



Pall Corporation

Melt Blown Filter Technology

RECOMMENDED FOR INDUSTRIAL APPLICATIONS

Filters for water, aqueous solutions
and low viscosity process fluids



Melt Blown Filter Elements

'Pall' has supplied Melt Blown media filters for industrial fluid process applications for over 20 years. During that time new developments in depth filtration technology and improved manufacturing techniques has enabled Pall to offer a comprehensive range of melt blown filter elements for almost every fluid application and flow capacity to support manufacturing industries.

What is Melt Blown Technology?

The term 'Melt blown' means the filter has been manufactured using a computer controlled process where fibres are collected in a graded pore structure about a moulded core. Pall manufacture Melt Blown products in two forms:

Continuously Extruded Fibre (CEF) technology

Continuously extruded fine fibres form a highly porous high strength filter matrix with high dirt holding capacity, low flow resistance, and consistent filter performance.

CoLD® Fibre Technology

CoLD® fibre technology is an innovative melt blown structure comprised of micro-thin fibres inter linked and thermally bonded with large diameter support fibres. (See Figure 1). This CoLD® fibre structure contains no additional adhesives or surfactants and provides a media structure offering a highly efficient contaminant removal rating, long service life with considerably improved mechanical strength.

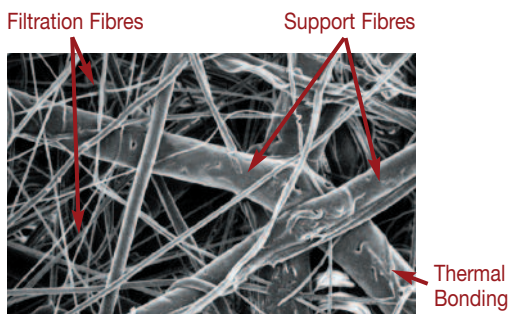
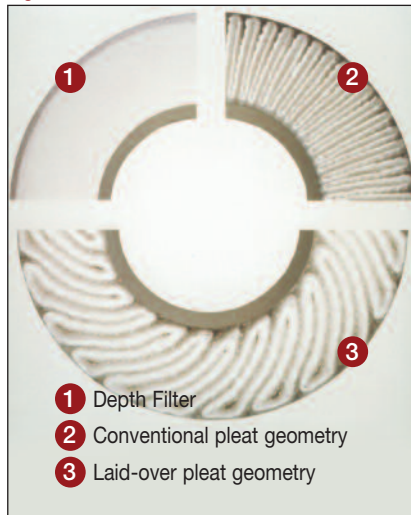


Figure 1



Different media configurations are suited to different applications and specific user requirements. The Pall melt blown filter element range is available in depth, fan pleated and patented laid over pleat (Ultipleat®) designs.

Applications

- Component wash fluids
- Cutting fluids
- Aqueous solutions
- Water
- Coolants
- Water glycols
- Mineral and synthetic oils
- Lubricants
- Fuels
- Light oil
- Solvents

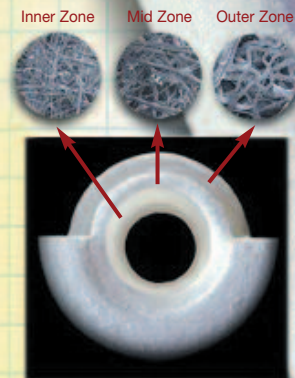
Elastomer Gasket Seals

- Various choices in o-rings or elastomer gaskets
- Prevents fluid bypass

Moulded Core

- For high strength resistance

Micrograph of Melt Blown filter media (Magnification 35x)



Unique Melt Blown Media

- All polypropylene
- Graded pore structure
- Consistent performance
- High void volume for high dirt holding capacity

End Caps

- Several optional configurations
- Thermally bonded to media
- No adhesives

The extensive range of Pall Melt Blown filter elements are all available in a wide range of ratings, ensuring the optimum filtration solution can be found for virtually every process fluid filtration challenge.

All filters have a wide fluid compatibility and being manufactured from 100% synthetic materials, (either polypropylene or nylon), have low disposal or incineration costs.

Recognizing that different applications have different fluid cleanliness and filtration requirements, the Pall range of Melt Blown filter products are simply defined to help you choose the best solution at the most economic cost.

There are three distinct groups of Melt Blown filter elements within the Pall range:

Highly Critical Cleanliness

Fluid make-up, contamination control, polishing, clarification, provides the full range of solid contamination removal including silt.



- Highly critical fluid applications are protected by the finer range of ratings, offering a graded pore structure media with 99.98% retention efficiency for defined cleanliness control, coupled with long element service life.

Features:

- Continuous extruded fibres
- High contaminant removal efficiency
- Fine fibres maintain maximum void area
- High dirt holding capacity
- Continuous graded pore structure helps maximise element life and prevent unloading

Recommended range: 1, 3, 6, 12, 20µm
Filter efficiency rating: 99.98%

Critical to general particulate control

Contamination control in wash applications, where a high surface finish is required in machining operations, single pass in-line last chance filtration, general purpose fluid clarification.



- For less critical applications, the mid range ratings offer high retention efficiency ratings (99.9%), with the added benefits of CoLD® (Co-located Large Diameter) technology manufacturing methods, providing maximum strength at low overall cost.

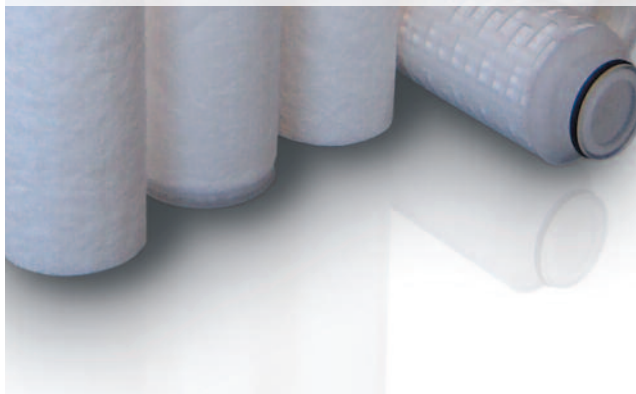
Features:

- CoLD® technology manufacture
- High contaminant removal efficiency
- Enhanced mechanical strength increases resistance to media stress and prevents contaminant unloading
- High dirt holding capacity
- Continuous fibre graded pore structure helps maximise element life and prevent unloading

Recommended range: 40, 70, 90µm
Filter efficiency rating: 99.9%

General particulate control

Coarser ratings for primary or pre-filtration applications, suitable for higher fluid flows where a fluid cleanliness level is not specified.



- For general particulate reduction and less sensitive component protection, coarser rated elements with 90% retention efficiencies provide reliable protection at the lowest possible cost.

Features:

- CoLD® technology manufacture
- Enhanced mechanical strength increases resistance to media stress and prevents contaminant unloading
- High dirt holding capacity
- Long service life
- Consistent filter performance at lowest cost

Recommended range: 100, 150, 200µm
Filter element efficiency: 90%

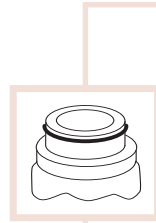
Melt Blown Filter Elements Selector Guide

Selecting the correct filter element and housing requires a clear understanding of both the application conditions and user requirements.

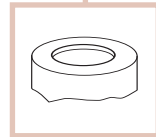
In summary it is necessary to understand the role of the fluid, it's total movement throughout the system, and what impact it potentially has on the system.

System parameters such as fluid flow rate, operating pressure, fluid type, preferred pipework connections, any space limitations, and typical maintenance procedures need to be considered to make a suitable selection.

Use the table to the right as a guide to firstly select the correct filter element and secondly to match it with a suitable housing. A summary of the filter housing range is outlined below.



CODE 18



DOE

Melt Blown Filter Element Selector Guide

Melt Blown Filter Element Style (Material)	Retention Efficiency	Filter Ratings	Element Series Ref
'Depth' Melt Blown Filters (Polypropylene)	99.98% 99.90% 90%	1, 3, 6, 12, 20 40, 70, 90 100, 150, 200	ME3310FP
Profile (Nylon)	99.98%	5, 6, 12, 20, 40, 70	HC3310FG
'Pleated' Melt Blown Filters (Polypropylene)	99.90%	3, 6, 12, 20 30, 40, 70, 90	ME3310CP
Profile Star (Nylon)	99.98%	6, 12, 40	HC3310CG
Ultipleat High Flow (Polypropylene)	99.98%	3, 4.5, 10, 20, 40, 70, 100	UC3389
Coreless Profile (Polypropylene/Nylon*)	99.98%	10*, 20*, 40*, 70*, 120	HC3370
Melt Blown 'Depth' (Polypropylene)	99.98% 99.90% 90%	1, 3, 6, 12, 20 40, 70, 90 100, 150, 200	ME3300FP
Profile (Nylon)	99.98%	6, 12, 20, 40, 70, 90	HC3300FN
'Claris' (Polypropylene)	90%	1, 3, 5, 10, 20, 30, 50, 75	CLR

Filter Housings

IDL/IOL series

Stainless steel housing

Flow range: IDL: 30 L/min maximum
IOL: 20 L/min maximum

Pressure rating: 17.9 bar

Material: 316L stainless steel

Port options: ¾" or 1" BSPP (GAZ)

Element length: 10", 20", 30"

Other features include:

- Quick release V band clamp.
- IDL housings accept DOE element designs.
- IOL housings accept CODE 18 element designs



◀ 'LBV' filter housing series

Multiple cartridge housings

Flow range: 30 - 800 L/min

Pressure rating: 6 bar

Material: 316L stainless steel

Port options: 1½", 2" or 3" BSPP (GAZ)

Element length: 10", 20", 30", 40"

No of Elements: 3 - 9 elements per housing

Other features include:

- Quick release V band clamp filter cap.
- Mid-height housing opening assists simple element changeouts.
- Optional mounting legs.
- Accepts Code 18 and DOE design elements.

'CDF' filter housing series ▶

Multiple cartridge high volume housings

Flow range: 50 - 1400 L/min

Pressure rating: 10 bar

Material: 316L stainless steel

Port options: 1½", 2", 2½" BSPP (GAZ),
DN100/DN150 flanges

Element lengths: Multiple 10" lengths

No of Elements: 3 - 85 10" cartridges
[stacked 5 per column]

Other features include:

- Swing bolt sealing mechanism.
- Optional lifting davit [standard on 51, 68 and 85 element variants].
- Accepts Code 18 and DOE design elements.

Element Length (in)	Suitable Filter Housing Ref.	Max. Flow Range (L/min) @ 1cSt	Typical Application
13, 20, 30, 40	IOL, CDF, LBV, 3313, 3315, 3323, 3343	0 - 800 LBV 0 - 1400 CDF	Low flow (<50L/min) through-tool-coolant applications. High Pressure pump protection. Where a range from highly critical to general particulate control levels of fluid cleanliness are required. Recommended for wide contaminant size distribution to provide economic use of the full element volume, in water based fluid applications.
13, 20, 30, 40	As above	As above	High temperature fluids, kerosine, gasoline and neat oils below 5cSt that are not compatible with polypropylene. Not recommended for use in water based applications.
13, 20, 30, 40	As above	As above	For wash fluids where a defined cleanliness level and high dirt holding capacity is required - a good compromise between depth and surface. For use where tramp oil may be present.
13, 20, 30, 40	As above	As above	As above, but for neat oil or fuel applications.
20, 40	3389	600	Industrial water applications, spray nozzle protection, make-up water for coolant and wash systems, high flow rinse section. Industrial hydraulic off-line filtration to remove gels or to economically correct fluid filterability.
20, 40	3370	400	For water based cutting and wash fluids, water and chemical filtration parts washing and paint nozzle protection. Depth filter technology with special surface treatment to repel tramp oil and prevent element binding. In nylon configuration, compatible with most of solvents applications and synthetic oils such as transmission oils.
10, 20, 30, 40	IDL, CDF, LBV	Various	Pall housings and retrofit applications for a wide range of ratings and fluid cleanliness requirements. Wash fluids, coolants, water, paint and light oils.
10, 20, 30, 40	IDL, CDF, LBV	Various	High temperature fluids, kerosine, gasoline and neat oils below 5cSt that are not compatible with polypropylene. Suitable for retrofit of existing 2 1/2" DOE application where nylon media are required.
10, 20, 30, 40 Other lengths available on request	IDL, CDF, LBV	Various	Pre-filtration general particulate filtration for water, wash fluid and coolant applications.



'SILVER' filter series 3370/3389

Flow range: 600 L/min maximum
 Pressure rating: 10 bar
 Material: Welded carbon stainless steel housings
 Port options: 1 1/4" BSPP (GAZ) or DN50 flange
 Element length: 20", 30", 40"
 Element type: Coreless Profile Utiplateat High Flow

Other features include:

- Quick release V band clamp filter cap.
- Wall bracket or free standing leg mounting options.
- Visual or electrical differential pressure indicator.



Single element housings 3313 / 3315 / 3323 simplex

Flow range: 0-80 L/min
 Pressure rating: 3315 - 100 bar
 3323 - 40 bar
 Material: Cast iron head
 Carbon steel bowl
 Port options: 3/4", 1" BSPP (GAZ)
 Element length: 13", 20", 30", 40"
 Element type: CODE 18 only

For further information request datasheet PIH3315 or PIH3323

Other features include:

- 3323 Series 'Rotolok' ring filter bowl design enables element change without the use of tools.
- Stainless steel housing options also available. Contact the Pall Sales office.



Melt Blown Filter Elements Polypropylene



ME3300FP and ME3310FP Series

Depth Melt Blown Filter Elements

Technical Specification

- 1, 3, 6, 12 and 20µm: 99.98% removal efficiency
Continuous graded pore structure
- 40, 70 and 90µm: 99.9% removal efficiency
Co-Located large diameter fibres
- 100, 150 and 200µm: 90% removal efficiency
Co-Located large diameter fibres
- Flow direction: Out to in flow

Table 1. Typical Filter Rating & Pressure Drop

Element CODE	Rating 99.98% R. eff.	Element ΔP per 1 L/min @ 1 cSt (mbar)			
		L=10 (254 mm)	L=20 (508 mm)	L=30 (762 mm)	L=40 (1016 mm)
Z	1	36.2	23.5	14.5	12
P	3	11.5	7	5	3.5
N	6	6.9	4.5	3	2
S	12	3.1	2	1	0.9
T	20	1.5	1	0.5	0.4
R	40	1	0.7	0.4	0.3
G	70	0.9	0.6	0.4	0.3
Y	90	0.7	0.5	0.3	0.2
B	100	0.8	0.4	0.3	0.2
F	150	0.7	0.4	0.2	0.2
X	200	0.7	0.3	0.2	0.2

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Polypropylene	
	Up to code R	From code G
30	4	3.4
50	3.5	—
60	3	1.7
70	2	1.0



ME3300FP Series - DOE

- Element length: 10, 20, 30 and 40 inches (other lengths available on request)
- For use with 'Pall' filter housing series: IDL, LBV and CDF

ME3310FP Series - CODE 18

- Element length: 13, 20, 30 and 40 inches
- For use with 'Pall' filter housing series:
Single element: 3330, 33*3, 3315 and IOL
Multiple elements: LBV and CDF

Ordering Information

ME3300FP M
Table 1 Element Length (inches) Table 2

Ordering Information

ME3310FP
Table 1 Element Length (inches) Table 2

Table 2. Seal Type

Code	Seal Type
H	Nitrile
Z	Fluorocarbon



ME3310CP Series - CODE 18

Pleated Melt Blown Filter Elements

Technical Specification

- 1, 3, 6, 12, 20, 40, 70 and 90µm: 99.9% removal efficiency
Micro denier Melt Blown fibres
- Flow direction: Out to in flow
- Element length: 13, 20, 30 and 40 inches
- For use with 'Pall' filter housing series:
Single element: 3330, 33*3, 3315 and IOL
Multiple elements: LBV and CDF

Table 1. Typical Filter Rating & Pressure Drop

Element CODE	Rating 99.98% R. eff.	Element ΔP per 1 L/min @ 1 cSt (mbar)			
		L=10 (254 mm)	L=20 (508 mm)	L=30 (762 mm)	L=40 (1016 mm)
P	3	11.5	7	5	3.5
N	6	6.9	4.5	3	2
S	12	3.1	2	1	0.9
T	20	1.5	1	0.5	0.4
R	40	0.8	0.5	0.2	0.2
G	70	0.8	0.5	0.2	0.2
Y	90	0.8	0.5	0.2	0.2

Ordering Information

ME3310CP
Table 1 Element Length (inches) Table 2

Table 2. Seal Type

Code	Seal Type
H	Nitrile
Z	Fluorocarbon

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Polypropylene	
	Up to code R	From code G
50	3.5	—
70	2	1.0



Claris - DOE

Depth Melt Blown Filter Elements

Technical Specification

- 1, 3, 5, 10, 20, 30, 50 and 75µm: 90% removal efficiency
Graded pore structure providing general particulate control in non-critical applications.
- Flow direction: Out to in flow
- Element length: 10, 20, 30, 40 and 50 inches (other lengths available on request)
- Knife edge seal: DOE Industrial (no end caps)
- For use with 'Pall' filter housing series: IDL, LBV and CDF

Ordering Information

CLR
Table 1 Element Length (inches)

Table 1. Typical Filter Rating

Element CODE	Rating (µm) Nominal
1	1
3	3
5	5
10	10
20	20
30	30
50	50
75	75

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Polypropylene	
	Up to code R	From code G
20 (ambient)	3.45	—
60	1.72	—

Melt Blown Filter Elements Nylon



HC3300FN Series - DOE

Depth Melt Blown Filter Elements

Technical Specification

- 3, 6, 12, 20, 40, 70 and 90µm: 99.98% removal efficiency. Continuous graded pore structure.
- Flow direction: Out to in flow
- Element length: 10, 13, 20, 30 and 40 inches
- Seal material: Knife edge seal
- For use with 'Pall' filter housing series: IDL, LBV and CDF

Ordering Information

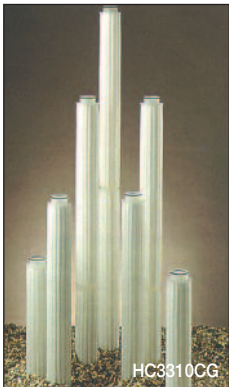
HC3300FN M
Table 1 Element Length (inches)

Table 1. Typical Filter Rating & Pressure Drop

Element CODE	Rating 99.98% R. eff.	Element ΔP per 1 L/min @ 1 cSt (mbar)			
		L=10 (254 mm)	L=20 (508 mm)	L=30 (762 mm)	L=40 (1016 mm)
P	3	15	7	5	3.5
N	6	9	4.5	3	2
S	12	4	2	1	0.9
T	20	1.8	1	0.5	0.4
R	40	1	0.4	0.2	0.2
G	70	<1	0.4	0.2	0.2
Y	90	<1	0.4	0.2	0.2

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Nylon
30	6
70	5.5
100	4.5



HC3310CG Series - CODE 18

Pleated Melt Blown Filter Elements

Technical Specification

- 6, 12 and 40µm: 99.98% removal efficiency. Continuous graded pore structure.
- Flow direction: Out to in flow
- Element length: 10, 13, 20, 30 and 40 inches
- Seal material: Fluorocarbon 'O' ring
- For use with 'Pall' filter housing series: Single element: 3330, 33*3, 3315, 0914 and IOL. Multiple elements: 335*, LBV and CDF

Ordering Information

HC3310CG Z
Table 1 Element Length (inches)

Table 1. Typical Filter Rating & Pressure Drop

Element CODE	Rating 99.98% R. eff.	Element ΔP per 1 L/min @ 1 cSt (mbar)			
		L=10 (254 mm)	L=20 (508 mm)	L=30 (762 mm)	L=40 (1016 mm)
N	6	1.98	1.29	0.86	0.64
S	12	0.78	0.51	0.34	0.26
R	40	0.23	0.15	0.10	0.08

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Nylon
30	6.2
70	5.5
100	4.8



HC3310FG Series - CODE 18

Depth Melt Blown Filter Elements

Technical Specification

- 3, 6, 12, 20, 40, 70 and 90µm: 99.98% removal efficiency. Continuous graded pore structure.
- Flow direction: Out to in flow
- Element length: 10, 13, 20, 30 and 40 inches
- Seal material: Fluorocarbon 'O' ring
- For use with 'Pall' filter housing series: IDL, LBV and CDF

Ordering Information

HC3310FG Z
Table 1 Element Length (inches)

Table 1. Typical Filter Rating & Pressure Drop

Element CODE	Rating 99.98% R. eff.	Element ΔP per 1 L/min @ 1 cSt (mbar)			
		L=10 (254 mm)	L=20 (508 mm)	L=30 (762 mm)	L=40 (1016 mm)
P	3	11.5	7	5	3.5
N	6	6.9	4.5	3	2
S	12	3.1	2	1	0.9
T	20	1.5	1	0.5	0.4
R	40	0.8	0.5	0.2	0.2
G	70	0.8	0.5	0.2	0.2
Y	90	0.8	0.5	0.2	0.2

Maximum Operating Conditions

Temperature (°C)	Maximum ΔP (bar) - Nylon
30	6
70	5.5
100	4.5

⁽¹⁾ The test procedure used is an adaptation of ISO 4572, modified to determine the micron size above which particles are quantitatively removed.

Sizing Guide - for fluids at 1cSt

20 litres/minute/10" cartridge, in controlled conditions or highly critical applications
 10 litres/minute/10" cartridge, for less critical to general applications.

Note: Do not exceed 90 l/min per 40" element

Example: 300 litres/minute use 7 x 40" element e.g. ME3310FPT40H (polypropylene, 20µm, 40", plug-in, 'O' ring seal)

Sizing Calculation

Target clean element ΔP should not exceed 0.20 bar.
 To calculate the clean element ΔP (bar) use:

$$= \frac{\text{Flow Rate (L/min} \times \text{Viscosity (cSt)} \times \Delta P/\text{element (mbar)}}{\text{Number of Elements in Housing} \times 1000}$$

Example: ME3310FPT40H clean element ΔP

$$= \frac{300 \text{ (L/min)} \times 5 \text{ (cSt)} \times 0.4 \text{ (element } \Delta P \text{ factor)}}{7 \times 1000} = 0.09 \text{ bar}$$

Melt Blown Filter Elements High flow applications

As well as depth filter configurations Melt Blown filtration media can be manufactured in sheets for use in pleated filter element designs, such as **Pall Ultipleat High Flow** and **Pall Marksman** filter elements.



Pall Ultipleat High Flow Series

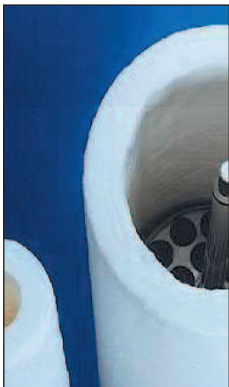
Pall Ultipleat High Flow elements are designed for use in high fluid capacity applications, fitted in housings of single or multiple element configurations.

Application: Flows up to 600L/min, small particulate size distribution (uniform sized contaminants), in high viscosity fluids and mineral oils, where a low differential pressure is specified, ie, honing operations, oil based manufacturing processes.

Features:

- High contaminant removal efficiency
- Finest fibres maintain maximum void area
- Laid over pleat design
- High dirt holding capacity

Rating range: 3, 4.5, 10, 20, 40, 70, 100µm
Filter efficiency rating: 99.98%
Material: Polypropylene



Pall Coreless Profile Series

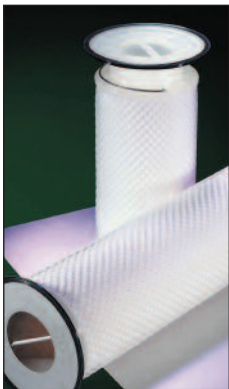
Pall Coreless Profile is a dedicated medium for standard water based applications for use in high flow applications where Profile filter capacity is exceeded. A single 6" diameter 20" Coreless **Profile** element provides the same filtration capacity as four 40" 2½" diameter Melt Blown filter elements.

Application: Flow rates up to 400L/min in water based cutting and wash fluids, packaged in an environmentally friendly coreless design to minimise waste and reduce disposal costs.

Features:

- High contaminant removal efficiency
- Special surface treatment prevents blinding by tramp oils
- High dirt holding capacity
- Continuous fibre graded pore structure helps maximise element life and prevent contaminant unloading

Rating range: 10*, 20*, 40*, 70*, 120µm
Filter efficiency rating: 99.98%
Material: Polypropylene or Nylon*



Pall Marksman Series

Pall Marksman filter elements combine the performance advantages of cartridge filters with the ease of use of bag filter systems. The innovative sliding flange sealing mechanism allows direct retrofit of bag filters into existing housings, without additional hardware or modification. The 6" diameter filter element ensures contaminant is captured inside the filter and does not fall into the downstream (clean) section of the housing during element change out.

Application: For defined fluid cleanliness in critical applications, where tramp oil may be present and where improved performance to standard processes may be required.

Features:

- High flow capacity
- Adjustable sealing mechanism for Bag filter retrofits
- Multi-layered pleat pack for increased dirt holding capacity
- Media treated to repel tramp oils and prevent element blinding

Rating range: 1.5, 3, 4.5, 10, 20, 30, 40, 70, 90µm
Filter efficiency rating: 99.9%
Material: Polypropylene



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