



FT®, FSS®, FP®, FS®

## Universal Filter Series FP®, FT®

Versions FP, FT, FS, FSS

### Special Features

- **Universal in use**
- **Modular design**
- **Large variety of materials**
- **Deep-acting filter element**
- **Reliable separation of solids**
- **Wall-mounting bracket**
- **Easy maintenance**

### Application

M&C universal filters reliably separate solids, in particular extremely fine particles, occurring in analysis techniques in gas filtration, using very fine, deep-acting filter elements.

Thanks to their universal design, the filters can also be used as separators (without a filter element), liquid filters or, with adsorption cartridges, as adsorption filters.

For ambient or medium temperatures up to 180 °C [356 °F], a stainless steel version FSS or FT-H version can be offered.

### Description

The modular design of the filters and the compatibility of the fitting components filter head, filter body and filter element enable optimum adaptation to process conditions.

Elements of different materials and porosities are available and their degree of contamination and condition can be assessed from the outside without having to open the filter housings (not with FSS).

No tools are required for element replacement, and the optimum positioning of the O-ring always ensures a safe sealing between the filter body and the filter head.

The filters are designed in such a way that only liquid-free gas flows through the filter elements when condensation droplets accumulate.

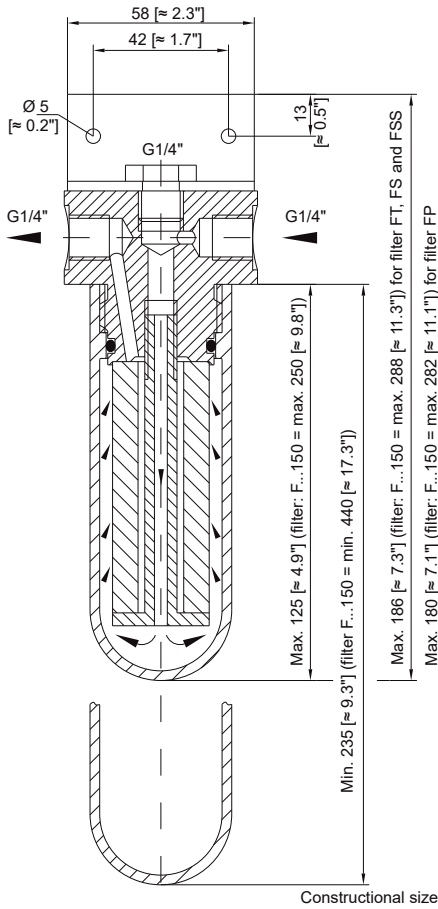
The versions FP-D, FT-D, FS-D and FSS-D can also be connected to a condensate trap or a liquid alarm sensor. Filter inlet and outlet can be rotated 180° on the mounting bracket so that flexible adaptation to local conditions is possible during installation.

## Dimensions



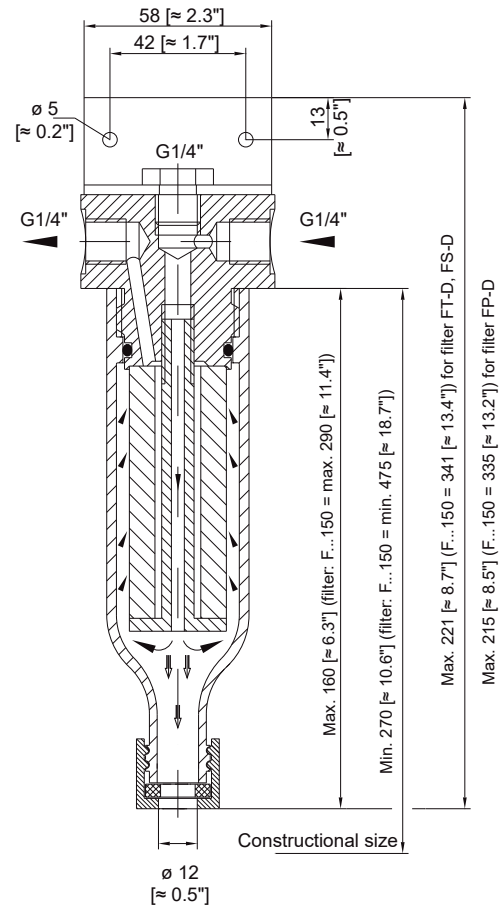
### FP, FT, FS, FSS

(Drawing shows filter FT)

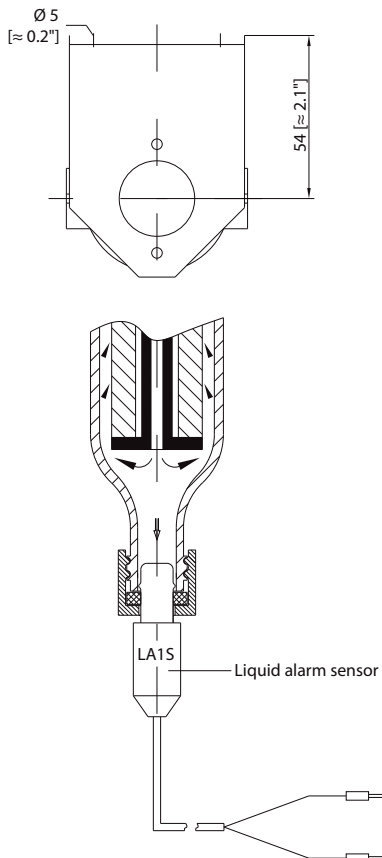


### FP-D, FT-D, FS-D

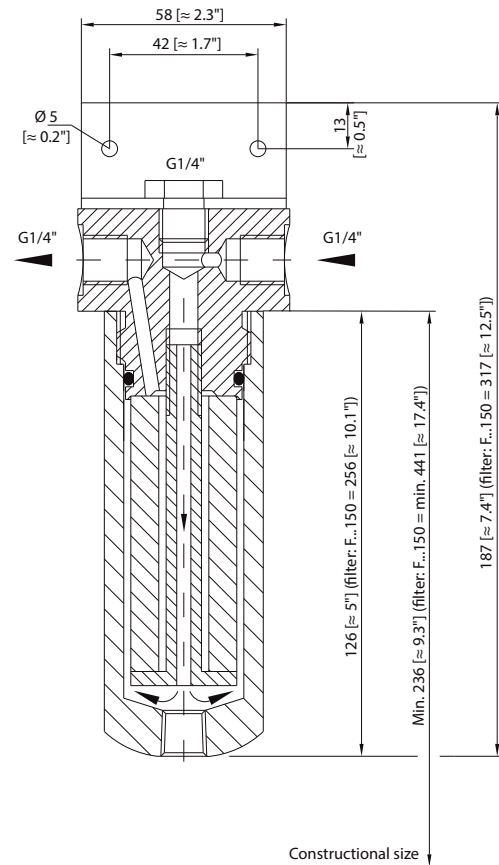
(Drawing shows filter FT-D)



### FP-D, FT-D, FS-D with LA1

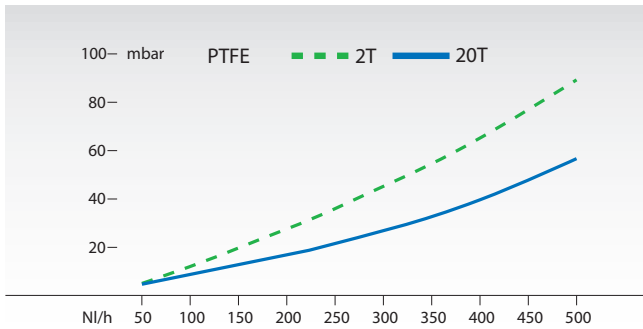


### FSS-D

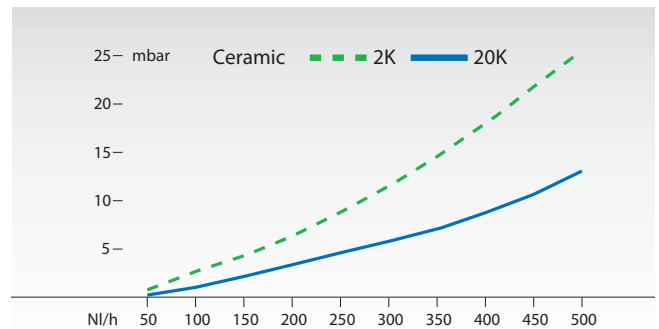


Dimensions in mm [Inches]

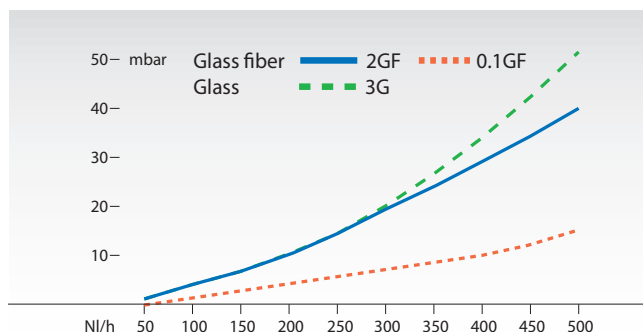
# Flow rate in NI/h air and differential pressure in mbar with clean filter elements



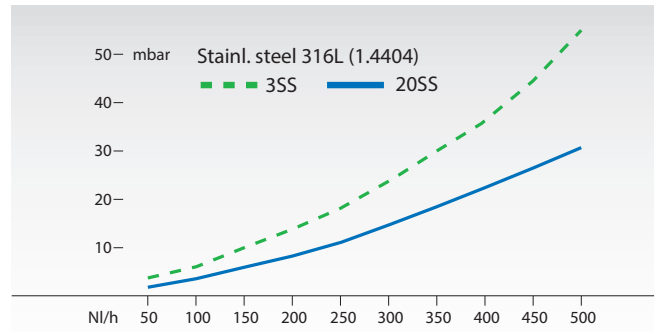
Flow rate	50	100	150	200	250	300	350	400	450	500	NI/h
Differential pressure 2T	7	14	22	30	39	48	57	66	76	88	mbar
Differential pressure 20T	4	8	12	18	23	29	35	41	48	55	mbar



Flow rate	50	100	150	200	250	300	350	400	450	500	NI/h
Differential pressure 2K	1.5	3	5	7	9.5	13	15	19	22	26	mbar
Differential pressure 20K	0.5	1.5	2.5	3.5	4.5	6	7.5	9	11	13	mbar



Flow rate	50	100	150	200	250	300	350	400	450	500	NI/h
Differential pressure 3G	1	3	6	11	14.5	21	27	33	43	52	mbar
Differential pressure 2GF	2	4.5	7.5	12	15	19	24	29	34	40	mbar
Differential pressure 0.1GF	0.5	2	3	4	5	6	7	10	11	15	mbar



Flow rate	50	100	150	200	250	300	350	400	450	500	NI/h
Differential pressure 3SS	4	6	10	14	18	25	30	36	43	54	mbar
Differential pressure 20SS	2	4	6	8.5	10.5	14	19	22	26	31	mbar

## Technical Data

	FP, FT, FT-H, FS	FP-D, FT-D, FS-D	FSS, FSS-D
Length of filter element	75 mm, Option: F...150 = 150 mm		
Sample connections: gas inlet/-outlet	3 x G 1/4i (1 x closed) DIN ISO 228/1* FS, FSS, FSS-D: optional NPT		
Condensate connection		GL 25 - ø 12 mm	FSS-D = G 1/4 i, optional NPT
Pressure at 20 °C [68 °F]	Max. 5 bar abs.	Max. 2 bar abs.	250 bar**, F...150 = 200 bar**
Pressure with GL connection adapter		5 bar abs.	
Internal dead volume	65 cm <sup>3</sup> , F...150 = 180 cm <sup>3</sup>	75 cm <sup>3</sup> , F...150 = 190 cm <sup>3</sup>	40 cm <sup>3</sup> , F...150 = 70 cm <sup>3</sup>
Filter surface	70 cm <sup>2</sup> , F...150 = 140 cm <sup>2</sup>		
Materials: Filter head	PVDF, PTFE, PTFE-ko, stainless steel 316Ti		Stainless steel 316Ti
Filter body	Glass		Stainless steel 316Ti
Filter element	PTFE, glass, glass fiber, ceramic, stainless steel, wire cloth stainl. steel		
Seals: O-ring	FP/-D, FT-H, FS/-D = FKM, FT/-D = FEP		FKM
...-D-connection			PTFE/silicone
Temperature of ambient or sample max.	80 °C [176 °F] PVDF, 100 °C [212 °F] PTFE, 180 °C [356 °F] PTFE-ko, stainless steel, glass (fiber), ceramics		
Method of mounting	Wall-mounting		
Weight approx.	0.4-1.0 / F...150 = 0.5 to 1.2 kg [≈ 1.1 to 2.7 lbs]		1.5/F...150 = 2.0 kg [≈ 4.4 lbs]

\* The thread lengths of the screw-in threads correspond to the respective applicable standard. The tolerances of the thread standards are matched to metal threads and cannot be applied to plastic threads.

\*\* At 180 °C [356 °F], 50 bar

Please note: NI/h and NI/min refer to the German standard DIN 1343 and are based on these standard conditions: 0 °C [32 °F], 1013 mbar.

Filter Elements	Filter Head	Filter Body	Filter Type	Part No.			
				F...-...-D	F...-...-D		
PTFE F-2T, 2 µm F-20T, 20 µm	universal in use	PVDF	Glass	FP-2T	/-D	01F1200	02F1000
		PVDF	Glass	FP-20T	/-D	01F1400	02F1200
		PTFE	Glass	FT-2T	/-D	01F2200	02F2000
		PTFE	Glass	FT-20T	/-D	01F2400	02F2200
		Stainl. steel 316Ti	Glass	FS-2T	/-D	01F4000	02F2650
		Stainl. steel 316Ti	Glass	FS-20T	/-D	01F4100	02F2660
		Stainl. steel 316Ti	Glass	FS-50T	/-D	01F1410	
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-2T	/-D	01F7100	02F2665
F-50T, 50 µm	universal in use	Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-20T	/-D	01F7250	02F2670
		PVDF	Glass	FP-3G	/-D	01F1850	02F1480
		PTFE	Glass	FT-3G	/-D	01F2850	02F2050
		Stainl. steel 316Ti	Glass	FS-3G	/-D	01F6500	02F2692
Glass (G) F-3G, 3 µm	universal in use	Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-3G	/-D	01F7300	02F2675
		PVDF	Glass	FP-2GF	/-D	01F1900	02F1490
		PTFE	Glass	FT-2GF	/-D	01F2900	02F2100
Glass fiber (GF) F-2GF, 2 µm	for high dust levels	Stainl. steel 316Ti	Glass	FS-2GF	/-D	01F6600	02F2715
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-2GF	/-D	01F7200	02F2677
		PVDF	Glass	FP-0, 1GF	/-D	01F1500	02F1500
Glass fiber (GF) F-0, 1GF, 0,1 µm	for ultra fine filtration	PTFE	Glass	FT-0, 1GF	/-D	01F2950	02F2400
		Stainl. steel 316Ti	Glass	FS-0, 1GF	/-D	01F6700	02F2710
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-0, 1GF	/-D	01F7150	02F2685
		PVDF	Glass	FP-2K	/-D	01F1000	02F1300
Ceramic F-2K, 2 µm F-20K, 20 µm	large separation at low differential pressure	PVDF	Glass	FP-20K	/-D	01F1100	02F1310
		PTFE	Glass	FT-2K	/-D	01F2000	02F2300
		PTFE	Glass	FT-20K	/-D	01F2100	02F2310
		Stainl. steel 316Ti	Glass	FS-2K	/-D	01F5000	02F2550
		Stainl. steel 316Ti	Glass	FS-20K	/-D	01F5100	02F2560
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-2K	/-D	01F7050	02F2690
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-20K	/-D	01F7060	02F2695
		PVDF	Glass	FP-3SS	/-D	01F1600	02F1550
Stainless steel 316L F-3SS, 3 µm F-20SS, 20 µm	for high pressure humid and trace gas measurement	PVDF	Glass	FP-20SS	/-D	01F1800	02F1560
		PTFE	Glass	FT-3SS	/-D	01F2600	02F2600
		PTFE	Glass	FT-20SS	/-D	01F2800	02F2500
		Stainl. steel 316Ti	Glass	FS-3SS	/-D	01F6000	02F2667
		Stainl. steel 316Ti	Glass	FS-20SS	/-D	01F6010	02F2680
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-3SS	/-D	01F7000	02F2700
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-20SS	/-D	01F7010	02F2705
Wire cloth stainless steel 316L F-100SSG, 100 µm F-250SSG, 250 µm		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-100SSG		01F7015	
		Stainl. steel 316Ti	Stainl. steel 316Ti	FSS-250SSG		01F7020	

All filter units are also available with double-sized element F-3G 150, F-2K 150 and F-0,1GF 150, and types FS, FSS with NPT thread.

To avoid damage of gas analyzers due to faulty pre-installed gas drying systems, M&C recommends a liquid alarm sensor.

Liquid alarm sensors incl. electronic controllers, upon request see data sheets "Liquid Alarm Sensors Series LA" for Conductive Media, "Electronic controllers series LA" and "Liquid Alarm Sensor KS3/KS3 EX, KS3 EX PEEK, KS3 EX PEEK SS, KS3 EX SS".

For special applications see data sheets

**Filters:** "Front-Panel Mounting Fine Filter Series FP\*", "Electrically Heated Universal Filter Series FT\*", "Universal Bypass Filter Series FP" for Liquid Filtration, "Universal Adsorption Filter Series FP\*", "Liquid Particle Filter Series CLF\*", Versions CLF-T, CLF-SS", "Liquid Particle Filter Series CLF\*", Version CLF-5, CLF-5/W"

**Separators:** "Series FP\*, FT\* Universal Condensate Separators", "Separator with Automatic Condensate Float Trap, Versions ADS-P, ADS-T, ADS-So", "Separator with Automatic Condensate Float Trap, Version ADS-SS"

**Wash bottles:** "Wash Bottle Series FP"

**Option**

**Acrylic glass cover PS and thread adaptor piece PS 1**

Acrylic glass protection cover PS for standard filter glass type F-120 G, part No. 90F0032, threaded counterpart PS 1 for mounting PS, part No. 90F0018

