

EPF *iprotect*[®]

(Ecological Pressure Filter)

High Pressure Filters
Max 700 l/min - 450 bar



A compact, cost effective pressure filter solution

Designed with the *iprotect*[®] patented filtration technology

The Parker EPF *iprotect*[®] (Ecological High Pressure Filter) is designed to provide high quality filtration of hydraulic systems, providing new possibilities to reduce the cost of ownership by improving their productivity and profitability.

A radical, innovative approach was applied with the design of the EPF *iprotect*[®], suitable for a flow capacity up to 700 l/min at 450 bar working pressure.

A new patented design of the filter element allows integration of the bypass valve and element core as re-usable parts in the filter bowl.

This makes the product fool proof as there is no risk of forgetting to re-install re-usable parts.

With less space being available for filters, Parker has taken on board the requirement 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 500mm of space envelope in comparison with traditional high pressure filters.



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 of 50%
- No risk of installation mistakes due to a 'foolproof' design
- Unique OEM branding opportunities
- Easy to integrate into hydraulic manifold solutions

| 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 Reduce service time for filter over 40% |
| Environmentally-friendly design | Reduces environmental waste over 50% | Lower disposal cost |
| Service-friendly product design | No handling of loose re-usable parts | No risk of making mistakes during change of element |
| Bypass valve integral part of filter bowl | Easy to integrate in manifold systems | More compact and lower cost of manifold (only one cavity is needed) |
| | Lower pressure lost across filter | Saving energy, improving system efficiency |
| Wide range of differential pressure indicators | Continuous feedback of condition filter elements | Optimizing filter element life |
| | | Contributes to scheduled maintenance |

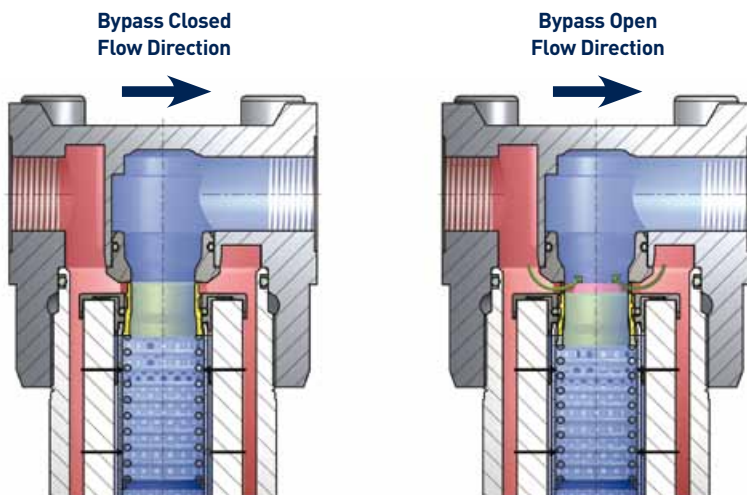
Typical Applications

- Mobile working hydraulics
- Mobile drive system
- Pilot line filtration
- Servo controls
- Reverse flow valve applications
- Industrial working hydraulics
- Control systems

The Parker EPF *iprotect*[®] series patented bypass valve technology

Bypass settings are available up to 7 bar or completely blocked in conjunction with patented, high strength filter elements. The principle is

based on differential pressure measurement across the filter element. During bypass only a part of the mainflow is flowing through the bypass valve.



Epf *iprotect*[®] applies the latest generation of Microglass III filter media. The patented element design guarantees the quality of filtration.

EPF *iprotect*®

High Pressure Filters

Selecting the right EPF element



EPF Spare Element Information

Type QI

| | |
|-------------------------|---------|
| EPF Size1 L1 2 micron | 944418Q |
| EPF Size1 L1 5 micron | 944419Q |
| EPF Size1 L1 10 micron | 944420Q |
| EPF Size1 L1 20 micron | 944421Q |
| EPF Size 2 L1 2 micron | 944426Q |
| EPF Size 2 L1 5 micron | 944427Q |
| EPF Size 2 L1 10 micron | 944428Q |
| EPF Size 2 L1 20 micron | 944429Q |
| EPF Size 2 L2 2 micron | 944430Q |
| EPF Size 2 L2 5 micron | 944431Q |
| EPF Size 2 L2 10 micron | 944432Q |
| EPF Size 2 L2 20 micron | 944433Q |
| EPF Size 3 L1 2 micron | 944434Q |
| EPF Size 3 L1 5 micron | 944435Q |
| EPF Size 3 L1 10 micron | 944436Q |
| EPF Size 3 L1 20 micron | 944437Q |
| EPF Size 3 L2 2 micron | 944438Q |
| EPF Size 3 L2 5 micron | 944439Q |
| EPF Size 3 L2 10 micron | 944440Q |
| EPF Size 3 L2 20 micron | 944441Q |
| EPF Size 4 L1 2 micron | 944442Q |
| EPF Size 4 L1 5 micron | 944443Q |
| EPF Size 4 L1 10 micron | 944444Q |
| EPF Size 4 L1 20 micron | 944445Q |
| EPF Size 4 L2 2 micron | 944446Q |
| EPF Size 4 L2 5 micron | 944447Q |
| EPF Size 4 L2 10 micron | 944448Q |
| EPF Size 4 L2 20 micron | 944449Q |
| EPF Size 5 L1 2 micron | 944450Q |
| EPF Size 5 L1 5 micron | 944451Q |
| EPF Size 5 L1 10 micron | 944452Q |
| EPF Size 5 L1 20 micron | 944453Q |

Type QIH

| | |
|---------------------------------------|---------|
| EPF High Strength Size1 L1 2 micron | 944481Q |
| EPF High Strength Size1 L1 5 micron | 944482Q |
| EPF High Strength Size1 L1 10 micron | 944483Q |
| EPF High Strength Size1 L1 20 micron | 944484Q |
| EPF High Strength Size 2 L1 2 micron | 944489Q |
| EPF High Strength Size 2 L1 5 micron | 944490Q |
| EPF High Strength Size 2 L1 10 micron | 944491Q |
| EPF High Strength Size 2 L1 20 micron | 944492Q |
| EPF High Strength Size 2 L2 2 micron | 944493Q |
| EPF High Strength Size 2 L2 5 micron | 944494Q |
| EPF High Strength Size 2 L2 10 micron | 944495Q |
| EPF High Strength Size 2 L2 20 micron | 944496Q |
| EPF High Strength Size 3 L1 2 micron | 944497Q |
| EPF High Strength Size 3 L1 5 micron | 944498Q |
| EPF High Strength Size 3 L1 10 micron | 944499Q |
| EPF High Strength Size 3 L1 20 micron | 944500Q |
| EPF High Strength Size 3 L2 2 micron | 944501Q |
| EPF High Strength Size 3 L2 5 micron | 944502Q |
| EPF High Strength Size 3 L2 10 micron | 944503Q |
| EPF High Strength Size 3 L2 20 micron | 944504Q |
| EPF High Strength Size 4 L1 2 micron | 944505Q |
| EPF High Strength Size 4 L1 5 micron | 944506Q |
| EPF High Strength Size 4 L1 10 micron | 944507Q |
| EPF High Strength Size 4 L1 20 micron | 944508Q |
| EPF High Strength Size 4 L2 2 micron | 944509Q |
| EPF High Strength Size 4 L2 5 micron | 944510Q |
| EPF High Strength Size 4 L2 10 micron | 944511Q |
| EPF High Strength Size 4 L2 20 micron | 944512Q |
| EPF High Strength Size 5 L1 2 micron | 944513Q |
| EPF High Strength Size 5 L1 5 micron | 944514Q |
| EPF High Strength Size 5 L1 10 micron | 944515Q |
| EPF High Strength Size 5 L1 20 micron | 944516Q |

Type QIR

| | |
|--------------------------------------|---------|
| EPF Size1 L1 2 micron reverse flow | 944561Q |
| EPF Size1 L1 5 micron reverse flow | 944562Q |
| EPF Size1 L1 10 micron reverse flow | 944563Q |
| EPF Size1 L1 20 micron reverse flow | 944564Q |
| EPF Size 2 L1 2 micron reverse flow | 944569Q |
| EPF Size 2 L1 5 micron reverse flow | 944570Q |
| EPF Size 2 L1 10 micron reverse flow | 944571Q |
| EPF Size 2 L1 20 micron reverse flow | 944572Q |
| EPF Size 2 L2 2 micron reverse flow | 944573Q |
| EPF Size 2 L2 5 micron reverse flow | 944574Q |
| EPF Size 2 L2 10 micron reverse flow | 944575Q |
| EPF Size 2 L2 20 micron reverse flow | 944576Q |
| EPF Size 3 L1 2 micron reverse flow | 944577Q |
| EPF Size 3 L1 5 micron reverse flow | 944578Q |
| EPF Size 3 L1 10 micron reverse flow | 944579Q |
| EPF Size 3 L1 20 micron reverse flow | 944580Q |
| EPF Size 3 L2 2 micron reverse flow | 944581Q |
| EPF Size 3 L2 5 micron reverse flow | 944582Q |
| EPF Size 3 L2 10 micron reverse flow | 944583Q |
| EPF Size 3 L2 20 micron reverse flow | 944584Q |
| EPF Size 4 L1 2 micron reverse flow | 944585Q |
| EPF Size 4 L1 5 micron reverse flow | 944586Q |
| EPF Size 4 L1 10 micron reverse flow | 944587Q |
| EPF Size 4 L1 20 micron reverse flow | 944588Q |
| EPF Size 4 L2 2 micron reverse flow | 944589Q |
| EPF Size 4 L2 5 micron reverse flow | 944590Q |
| EPF Size 4 L2 10 micron reverse flow | 944591Q |
| EPF Size 4 L2 20 micron reverse flow | 944592Q |
| EPF Size 5 L1 2 micron reverse flow | 944593Q |
| EPF Size 5 L1 5 micron reverse flow | 944594Q |
| EPF Size 5 L1 10 micron reverse flow | 944595Q |
| EPF Size 5 L1 20 micron reverse flow | 944596Q |

Protecting your system and the environment

Protect your system performance and profit

The new *iprotect*® generation of filter elements provide high filtration performance combined with Parker technology. The bespoke design prevents the use of pirate type alternatives.



Less space needed to accommodate the filter

More compact solutions are possible as the filter element remains in the filter bowl during change of filter element. Compared to traditional solutions it does not only save space, it also reduces the required manual handling during the filter change process.



Saving cost and our environment

What does it take to introduce a new ground-breaking design which saves the environment? Parker's EPF *iprotect*® applies a re-usable element core and bypass, both integral parts of the filter bowl. This solution avoids the handling of re-usable parts during element change and reduces over 50% disposal weight.



Smart valve technology

Parker hydraulic control valve technology is applied for the reusable bypass valve. This leakage-free valve has a patented interface with the filter element, which ensures that genuine parts are always applied. With bypass settings up to 7 bar filtration during cold start conditions, more compact solutions, can be realised. The valve also optimizes the flow path, reducing the pressure lost across the filter.



Easier to integrate

Parker has set the trend to integrate filtration into manifolds. With Parker's EPF *iprotect*® we have taken the design one step further. Only one cavity is needed to accommodate the filter instead of two, this is because the re-usable bypass valve is integrated into the filter bowl, reducing space and cost.



Customized solutions

Parker's motion & control technologies provide new opportunities for our customers. Customized manifolds or duplex filters, as in this example offer complete automatic change-over. The EPF *iprotect*® contributes to realizing new solutions, improving your productivity and profitability.



A protective 'gene'

The performance and profitability of systems directly depends upon the filter media.



It goes without saying that Parker's products aim to avoid the use of unknown filter performance, jeopardizing safety and performance. Our Microglass III media is continuously upgraded and acts as a protective 'gene' in the system.

When going into reverse

Parker's EPF can be equipped with an optional reverse flow. This valve assembly is integrated in the element end cap and isolates the filter medium during reverse flow conditions.



A new design of the filter element allows integration of the bypass valve and element core as re-usable parts in the filter bowl. This results in cost reduction when integrating the high pressure filter in manifold type solutions. But it also reduces the waste when changing the filter element by over 50% as the element core is an integral part of the filter bowl.

The design of the EPF *iprotect*®, is unique, there is no need to re-install any re-usable parts as with some other filters in the market. This makes the product fool proof as there is no risk of forgetting to re-install re-usable parts.



Replacing the filter element:

- Drain the filter housing using the plugged drain port.
- Thanks to the filter lock the element remains in the bowl.
- Pull out the old element. The re-usable element core and bypass valve are integral parts of the bowl.
- Filtration is from 'Out to In,' the element core is located in the clean oil side.
- Just drop the new element in the bowl.
- Screw the bowl, including element into the filter head.

EPF *iprotect*®

Size 1

Specification EPF *iprotect*® Size 1

Specification

Nominal flow 40 l/min

Pressure ratings

Maximum allowable operating pressure 450 bar

Filter housing pressure pulse fatigue tested

10⁶ pulses 0-414 bar

Connections

Inlet and outlet connections are threaded internally

Connection style

Thread G¹/₂

Threat SAE 8

Filter housing

Head material cast iron (GSI)

Bowl material steel

Seal material

Nitrile of Fluorelastomer

Operating temperature range

Seal material Nitrile : -40 °C to +100 °C

Seal material Fluorelastomer : -20 °C to +120 °C

Bypass valve & Indicator settings

Bypass Indicator

3.5 bar 2.5 bar

5.0 bar 3.5 bar

7.0 bar 5.0 bar

Blocked 5.0 bar

Filter element

Degree of filtration

Determined by multipass test in accordance to ISO16889

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 reusable metal inner core. Collapse pressure 25 bar (ISO 2941)

High collapse elements

To be used when bypass blocked option is selected Collapse pressure 210 bar (ISO 2941)

Indicator options

Indicating differential pressure:

2.5 +/- 0.3 bar

3.5 +/- 0.3 bar

5.0 +/- 0.3 bar

Visual M3

Electrical T1

Electronic F1 (PNP)

Electronic F2 (NPN)

Atex versions are available on request

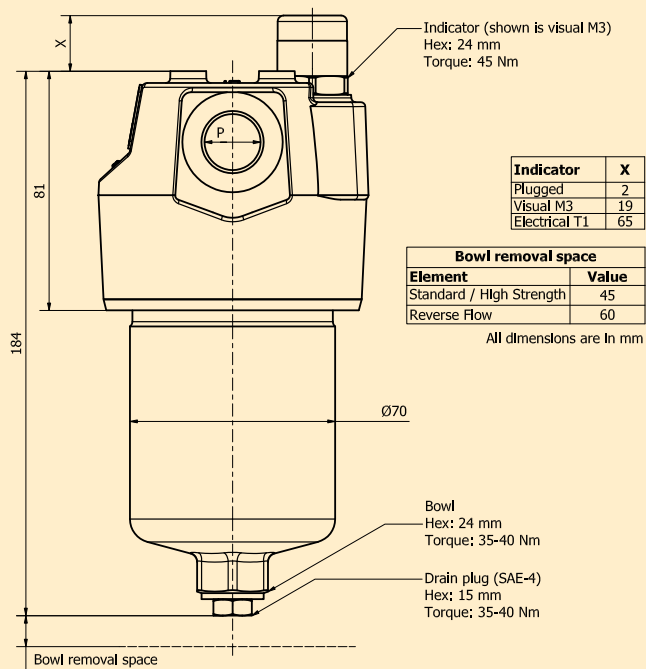
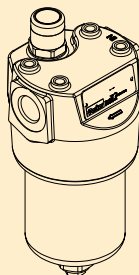
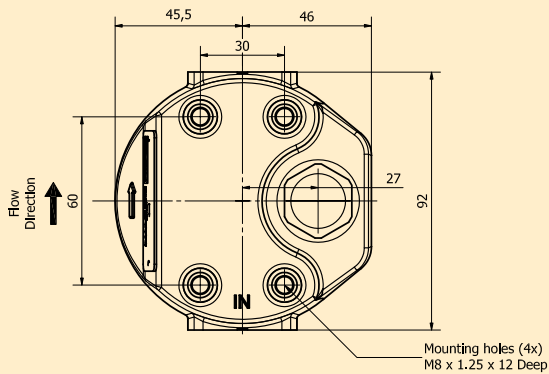
Weights (kg)

EPF Size 1: 3

Fluid compatibility

- Hydraulic mineral oils H to class HLPD (DIN51524)
- Operating fluids DIN ISO 2943
- Lubrication fluids ISO6743, APJ, DIN 51517, ACEA, ASTM
- Vegetable oils
- 60/40 Water Glycols
- On request - Industrial grade phosphate esters
- Non aggressive synthetic oils
- Non aggressive bio-degradable oils (HETG, HEPG and HEES to VDMA 24568)

EPF *iprotect*® - Size 1 (Inline)



EPF *i*protect® Size 1 Pressure Drop Curves

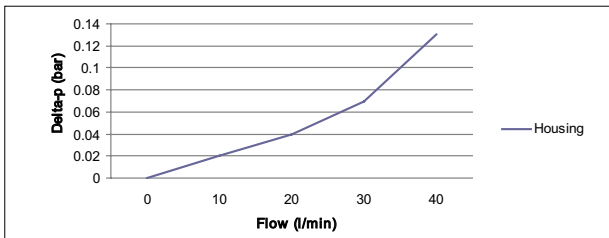
With 3.5 bar bypass the recommended initial pressure drop max is 1.2 bar

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

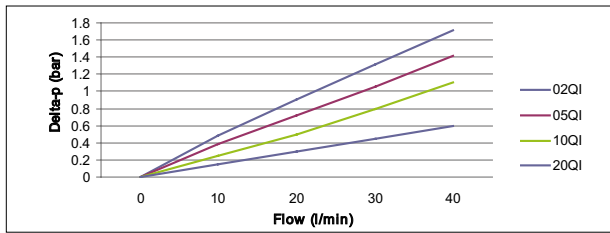
If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:

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

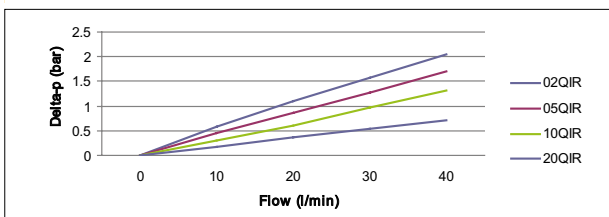
EPF Size 1 Empty housing



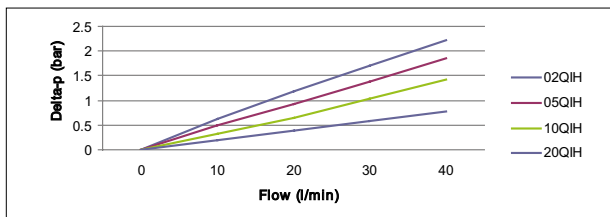
EPF Size 1 Filter Elements



EPF Size 1 Filter Elements with reverse flow valve



EPF Size 1 High Strength Filter Elements



EPF *iprotect*®

Size 2

Specification EPF *iprotect*® Size 2

Specification

Nominal flow >100 l/min

Pressure ratings

Maximum allowable operating pressure 450 bar

Filter housing pressure pulse fatigue tested

10⁶ pulses 0-414 bar

Connections

Inlet and outlet connections are threaded internally

Connection style

Thread G $\frac{3}{4}$

Thread SAE 12

Thread M27, ISO 6149

SAE flange $\frac{3}{4}$ = 6000M

SAE flange $\frac{3}{4}$ = 6000

Manifold

Filter housing

Head material cast iron (GSI)

Bowl material steel

Seal material

Nitrile of Fluorelastomer

Operating temperature range

Seal material Nitrile : -40 °C to +100 C

Seal material Fluorelastomer : -20 °C to +120 C

Bypass valve & Indicator settings

Bypass Indicator

3.5 bar 2.5 bar

5.0 bar 3.5 bar

7.0 bar 5.0 bar

Blocked 5.0 bar

Filter element

Degree of filtration

Determined by multipass test in accordance to ISO16889

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 reusable metal inner core. Collapse pressure 25 bar (ISO 2941)

High collapse elements

To be used when bypass blocked option is selected

Collapse pressure 210 bar (ISO 2941)

Indicator options

Indicating differential pressure:

2.5 +/- 0.3 bar

3.5 +/- 0.3 bar

5.0 +/- 0.3 bar

Visual M3

Electrical T1

Electronic F1 (PNP)

Electronic F2 (NPN)

Atex versions are available on request

Weights (kg)

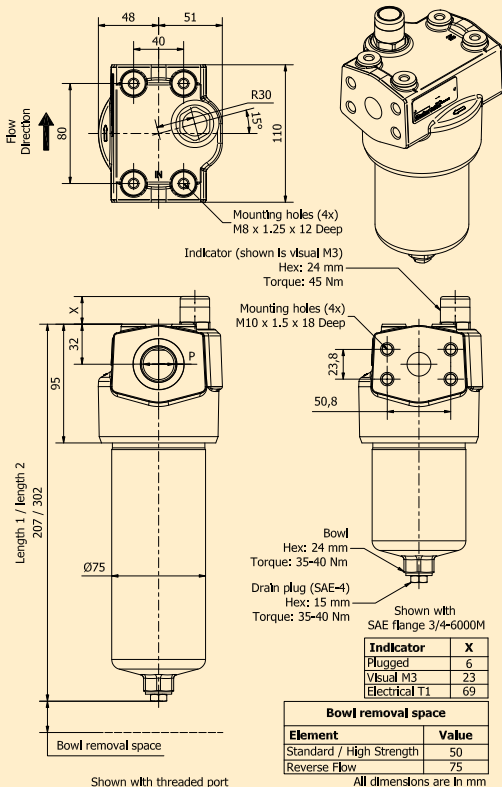
EPF Size 2 length 1: 4,2

EPF Size 2 length 2: 5,7

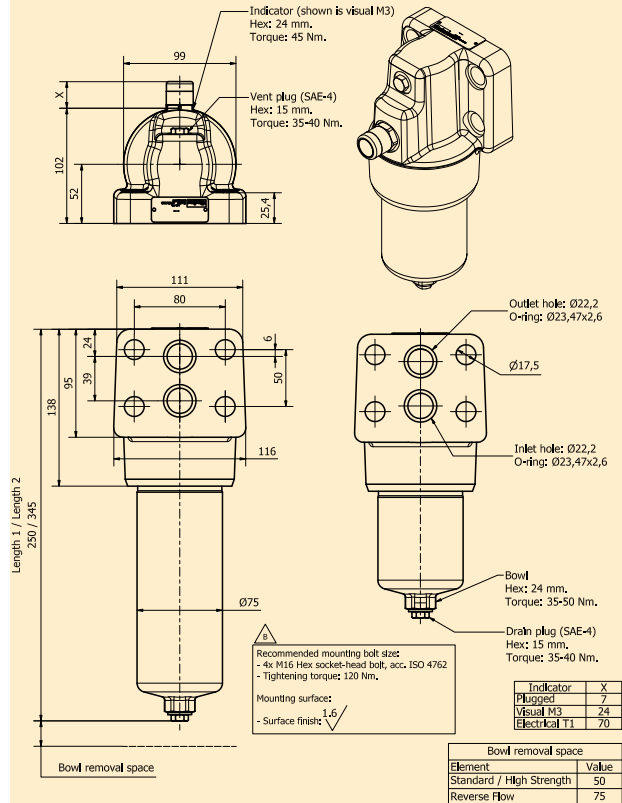
Fluid compatibility

- Hydraulic mineral oils H to class HLPD (DIN51524)
- Operating fluids DIN ISO 2943
- Lubrication fluids ISO6743, APJ, DIN 51517, ACEA, ASTM
- Vegetable oils
- 60/40 Water Glycols
- On request - Industrial grade phosphate esters
- Non aggressive synthetic oils
- Non aggressive bio-degradable oils (HETG, HEPG and HEES to VDMA 24568)

EPF *iprotect*® - Size 2 (Inline)



EPF *iprotect*® - Size 2 (Manifold)



EPF *i*protect® Size 2 Pressure Drop Curves

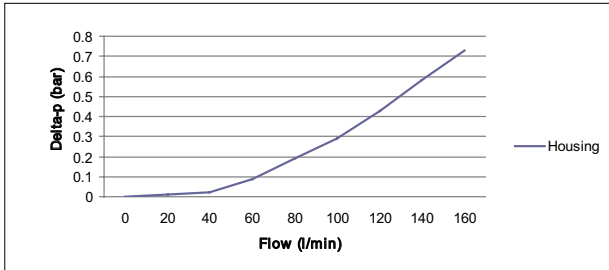
With 3.5 bar bypass the recommended initial pressure drop max is 1.2 bar

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

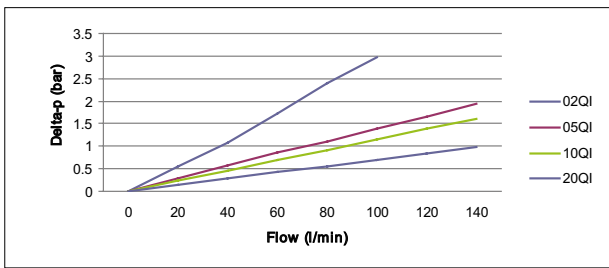
If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:

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

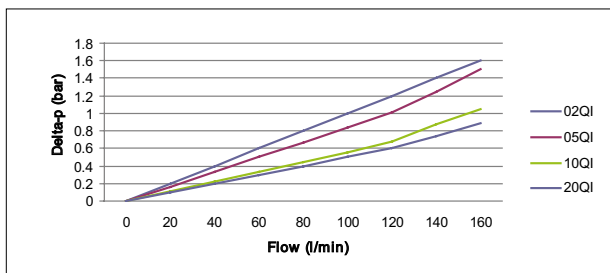
Empty Housing EPF Size 2



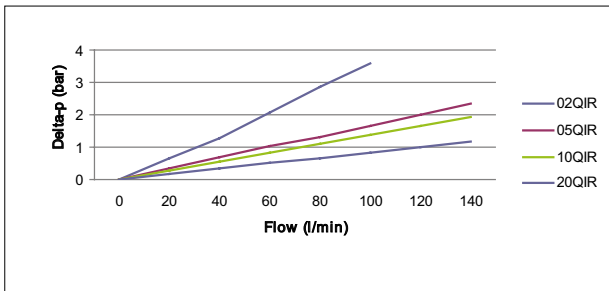
EPF Size 2 Length 1 Filter Elements



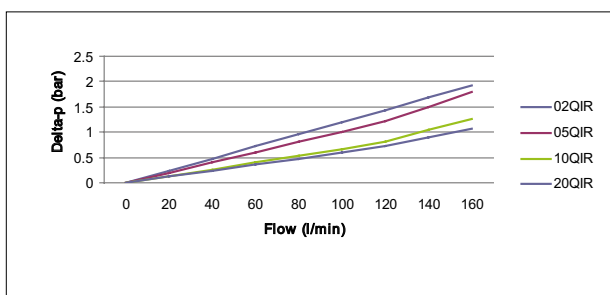
EPF Size 2 Length 2 Filter Elements



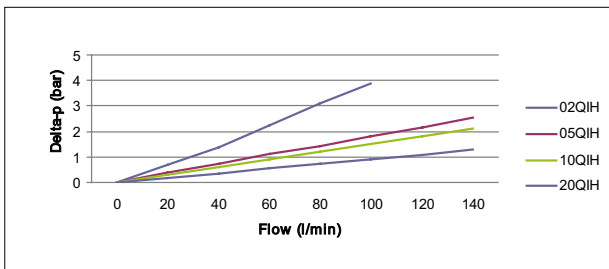
EPF Size 2 Length 1 Filter Elements with reverse flow valve



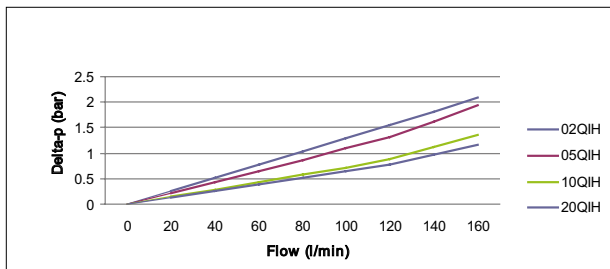
EPF Size 2 Length 2 Filter Elements with reverse flow valve



EPF Size 2 Length 1 High Strength Filter Elements



EPF Size 2 Length 2 High Strength Filter Elements



EPF *iprotect*®

Size 3

Specification EPF *iprotect*® Size 3

Specification

Nominal flow >160 l/min

Pressure ratings

Maximum allowable operating pressure 450 bar

Filter housing pressure pulse fatigue tested

10⁶ pulses 0-414 bar

Connections

Inlet and outlet connections are threaded internally

Connection style

Thread G1

Thread SAE 16

Thread M33, ISO 6149

SAE flange 1 = 6000M

SAE flange 1 = 6000

Filter housing

Head material cast iron (GSI)

Bowl material steel

Seal material

Nitrile of Fluorelastomer

Operating temperature range

Seal material Nitrile : -40 °C to +100 °C

Seal material Fluorelastomer : -20 °C to +120 °C

Bypass valve & Indicator settings

Bypass Indicator

3.5 bar 2.5 bar

5.0 bar 3.5 bar

7.0 bar 5.0 bar

Blocked 5.0 bar

Filter element

Degree of filtration

Determined by multipass test in accordance to ISO16889

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 reusable metal inner core. Collapse pressure 25 bar (ISO 2941)

High collapse elements

To be used when bypass blocked option is selected

Collapse pressure 210 bar (ISO 2941)

Indicator options

Indicating differential pressure:

2.5 +/- 0.3 bar

3.5 +/- 0.3 bar

5.0 +/- 0.3 bar

Visual M3

Electrical T1

Electronic F1 (PNP)

Electronic F2 (NPN)

Atex versions are available on request

Weights (kg)

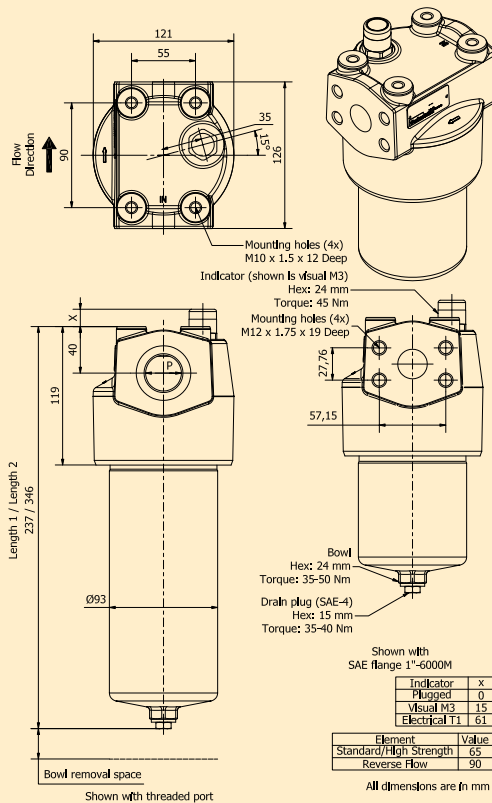
EPF Size 3 length 1: 6,7

EPF Size 3 length 2: 9,2

Fluid compatibility

- Hydraulic mineral oils H to class HLPD (DIN51524)
- Operating fluids DIN ISO 2943
- Lubrication fluids ISO6743, APJ, DIN 51517, ACEA, ASTM
- Vegetable oils
- 60/40 Water Glycols
- On request - Industrial grade phosphate esters
- Non aggressive synthetic oils
- Non aggressive bio-degradable oils (HETG, HEPG and HEES to VDMA 24568)

EPF *iprotect*® - Size 3 (Inline)



EPF *iprotect*® Size 3 Pressure Drop Curves

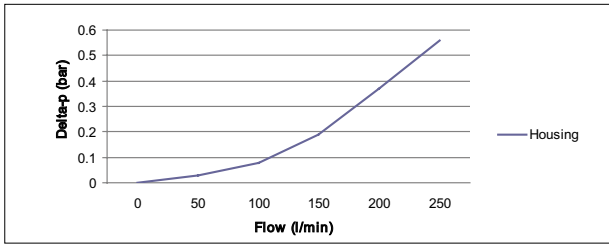
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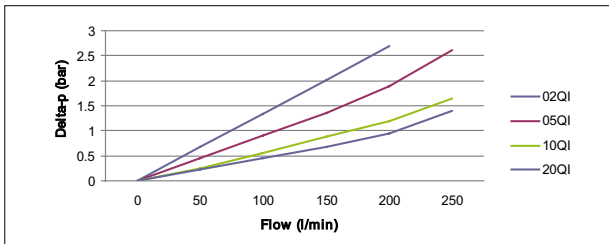
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The total $\Delta p = \text{housing } \Delta p_h + (\text{element } \Delta p_e \times \text{working viscosity}/30)$.

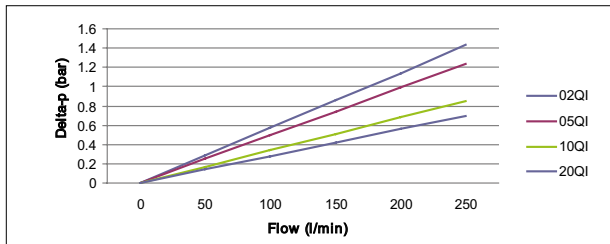
EPF Size 3 Empty Housing



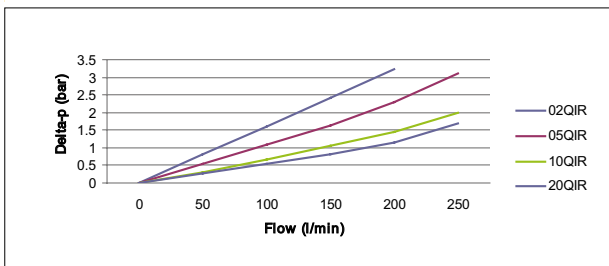
EPF Size 3 Length 1 Filter Elements



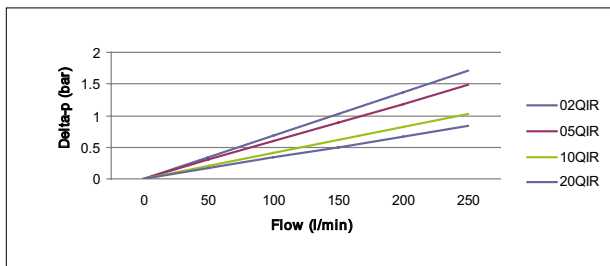
EPF Size 3 Length 2 Filter Elements



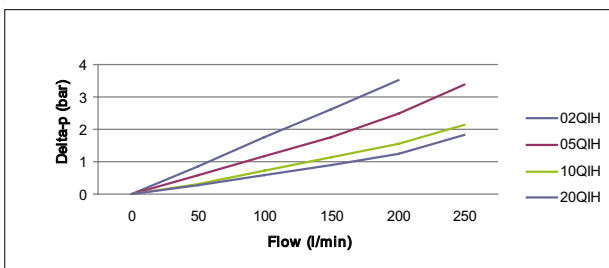
EPF Size 3 Length 1 Filter Elements with reverse flow valve



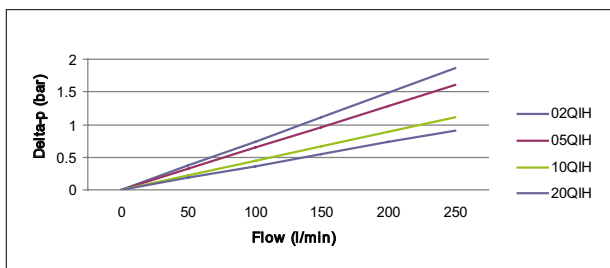
EPF Size 3 Length 2 Filter Elements with reverse flow valve



EPF Size 3 Length 1 High Strength Filter Elements



EPF Size 3 Length 2 High Strength Filter Elements



EPF *iprotect*®

Size 4

Specification EPF *iprotect*® Size 4

Specification

Nominal flow >320 l/min

Pressure ratings

Maximum allowable operating pressure 450 bar
Filter housing pressure pulse fatigue tested 10⁶ pulses 0-414 bar

Connections

Inlet and outlet connections are threaded internally

Connection style

Thread G11/4
Thread G11/2
Thread SAE 20
Thread SAE 24
Thread M42, ISO 6149
SAE flange 1¼ = 6000M
SAE flange 1¼ = 6000
Manifold

Filter housing

Head material cast iron (GSI)
Bowl material steel
Seal material
Nitrile of Fluorelastomer

Operating temperature range

Seal material Nitrile : -40 °C to +100 °C
Seal material Fluorelastomer : -20 °C to +120 °C

Bypass valve & Indicator settings

| Bypass | Indicator |
|---------|-----------|
| 3.5 bar | 2.5 bar |
| 5.0 bar | 3.5 bar |
| 7.0 bar | 5.0 bar |
| Blocked | 7.0 bar |

Filter element

Degree of filtration
Determined by multipass test in accordance to ISO16889

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 reusable metal inner core. Collapse pressure 25 bar (ISO 2941)

High collapse elements

To be used when bypass blocked option is selected
Collapse pressure 210 bar (ISO 2941)

Indicator options

Indicating differential pressure:

2.5 +/- 0.3 bar
3.5 +/- 0.3 bar
5.0 +/- 0.3 bar

Visual M3

Electrical T1
Electronic F1 (PNP)
Electronic F2 (NPN)
Atex versions are available on request

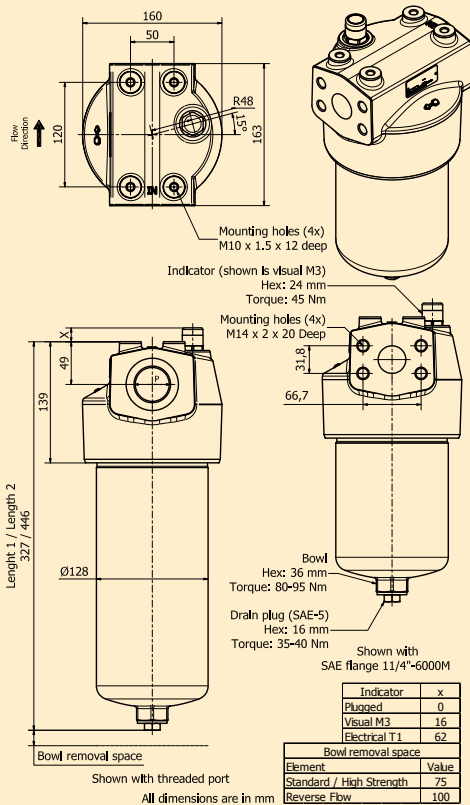
Weights (kg)

EPF Size 4 length 1: 15,8
EPF Size 4 length 2: 20,3

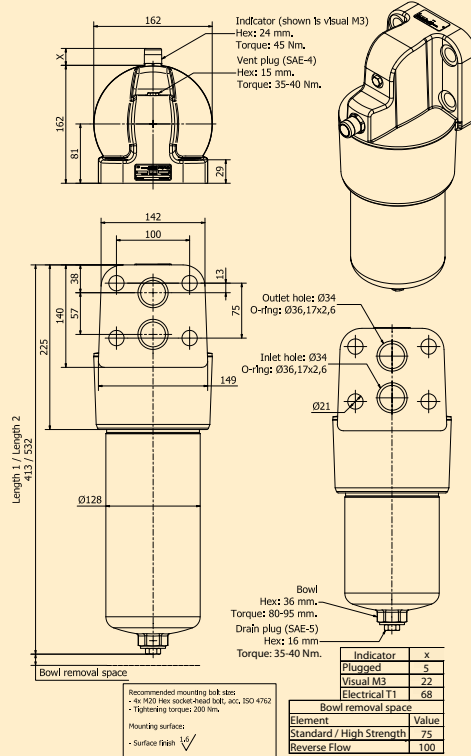
Fluid compatibility

- Hydraulic mineral oils H to class HLPD (DIN51524)
- Operating fluids DIN ISO 2943
- Lubrication fluids ISO6743, APJ, DIN 51517, ACEA, ASTM
- Vegetable oils
- 60/40 Water Glycols
- On request - Industrial grade phosphate esters
- Non aggressive synthetic oils
- Non aggressive bio-degradable oils (HETG, HEPG and HEES to VDMA 24568)

EPF *iprotect*® - Size 4 (Inline)



EPF *iprotect*® - Size 4 (Manifold)



EPF *iprotect*® Size 4 Pressure Drop Curves

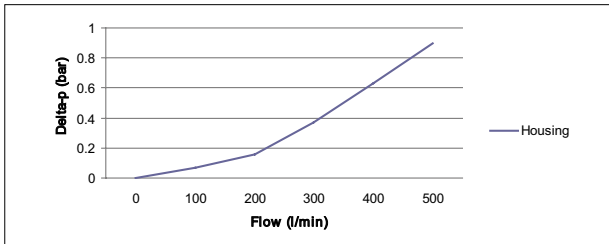
With 3.5 bar bypass the recommended initial pressure drop max is 1.2 bar

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

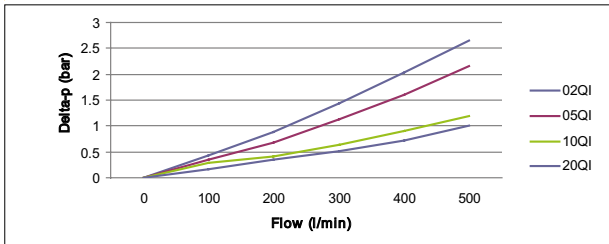
If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:

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

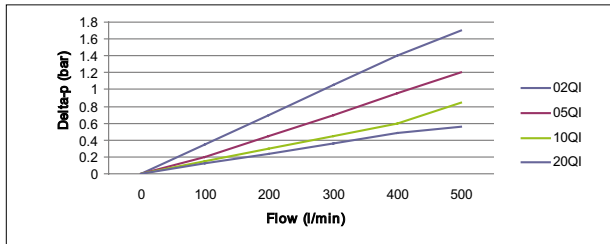
EPF Size 4 Empty Housing



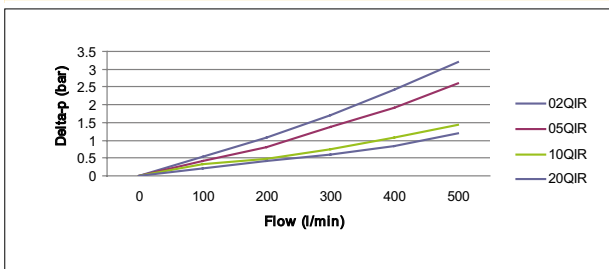
EPF Size 4 Length 1 Filter Elements



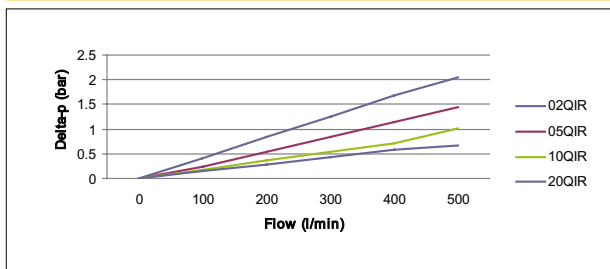
EPF Size 4 Length 2 Filter Elements



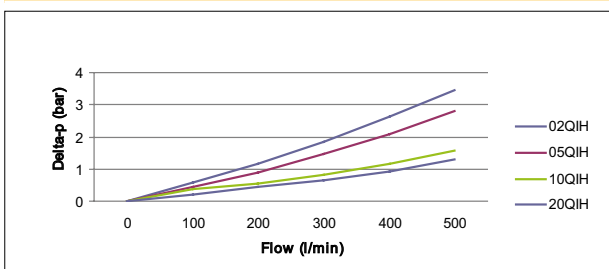
EPF Size 4 Length 1 Filter Elements with reverse flow valve



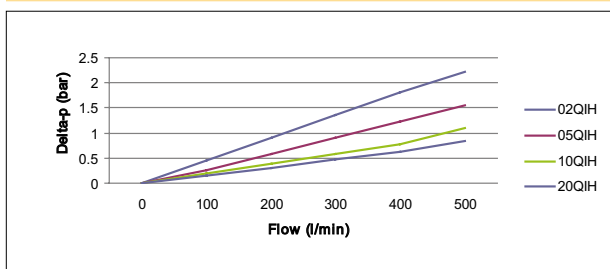
EPF Size 4 Length 2 Filter Elements with reverse flow valve



EPF Size 4 Length 1 High Strength Filter Elements



EPF Size 4 Length 2 High Strength Filter Elements



EPF *iprotect*®

Size 5

Specification EPF *iprotect*® Size 5

Specification

Nominal flow >320 l/min

Pressure ratings

Maximum allowable operating pressure 450 bar
Filter housing pressure pulse fatigue tested 10⁶ pulses 0-414 bar

Connections

Inlet and outlet connections are threaded internally

Connection style

Thread G1½
Thread SAE 24
Manifold
SAE flange 1½ - 6000M

Filter housing

Head material cast iron (GSI)
Bowl material steel
Seal material
Nitrile of Fluorelastomer

Operating temperature range

Seal material Nitrile : -40 °C to +100 °C
Seal material Fluorelastomer : -20 °C to +120 °C

Bypass valve & Indicator settings

| Bypass | Indicator |
|---------|-----------|
| 3.5 bar | 2.5 bar |
| 5.0 bar | 3.5 bar |
| 7.0 bar | 5.0 bar |
| Blocked | 5.0 bar |

Filter element

Degree of filtration
Determined by multipass test in accordance to ISO16889

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 reusable metal inner core. Collapse pressure 25 bar (ISO 2941)

High collapse elements

To be used when bypass blocked option is selected
Collapse pressure 210 bar (ISO 2941)

Indicator options

Indicating differential pressure:

2.5 +/- 0.3 bar
3.5 +/- 0.3 bar
5.0 +/- 0.3 bar

Visual M3

Electrical T1

Electronic F1 (PNP)

Electronic F2 (NPN)

Atex versions are available on request

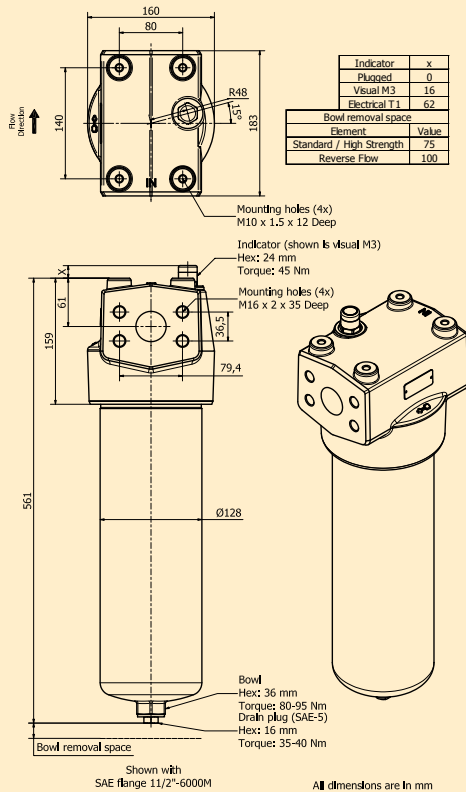
Weights (kg)

EPF Size 5 length 1: 31

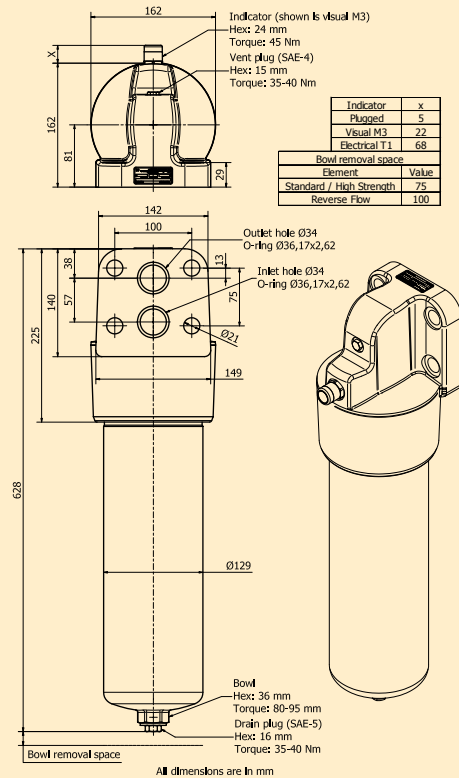
Fluid compatibility

- Hydraulic mineral oils H to class HLPD (DIN51524)
- Operating fluids DIN ISO 2943
- Lubrication fluids ISO6743, APJ, DIN 51517, ACEA, ASTM
- Vegetable oils
- 60/40 Water Glycols
- On request - Industrial grade phosphate esters
- Non aggressive synthetic oils
- Non aggressive bio-degradable oils (HETG, HEPG and HEES to VDMA 24568)

EPF *iprotect*® - Size 5 (Inline)



EPF *iprotect*® - Size (Manifold)



EPF *iprotect*® Size 5 Pressure Drop Curves

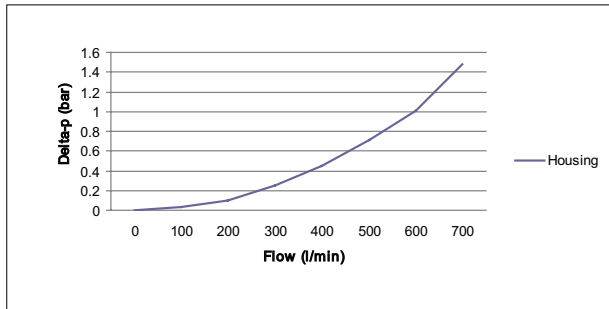
With 3.5 bar bypass the recommended initial pressure drop max is 1.2 bar

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

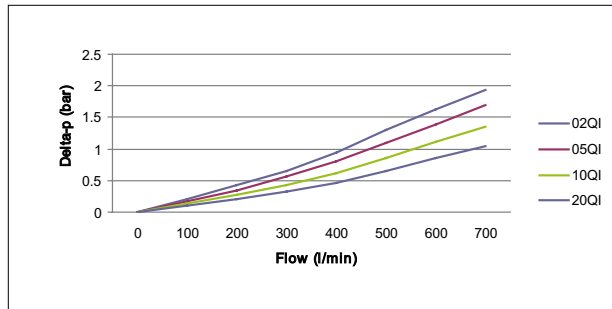
If the medium used has a viscosity different from 30cSt, pressure drop over the filter can be estimated as follows:

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

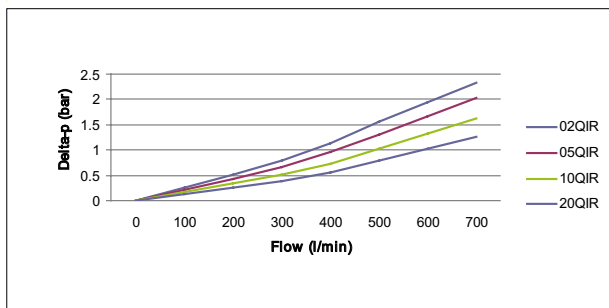
EPF Size 5 Empty Housing



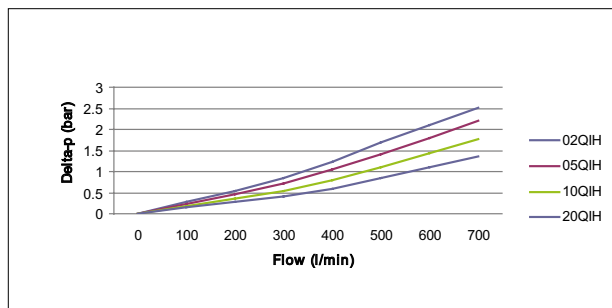
EPF Size 5 Length 1 Filter Elements



EPF Size 5 Length 1 Filter Elements with reverse flow valve



EPF Size 5 Length 1 Filter Elements



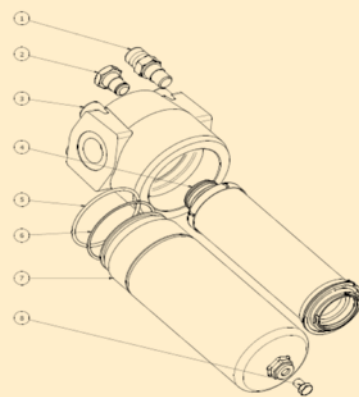
Parts list

| Index | Description | Part number |
|-------|----------------|------------------------------------|
| 1 | Indicator | On Request |
| 2 | Plug | On Request |
| 3 | Filter head | On Request |
| 4 | Filter element | See element table |
| 5 | Back-up ring | In seal kit/spare filter elements |
| 6 | O-ring | In seal kit/ spare filter elements |
| 7 | Filter bowl | On Request |
| 8 | Drain plug | On Request |

Seal kit numbers

| Filter | Nitrile | Fluorelastomer |
|-----------|----------|----------------|
| EPF 1 | EPFSK001 | EPFSK011 |
| EPF 2 | EPFSK002 | EPFSK012 |
| EPF 3 | EPFSK003 | EPFSK013 |
| EPF 4 + 5 | EPFSK004 | EPFSK014 |

Exploded view spare parts drawing



See opposite for parts list and seal kit numbers

Indicator Options

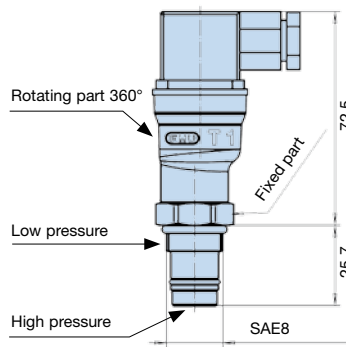
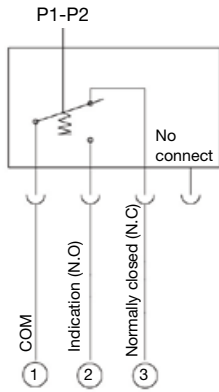
FMU Δp-Indicators and Pressure Indicators

FMUT Electrical

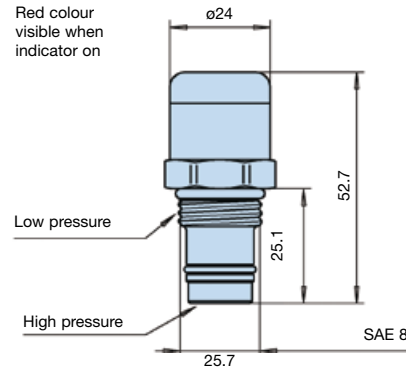
| Rated voltage | Non-inductive load (A) | | | | Inductive load (A) | | | | Inrush current (A) | |
|---------------|------------------------|------|-----------|------|--------------------|------|------------|---------|--------------------|------|
| | Resistive load | | Lamp load | | Inductive load | | 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 | | | | |

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

Contact configuration Electrical Indicator Type T1

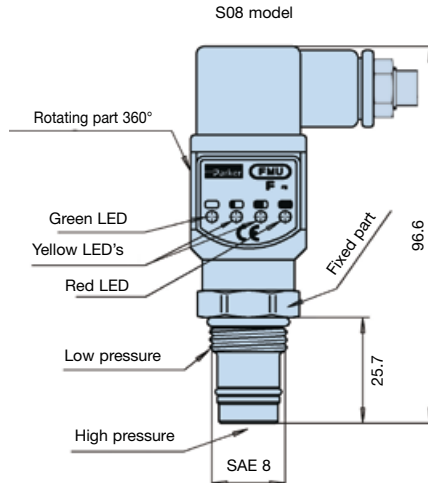
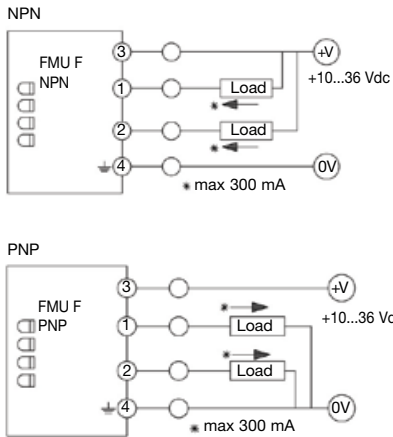


FMUM3 Visual Auto Reset Operation



FMUF Electronic

Contact configuration



Thermal lock-out (standard setting +20 °C)

- Indicator operates only when temperature is above setting.

| Ind. press. setting | LED status | | | | Output |
|---------------------|------------|----|----|---|----------|
| | G | Y1 | Y2 | R | |
| < 50 % | ⊗ | | | | - |
| 50 % | ⊗ | ⊗ | | | - |
| 75 % | ⊗ | ⊗ | ⊗ | | 2 active |
| 100 % | ⊗ | ⊗ | ⊗ | ⊗ | 1 active |

| | |
|----------------------|---------------------------------------------------------|
| Enclosure class | IP65 |
| Electrical connector | DIN 43650, cable connection PG9 or optionally M12 4-pin |
| Input supply voltage | +10 to 36 Vdc |
| *Indication output | max. 300 mA/36 Vdc |
| Output type: | N.O. or N.C./NPN or PNP |

Note: Do not connect output terminals 1 or 2 directly (without load) to power supply terminals, because this will damage the equipment.

Filter media efficiency

| Degree of filtration | | | | | | Code | | |
|-------------------------------------------------------------------------------------|-----------------|-----------------|------------------|------------------|-------------------|------------------------------|---------------------------------------|--------------------------|
| Average filtration beta ratio β (ISO 16889) / particle size μm [c] | | | | | | | | |
| $\beta_x(c)=2$ | $\beta_x(c)=10$ | $\beta_x(c)=75$ | $\beta_x(c)=100$ | $\beta_x(c)=200$ | $\beta_x(c)=1000$ | Disposable Microglass III | Element with reverse flow valve | High strength Element |
| % efficiency, based on the above beta ration (β_x) | | | | | | | | |
| 50.0% | 90.0% | 98.7% | 99.0% | 99.5% | 99.9% | | | |
| N/A | N/A | N/A | N/A | N/A | 4.5 | 02QI | 02QIR | 02QIH |
| N/A | N/A | 4.5 | 5 | 6 | 7 | 05QI | 05QIR | 05QIH |
| N/A | 6 | 8.5 | 9 | 10 | 12 | 10QI | 10QIR | 10QIH |
| 6 | 11 | 17 | 18 | 20 | 22 | 20QI | 20QIR | 20QIH |

Ordering information. Standard part numbers

| Filter Assemblies | Part Number | Flow (l/min) | Model Number | Element length | Media Rating (micron) | Seals | Indicator | Bypass (bar) | Ports | Replacement elements |
|-------------------|------------------|--------------|--------------|----------------|-----------------------|---------|--------------|--------------|---------|----------------------|
| | EPF1105QIBPMG081 | 40 | EPF1 | 1 | 5 | Nitrile | Plugged port | 7 | G1/2" | 944419Q |
| | EPF1110QIBPMG081 | 40 | EPF1 | 1 | 10 | Nitrile | Plugged port | 7 | G1/2" | 944420Q |
| | EPF1120QIBPMG081 | 40 | EPF1 | 1 | 20 | Nitrile | Plugged port | 7 | G1/2" | 944421Q |
| | EPF2205QIBPMG121 | 140 | EPF2 | 2 | 5 | Nitrile | Plugged port | 7 | G3/4" | 944431Q |
| | EPF2210QIBPMG121 | 140 | EPF2 | 2 | 10 | Nitrile | Plugged port | 7 | G3/4" | 944432Q |
| | EPF2220QIBPMG121 | 140 | EPF2 | 2 | 20 | Nitrile | Plugged port | 7 | G3/4" | 944433Q |
| | EPF3205QIBPMG161 | 250 | EPF3 | 2 | 5 | Nitrile | Plugged port | 7 | G1" | 944439Q |
| | EPF3210QIBPMG161 | 250 | EPF3 | 2 | 10 | Nitrile | Plugged port | 7 | G1" | 944440Q |
| | EPF3220QIBPMG161 | 250 | EPF3 | 2 | 20 | Nitrile | Plugged port | 7 | G1" | 944441Q |
| | EPF4205QIBPMG201 | 450 | EPF4 | 2 | 5 | Nitrile | Plugged port | 7 | G1 1/4" | 944447Q |
| | EPF4210QIBPMG201 | 450 | EPF4 | 2 | 10 | Nitrile | Plugged port | 7 | G1 1/4" | 944448Q |
| | EPF4220QIBPMG201 | 450 | EPF4 | 2 | 20 | Nitrile | Plugged port | 7 | G1 1/4" | 944449Q |
| | EPF5105QIBPMG241 | 500 | EPF5 | 1 | 5 | Nitrile | Plugged port | 7 | G1 1/2" | 944451Q |
| | EPF5110QIBPMG241 | 500 | EPF5 | 1 | 10 | Nitrile | Plugged port | 7 | G1 1/2" | 944452Q |
| | EPF5120QIBPMG241 | 500 | EPF5 | 1 | 20 | Nitrile | Plugged port | 7 | G1 1/2" | 944453Q |

| Visual Indicators | Part Number | Setting (bar) |
|-------------------|-------------|---------------|
| | FMUM3MVMS08 | 5 |

For spare element see page 130.

| Electrical Indicators | Part Number | Setting (bar) | Switch Type | Additional |
|-----------------------|-------------|---------------|-------------|-----------------------|
| | FMUT1MVMS08 | 5 | NO/NC | |
| | FMUF1MVMS08 | 5 | NO | Electronic 4 LED, PNP |
| | FMUF2MVMS08 | 5 | NO | Electronic 4 LED, NPN |
| | FMUF3MVMS08 | 5 | NC | Electronic 4 LED, PNP |
| | FMUF4MVMS08 | 5 | NC | Electronic 4 LED, NPN |

EPF *iprotect*[®]

High Pressure Filter

Ordering Information

| | | | | | | | |
|-------------|----------|-------------|----------|----------|----------|------------|----------|
| Box 1 | Box 2 | Box 3 | Box 4 | Box 5 | Box 6 | Box 7 | Box 8 |
| EPF3 | 2 | 02QI | B | P | M | G16 | 1 |

Box 1

| Capacity | |
|-----------------------|------|
| Model | Code |
| Size 1 (40 l/min) | EPF1 |
| Size 2 (replaces 18P) | EPF2 |
| Size 3 (replaces 28P) | EPF3 |
| Size 4 (replaces 38P) | EPF4 |
| Size 5 | EPF5 |

Box 2

| Filter Length | |
|-----------------------------------------|------|
| | Code |
| Length 1 | 1 |
| Length 2 (not for Size 1 and Size 5) | 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 |

Box 3

| Degree of filtration | | | | |
|---------------------------------------------------------|------------|-------|-------|-------|
| | Media code | | | |
| <i>iprotect</i> [®] Glassfibre element | 02QI | 05QI | 10QI | 20QI |
| <i>iprotect</i> [®] with reverse flow valve(*) | 02QIR | 05QIR | 10QIR | 20QIR |
| <i>iprotect</i> [®] High Strength element | 02QIH | 05QIH | 10QIH | 20QIH |

(*Note: Only in combination with 3.5 bar bypass)

Box 4

| Seal Material | |
|----------------|------|
| | Code |
| Nitrile | B |
| Fluorelastomer | V |

Box 5

| Indicator | |
|---------------------------|------|
| | Code |
| Visual Indicator | M3 |
| Electrical Indicator | T1 |
| Electronic 4 LED, PNP, NO | F1 |
| Electronic 4 LED, NPN, NO | F2 |
| Electronic 4 LED, PNP, NC | F3 |
| Electronic 4 LED, NPN, NC | F4 |
| Plugged with Steel plug | P |
| No indicator port | N |

Other versions like ATEX on request
All electrical indicators are CE-certified

Box 6

| Bypass Setting | | |
|----------------|-------------------|------|
| | Indicator Setting | Code |
| 3.5 bar | 2.5 bar | K |
| 5.0 bar | 3.5 bar | L |
| 7.0 bar | 5.0 bar | M |
| No bypass | 5.0 bar | M |
| No bypass | No indicator | X |

Important notes: When no bypass is selected Parker strongly advises the use of high strength elements

Box 8

| Options | | |
|-----------------------------------------------------------|---------------------------------------------------------|------|
| | | Code |
| Standard | | 1 |
| No bypass | | 2 |
| Reverse flow valve | Safeguard valve only in combination with 3.5 bar bypass | RFV |
| ATEX certified* (Category 2, non-electrical equipment) | | EX |

Note 1: For non-bypass please select High strength element type QIH
Note 2: 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.

Box 7

| Filter Connection | | |
|-------------------|------------------------|------|
| | Connection type & size | Code |
| Size 1 | Thread G½ | G08 |
| | Thread SAE 8 | S08 |
| Size 2 | Thread G½ | G08 |
| | Thread G¾ | G12 |
| | Thread SAE 12 | S12 |
| | Thread M27, ISO 6149 | M27 |
| | SAE flange ¾ - 6000M | H12 |
| | SAE flange ¾ - 6000 | F12 |
| | Manifold | X12 |
| Size 3 | Thread G1 | G16 |
| | Thread SAE 16 | S16 |
| | Thread M33, ISO 6149 | M33 |
| | SAE flange 1 - 6000M | H16 |
| | SAE flange 1 - 6000 | F16 |
| | Manifold | X16 |
| Size 4 | Thread G1¼ | G20 |
| | Thread G1½ | G24 |
| | Thread SAE20 | S20 |
| | Thread SAE24 | S24 |
| | Thread M42, ISO 6149 | M42 |
| | SAE flange 1¼ - 6000M | H20 |
| | SAE flange 1¼ - 6000 | F20 |
| | Manifold | X20 |
| Size 5 | Thread G1½ | G24 |
| | Thread SAE 24 | S24 |
| | SAE flange 1½ - 6000M | H24 |
| | Manifold | X20 |