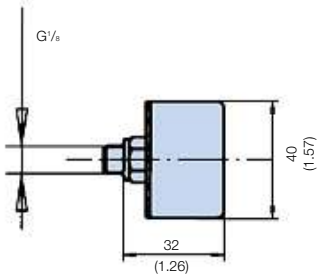
# ETF Series

## Indicator Details

**Visual pressure indicator**

**Code G2**

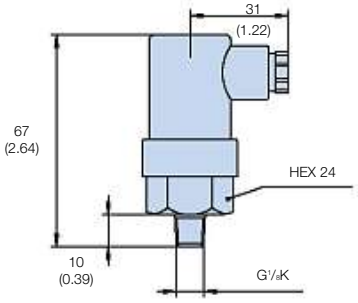
**mm (inches)**




**48 Vdc electrical indicator 1.2 bar**

**Code S2/S3**

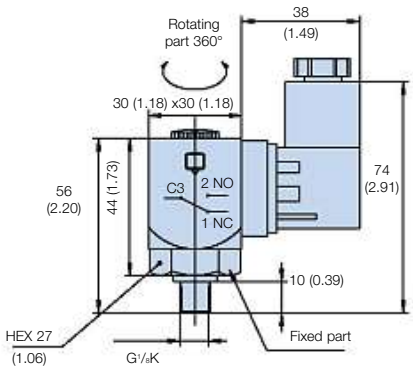
**mm (inches)**




**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 | + -<br>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 |

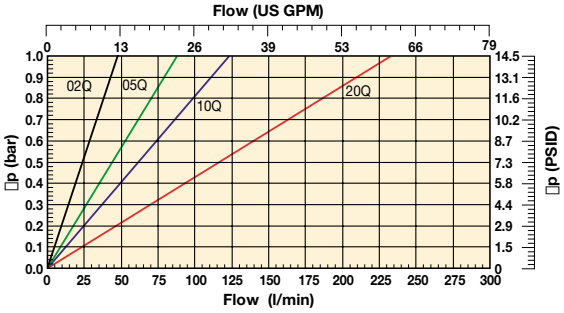
Normally open contacts

Normally closed contacts

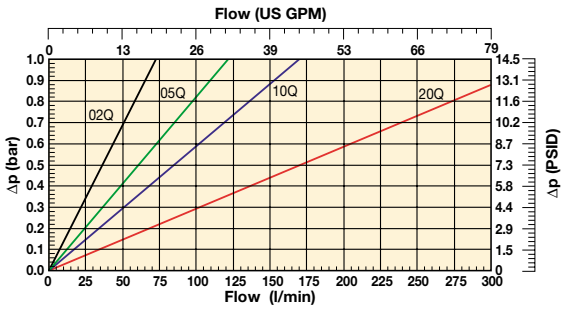
## Pressure Drop Curves

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:
□p = (□p32 x viscosity of medium used) / 32cSt.

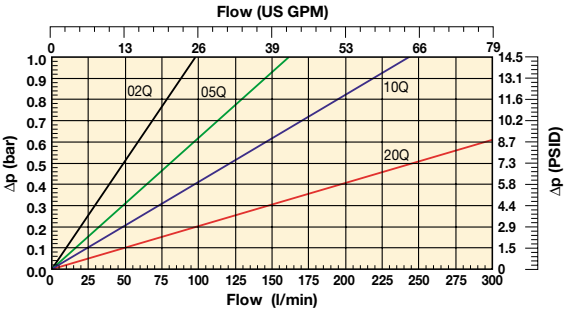
### ETF45 (Element length code 1)



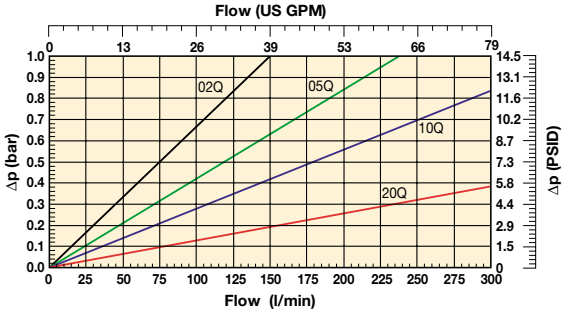

### ETF60 (Element length code 2)



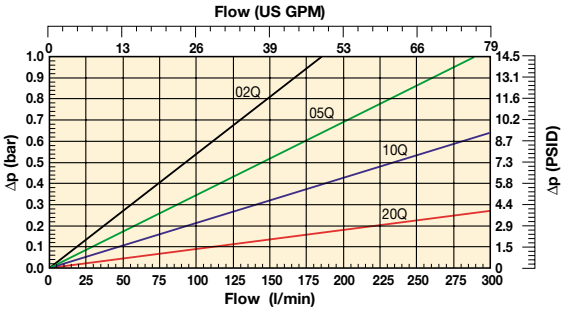

### ETF90 (Element length code 3)




### 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.

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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

| Code |
|---|
| **ETF** |

Box 2

| Filter type | |
|---|---|
| **Housing** | **Code** |
| ETF 1-45 | 1 |
| ETF 1-60 | **2** |
| ETF 1-90 | **3** |
| ETF 1-120 | 4 |
| ETF 1-140 | **4A** |

Box 3

| 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, G1/8 for dual head ports and TSR series | **G2** |
| Pressure switch 42V, 1.2 bar setting, NO with G1/8 BSP | **S2** |
| Pressure switch 42V, 1.2 bar setting, NC with G1/8 BSP | S3 |
| Pressure switch 250V, 1.2 bar setting NO/NC with G1/8 | 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

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| ßx(c)=2 | ßx(c)=10 | ßx(c)=75 | ßx(c)=100 | ßx(c)=200 | ßx(c)=1000 | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| **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 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 |
| 937951Q | FC1230.Q020.XS |
| 937973Q | FC1240.Q002.XS |
| 937974Q | FC1240.Q005.XS |
| 937952Q | FC1240.Q010.XS |
| 937953Q | FC1240.Q020.XS |
| 937975Q | FC1250.Q002.XS |
| 937976Q | FC1250.Q005.XS |
| 937954Q | FC1250.Q010.XS |
| 937955Q | FC1250.Q020.XS |
| 937977Q | FC1260.Q002.XS |
| 937978Q | FC1260.Q005.XS |
| 937956Q | FC1260.Q010.XS |
| 937957Q | FC1260.Q020.XS |
| 937979Q | FC1275.Q002.XS |
| 937980Q | FC1275.Q005.XS |
| 937981Q | FC1275.Q010.XS |
| 937982Q | FC1275.Q020.XS |

### 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.

Parker

Tanktop Mounted Return Line Filters

# TTF Series

*MAX 500 l/min - 10 bar*

Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

Tanktop Mounted Return Line Filters

# 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.

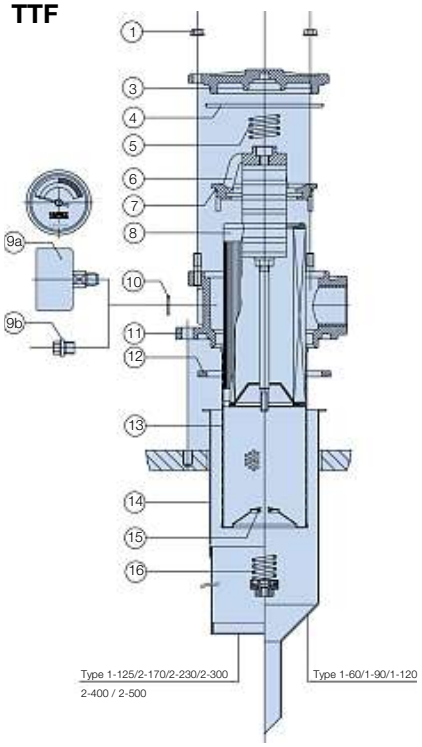
**Options:**
Diffuser type P (straight pipe, no perforated plate area)
Diffuser type T (with closed diffuser end cap and with perforated plate area, recommended when oil entry in reservoir is close to the reservoir bottom or to ensure oil entry under the reservoir oil level)

**Magnetic pack:**
Standard. TTF400 and 500 are standard supplied without magnets

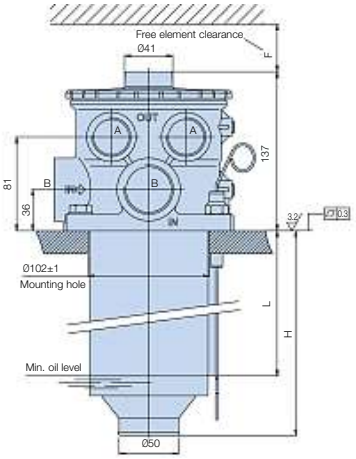
**Filling port in cover: (optional)**
Plugged.

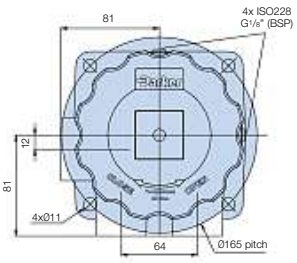
**Filter element:**
*LEIF*® element with reusable metal element sleeve.
Optional conventional style element with steel end caps.
The *LEIF*® element is patented and safeguards the use of genuine parts.
Note: *LEIF*® element can be used with mineral and HEES type oils.
For other fluids consult Parker 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

| 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 |

| Ports A | Ports B |
|---|---|
| G1 (BSP) | G1¼ (BSP) |
| SAE16 | SAE20 |

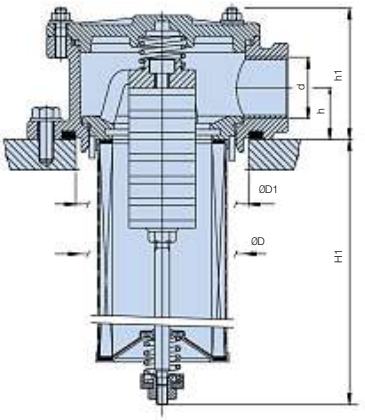
Note: All ports for return flow only

| 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) |

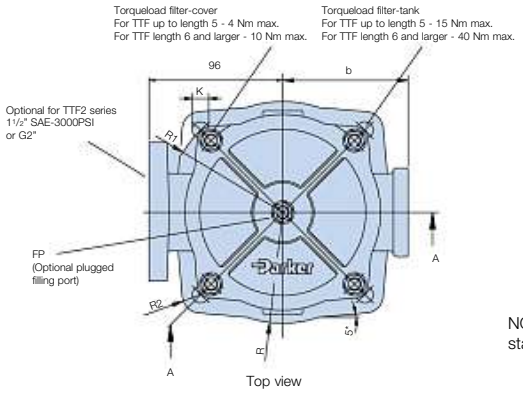
Tanktop Mounted Return Line Filters

# TTF Series

## Specification (cont.)




Section A-A



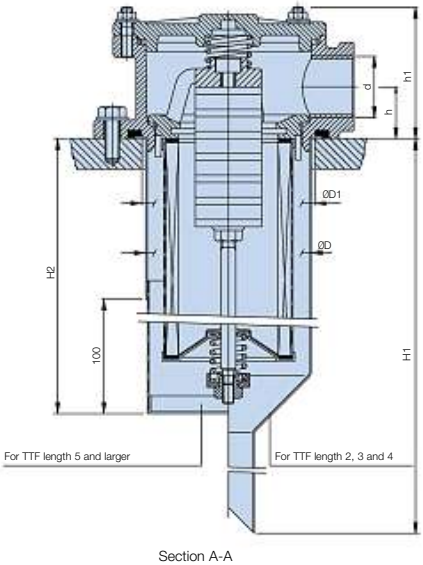

Top view

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

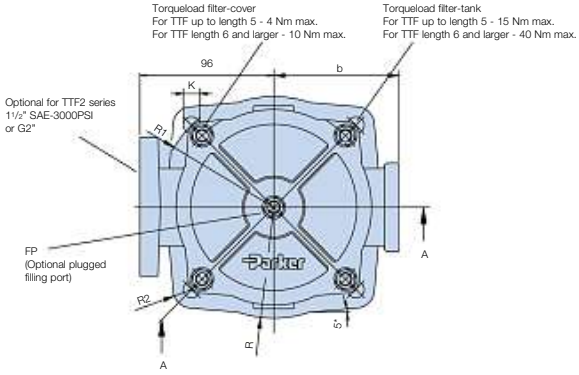
### Without Funnel

| TTF length | Type | Connection Option | h | h1 | □D | □D1 | H1 | b | R | R1 | R2 | K | FP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | TTF60 | G¾, G1 | 28 | 73 | □90 | □93 | 131 | 68 | 60 | 63 | 10 | 4x□9 | G½ |
| 3 | TTF90 | | | | | | 175 | | | | | | |
| 4 | TTF120 | | | | | | 225 | | | | | | |
| 5 | TTF125 | | | | | | 325 | | | | | | |
| 6 | TTF170 | G1, G1¼, G1½ | 36 (46) | 92 (107) | □132 | □136 | 223 | 90 (96) | 83 | 87.5 | 12 | 4x□11 | G¾ (G1) |
| 7 | TTF230 | | | | | | 303 | | | | | | |
| 8 | TTF300 | (G2 Single Port) | | | | | 508 | | | | | | |
| 9 | TTF400 | (Dual Port) | | | | | 523 | | | | | | |
| 10 | TTF500 | (1½ SAE) | | | | | 563 | | | | | | |

Dimensions in mm




Section A-A




Top view

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

### With Funnel

| TTF length | Type | Connection Option | h | h1 | □D | □D1 | H1 | H2 | b | R | R1 | R2 | K | FP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | TTF60 | G¾, G1 | 28 | 73 | □90 | □93 | 235 | | 68 | 60 | 63 | 10 | 4x□9 | G½ |
| 3 | TTF90 | | | | | | 280 | | | | | | | |
| 4 | TTF120 | | | | | | 330 | | | | | | | |
| 5 | TTF125 | | | | | | | 420 | | | | | | |
| 6 | TTF170 | G1, G1¼, G1½ | 36 (46) | 92 (107) | □132 | □136 | | 305 | 90 (96) | 83 | 87.5 | 12 | 4x□11 | G¾ (G1) |
| 7 | TTF230 | | | | | | | 305 | | | | | | |
| 8 | TTF300 | (G2 Single Port) | | | | | | 510 | | | | | | |
| 9 | TTF400 | (Dual Port) | | | | | | 525 | | | | | | |
| 10 | TTF500 | (1½ SAE) | | | | | | 575 | | | | | | |

Dimensions in mm



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FDHB200UK. Section 2

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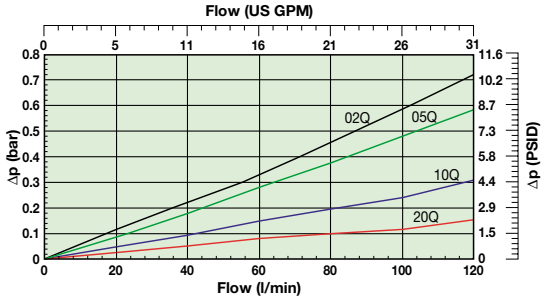
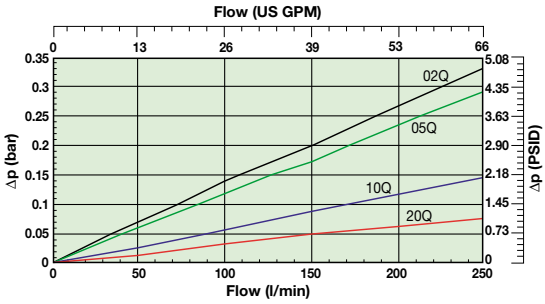
## Pressure Drop Curves

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:
□p = (□p32 x viscosity of medium used) / 32cSt.

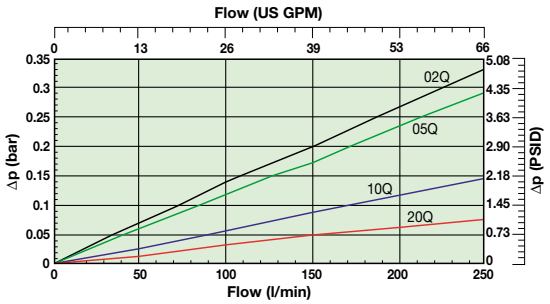
### TSR120 (Element length code 1)



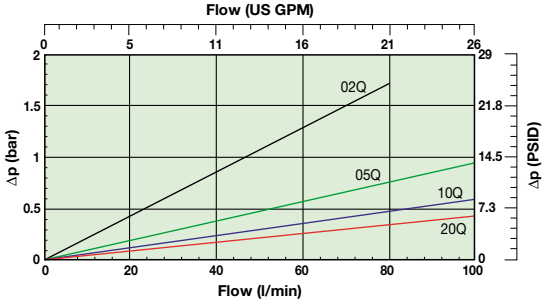

### TSR (Element length code 2)



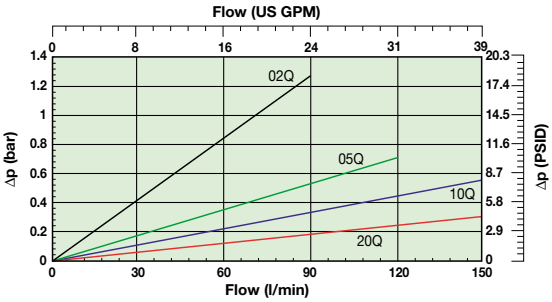

### TSR250 (Element length code 3)



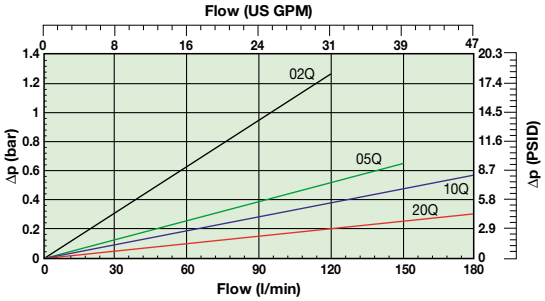

### TTF60 (Element length code 2)



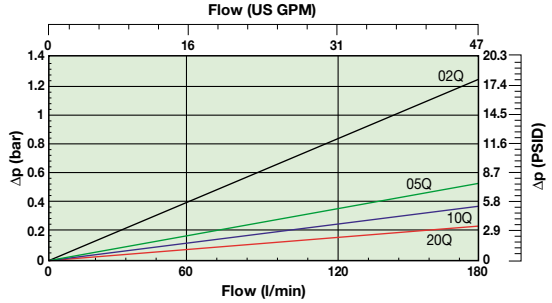

### TTF90 (Element length code 3)




### TTF120 (Element length code 4)




### TTF125 (Element length code 5)







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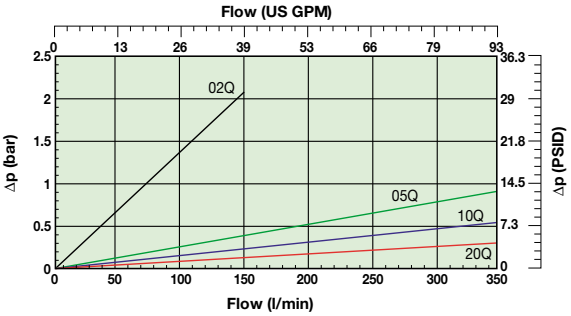
Tanktop Mounted Return Line Filters

# TTF Series

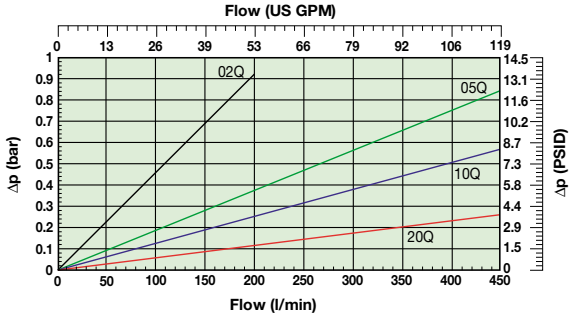
## Pressure Drop Curves (cont.)

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:
□p = (□p32 x viscosity of medium used) / 32cSt.

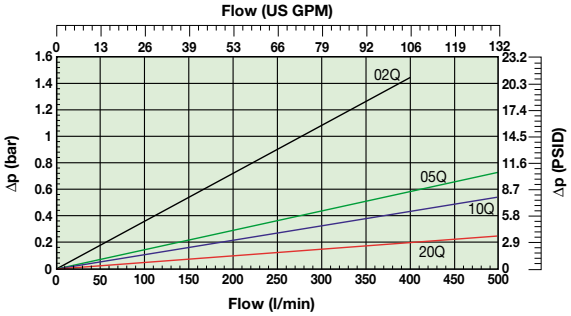
### TTF170 (Element length code 6)



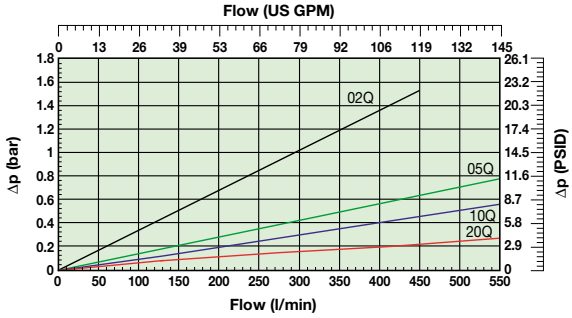

### TTF230 (Element length code 7)



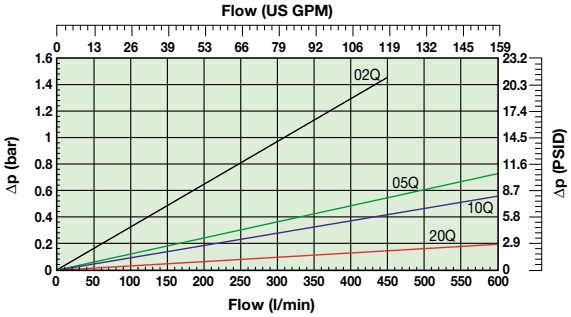

### TTF300 (Element length code 8)




### TTF400 (Element length code 9)




### TTF500 (Element length code 10)



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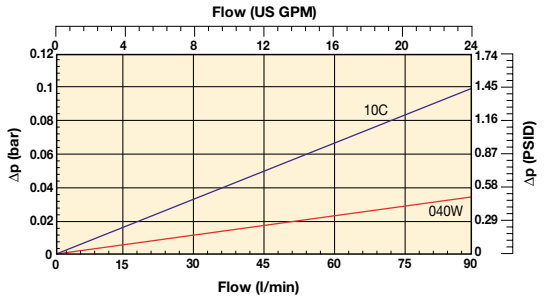
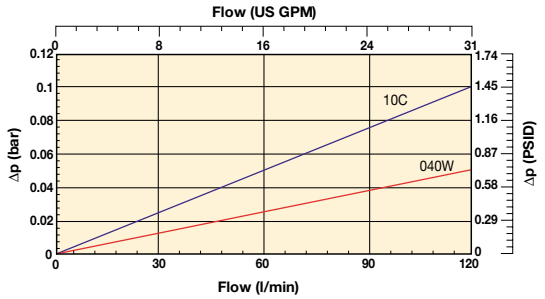
FDHB200UK. Section 2

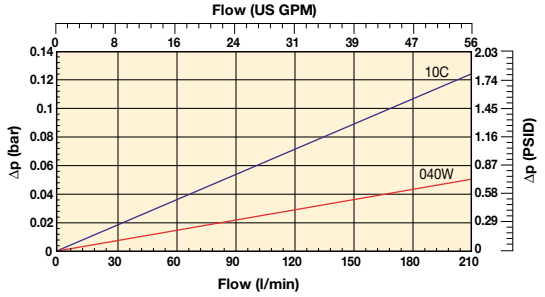
### TTF60 (Element length code 2)
### Cellulose & stainless steel media



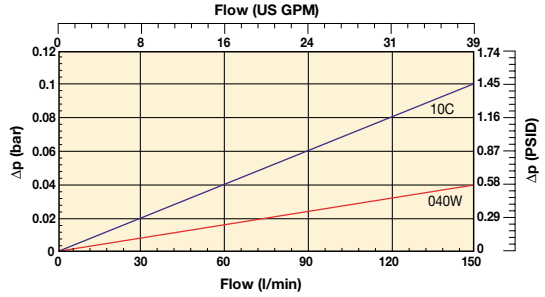

### TTF90 (Element length code 3)
### Cellulose & stainless steel media



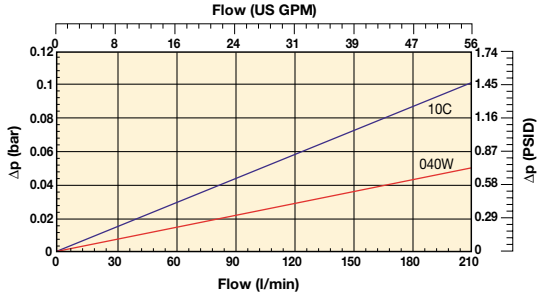

### TTF120 (Element length code 4)
### Cellulose & stainless steel media



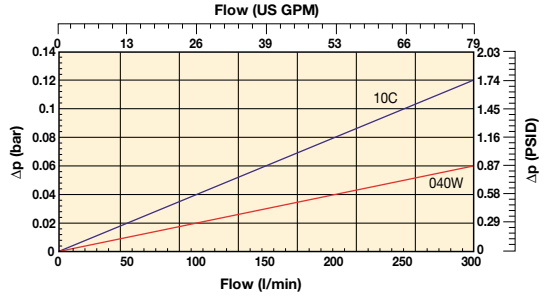

### TTF125 (Element length code 5)
### Cellulose & stainless steel media



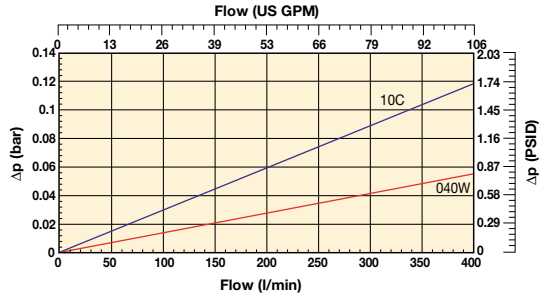

### TTF170 (Element length code 6)
### Cellulose & stainless steel media




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




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

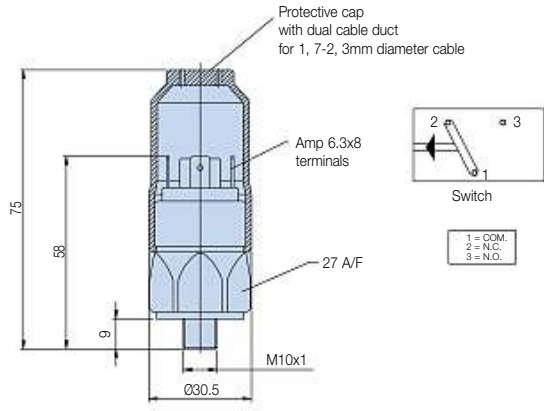


Tanktop Mounted Return Line Filters

# TTF Series

## Indicator Options

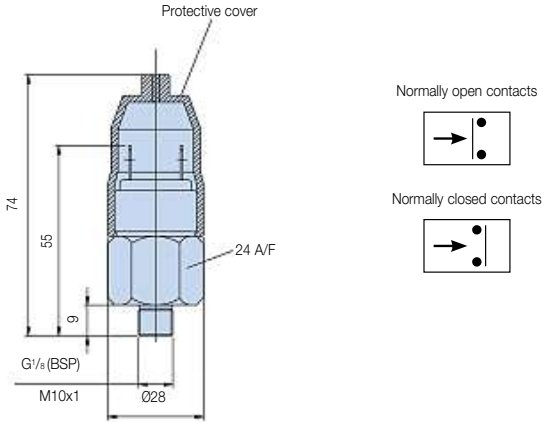
### Indicator PS pressure switch




| 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-G¾" (BSP) (TTF length 2,3,4 and 5) | M10 |
| | ISO 228-G1" (BSP) | M10 |
| | ISO 228-G1¼" (BSP) (TTF length 7 and larger) | M10 |
| | 2xISO 228-G1¼" (BSP) (TTF length 7 and larger) | G1/8" |
| | ISO 228-G1½"(BSP) (TTF length 7 and larger) | M10 |
| | 2xISO 228-G1½"(BSP) (TTF length 7 and larger) | G1/8" |
| | 1½" SAE-3000 PSI (TTF length 7 and larger) | G1/8" |
| | 1½" SAE-3000 PSI (2nd port) + G1½" (TTF length 7 and larger) | G1/8" |
| | G2" (TTF length 7 and larger) | G1/8" |
| | G2" + G1½" (TTF length 7 and larger) | G1/8" |
| TSR | ISO 228-G1¼" (BSP) + 2 Ports A ISO228-G1" (TSR only) | G1/8" |
| | 2xISO 228-G1¼" (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 | 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) |

| | |
|---|---|
| **Visual indicator** | 1.2 bar |
| M10: code | FMUG1EBPM10L |
| G1/8: 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-G¾ TXWL3-10 B15 MM | 90 | TTF90 | Length 3 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G¾ | None | **937878Q** | TXWL3-10 |
| **TTF320QLBP2EG121** | TTF90-G¾ TXWL3-20 B15 MM | 90 | TTF90 | Length 3 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G¾ | 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-G1¼ TXWL4-10 T B15 MM | 170 | TTF170 | Length 6 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G1¼ | Diffuser type T | **937853Q** | TXWL4-10 |
| **TTF620QLBP2EG203** | TTF170-G1¼ TXWL4-20 T B15 MM | 170 | TTF170 | Length 6 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G1¼ | Diffuser type T | **937874Q** | TXWL4-20 |
| **TTF810QLBP2EG243** | TTF300-G1½ TXWL5A-10 T B15 MM | 300 | TTF300 | Length 8 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G1½ | Diffuser type T | **937855Q** | TXWL5A-10 |
| **TTF820QLBP2EG243** | TTF300-G1½ TXWL5A-20 T B15 MM | 300 | TTF300 | Length 8 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G1½ | Diffuser type T | **937872Q** | TXWL5A-20 |
| **TTF1010QLBP2HG24A** | TTF500-G1½ TXWL5C-10 T B20 MM NMG | 500 | TTF500 | Length 10 | 10 | Nitrile | Plugged | 2.0 Bar (29 Psi) | G1½ | Diffuser type T | **937857Q** | TXWL5C-10 |
| **TTF1010QLBP2HG24A** | TTF500-G1½ TXWL5C-20 T B20 MM NMG | 500 | TTF500 | Length 10 | 20 | Nitrile | Plugged | 2.0 Bar (29 Psi) | G1½ | 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.



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## 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

| Code |
|---|
| **TTF** |
| TSR |

Box 2

| Filter type | |
|---|---|
| **Housing** | **Code** |
| TTF 1-60 | 2 |
| TTF 1-90 | **3** |
| TTF 1-120 | 4 |
| TTF 1-125 | **5** |
| TTF 2-170 | **6** |
| TTF 2-230 | 7 |
| TTF 2-300 | **8** |
| TTF 2-400 | 9 |
| TTF 2-500 | **10** |
| TSR2-120 | 1 |
| TSR2-200 | 2 |
| TSR2-250 | 3 |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| **Element media** | | **Glass fibre** | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | **Cellulose** | Ecoglass III (for Leif® elements) | | | | **Wire mesh** |
| | 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, G1/8 for dual head ports and TSR series | G2 |
| Pressure switch 42V, 1.2 bar setting, NO/NC, M10x1 | **S1** |
| Pressure switch 42V, 1.2 bar setting, NO with G1/8 BSP | S2 |
| Pressure switch 42V, 1.2 bar setting, NC with G1/8 BSP | S3 |
| Pressure switch 250V, NO/NC with G1/8 | 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 |

Note: for all dual head ports and TSR series apply G1/8 connection for indicator

Box 6

| Bypass valve | |
|---|---|
| **Bypass valve** | **Code** |
| 0.8 bar | B |
| 1.5 bar | **E** |
| 2.0 bar for TTF series | H |
| Blocked bypass | X |
| Other bypass settings | on request |

Box 7

| Filter connection | |
|---|---|
| **Ports** | **Code** |
| ISO 228-G3/4" (BSP) (TTF length 2,3,4 and 5) | **G12** |
| ISO 228-G1" (BSP) | **G16** |
| ISO 228-G1 1/4" (BSP) (TTF length 7 and larger) | **G20** |
| 2xISO 228-G1 1/4" (BSP) (TTF length 7 and larger) | 2G20 |
| ISO 228-G1 1/2" (BSP) (TTF length 7 and larger) | **G24** |
| 2xISO 228-G1 1/2" (BSP) (TTF length 7 and larger) | 2G24 |
| 1 1/2" SAE-3000 PSI (TTF length 7 and larger) | L24 |
| 1 1/2" SAE-3000 PSI (2nd port) + G1 1/2" (TTF length 7 and larger) | LD24 |
| G2" (TTF length 7 and larger) | G32 |
| G2" + G1 1/2" (TTF length 7 and larger) | GM32 |
| ISO 228-G1 1/4" (BSP) + 2 Ports A ISO228-G1" (TSR only) | G20 |
| 2xISO 228-G1 1/4" (BSP) + 2 Ports A ISO228-G1" (TSR only) | 2G20 |
| SAE20 + 2 Ports A SAE16 (TSR only) | S20 |
| 2xSAE20 + 2 Ports SAE16 (TSR only) | 2S20 |

Box 8

| Options | |
|---|---|
| **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 for TTF lengths 2, 3 and 4 | 9 |
| 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 |

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

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| **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 | TWXL5C-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 | 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 |
| TTF90 | 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 |
| TTF120 | 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 |
| TTF125 | 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 | 937748Q | 937793Q | 937817 |
| TTF170 | 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 |
| TTF230 | 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 |
| TTF300 | 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 |



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Parker

Tanktop Mounted Return Line Filters

# BGT Series

*MAX 2400 l/min - 10 bar*

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Tanktop Mounted Return Line Filters

# 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.

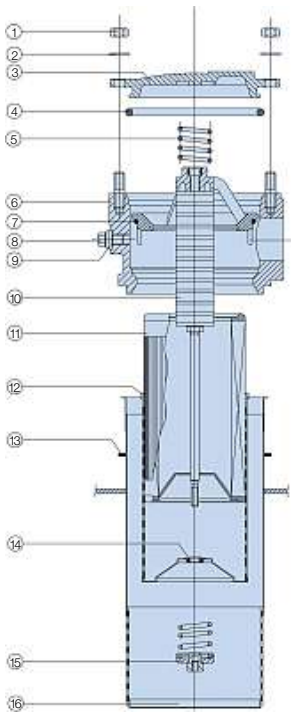
**Filter element:**
*LEIF*® element with reusable metal element sleeve.
Conventional style element with steel end caps.
The *LEIF*® element is patented and safeguards the use of genuine parts.

**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.

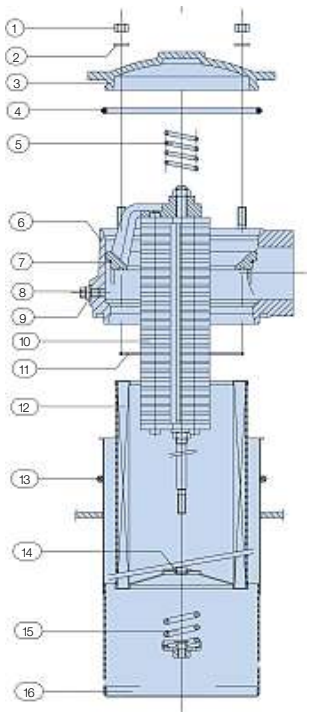
| BGT-3 Length 11 and 12 (*LEIF*® version) | | |
|---|---|---|
| **Ref.** | **No.** | **Description** |
| 1 | 1 | Nut |
| 2 | 1 | Washer |
| 3 | 1 | Cover |
| 4 | 1 | Cover-seal |
| 5 | 1 | Top-spring |
| 6 | 1 | Housing |
| 7 | 1 | Insert-seal |
| 8 | 1 | Plug M10x1 |
| 9 | 1 | Bonded seal |
| 10 | 1 | Insert |
| 11 | 1 | *LEIF*® 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)**



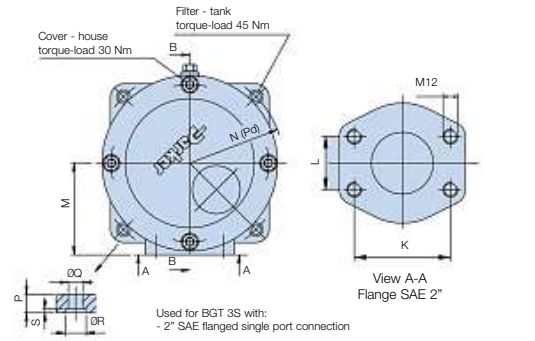

**BGT-4 (conventional element)**

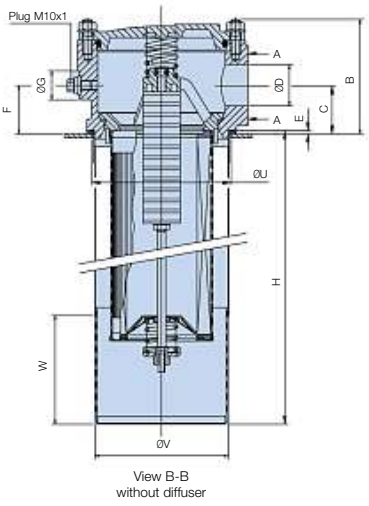


# BGT Series

## Specification (cont.)

### BGT-3 with diffuser

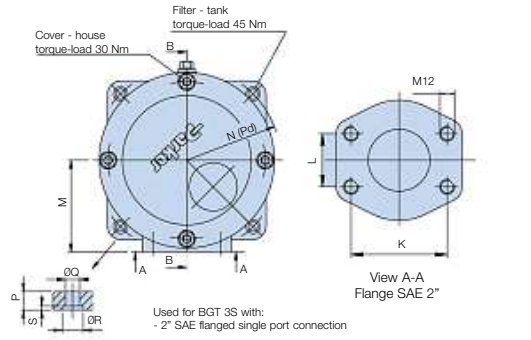


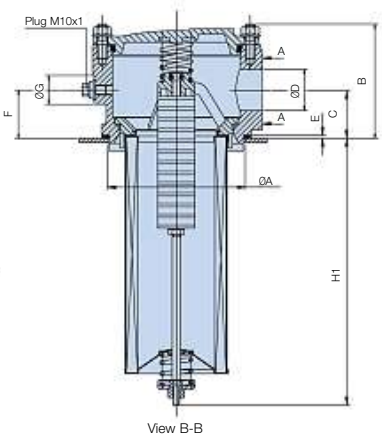




Dimensions in mm

| 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) | | | | |



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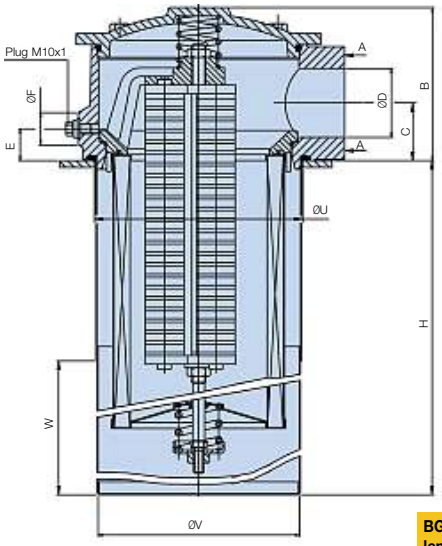
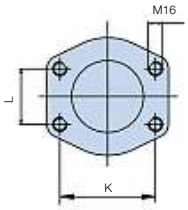
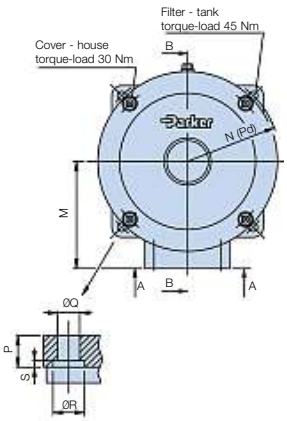
## BGT-4 with diffuser




View B-B
with diffuser



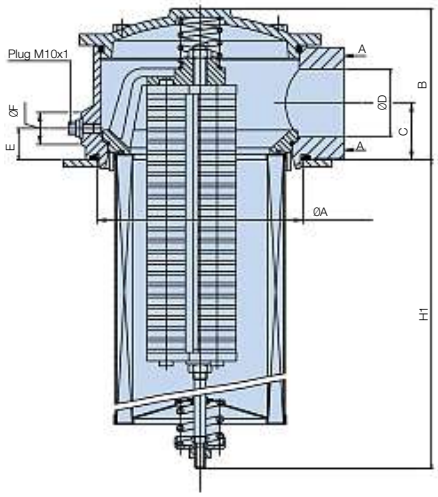

Flange SAE 3"
View A-A



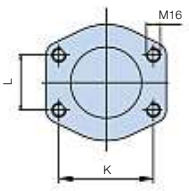

| BGT length | | B | C | ØD | E | ØF | H | K | L | M | N(Pd) | P | ØQ | ØR | S | ØU | ØV | W | Kg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | **BGT600** | | | | | | 425 | | | | | | | | | | | | 20.5 |
| 14 | **BGT800** | | | | | | 535 | | | | | | | | | | | | 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

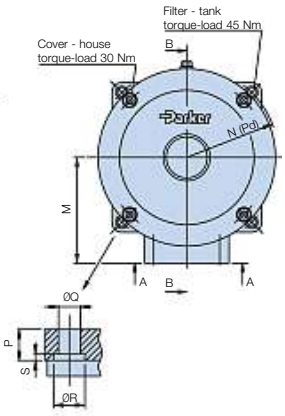
## BGT-4 without diffuser




View B-B
without diffuser




Flange SAE 3"
View A-A




| 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 |

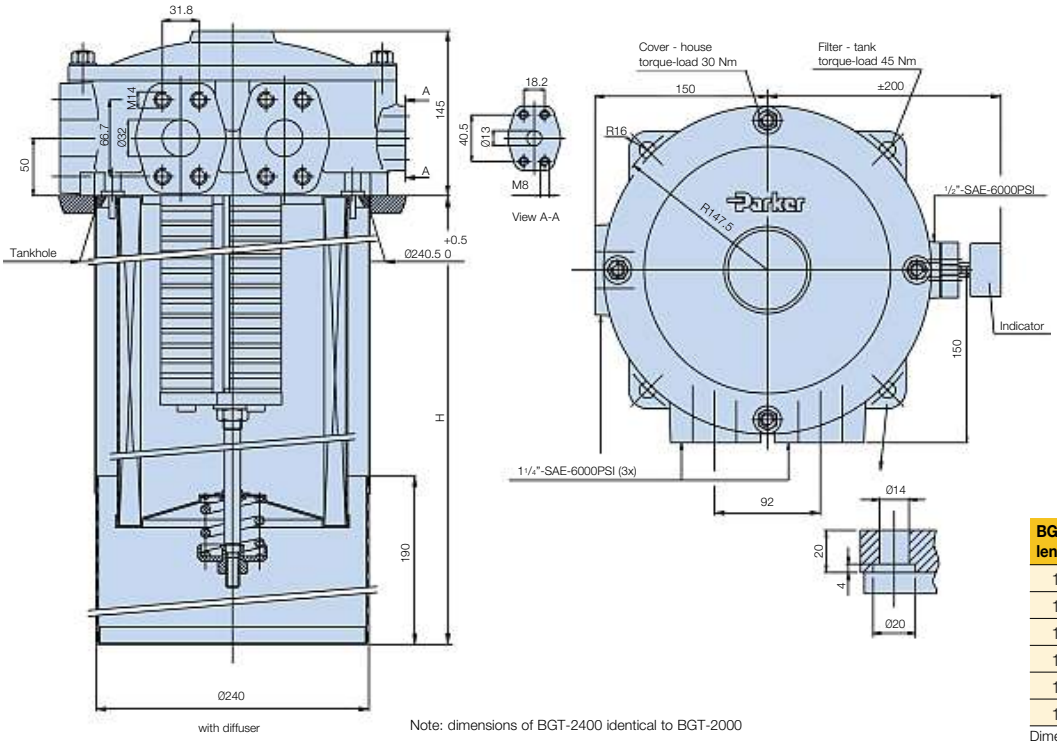
Note: dimensions of BGT-2400 identical to BGT-2000. Dimensions in mm

Tanktop Mounted Return Line Filters

# BGT Series

## Specification (cont.)

### BGT F1¼ manifold type - with diffuser

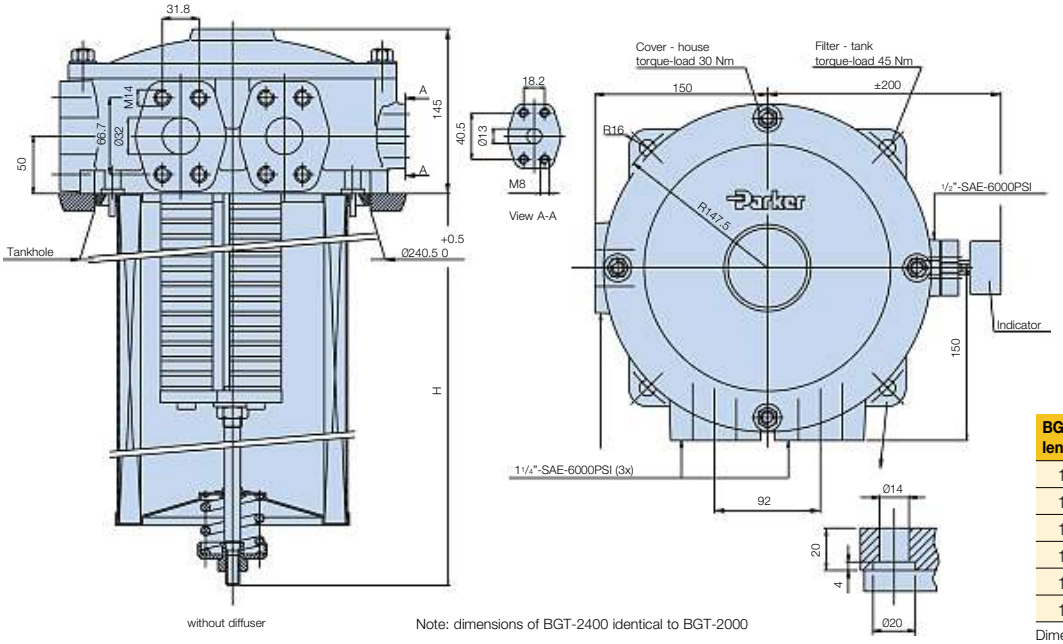



Note: dimensions of BGT-2400 identical to BGT-2000

| 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 F1¼ manifold type - without diffuser



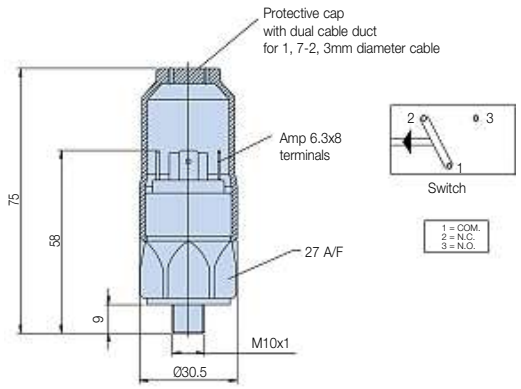

Note: dimensions of BGT-2400 identical to BGT-2000

| 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

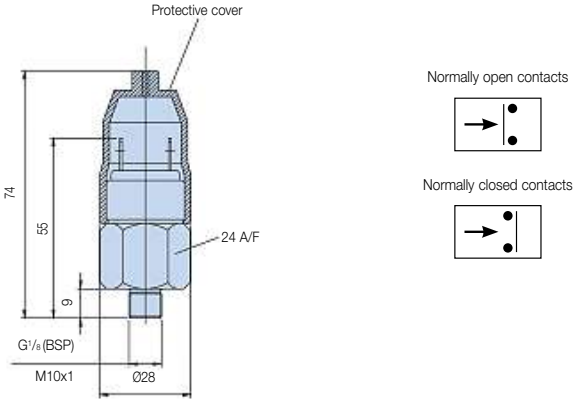
### Indicator PS pressure switch




| 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 1¼" SAE Flanged for BGT Length 11 and 12 | G⅛" |
| 3x1¼" SAE Flanges + 1x ½" SAE for BGT Length 13 and larger | M10 |

### Indicator PS NO/NC pressure switch



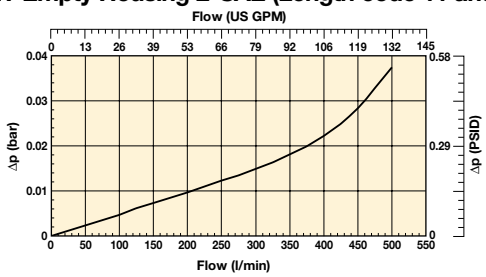

| Specifications | |
|---|---|
| Elec.rating | 42V / 2A |
| Thread connection | G⅛ |
| Elec.connection | AMP terminal 6.3x0.8 |
| Protection | IP65 (terminal IP00) |
| Switch type | NO or NC |
| Code | FMUS2EBMG02L (NO switch) |
| | FMUS3EBMG02L (NC switch) |

| | |
|---|---|
| **Visual indicator** | 1.2 bar |
| M10 code | FMUG1EBPM10L |
| G⅛ code | FMUG2EBPG02L |

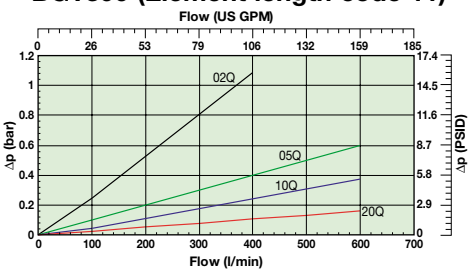
## Pressure Drop Curves

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:
Δp = (Δp32 x viscosity of medium used) / 32cSt.
Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

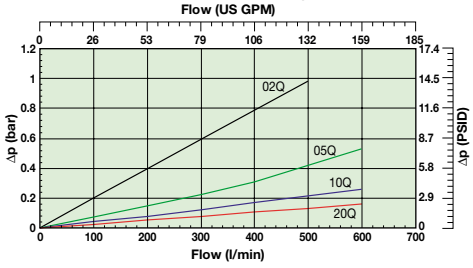
### BGT Empty Housing 2"SAE (Length code 11 and 12)




### BGT390 (Element length code 11)




### BGT500 (Element length code 12)







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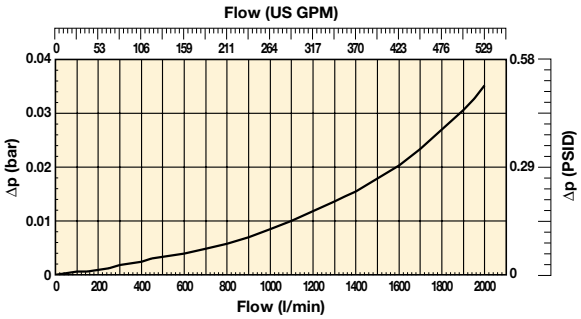
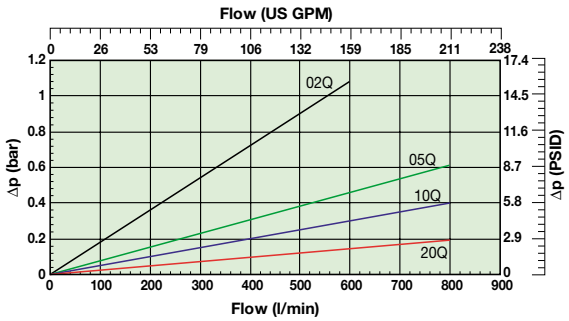
# BGT Series

## Pressure Drop Curves (cont.)

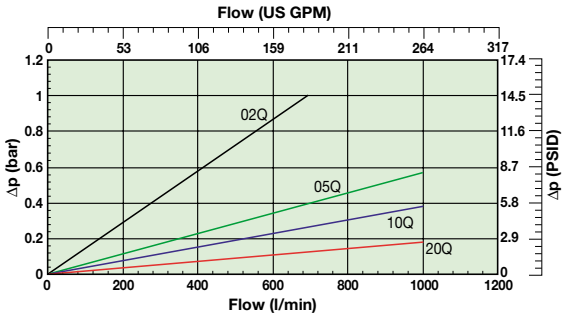
### BGT Empty Housing 3"SAE (Length 13 and larger)



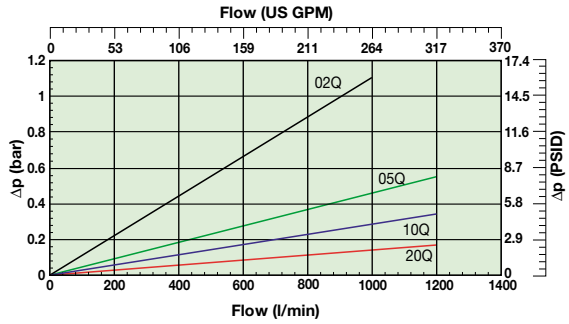

### BGT600 (Element length code 13)



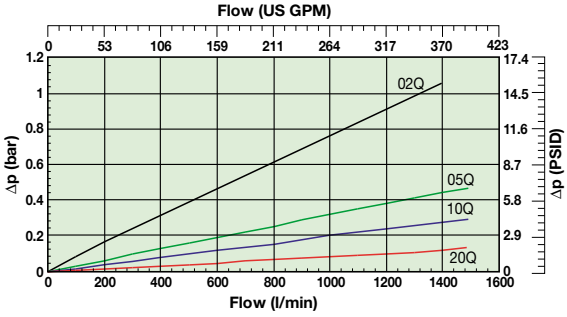

### BGT800 (Element length code 14)



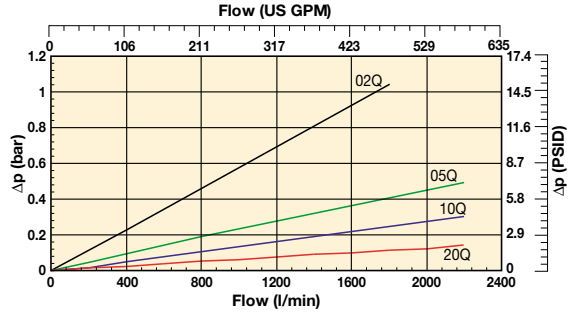

### BGT1000 (Element length code 15)



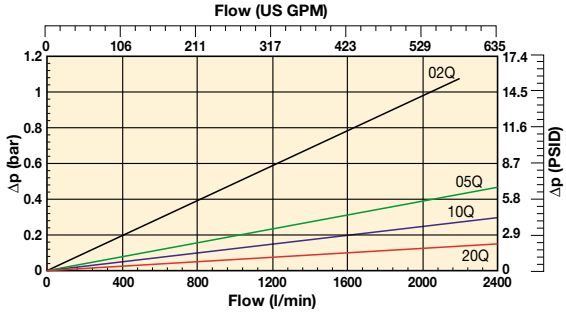

### BGT1500 (Element length code 16)




### BGT2000 (Element length code 17)




### BGT2400 (Element length code 18)



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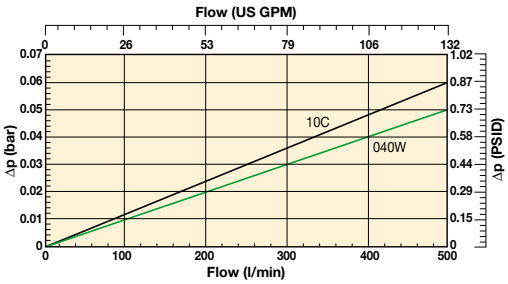
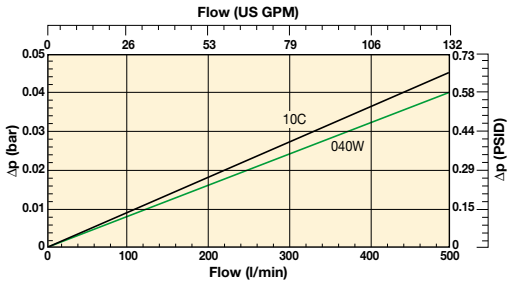
## Pressure Drop Curves (cellulose and stainless steel media)

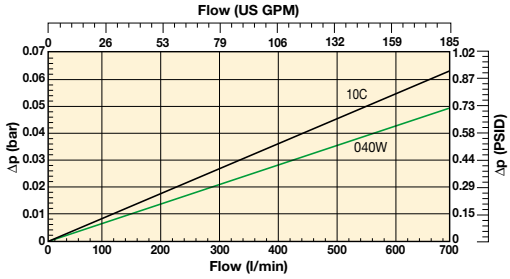
### BGT390 (Element length code 11) Cellulose & Stainless steel media



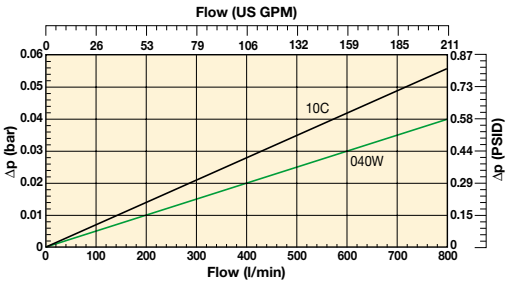

### BGT390 (Element length code 11) Cellulose & Stainless steel media



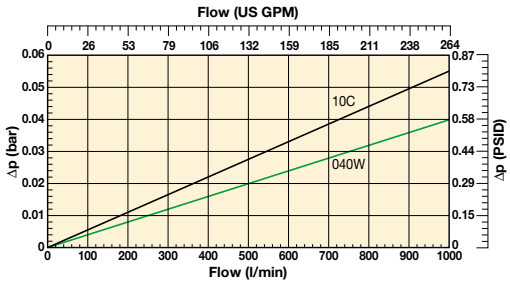

### BGT600 (Element length code 13) Cellulose & Stainless steel media



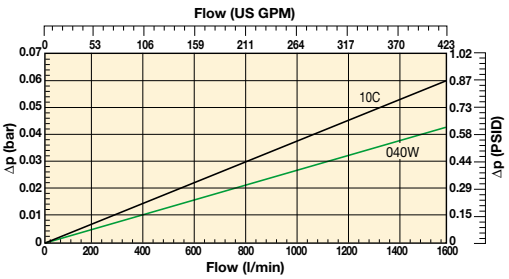

### BGT800 (Element length code 14) Cellulose & Stainless steel media



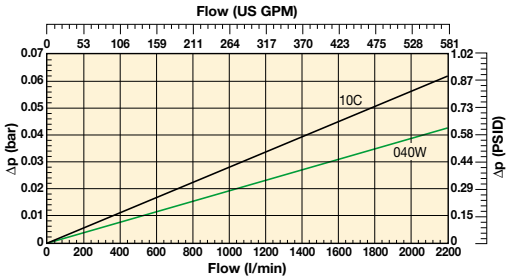

### BGT1000 (Element length code 15) Cellulose & Stainless steel media




### 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

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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

| Code |
|---|
| **BGT** |

Box 2

| Filter type | |
|---|---|
| **Housing** | **Code** |
| BGT390 | 11 |
| BGT500 | **12** |
| BGT600 | 13 |
| BGT800 | 14 |
| BGT1000 | **15** |
| BGT1500 | 16 |
| BGT2000 | **17** |
| BGT2400 | 18 |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| **Element media** | | **Glass fibre** | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | **Cellulose** | Ecoglass III (for Leif® elements) | | | | **Wire mesh** |
| | 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, G1/8 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 G1/8 BSP | S2 |
| Pressure switch 24V, 1.2 bar setting, NC with G1/8 BSP | S3 |
| Pressure switch 250V, NO/NC with G1/8 | 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 |

Note: For all dual head ports for BGTS apply G1/8 connection for indicators

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 |

Box 7

| Filter connection | |
|---|---|
| **Ports** | **Code** |
| 2" SAE BGT length 11 and 12 | **R32** |
| 3" SAE BGT Length 13 and larger | **R48** |
| 1x2" SAE Flanged + 2 x 1 1/4" SAE Flanged for BGT Length 11 and 12 | R32M |
| 3x1 1/4" SAE Flanges + 1x 1/2" SAE for BGT Length 13 and larger | 3R20 |

Box 8

| Options | |
|---|---|
| **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 |

### 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.



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## Ordering Information (cont.)

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| ßx(c)=2 | ßx(c)=10 | ßx(c)=75 | ßx(c)=100 | ßx(c)=200 | ßx(c)=1000 | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| 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 | 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 |
| BGT500 | 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 |
| BGT600 | 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 |
| BGT800 | 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 |
| BGT1000 | 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 |
| BGT1500 | 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 |
| BGT2000 | TXX14-10-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 | |



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## 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

Parker

Aerospace | Automation | Climate & Industrial Controls | **Filtration** | Fluid Connectors | Hydraulics | Instrumentation | Seal

Parker

In-Tank Mounted Return Line Filters

# IN-AGB Series

*MAX 2400 l/min*

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In-Tank Mounted Return Line Filters

# IN-AGB Series

## Features & Benefits

| Features | Advantages | Benefits |
|---|---|---|
| Filter integrated in tank | Compact low cost solution<br>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 | 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

- 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.

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## 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.

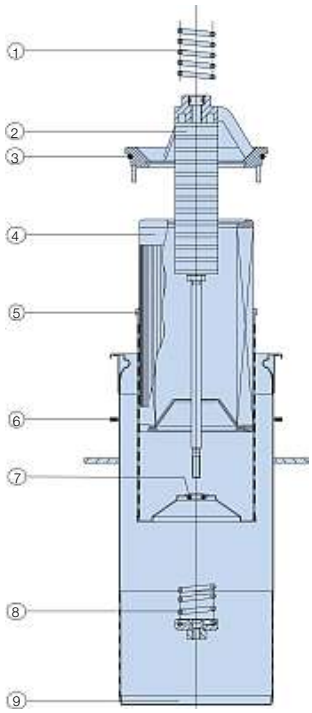
**Insert-AGB *LEIF*® 3 series**

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

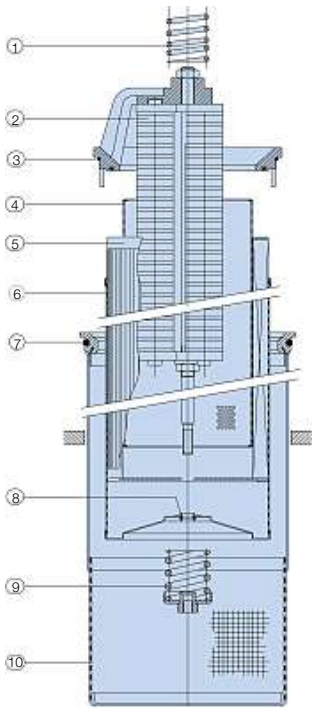
**Insert-AGB *LEIF*® 4 series**

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

**1-3 Series**



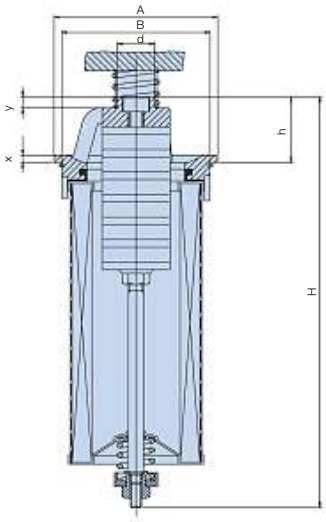

**4 Series**



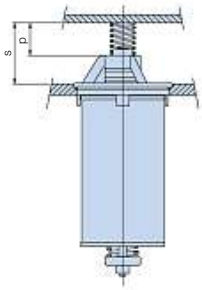
In-Tank Mounted Return Line Filters

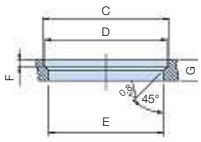
# IN-AGB Series

## Specification (cont.)




without diffuser

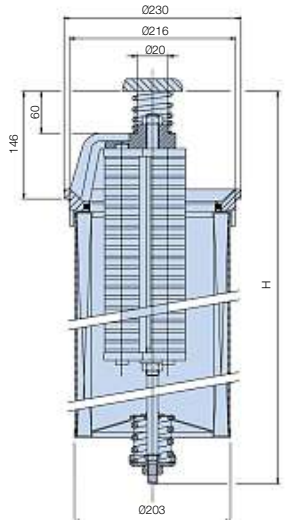


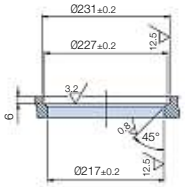




Mounting arrangement

| | 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

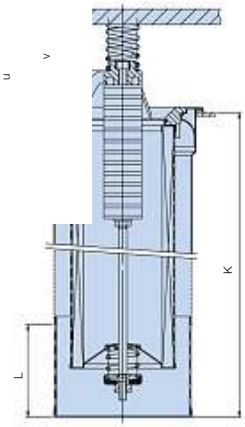



without diffuser

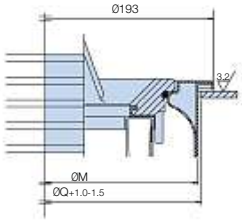
| INAGB Length | Type | H |
|---|---|---|
| 13 | IN600 | 543 |
| 14 | IN800 | 653 |
| 15 | IN1000 | 758 |
| 16 | IN1500 | 1038 |
| 17 | IN2000 | 1303 |
| 18 | IN2400 | 1303 |

Dimensions in mm

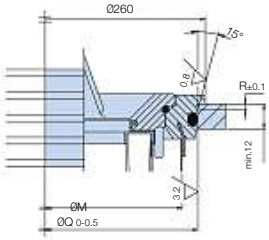



with diffuser

**IN-AGB 3**




**IN-AGB 4**




| | 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



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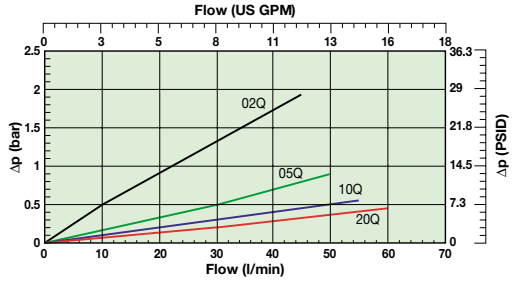
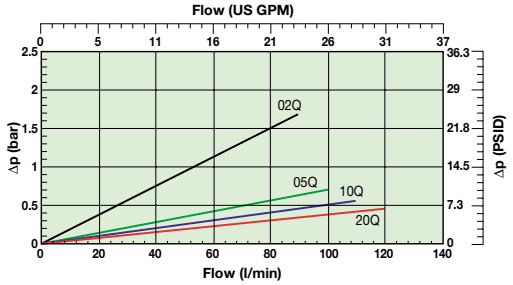
## Pressure Drop Curves

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:
□p = (□p32 x viscosity of medium used) / 32cSt.
Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

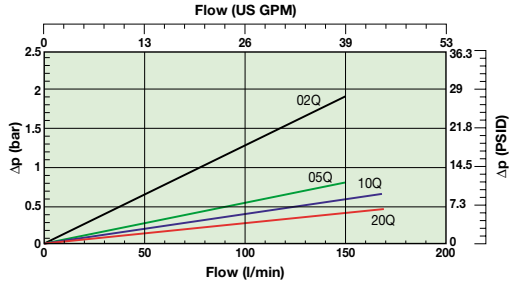
### IN30 (Element length code 0)



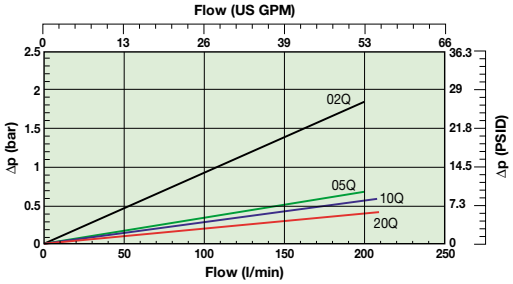

### IN60 (Element length code 2)



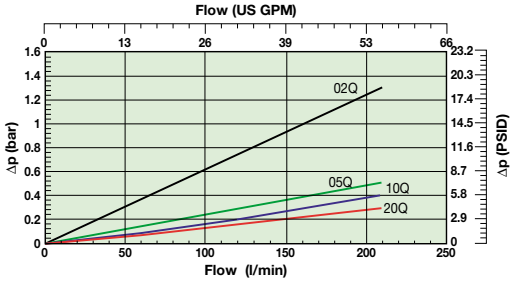

### IN90 (Element length code 3)



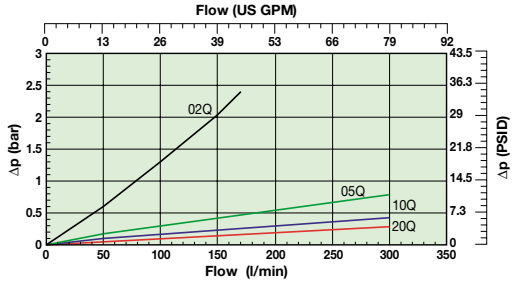

### IN120 (Element length code 4)



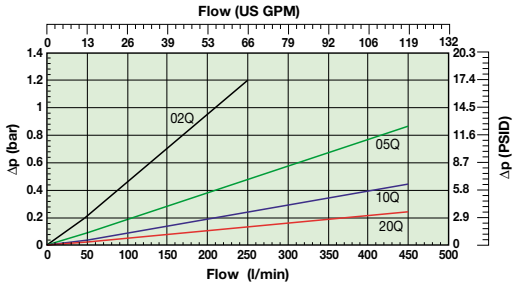

### IN125 (Element length code 5)



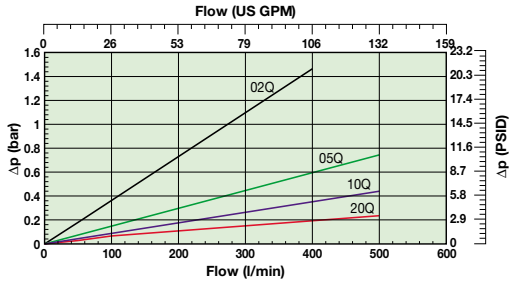

### IN170 (Element length code 6)




### IN230 (Element length code 7)




### IN300 (Element length code 8)







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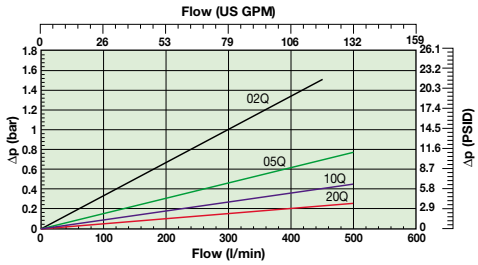
In-Tank Mounted Return Line Filters

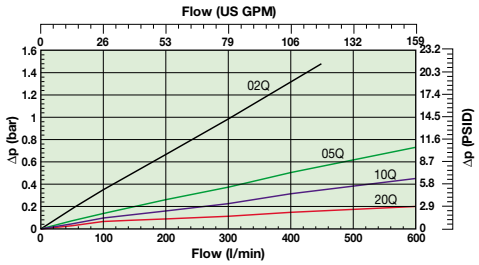
# IN-AGB Series

## Pressure Drop Curves (cont.)

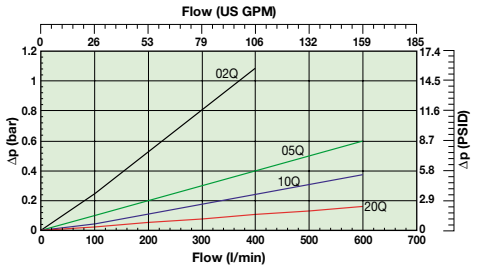
### IN400 (Element length code 9)



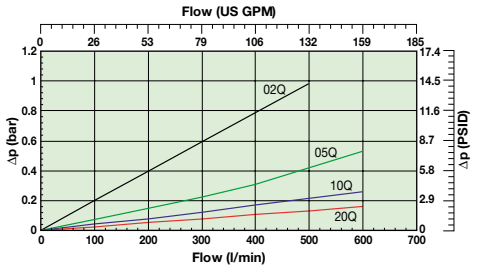

### IN500 (Element length code 10)



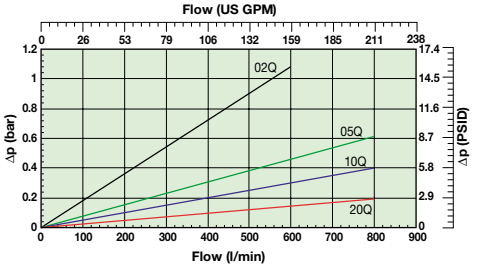

### IN390 (3)(Element length code 11)



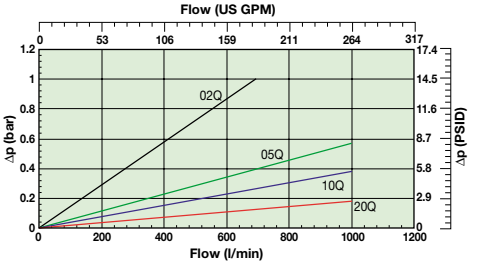

### IN500 (3) (Element length code 12)



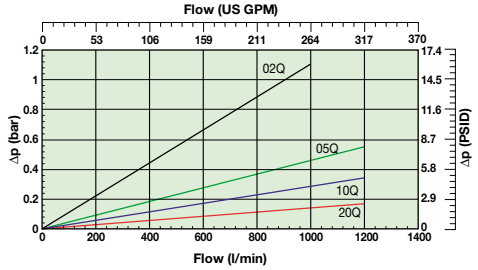

### IN600 (Element length code 13)



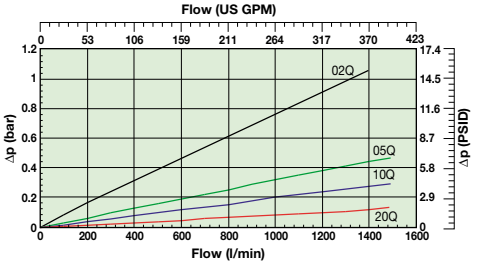

### IN800 (Element length code 14)



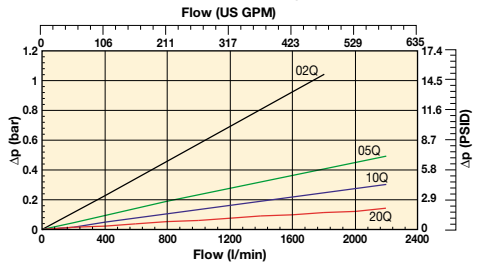

### IN1000 (Element length code 15)



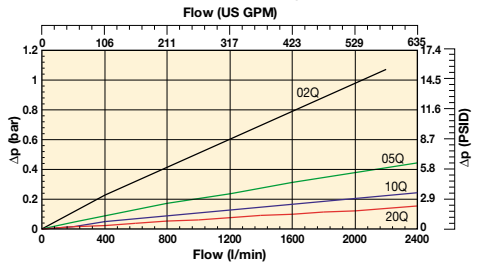

### IN1500 (Element length code 16)




### IN2000 (Element length code 17)

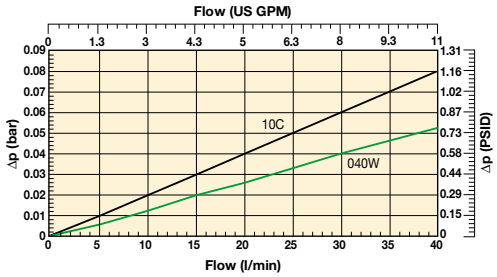



### IN1500 (Element length code 18)

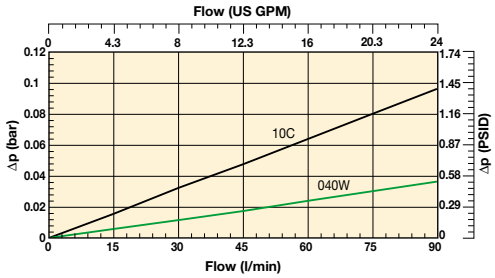


## Pressure Drop Curves (cellulose and stainless steel media)

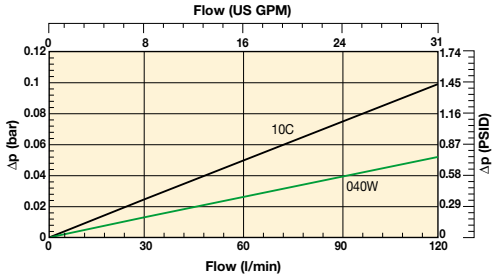
### IN30 (Element length code 0)
### Cellulose & Stainless steel media



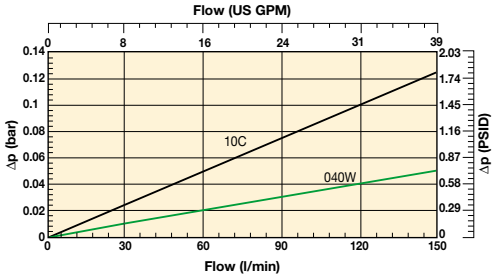

### IN60 (Element length code 2)
### Cellulose & Stainless steel media



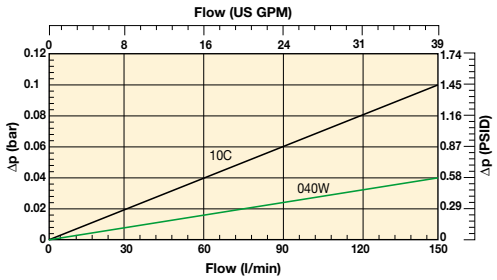

### IN90 (Element length code 3)
### Cellulose & Stainless steel media



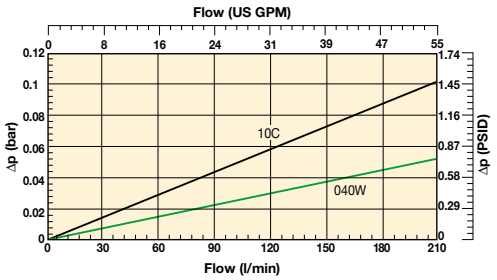

### IN120 (Element length code 4)
### Cellulose & Stainless steel media



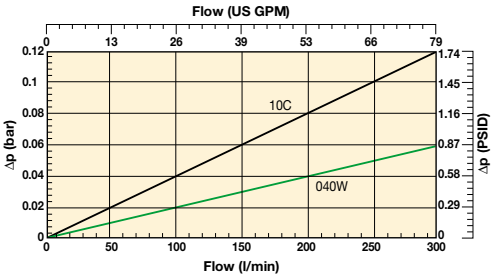

### IN125 (Element length code 5)
### Cellulose & Stainless steel media



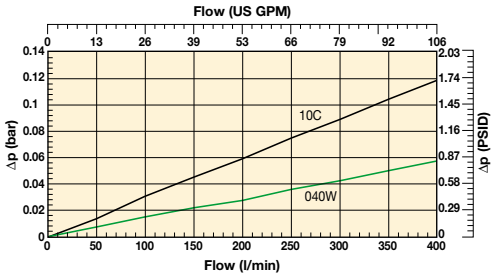

### IN170 (Element length code 6)
### Cellulose & Stainless steel media




### 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

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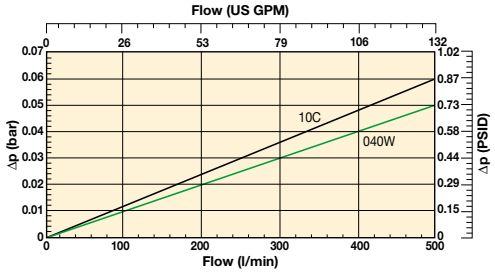
In-Tank Mounted Return Line Filters

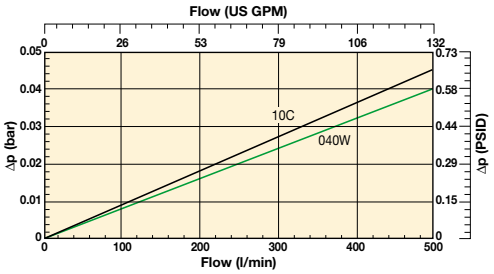
# IN-AGB Series

## Pressure Drop Curves (cellulose and stainless steel media)

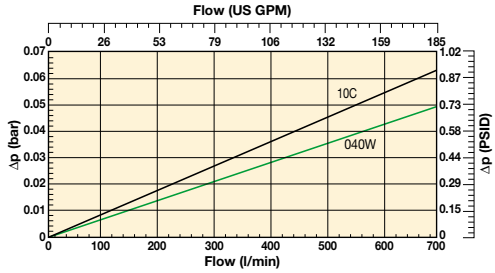
### IN390 (Element length code 11)
### Cellulose & Stainless steel media



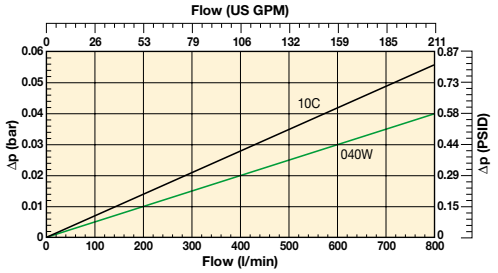

### IN500 (Element length code 12)
### Cellulose & Stainless steel media



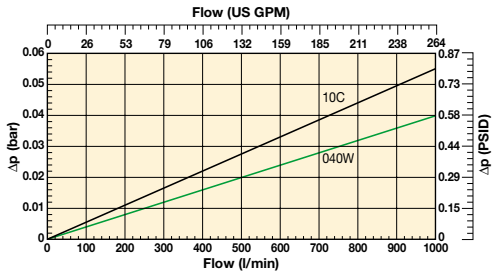

### IN600 (Element length code 13)
### Cellulose & Stainless steel media



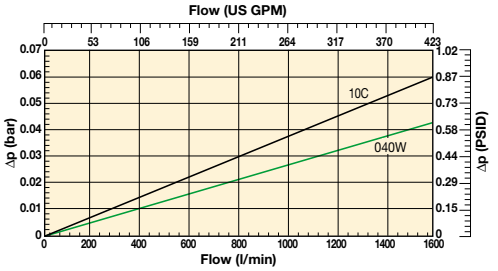

### IN800 (Element length code 14)
### Cellulose & Stainless steel media



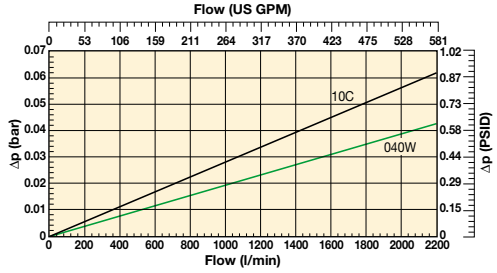

### IN1000 (Element length code 15)
### Cellulose & Stainless steel media




### 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

| Code |
|---|
| **IN** |

Box 2

| Filter Rating | |
|---|---|
| **Insert IN-AGB** | **Code** |
| 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 |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| **Element media** | | **Glass fibre** | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | **Cellulose** | Ecoglass III (for Leif® elements) | | | | **Wire mesh** |
| | 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** |
| Fluoroelastomer | V |
| Neoprene | N |

Box 5

| Indicator | |
|---|---|
| | **Code** |
| No indicator | **N** |

Box 6

| Bypass valve | |
|---|---|
| **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 | |
|---|---|
| **Ports** | **Code** |
| No ports applicable | **XXX** |

Box 8

| Options | |
|---|---|
| **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 |

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

### 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.

In-Tank Mounted Return Line Filters

# IN-AGB Series

## Ordering Information (cont.)

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| ßx(c)=2 | ßx(c)=10 | ßx(c)=75 | ßx(c)=100 | ßx(c)=200 | ßx(c)=1000 | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| 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 | TWXL5C-10 | TWXL5C-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 |



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## 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 | |



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# Grab the benefits of a greener future

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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.

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Tanktop Mounted Return Line Filters with Integrated Air Breather

# Tanktopper Series I,II & III

*MAX 650 l/min - 10 bar*

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Tanktop Mounted Return Line Filters

# 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 | 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

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.

## Specification

**Operation pressure:**
Max. 10 bar.

**Assembly:**
Tank top mounted.

**Connections:**
Threaded BSP or SAE ports.
Second return port available for Tanktopper II and Tanktopper III.

**Filter housing:**
Aluminium head and co-polymer cover.

**Seal material:**
Nitrile, Fluoroelastomer.

**Operation temperature range:**
-40 to +80°C.

**Bypass setting:**
Opening pressure 0.8, 1.5 or 2.5 bar for Tanktopper I.
Opening pressure 1.5 bar for Tanktopper II and III.

**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, Ecoglass III for *LEIF*® element. Air breather 10 micron Abs.
Also available 10µm Cellulose and 40µm stainless steel mesh. (TPR1)

**Element collapse rating:**
10 bar (ISO 2941).

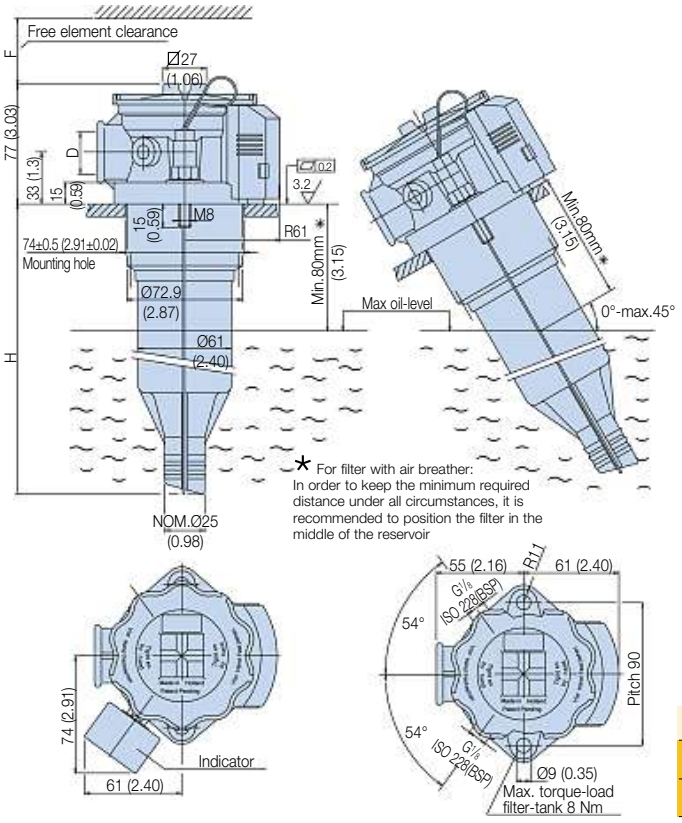
**Pressure indicator options:**
Setting 0.7 or 1.2 bar.
Other settings on request.
Visual pressure gauge.
Electrical pressure switch.

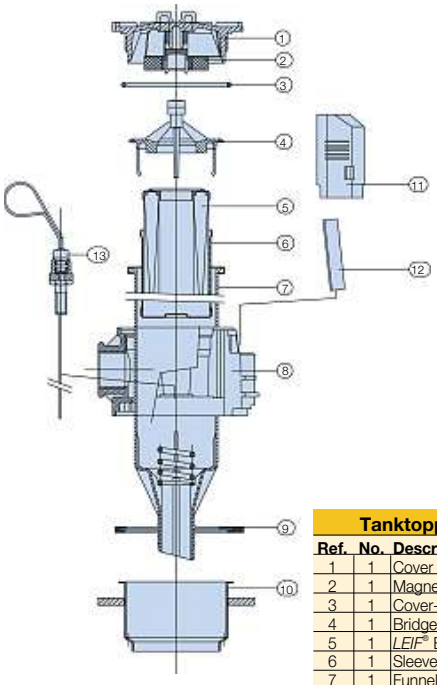
**Options:**
Dipstick
Second port (only for TPR II and III)

**Magnetic pack:**
Optional for Tanktopper I.
Standard for Tanktopper II and III.

**Filter element:**
*LEIF*® element with reusable metal element sleeve.
Conventional style element with steel end caps only optional for Tanktopper I. 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

### Tanktopper I (length 1 and 2)




| Length | | H | F | D |
|---|---|---|---|---|
| 1 | TPR1-40 | 169 (6.65) | 160 (6.30) | G3/4 (BSP) |
| 2 | TPR1-80 | 269 (10.60) | 260 (10.23) | SAE 12 |

Dimensions in mm

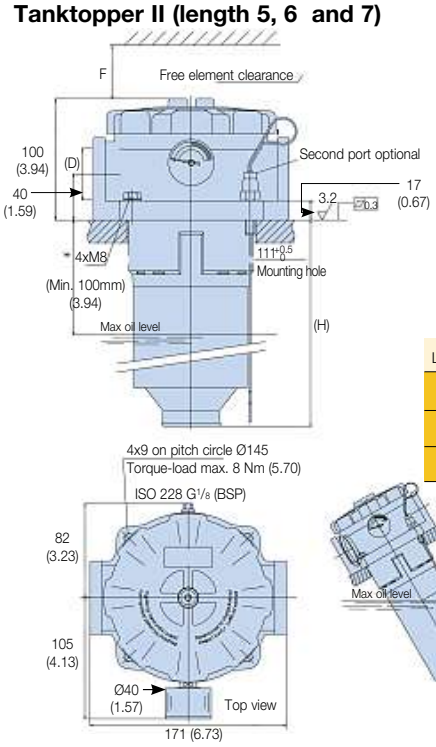
| Tanktopper I | | |
|---|---|---|
| Ref. | No. | Description |
| 1 | 1 | Cover |
| 2 | 1 | Magnet-set |
| 3 | 1 | Cover-seal |
| 4 | 1 | Bridge (blue) |
| 5 | 1 | *LEIF*® Element |
| 6 | 1 | Sleeve |
| 7 | 1 | Funnel-assembly |
| 8 | 1 | Filter-housing |
| 9 | 1 | Housing-seal |
| 10 | 1 | Airguide |
| 11 | 1 | Cover airbreather |
| 12 | 1 | Breather-element |
| 13 | 1 | Dipstick assembly |

Tanktop Mounted Return Line Filters

# Tanktopper Series I,II & III

## Specification (cont.)

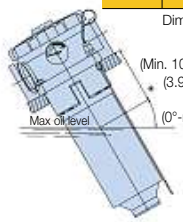
### Tanktopper II (length 5, 6 and 7)




| (Port) | D |
|---|---|
| G1¼ | (BSP) |
| G1½ | (BSP) |
| SAE 20 | |
| SAE 24 | |

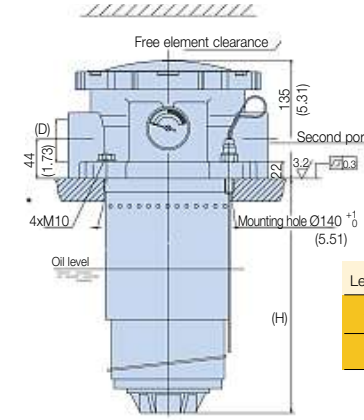
| Length | | H | F |
|---|---|---|---|
| 5 | TPR2-120 | 181 (7.12) | 170 (6.70) |
| 6 | TPR2-200 | 267 (10.51) | 255 (10.03) |
| 7 | TPR 2-250 | 400 (15.75) | 380 (14.96) |

Dimensions in mm




* For filter with air breather:
In order to keep the minimum required distance under all circumstances, it is recommended to position the filter in the middle of the reservoir

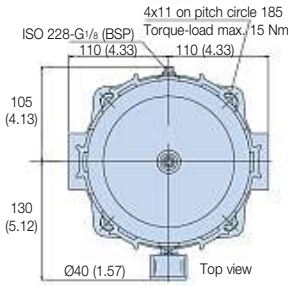
### Tanktopper III (length 10 and 11)

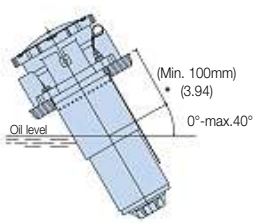


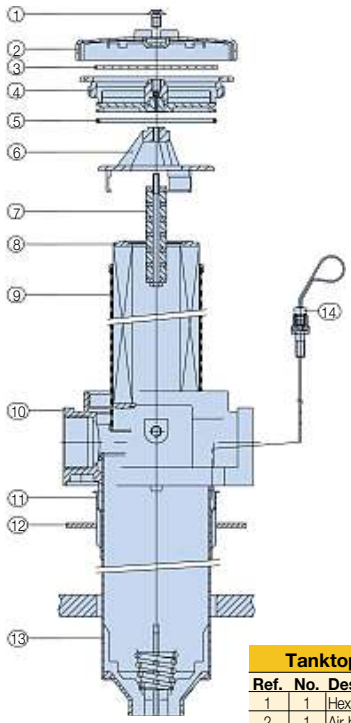

* For filter with air breather:
In order to keep the minimum required distance under all circumstances, it is recommended to position the filter in the middle of the reservoir

| Length | | D | H | F |
|---|---|---|---|---|
| 10 | TPR3-450 | -G1½ (BSP) | 415 (16.34) | 345 (13.58) |
| 11 | TPR3-650 | -G1½ (BSP) | 600 (23.62) | 530 (20.87) |

Dimensions in mm

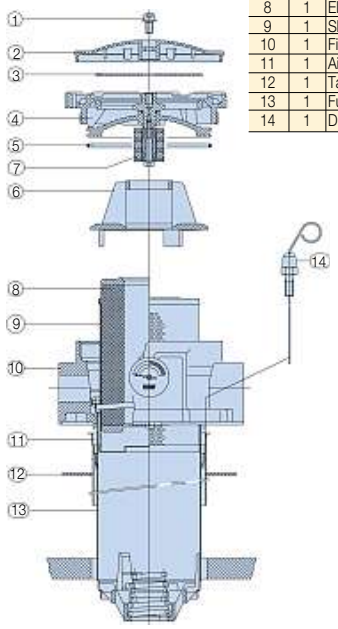



**Tanktopper II & III**

| 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 |

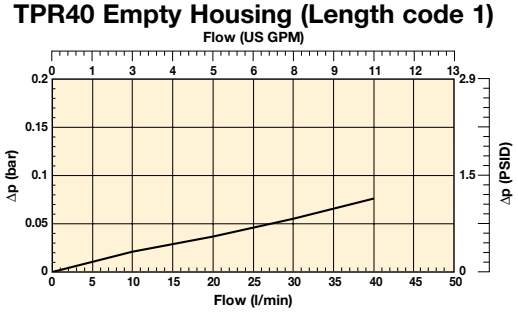


# Tanktopper Series I & II

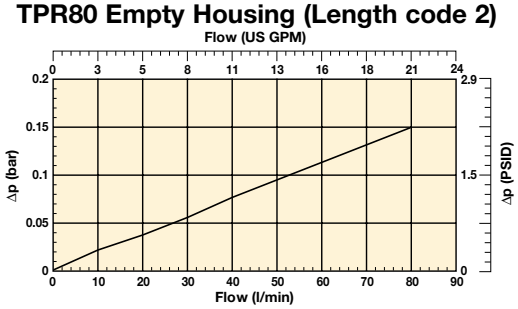
## Pressure Drop Curves - Tanktopper I

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

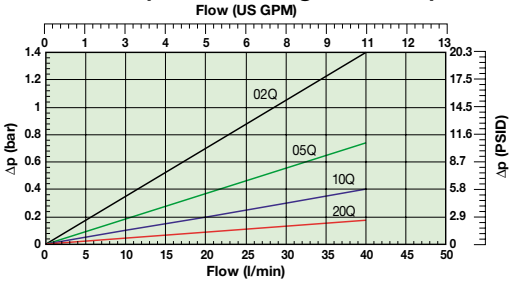
### TPR40 Empty Housing (Length code 1)



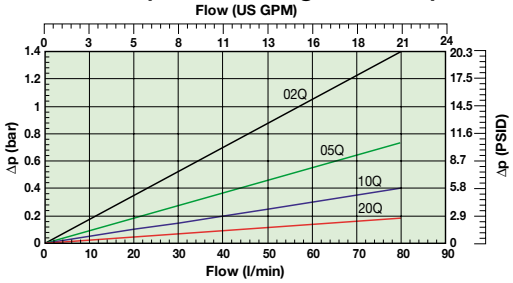

### TPR80 Empty Housing (Length code 2)



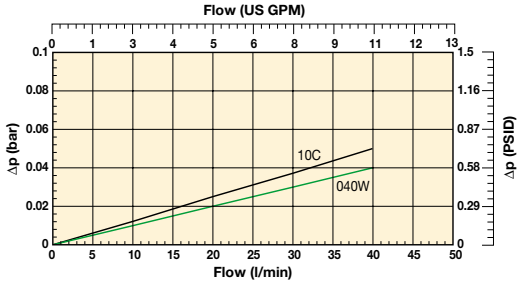

### TPR40 (Element length code 1)



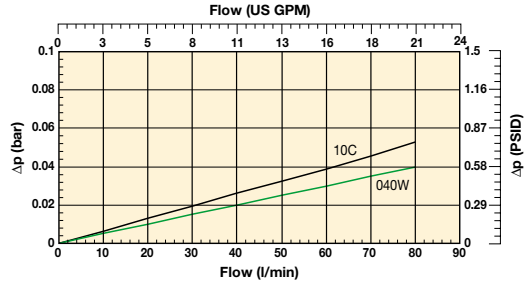

### TPR80 (Element length code 2)




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



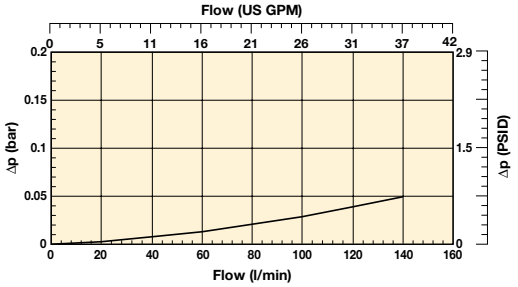

### TPR80 (Element length code 2) (cellulose and stainless steel)



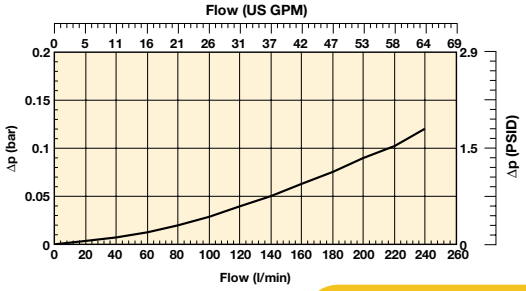

## Pressure Drop Curves - Tanktopper II

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

### TPR II Empty Housing with G1¼" ports (Length code 5, 6 and 7)




### TPR II Empty Housing with G1½" ports (Length code 5, 6 and 7)



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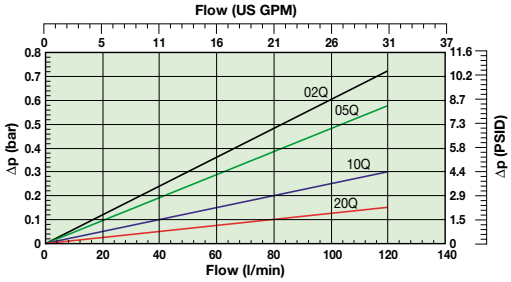
# Tanktopper Series II & III

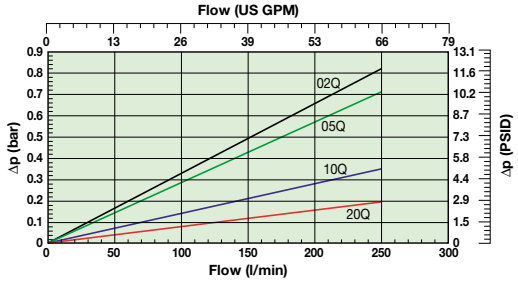
## Pressure Drop Curves - Tanktopper II (cont.)

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

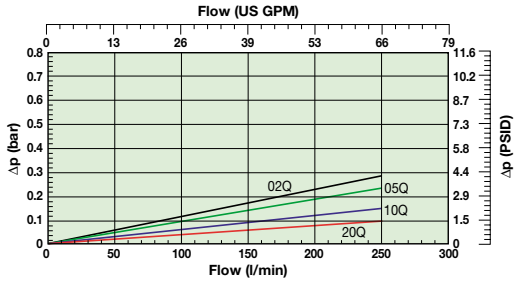
### TPR120 (Element length code 5)




### TPR200 (Element length code 6)



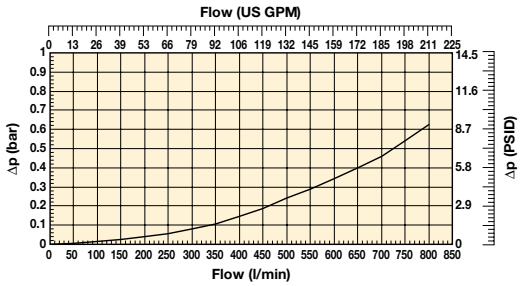

### TPR250 (Element length code 7)



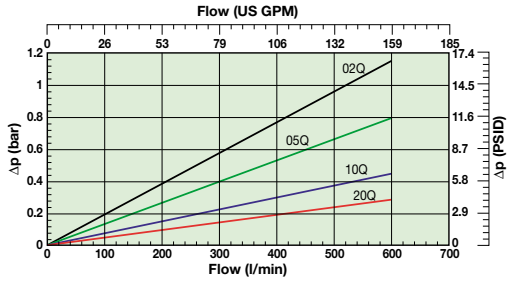

## Pressure Drop Curves - Tanktopper III

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

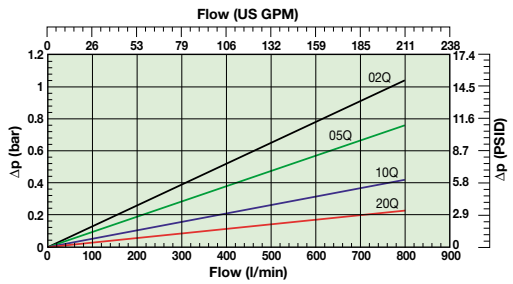
### TPR III Empty Housing with G1½" ports (Length code 10 and 11)




### TPR450 (Element length code 10)




### TPR650 (Element length code 11)



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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-G3/4 PXWL1-10 B15 MM MA | 40 | TPR40 | Length 1 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G3/4 | Magnets | **937902Q** | PXWL1-10 |
| **TPR120QLBP2EG12E** | TPR40-G3/4 PXWL1-20 B15 MM MA | 40 | TPR40 | Length 1 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G3/4 | Magnets | **937904Q** | PXWL1-20 |
| **TPR210QLBP2EG12L** | TPR80-G3/4 PXWL2-10 AB15 MM MA | 80 | TPR80 | Length 2 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G3/4 | Aluminium funnel, magnets | **937903Q** | PXWL2-10 |
| **TPR220QLBP2EG12L** | TPR80-G3/4 PXWL2-20 AB15 MM MA | 80 | TPR80 | Length 2 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | G3/4 | Aluminium funnel, magnets | **937905Q** | PXWL2-20 |
| **TPR510QLBP2E2G201** | TPR120-2G1 1/4 PXWL3-10 B15 MM | 120 | TPR120 | Length 5 | 10 | Nitrile | Plugged | 1.5 Bar (22 Psi) | 2xG1 1/4 | None | **937892Q** | PXWL3-10 |
| **TPR520QLBP2E2G201** | TPR120-2G1 1/4 PXWL3-20 B15 MM | 120 | TPR120 | Length 5 | 20 | Nitrile | Plugged | 1.5 Bar (22 Psi) | 2xG1 1/4 | None | **937895Q** | PXWL3-20 |
| **TPR710QLBP2E2G241** | 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 |
| **TPR720QLBP2E2G241** | 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 |
| **TPR1110QLBP2E2G241** | 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 |
| **TPR1120QLBP2E2G241** | 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 | G1/8 |
| Code | FMUG2EBPG02L |

| 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) |

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

| Code |
|---|
| **TPR** |

Box 2

| 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** |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| **Element media** | | **Glass fibre** | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | **Cellulose** | Ecoglass III (for Leif® elements) | | | | **Wire mesh** |
| | Nom. rating | | | | | Abs. rating |
| Disposable element (TPR I only) | 10C | 02Q | 05Q | **10Q** | **20Q** | 040W |
| ***LEIF*® element (for all TPR Filters)** | | 02QL | **05QL** | **10QL** | **20QL** | |

Box 4

| Seal type | |
|---|---|
| **Seal material** | **Code** |
| Nitrile | **B** |
| Fluoroelastomer | on request |

Box 5

| Indicator | |
|---|---|
| | **Code** |
| Pressure gauge, setting 1.2 bar, G1/8 | **G2** |
| Pressure switch 42V, 1.2 bar setting, NO with G1/8 | **S2** |
| Pressure switch 42V, 1.2 bar setting, NC with G1/8 | S3 |
| Pressure switch 250V, NO/NC with G1/8 | 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 |

Box 6

| 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.

Box 7

| Filter connection | |
|---|---|
| **Ports** | **Code** |
| G3/4 (BSP) (TPR 1 Series) | **G12** |
| SAE12 (TPR 1 Series) | S12 |
| G1 1/4 (BSP) (TPR 2 Series) | G20 |
| 2 x ISO 228-G1 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 |
| G1 1/2 (BSP) (TPR 2 and 3 Series) | G24 |
| G1 1/2 (BSP) (TPR 2 and 3 Series) | **2G24** |

Box 8

| 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

Tanktop Mounted Return Line Filters

# Tanktopper Series I,II & III

## Ordering Information (cont.)

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| ßx(c)=2 | ßx(c)=10 | ßx(c)=75 | ßx(c)=100 | ßx(c)=200 | ßx(c)=1000 | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| 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 | |



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Parker

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

# Suction Return Series

*MAX 250 l/min - 10 bar*

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

# 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 cavition |
| | | 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 | 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 |
| 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 |

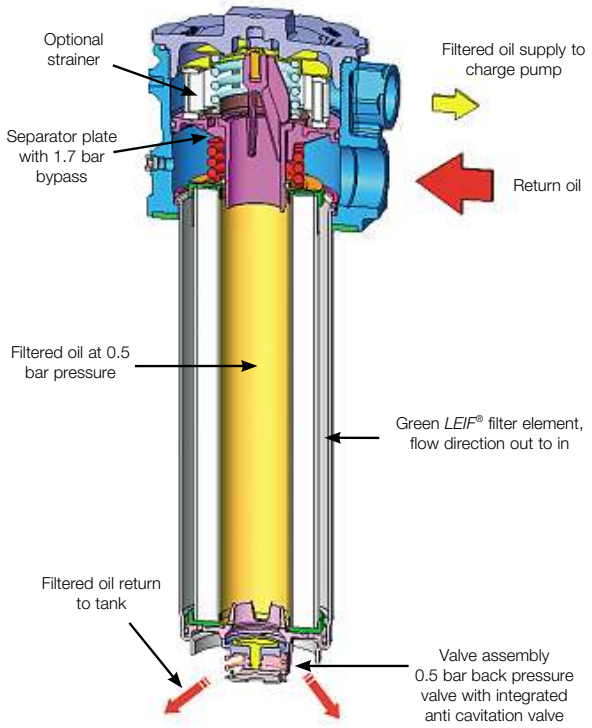
## Typical Applications

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 G3/4 (to BS 2779).

Return port G1 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).

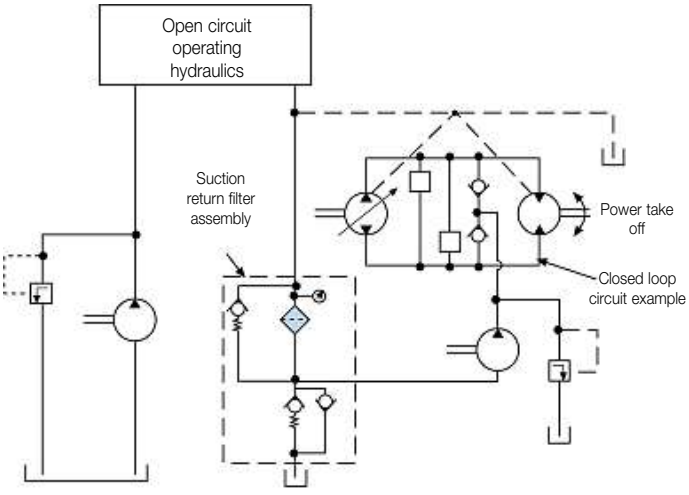
**Suction line:**
Back-pressure valve setting 0.5 bar (nominal).

**Anti-cavitation:**
Emergency suction valve fitted as standard.

**Construction:**

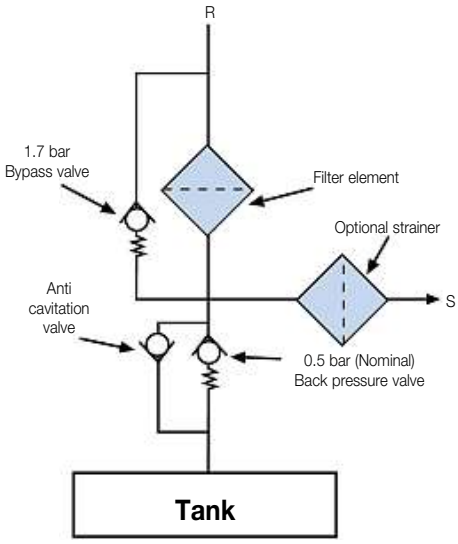
| | **Type SR1 and Type SR2** | |
|---|---|---|
| Filter Housing: | Precision pressure die casting | |
| Cover: | Glass reinforced nylon (high impact and temperature resistant) | |
| Weight: | 1.4Kg | 3.3Kg |
| Filter element: | *LEIF*® element with reusable metal element sleeve. The patented *LEIF*® concept contributes to ISO14001 and can be applied with mineral and HEES type fluids. For other fluid types consult Parker Filtration. } | SR1 & SR2 |

## Circuit Application Example




Note: Suction return filter without optional strainer.

## Suction Return Filter: Hydraulic Circuit

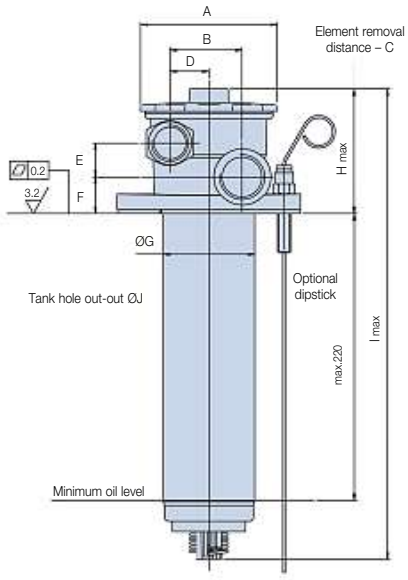


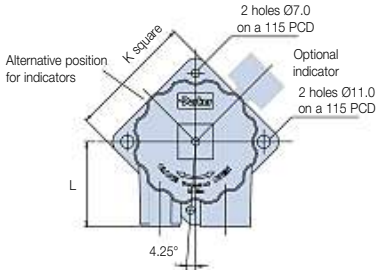

Note: Suction return filter with optional strainer.

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

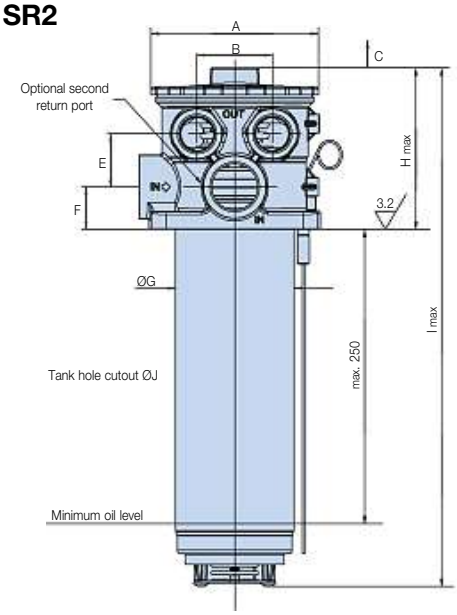
# Suction Return Series

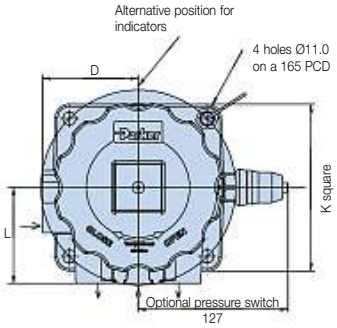
## SR1




## SR2

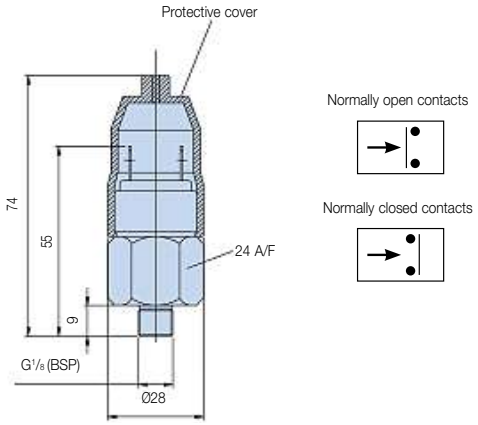



| Dimensions mm (inches) | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type SRL1 | 106 (4.17) | 55 (2.17) | 280 (11.0) | 29.75 (1.17) | 26 (1.02) | 28 (1.10) | 70 (2.76) | 96 (3.78) | 361 (14.21) | 71 to 73 (2.8 to 2.87) | 105 (4.13) | 72 (2.83) |
| 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.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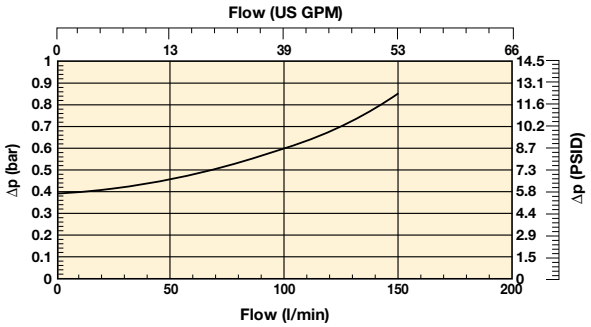
# Suction Return Series

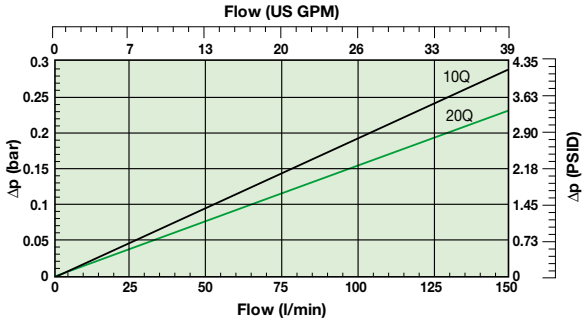
## Pressure Drop Curves (Type SR1)

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 □p = Housing □ph + (Element □pe x working viscosity/32).

### SRL1 Empty Housing (Length Code 2)




### SRL1 (Element Length Code 2)

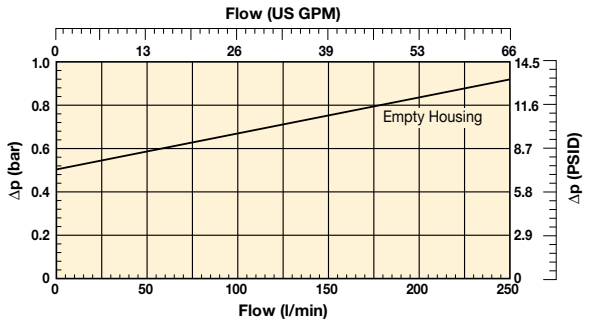



Curves are based on 32cSt fluid viscosity and 0.87 Kg/l density.

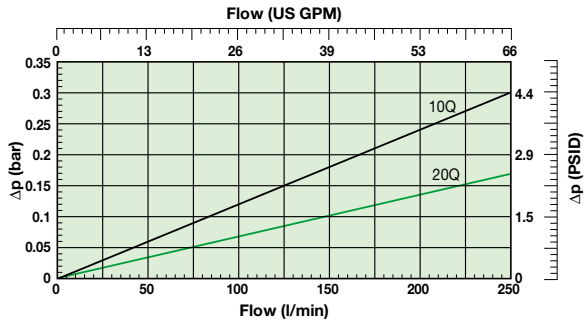
## Pressure Drop Curves (Type SR2)

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 | G¾ | None | **937984Q** | SRE12Q10 |
| **SRL1220QLBPGG161** | | 130 | SRL1 | Length 2 | 20 | Nitrile | Plugged | 1.7 Bar (25 Psi) | G1 | G¾ | None | **937985Q** | SRE12Q20 |
| **SRL2210QLBPGG201** | SRL22Q10NP1B10 | 250 | SRL2 | Length 2 | 10 | Nitrile | Plugged | 1.7 Bar (25 Psi) | G1¼ | 2xG1¼ | None | **937946Q** | SRE22Q10 |
| **SRL2220QLBPGG201** | SRL22Q20NP1B10 | 250 | SRL2 | Length 2 | 20 | Nitrile | Plugged | 1.7 Bar (25 Psi) | G1¼ | 2xG1¼ | 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 ßx(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, G⅛ | **G5** |
| Pressure switch 42V, 2.0 bar setting, NO with G⅛ BSP | **S6** |
| Pressure switch 42V, 2.0 bar setting, NC with G⅛ BSP | S7 |
| Pressure switch 250V, NO/NC with G⅛ | 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 G¾ (ISO228) | **G16** | **SRL1** |
| Return port 1 x G1¼ (ISO228) + Suction port 2 x G1 (ISO228) | **G20** | **SRL2** |
| Return port 2 x G1¼ (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 ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| **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** |

| 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 |

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.

# 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

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Parker

Spin-on Filters

# Maxiflow Series

*MAX 360 l/min - 10 bar*

Spin-on 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.

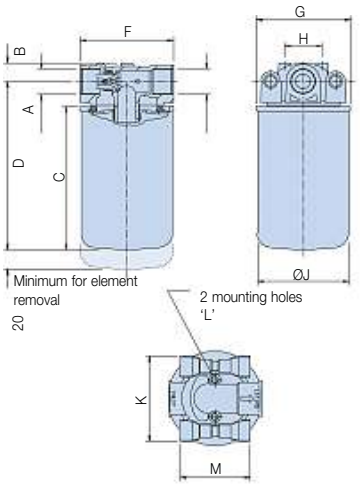
Maxiflow type MXA7 features one integral indicator.

## Specification

| | Preferred Series MXA | PS Series |
|---|---|---|
| **Maximum working pressure:** | 10 bar | 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<br>Suction line 0.17 bar<br>No bypass option | Return line 1.5 bar<br>Suction line 0.10 bar<br>No bypass option |
| **Fluids:** | Mineral oils | Mineral oils |
| **Element media:** | Microglass III media<br>Cellulose media | Microglass III media<br>Cellulose media |

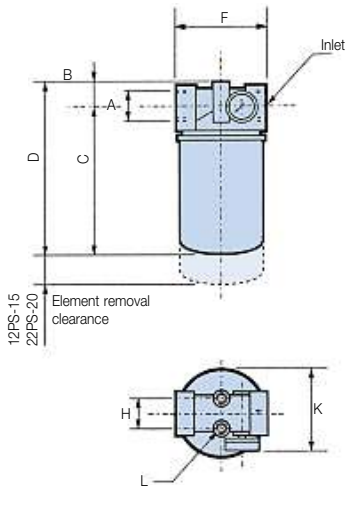
## Installation Details

### MXA.8/MXA.9***

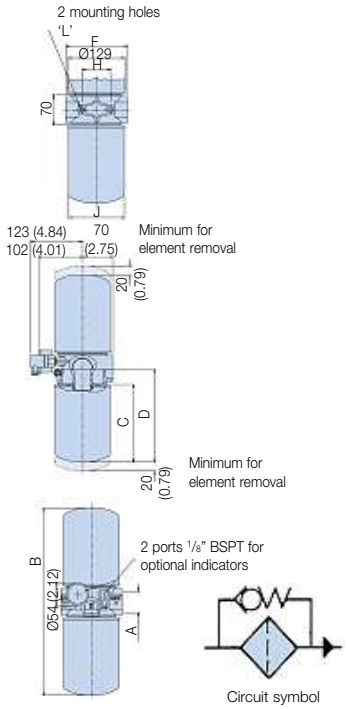



**Filter selection**
To select the correct filter use the appropriate pressure drop graphs. For details and an example of how to select the correct filter, see next page.

### 12PS/22PS




### MXA.7***




| Type | A | B | C | D | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MXA.8** | G3/4 | 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 | | 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) | | M10 x 1.5 | |

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Spin-on Filters

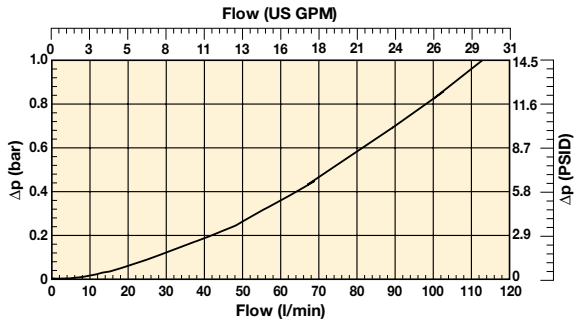
# Maxiflow Series

## Pressure Drop Curves

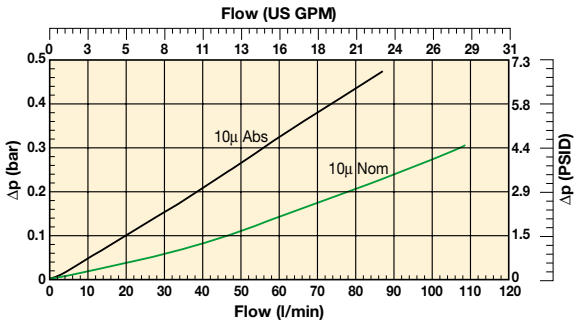
The recommended level of the initial pressure drop for low pressure filters is max 0.5 bar.
If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:
□p = (□p30 x viscosity of medium used) / 30cSt.

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

#### Filter Housing

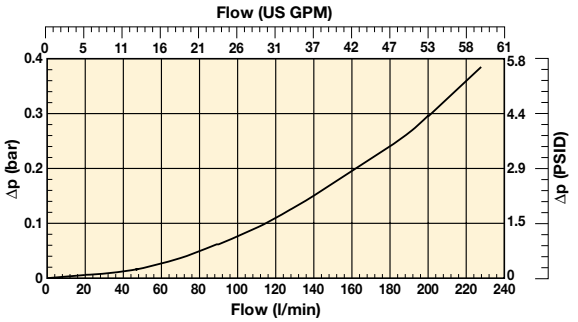



#### Filter Element

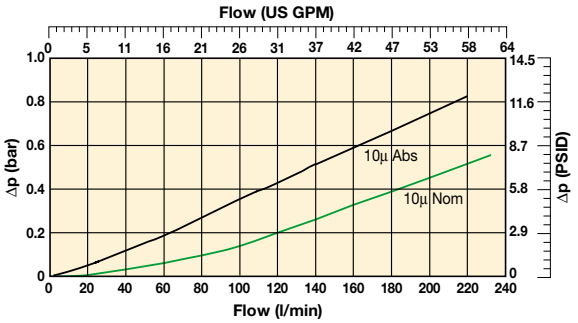



### Maxiflow (MXA.9*** Series) and 22PS Series

#### Filter Housing

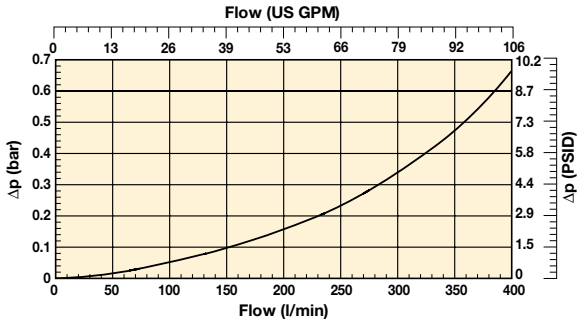



#### Filter Element

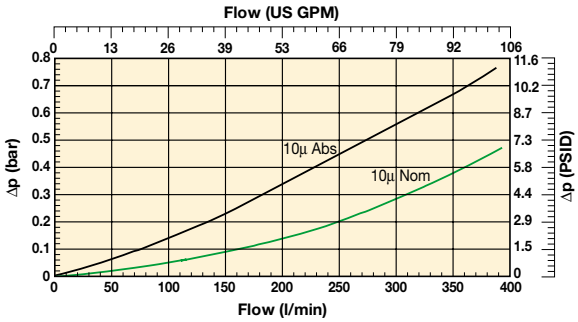



### Maxiflow (MXA.7*** Series)

#### 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. | G3/4 | **MXR8550** |
| PS | **12PS10BTV1R2B** | Assembly with bypass & gauge type visual indicators | | | | | |
| **MXA** | **MXA8511424** | Assembly with bypass & dual visual indicators | 10 | 70 | 10 micron nom. | G3/4 | **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. | G3/4 | **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** |
| **MXA** | **MXA9551424** | Assembly with bypass & dual visual indicators | 10 | 180 | 10 micron abs. | G1 1/4 | **MXR9550** |
| PS | **22PS10BTV1R2D** | 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 | | | | | |

**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

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**

## 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.

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Suction Filters

# ATZ Series

*MAX 300 l/min*

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Suction Filters

# 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 G1½ (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.

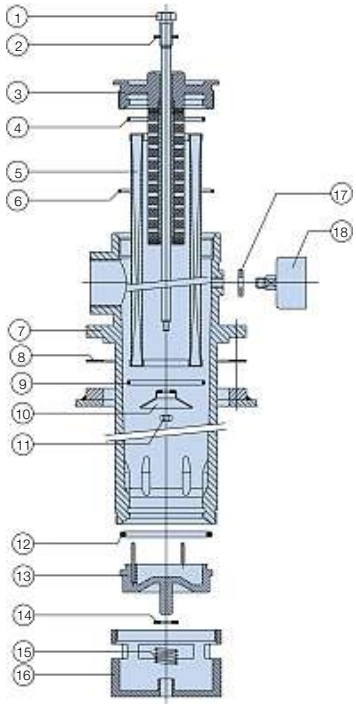
**Element collapse rating:**
10 bar (ISO 2941).

**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).

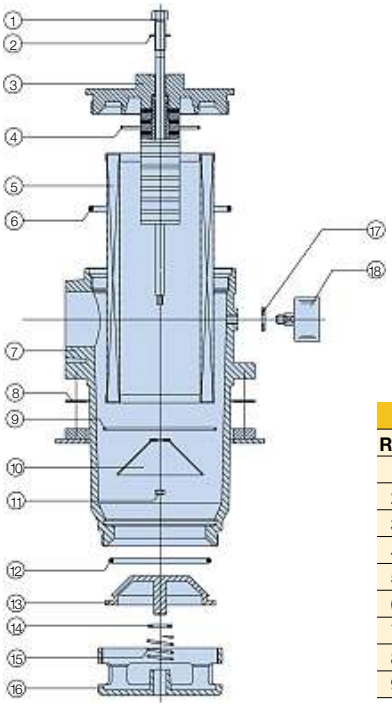
**Features:**
Unique check valve, enabling element change below oil level.

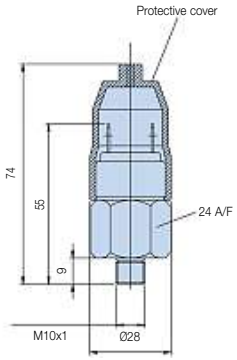
**Filter element:**
Element with steel end caps.

### ATZ-120




### ATZ-300




**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 |



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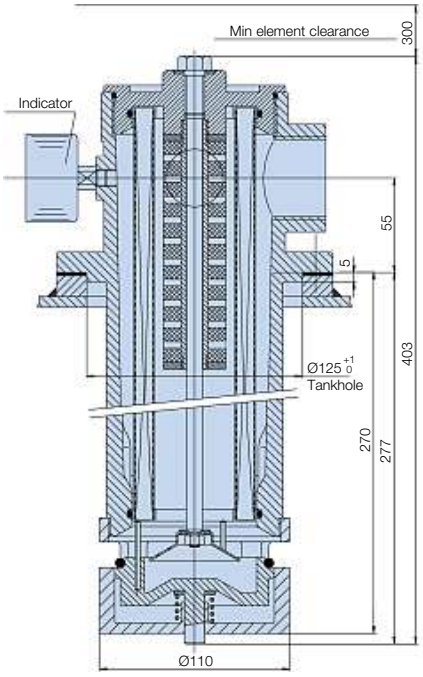
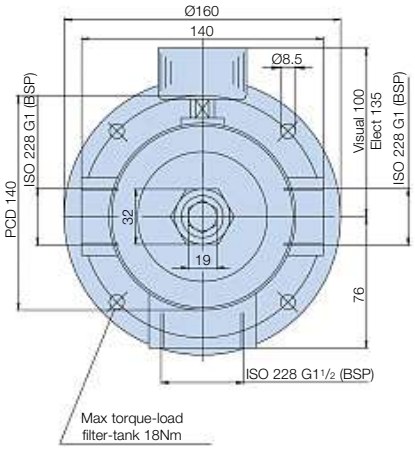
Suction Filters

# ATZ Series

## Specification (cont.)

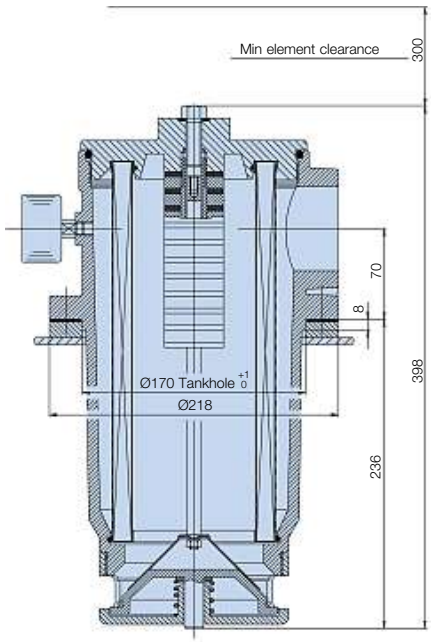
### ATZ-120

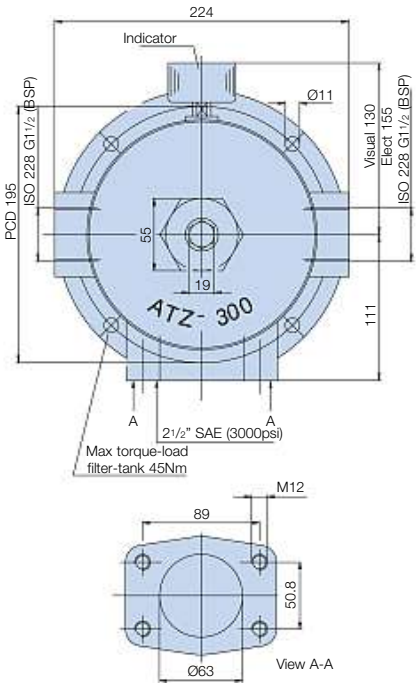



The Parker suction filters, type ATZ, are designed for submerged operation. The filters contain a unique check valve which automatically closes when the filter insert is removed from the housing, thus enabling element change below oil level. Construction is based on the field proven Parker Filter System.

### ATZ-300






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 8

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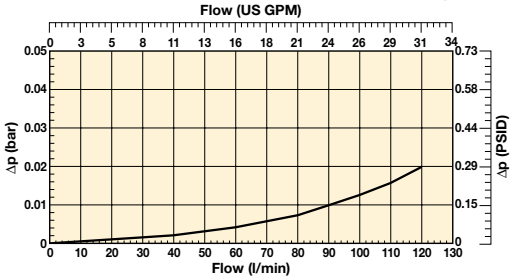
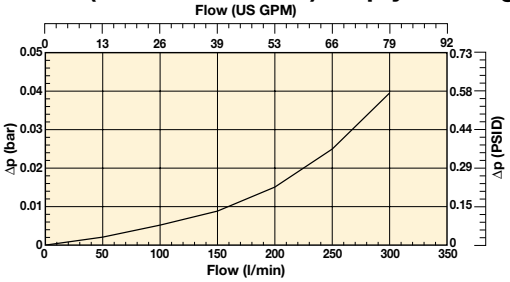
## Pressure Drop Curves

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:
□p = (□p32 x viscosity of medium used) / 32cSt.
Filter housing and element pressure drop based on 32cSt fluid viscosity and 0.87 density.

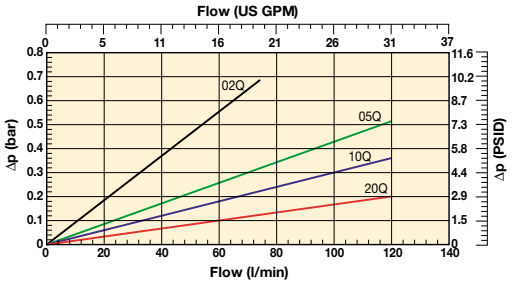
### ATZ 1-120 (G1 1/2) Empty Housing



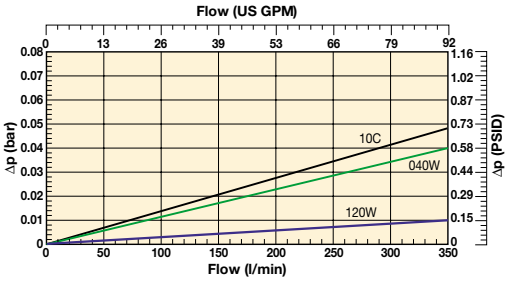

### ATZ 300 (2 1/2 SAE FLANGE) Empty Housing



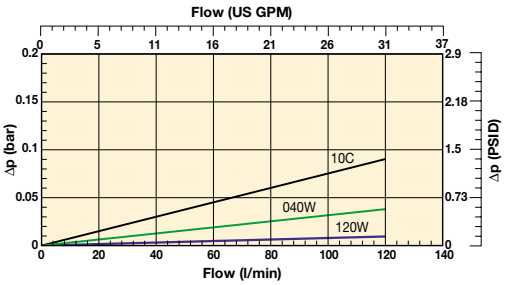

### ATZ120 Filter Element Length 1



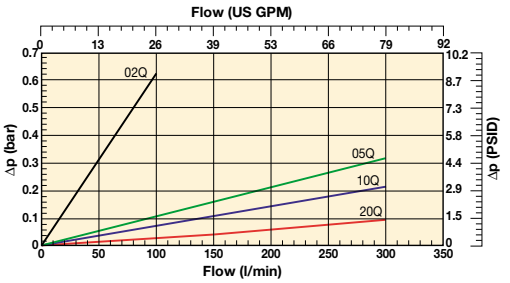

### ATZ300 Filter Element Length 2
(cellulose and stainless steel)




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




### ATZ300 Filter Element Length 2







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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

| Code |
|---|
| **ATZ** |

Box 2

| Filter type | |
|---|---|
| **Housing** | **Code** |
| ATZ 1-120 | **1** |
| ATZ 2-300 | **2** |

Box 3

| Degree of filtration | | | | | | |
|---|---|---|---|---|---|---|
| **Element media** | | **Glass fibre** | | | | |
| | | Microglass III (for disposable elements) | | | | |
| | **Cellulose** | | | | | **Wire mesh** |
| | 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

| 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 |

| Degree of filtration | | | | | | Media code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| ßx(c)=2 | ßx(c)=10 | ßx(c)=75 | ßx(c)=100 | ßx(c)=200 | ßx(c)=1000 | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| **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 |

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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Parker

Medium Pressure Filters

# 15/40/80CN Series

*MAX 600 l/min - 70 bar*

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Medium Pressure Filters

# 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 |
| | Reduced importance of bowl torque | Performs with “real world” service |
| Dust seal | Prevents contamination from building up on bowl/head threads | Easier service, eliminates thread galling |
| 40CN-2 meets automotive HF3 standard | Automotive industry acceptance | Satisfies specifications without need for further testing and/or approval |
| 15CN meets automotive HF2 standard | | |
| 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 |
| | | Reliable performance throughout element life |
| | Wire support reduces pleat bunching, keeps performance consistent | Reduces downtime, maximises element life |
| Complete performance data disclosure | All pertinent information is provided in an easy-to-compare format | No hidden deficiencies |
| | | Easy selection of proper filtration |
| Visual, electrical or electronic indicators available | Check element condition at a glance | Optimise element life, prevent bypassing |
| | Right style for the application | Matches your system electrical connections |
| 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 cost |
| | Conversion kits available: new bowl with permanent core | 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* | | |
|---|---|---|---|
| | 15CN | 40CN | 80CN |
| BSPF(G) | 1", 3/4" | 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).

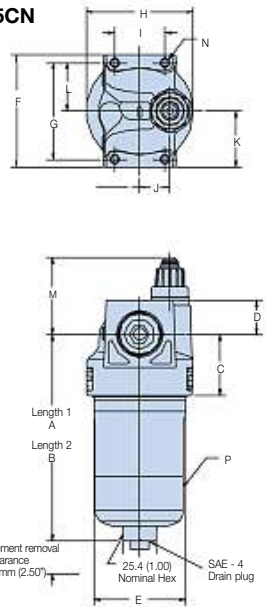
For indicator details see catalogue section 6.

**Weights (kg):**

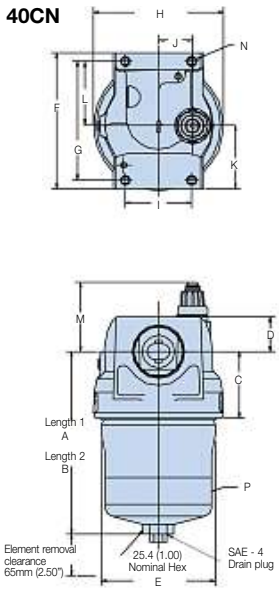
| *Model* | *Length 1* | *Length 2* |
|---|---|---|
| 15CN | 1.1 | 1.6 |
| 40CN | 2.0 | 2.5 |
| 80CN | 5.6 | 6.9 |

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

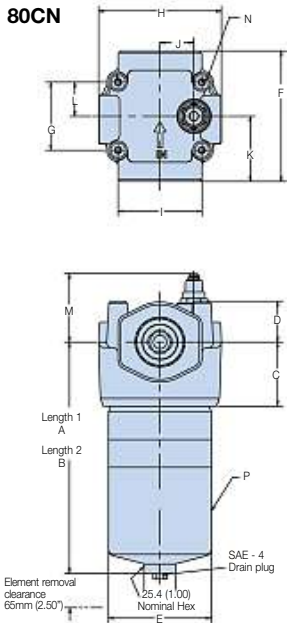
**15CN**




**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



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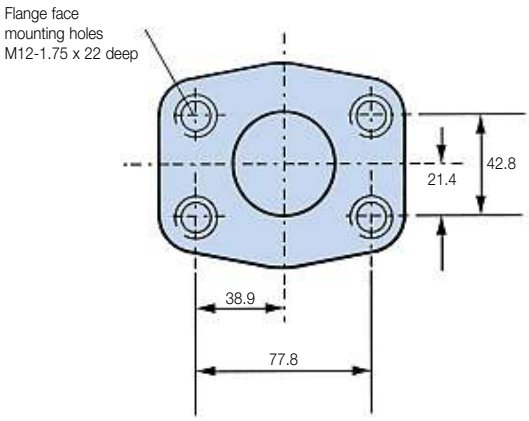
Medium Pressure Filters

# 15/40/80CN Series

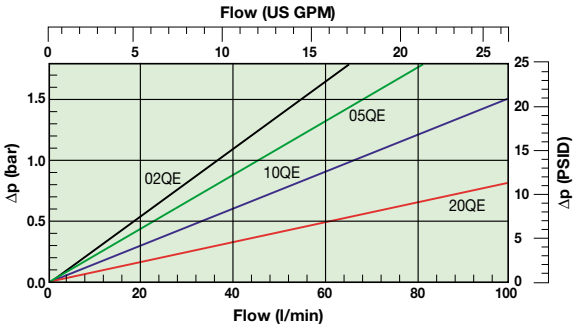
## 80CN Flange Face Details (SAE 2” 3000-M)



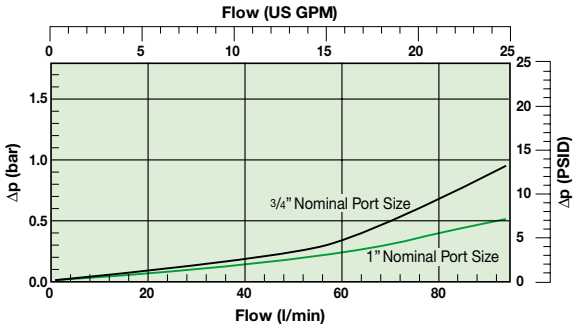

## Pressure Drop Curves

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 □p = housing □ph + (element □pe x working viscosity/30).

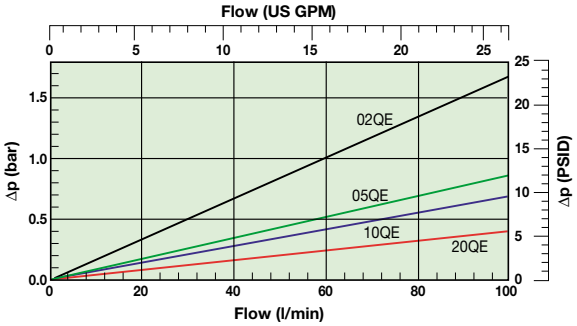
### 15CN-1 Elements




### 15CN Empty Housing

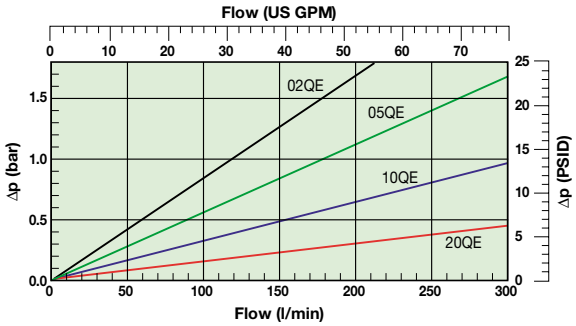



### 15CN-2 Elements

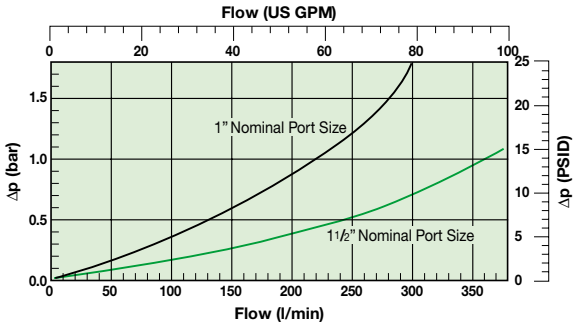


## Pressure Drop Curves

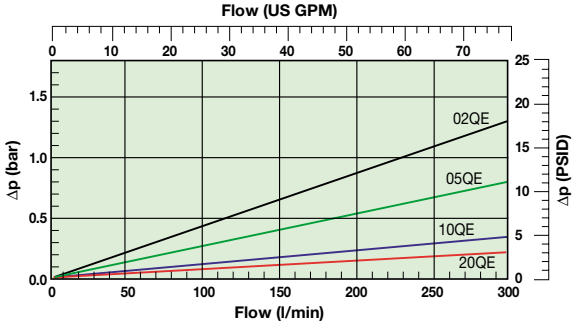
### 40CN-1 Elements



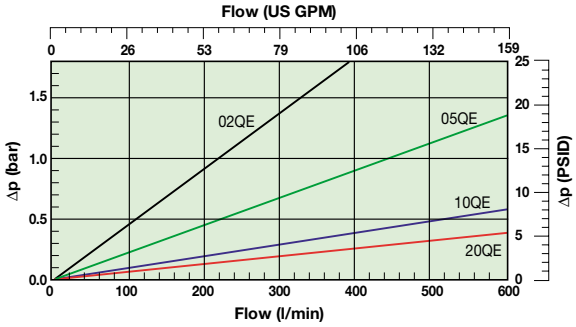

### 40CN Empty Housing



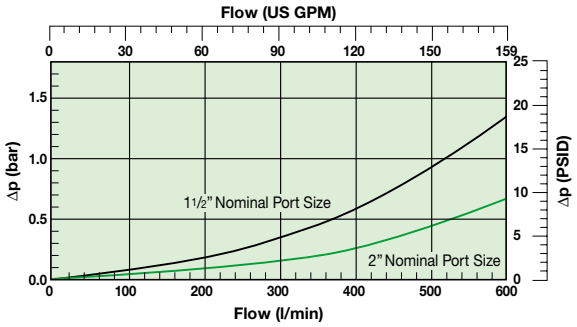

### 40CN-2 Elements



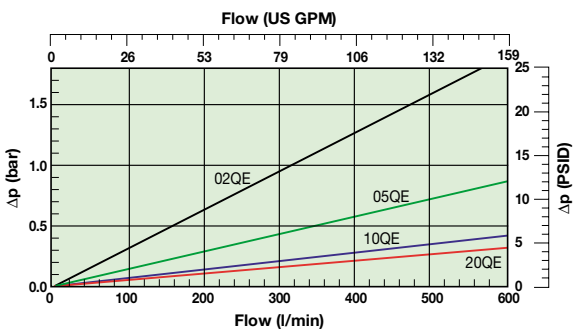

### 80CN-1 Elements




### 80CN Empty Housing




### 80CN-2 Elements



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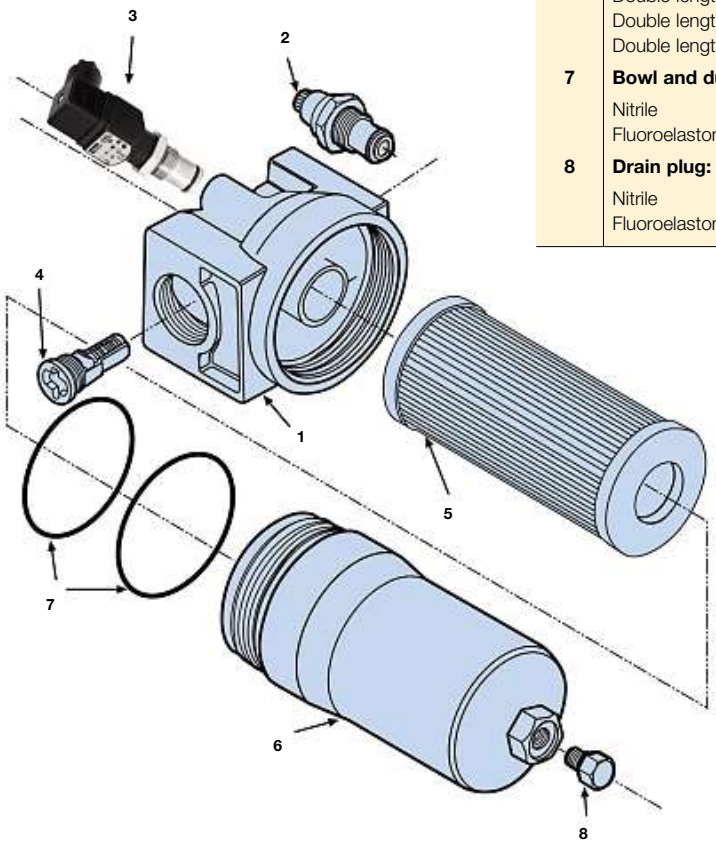
Medium Pressure Filters

# 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** |
| **15CN110QEVM3KG164** | 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** |
| **15CN120QEVM3KG164** | 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** |
| **15CN210QEVM3KG164** | 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** |
| **15CN220QEVM3KG164** | 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** |
| **40CN105QEVM3KG244** | 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** |
| **40CN110QEVM3KG244** | 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** |
| **40CN120QEVM3KG244** | 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** |
| **40CN205QEVM3KG244** | 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** |
| **40CN210QEVM3KG244** | 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** |
| **40CN220QEVM3KG244** | 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** |
| **80CN110QEVM3KG324** | 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** |
| **80CN120QEVM3KG324** | 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** |
| **80CN210QEVM3KG324** | 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** |
| **80CN220QEVM3KG324** | 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 G¾ | G12 |
| Thread G1 | **G16** |
| Thread SAE 12 | S12 |
| Thread SAE 16 | S16 |
| Thread M27, ISO6149 | M27 |
| 40CN: Thread G1¼ | G20 |
| Thread G1½ | **G24** |
| Thread SAE 16 | S16 |
| Thread SAE 24 | S24 |
| Thread M33, ISO6149 | M33 |
| 80CN: Thread G1½ | 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 |

| 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 |

Replacement element part numbers for conventional assemblies

| 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 | 832661Q | 929903Q |
| 80CN-2 | 932665Q | 932666Q | 932667Q | 929927Q |

| Degree of filtration | | | | | | Code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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, G1½ | 60 | 120 | 180 | 260 |
| 40CN-2, G1½ | 80 | 200 | 280 | 320 |
| 80CN-1, G2 | 150 | 300 | 370 | 420 |
| 80CN-2, G2 | 180 | 420 | 530 | 600 |

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.

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



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Parker

Medium Pressure Filters

# 45M/45M Eco Series

*MAX 260 l/min - 40 bar*

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Medium Pressure Filters

# 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 |
| | | Reliable performance throughout element life |
| | Wire support reduces pleat bunching, keeps performance consistent | Reduces downtime, maximises element life |
| Visual, electrical or electronic indicators available | Check element condition at glance | Optimise element life, prevent bypassing |
| | Right style for the application | Matches your system electrical connections |
| Test points in the filter head | Pressure measurement and □p possible | Quick testing and maintenance |
| Coreless Ecoglass III replacement elements | No metal content in element | Environmentally friendly disposal by incineration |
| | Reduced overall weight of 50% | |
| | 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.



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## Specification

**Pressure ratings:**
Maximum allowable operating pressure 40 bar.
Filter housing pressure pulse fatigue tested: $10^6$ pulses 0-40 bar.

**Connections:**
Threads G1, G1¼ (ISO 228/1) or flange SAE 1½" 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-adapter.
Note: Ecoglass III contributes to ISO 14001 quality.

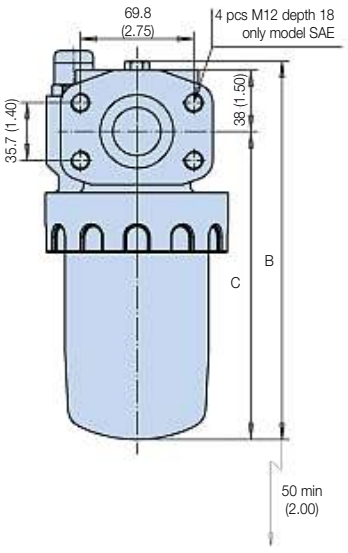
**Indicator options:**
Indicating differential pressure: 2.5 ± 0.3 bar.
- visual M3.
- electrical T1.
- electronic F1(PNP).
- electronic F2(NPN).

For indicator details see catalogue section 6.

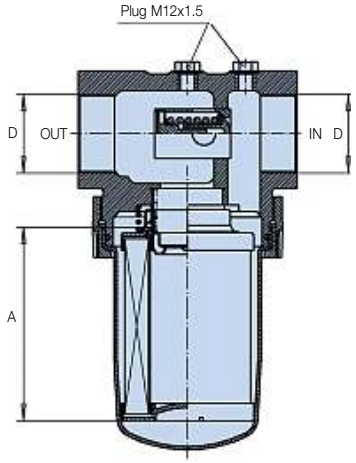
**Fluid compatibility:**
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

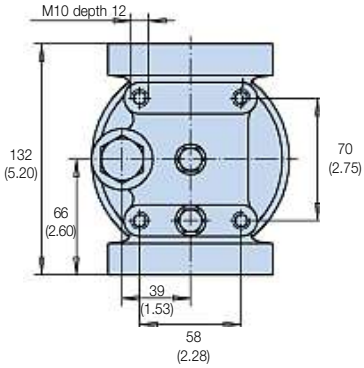
## Installation Details

| Type | A | B | C | Weight (kg) | D |
|---|---|---|---|---|---|
| **Length 1** | 116 (4.57) | 237 (9.33) | 192 (7.56) | 5.9 | G1, G1¼, G1½, Flange SAE 1½" 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 | |




mm
(inches)



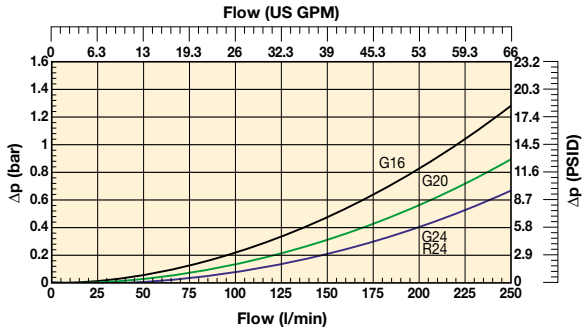
Medium Pressure Filters

# 45M/45M Eco Series

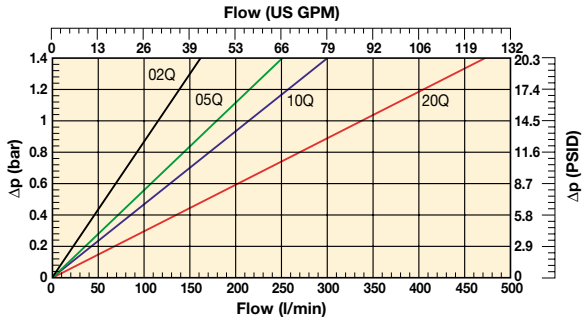
## Pressure Drop Curves

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 □p = housing □ph + (element □pe x working viscosity/30).

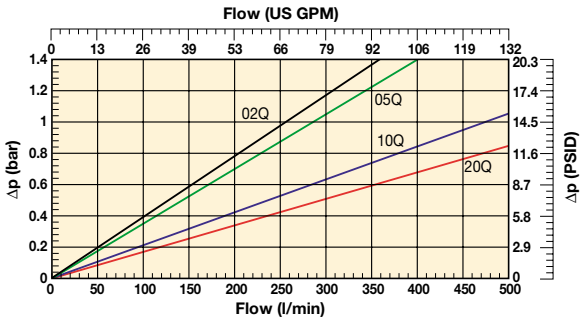
### 45M Series Empty Housing



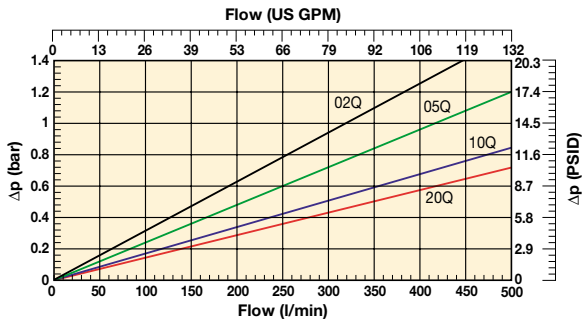

### 45M-1 Element with Microglass III



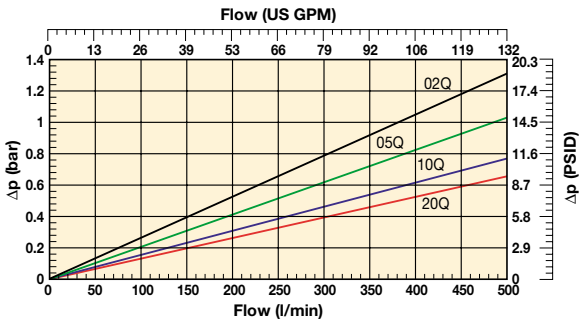

### 45M-2 Element with Microglass III



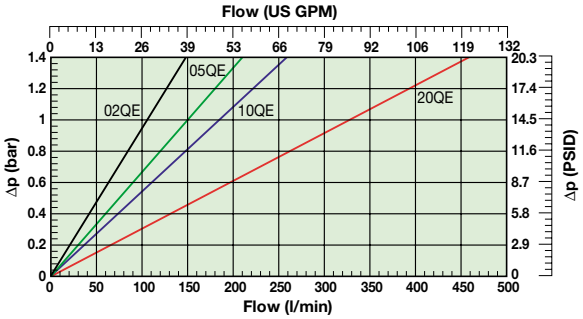

### 45M-3 Element with Microglass III



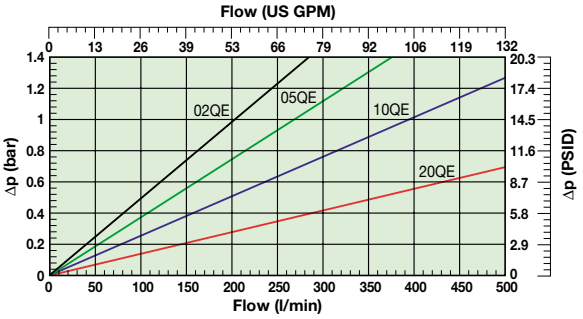

### 45M-4 Element with Microglass III



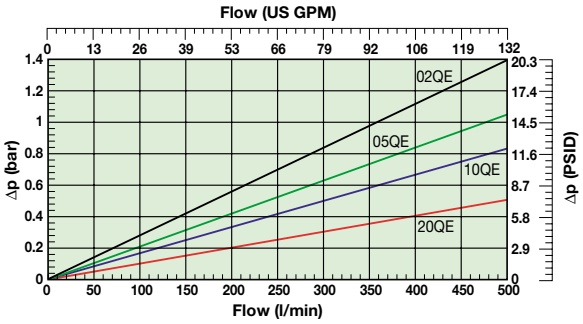
### 45M-1 Element with Ecoglass III



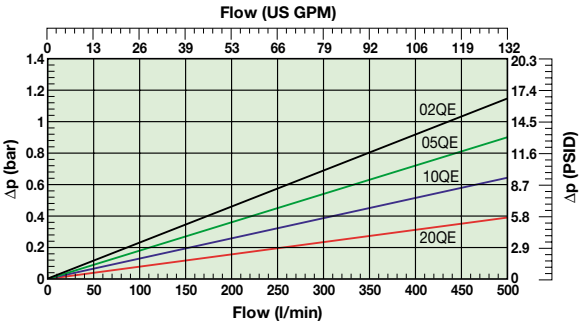

### 45M-2 Element with Ecoglass III




### 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 | G1¼" | **938966Q** | FC7006.Q010.BK |
| **45M220QBPKG201** | FF1146.Q020.BS35.GT20 | 220 | 45M | Length 2 | 20 | Nitrile | Plugged | 3.5 bar | G1¼" | **938967Q** | FC7006.Q020.BK |
| **45M210QEBPKG201** | FF1146.QE10.BS35.GT20 | 200 | 45M | Length 2 | 10 | Nitrile | Plugged | 3.5 bar | G1¼" | **938982Q** | FC7006.QE10.BK |
| **45M220QEBPKG201** | FF1146.QE20.BS35.GT20 | 220 | 45M | Length 2 | 20 | Nitrile | Plugged | 3.5 bar | G1¼" | **938983Q** | FC7006.QE20.BK |
| **45M310QBPKG241** | FF1147.Q010.BS35.GT24 | 230 | 45M | Length 3 | 10 | Nitrile | Plugged | 3.5 bar | G1½" | **938970Q** | FC7007.Q010.BK |
| **45M320QBPKG241** | FF1147.Q020.BS35.GT24 | 250 | 45M | Length 3 | 20 | Nitrile | Plugged | 3.5 bar | G1½" | **938971Q** | FC7007.Q020.BK |
| **45M310QEBPKG241** | FF1147.QE10.BS35.GT24 | 230 | 45M | Length 3 | 10 | Nitrile | Plugged | 3.5 bar | G1½" | **938986Q** | FC7007.QE10.BK |
| **45M320QEBPKG241** | FF1147.QE20.BS35.GT24 | 250 | 45M | Length 3 | 20 | Nitrile | Plugged | 3.5 bar | G1½" | **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.



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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** | **20Q** |
| Ecoglass III element | **02QE** | **05QE** | **10QE** | **20QE** |

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 | + Box 8: code 2 |
| No bypass* | No indicator (P) | X | + Box 8: code 2 |

* 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 7

| Filter connection | | | | | |
|---|---|---|---|---|---|
| **Connections** | **Code** | Length 1 | Length 2 | Length 3 | Length 4 |
| Thread G 1 | **G16** | **S** | **S** | **S** | x |
| Thread G 1 ¼ | **G20** | **S** | **S** | **S** | **S** |
| Thread G 1 ½ | **G24** | x | **S** | **S** | **S** |
| SAE flange 1 ½" 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 ß (ISO 16889) / particle size µm [c] | | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | Disposable | Metal free |
| **50.0%** | **90.0%** | **98.7%** | **99.0%** | **99.5%** | **99.9%** | Microglass III | 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** |



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Parker

Medium Pressure Filters

# 130 Eco Series

*MAX 1000 l/min - 30 bar*

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Medium Pressure Filters

# 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.

## Specification

**Pressure ratings:**
Maximum allowable operating pressure:
Single filters 30 bar.
Filter systems 16 bar.
Filter housing pressure pulse fatigue tested: $10^6$ pulses 0-25 bar.

**Construction:**
Eco-element does not include any metal parts and is supported by Eco-adaptor. Conventional elements can be used without removing the Eco-adaptor.

**Connections:**
**Single unit connections:**
Flanges SAE 2" 3000-M, SAE 2½" 3000-M or with adaptor threads G1½ or G2.

**Dual unit connections:**
Flanges SAE 3" 3000-M or with adaptor threads G1½ or G2.

**Parallel unit and filter system assembly connections:**
DN80/PN16 or DN100/PN16. Assembly of two, four six or eight filters to the same system by using L-bore valve assembly (only one side in use).

**Filter housing:**
Material aluminium.

**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).

**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.
Also available with Microglass III elements. Contact Parker Filtration for details.

**Visual indicator:**
Includes M3, full part number FMUM3KVMU12H as standard.

**Optional Indicators (mounted to lower indicator port):**
- 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.

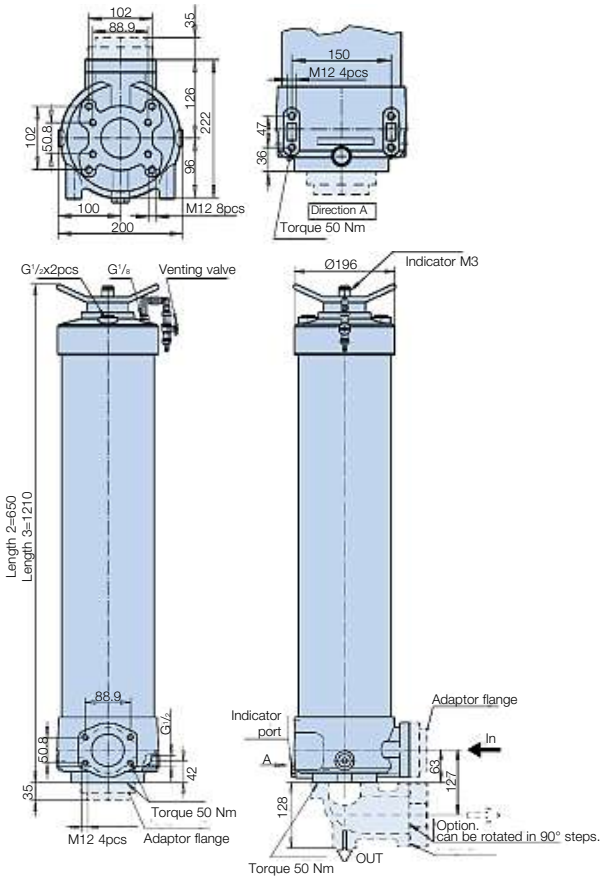
## Installation Details

### Single Assemblies 130M

| Connection options | |
|---|---|
| Body flange | SAE 2" 3000-M |
| | SAE 2½" 3000-M |
| Adaptor flange | G1½ |
| | G2 |
| | SAE 3" 3000-M (90° elbow) |

| Weights (kg) | Length 2 | Length 3 |
|---|---|---|
| Single | 24.5 | 32.5 |
| Dual D2 | 70.2 | 86.2 |
| Parallel P2 | 75.2 | 91.2 |
| System S2 | 111.0 | 127.0 |
| System S9 | 204.0 | 236.0 |
| System S6 | 261.2 | 309.2 |
| System S8 | 341.4 | 705.4 |

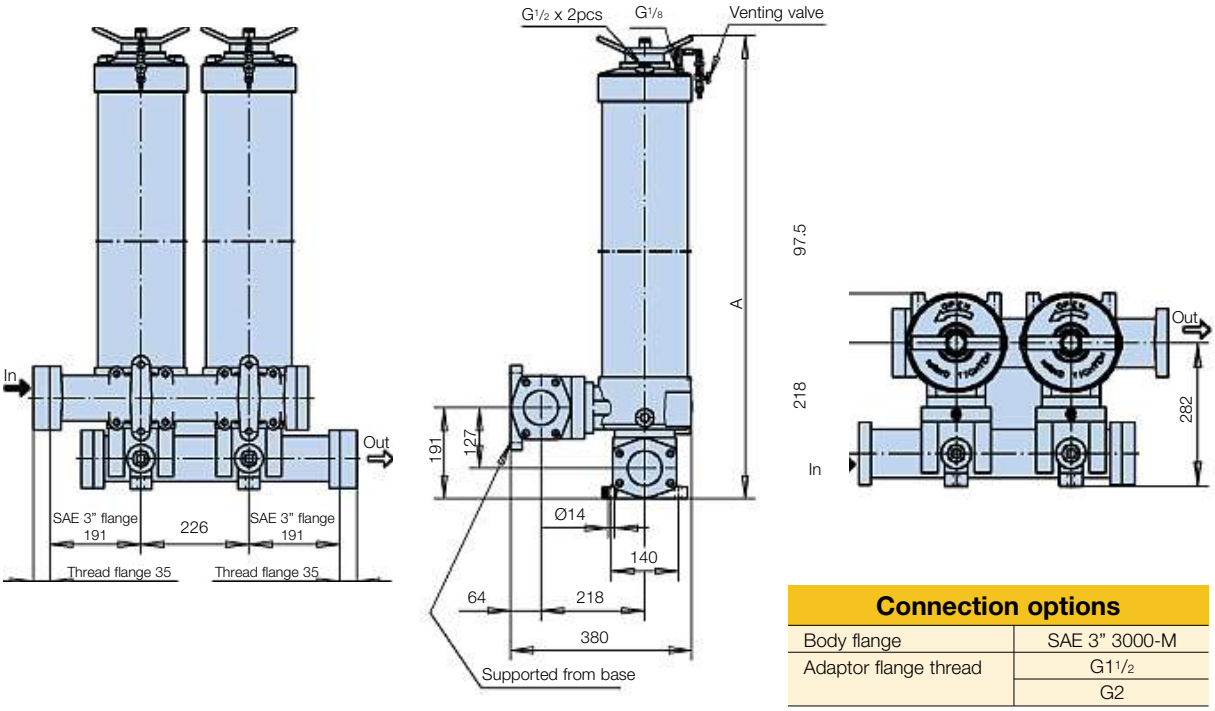
Dimensions in mm



Medium Pressure Filters

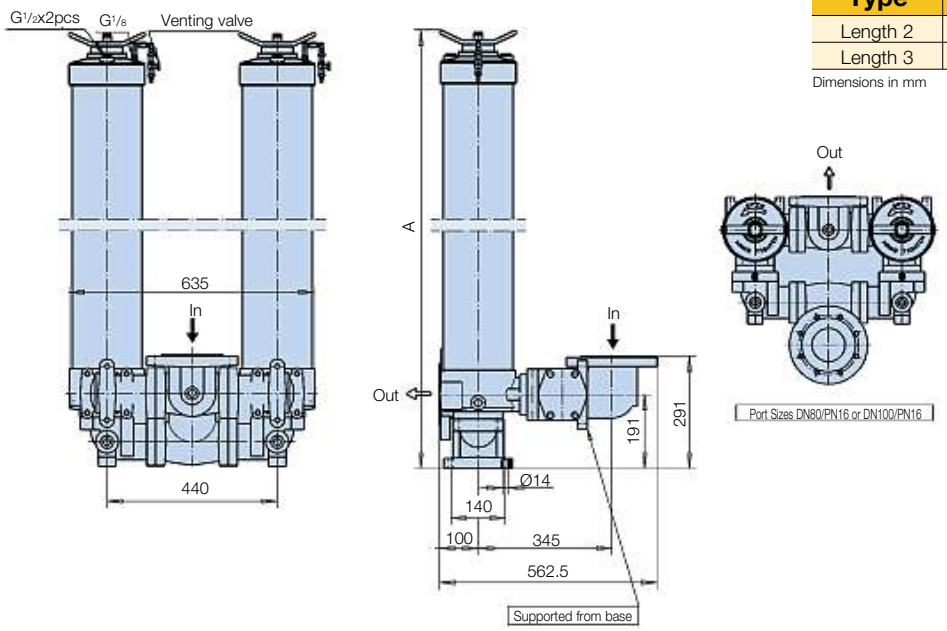
# 130 Eco Series

## Dual System 130D




| Connection options | |
|---|---|
| Body flange | SAE 3" 3000-M |
| Adaptor flange thread | G1 1/2 |
| | G2 |

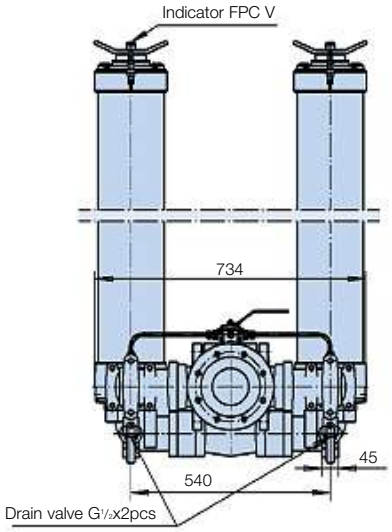
## Parallel System 130N



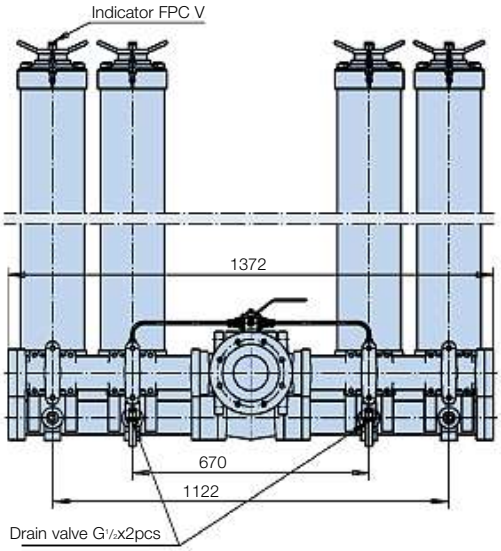

| Type | A |
|---|---|
| Length 2 | 780 |
| Length 3 | 1340 |

Dimensions in mm

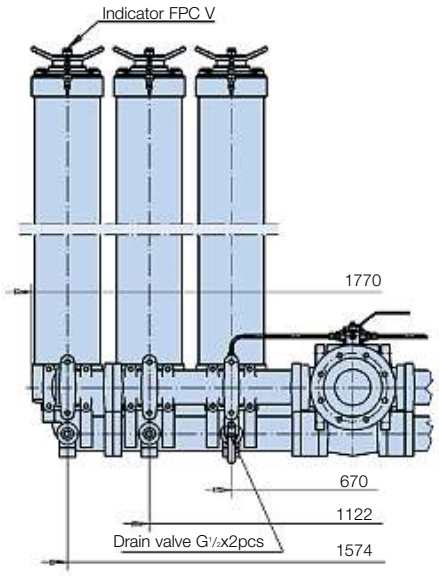
## 130S System 1+1 units



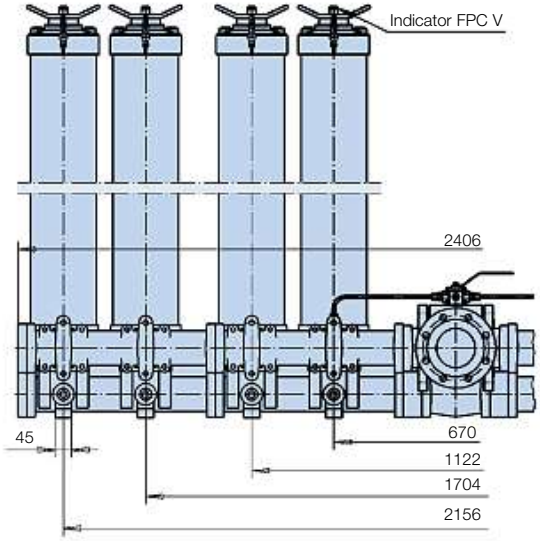

## 130S System 2+2 units




## 130S System 3+3 units



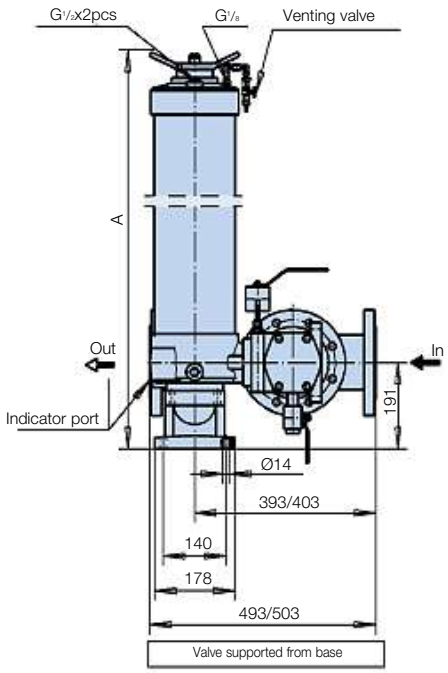

## 130S System 4+4 units



Medium Pressure Filters

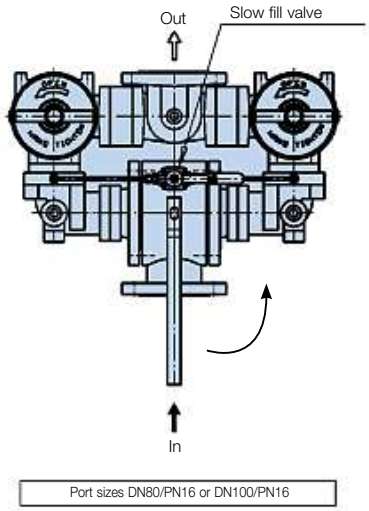
# 130 Eco Series

## Valve Assembly Connection - T-Model

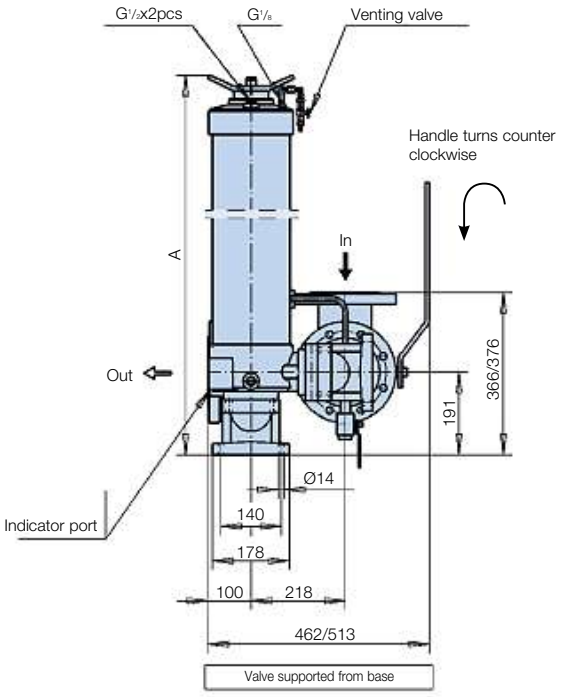



| Type | A |
|---|---|
| Length 2 | 780 |
| Length 3 | 1340 |

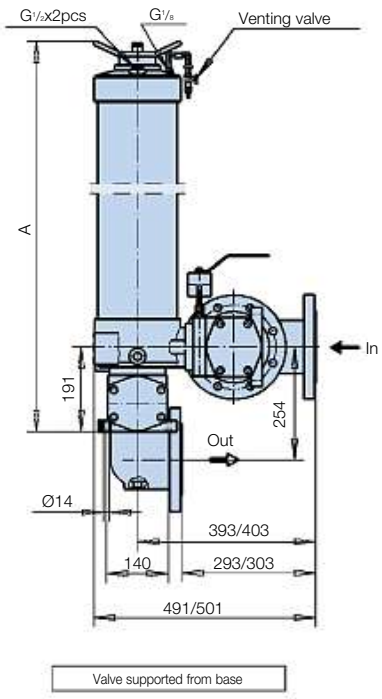
Dimensions in mm




## L-Model




## C-Model



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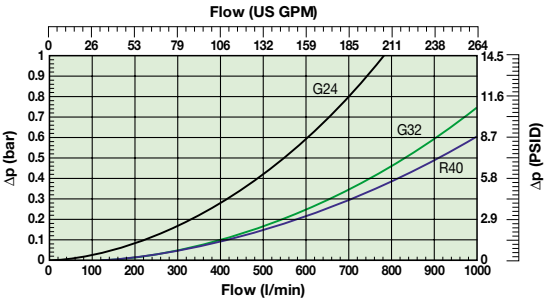
Hydraulic Filter Division Europe
FDHB200UK. Section 11

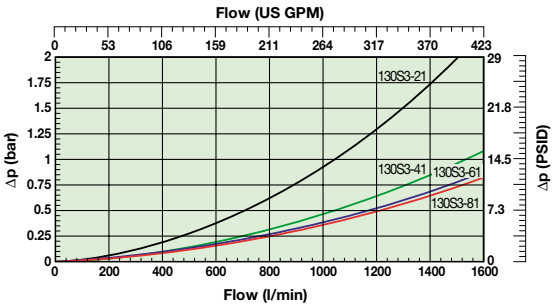
## Pressure Drop Curves

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 □p = housing □ph + (element □pe x working viscosity/30).

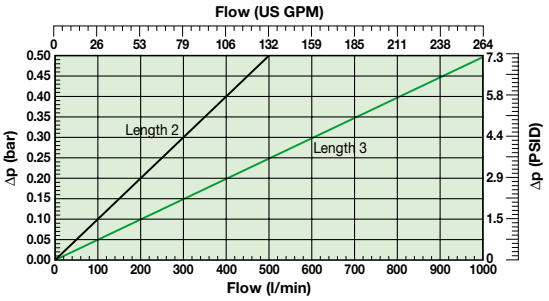
### 130M Eco Single Empty Housing



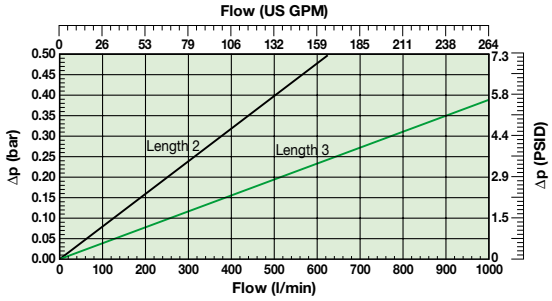

### 130S Eco System Empty Housing



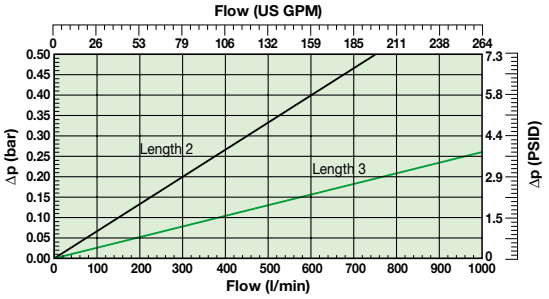

### 130 Elements 02QE



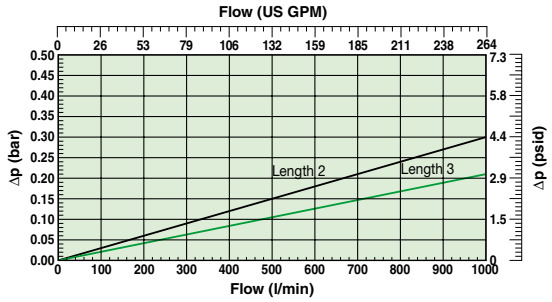

### 130 Elements 05QE




### 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"½" 3000-M | **938723Q** | FC1302.QE10.BK |
| **130M220QEBM3KR401** | FF1302.QE20.BA35.SL40 | 800 | 130M | Length 2 | 20 | Nitrile | Visual | 3.5 bar | SAE flange 2"½" 3000-M | **938724Q** | FC1302.QE20.BK |
| **130M310QEBM3KR401** | FF1303.QE10.BA35.SL40 | 950 | 130M | Length 3 | 10 | Nitrile | Visual | 3.5 bar | SAE flange 2"½" 3000-M | **938727Q** | FC1303.QE10.BK |
| **130M320QEBM3KR401** | FF1303.QE20.BA35.SL40 | 1000 | 130M | Length 3 | 20 | Nitrile | Visual | 3.5 bar | SAE flange 2"½" 3000-M | **938728Q** | FC1303.QE20.BK |

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

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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 G1 1/2 | **G24** | **S** | x | - | - |
| Thread G2 | **G32** | **S** | x | - | - |
| SAE flange 2" 3000-M | R32 | x | - | - | - |
| SAE flange 2 1/2" 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 ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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** |



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High Pressure Filters

# 15P/30P Series

*MAX 200 l/min - 207 bar*

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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 |
| | 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 | 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.



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## 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* | |
|---|---|---|
| | 15P | 30P |
| BSPF(G) | 3/4" | 1" |
| ISO 6149 | 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.

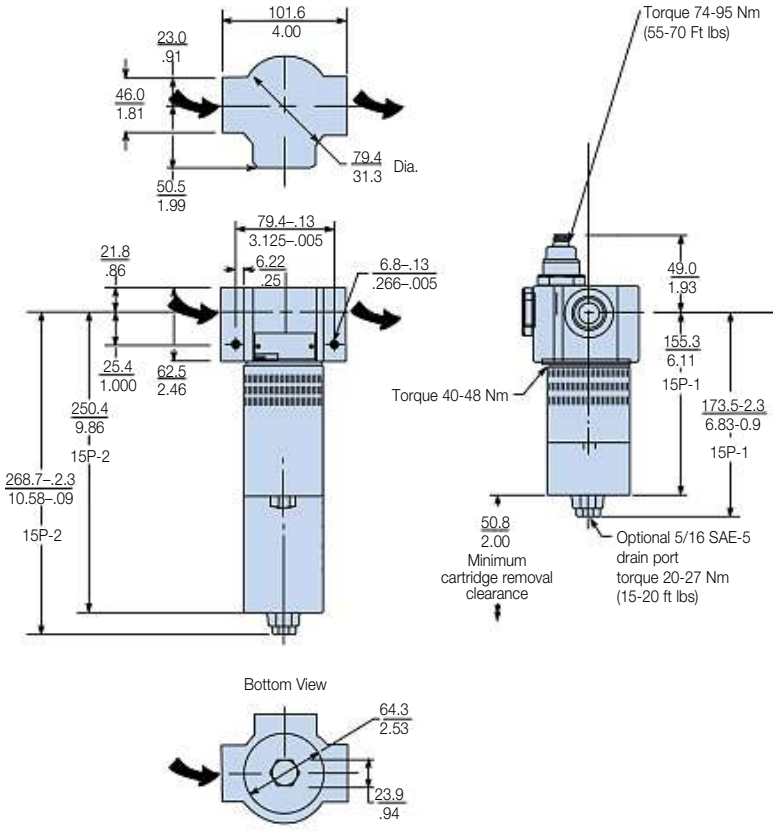
**Weights (kg):**

| *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

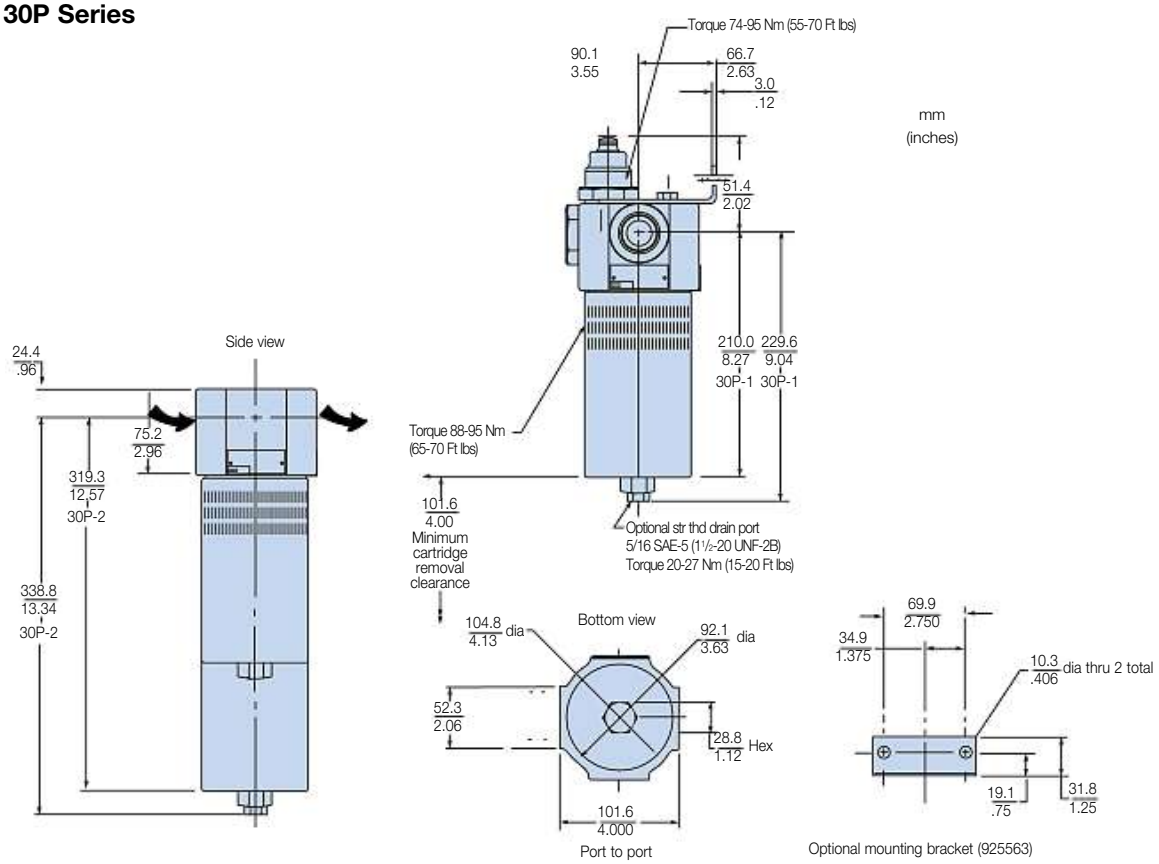


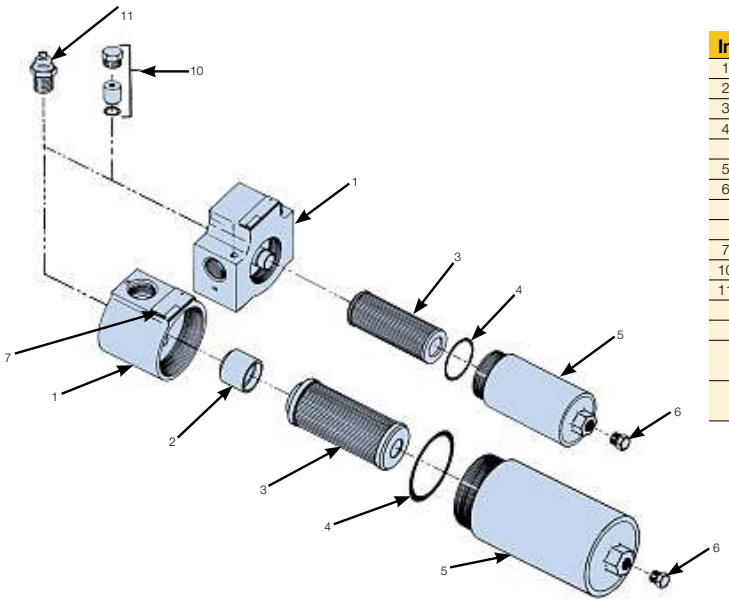
High Pressure Filters

# 15P/30P Series

## Installation Details (cont.)

### 30P Series



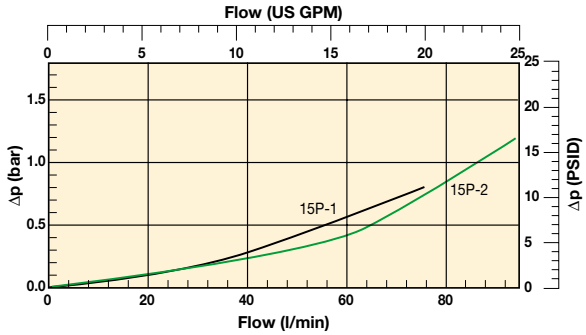




| Index | Description | 15P | 30P |
|---|---|---|---|
| 1 | Head | | |
| 2 | Bypass assembly | | |
| 3 | Element | See chart in product configurator | |
| 4 | Bowl O-ring – buna | N92138 | N92151 |
| | Bowl O-ring – fluoroelastomer | V92138 | V92151 |
| 5 | Bowl | | |
| 6 | Drain plug – c/w buna seal | | |
| | Drain plug – c/w | | |
| | Fluoroelastomer seal | | |
| 7 | Nameplate | | |
| 10 | Blank indicator kit | | |
| 11 | Indicators | | |
| | M3 – Visual auto reset indicator | FMUM3KVAU14M | |
| | T1 – Electrical indicator | FMUT1KVAU14M | |
| | F1 – Electronic indicator PNP with 4 LED | FMUF1KVAU14M | |
| | F2 – Electronic indicator NPN with 4 LED | FMUF2KVAU14M | |

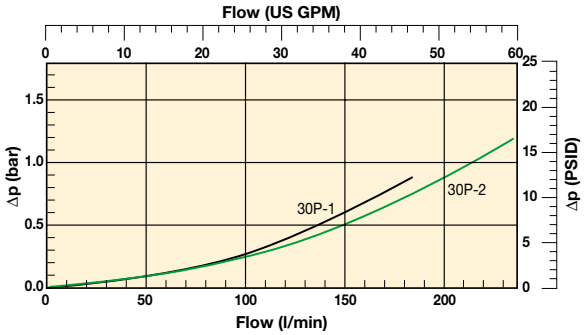
## Pressure Drop Curves

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:
□p = (□p30 x viscosity of medium used) / 30 cSt.

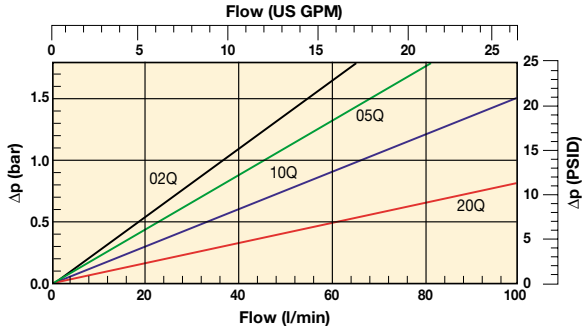
### 15P Empty Housing



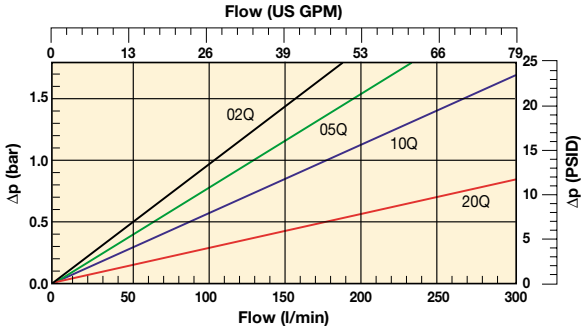

### 30P Empty Housing



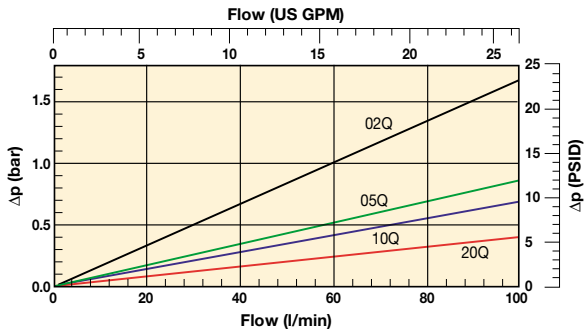

### 15P-1 Elements



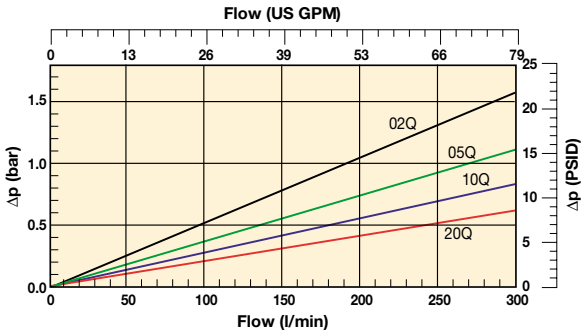

### 30P-1 Elements




### 15P-2 Elements




### 30P-2 Elements







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High Pressure Filters

# 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 | G3/4" | **939102Q** |
| **15P110QBT1KG121** | 15P-1-10Q-TW3-50-B2B2-1 | 45 | 15P | Length 1 | 10 | Nitrile | Electrical | 3.5 bar | G3/4" | **939102Q** |
| **15P210QBM3KG121** | 15P-2-10Q-M2-50-B2B2-1 | 70 | 15P | Length 2 | 10 | Nitrile | Visual | 3.5 bar | G3/4" | **939106Q** |
| **15P210QBT1KG121** | 15P-2-10Q-TW3-50-B2B2-1 | 70 | 15P | Length 2 | 10 | Nitrile | Electrical | 3.5 bar | G3/4" | **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 G3/4 | **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 ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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** |



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 12

Parker

High Pressure Filters

# 100P Series

*MAX 1000 l/min - 414 bar*

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High Pressure Filters

# 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 |
| | Wire support reduces pleat bunching, keeps performance consistent | Reduces downtime, maximises element life |
| Visual and electrical 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

- 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).

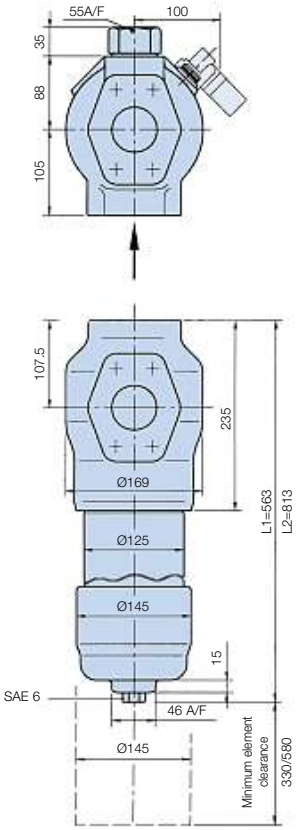
**High collapse elements:**
High collapse elements available. For details please contact Parker Filtration.

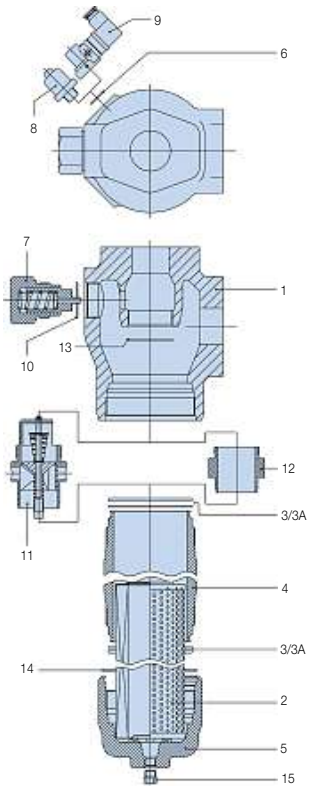
**Indicator options:**
Indicating differential pressure: 5.0 bar.
- visual indicator.
- electrical indicator.

**Weights (kg):**
100P-1: 37 kg.
100P-2: 47 kg.

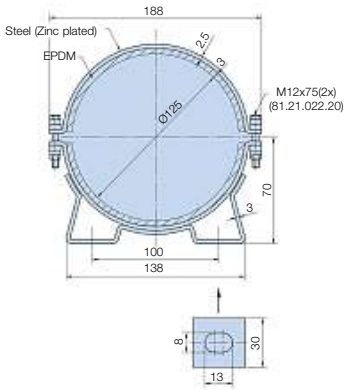
**Fluid compatibility:**
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

## 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 |

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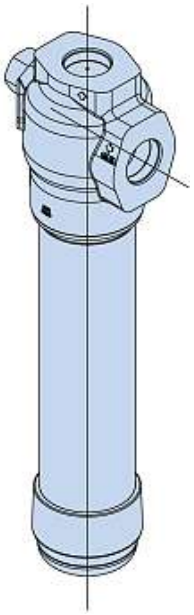
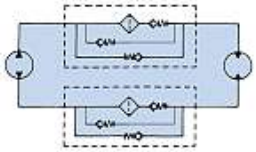
High Pressure Filters

# 100P Series

## Additional Information

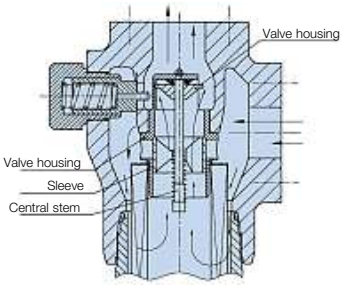


**Filter with Reverse Flow Valve**

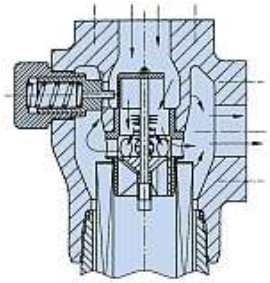


Circuit symbol

**Normal Flow Condition**



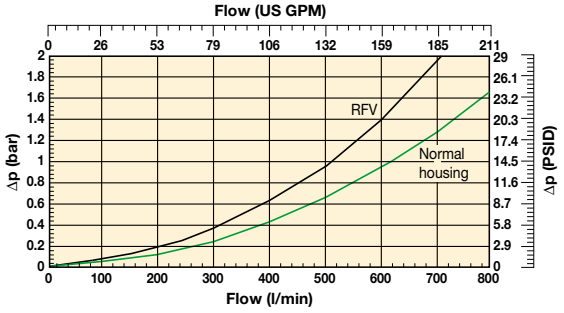

**Reverse Flow Condition**



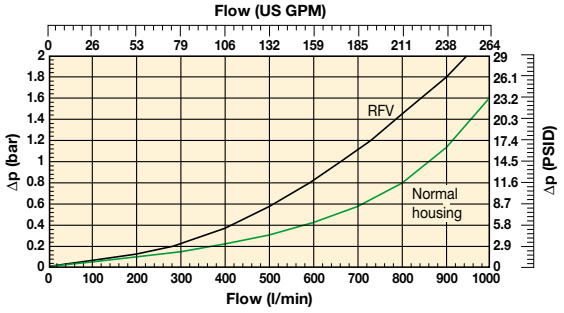
## Pressure Drop Curves

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 □p = housing □ph + (element □pe x working viscosity/30).

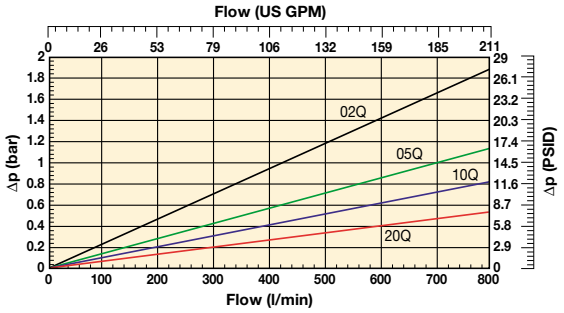
### 100P-1 Empty Housing (G1½", SAE 24, SAE 1½")



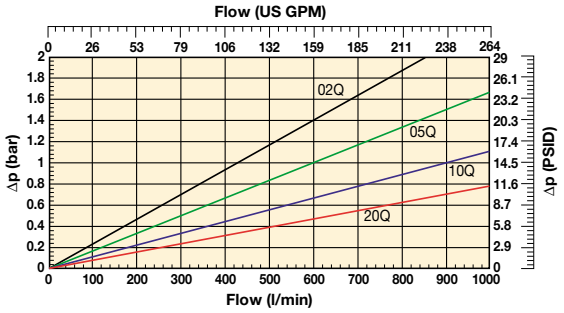

### 100P-2 Empty Housing (G2", SAE 32, SAE 2")




### 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 1½" 6000 | **939061Q** | 1070Z121A |
| **100P110QBM4MF241** | 1074A.2HN70.FZ1220 | 700 | 100P | Length 1 | 10 | Nitrile | Visual | 7.0 bar | SAE flange 1½" 6000 | **939062Q** | 1070Z122A |
| **100P120QBM4MF241** | 1074A.2HN70.FZ1230 | 800 | 100P | Length 1 | 20 | Nitrile | Visual | 7.0 bar | SAE flange 1½" 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 1½ | G24 |
| Thread G 2 | G32 |
| Thread SAE 24 | S24 |
| Thread SAE 32 | S32 |
| SAE flange 1½" 6000 | **F24** |
| SAE flange 1½" 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, 1½" | 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

| Degree of filtration | | | | | | Code |
|---|---|---|---|---|---|---|
| Average filtration beta ratio ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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** |

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.

## 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**

Parker

Aerospace | Automation | Climate & Industrial Controls | **Filtration** | Fluid Connectors | Hydraulics | Instrumentation | Seal

Parker

High Pressure Filters

# 18/28/38P Series

*MAX 700 l/min - 414 bar*

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High Pressure Filters

# 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 |
| | | 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

- 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: $10^6$ 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.

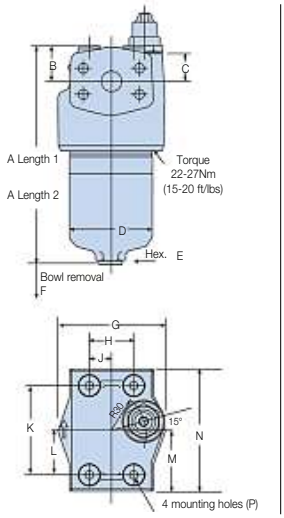
**Weights (kg):**

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

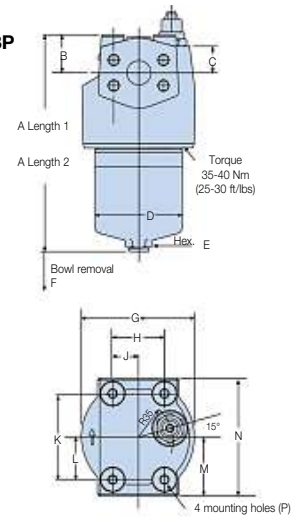
**Fluid compatibility:**
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

| 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) | | | | | | | | | | | | | |

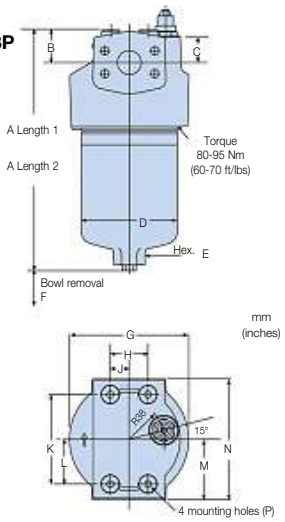
**18P**




**28P**




**38P**




mm
(inches)



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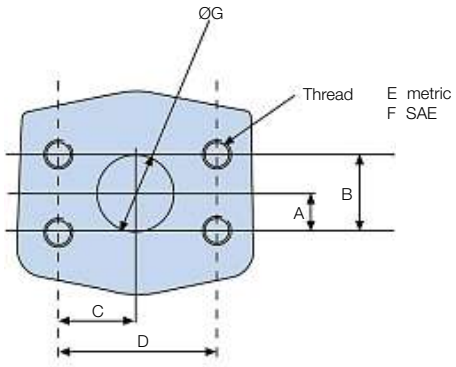
High Pressure Filters

# 18/28/38P Series

## Flange Face Details

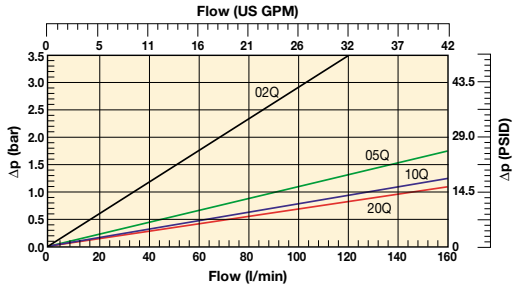



| Model mm (inches) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| **18P (3/4")** | 11.9 (0.47) | 23.8 (0.94) | 25.4 (1.00) | 50.8 (2.0) | M10 x 1.5-6H x 18 Deep | 3/8-16 UNC-2B x 18 deep | 19.0 (0.75) |
| **28P (1")** | 14 (0.55) | 27.8 (1.09) | 28.0 (1.10) | 57.1 (2.25) | M12 x 1.75-6H 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) |

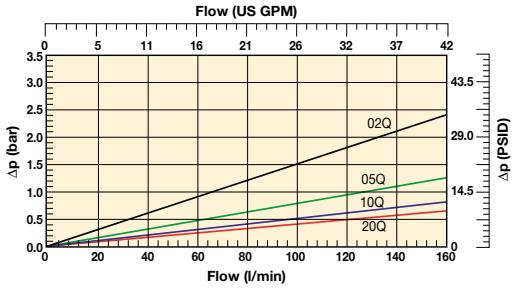
## Pressure Drop Curves

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 □p = housing □ph + (element □pe x working viscosity/30).

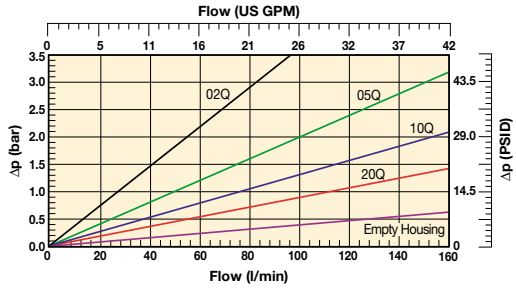
### 18P-1 Elements



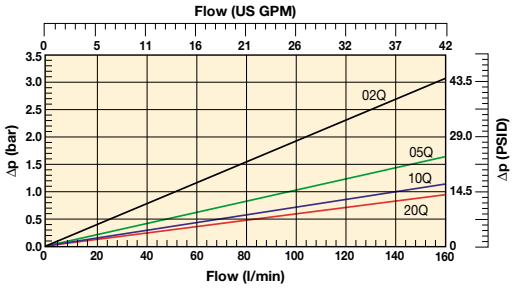

### 18P-2 Elements



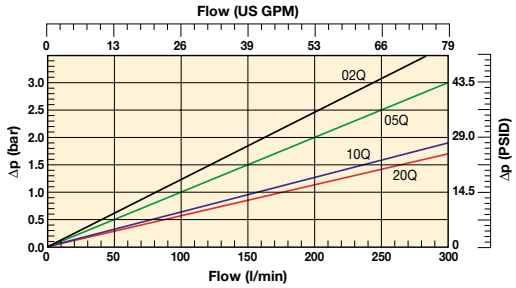

### 18P-1 Empty Housing and High Collapse



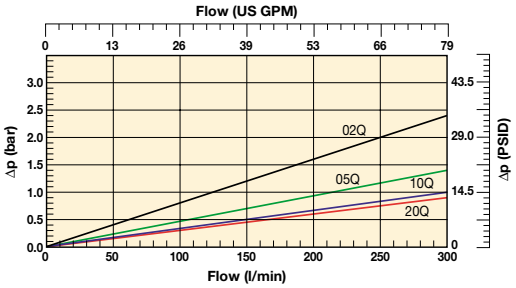

### 18P-2 High Collapse Elements



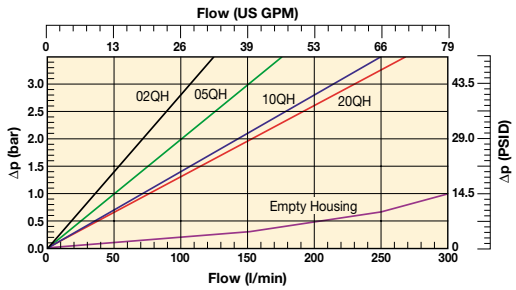

### 28P-1 Elements



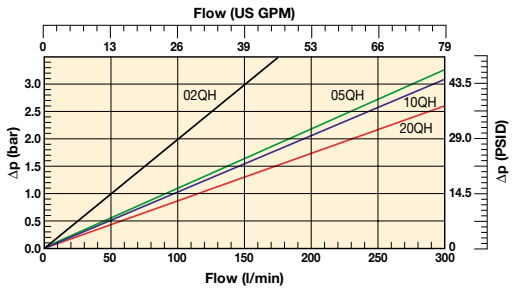

### 28P-2 Elements




### 28P-1 Empty Housing and High Collapse




### 28P-2 High Collapse Elements



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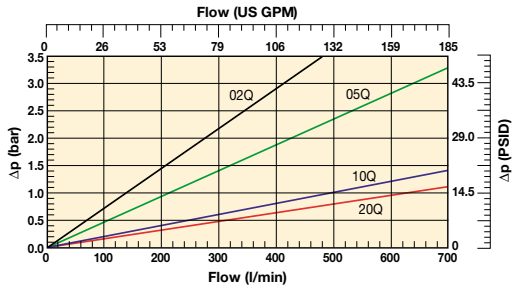
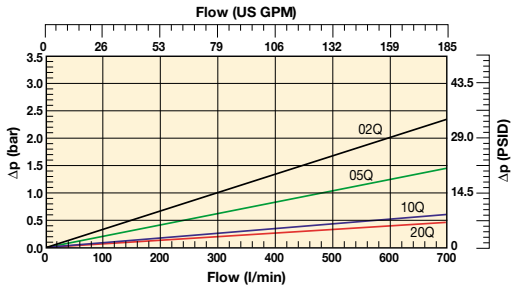
# 18/28/38P Series

## Pressure Drop Curves (cont.)

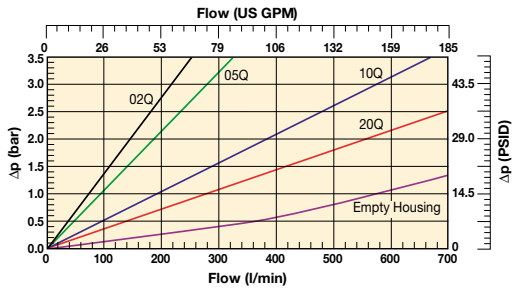
### 38P-1 Elements



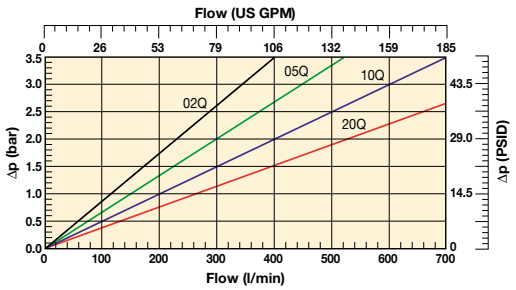

### 38P-2 Elements




### 38P-1 Empty Housing and High Collapse




### 38P-2 High Collapse Elements




## Element Service

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. Rotate the bowl clockwise (left) and remove.
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 locate element in filter head.
H. 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.)
I. Confirm there are no leaks after powering the system.

### Parts List

| Index | Description | Part number |
|---|---|---|
| 1 | **Head Assembly** | |
| 2 | **Element** | see table on |
| 3 | **Bowl** | next page |
| | **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 |



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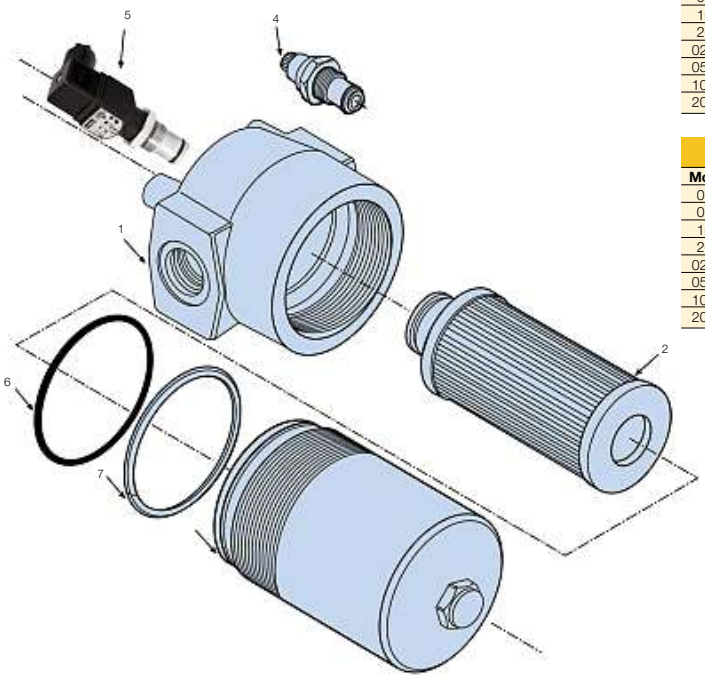
## Element Service (cont.)




**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 | G3/4" | **G04244** |
| **18P110QBM3MG121** | 18P-1-10Q-M2-98-B2B2-1 | 80 | 18P | Length 1 | 10 | Nitrile | Visual | 7.0 bar | G3/4" | **G04244** |
| **18P120QBT1MG121** | 18P-1-20Q-TW6-98-B2B2-1 | 100 | 18P | Length 1 | 20 | Nitrile | Electrical | 7.0 bar | G3/4" | **G04245** |
| **18P120QBM3MG121** | 18P-1-20Q-M2-98-B2B2-1 | 100 | 18P | Length 1 | 20 | Nitrile | Visual | 7.0 bar | G3/4" | **G04245** |
| **18P210QBT1MG121** | 18P-2-10Q-TW6-98-B2B2-1 | 130 | 18P | Length 2 | 10 | Nitrile | Electrical | 7.0 bar | G3/4" | **G04252** |
| **18P210QBM3MG121** | 18P-2-10Q-M2-98-B2B2-1 | 130 | 18P | Length 2 | 10 | Nitrile | Visual | 7.0 bar | G3/4" | **G04252** |
| **18P220QBT1MG121** | 18P-2-20Q-TW6-98-B2B2-1 | 150 | 18P | Length 2 | 20 | Nitrile | Electrical | 7.0 bar | G3/4" | **G04253** |
| **18P220QBM3MG121** | 18P-2-20Q-M2-98-B2B2-1 | 150 | 18P | Length 2 | 20 | Nitrile | Visual | 7.0 bar | G3/4" | **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** |
| **28P210QBT1MG161** | 28P-2-10Q-TW6-98-C2C2-1 | 250 | 28P | Length 2 | 10 | Nitrile | Electrical | 7.0 bar | G1" | **G04268** |
| **28P210QBM3MG161** | 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 1/4" | **G04276** |
| **38P110QBM3MG201** | 38P-1-10Q-M2-98-D2D2-1 | 340 | 38P | Length 1 | 10 | Nitrile | Visual | 7.0 bar | G1 1/4" | **G04276** |
| **38P120QBT1MG201** | 38P-1-20Q-TW6-98-D2D2-1 | 420 | 38P | Length 1 | 20 | Nitrile | Electrical | 7.0 bar | G1 1/4" | **G04277** |
| **38P120QBM3MG201** | 38P-1-20Q-M2-98-D2D2-1 | 420 | 38P | Length 1 | 20 | Nitrile | Visual | 7.0 bar | G1 1/4" | **G04277** |
| **38P210QBT1MG201** | 38P-2-10Q-TW6-98-D2D2-1 | 560 | 38P | Length 2 | 10 | Nitrile | Electrical | 7.0 bar | G1 1/4" | **G04284** |
| **38P210QBM3MG201** | 38P-2-10Q-M2-98-D2D2-1 | 560 | 38P | Length 2 | 10 | Nitrile | Visual | 7.0 bar | G1 1/4" | **G04284** |
| **38P220QBT1MG201** | 38P-2-20Q-TW6-98-D2D2-1 | 700 | 38P | Length 2 | 20 | Nitrile | Electrical | 7.0 bar | G1 1/4" | **G04285** |
| **38P220QBM3MG201** | 38P-2-20Q-M2-98-D2D2-1 | 700 | 38P | Length 2 | 20 | Nitrile | Visual | 7.0 bar | G1 1/4" | **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.



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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** | **20Q** |
| High collapse element | **02QH** | **05QH** | **10QH** | **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** | + Box 8: code 2 |
| No bypass | No indicator | **X** | + 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 ¾ | **G12** |
| Thread SAE 12 | S12 |
| Thread M27, ISO 6149 | M27 |
| SAE flange ¾" 6000-M | H12 |
| SAE flange ¾" 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 ¼ | **G20** |
| Thread G 1 ½ | **G24** |
| Thread SAE 20 | S20 |
| Thread SAE 24 | S24 |
| Thread M42, ISO 6149 | M42 |
| Thread M48, ISO 6149 | M48 |
| SAE flange 1 ¼" 6000-M | **H20** |
| SAE flange 1 ¼" 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 ß (ISO 16889) / particle size µm [c] | | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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.



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Parker

High Pressure Filters

# 70/70 Eco Series

*MAX 450 l/min - 420 bar*

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High Pressure Filters

# 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 |
| | | Reliable performance throughout element life |
| | Wire support reduces pleat bunching, keeps performance consistent | 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% | |
| | Easy compaction of used elements | Lower element replacement costs |
| | Eco adaptors available | Lower disposal costs |
| | | 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, G1¼, G1½ (ISO 228/1).
or flanges 1¼" SAE 3000-M, 1½" SAE 3000-M, 1¼" SAE 6000-M, 1½" 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.

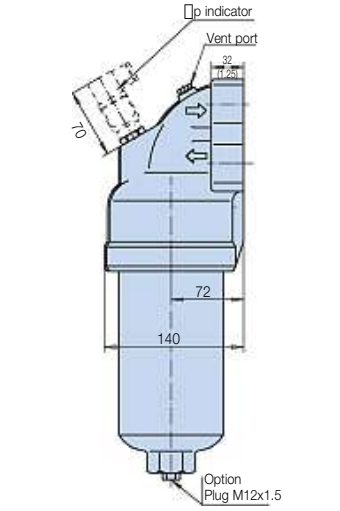
**Fluid compatibility:**
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

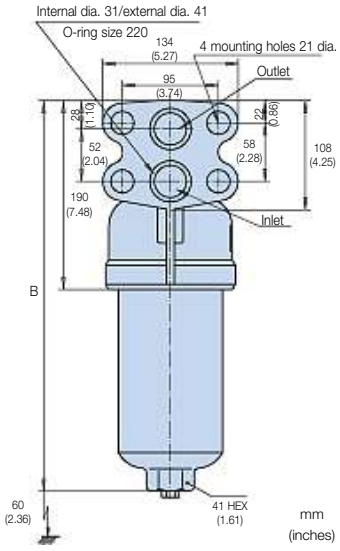
High Pressure Filters

# 70/70 Eco Series

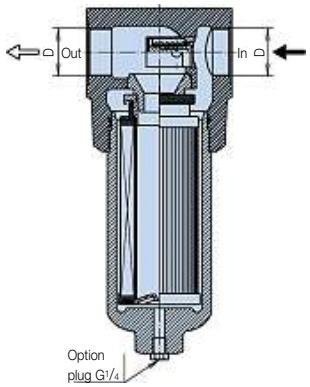
## Specification

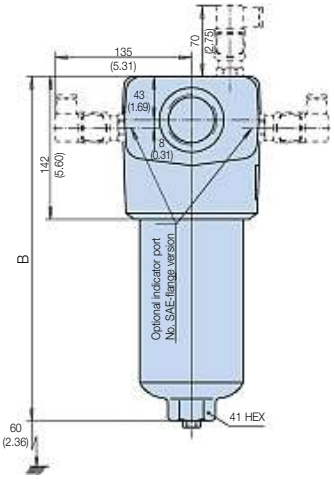
### 70B

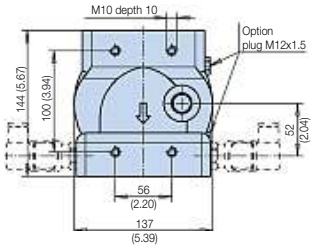


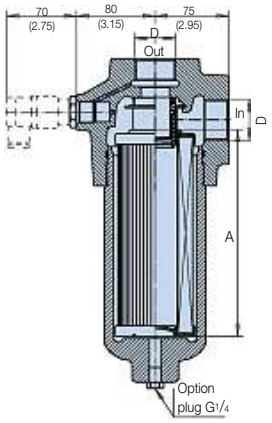

### 70T

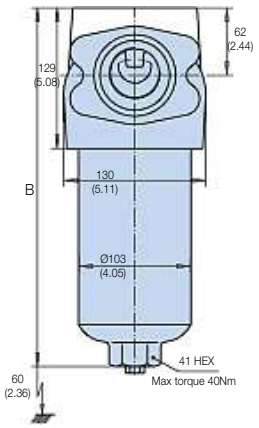


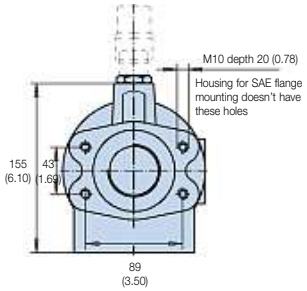




### 70L




| 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 |

| 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) | | Flange 1 1/2 SAE 3000-M |
| Length 3 | 329 (12.95) | 462 (18.19) | 510 (20.08) | 450 (17.72) | | Flange 1 1/4 SAE 3000-M<br>Flange 1 1/2 SAE 6000-M |
| Length 4 | 428 (16.85) | 562 (22.12) | 610 (24.01) | 550 (21.65) | 350 bar | Flange 1 1/4 SAE 6000-M |



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 15

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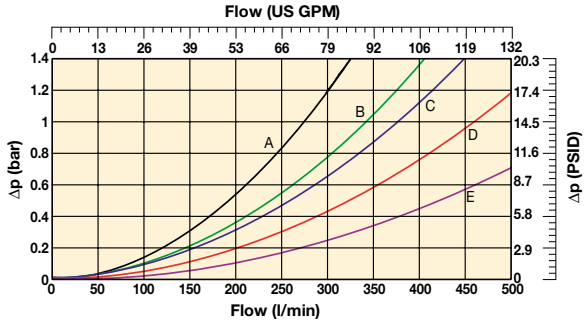
## Pressure Drop Curves

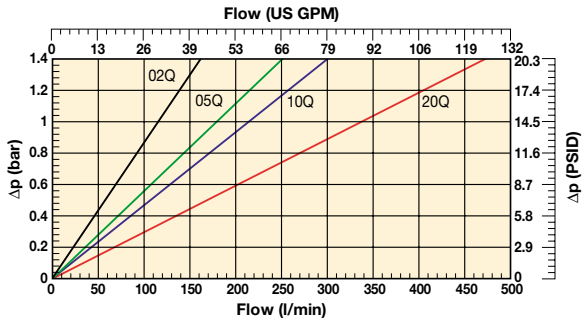
With 3.5 bar bypass the recommended initial pressure drop is max 1.2 bar.
If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:
The total □p = housing □ph + (element □pe x working viscosity/30).

### 70 Series Empty Housing

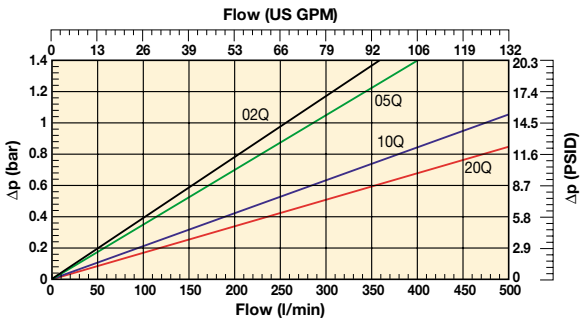



A: 70T with G16 connections
B: 70T with G20 connections
70L with G16 connections
C: 70L with G20 connections
70B
D: 70T with G24 connections
E: 70L with G24 connections

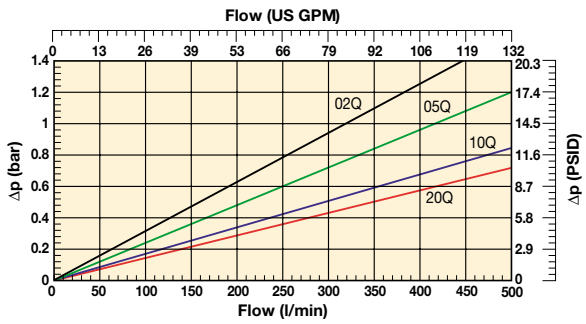
### 70-1 Elements with Microglass III



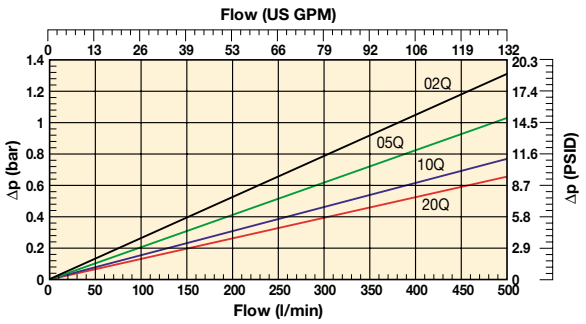

### 70-2 Elements with Microglass III




### 70-3 Elements with Microglass III




### 70-4 Elements with Microglass III







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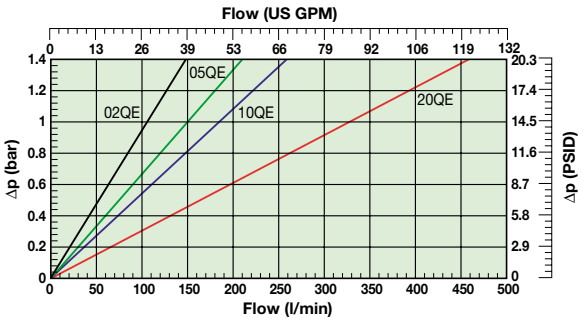
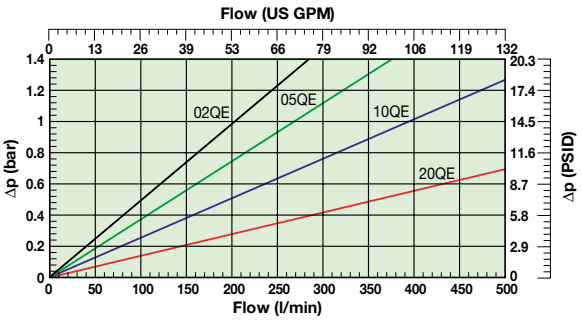
# 70/70 Eco Series

## Pressure Drop Curves (cont.)

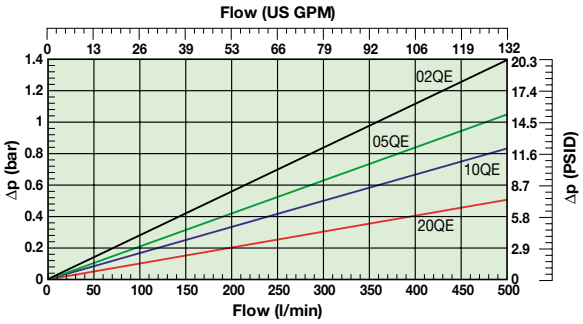
### 70-1 Elements with Ecoglass III



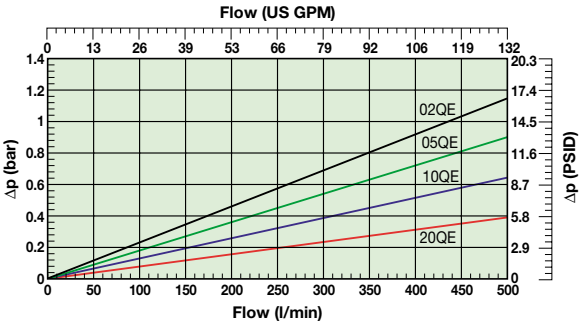

### 70-2 Elements with Ecoglass III




### 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 | G1¼" | **938777Q** | FC7006.Q010.BK |
| **70L220QBPKG201** | FF7006.Q020.BS35.GL20 | 300 | 70L | 2 | 20 | Nitrile | Plugged | 3.5 bar | G1¼" | **938778Q** | FC7006.Q020.BK |
| **70L310QBPKG241** | FF7007.Q010.BS35.GL24 | 400 | 70L | 3 | 10 | Nitrile | Plugged | 3.5 bar | G1½" | **938781Q** | FC7007.Q010.BK |
| **70L320QBPKG241** | FF7007.Q020.BS35.GL24 | 430 | 70L | 3 | 20 | Nitrile | Plugged | 3.5 bar | G1½" | **938782Q** | FC7007.Q020.BK |
| **70L410QBPKG241** | FF7008.Q010.BS35.GL24 | 430 | 70L | 4 | 10 | Nitrile | Plugged | 3.5 bar | G1½" | **938785Q** | FC7008.Q010.BK |
| **70L420QBPKG241** | FF7008.Q020.BS35.GL24 | 450 | 70L | 4 | 20 | Nitrile | Plugged | 3.5 bar | G1½" | **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 | G1¼" | **938793Q** | FC7006.QE10.BK |
| **70L220QEBPKG201** | FF7006.QE20.BS35.GL20 | 300 | 70L | 2 | 20 | | Plugged | 3.5 bar | G1¼" | **938794Q** | FC7006.QE20.BK |
| **70L310QEBPKG241** | FF7007.QE10.BS35.GL24 | 400 | 70L | 3 | 10 | | Plugged | 3.5 bar | G1½" | **938797Q** | FC7007.QE10.BK |
| **70L320QEBPKG241** | FF7007.QE20.BS35.GL24 | 430 | 70L | 3 | 20 | | Plugged | 3.5 bar | G1½" | **938798Q** | FC7007.QE20.BK |
| **70L410QEBPKG241** | FF7008.QE10.BS35.GL24 | 430 | 70L | 4 | 10 | | Plugged | 3.5 bar | G1½" | **938801Q** | FC7008.QE10.BK |
| **70L420QEBPKG241** | FF7008.QE20.BS35.GL24 | 450 | 70L | 4 | 20 | | Plugged | 3.5 bar | G1½" | **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 | G1¼" | **938777Q** | FC7006.Q010.BK |
| **70T220QBPKG201** | FF7006.Q020.BS35.GT20 | 280 | 70T | 2 | 20 | | Plugged | 3.5 bar | G1¼" | **938778Q** | FC7006.Q020.BK |
| **70T310QBPKG241** | FF7007.Q010.BS35.GT24 | 360 | 70T | 3 | 10 | | Plugged | 3.5 bar | G1½" | **938781Q** | FC7007.Q010.BK |
| **70T320QBPKG241** | FF7007.Q020.BS35.GT24 | 380 | 70T | 3 | 20 | | Plugged | 3.5 bar | G1½" | **938782Q** | FC7007.Q020.BK |
| **70T410QBPKG241** | FF7008.Q010.BS35.GT24 | 360 | 70T | 4 | 10 | | Plugged | 3.5 bar | G1½" | **938785Q** | FC7008.Q010.BK |
| **70T420QBPKG241** | FF7008.Q020.BS35.GT24 | 380 | 70T | 4 | 20 | | Plugged | 3.5 bar | G1½" | **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 | G1¼" | **938793Q** | FC7006.QE10.BK |
| **70T220QEBPKG201** | FF7006.QE20.BS35.GT20 | 280 | 70T | 2 | 20 | | Plugged | 3.5 bar | G1¼" | **938794Q** | FC7006.QE20.BK |
| **70T310QEBPKG241** | FF7007.QE10.BS35.GT24 | 360 | 70T | 3 | 10 | | Plugged | 3.5 bar | G1½" | **938797Q** | FC7007.QE10.BK |
| **70T320QEBPKG241** | FF7007.QE20.BS35.GT24 | 380 | 70T | 3 | 20 | | Plugged | 3.5 bar | G1½" | **938798Q** | FC7007.QE20.BK |
| **70T410QEBPKG241** | FF7008.QE10.BS35.GT24 | 360 | 70T | 4 | 10 | | Plugged | 3.5 bar | G1½" | **938801Q** | FC7008.QE10.BK |
| **70T420QEBPKG241** | FF7008.QE20.BS35.GT24 | 380 | 70T | 4 | 20 | | Plugged | 3.5 bar | G1½" | **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.



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High Pressure Filters

# 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 | + Box 8: code 2 |
| No bypass | No indicator (P) | X | + 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 ¼ | **G20** | **S** | **S** | **S** | **S** |
| Thread G 1 ½ | **G24** | x | **S** | **S** | **S** |
| SAE flange 1 ¼" 3000-M | R20 | x | x | x | x |
| SAE flange 1 ½" 3000-M | R24 | x | x | x | x |
| SAE flange 1 ¼" 6000-M | H20 | x | x | x | x |
| SAE flange 1 ½" 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 ß (ISO 16889) / particle size µm [c] | | | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | | | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | Disposable Microglass III | Metal free Ecoglass 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** | **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.



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High Pressure Duplex Filters

# 22PD/32PD Series

*MAX 260 l/min - 210 bar*

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High Pressure Duplex Filters

# 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" | 1¼" |
| Flange SAE 3000-M | 1¼" | 1½" |

*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).

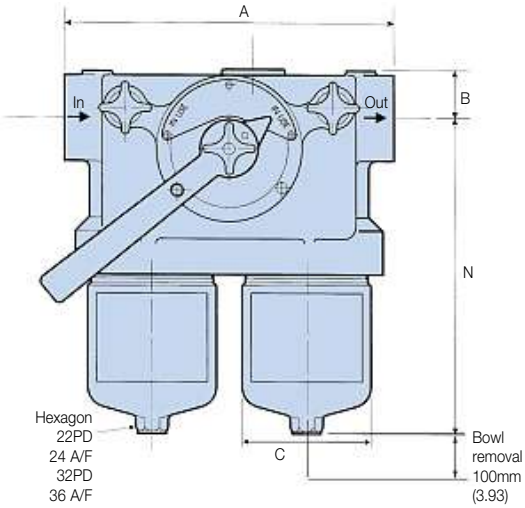
For indicator details see catalogue section 6.

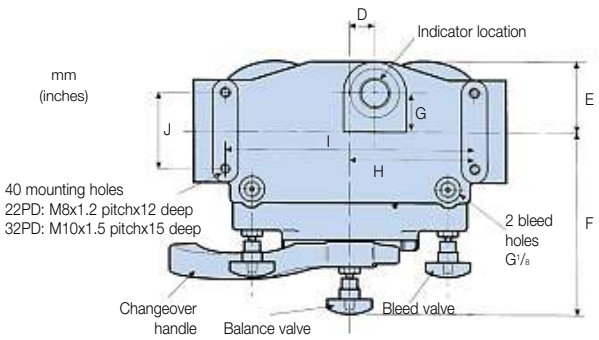
**Weights (kg):**

| *Model* | *Length 1* | *Length 2* |
|---|---|---|
| 22PD | 22 | 27 |
| 32PD | 44 | 50 |

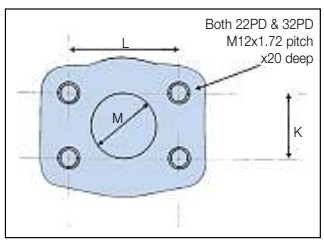
**Fluid compatibility:**
Suitable for use with mineral and vegetable oils, and some synthetic oils. For other fluids, please consult Parker Filtration.

| Dimensions mm (inches) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** | **N** |
| 22PD-1 | 240 | 35 | 92 | 18 | 55 | 150 | 150 | 96 | 192 | 60 | 30 | 59 | 30.75Ø | 236 (9.29) |
| 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) | | 345 (13.58) |
| 32PD-1 | 306 | 42 | 130 | 20 | 78 | 170 | 165 | 120 | 240 | 75 | 36 | 70 | 38Ø | 317 (12.48) |
| 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**



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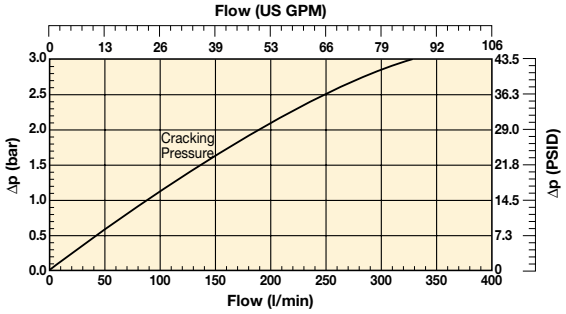
High Pressure Duplex Filters

# 22PD/32PD Series

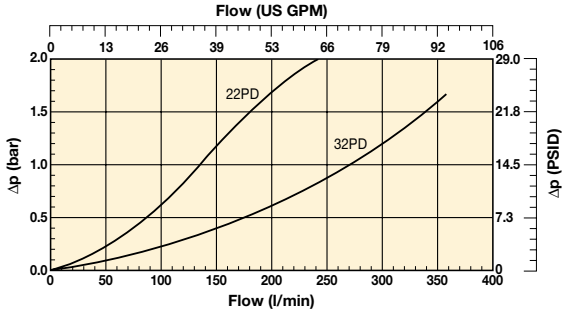
## Pressure Drop Curves

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:
□p = (□p30 x viscosity of medium used) / 30 cSt.
The total □p = housing □ph + (element □pe x working viscosity/30).

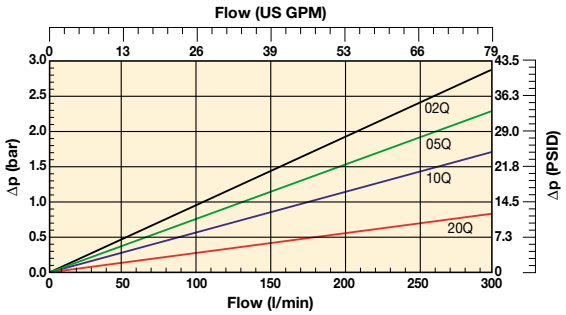
### 22PD/32PD Bypass Valve



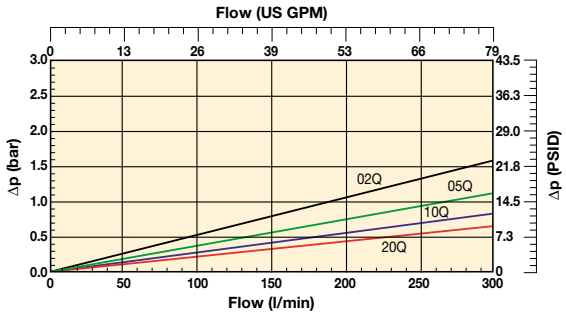

### 22PD/32PD Empty Housing



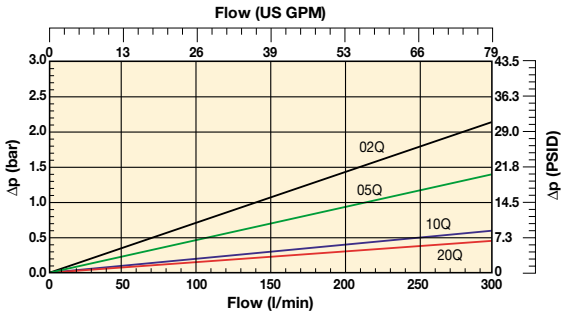

### 22PD-1 Elements



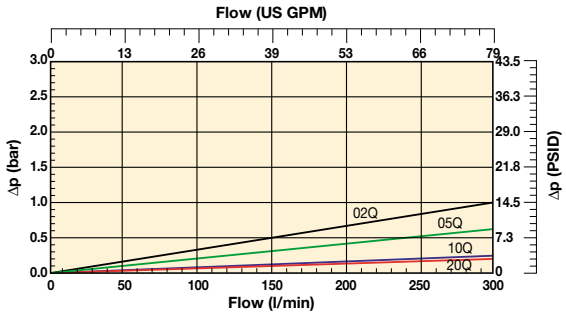

### 22PD-2 Elements



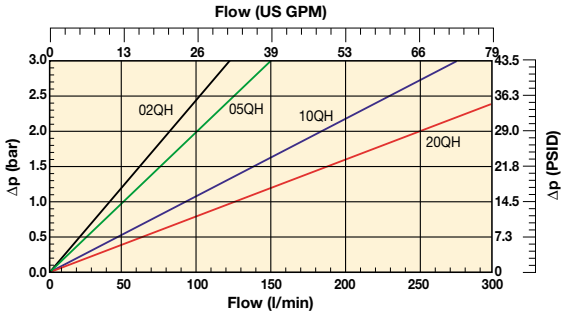

### 32PD-1 Elements



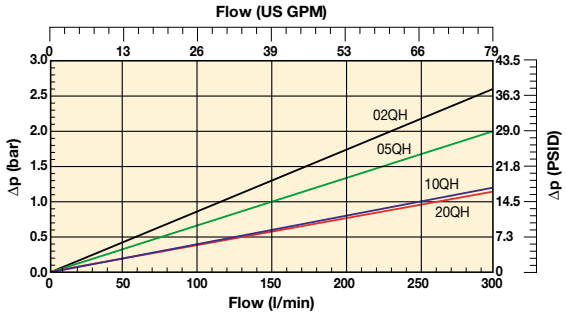

### 32PD-2 Elements



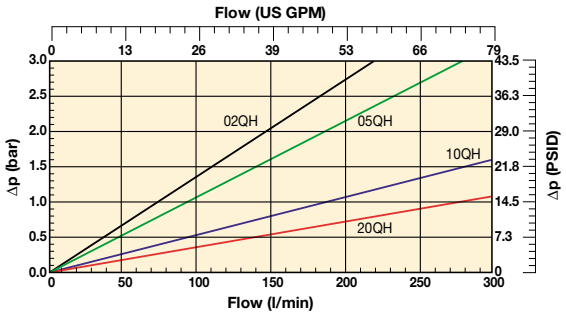
## 22PD-1 High Collapse Elements



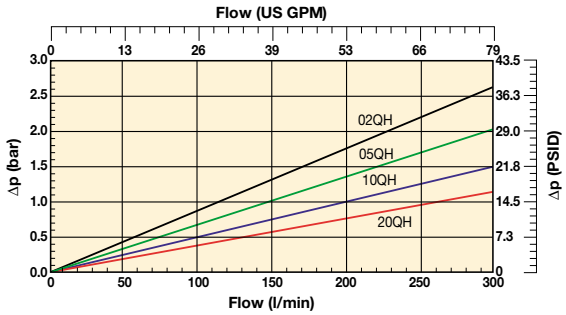

## 22PD-2 High Collapse Elements




## 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 | G1¼" | **G01098Q** |
| **32PD210QBT1KG201** | 0-32-PD-2-10Q-TW3-50-D-1 | 240 | 32PD | Length 2 | 10 | Nitrile | Electrical | 3.5 bar | G1¼" | **G01098Q** |
| **32PD220QBM3KG201** | 0-32-PD-2-20Q-V-50-D-1 | 260 | 32PD | Length 2 | 20 | Nitrile | Visual | 3.5 bar | G1¼" | **G01954Q** |
| **32PD220QBT1KG201** | 0-32-PD-2-20Q-TW3-50-D-1 | 260 | 32PD | Length 2 | 20 | Nitrile | Electrical | 3.5 bar | G1¼" | **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.

High Pressure Duplex Filters

# 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 | + Box 8: code 2 |
| No bypass | No indicator | X | + 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 ¼" 3000-M | R20 |
| 32PD: Thread G 1 ¼ | **G20** |
| SAE flange 1 ½" 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 ß (ISO 16889) / particle size µm [c] | | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | 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.

Parker

Portable Hydraulic Filtration Systems

# Guardian®

*MAX 15 l/min - 2 bar*

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Portable Hydraulic Filtration Systems

# Guardian®

## 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

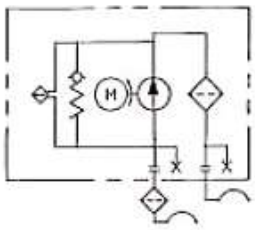
- Fluid transfer
- Offline reservoir clean-up
- Injection moulding machines
- Royal navy surface fleet systems
- Paper mills
- Industrial equipment
- Mobile equipment
- Marine system support

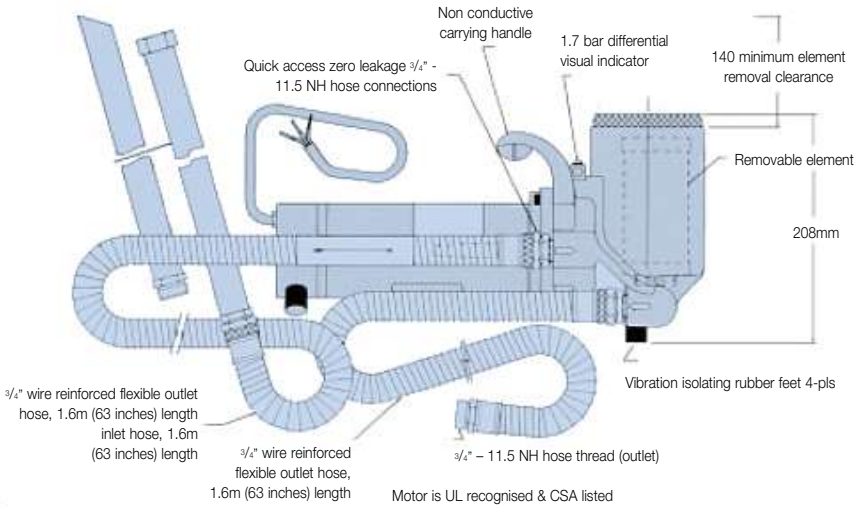
### The Parker Filtration Guardian® portable filtration systems.

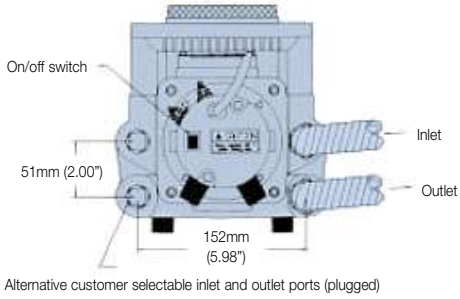
Guardian is a portable filtration system with two main functions: to ensure that new 'dirty' fluid often contaminated during handling, is delivered to the system at a specific cleanliness; and to permit periodic clean up of existing fluid to original condition.

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

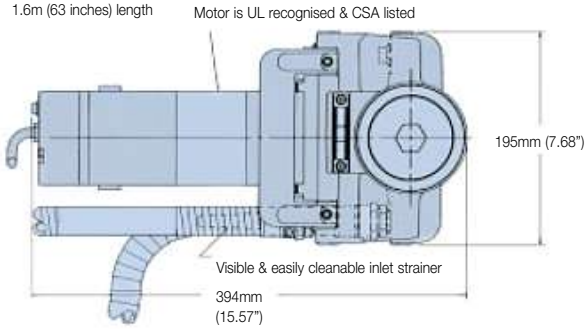
## Specification






Alternative customer selectable inlet and outlet ports (plugged)



Portable Hydraulic Filtration Systems

# Guardian®

## 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** | | | | CL | ~ Battery clamps (24Vdc Only) |
| | | | **25W** | Wire mesh | | | | |
| | | | **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.



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Parker

Hydraulic Service Equipment

# Filtration Unit

*MAX 15 l/min - 6 bar*

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Hydraulic Service Equipment

# 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

CE

### 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

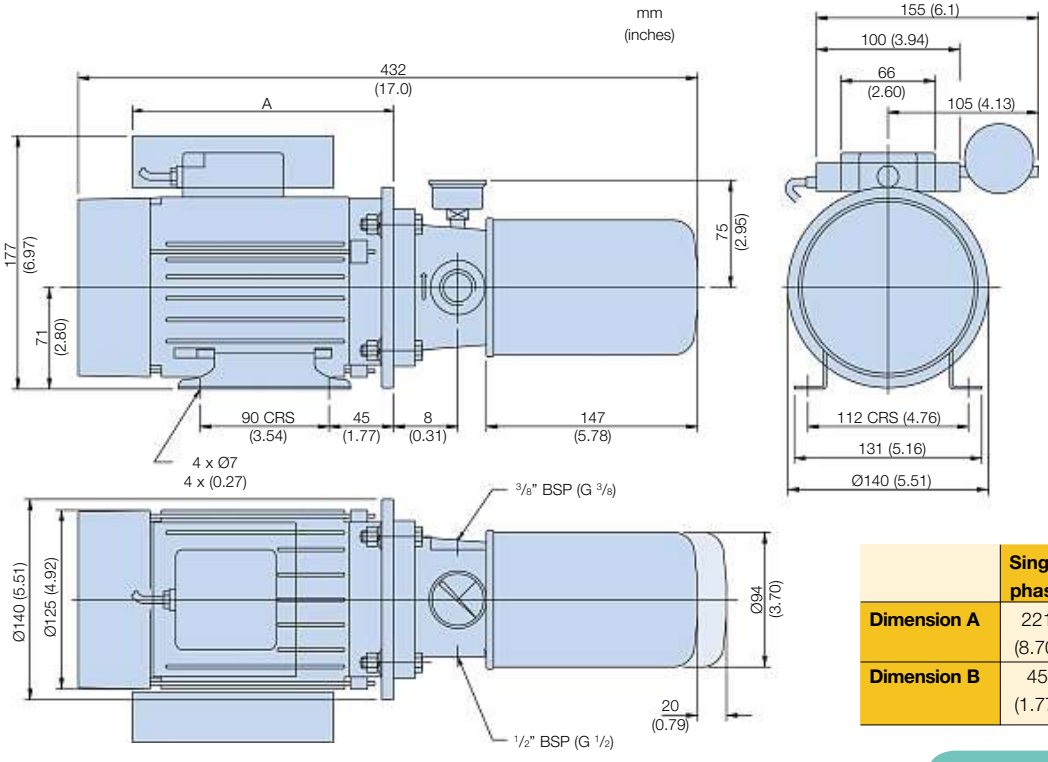
**Visual indicator**

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




| | Single phase | Three phase |
|---|---|---|
| **Dimension A** | 221 (8.70) | 184 (7.24) |
| **Dimension B** | 45 (1.77) | 25 (0.98) |



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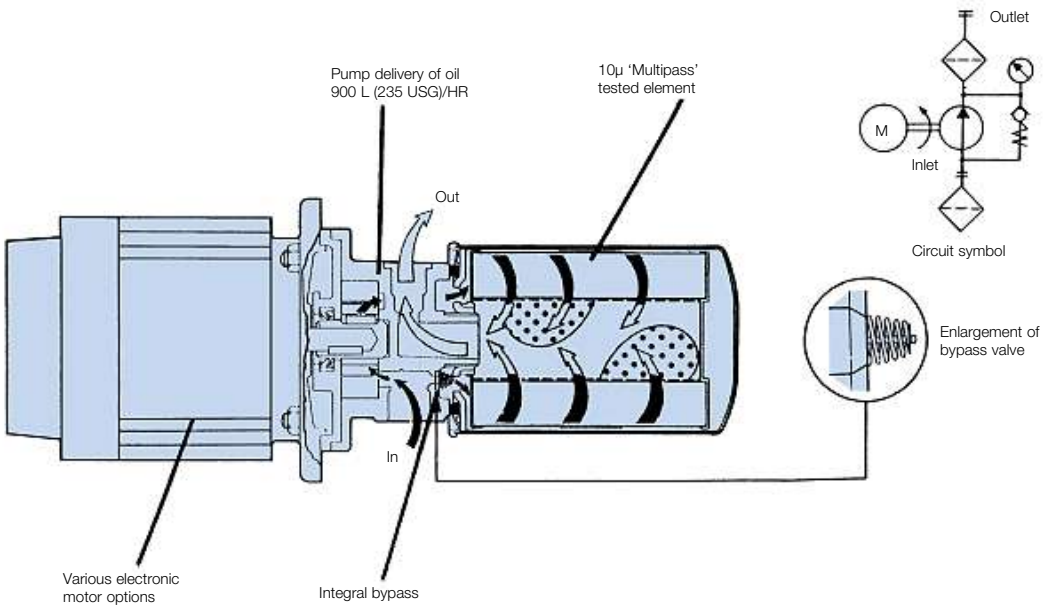
Hydraulic Service Equipment

# 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.

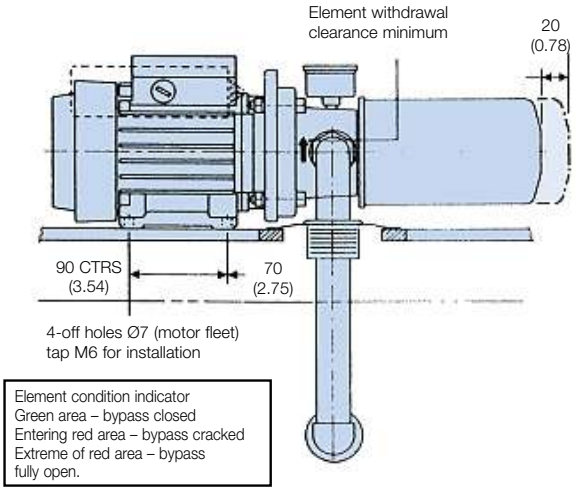
**The outlet pipe** should be as large as possible to reduce the possibility of delivery pressure exceeding the bypass valve setting. It should not be less than 10mm (0.39") internal diameter. The discharge end of this pipe should always be below the oil surface to minimise aeration. It is equally important, 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.

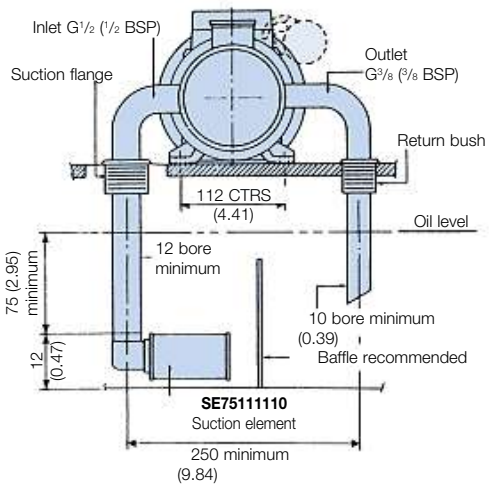
**Installation details – 2742**

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

## Notes



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Parker

Portable Filtration Trolley

# 10MF Series

*MAX 38 l/min*

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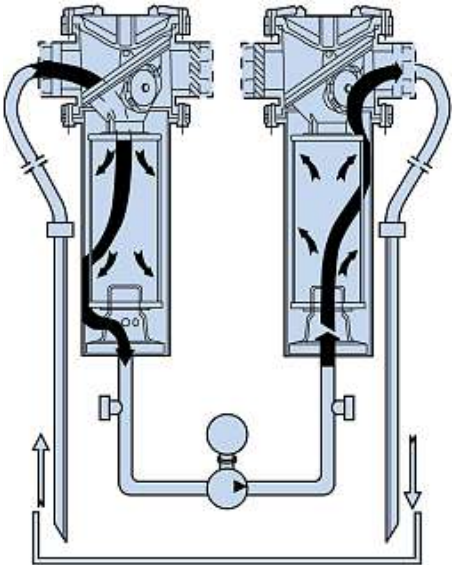
Portable Filtration Trolley

# 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 themal 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.

Parkers 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).

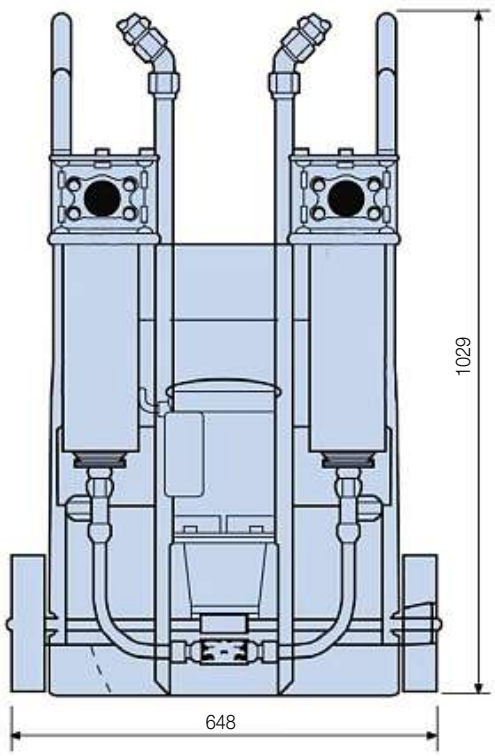
**Visual indicator:**
3 band visual differential (clean, change, bypass).

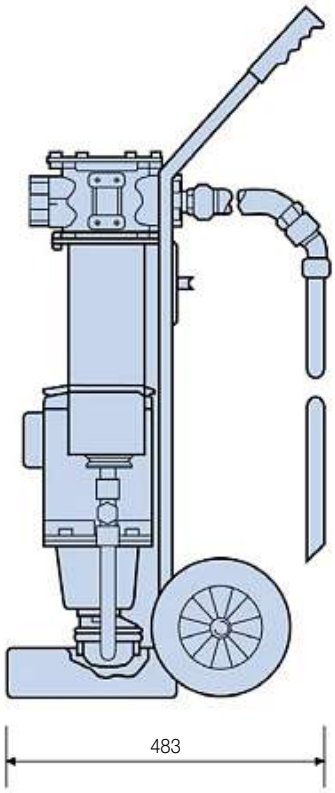
**Construction:**
Cart frame - steel, filter head - aluminium.
Filter bowl - steel, hoses - PVC standard.

**Motor options:**
220/240 VAC.
110 VAC.

**Operating temperatures:**
-40°C to 66°C Nitrile.

## Installation Details



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Portable Filtration Trolley

# 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 |

Portable Purification Systems

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

Portable Purification Systems

# 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:

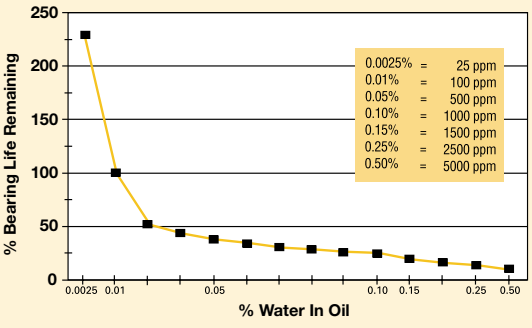
- Corrosion by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

**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).

**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.

## 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.



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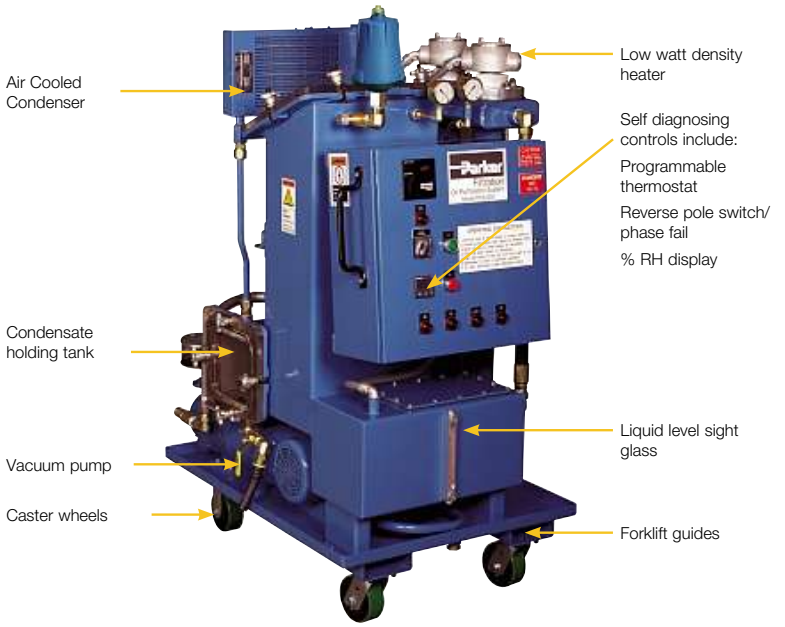
## Applications for PVS Portable Purification Systems

- **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<br>Large enough to provide long service interval | Eliminate potential hazard of exhausting to atmosphere<br>Reduced maintenance costs |
| Compact size | Smallest envelope in the industry<br>Ease of portability | Fits through doorways and down narrow aisles<br>Increased use |
| Forklift guides<br>Lifting eyes | Provides safe and secure method to lift unit | Employee safety<br>Easily transported |
| Programmable thermostat | Maintains oil within 1°C<br>Prevents overheating oil | Unattended operation<br>Increases oil life |
| Automatic operation | Unattended use | Reduced labour costs<br>Increased running time |
| Reverse pole switch/phase fail | Change motor rotation for different power source locations | Flexibility, less maintenance<br>Prevents incorrect rotation |
| High temperature safety circuit | Shuts down heater if primary contacters fail<br>Oil can never exceed 120°C (250°F) | Prevents system damage<br><br>Worker safety |
| Circuit breakers utilised in electrical panel | No fuses to replace<br>Simple diagnostics | Fewer spare parts, increased uptime<br>Reduced maintenance |
| Available with EPR seals and stainless steel | Phosphate ester compatible | Specifically designed for application |
| Solid state heater contacter | Longer more reliable service life | Reduced downtime |

Portable Purification Systems

# 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.

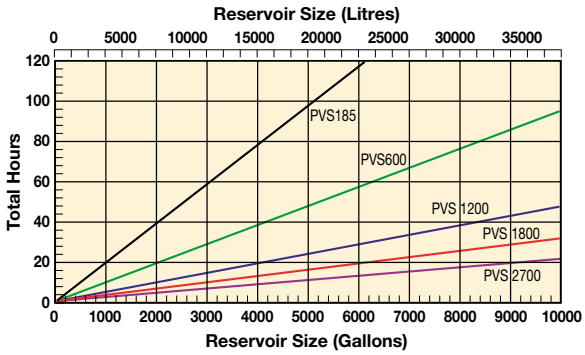
**Coalescer units** – Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>23cSt); much larger in size compared to PVS.

## 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%)**<br>**Stop: 50 PPM(0.005%)** |
| **Contamination level** | **Start: ISO 21/18/16**<br>**Stop: ISO 16/14/11** |

**Start** **Stop**

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



Portable Purification Systems

# 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.

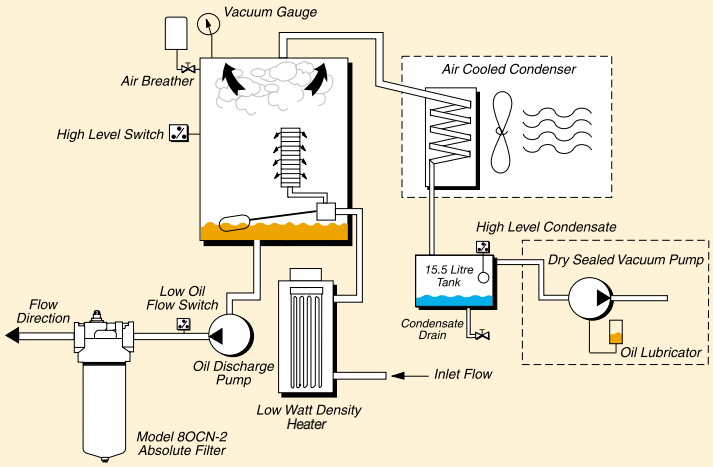
**Outlet pressure (max):**
4.1 bar (60 psi).

**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



Portable Purification Systems

# 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.

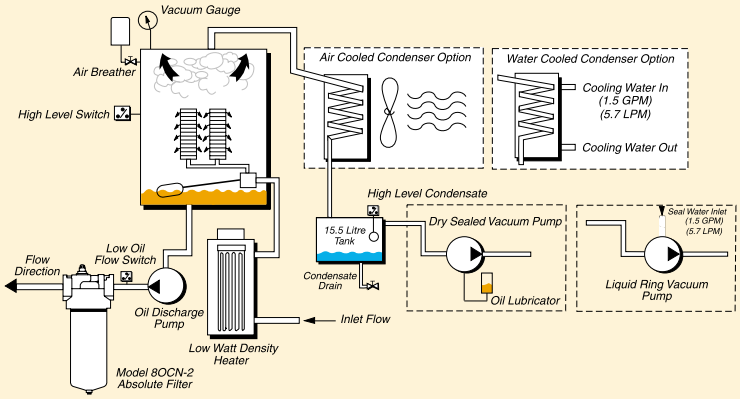
**Outlet pressure (max):**
4.1 bar (60 psi).

**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






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 20

Portable Purification Systems

# 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.

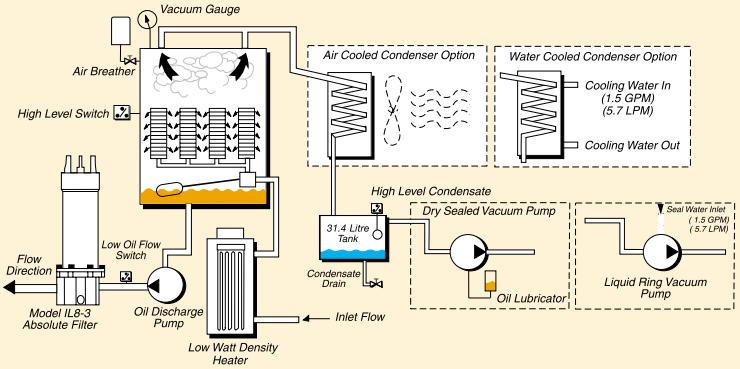
**Outlet pressure (max):**
4.1 bar (60 psi).

**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



Portable Purification Systems

# 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 (coalescing) | 933180 |
| Packed tower (cleanable) | 933553 |
| **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.

1. Application.....

2. Fluid type..... Brand.....
   Grade ..... Specific Gravity .....

3. Viscosity Min ..... SUS/cSt @..... °F/°C
   Max..... SUS/cSt @..... °F/°C
   Normal..... SUS/cSt @..... °F/°C

4. Contamination level Current ISO level ___ /___ /___
   Desired PPM level ___ /___ /___

5. Water concentration Current ISO level.....
   Desired PPM level.....

6. Suction Head Positive/Negative ..... Ft./metres.....

7. Operating distance ..... Ft./metres .....

8. System fluid operating temperature: ..... °F/°C
   Is there a cooler?.....

9. Operating environment air temperature: (air cooled model)
   Min .....°F/°C
   Max .....°F/°C
   Normal.....°F/°C



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 20

Portable Purification Systems

# 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**



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## 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 viscious 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** |
| **600** | **12 KW** | **12** |
| | 24 KW | 24 |
| **1200** | **24 KW** | **24** |
| 1800 | 36 KW | 36 |
| 2700 | 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 |
| Resetable 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

Parker

Water Removal Filter Elements

# Par-Gel

Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

Water Removal Filter Elements

# 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
- Visosity 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.

Water Removal Filter Elements

# Par-Gel

## Features & Benefits

**Removing water.**

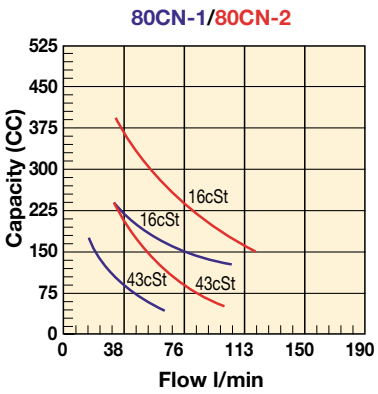
Using a Par-Gel water removal element is an effective way of removing free water contamination from your hydraulic system. It is highly effective at removing free water from mineral-base and synthetic fluids.

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.

1. 1000 ppm start – 300 ppm finish = 700 ppm removed
2. 700 ppm water x 0.001 = .07%
   .07% x 750 litres = 0.53 litres water total
3. 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)
   $80cc \times 0.0001 \frac{lpm}{CC} = 0.076$ lpm/element
4. $\frac{0.53 \text{ litres total water}}{0.076 \text{ lpm/element}} = 7$ 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.



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## 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

## 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**

Parker

Aerospace | Automation | Climate & Industrial Controls | **Filtration** | Fluid Connectors | Hydraulics | Instrumentation | Seal

Parker

FMU □p-Indicators and Pressure Indicators

# Indicators Series

*MAX 420 bar*

FMU □p-Indicators

# 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.0.) 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 ± 0.2
1.5 bar ± 0.2
2.5 bar ± 0.3
5.0 bar ± 0.5
7.0 bar ± 0.5
8.5 bar ± 0.5
(Indicators for other differential pressure values are optional).

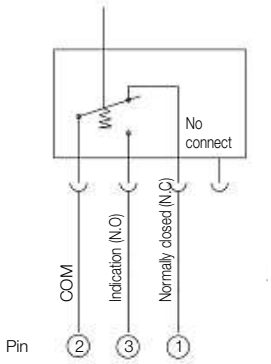
| **FMU □p – Indicators are typically used with the following filters:** | | |
|---|---|---|
| Marine filters: 2020, 2035, 2040, 2045, 2060, 2065, 2070, 2110 and 2520.<br>Types: 2035, 2040, 2045 and 2060 require FMU-Block for connecting indicator to the filter. | **U12H** | **1.5 bar** |
| Medium pressure filters series: 45M and 130M.<br>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;<br>Note for PD Range only 2.5 bar indicators are available<br>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

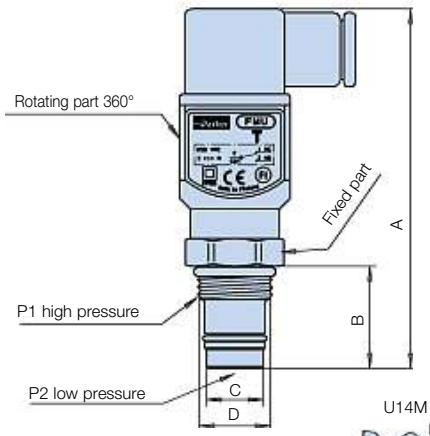
## FMUT Electrical

Contact configuration U12H model

P1-P2




U12H model

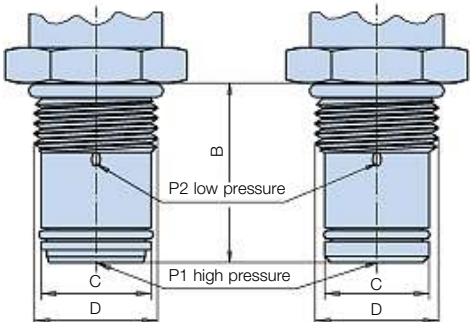



| | U12H | U14M | U14H |
|---|---|---|---|
| **A** | 98 | 105 | 105 |
| **B** | 27.5 | 32 | 32 |
| **C** | Ø16.2 ±0.05 | Ø19.78 ± 0.06 | Ø18.83 ± 0.06 |
| **D** | 3/4-16 UNF-2A | 7/8-14 UNF-2A | 7/8-14 UNF-2A |

| | |
|---|---|
| Enclosure class | IP65 |
| Electrical connector | DIN 43650 |
| Overvoltage category | II (EN61010-1) |

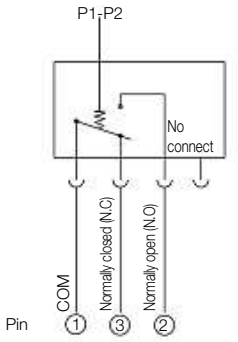
U14M model

U14H model




Contact configuration U14M & U14H

P1-P2

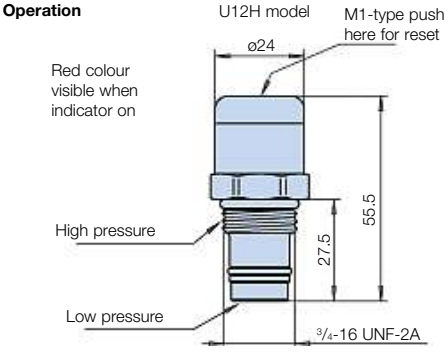



| Rated voltage | Non-inductive load (A) | | | | Inductive load (A) | | | | Inrush current (A) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Resistive load | | Lamp load | | Inductive load | | Motor load | | | |
| | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. |
| 125Vac | 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 | | | |

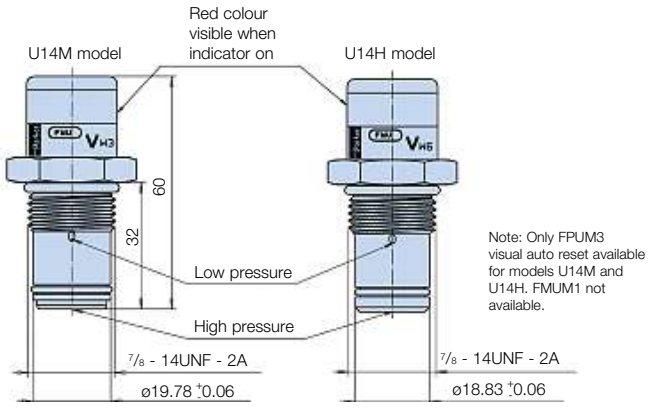
## FMUM3 Visual Auto Reset/FMUM1 Visual Manual Reset

**Operation**

U12H model




**Operation**




Note: Only FPUM3 visual auto reset available for models U14M and U14H. FMUM1 not available.



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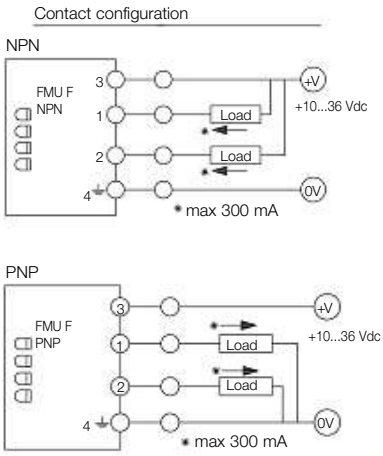
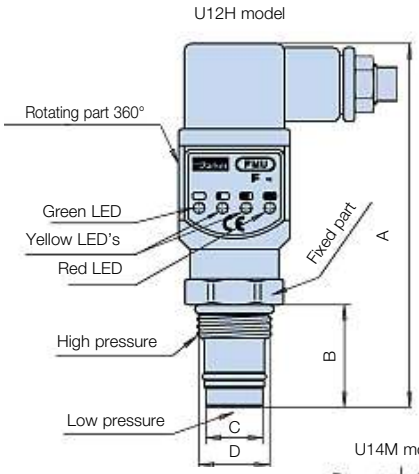
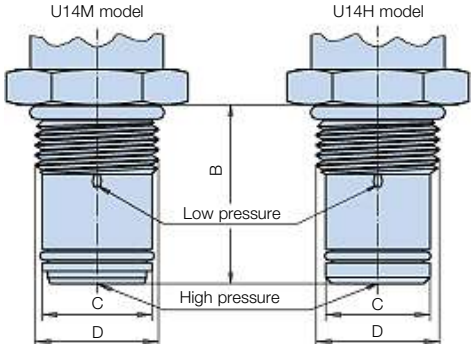
## FMUF Electronic




| | 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 |




**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 G | Y1 | Y2 | R | Output |
|---|---|---|---|---|---|
| 50% | ⊗ | ⊗ | | | – |
| 75% | ⊗ | ⊗ | ⊗ | | 2 active |
| 100% | ⊗ | ⊗ | ⊗ | ⊗ | 1 active |

| | |
|---|---|
| Enclosure class | IP65 |
| Electrical connector | DIN 43650, cable connection PG9 or optinally 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.

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



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FMU □p-Indicators

# 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** |
| ¾" - 16UNF-2A | **U12** |
| ⅞" - 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 (fluroelastomer)** | **Ordering code** |
|---|---|
| Indicators with thread connection U12H (former -F6) | **911045078** |
| Indicators with thread connection U14M (former -W3) | **911045086** |
| Indicators with thread connection U14H (former -W6) | **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.



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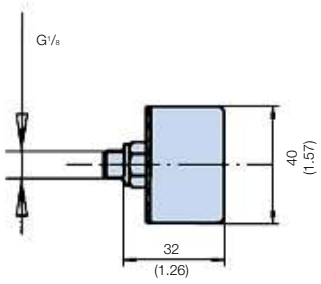
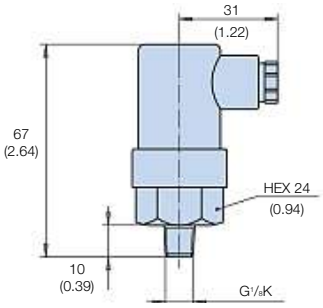
## Pressure Indicators for Low Pressure Filters

### ETF Filter

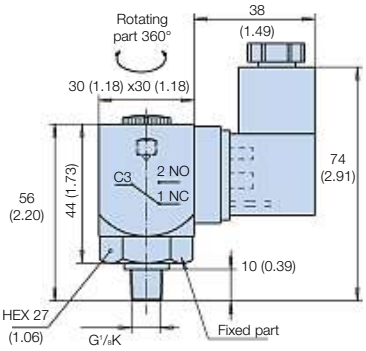
**Visual pressure indicator**
**Code G2**
**mm (inches)**




**48 Vdc electrical indicator 1.2 bar**
**Code S2/S3**
**mm (inches)**




**250 VAC electrical indicator 1.2 bar**
**Code S4**
**mm (inches)**



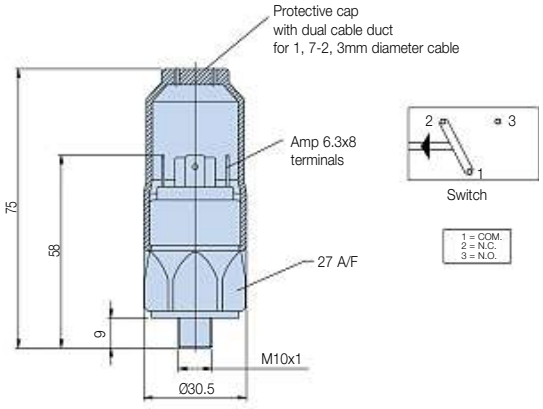

| Option | Description | Connection/Voltage | Wiring | Part number |
|---|---|---|---|---|
| G2 | Visual indicator 1.2 bar | N/A | N/A | FMUG2FBMG02L |
| S2/S3 | Electrical indicator 1.2 bar | 42 Vdc max | + - Select either normally open (NO) or normally closed (NC) | FMUS2FBMG02L (NO switch) or FMUS3FBMG02L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

Normally open contacts

Normally closed contacts

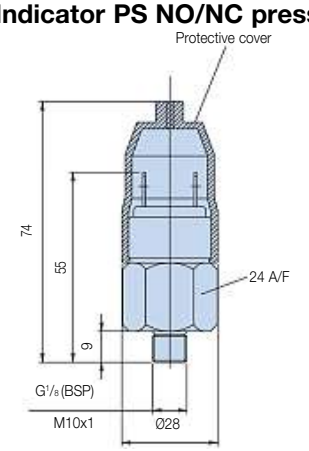
### TTF, BGT and TPR

**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) |
| Visual indicator | 1.2 bar |
| M10: code | FMUS1EBMM10L |
| G1/8: code | FMUS4EBMG02L |

**Indicator PS NO/NC pressure switch**

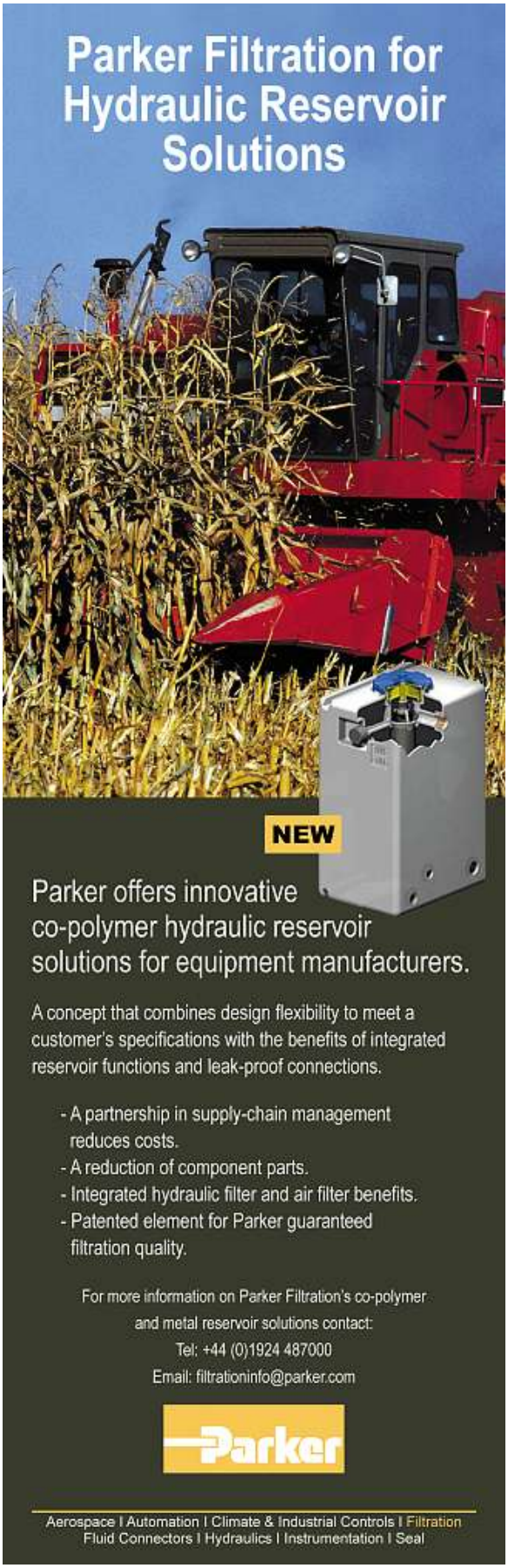



Normally open contacts

Normally closed contacts

| 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) |

| | |
|---|---|
| **Visual indicator** | 1.2 bar |
| M10: code | FMUG1EBPM10L |
| G1/8: code | FMUG2EBPG02L |




# 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.

Parker

Hydraulic Reservoir Solutions

# Co-Polymer and Steel Reservoirs

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Hydraulic Reservoir Solutions

# 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.

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

*Steel tank example*

## Typical Applications

**Unique tank solutions designed to meet customer needs**
Parker designs and supplies both co-polymer and steel reservoirs.

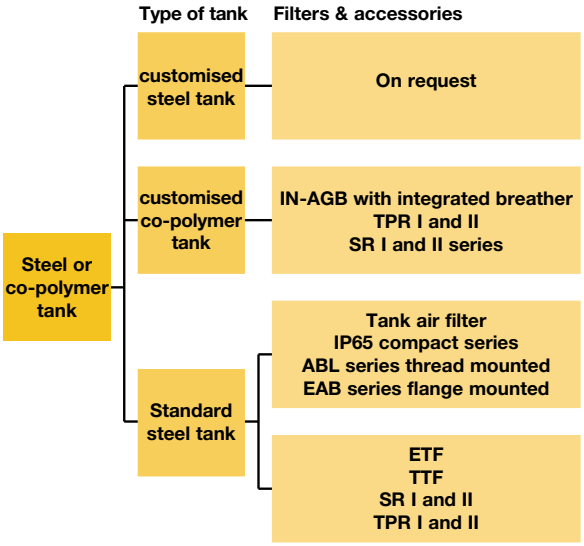
Today Parker steel tank solutions are typically applied to commercial vehicle applications for example waste management and the transportation market. Customers manufacturing hook-arm systems, truck manufacturing or vehicle body builders are further examples of potential customers for a complete steel 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*

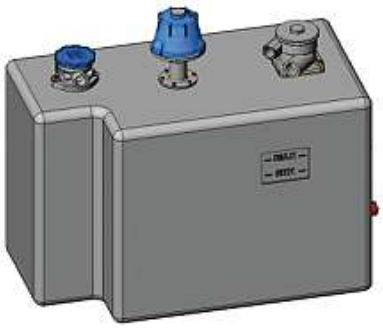
## Specifications

### 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.

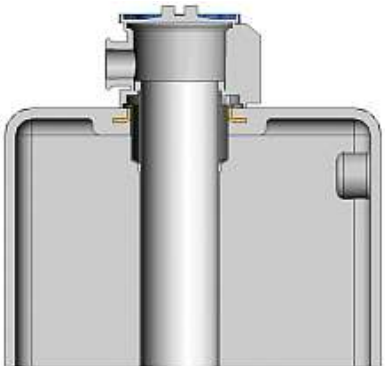
Hydraulic Reservoir Solutions

# 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.

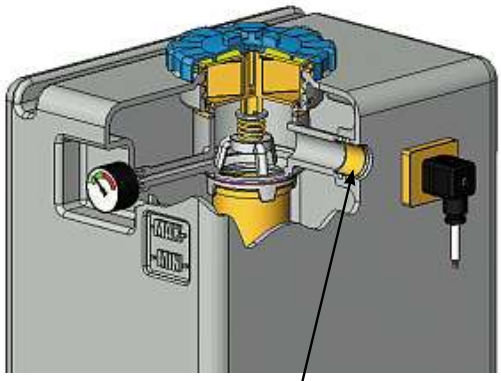
**Reliable connections**
Reliable, leak-proof connections have always been a critical aspect for co-polymer tanks. Parker has developed a technology using metal attachment components. All metal attachment components are moulded in with the co-polymer tank wall, ensuring a reliable, leak-proof connection between the tank and the components that are attached to it.



*Parker Filtration has designed high tech sealing solutions for tank top mounted filters.*

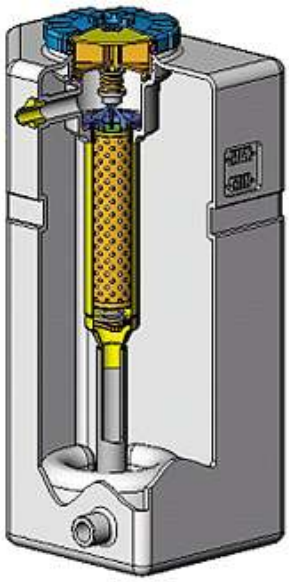
These attached connections (e.g. a suction connection for pumps, drains, vents, or a filler opening) can easily be achieved, as well as providing indications for minimum and maximum oil levels. Metal attachment connections can be made available for hose couplings, a flange attachment or thread attachment.

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.



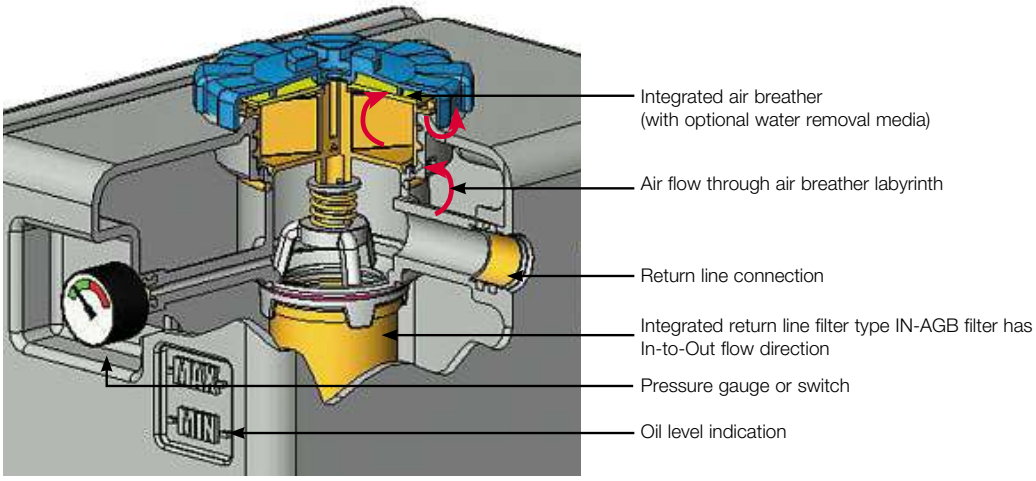
*Customised integrated metal attachment*
*"Tank also features integrated level measurement"*

**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

Hydraulic Reservoir Solutions

# 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.

**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.

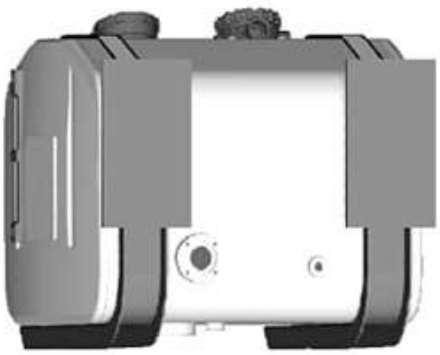
**Technical data steel tanks**
**Material:** 2mm steel plate applied for standard reservoirs

**Suction connection:** Suction connections at the back and the bottom of the tank swivel type nominal size 2", 2½" 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



*Steel tank with with customised chassis mounting straps*

*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 ½") | W (on request) |
| Swivel type SAE 3" | S (standard) |
| G2" - Female BSP (ISO 228) | on request |
| G2 ½" - Female BSP (ISO 228) | on request |
| G2" - Female ball valve (manual operated) | on request |
| G2 ½" - Female ball valve (manual operated) | on request |

Box 5 Box 6

| 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 |
| TPR710QLBP2E2G241 | 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 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 ß (ISO 16889) / particle size µm [c] | | | | | | |
| **ßx(c)=2** | **ßx(c)=10** | **ßx(c)=75** | **ßx(c)=100** | **ßx(c)=200** | **ßx(c)=1000** | |
| % efficiency, based on the above beta ratio (ßx) | | | | | | |
| **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.

## Notes



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK.

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Parker

Reservoir Equipment

# Environmental Air Filters

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Reservoir Equipment

# 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 G¾", G1".
Internal thread G¾".

**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).

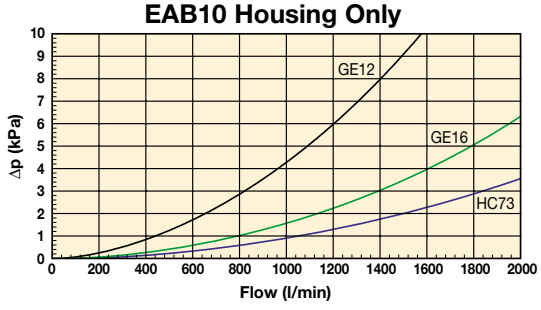
**Environmentally friendly:**
EAB elements contains no metal parts: therefore it can be crushed and burned minimising the volume of waste material.

**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.

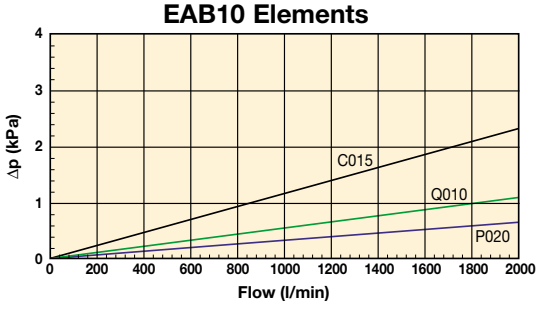
## Pressure Drop Curves

□p total = □p housing + □p element. The recommended level of the initial pressure drop for this filter is max 0.02 bar (2.0 kPa).

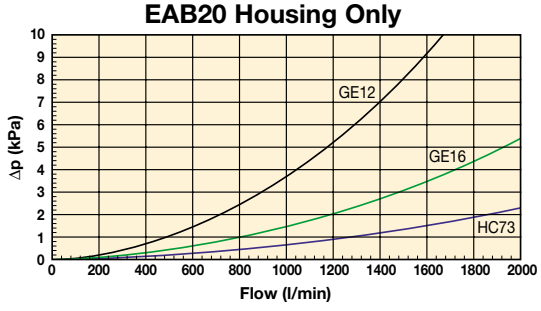
**EAB10 Housing Only**



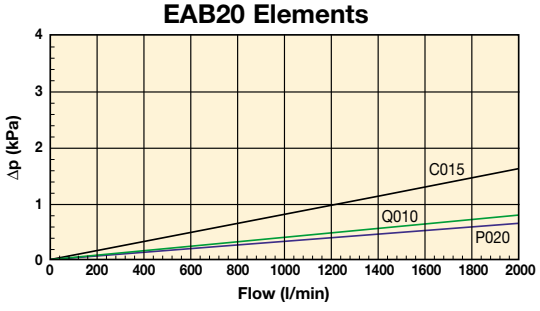

**EAB10 Elements**




**EAB20 Housing Only**

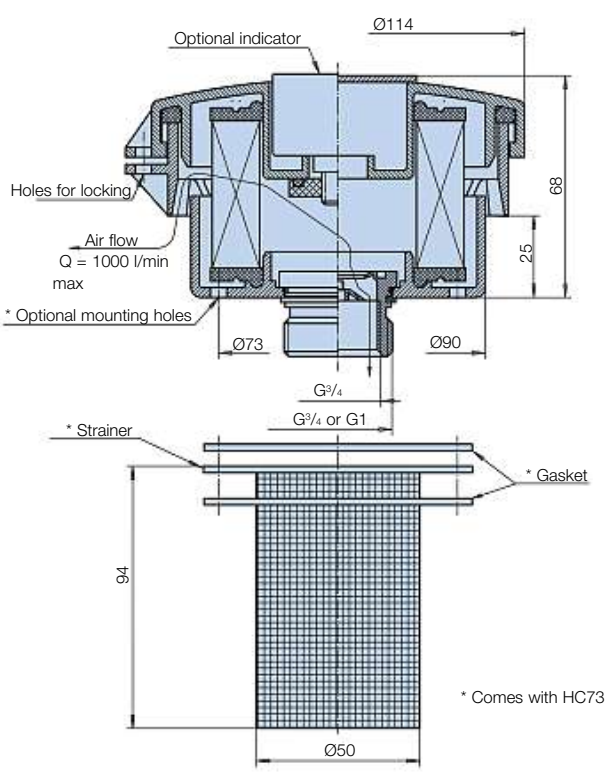



**EAB20 Elements**

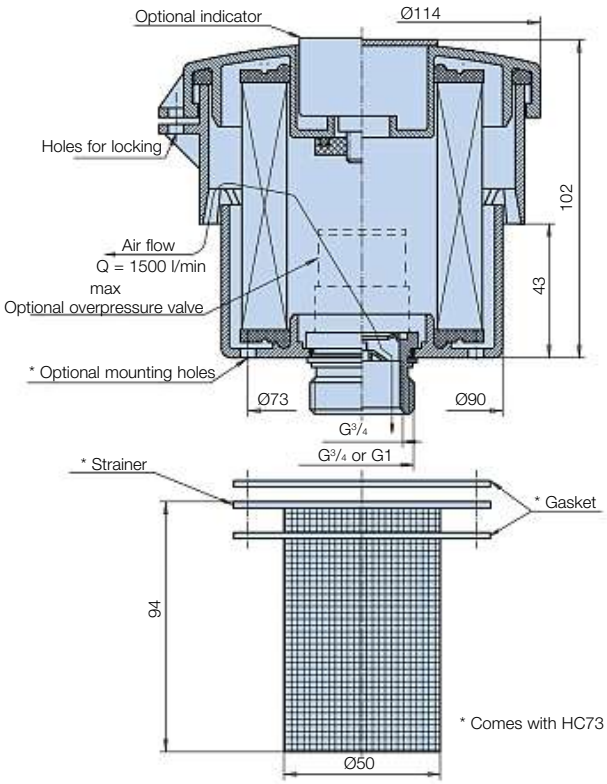


## Specification

### EAB10

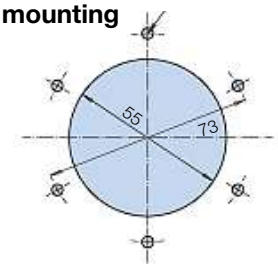



### EAB20




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 |
| G¾ external | GE12 |
| G¾ internal | GS12 |



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Reservoir Equipment

# 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 | G¾ external thread | V2 | 0.2 bar | A | Vacuum/pressure gauge |
| | **Q010** | 1.0µ abs glass fibre | **GE16** | G1 external thread G¾ internal | | | | |
| | | | GS12 | thread M33 x 2 external | | | | |
| | | | ME33 | thread | | | | |

### 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.



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Reservoir Equipment

# 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 G1¼ (ISO 228), 1½" (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.

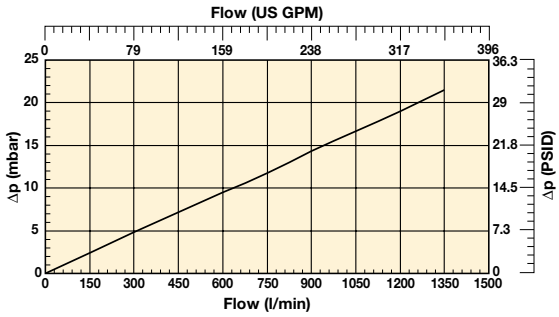
**Filter element:**
*LEIF*® element.

**Options:**
- Adaptor with filter connection.
- Single adaptor.
- Breather with integrated pressure relieve valve for pressurised tank on request only.

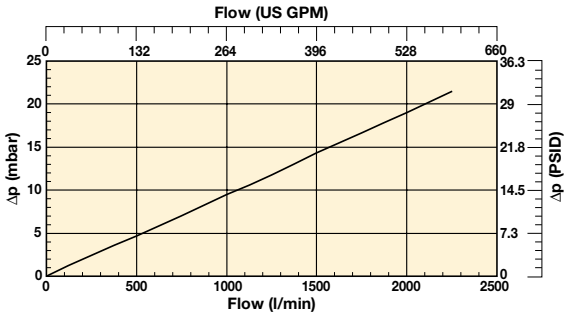
*LEIF*® elements can be used for hydraulic fluids and HEES type fluids only. For other fluids contact Parker Filtration.

## Pressure Drop Curves

**ABL1**




**ABL2**



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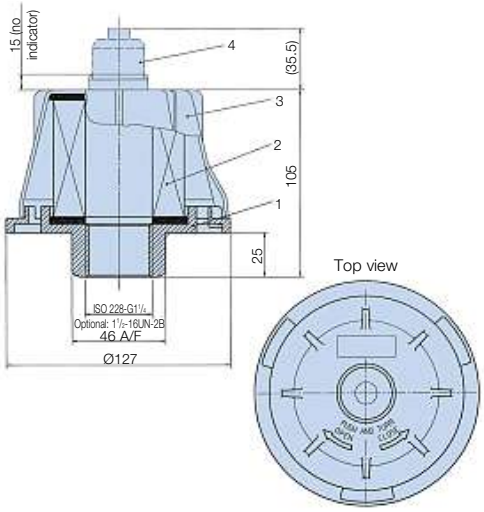
Reservoir Equipment

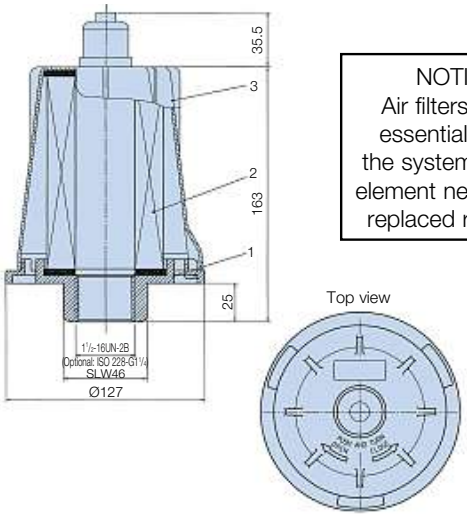
# ABL Series

## Specification

### ABL-1



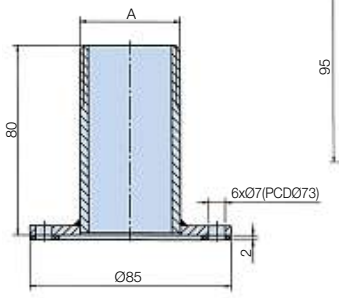

### ABL-2



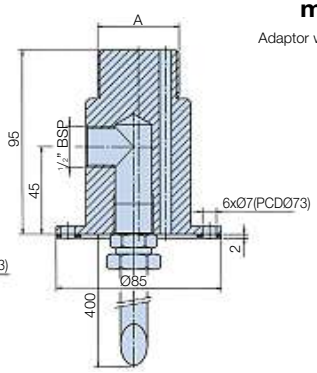

NOTICE!
Air filters are an essential part of the system and the element needs to be replaced regularly.

### Extensions and filling mounting adaptors

Adaptor single




Adaptor with filler connection






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 24

## Ordering Information

### Standard products table

| Part number | Supersedes | Replacement elements |
|---|---|---|
| **ABL1G114QXWL3** | ABL1-G1¹/₄-QXWL-3 | **QXWL3** |
| **ABL2G114QXWL13V** | ABL2-G1¹/₄-QXWL-1-3-V | **QXWL13** |
| **ABL2U112QXWL13V** | ABL2-U1¹/₂-QXWL-1-3-V | **QXWL13** |
| **ADAPTORABLG114FP** | ADAPTOR-ABL-G1¹/₄-FP | **-** |

### Product configurator

| Product number | | Mounting options | | Filtration (3µm) | | Indicators | | Options | |
|---|---|---|---|---|---|---|---|---|---|
| **ABL1** | 1000 l/min | **G114** | ISO 228 - G1¹/₄ (BSP) | **QXWL3** | ABL1 Only | | None | | None |
| **ABL2** | 2000 l/min | **U112** | 1¹/₂ 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 - G1¹/₄ (BSP) | **SNG** | Single Adaptor |
| | **U112** | 1¹/₂ 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.



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## Notes

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Reservoir Equipment

# Glass-Filled Nylon and Metal Breathers

## IP65 Rated, Metal, Screw-on and Lockables

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Reservoir Equipment

# 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.

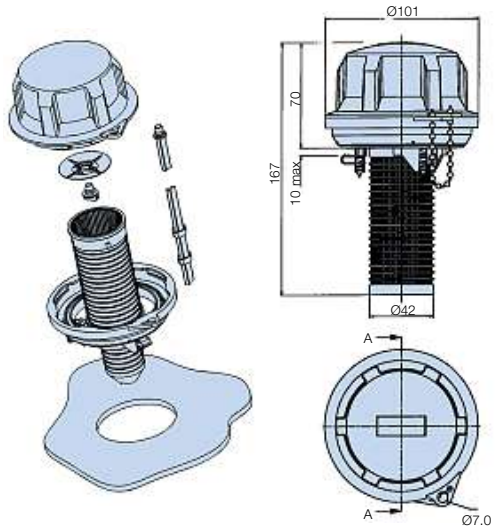
**Hi/Lo indicators:**
Acetal. Adjustable Red/Green level indicators.

**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)

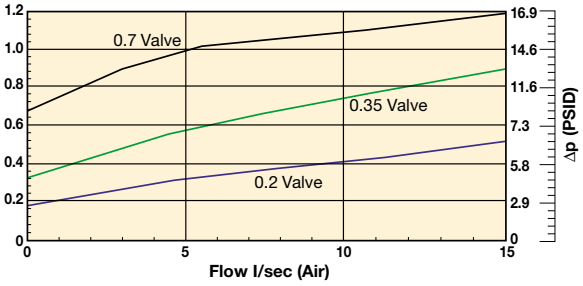



### Option 1. Single Hole Filler Breathers – Pressurised

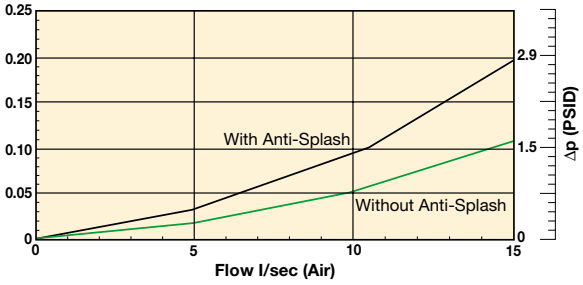
| Part number | Supersedes | Description 10µ nom |
|---|---|---|
| **AB98212011** | AB.98212011.UC | Pressurised 0.2bar with 95mm strainer |
| **AB98213011** | AB.98213011.UC | Pressurised 0.35bar with 95mm strainer |
| **AB98212001** | AB.98212001.UC | Pressurised 0.2bar without strainer |
| **AB98212021** | 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:**

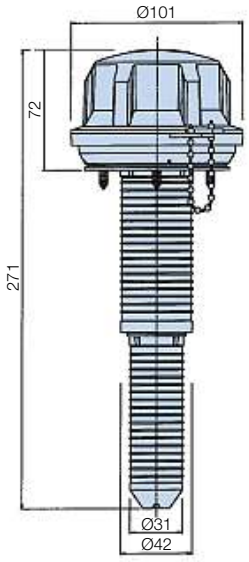
Form 6 off tank mounting holes between Ø4.0 and 4.4mm (dependent on the material and thickness – see guide below) equispaced on 70-73mm P.C.D. to suit supplied No.10 thread forming screws.

**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.

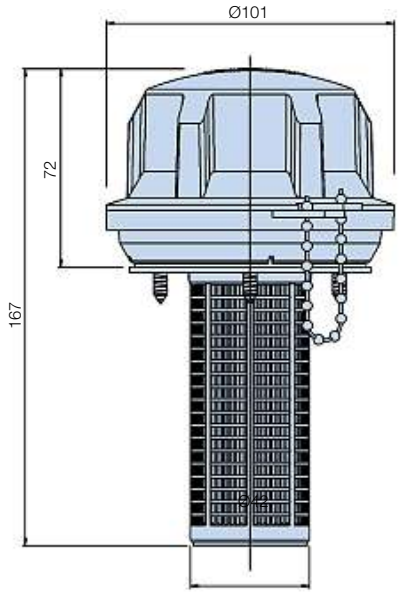
**Note 3. Reservoir mounting guide**

| 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**

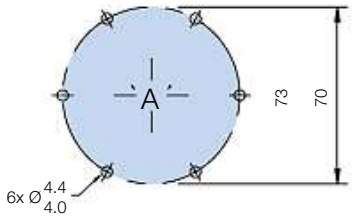
| Part number | Supersedes | Description 10µ nom |
|---|---|---|
| **AB98817011** | AB.98817011.UC | Pressurised 0.7bar with 95mm strainer |
| **AB98812001** | AB.98812001.UC | Pressurised 0.2bar without strainer |
| **AB98812011** | AB.98812011.UC | Pressurised 0.2bar with 95mm strainer |
| **AB98812021** | 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.



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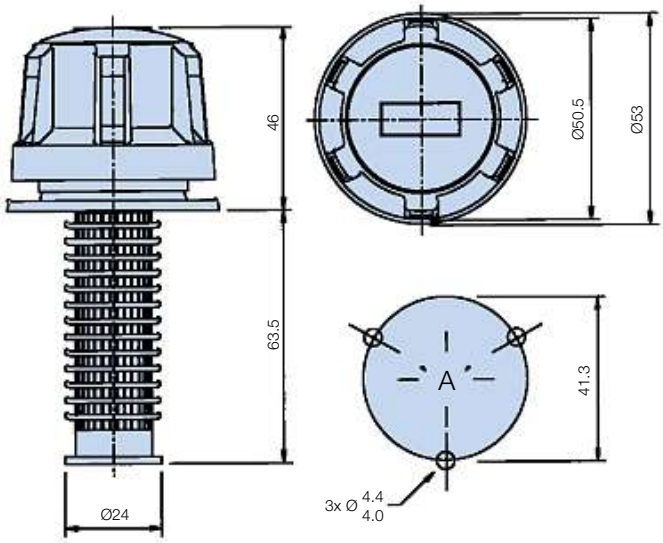
Reservoir Equipment

# 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

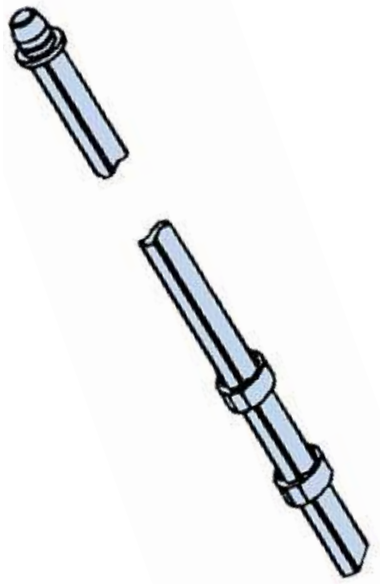
### Dipstick Ordering

| 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.





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Reservoir Equipment

# 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.

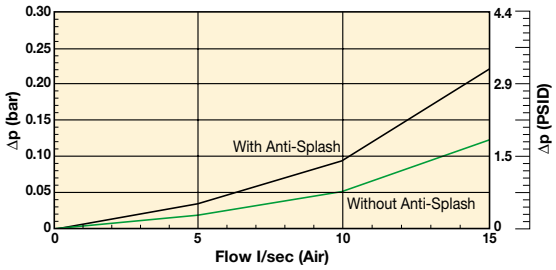
**Dipstick lengths:**
200mm and 400mm.

**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

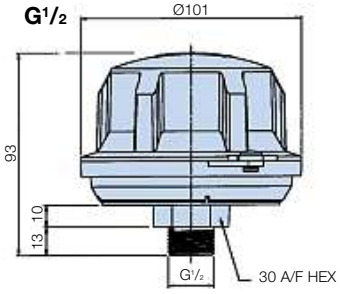


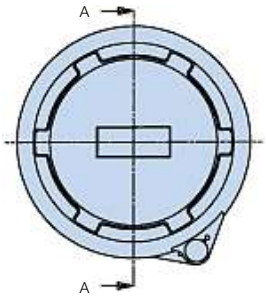

Note: For pressure drop information on the Option 1. Pressurised consult Parker Filtration.

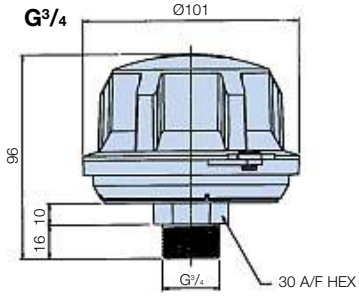
### Option 1 – G1/2 or G3/4

| Part number | Supersedes | Description 10µ nom |
|---|---|---|
| **AB98610101** | AB.98610101.UC | G1/2 Un-pressurised |
| **AB98612101** | AB.98612101.UC | G1/2 pressurised 0.2 bar |
| **AB98613101** | AB.98613101.UC | G1/2 pressurised 0.35 bar |
| **AB98617101** | AB.98617101.UC | G1/2 pressurised 0.7 bar |
| **AB98410101** | AB.98410101.UC | G3/4 Un-pressurised |
| **AB98412101** | AB.98412101.UC | G3/4 pressurised 0.2 bar |
| **AB98413101** | AB.98413101.UC | G3/4 pressurised 0.35 bar |
| **AB98417101** | AB.98417101.UC | G3/4 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.



Reservoir Equipment

# 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.

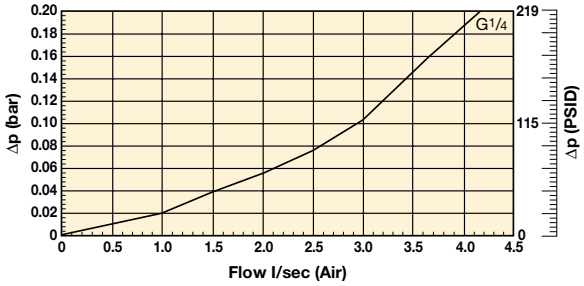
**Dipstick material:**
ABS.

**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



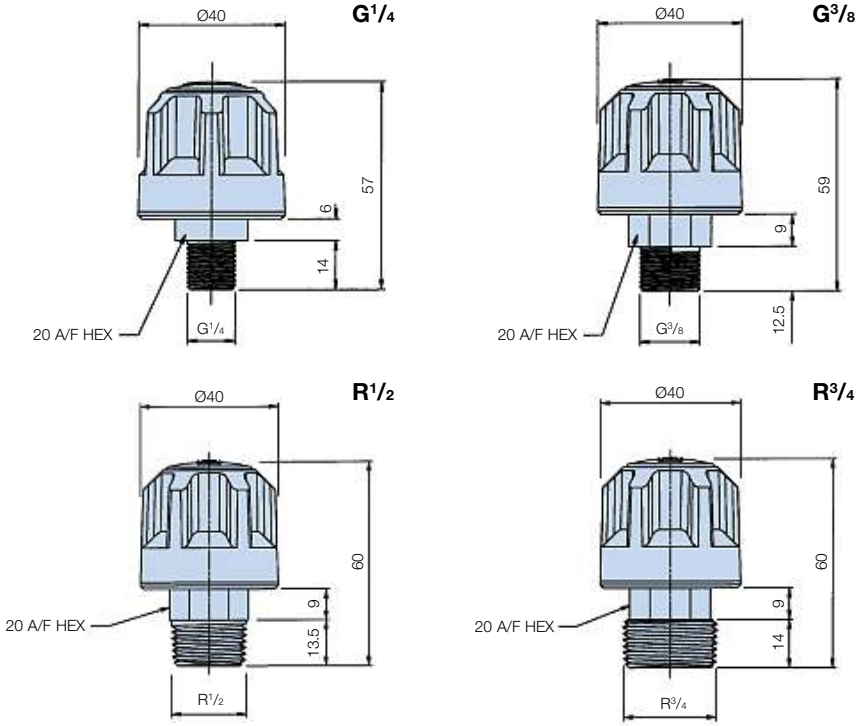

Note: For pressure drop information on G3/8, R1/2 and R3/4, consult Parker Filtration.

## 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 | G1/4 Un-pressurised |
| **AB68X101** | AB.68X101.UC | G3/8 Un-pressurised |
| **AB68Y101** | AB.68Y101.UC | R1/2 Un-pressurised |
| **AB68Z101** | AB.68Z101.UC | R3/4 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.



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## 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.

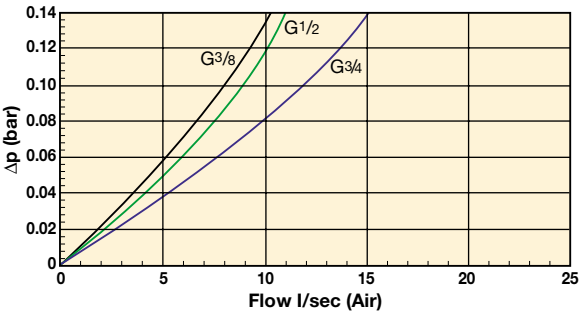
**Dipstick material:**
Mini-series in brass.

**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

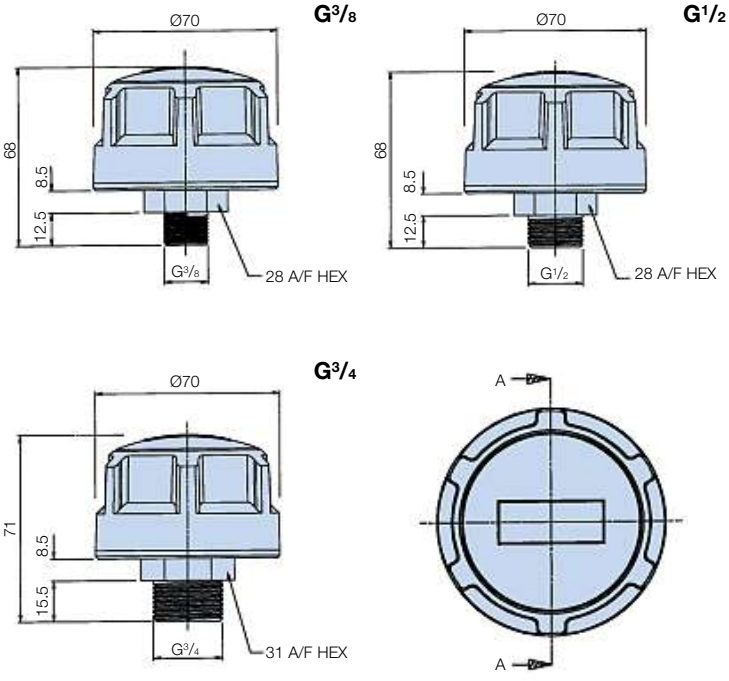


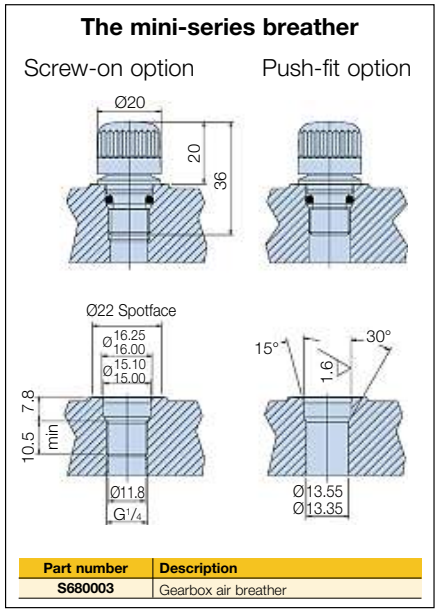

## Ordering Information

### Option 3 – G3/8, G1/2 and G3/4

| Part number | Supersedes | Description 10µ nom |
|---|---|---|
| **AB685101** | SAB.5101 | G3/4 Un-pressurised |
| **AB687101** | SAB.7101 | G3/4 Un-pressurised |
| **AB686101** | SAB.6101 | G1/2 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.




| Part number | Description |
|---|---|
| **S680003** | Gearbox air breather |



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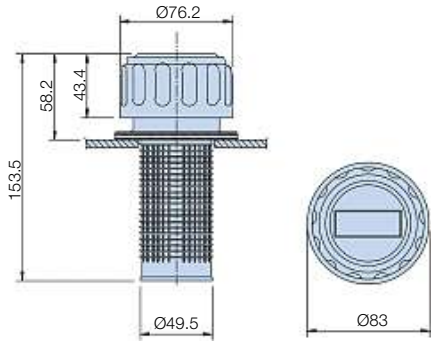
Reservoir Equipment

# 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 | G¾ | 0.20kg |
| **SAB156310** | SAB.1563.10 | N/A | N/A | 135 | N/A | 10µ nom | 0.15 | G¼ | 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 | G¾ | 0.20kg |
| **SPA17311010** | SPA.1731.10.10 | N/A | N/A | 430 | 0.70 bar | 10µ nom | 0.45 | G¾ | 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.

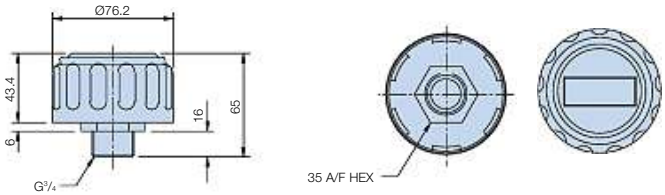
**Micron rating:**
10µ nominal

**Air flow:**
0.45m³/min.

**Weight:**
0.2 Kg.

**Thread:**
G¾.

**Valve crack-pressure:**
0.35 and
0.7 bar.




## 1562-1563 - Threaded type (Un-pressurised

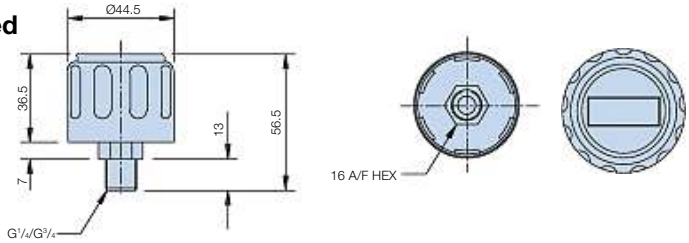
**Displacement:**
1562 = 430 l/min.
1563 = 135 l/min.

**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 = G¾.
1563 = G¼.



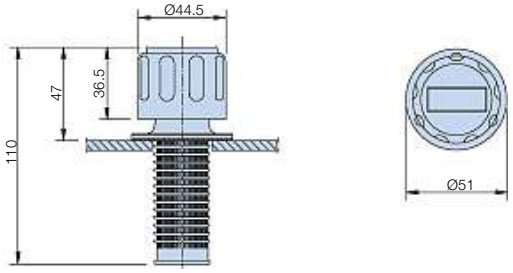

## 1380 - Filter flange type

**Displacement:**
135 l/min.

**Micron rating:**
10µ nominal

**Air flow:**
0.15m³/min.

**Weight:**
0.08 Kg.




**Tank installation notes**

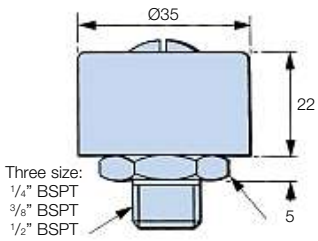
**1. Un-pressurised 6 hole fixing**
Form off tank mounting holes between Ø4.0 and Ø4.4 (dependant on the material and thickness, consult Parker Filtration) equispaced on 70.0-73.0 P.C.D. to suit
No. 10 thread forming screws supplied.

**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 ¼ BSPT thread |
| **H00279002** | H00279-002 | Small breather ⅜ BSPT thread |
| **H00279003** | H00279-003 | Small breather ½ BSPT thread |

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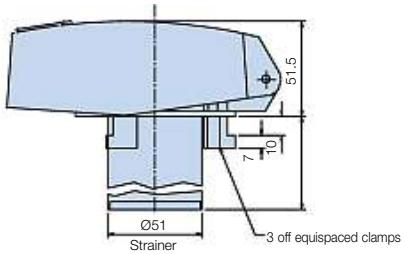
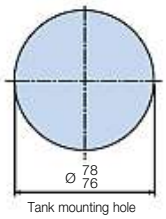
Reservoir Equipment

# Lockable Filler Breather

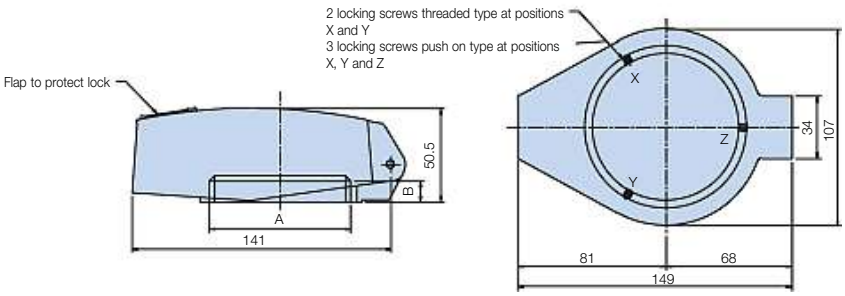
## Installation Details

### Tank Mounting



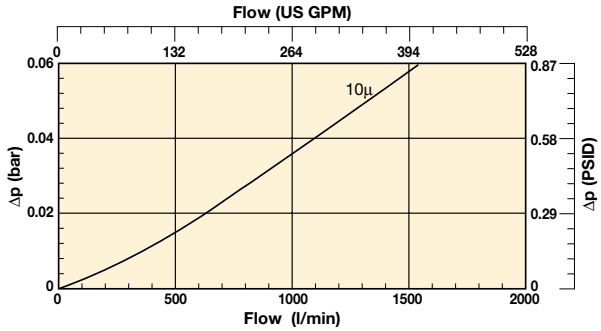




### Stand Pipe Mounting




## Lockable Filler Breather Selection

### Total assembly pressure drop flow curve – 10µ elements




## Ordering Information

| Part number | Description |
|---|---|
| **LFC622142** | Non-breathing (No element) Clamp mounting with strainer |
| **LFC622212** | 10µ nom element, G2 thread with strainer |
| **LFC622242** | 10µ nom element, clamp mounting with strainer |
| **LFC622432** | 10µ nom vented (air in) push on mounting with strainer |
| **LFC622122** | Non-breathing (No element) 2" BSP thread with strainer |
| **LFC622222** | 10µ nom element, G2½ thread with strainer |
| **LFC622411** | 10µ 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.



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Parker

Reservoir Equipment

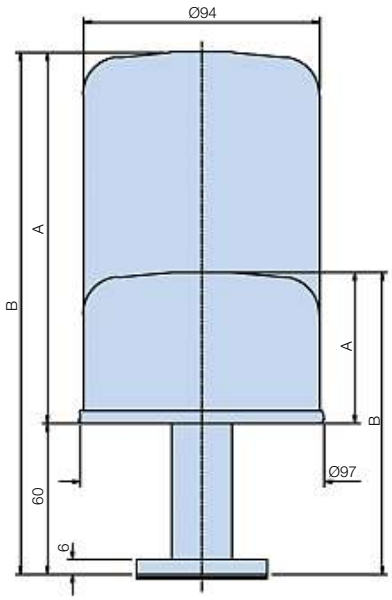
# Spin-On Air Breathers

Reservoir Equipment

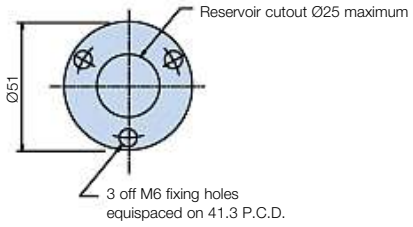
# Spin-On Air Breathers

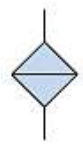
## Specification

- 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.



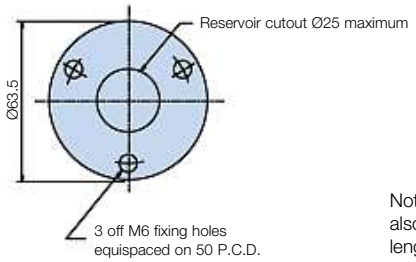

Standard spin-on air breather stem

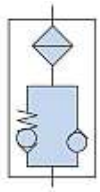


Circuit symbol
(standard)

Pressurised spin-on air breather stem



Circuit symbol
(pressurised)

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.



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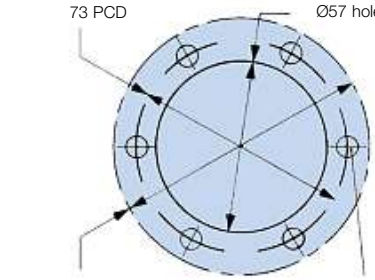
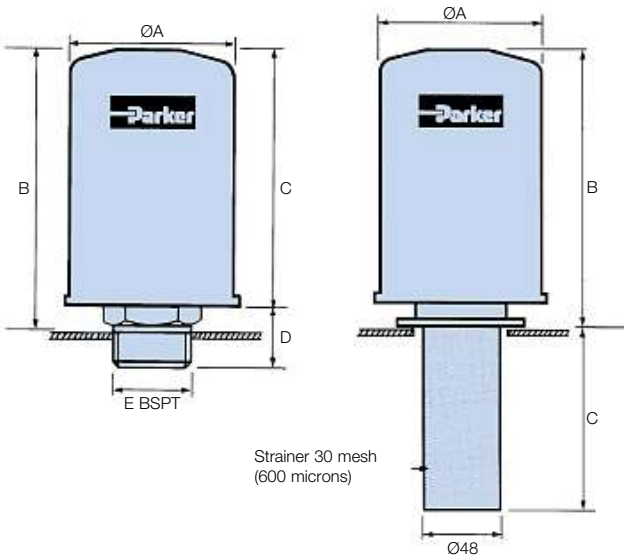
- High capacity air breathers and filler/breathers designed for the removal of airborne contamination in hydraulic systems to support environmental maintenance.
- Ideal for high flow systems and heavily contaminated environments.
- Disposable spin-on elements quickly and easily replaced.
- 3 micron absolute quality filtration elements.
- Models available – 1700 l/min and 3000 l/min.




Mounting face for standard and large breather




Large breather filter

## 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 | ¾ |
| **H00834005** | H00834-005 | 3000 | 134 | 198 | 180 | 36 | 1¼ |

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 |



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## Notes



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Reservoir Equipment

# Fluid Level Measurement

## Fluid Level Temperature Gauges

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Reservoir Equipment

# 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:**

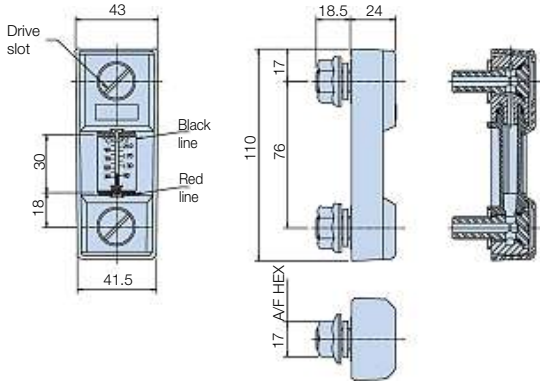
| | –Thread– | |
|---|---|---|
| Hole size | M10 | M12 |
| Preferred | 11.0 | 13.0 |
| Maximum | 13.0 | 14.0 |

**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 | Desciption | 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.



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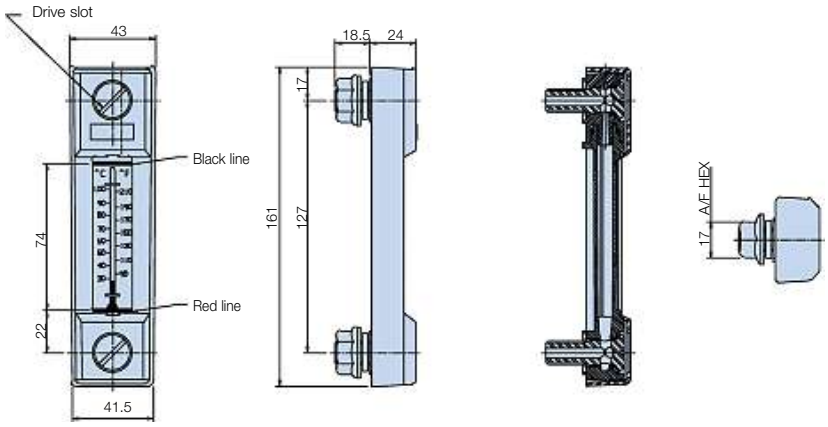
## Size 2 Installation Details



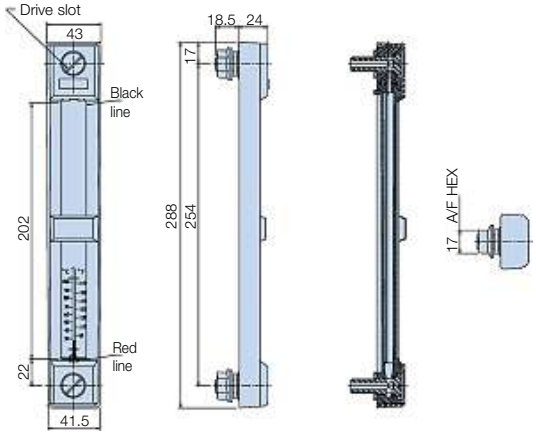

## Size 2 Ordering Information

**Standard products table**

| Part number | Supersedes | Desciption | 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 | Desciption | 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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## Notes

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Reservoir Equipment

# Reservoir Float & Level Switches

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Reservoir Equipment

# FL Series

## Adjustable Float Switch

## Features & Benefits

### 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 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.

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

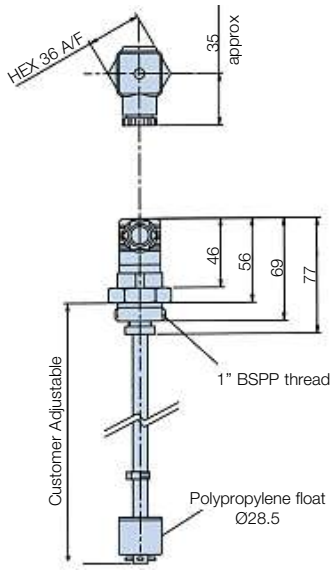
**Electrical specification**
Supply voltage: 240 Vac maximum
300 Vdc maximum
Switching current: 0.5A

**Thermostat ratings**
Normal voltage: 250V
Current rating: 4A (10A max)

**Material specification**
Header: Brass
Float: Polypropylene
Stem: Brass
Gasket: Klingersil 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 | Desciption |
|---|---|---|
| **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.

Reservoir Equipment

# CLS46

## Capacitive Level Switch

## Features & Benefits

### Features Include:

- Rugged construction
- Simple to install
- Delay circuitry prevents false alarms
- Purely electronic, no moving components
- Integrated test feature

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.

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 flurosilicone

**Construction:**

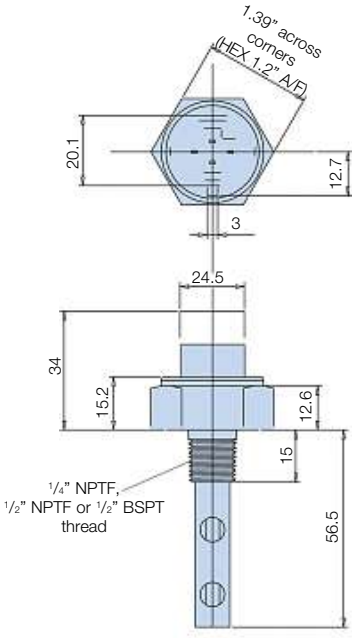
| | | | |
|---|---|---|---|
| Body: | Brass | Probe: | PTFE |
| Terminals: | SAE CA210 brass, tin plated | | |
| Seals: | Flurosilicone | | |
| Connector: | 30% glass filled nylon 6 | | |

**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 | Desciption |
|---|---|
| **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.



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Reservoir Equipment

# 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

Parker

Reservoir Equipment

# Suction Elements

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Reservoir Equipment

# Suction Elements

## Specification

**Construction:**
Stainless steel media 30% glass filled nylon head. Zintec centre tube.
Epoxy adhesives.

**Maximum working temperature:**
90ºC.

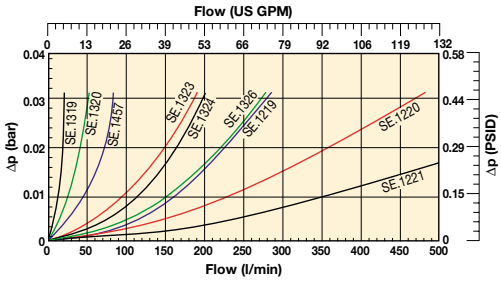
**Filtration media:**
125 micron*.

**Flow range:**
15-500 l/min.

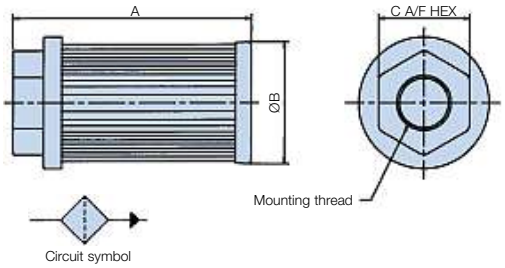
**Bypass rating:**
0.17 bar.

**Mounting threads:**
G1/2 up to G3.

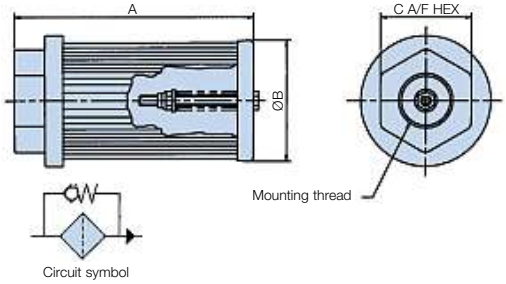
* Non-standard elements are available to order. Consult Parker Filtration.




## 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**

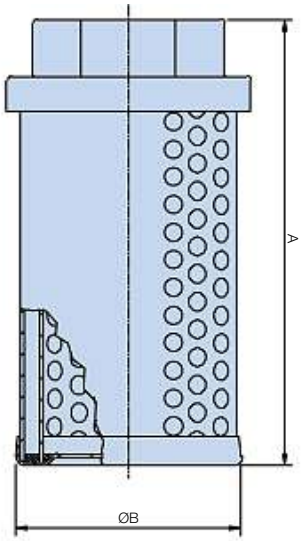
| Part number | Supersedes | Air flow l/min | Ports BSP | Micron rating | Dimensions (mm) | | | Weight kg | Bypass rating |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | A | B | C | | |
| **SE75111111** | SE.5100 | 15 | 1/2 | 125 | 105.5 | 46 | 36 | 0.11 | 0.17 bar |
| **SE75221111** | SE.5101 | 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 |

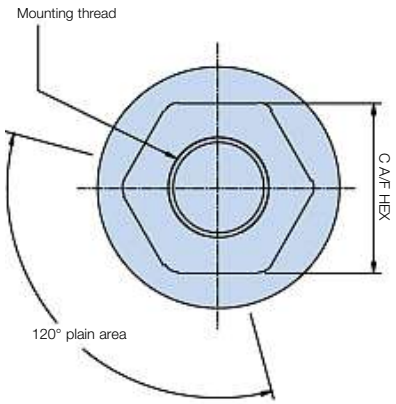
Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Reservoir Equipment

# Diffusers

## Installation Details



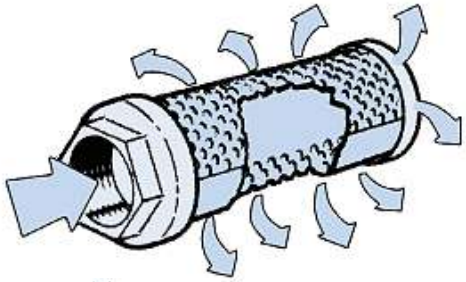



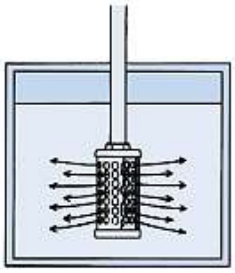

## Specification

**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 | 1 1/2 | 178 | 86 | 65 | 0.56 |
| **2210** | 50 | 3/4 | 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.



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Reservoir Equipment

# 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.

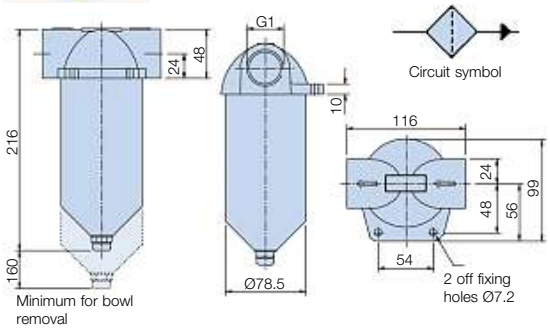
**Bowl tightening torque:**
12 Nm.

**Flow direction:**
From outside to inside.

**Weight:**
1.5 Kg.

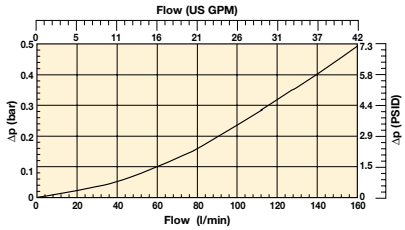
*Alternative media can be specified.

### 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.

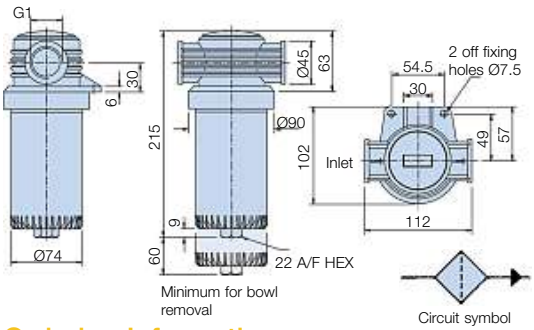
**Bowl tightening torque:**
12 Nm.

**Bowl tightening note:**
A box or ring spanner is recommended.

**Flow direction:**
From outside to inside.

**Weight:**
0.5 Kg.

### Installation Details



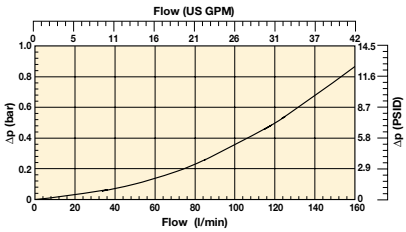

### Ordering Information

**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.

**Total assembly pressure drop flow curve**
Oil Viscosity 30 cSt  Relative density 0.856






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 30

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Reservoir Equipment

# Drive Couplings

## Technical Data

### Materials

**Coupling halves**
Sintered Steel

**Sleeve**
Nylon 66

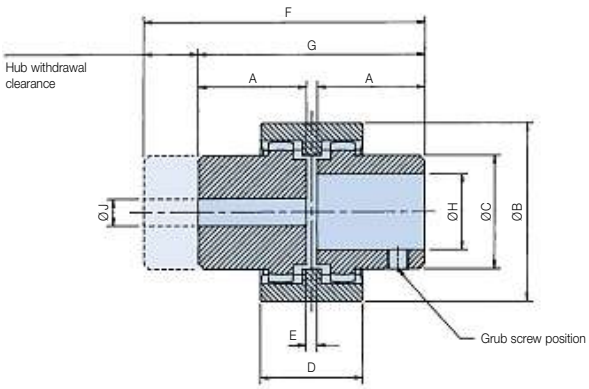
**Max temp sleeve**
83°C

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'.

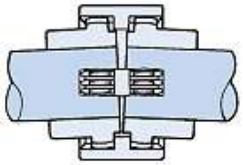
| | Factor (F) | |
|---|---|---|
| Application | Electric motor | Petrol/diesel engine |
| Uniform load | 1.00 | 1.20 |
| Medium shock | 1.25 | 1.50 |
| Heavy shock | 1.75 | 2.00 |

$$\text{*Rating of coupling} = \frac{\text{HP of application x 100 x F}}{\text{rev/min of application}}$$

## 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<br>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**
1. Maximum angular misalignment is ±2°. Maximum radial misalignment is ±0.4mm.
2. 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.
3. When in position, the hubs should have a gap of 4mm as denoted by 'E' dimension.
4. 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.

1. 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 1/2" bore with 0.125" wide keyway.
Both hubs supplied with locating grub screw.

2. 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.

3. Complete assembly – **DCR55PBB12K**
   Made up of a **DCR55PB**
   **DC55B12K**
   **DC55S** (Sleeve)

Complete model **DC55** drive coupling: One gear hub pilot bored 5/8", the other hub pilot bored 1 1/2". Latter only supplied with grub screw.

Reservoir Equipment

# 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 | |
| **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 | Range from 0.259Kg to 0.411Kg |
| **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 | 7/16 | 0.125 ins | 0.50 ins | |
| DC28B04K | DC.28.B04K | 1/2 | 0.125 ins | 0.57 ins | |
| DC28B05K | DC.28.B05K | 5/8 | 0.188 ins | 0.72 ins | |
| DC28B06K | DC.28.B06K | 3/4 | 0.188 ins | 0.84 ins | |
| DC28B07K | DC.28.B07K | 7/8 | 0.250 ins | 0.99 ins | |
| DC28B08K | DC.28.B08K | 1 | 0.250 ins | 1.12 ins | |
| DC28B09K | DC.28.B09K | 1 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 | |
| **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 | Range from 0.436Kg to 0.753Kg |
| **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 | 5/8 | 0.188 ins | 0.72 ins | |
| DC42B06K | DC.42.B06K | 3/4 | 0.188 ins | 0.84 ins | |
| DC42B07K | DC.42.B07K | 7/8 | 0.250 ins | 0.99 ins | |
| DC42B08K | DC.42.B08K | 1 | 0.250 ins | 1.12 ins | |
| DC42B09K | DC.42.B09K | 1 1/8 | 0.313 ins | 1.24 ins | |
| DC42B10K | DC.42.B10K | 1 1/4 | 0.313 ins | 1.37 ins | |
| DC42B11K | DC.42.B11K | 1 3/8 | 0.375 ins | 1.49 ins | |
| DC42B12K | DC.42.B12K | 1 1/2 | 0.375 ins | 1.61 ins | |
| DC42B13K | DC.42.B13K | 1 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 | |
| **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 | Range from 1.248 Kg – 2.046 Kg |
| DC55M55 | DC.55.M55 | 55.0mm | 16.0mm | 59.5mm | |
| DC55B09K | DC.55.B09K | 1 1/8 | 0.313 ins | 1.24 ins | |
| DC55B10K | DC.55.B10K | 1 1/4 | 0.313 ins | 1.37 ins | |
| DC55B11K | DC.55.B11K | 1 3/8 | 0.375 ins | 1.49 ins | |
| DC55B12K | DC.55.B12K | 1 1/2 | 0.375 ins | 1.61 ins | |
| DC55B13K | DC.55.B13K | 1 5/8 | 0.439 ins | 1.76 ins | |
| DC55B14K | DC.55.B14K | 1 3/4 | 0.439 ins | 1.89 ins | |
| DC55B15K | DC.55.B15K | 1 7/8 | 0.501 ins | 2.01 ins | |
| DC55B16K | DC.55.B16K | 2 | 0.501 ins | 2.13 ins | |
| DC55B17K | DC.55.B17K | 2 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.



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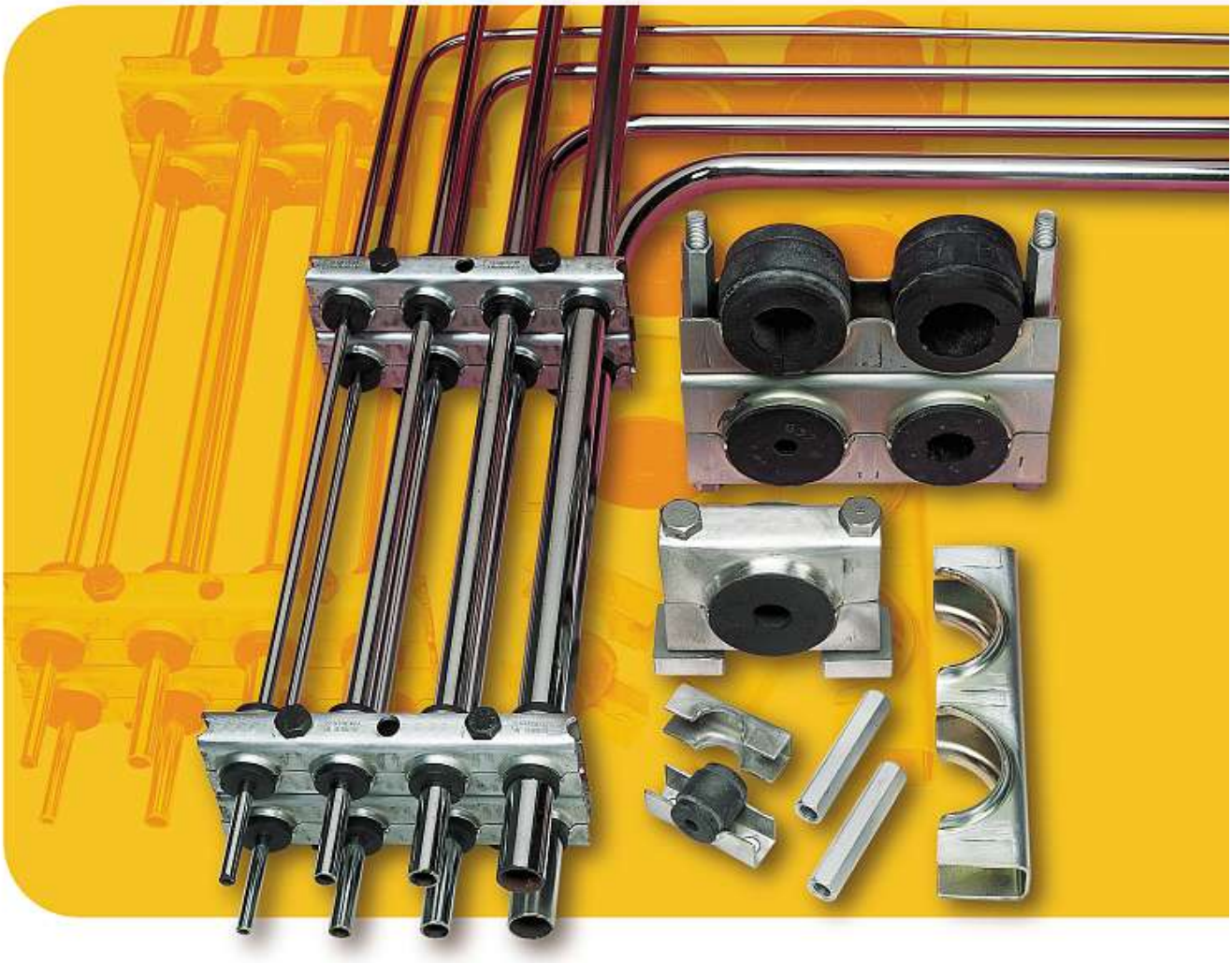
Parker

Pipe Clamp System

# Multiclamp





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Pipe Clamp System

# Multiclamp

**When only the best Clamping System will do ....specify 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.

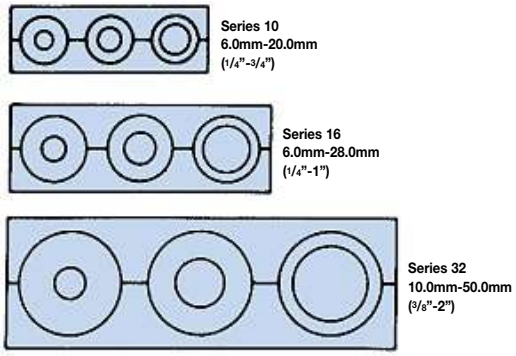
Should a last minute change in pipe diameter occur during installation, an alternative rubber bush is likely to be all that is required. Not a complete and expensive re-think of the installation.

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.




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.

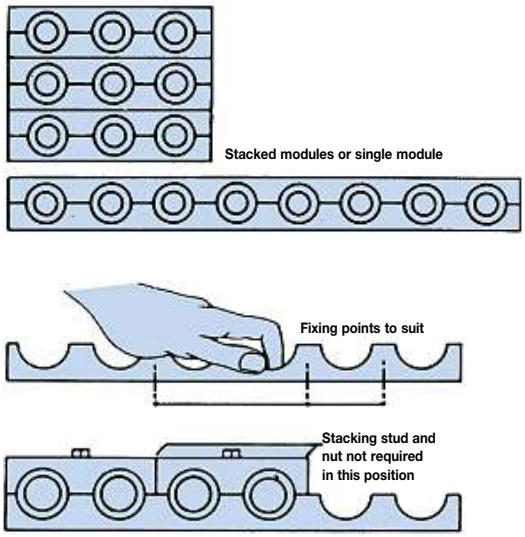
Group pipe sizes together to obtain the most economical use of three basic Multiclamp Series.

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%.

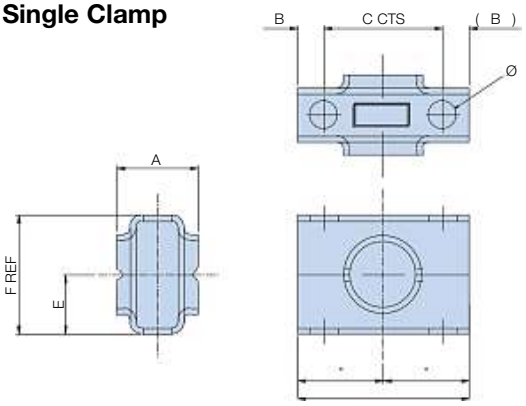
If a factory installation is being built in phases, it would be wise to leave the first phase with a lower clamping unit and Stacking Nuts in position ready to receive pipe runs for the next building phase.



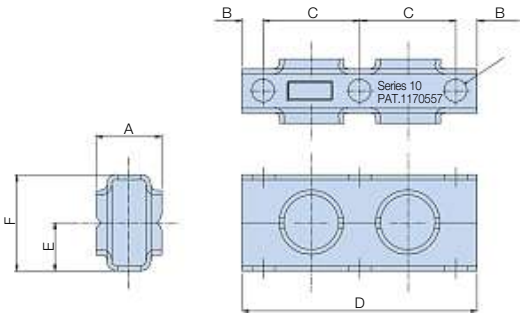
## Specification

Dimension details supplied in product configurator

### Single Clamp

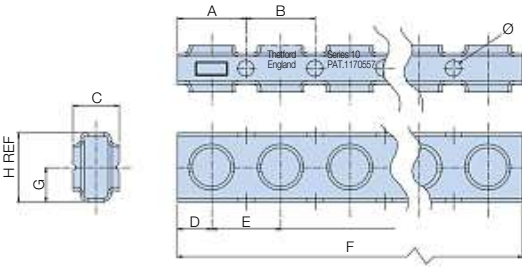



### Double Clamp



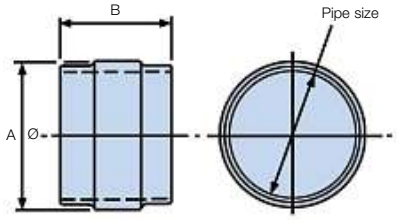

### Multiclamp – 12 or 16 holes

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



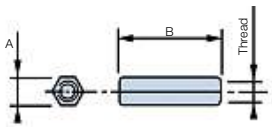

## Material Specifications

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.

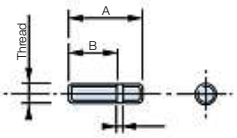
Series 10 will accept pipe or hose diameters from 6mm up to 20mm maximum. Series 16 from 6mm up to 28mm and Series 32 from 10mm up to 50mm. Across the 3 Series, there are 26 different high-quality split rubber bushes to select from to cope with any combination and number of different pipe and hose diameters in the same run.

### Stacking Nuts



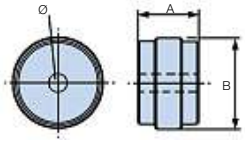

Stacking nuts are ordered in sets only.
i.e. 1 set of stacking nuts
= 50 stacking nuts of one size.

### Stacking Studs



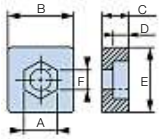

Stacking studs are ordered in sets only. i.e. 1 set of stacking studs
= 50 stacking studs of one size.

### 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.

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Pipe Clamp System

# 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 |

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.

## How to 'build' Multiclamp

Reservoir Equipment

# Inline Check Valves

## Specification

**Construction:**
Steel UNI 5105.

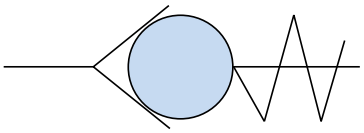
**Ball and spring:**
Chrome finished steel.

**Retainer:**
Nylon.

**Flow rates:**
From 20 l/min to 150 l/min.

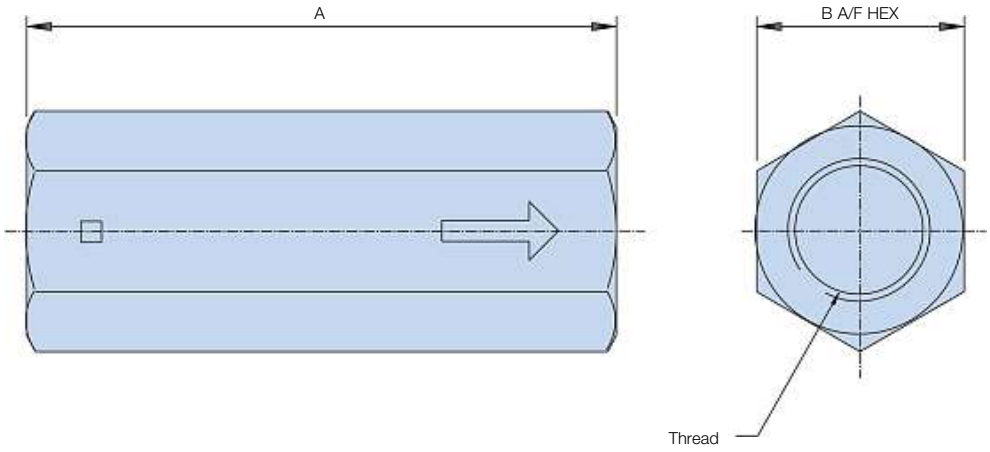
**Max. working pressure:**
350 bar.

**Valve crack pressures:**
0.35 and 4.5 bar.



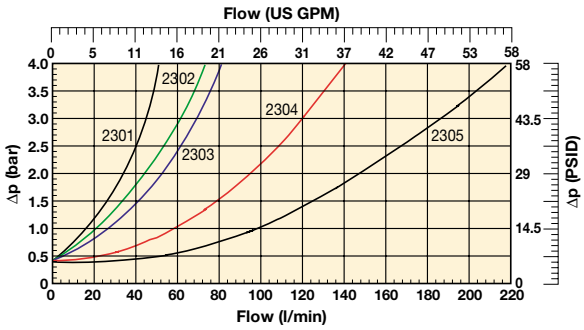
Circuit symbol

## 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 |



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Reservoir Equipment

# Single Station Gauge Isolator Valves

## Specification

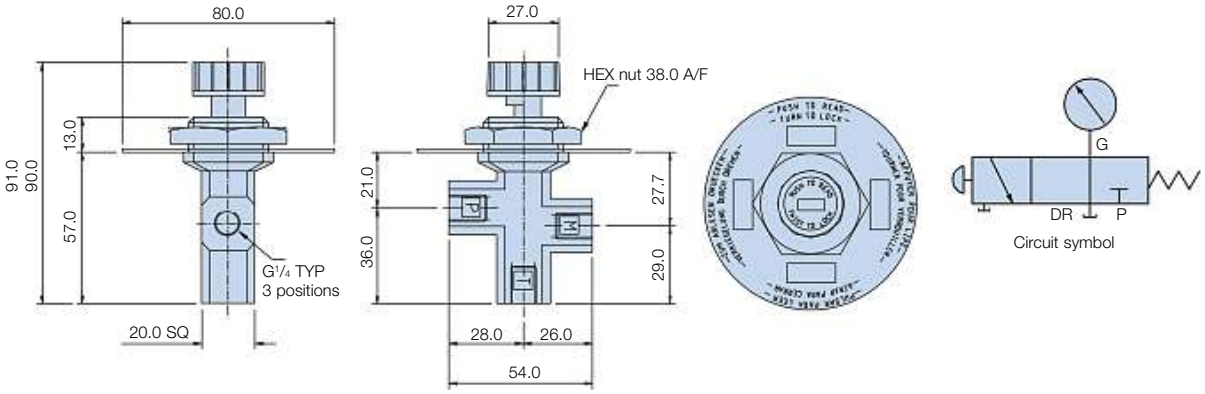
**Construction:**
*Single Station:* Cast iron and steel. Knurled aluminium knob with 'Twist to lock' or 'push to read' type.

**Max. working pressure:**
350 bar.

**Port size:**
*Single Station:* G1/4.

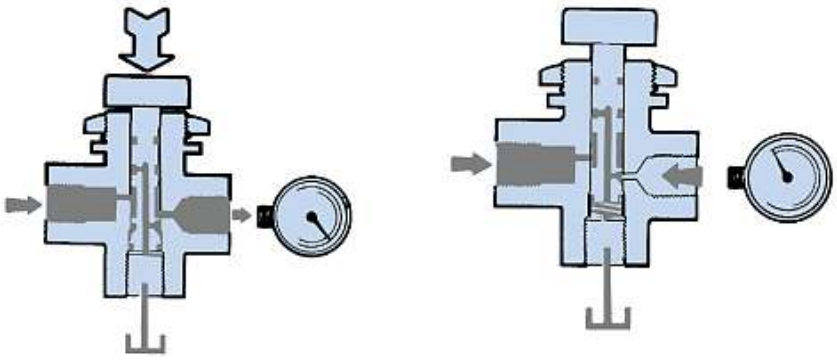
**Weight:**
*Single Station:* 0.90 Kg.

## 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 |



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Reservoir Equipment

# 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.

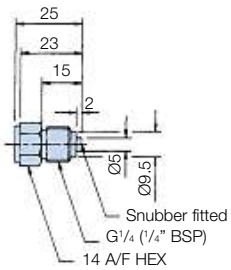
**Process temperature:**
+ 60°C maximum.

**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

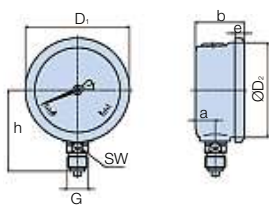


Symbol

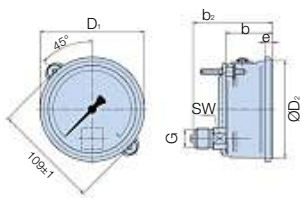
Note: It is recommended that all glycerine gauges should be mounted in the vertical position with gauge case relief valve uppermost. Pressure range up to 1000 bar available.

## Installation Details

### Bottom Connection




### Panel Mounting (Lower Back)




**Dimensions (mm) — Bottom Connection**

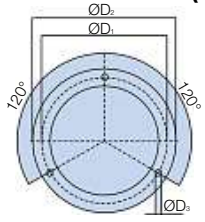
| a | b ±0.5 | D1 | D2 | e | G | h ±1 | SW | Weight Kg |
|---|---|---|---|---|---|---|---|---|
| 13 | 32 | 68 | 62 | 6.5 | G¼ | 54 | 14 | 0.21 |

**Dimensions (mm) — Panel Mounting (Lower Back)**

| b ±0.5 | b2 ±1 | D1 | D2 | e | G | SW | Weight Kg |
|---|---|---|---|---|---|---|---|
| 32 | 56 | 68 | 62 | 6.5 | G¼ | 14 | 0.21 |

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 |

## Ordering Information

### Bottom Connection

| Part number | Supersedes | Pressure range | Connector type |
|---|---|---|---|
| **PGB0631010** | PGB.0631.010 | 0-10 bar | G¼ Bottom |
| **PGB0631016** | PGB.0631.016 | 0-16 bar | G¼ Bottom |
| **PGB0631025** | PGB.0631.025 | 0-25 bar | G¼ Bottom |
| **PGB0631040** | PGB.0631.040 | 0-40 bar | G¼ Bottom |
| **PGB0631060** | PGB.0631.060 | 0-60 bar | G¼ Bottom |
| **PGB0631100** | PGB.0631.100 | 0-100 bar | G¼ Bottom |
| **PGB0631160** | PGB.0631.160 | 0-160 bar | G¼ Bottom |
| **PGB0631250** | PGB.0631.250 | 0-250 bar | G¼ Bottom |
| **PGB0631400** | PGB.0631.400 | 0-400 bar | G¼ Bottom |
| **PGB0631600** | PGB.0631.600 | 0-600 bar | G¼ Bottom |
| **PGB0631004** | PGB.0631.004 | 0-4 bar | G¼ Bottom |

### Panel Mounting

| Part number | Supersedes | Pressure range | Connector type |
|---|---|---|---|
| **PGC0631010** | PGC.0631.010 | 0-10 bar | G¼ Panel |
| **PGC0631016** | PGC.0631.016 | 0-16 bar | G¼ Panel |
| **PGC0631025** | PGC.0631.025 | 0-25 bar | G¼ Panel |
| **PGC0631040** | PGC.0631.040 | 0-40 bar | G¼ Panel |
| **PGC0631060** | PGC.0631.060 | 0-60 bar | G¼ Panel |
| **PGC0631100** | PGC.0631.100 | 0-100 bar | G¼ Panel |
| **PGC0631160** | PGC.0631.160 | 0-160 bar | G¼ Panel |
| **PGC0631250** | PGC.0631.250 | 0-250 bar | G¼ Panel |
| **PGC0631400** | PGC.0631.400 | 0-400 bar | G¼ Panel |
| **PGC0631004** | PGC.0631.004 | 0-4 bar | G¼ Panel |
| **PGC0631600** | PGC.0631.600 | 0-600 bar | G¼ Panel |

### Panel Mounted (3-hole flange)

| Part number | Supersedes | Pressure range | Connector type |
|---|---|---|---|
| **PGF0631060** | PGF.0631.060 | 0-60 bar | G¼ Panel Flange |
| **PGF0631100** | PGF.0631.100 | 0-100 bar | G¼ Panel Flange |
| **PGF0631160** | PGF.0631.160 | 0-160 bar | G¼ Panel Flange |
| **PGF0631250** | PGF.0631.250 | 0-250 bar | G¼ Panel Flange |
| **PGF0631400** | PGF.0631.400 | 0-400 bar | G¼ Panel Flange |
| PGF0631004 | PGF.0631.004 | 0-4 bar | G¼ Panel Flange |
| PGF0631010 | PGF.0631.010 | 0-10 bar | G¼ Panel Flange |
| PGF0631016 | PGF.0631.016 | 0-16 bar | G¼ Panel Flange |
| PGF0631025 | PGF.0631.025 | 0-25 bar | G¼ Panel Flange |
| PGF0631040 | PGF.0631.040 | 0-40 bar | G¼ Panel Flange |
| PGF0631600 | PGF.0631.600 | 0-600 bar | G¼ 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.

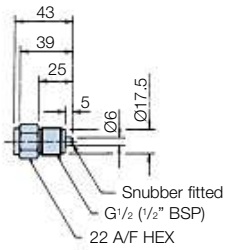
**Process temperature:**
+ 60°C maximum.

**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

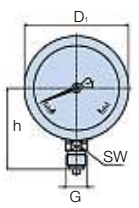


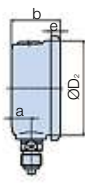
Symbol

Note: It is recommended that all glycerine gauges should be mounted in the vertical position with gauge case relief valve uppermost.

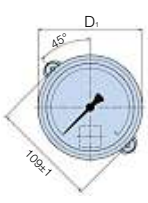
## Installation Details

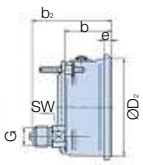
### Bottom Connection




### Panel Mounting (Lower Back)




**Dimensions (mm) Bottom Connection**

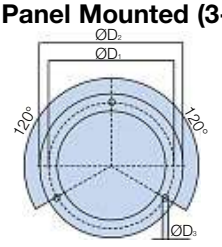
| a | b ±0.5 | $D_1$ | $D_2$ | e | G | h ±1 | SW | Weight Kg |
|---|---|---|---|---|---|---|---|---|
| 15.5 | 48 | 107 | 100 | 8 | G1/2 | 87 | 22 | 0.80 |

**Dimensions (mm) Panel Mounting (Lower Back)**

| b ±0.5 | $b_2$ ±1 | $D_1$ | $D_2$ | e | G | SW | Weight Kg |
|---|---|---|---|---|---|---|---|
| 48 | 81.5 | 107 | 100 | 8 | G1/2 | 22 | 0.80 |

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 | G1/2 Bottom |
| **PGB1001400** | PGB.1001.400 | 0-400 bar | G1/2 Bottom |
| **PGB1001010** | PGB.1001.010 | 0-10 bar | G1/2 Bottom |
| **PGB1001016** | PGB.1001.016 | 0-16 bar | G1/2 Bottom |
| **PGB1001025** | PGB.1001.025 | 0-25 bar | G1/2 Bottom |
| **PGB1001040** | PGB.1001.040 | 0-40 bar | G1/2 Bottom |
| **PGB1001060** | PGB.1001.060 | 0-60 bar | G1/2 Bottom |
| **PGB1001100** | PGB.1001.100 | 0-100 bar | G1/2 Bottom |
| **PGB1001160** | PGB.1001.160 | 0-160 bar | G1/2 Bottom |
| **PGB1001600** | PGB.1001.600 | 0-600 bar | G1/2 Bottom |
| **PGB10011000** | PGB.1001.1000 | 0-1000 bar | G1/2 Bottom |

### Panel Mounting

| Part number | Supersedes | Pressure range | Connector type |
|---|---|---|---|
| **PGE1001010** | PGE.1001.010 | 0-10 bar | G1/2 Panel |
| **PGE1001016** | PGE.1001.016 | 0-16 bar | G1/2 Panel |
| **PGE1001025** | PGE.1001.025 | 0-25 bar | G1/2 Panel |
| **PGE1001040** | PGE.1001.040 | 0-40 bar | G1/2 Panel |
| **PGE1001060** | PGE.1001.060 | 0-60 bar | G1/2 Panel |
| **PGE1001100** | PGE.1001.100 | 0-100 bar | G1/2 Panel |
| **PGE1001160** | PGE.1001.160 | 0-160 bar | G1/2 Panel |
| **PGE1001250** | PGE.1001.250 | 0-250 bar | G1/2 Panel |
| **PGE1001400** | PGE.1001.400 | 0-400 bar | G1/2 Panel |
| **PGE1001600** | PGE.1001.600 | 0-600 bar | G1/2 Panel |
| **PGE10011000** | PGE.1001.1000 | 0-1000 bar | G1/2 Panel |

### Panel Mounted (3-hole flange)

| Part number | Supersedes | Pressure range | Connector type |
|---|---|---|---|
| **PG.1001250** | PGF.1001.250 | 0-250 bar | G1/2 Panel Flange |
| **PGF1001400** | PGF.1001.400 | 0-400 bar | G1/2 Panel Flange |
| PGF1001010 | PGF.1001.010 | 0-10 bar | G1/2 Panel Flange |
| PGF1001016 | PGF.1001.016 | 0-16 bar | G1/2 Panel Flange |
| PGF1001025 | PGF.1001.025 | 0-25 bar | G1/2 Panel Flange |
| PGF1001040 | PGF.1001.040 | 0-40 bar | G1/2 Panel Flange |
| PGF1001060 | PGF.1001.060 | 0-60 bar | G1/2 Panel Flange |
| PGF1001100 | PGF.1001.100 | 0-100 bar | G1/2 Panel Flange |
| PGF1001160 | PGF.1001.160 | 0-160 bar | G1/2 Panel Flange |
| PGF1001600 | PGF.1001.600 | 0-600 bar | G1/2 Panel Flange |
| PGF10011000 | PGF.1001.1000 | 0-1000 bar | G1/2 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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## Notes

Parker

Portable Particle Counter

# LaserCM

## Fluid Condition Monitoring

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Portable Particle Counter

# LaserCM

## Features & Benefits

| | |
|---|---|
| **Test time:** | 2 minutes |
| **Particle counts:** | 2+, 5+, 15+, 25+, 50+ and 100+ microns<br>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.



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## 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).

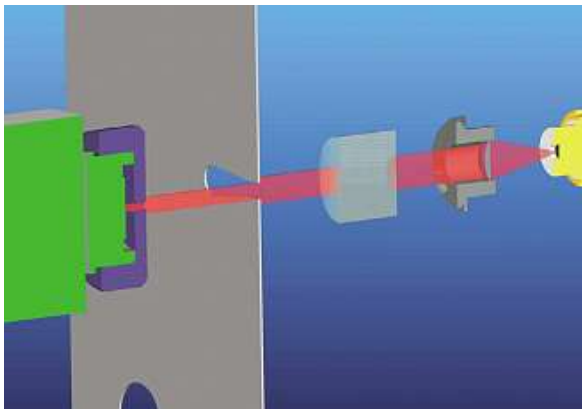
The electrical output of the photo diode cell will vary in accordance with the size of the particles contained in the column of oil; the larger the particle, the bigger the change in the photo diode electrical output.

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.



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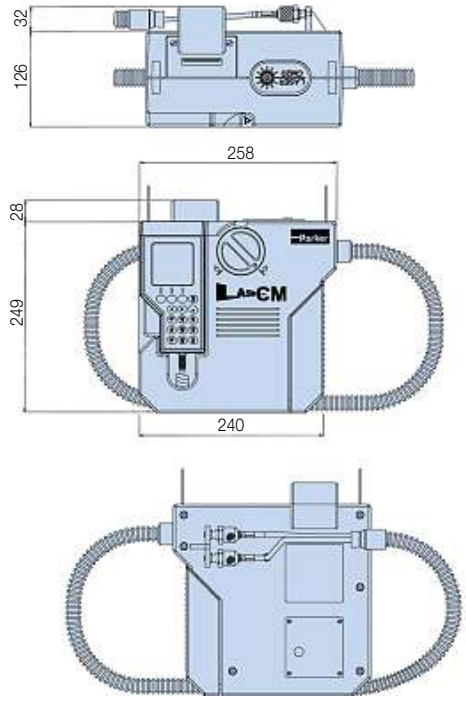
## Portable Particle Counter

# LaserCM

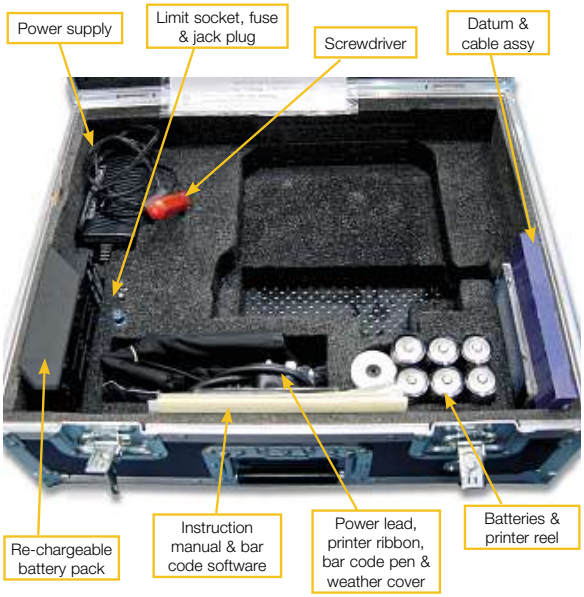
## Specification

| 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






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 33

## Operation

Switch On

Start Test

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

### 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.

Portable Particle Counter

# 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

DATμm

Datum, dedicated software, provides the link between a Laser CM20, System 20 EM20 or the $H_2O$il - 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

| | D M Y |
|---|---|
| Date | 04-03-06 |
| Time | 15-52 |
| ISO: | 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

| | D M Y |
|---|---|
| Date | 04-03-06 |
| Time | 15-52 |
| NAS CLASS: | 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.

## Notes

Offline Sampling

# Universal Bottle Sampler

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Offline Sampling

# 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.

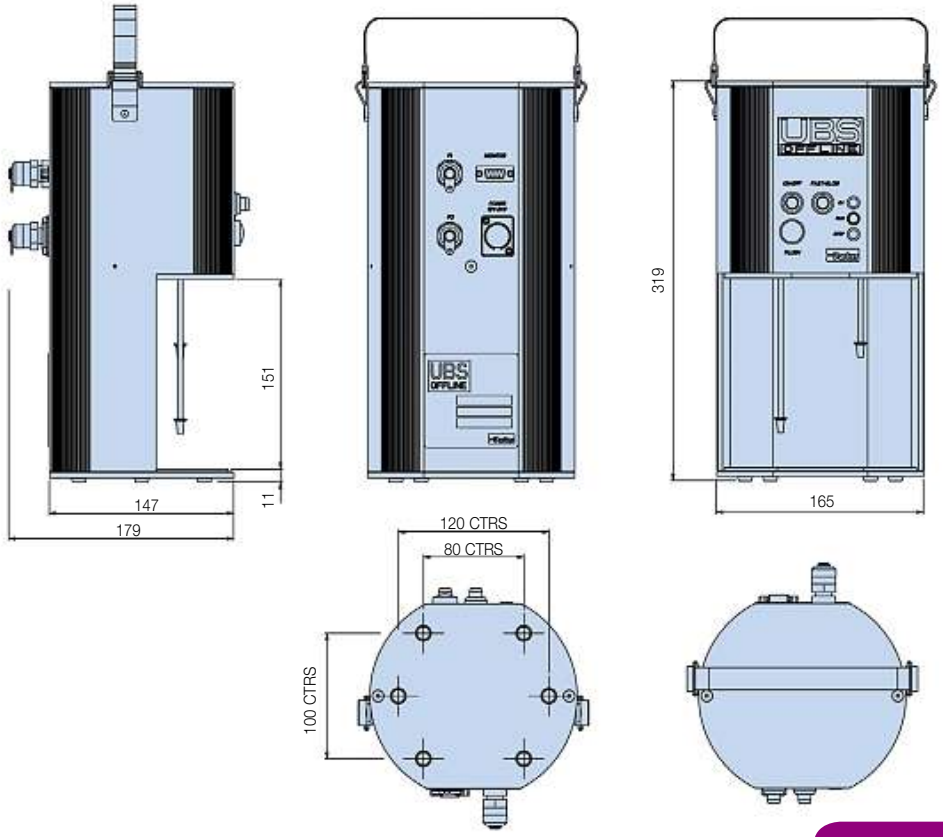
### Simple To Use UBS

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



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Offline Sampling

# Universal Bottle Sampler

## Usage Specifications

### System Flow Rate

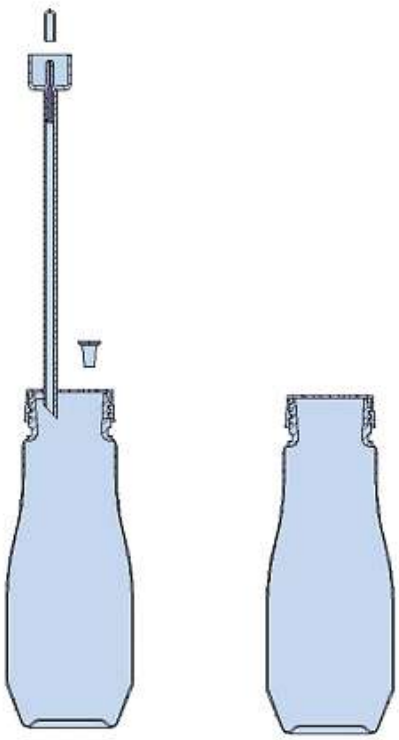
Samples are best taken from a point in the system where the flow is TURBULENT (Reynolds No. greater than 4000). The turbulent flow creates a mixing action. Where flow is streamline or LAMINAR, larger particulate may tend to settle toward the lower pipe surface and not be sampled.

### 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.

## Notes



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK.

Parker

Single Point Sampler

# SPS

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Single Point Sampler

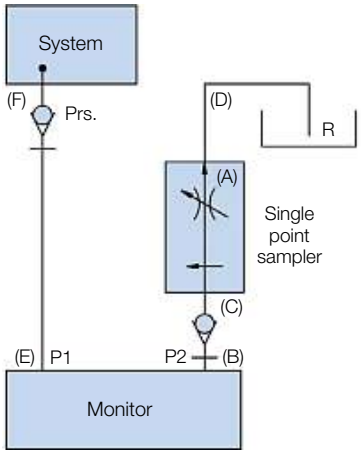
# SPS

## Features & Benefits

The Single Point Sampler provides a means to connect a CM20 or $H_2$Oil 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 $H_2$Oil 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 $H_2$Oil)

## 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).

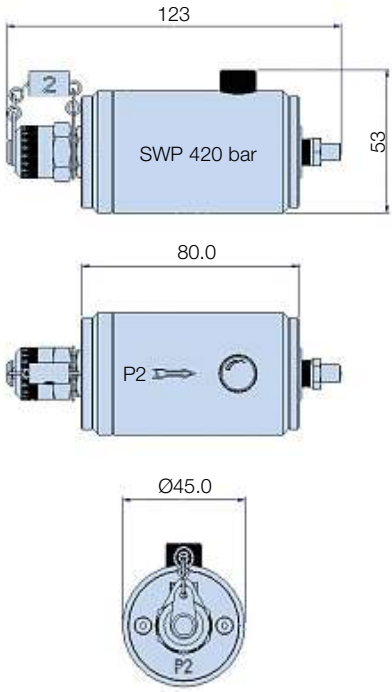
**Unit size:**
45mm dia x 123mm long.

**System connection:**
Standard - minimess 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.



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## Notes

Parker

Inline Sensors & Monitors

# System 20

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Inline Sensors & Monitors

# 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 $H_2$Oil. 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.



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## 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 – G3/8
Size 1 – G3/4
Size 2 – G1 1/4
} (SAE threads also available)

**Repeatability:**
±1% FSD

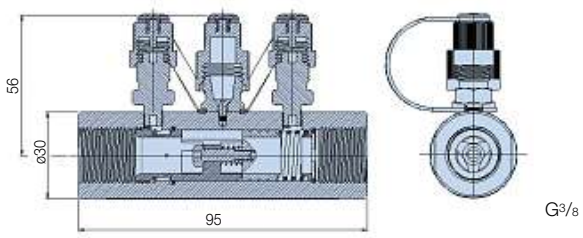
**Accuracy:**
Flow ±2.5% full scale deflection

**Weight:**
Size 0 – 0.5kg (1.2lbs)
Size 1 – 3.5kg (8.4lbs)
Size 2 – 4.4kg (9lbs)

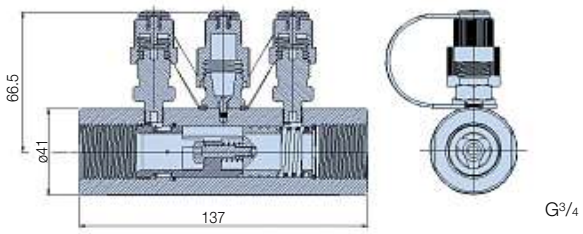
**Aggressive Fluid Applications:**
EPDM internal/external 'O'-rings and seals

## Installation Details

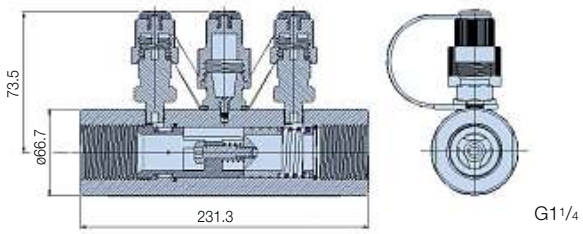
**Size 0 Sensor**




**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 | 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 |

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



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Inline Sensors & Monitors

# 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.



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## Electronic Monitor Specification

**Construction:**
A sealed assembly requiring no routine maintenance or adjustment. Body moulding in Acrylonitrile Butadene 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 ±1% FSD.

**Temperature section:**
Temperature reading between -10°C and +110°C (0°F to 230°F).

**Dimensions:**
The ABS Case is 291mm (11.46") long, 105mm (4.13") wide and 76mm (3") deep overall.

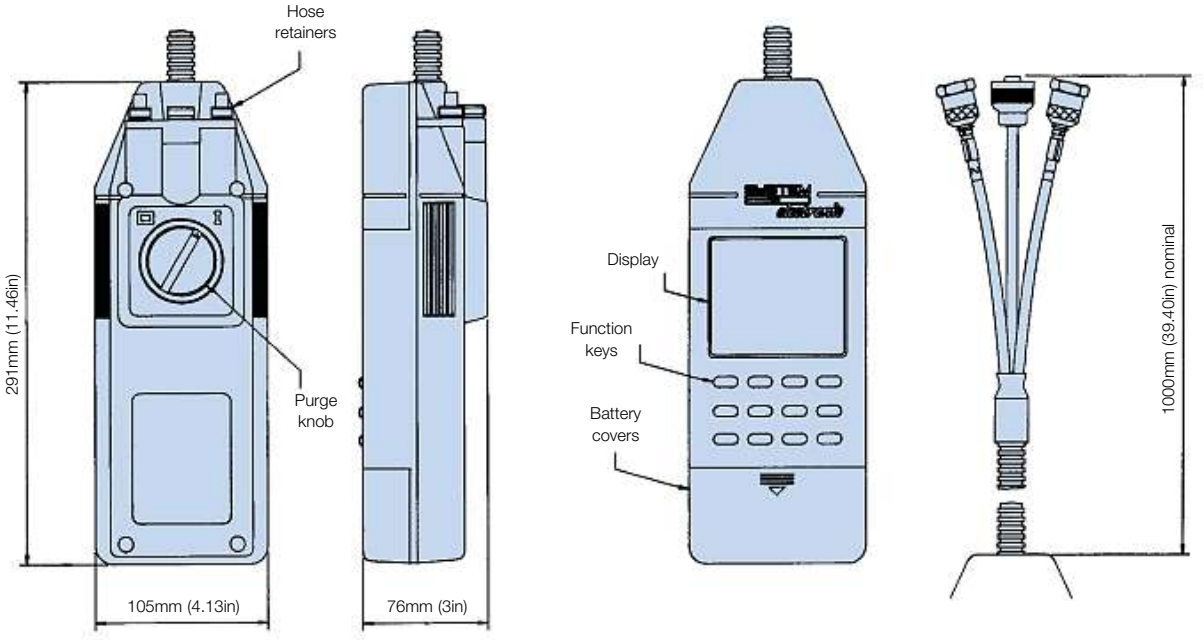
**Weight:**
1.4kg (3lbs).

**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.

Inline Sensors & Monitors

# 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.

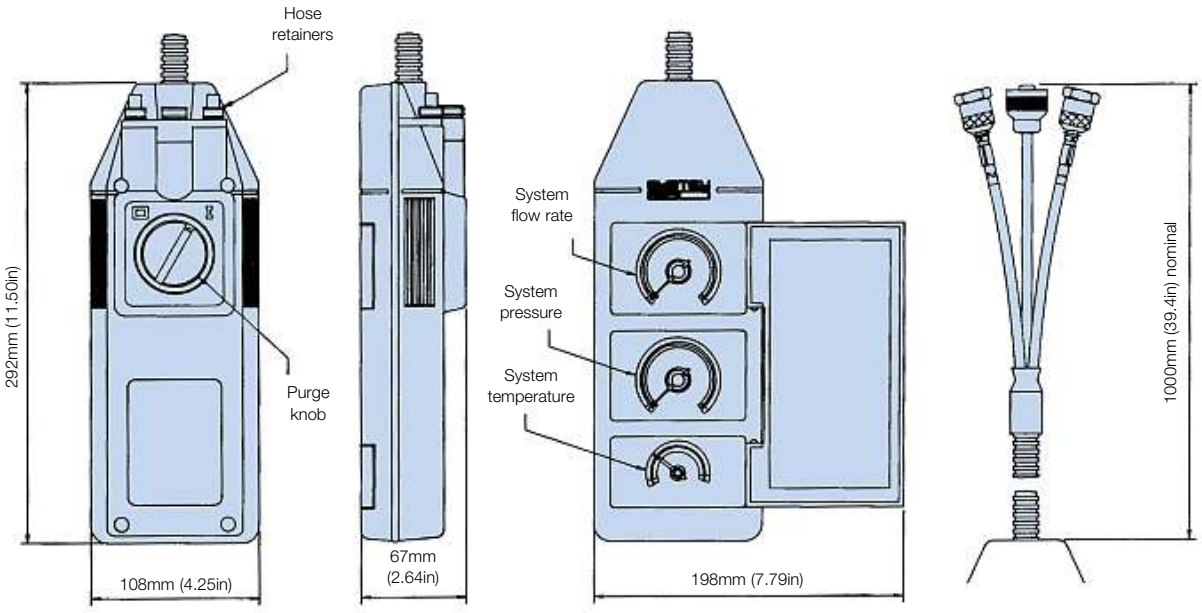
When the system is in reverse flow or when the high pressure lines to the sensor have been transposed, a 'below zero' indication is given.

**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 |



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Parker

Autoremote Particle Counter

# MCM20

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Autoremote Particle Counter

# 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

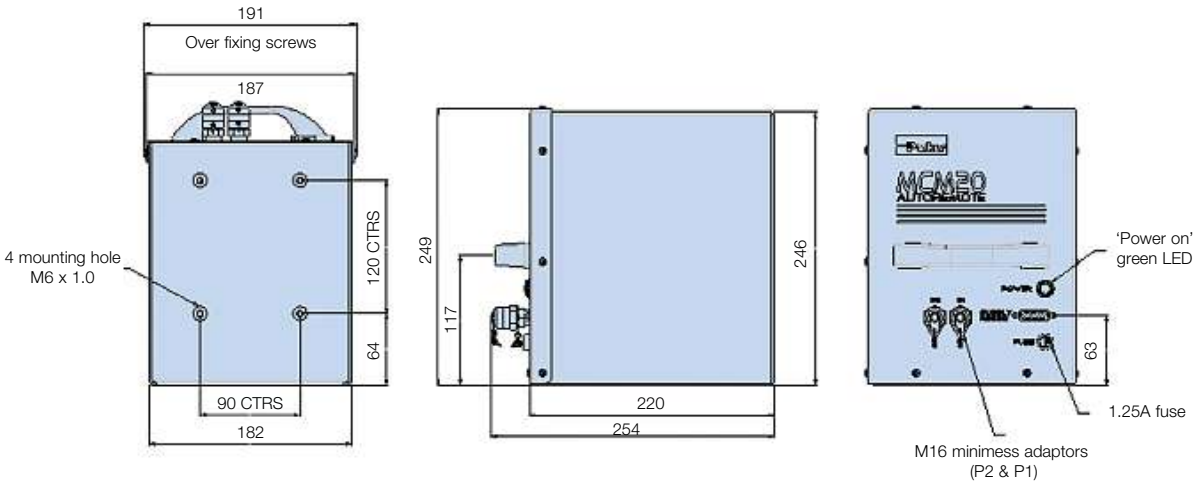
**Computer compatibility:**
Interface via RS 232 connection @ 9600 baud rate.

**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).

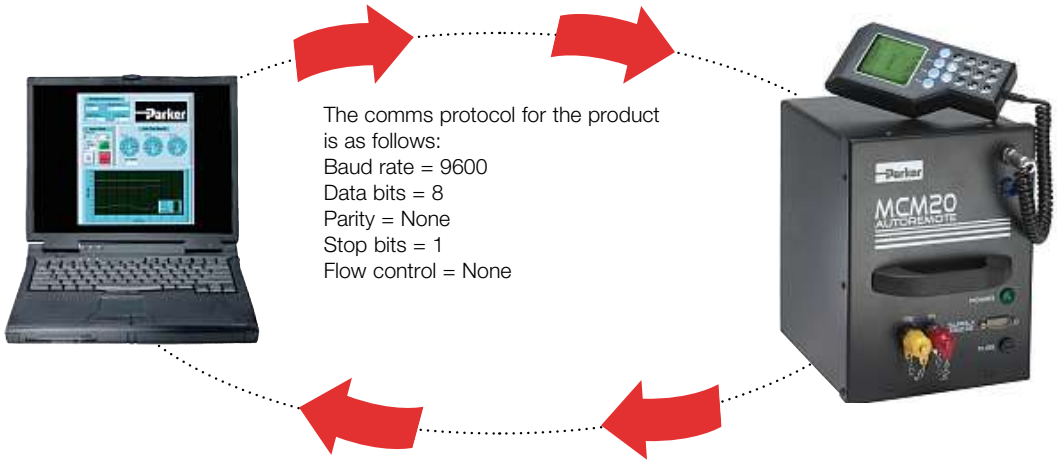
**Software:**
LabView demonstration software.



Autoremote Particle Counter

# MCM20

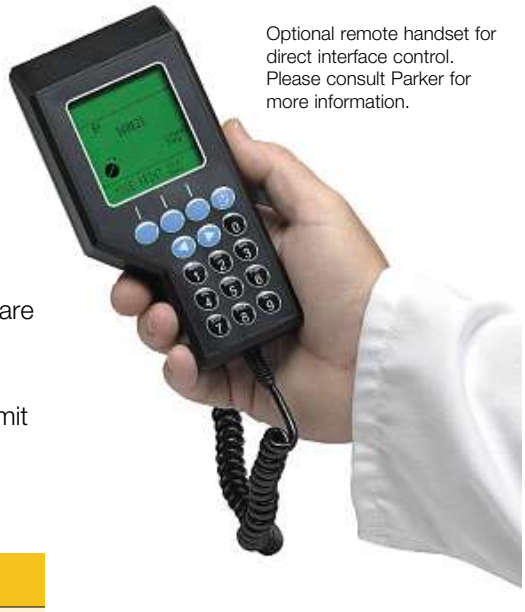
## Communications Protocol




## Labview

- Customised demonstration/software for MCM operation.
- Full graphic display.
- Visual indication of limit parameters.

## Optional Remote Handset



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

# icountPD

*Brochure: FDCB321UK*
*October 2007*

Fluid condition monitoring

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Online Particle Detector

# IcountPD

## 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).

## IcountPD

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.

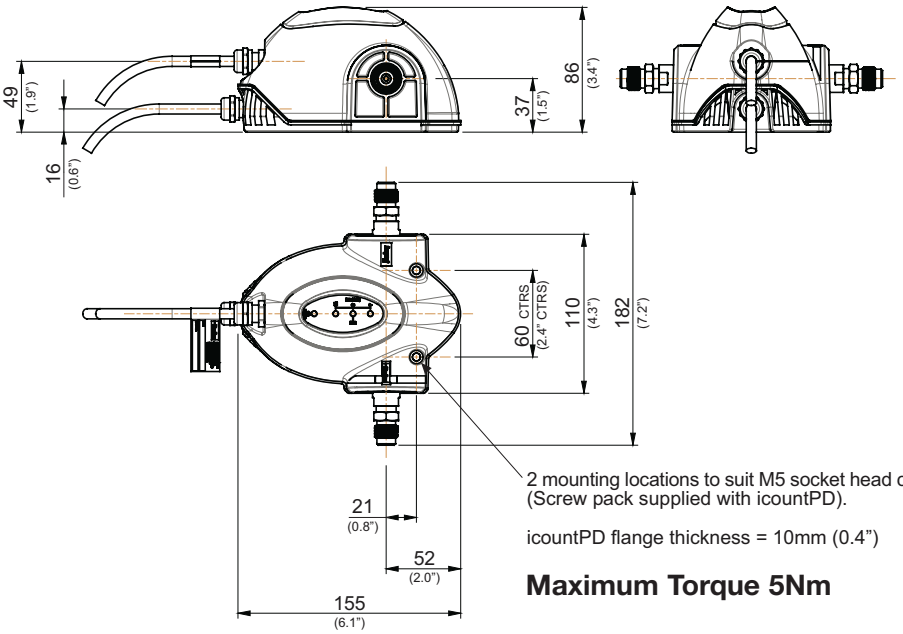
Fluid condition monitoring

Online Particle Detector

# icountPD

## Dimensions / Installation Details

mm
(inches)




2 mounting locations to suit M5 socket head cap screw.
(Screw pack supplied with icountPD).

icountPD flange thickness = 10mm (0.4")

**Maximum Torque 5Nm**

## Typical Applications

- **Mobile Equipment**
  - o Earth Moving Machinery
  - o Harvesting
  - o Forestry
  - o Agriculture

Monitoring of the hydraulics, enabling the vehicles to function to there 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.

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## 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 4µm(c)* | Channel A, ISO 4µm(c)* |
| 4 | Channel B, ISO 6µm (c)* or NAS (if selected) | Channel B, ISO 6µm (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 14µm (c)* | Channel C, ISO 14µm (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.

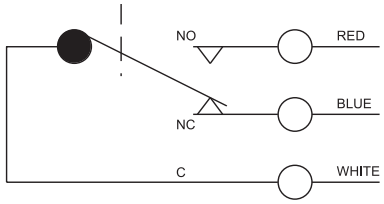
*** Optional – refer to ordering information section.

**(Limit Relay Wiring Instructions)**

NORMALLY OPEN

NORMALLY CLOSED

COMMON



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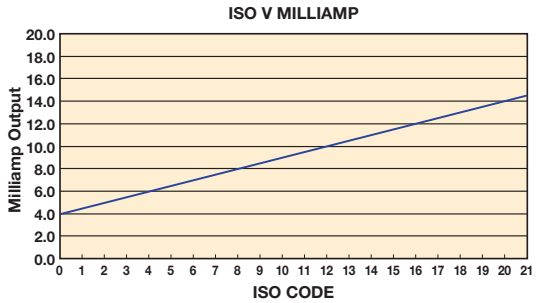
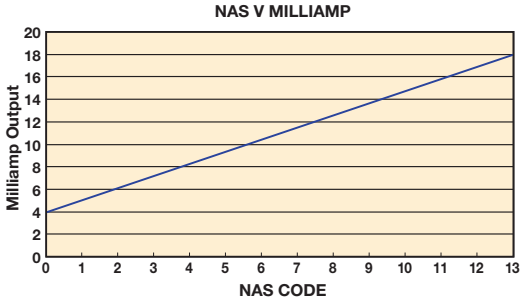
Online Particle Detector

# lcountPD

## 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 |
|---|---|
| 4.0 | 0 |
| 4.5 | 1 |
| 5.0 | 2 |
| 5.5 | 3 |
| 6.0 | 4 |
| 6.5 | 5 |
| 7.0 | 6 |
| 7.5 | 7 |
| 8.0 | 8 |
| 8.5 | 9 |
| 9.0 | 10 |
| 9.5 | 11 |
| 10.0 | 12 |
| 10.5 | 13 |
| 11.0 | 14 |
| 11.5 | 15 |
| 12.0 | 16 |
| 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 |

| mA | NAS |
|---|---|
| 4 | 00 |
| 5 | 0 |
| 6 | 1 |
| 7 | 2 |
| 8 | 3 |
| 9 | 4 |
| 10 | 5 |
| 11 | 6 |
| 12 | 7 |
| 13 | 8 |
| 14 | 9 |
| 15 | 10 |
| 16 | 11 |
| 17 | 12 |
| 18 | ** |
| 19 | ** |
| 20 | 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 ouptut 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 |

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## Digital display parameters (ISO 4406/NAS 1638)

### Start up

1. Once the IcountPD has been connected to a regulated power supply, the product logo is displayed for approximately five seconds as the IcountPD performs a self system diagnostic check.
2. The IcountPD 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 IcountPD will simply display the actual error code only – i.e. ERROR 13 (A full list of error codes are detailed in the IcountPD User Manual).

### Moisture sensor output settings

The Moisture Sensor is an option that can be included when specifying the IcountPD.

The Moisture Sensor reports on the saturation levels of the fluid passing through the IcountPD 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 IcountPD 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 |

Online Particle Detector

# IcountPD

## Auxiliary Flow Device

The pressure compensated, Flow control device (Part Number S840074) has been developed to give the IcountPD user greater flexibility. The Flow control device will enable testing where flow ranges are outside the IcountPD specifications (40 – 140 ml/min), or where pipe diameters do not allow the IcountPD to be installed.

The Flow control device fits onto the downstream (outlet) side of the IcountPD, 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 IcountPD 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)

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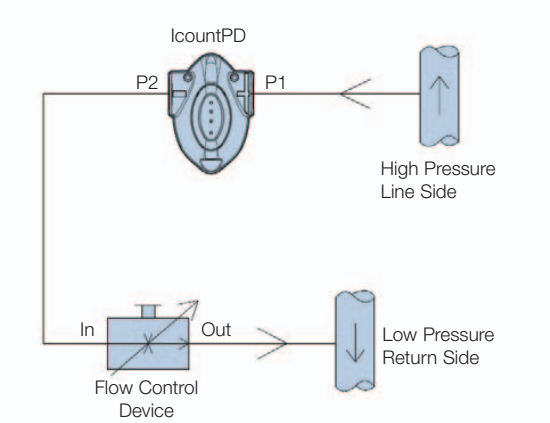
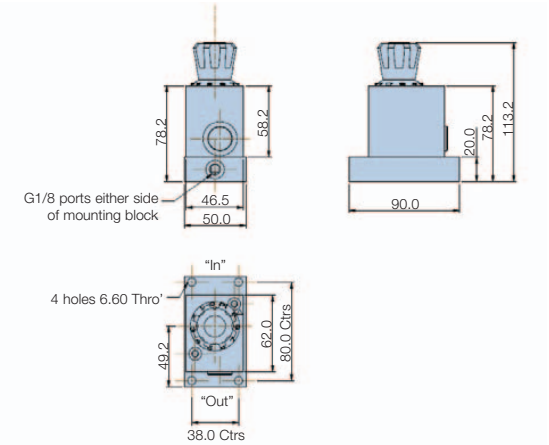
## Hydraulic Connection Diagram




## Dimensions




| | |
|---|---|
| **Actuator** | Manual flow rate adjustable via control knob |
| **Mounting Type** | 4 off mounting holes to suit M6 screws (not supplied) |
| **Mounting position** | Any |
| **Weight** | 1.7kg (3.7lb) |
| **Fluid Temperature** | 5°C to +80°C (+41°F to 176°F) |
| **Ambient storage temperature** | -20°C to +40°C (-4°F to +104°F) |
| **Viscosity range** | 20cSt to 500cSt (If lower than 20cSt contact Parker) |
| **Differential pressure range** | 5 to 315 bar |
| **Maximum pressure** | 315 bar |
| **Flow direction** | 'IN' to 'OUT' flow control function |
| **Port thread detail** | 1/8" BSPP (test points not supplied) |
| **Internal Seals** | Viton |

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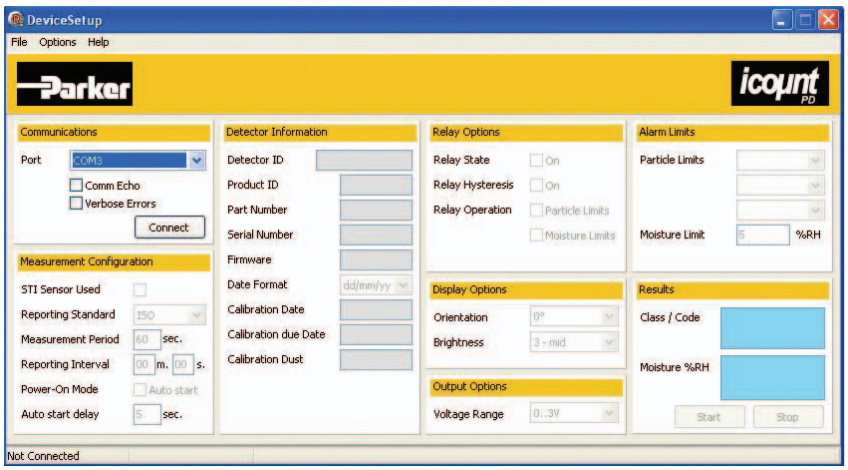
Online Particle Detector

# IcountPD

## 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 |



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Parker

Fluid Condition Monitoring

# $H_2O$il - Water in Oil Monitor

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Fluid Condition Monitoring

# $H_2O$il - Water in Oil Monitor

## Features & Benefits

- Water monitoring is now possible while machinery is working - $H_2O$il 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 $H_2O$il 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 $H_2O$il 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 $H_2O$il 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 $H_2O$il 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 $H_2O$il 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°C).

**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.

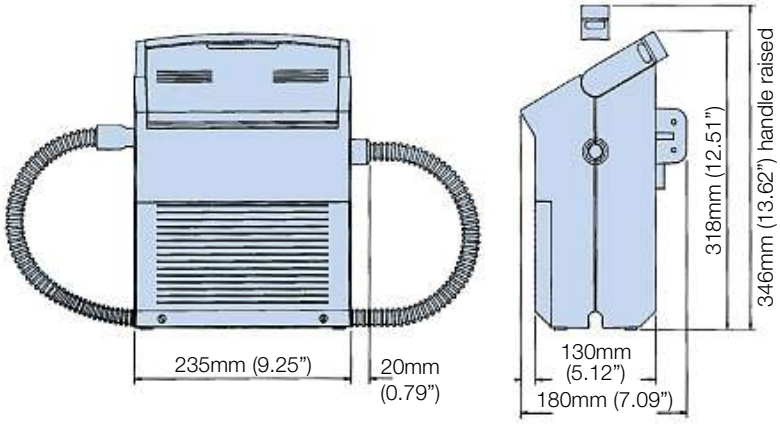
**Data entry:**
24 character two line back lit dot matrix LCD. Full alpha numeric keypad.

**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.



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Fluid Condition Monitoring

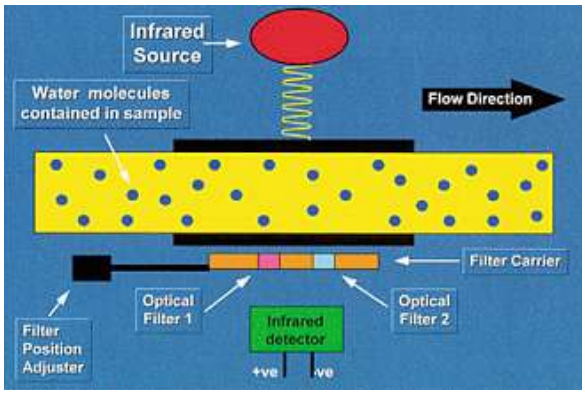
# $H_2O$il - Water in Oil Monitor

## How the $H_2O$il 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

$H_2O$il uses true infrared (IR) analysis technique - the principle used in all laboratory spectrometers, to measure absorbed water (before saturation point).

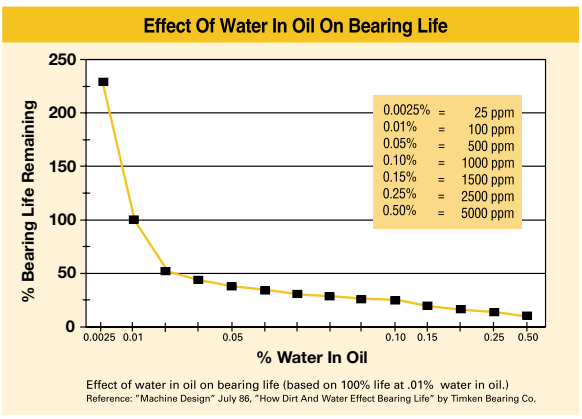
Channel one (2.6µ) is the reference point, whereas channel two (3µ) is $H_2O$.

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 $H_2O$il, would support such efforts.




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.

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 $H_2O$il makes it an essential kit for the service van or engineers tool.

## Ordering Information

**Standard products table**

| Product number | Supersedes | Description |
|---|---|---|
| **WOM9100** | N/A | $H_2O$il (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.



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Parker

Moisture Sensor Range

# MS100, MS150

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Cost Effective Moisture Detection

# 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.



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## 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.

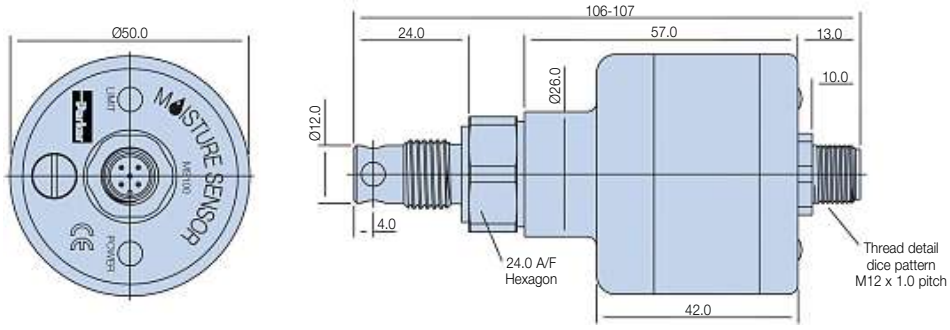
**Compensated thermal stability:**
+/- 1% RH (+10°C to +80°C).

**Materials:**
Stainless steel 316511.

**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 @ 65ºC (150ºF).
At the above operating condition, the meter displays 100% saturation. As the meters 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 65ºC (150ºF).

### Sensor

Using only the sensor as a go/no-go device, a red LED will indicate when the oils 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 |

Cost Effective Moisture Detection

# 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.

| 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 |

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.

Cost Effective Moisture Detection

# 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 todays 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.

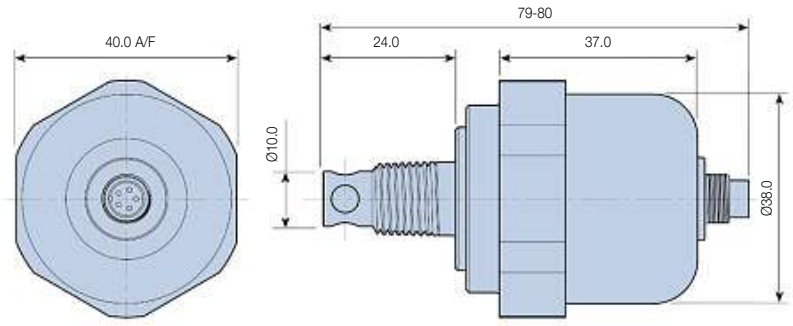
**Outputs:**
Variable - see sensor outputs.

**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)

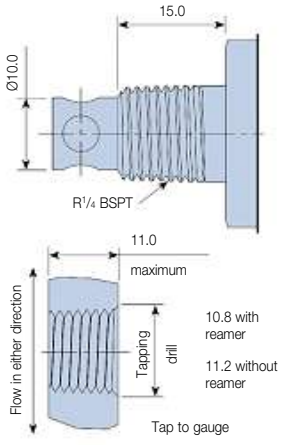
Dimensions are for reference only

### MS150

Water enters hydraulic and lubricating systems from a variety of sources. Atmospheric ingression 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.

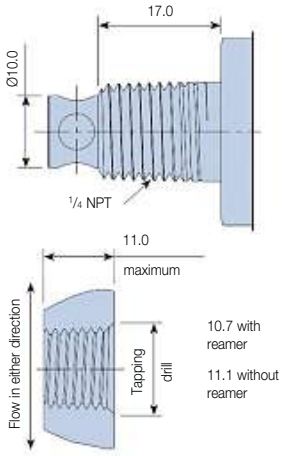
### Thread Form Options

**BSPT**




Installation details for R1/4 BSPT taper

**NPT**




Installation details for 1/4 NPT

**For alternative thread forms please contact Parker Filtration**

Cost Effective Moisture Detection

# 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 Vac process indicator |
| **MS1504** | MS150-4 | ¼" 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.



**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 40

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Parker

Hand-held Oil Condition Monitor

# Oilcheck

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Hand-held Oil Condition Monitor

# 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

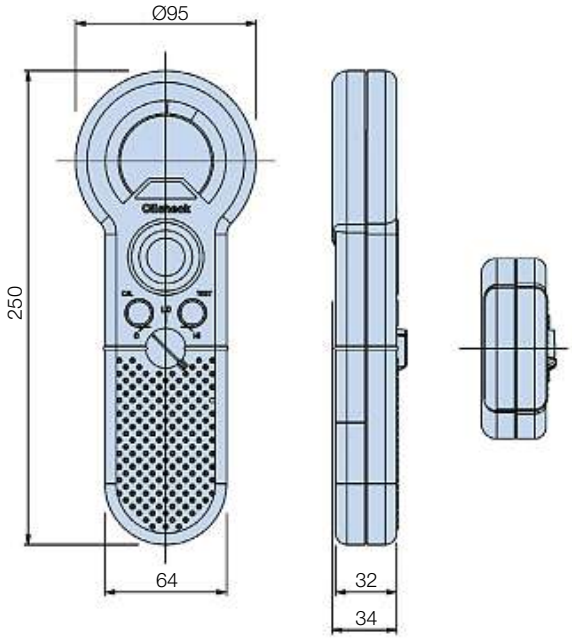
Green/amber/red numerical value

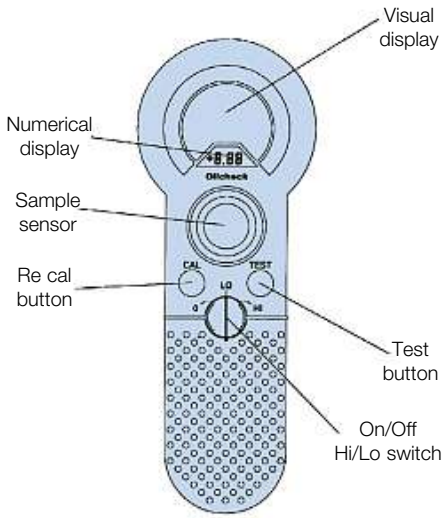
Function buttons

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

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*epic@parker.com*

Parker

Laboratory Analysis Service

# Par-Test™

Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

Laboratory Analysis Service

# Par-Test™

## 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<br>5µm / 15µm<br>14 / 11 |
| Former three-digit ISO 4406:1987<br>2µm / 5µm / 15µm<br>17 / 14 / 11 |
| New three-digit ISO 4406:1999<br>4µm (c) / 6µm (c) / 14µm (c)<br>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)<br>- Holland (Email: filtration.netherlands@parker.com) (all options)<br>- 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.

## Laboratory Analysis Service

# 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 TYPE | MICRON RATING **10NOM** | NUMBER COPIES 2 | TYPE NUMBER 2

**SAMPLE DATA** / **SPECTROCHEMICAL ANALYSIS** (WEAR METALS AND CONTAMINANTS IN PARTS PER MILLION (PPM) BY WEIGHT) / **PHYSICAL PROPERTY DATA**

| LAB# | DATE TAKEN/ TESTEN | DATE FILTER SERVICE | IRON | CHROMIUM | LEAD | COPPER | TIN | ALUMINIUM | NICKEL | SILVER | MANGANESE | SILICON | BORON | SODIUM | MAGNESIUM | CALCIUM | BARIUM | PHOSPHORUS | ZINC | MOLYBDENUM | TITANIUM | VANADIUM | CADMIUM | VIS 40°C (VIS 104 °F) | VIS 100°C (VIS 212 °F) | WATER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9261 | 30JUN89 | 02JUL89 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 2 | 29 | 291 | 339 | 233 | 0 | 0 | 0 | 0 | 32.7 | N/A | 0 |
| 9262 | 28JUL89 | 30JUL89 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 4 | 24 | 25 | 156 | 244 | 0 | 0 | 0 | 0 | 32.8 | N/A | 0 |
| 9263 | 20AUG89 | 22AUG89 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 29 | 24 | 133 | 207 | 0 | 0 | 0 | 0 | 32.3 | N/A | 0 |

| LAB# | ANALYSIS RECOMMENDATIONS 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 |

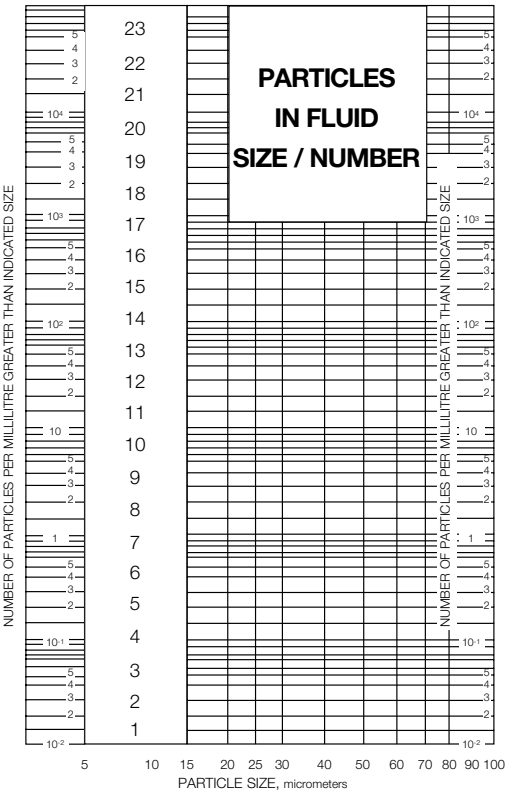
**LAB# ANALYSIS RECOMMENDATIONS**

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. 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 (centistrokes) | 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 | ≥ 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: conmoninfo@parker.com

Pressure Transducers and Transmitters

# ASIC 'Performer'

*25, 60, 100, 250, 400 and 600 bar*

*Brochure: FDHB240UK*
*March 2007*

Transducers and transmitters

Pressure Transducers and Transmitters

# 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.

AC/DC display unit (DDU1002)

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.

**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB240UK.

## 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/s$^2$ / 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 | Output |
|---|---|
| 12 - 36Vdc | 0 - 5Vdc |
| 12 - 36Vdc | 1 - 6Vdc |
| 9 - 36Vdc | 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.

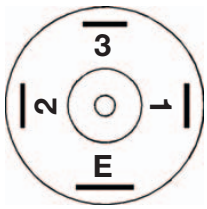
**Compensated temperature:**
-20°C to +85°C.

**Stability:**
<0.1%FS/a (typ).

**Response time:**
= <1mS.

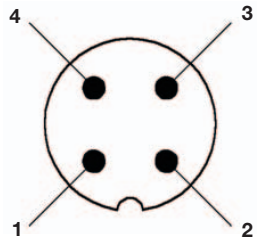
## Wiring Information

### Connector Industrial Micro Din 9.4mm



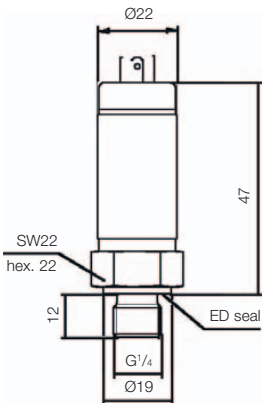

| PIN | 4 - 20mA | 0 - 5Vdc | 1 - 6Vdc |
|---|---|---|---|
| 1 | Do not connect | Signal output | Signal output |
| 2 | Supply +ve | Supply +ve | Supply +ve |
| 3 | Do not connect | Do not connect | Do not connect |
| E | Return | Supply ref. (0v) | Supply ref. (0v) |

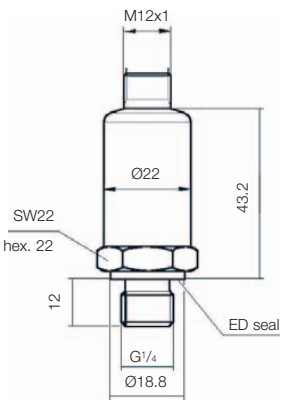
### Connector M12




| 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






Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

Pressure Transducers and Transmitters

# 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 | Supercedes | 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)

Parker

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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Parker

A range of cost saving solutions

# Flowmeters & Monitors

Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

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

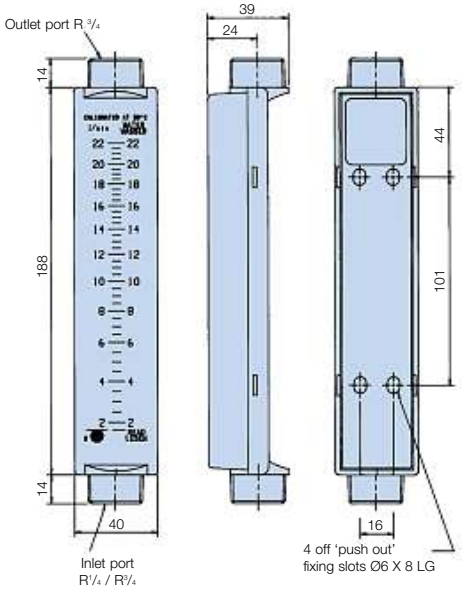
**Simple to fit, easy to use**

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.

Flowmeters & Monitors

# 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 ±5% FSD.
- Repeatability ±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:**
±5% FSD.

**Repeatability:**
±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.

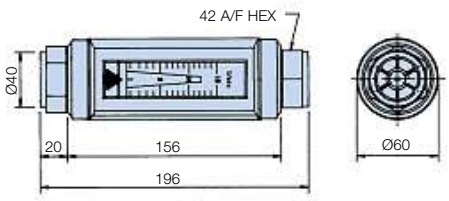
**Switch type specifications:**
Magnetically operated reed switch.

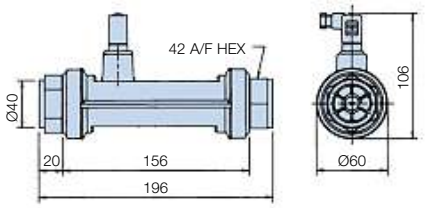
**Electrical details:**

| | |
|---|---|
| Voltage range | 300Vac/dc |
| Maximum current | 2.5Amps |
| Maximum load | 100W resistive<br>70W inductive |

CE

## Installation Details




## Ordering Information

**Standard products table**

| Product number | Supersedes | Media | Flow range (l/min) |
|---|---|---|---|
| **EF7731111220** | EFW.0302 | Water | 2 - 30 |
| **EF7731112220** | 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 ±2%.
- DIN 43650 plug connection (included).

## Specification

**Construction:**
Borosilicate glasstube.
Nitrile seals.
Body – Glass filled nylon.
Rotor and locater – 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:**
±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

CE

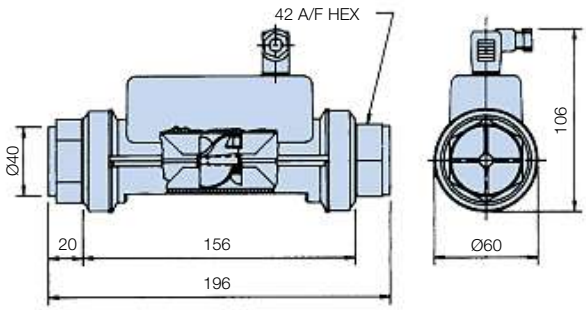
**Electrical details 4 to 20mA:**
Supply = 24Vdc.

**Pulse output:**
Supply = 24Vdc.
(open collector transistor).

## Digital Display Specification (DFT 990 only)

For indicator options please refer to MS150 section of the catalogue, reference DDU1001 and DDU1002 indicators

## 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)

## 4 to 20mA On-Site Calibration

Set your system to zero flow. Connect a multimeter across terminals 1 (+20mA) and ⏚ (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**

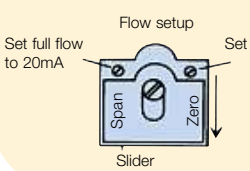
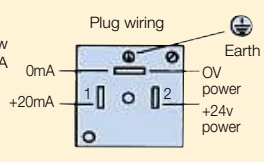



**Diagram 2**






**Parker Hannifin**
Hydraulic Filter Division Europe
FDHB200UK. Section 46

Flowmeters & Monitors

# 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.
- 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:**
3/8 BSP

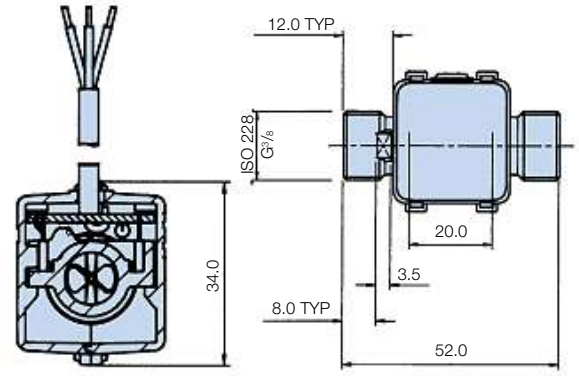
**Cable length:**
300mm.

**Power supply:**
5 Vdc.

**Output signal:**
5 Vdc - square wave

## Installation Details

Red wire +5V supply
Green wire Output signal
Blue wire 0V supply




### 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.

## 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 ±5% FSD.
- Repeatability ±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°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:**
±5% FSD.

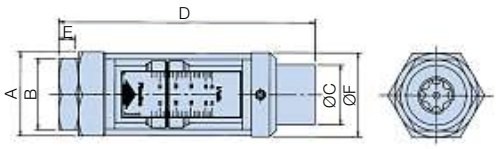
**Repeatability:**
±1% FSD.

**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 intallation 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 intallation 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.

Flowmeters & Monitors

# Flowline - Oil and Water Calibrated Flowmeters (Stainless Steel)

## Features & Benefits

- For flow measurement of corrosive or chemical media or in harsh locations.
- Manufactured in stainless steel 316.
- Works in any plane.
- Pressure up to 350 bar (5000 psi).
- Flows up to 360 l/min.
- Accuracy ±5% FSD.
- Repeatability ±1% FSD.
- Direct reading.
- Oil or water calibrated.
- Optional reed switch upgrade.

## Specification

**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.

**Viscosity range:**
10 to 200 cSt (oil).

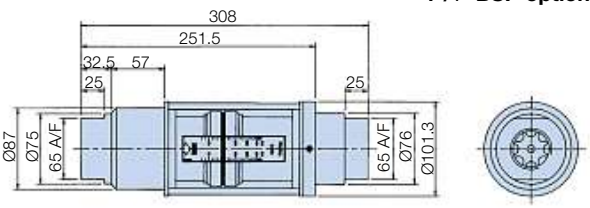
**Accuracy:**
±5% FSD.

**Repeatability:**
±1% FSD.

**Min. scale reading:**
10% FSD.

**Connections:**
BSP parallel threads.

**1¼" BSP option**




**Wetted parts:**
Body, thread adaptor

**Piston, etc: cone locknut:**
Stainless Steel.

**Flow cone:**
BS 970 316S 16.

**Magnet encapsulation:**
Stainless steel BS970/1:1991. :316S31.

**Spring:**
Stainless steel to BS 2056 EN 58J.

**Seal:**
Viton.

Note: To add an electrically operated reed switch to your flowmeter please order B.26307

## Ordering Information - Oil

**Standard products table**

| Stainless steel flowmeter for oil | | | | | Dimensions (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Product number | Supersedes | Ports BSP | Flow range (l/min) | Maximum pressure (bar) | A (A/F Hex) | B (A/F Hex) | C | D | E | F | Weight (kg) |
| **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 | 1¼ | 20 - 180 | 350 | For intallation details for 1¼ flowmeters see above | | | | | | 8.0 |
| **FM26432212** | FM.26 432 212 | 1¼ | 30 - 270 | 350 | | | | | | | 8.0 |
| **FM26432312** | FM.26 432 312 | 1¼ | 40 - 360 | 350 | | | | | | | 8.0 |

## Ordering Information - Water

**Standard products table**

| Stainless steel flowmeter for water | | | | | Dimensions (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Product number | Supersedes | Ports BSP | Flow range (l/min) | Maximum pressure (bar) | A (A/F Hex) | B (A/F Hex) | C | D | E | F | Weight (kg) |
| **FM26132122** | FM.26 132 122 | ¼ | 0.2 - 2.0 | 350 | 32 | 29 | 19 | 123 | 7 | 32 | 0.4 |
| **FM26132222** | FM.26 132 222 | ¼ | 0.5 - 4.5 | 350 | 32 | 29 | 19 | 123 | 7 | 32 | 0.4 |
| **FM26132322** | FM.26 132 322 | ¼ | 1 - 9 | 350 | 32 | 29 | 19 | 123 | 7 | 32 | 0.4 |
| **FM26232122** | FM.26 232 122 | ½ | 2 - 20 | 350 | 41 | 38 | 32 | 165.5 | 12.5 | 46 | 0.9 |
| **FM26232222** | FM.26 232 222 | ½ | 5 - 46 | 350 | 41 | 38 | 32 | 165.5 | 12.5 | 46 | 0.9 |
| **FM26332122** | FM.26 332 122 | ¾ | 5 - 55 | 350 | 58 | 46 | 43 | 190 | 15 | 58 | 1.75 |
| **FM26332222** | FM.26 332 222 | ¾ | 10 - 110 | 350 | 58 | 46 | 43 | 190 | 15 | 58 | 1.75 |
| **FM26432122** | FM.26 432 122 | 1¼ | 20 - 180 | 350 | For intallation details for 1¼ flowmeters see above | | | | | | 8.0 |
| **FM26432222** | FM.26 432 222 | 1¼ | 30 - 270 | 350 | | | | | | | 8.0 |
| **FM26432322** | FM.26 432 322 | 1¼ | 40 - 360 | 350 | | | | | | | 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.

Flowmeters & Monitors

# 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 | | | | | |
|---|---|---|---|---|---|
| Product number | | Flow range and (port size) | | Fluid type | |
| **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**

| Stainless steel flowswitch for oil or water | | | | | |
|---|---|---|---|---|---|
| Product number | | Flow range and (port size) | | Fluid type | |
| **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 |
|---|---|
| **FS643332212** | **FS.643 332 212** |

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.



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Flowmeters & Monitors

# 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.

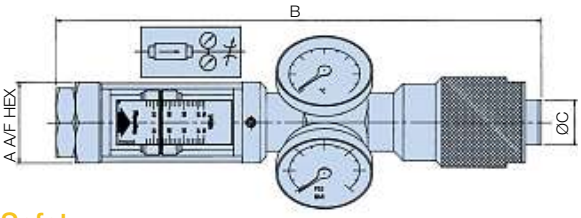
## Specification

**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)

## 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.

## 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.

Flowmeters & Monitors

# 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

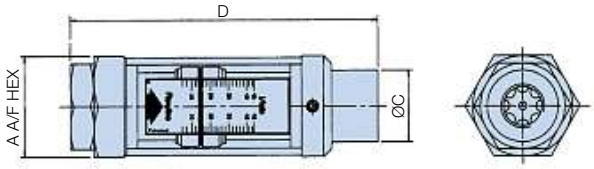
- Flow measurement from 1.1 to 720 l/min. Max 10 bar rating.

### Ⓒ 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**

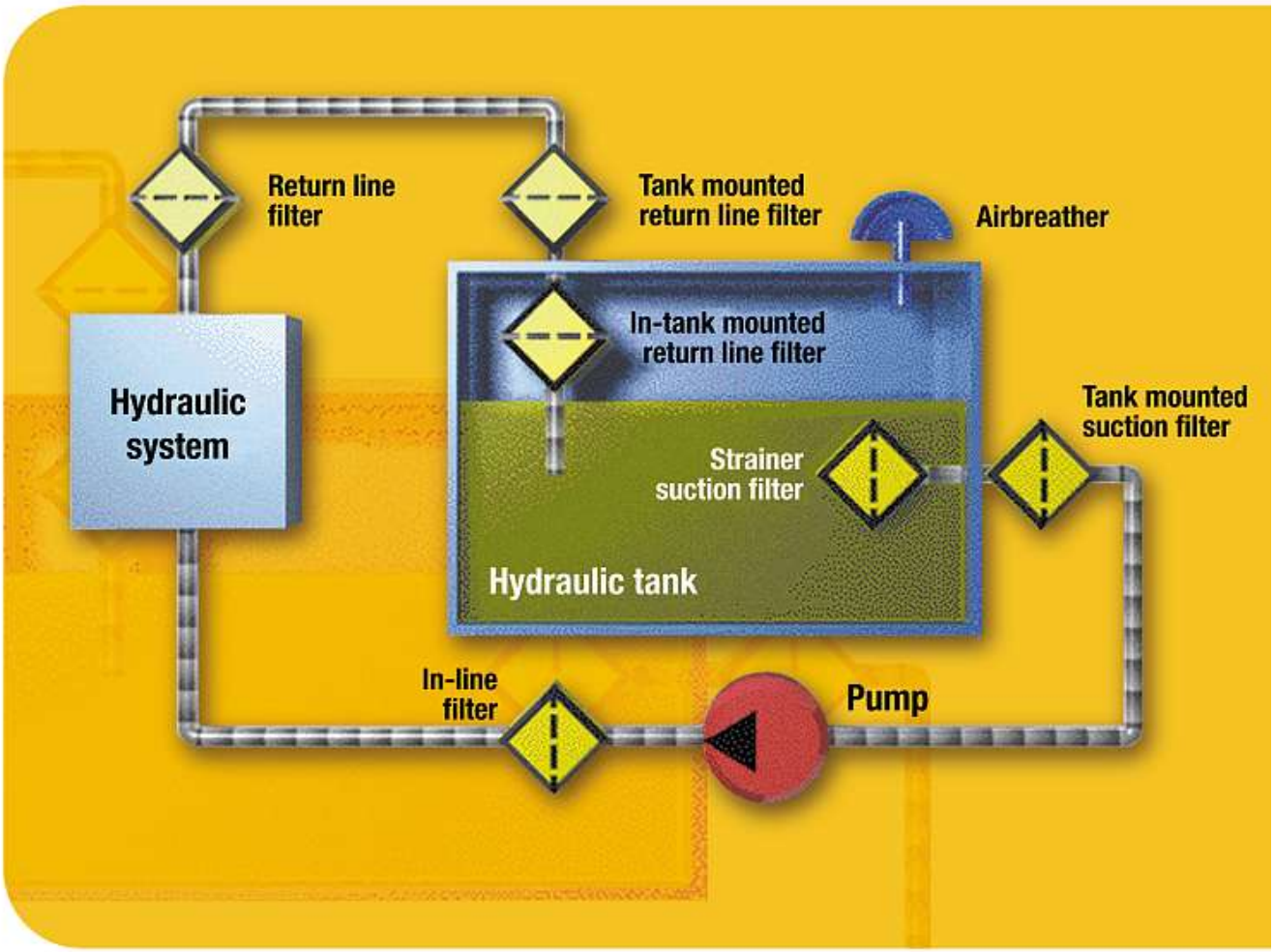
| Product number | Supersedes |
|---|---|
| FS643323232 | FS.643 323 232 |

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.

Parker

Understanding and Answering the Threat of Contamination

# Guide to Contamination Control



Understanding and Answering the Threat of Contamination

# 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.

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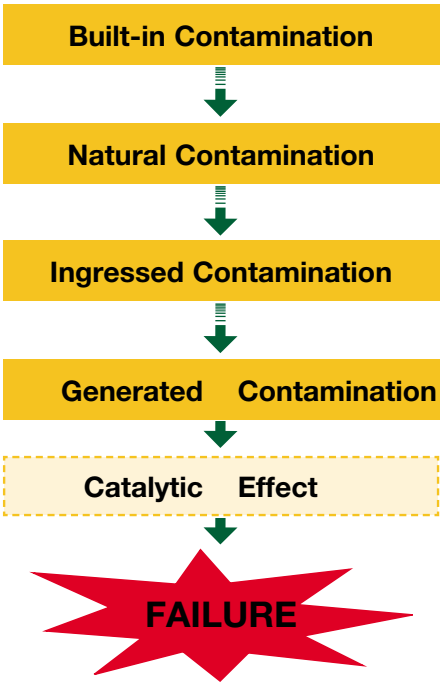
## Sources of Contamination

### 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 ingressed 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 ingressed 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.

Understanding and Answering the Threat of Contamination

# Guide to Contamination Control

## Lifetime of Oil

### Selecting the Right Oil

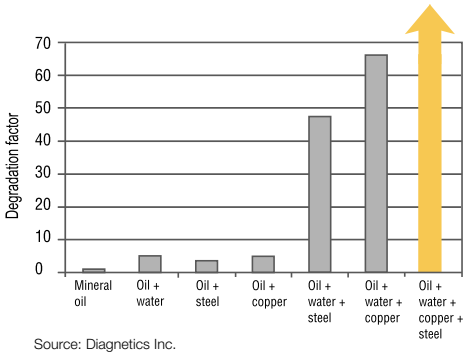
Oils are selected based on their unique performance with regard to:

a. Energy transfer
b. Corrosion protection
c. Cooling (transfer of heat)
d. Lubrication

The lifetime of oils is influenced by the amount of oxygen, oil temperature, water content and presence of catalyser 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: Diagnetics Inc.

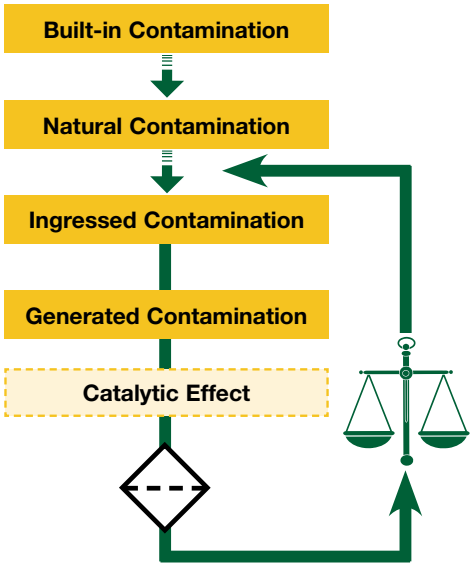
Oil degradation can reduce the protection against corrosion and lubrication performance.

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 ß-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**



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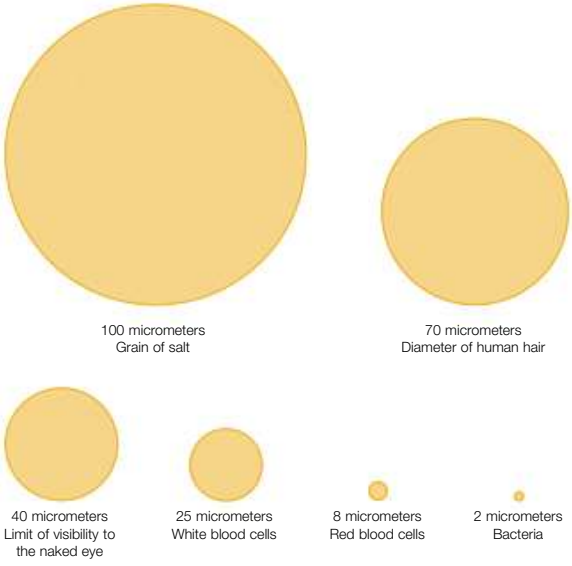
## Contamination & Cleanliness Level

### 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

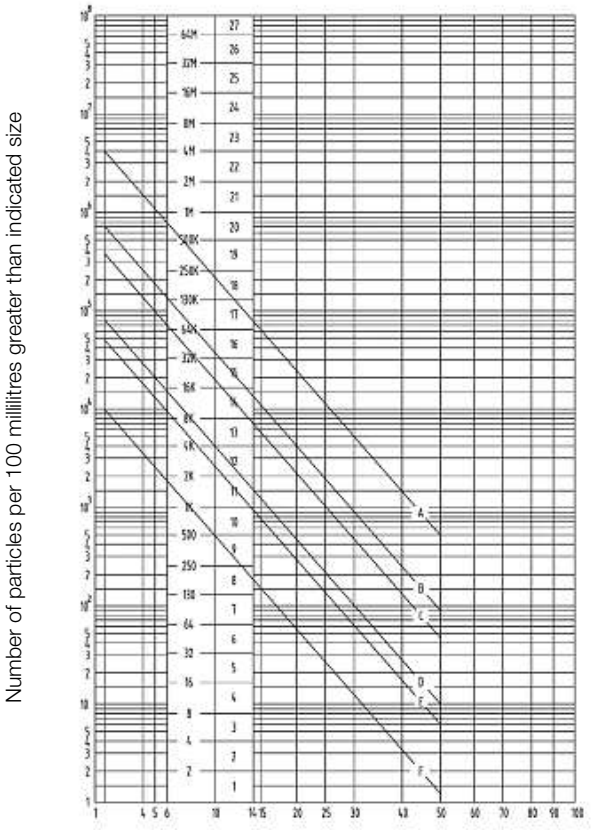
The ISO 4406:1999 standard is an important code to define the fluid cleanliness level using a solid contamination code.

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



Understanding and Answering the Threat of Contamination

# 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.

LaserCM

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 $H_2O$il means a complete solution is available to measure the water content in hydraulic or lubrication fluids.

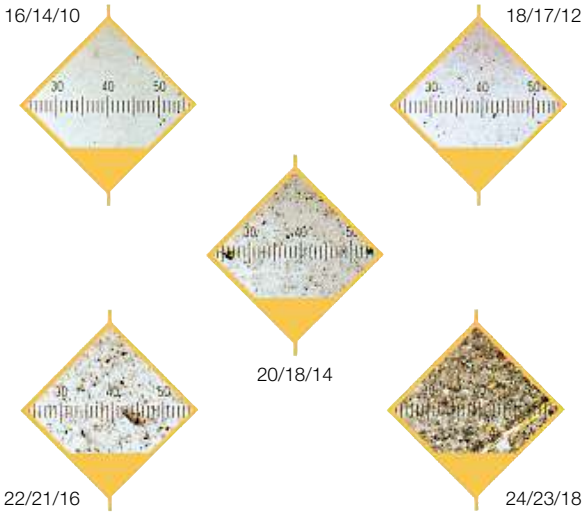
### Solid Contaminant Codes

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:

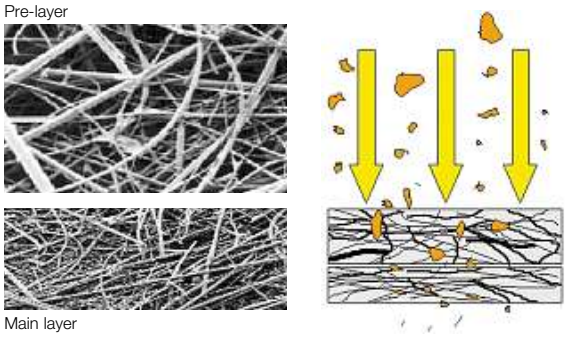
- Required protection of system components
- Location of filter(s) in the system
- Flow rate and allowed pressure loss
- Desired filter element life time
- Hydraulic or lubrication fluid type

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.




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.



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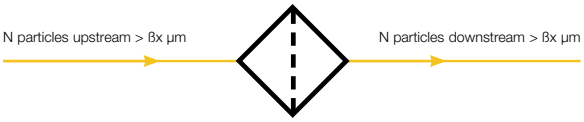
Understanding and Answering the Threat of Contamination

# Guide to Contamination Control

## Degree of Filtration

The ß-value is used to express the removal efficiency for a defined particle size.




ßx(c) = N particles upstream > x µm / N particles downstream > x µm

The ISO 4572 standard formerly required only the ßx>75 value. That standard has now been upgraded and replaced by ISO 16889, reporting the ß-value of 2, 10, 75, 100, 200 and 1000 for each filter medium or pleat pack. The corresponding efficiencies are given below.

| ß-value | 2 | 10 | 75 | 100 | 200 | 1000 |
|---|---|---|---|---|---|---|
| Efficiency | 50,00% | 90,00% | 98,67% | 99,00% | 99,50% | 99,99% |

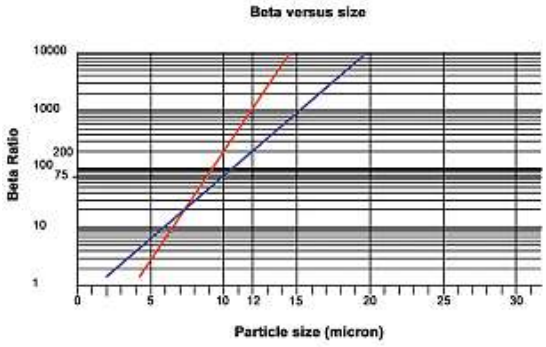
Taking into account a ß75(c)>10 element, the removal efficiency is 98.67% of particles larger than 10 micron.

Too often filter elements are compared by looking at one ß-value only. The focus on high ß-values is misleading and does not always provide the required information.

| Comparison ß-value | Filter element I | Filter element II |
|---|---|---|
| Beta-value | ß-75(c)>10 | ß-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 ß200 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.

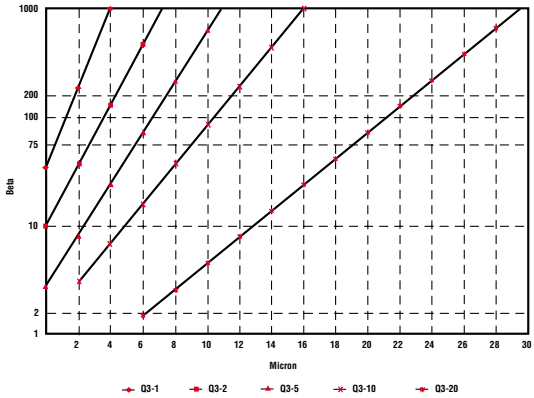



Filter element (blue) I: ß10(c)>75, Filter element (red) II: ß10(c)>200

Filter element II has a lower removal efficiency for smaller sized particles. Smaller sized particles can easily flow in narrow tolerances areas. Smaller sized particles will accelerate the amount of generated contamination, effecting the functionality of other system components and accelerating oil degradation.

The overall removal efficiency of the element forms the core of fluid cleanliness levels

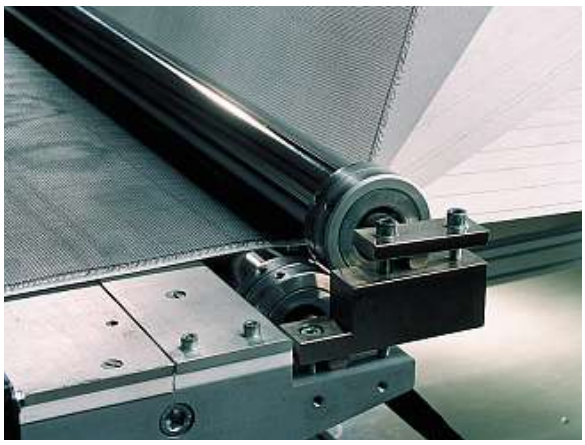
The correct degree of filtration is chosen based on the required fluid cleanliness level, not based on one ß-value.




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



Parker Hannifin
Hydraulic Filter Division Europe
FDHB200UK. Section 53

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## Flow Rate & Pressure Lost

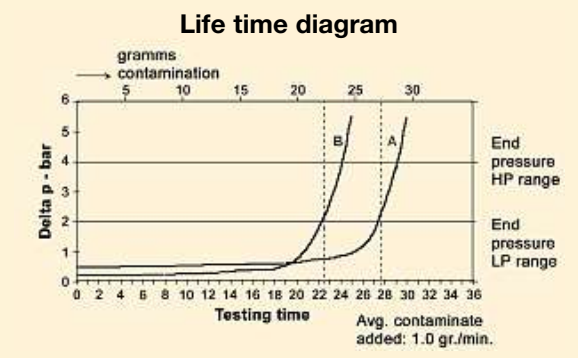
### Flow Rate and Allowable Pressure Lost

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 |

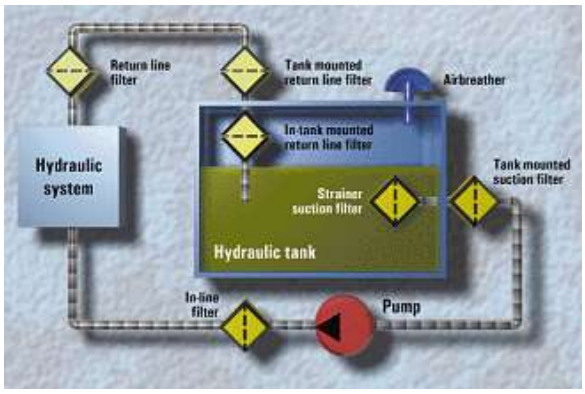
The given cleanliness levels are indicative values only, based on average values

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

## Notes

## Notes

# 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.**

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## 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

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