

# GMF iprotect®

Medium Pressure Filters  
Max. 600 l/min - 70 bar



## A compact, cost effective medium pressure filter

### Designed with the iprotect® patented filtration technology

The Parker GMF iprotect® is designed to provide high quality filtration of hydraulic systems, providing new possibilities to reduce the cost of ownership by improving the productivity and profitability. A new patented design of the filter element ensures the quality of filtration is secured.

With less space available for filters, Parker has taken on board the requirements to provide more compact solutions. A unique feature is the filter element remains inside the filter bowl when changing the filter element. This can save over 500 mm of space envelope in comparison with traditional medium pressure filters.

### Contact Information:

Parker Hannifin  
Hydraulic Filter Division Europe

European Product  
Information Centre  
Freephone: 00800 27 27 5374  
(from AT, BE, CH, CZ, DE, EE, ES,  
FI, FR, IE, IT, PT, SE, SK, UK)  
filtrationinfo@parker.com

[www.parker.com/hfde](http://www.parker.com/hfde)



### Product Features:

The patented element design guarantees the quality of filtration, which directly impacts the oil cleanliness level as the usage of pirate type after market filters with unknown quality of filter media is excluded. This in-built safety has a direct, positive impact on the productivity and profitability of equipment.

- Guaranteed quality of filtration
- More compact solutions are possible
- Filter element remains in filter bowl during filter service
- Reduce waste over 50% thanks to re-usable element core
- No risk of installation mistake due to a 'foolproof' design
- Unique OEM branding opportunities
- Easy to intergrate into hydraulic manifold solutions



Parker Hannifin  
Hydraulic Filter Division Europe  
FDHB818UK

# GMF iprotect®

## Features & Benefits

Features	Advantages	Benefits
Patented filter element	Avoid use of non-genuine parts	Guaranteed quality of filtration
Filter element remains in filter bowl	Less space needed to change/service filter	More compact solutions are possible
Environmental-friendly design	Re-usable filter element core located in filter bowl	Reduces environmental waste over 50%
Service-friendly product design	No handling of loose re-usable parts	Reduce service time for filter over 40%
Wide range of differential pressure indicators	Continuous feedback of condition filter elements	Optimized filter element life, contributes to scheduled maintenance

## 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 GMF iprotect® Series Medium Pressure Filters.

This partial list of applications for Parker “GMF” 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 “GMF” 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 “GMF” Series fills this gap and is now available with environmentally friendly iprotect® 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 GMF size 4.

Connection style	Model	GMF size 2	GMF size 3	GMF size 4
BSPF(G)		1", 3/4"	1 1/4", 1 1/2"	1 1/2", 2"
SAE		12, 16	16, 24	24, 32
Metric 3000-M				2"

### Filter housing:

Head material aluminium.  
 Bowl material hard anodized aluminium.

### Seal material:

Nitrile or fluoroelastomer.

### Operating temperature range:

Seal material Nitrile: -20°C to +100°C.  
 Seal material Fluoroelastomer: -20°C to +120°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
6 bar	5 bar

### Filter element:

#### Degree of filtration:

Quantumfiber™ filter media, determined by Multipass-test according to ISO16889

### iprotect® QI

Supported with epoxy coated metal wire mesh, end cap material reinforced composite. Collapse pressure rated at 20 bar (ISO 2941)

### Indicator options (all with SAE8 thread):

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

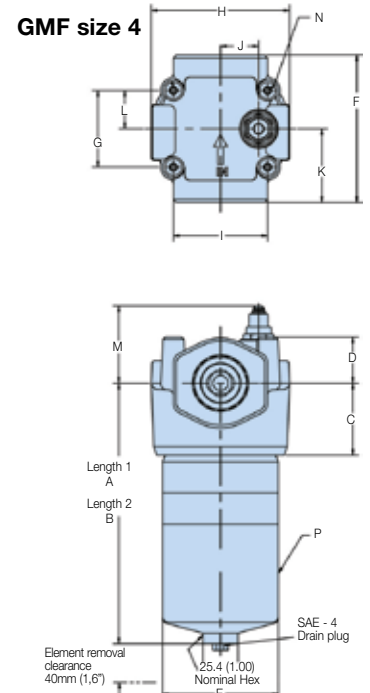
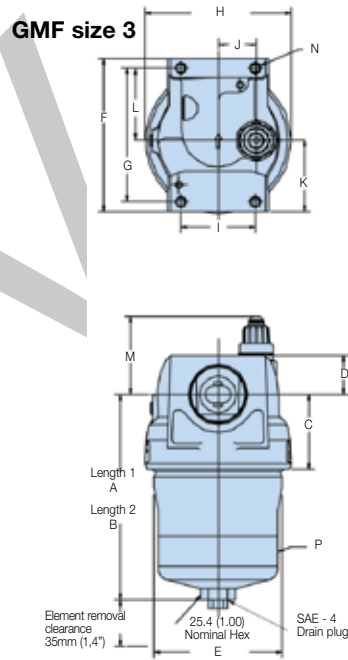
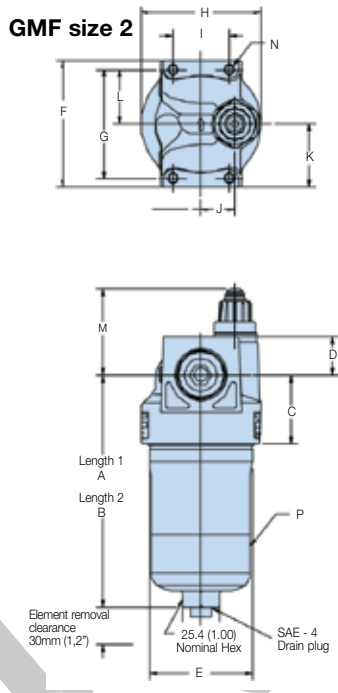
For indicator details see separate indicator brochure.

### Weights (kg):

Model	Length 1	Length 2
GMF size 2	1.1	1.6
GMF size 3	2.0	2.5
GMF size 4	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.



### Dimensions in mm (inch)

Model	A	B	C	D	E	F	G	H	I	J	K	L	M*	N	P
GMF size 2	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
GMF size 3	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
GMF size 4	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

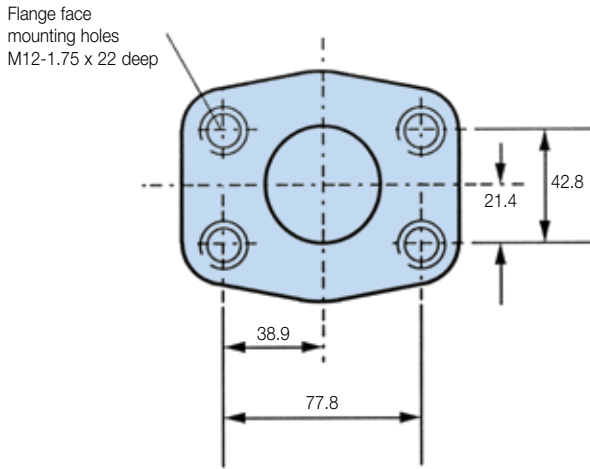


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# GMF iprotect®

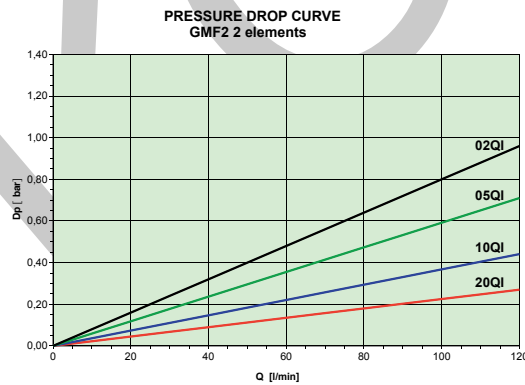
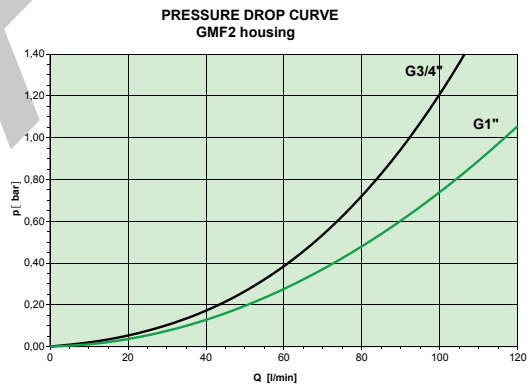
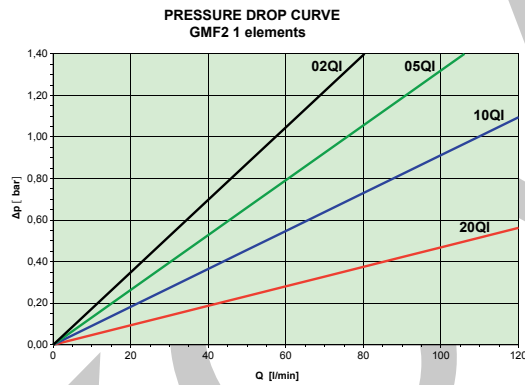
## Medium Pressure Filters

### GMF size 4 Flange Face Details (SAE 2" 3000-M)



### Pressure Drop Curves

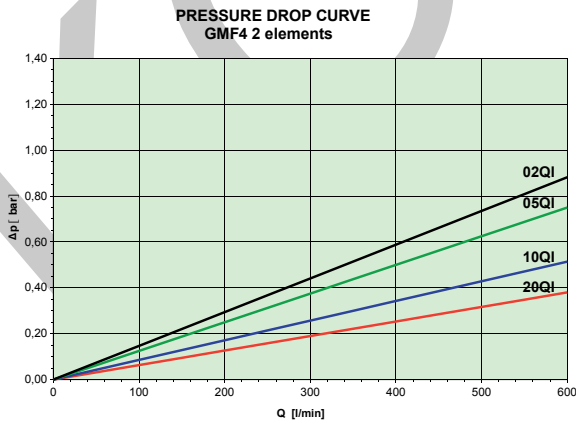
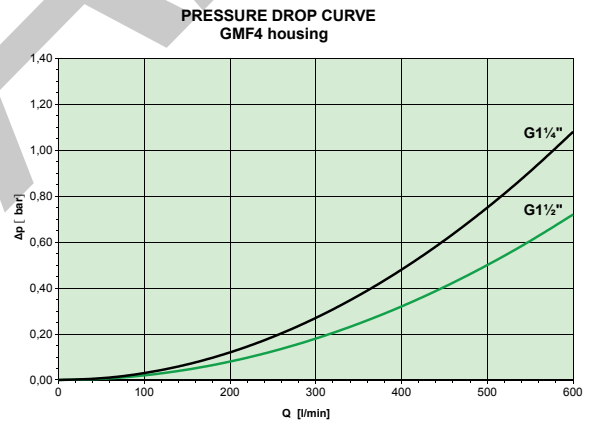
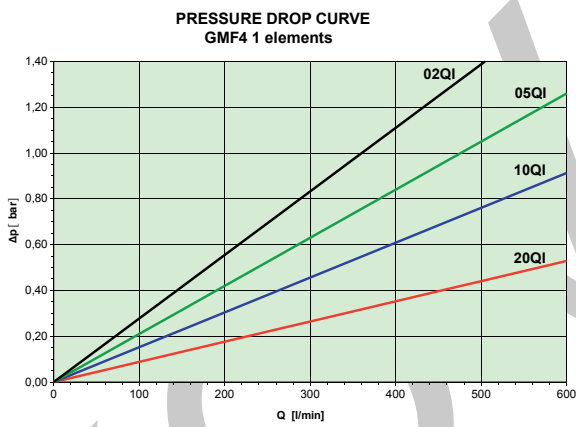
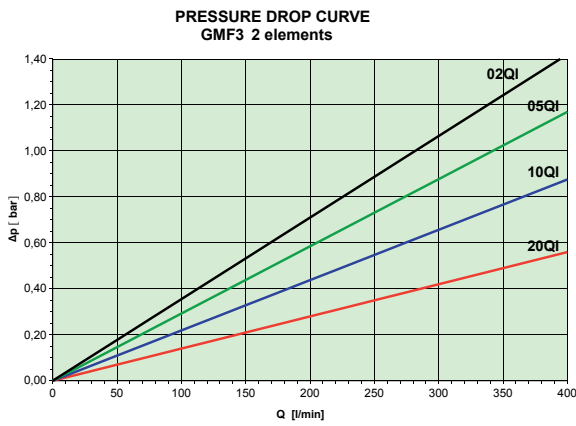
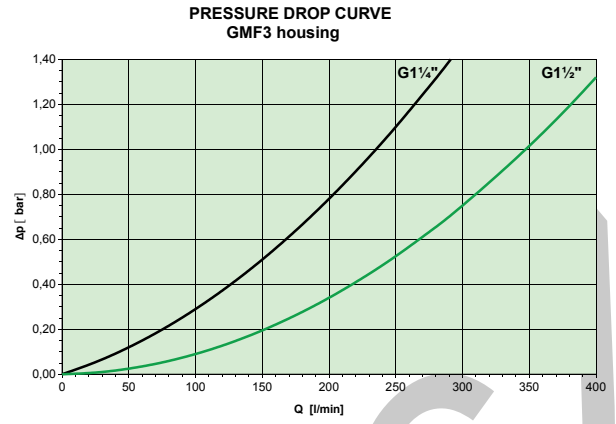
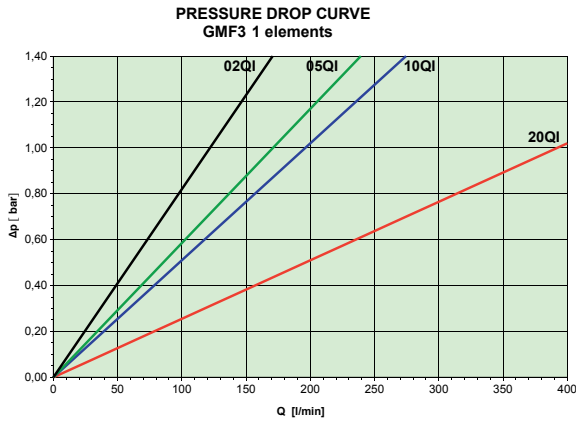
With 1.7 bar bypass the recommended initial pressure drop is max 0.5 bar.  
 With 3.5 bar bypass the recommended initial pressure drop is max 1.0 bar.  
 With 6.0 bar bypass the recommended initial pressure drop is max 2.0 bar  
 If the medium used has a viscosity different from 30 cSt, pressure drop over the filter can be estimated as follows:  
 The total  $\Delta p = \text{housing } \Delta p_h + (\text{element } \Delta p_e \times \text{working viscosity}/30)$ .



Pressure drop curves based on 30 cSt



# Pressure Drop Curves



Pressure drop curves based on 30 cSt

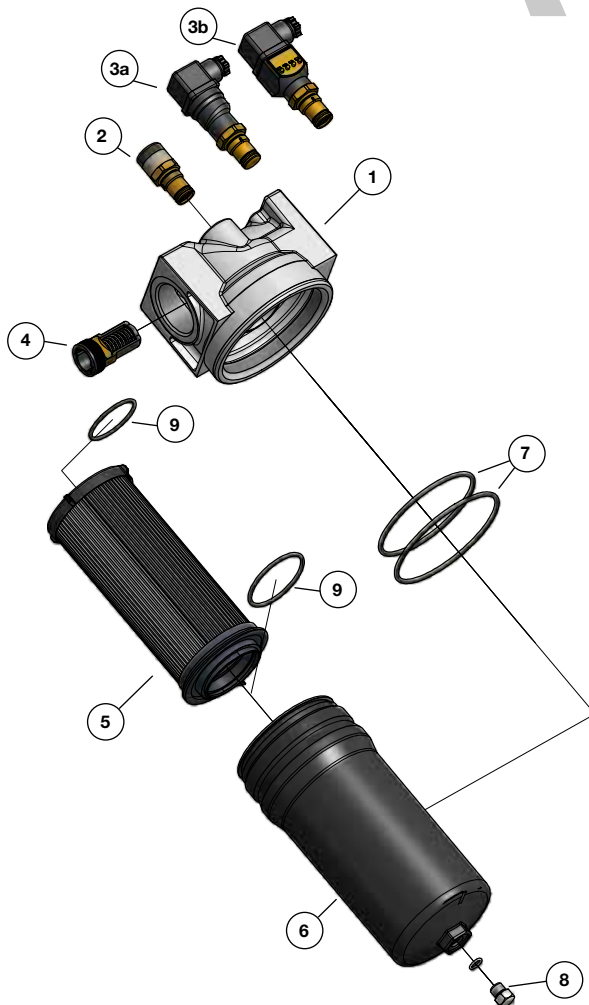


# GMF iprotect® Series

## Medium Pressure Filters

### 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 filter from filter bowl.
- F. Check bowl o-ring and dust seal for damage and replace if necessary.
- G. Lubricate element o-ring with system fluid and drop in filter bowl with a rotational movement of the filter element.
- H. Install bowl by rotating clockwise and tighten to specified torque.
  - GMF size 2 – 20-27 Nm (15-20ft. lbs)
  - GMF size 3 – 57-68 Nm (42-50ft. lbs)
  - GMF size 4 – 80-95 Nm (60-70ft. lbs)
- I. Confirm there are no leaks after powering the system.



### GMF Filters Parts List

Index	Description
1	<b>Head</b>
2	<b>Indicators with SAE 8 thread (code S08)</b> M3-visual auto reset: 1.2 bar M3-visual auto reset: 2.5 bar M3-visual auto reset: 5.0 bar
3a	T1-electrical: 1.2 bar c/w DIN 43650 connector T1-electrical: 2.5 bar c/w DIN 43650 connector T1-electrical: 5.0 bar c/w DIN 43650 connector
3b	F1-electrical PNP with 4 LEDs: 1.2 bar/2.5 bar/5.0 bar, NO type switch F2-electrical NPN with 4 LEDs: 1.2 bar/2.5 bar/5.0 bar, NO type switch F3-electrical PNP with 4 LEDs: 1.2 bar/2.5 bar/5.0 bar, NC type switch F4-electrical NPN with 4 LEDs: 1.2 bar/2.5 bar/5.0 bar, NC type switch
4	<b>Bypass valve</b> 1.7 bar assembly 3.5 bar assembly 6,0 bar assembly
5	<b>Element (see replacement element part numbers)</b>
6	<b>Bowl</b> Single length with drain Single length without drain Double length with drain Double length without drain
7	<b>Bowl and dust seal</b> Nitrile Fluoroelastomer
8	<b>Drain plug: SAE-4</b> Nitrile Fluoroelastomer
9	<b>Element seals are supplied with pos 5</b>

# GMF iprotect® Series

## Medium Pressure Filters

### Ordering Information (cont.)

#### Product Configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
<b>GMF2</b>	<b>2</b>	<b>10QI</b>	<b>B</b>	<b>T1</b>	<b>K</b>	<b>G16</b>	<b>4</b>

Box 1

Code	
<b>Model</b>	<b>Code</b>
Small size MP filter, T-port	<b>GMF 2</b>
Medium size MP filter, T-port	<b>GMF 3</b>
Large size MP filter, T-port	<b>GMF 4</b>

Box 2

Filter type	
<b>Length</b>	<b>Code</b>
Length 1	<b>1</b>
Length 2	<b>2</b>

Highlights Key (Denotes part number availability)

<b>123</b>	Item is standard
<b>123</b>	Item is standard green option
<b>123</b>	Item is semi standard
123	Item is non standard

Box 3

Degree of filtration			
Quantumfiber™ filter media	Glass fibre		
	Media code		
iprotect® QI (20 bar collapse rating)	<b>02QI</b>	<b>05QI</b>	<b>10QI</b>

Box 4

Seal type	
<b>Seal material</b>	<b>Code</b>
Fluoroelastomer	<b>V</b>
Nitrile	<b>B</b>

Box 5

Indicator	
	<b>Code</b>
Visual indicator	<b>M3</b>
Electrical indicator	<b>T1</b>
Plugged	<b>P</b>
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		
<b>Bypass valve</b>	<b>Indicator</b>	<b>Code</b>
1.7 bar	1.2 bar	G
3.5 bar	2.5 bar	<b>K</b>
6.0 bar	5.0 bar	M

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

Box 7

Filter connection		
<b>Ports</b>		<b>Code</b>
GMF size 2: Thread G <sup>3</sup> / <sub>4</sub>		G12
Thread G1		<b>G16</b>
GMF size 3: Thread G1 <sup>1</sup> / <sub>4</sub>		G20
Thread G1 <sup>1</sup> / <sub>2</sub>		<b>G24</b>
GMF size 4: Thread G1 <sup>1</sup> / <sub>2</sub>		G24
Thread G2		<b>G32</b>
SAE flange 2" 3000-M		<b>R32</b>

Box 8

Options	
<b>Options</b>	<b>Code</b>
Standard	<b>1</b>
Bowl with drain port	4
ATEX certified* (Category 2, non-electrical equipment)	EX

Note 1\*: For ATEX classified filters add EX after the code.  
ATEX certified filters with electrical indicator are available on request.  
Visual indicators are classified as Category 2, non electrical equipment.  
Filter assemblies with EX code will be supplied with a dedicated name plate.  
Pis consult Parker Filtration for any questions related to the classification of our products.

Degree of filtration						Code
Average filtration beta ratio $\beta$ (ISO 16889) / particle size $\mu\text{m}$ [c]						
$\beta_x(c)=2$	$\beta_x(c)=10$	$\beta_x(c)=75$	$\beta_x(c)=100$	$\beta_x(c)=200$	$\beta_x(c)=1000$	
% efficiency, based on the above beta ratio ( $\beta_x$ )						
<b>50.0%</b>	<b>90.0%</b>	<b>98.7%</b>	<b>99.0%</b>	<b>99.5%</b>	<b>99.9%</b>	
N/A	N/A	N/A	N/A	N/A	4.5	<b>02QI</b>
N/A	N/A	4.5	5	6	7	<b>05QI</b>
N/A	6	8.5	9	10	12	<b>10QI</b>
6	11	17	18	20	22	<b>20QI</b>

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.

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

Filter size, port size	02QI	05QI	10QI	20QI
GMF 21 - G1"	30	40	55	90
GMF 22 - G1"	60	80	90	100
GMF 31 - G1 <sup>1</sup> / <sub>2</sub> "	70	90	120	200
GMF 32 - G1 <sup>1</sup> / <sub>2</sub> "	150	180	230	270
GMF 41 - G2"	200	250	350	520
GMF 42 - G2"	350	400	530	600

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

GMF Seal Kits	
<b>Order code</b>	<b>Filter size and seal type</b>
<b>930000140</b>	GMF21 & GMF22 Seal Kit Nitrile
<b>930000141</b>	GMF31 & GMF32 Seal Kit Nitrile
<b>930000142</b>	GMF41 & GMF42 Seal Kit Nitrile
<b>930000149</b>	GMF21 & GMF22 Seal Kit Fluoroelastomer
<b>930000150</b>	GMF31 & GMF32 Seal Kit Fluoroelastomer
<b>930000151</b>	GMF41 & GMF42 Seal Kit Fluoroelastomer



# GMF spare elements

## Standard products table

Fluoroelastomer seals Element type	iprotect® QI Order code	Collapse pressure 20 bar Description
GMF 21 Glassfibre 2 µm	938895Q	GMF 21 02QI V Element
GMF 21 Glassfibre 5 µm	938896Q	GMF 21 05QI V Element
GMF 21 Glassfibre 10 µm	938897Q	GMF 21 10QI V Element
GMF 21 Glassfibre 20 µm	938898Q	GMF 21 20QI V Element
GMF 22 Glassfibre 2 µm	938899Q	GMF 22 02QI V Element
GMF 22 Glassfibre 5 µm	938900Q	GMF 22 05QI V Element
GMF 22 Glassfibre 10 µm	938901Q	GMF 22 10QI V Element
GMF 22 Glassfibre 20 µm	938902Q	GMF 22 20QI V Element
GMF 31 Glassfibre 2 µm	938903Q	GMF 31 02QI V Element
GMF 31 Glassfibre 5 µm	938904Q	GMF 31 05QI V Element
GMF 31 Glassfibre 10 µm	938905Q	GMF 31 10QI V Element
GMF 31 Glassfibre 20 µm	938906Q	GMF 31 20QI V Element
GMF 32 Glassfibre 2 µm	938907Q	GMF 32 02QI V Element
GMF 32 Glassfibre 5 µm	938908Q	GMF 32 05QI V Element
GMF 32 Glassfibre 10 µm	938909Q	GMF 32 10QI V Element
GMF 32 Glassfibre 20 µm	938910Q	GMF 32 20QI V Element
GMF 41 Glassfibre 2 µm	938911Q	GMF 41 02QI V Element
GMF 41 Glassfibre 5 µm	938912Q	GMF 41 05QI V Element
GMF 41 Glassfibre 10 µm	938913Q	GMF 41 10QI V Element
GMF 41 Glassfibre 20 µm	938914Q	GMF 41 20QI V Element
GMF 42 Glassfibre 2 µm	938915Q	GMF 42 02QI V Element
GMF 42 Glassfibre 5 µm	938916Q	GMF 42 05QI V Element
GMF 42 Glassfibre 10 µm	938917Q	GMF 42 10QI V Element
GMF 42 Glassfibre 20 µm	938918Q	GMF 42 20QI V Element

## Ordering Information

### Standard products table

Part numbers	Flow (l/min)	Model number	Element length	Media rating (µ)	Seals	Indicator	BYPASS SETTINGS	Ports	ELEMENT COLLAPSE PRESSURE	Replacement elements
GMF2205QIVPKG161	60	GMF size 2	2	5	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1"	20 BAR	938900Q
GMF2210QIVPKG161	80	GMF size 2	2	10	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1"	20 BAR	938901Q
GMF2220QIVPKG161	100	GMF size 2	2	20	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1"	20 BAR	938902Q
GMF3205QIVPKG241	200	GMF size 3	2	5	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1½"	20 BAR	938908Q
GMF3210QIVPKG241	280	GMF size 3	2	10	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1½"	20 BAR	938909Q
GMF3220QIVPKG241	320	GMF size 3	2	20	Fluoroelastomer	Plugged indicator port	3.5 BAR	G1½"	20 BAR	938910Q
GMF4205QIVPKG321	490	GMF size 4	2	5	Fluoroelastomer	Plugged indicator port	3.5 BAR	G2"	20 BAR	938916Q
GMF4210QIVPKG321	530	GMF size 4	2	10	Fluoroelastomer	Plugged indicator port	3.5 BAR	G2"	20 BAR	938917Q
GMF4220QIVPKG321	600	GMF size 4	2	20	Fluoroelastomer	Plugged indicator port	3.5 BAR	G2"	20 BAR	938918Q

Note: Filter assemblies ordered from the product configurator on previous page are on extended lead times. Where possible, please make your selection from the table above. Selecting the M3 or T1 type indicator will not extend the lead time for the standard products.