

FRI series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 2500 l/min



Description

Technical data

Return filter

Maximum working pressure up to 2 MPa (20 bar)

Flow rate up to 2500 l/min

FRI is a range of return filters for protection of the reservoir against the system contamination.

They could be directly fixed to the reservoir in immersed or semi-immersed position or connected to the lines of the system through the hydraulic fittings.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Female threaded connections up to 2 1/2" and flanged connections up to 3 1/2", for a maximum flow rate of 2500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

Common applications:

Heavy duty industrial equipment

Filter housing materials

- Filter body
 - Aluminium: FRI 255
 - Anodized Aluminium: FRI 025-040-100-250-630
 - Phosphatized Steel: FRI 850
- Cover
 - Polyamide, GF reinforced: FRI 255
 - Anodized Aluminium: FRI 025-040-100-250-630-850
- Valve: Polyamide, GF reinforced - Steel

Bypass valve

Opening pressure 240 kPa (2.4 bar) ±10%

Δp element type

- Microfibre filter elements - series N: 10 bar
- Fluid flow through the filter element from OUT to IN

Seals

- Standard NBR series A
- Optional FPM series V

Temperature

From -25 °C to +110 °C

Note

FRI filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]		Volumes [dm ³]	
	Length	1	Length	1
FRI 025		1.0		0.28
FRI 040		2.0		0.70
FRI 100		3.8		1.09
FRI 250		6.3		2.60
FRI 255		4.2		3.20
FRI 630		13.8		7.05
FRI 850		48.0		21.50

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
FRI 025	1	6	10	17	19	43	122	43	47
FRI 040	1	19	23	43	45	94	155	94	102
FRI 100	1	32	34	89	92	187	260	187	206
FRI 250	1	144	179	271	300	448	645	448	490
FRI 255	1	144	179	271	300	448	645	448	490
FRI 630	1	242	279	508	577	834	1446	834	911
FRI 850	1	440	541	971	1143	1705	2528	1705	1880

Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

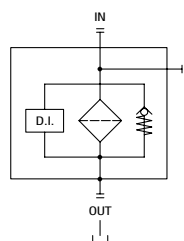
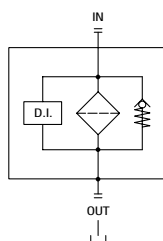
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

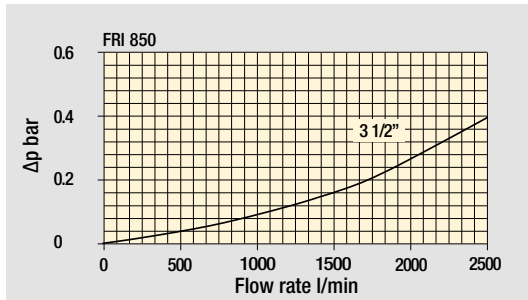
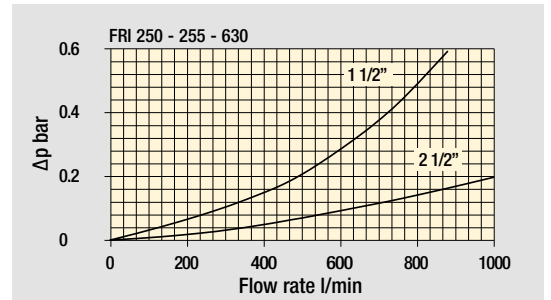
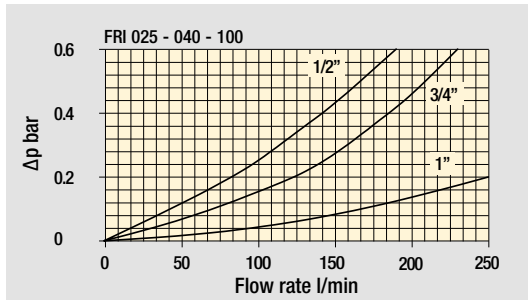
Hydraulic symbols

Filter series	Style 1 connection + Diff. indic.	Style 2 connections + Diff. indic.
FRI 025		•
FRI 040		•
FRI 100		•
FRI 250		•
FRI 255	•	
FRI 630		•
FRI 850	•	

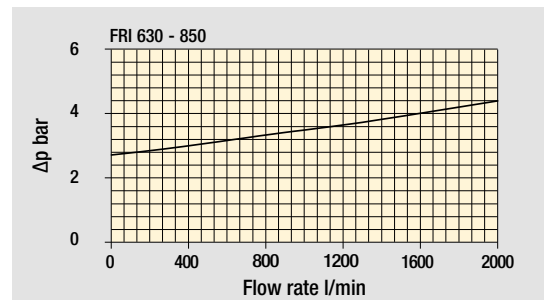
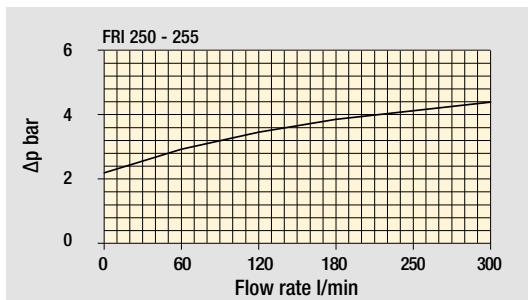
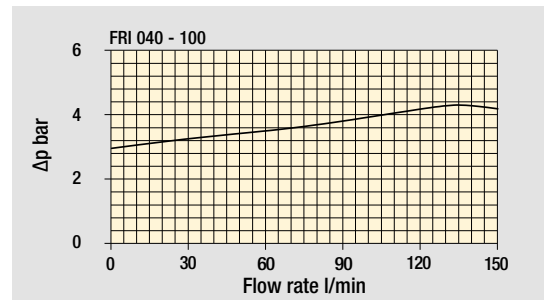
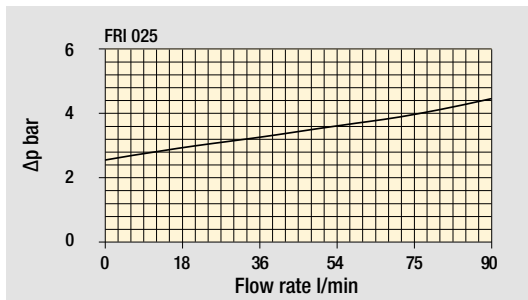


Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1: FRI025 B A G1 A25 N P01						
FRI025	Configuration example 2: FRI040 S V G2 M25 N P01						
FRI040							
Bypass valve							
B With bypass 2.4 bar							
S Without bypass							
Seals and treatments							
A NBR							
V FPM							
Connections for FRI025	Connections for FRI040						
G1 G 1/2"	G 3/4"						
G2 1/2" NPT	3/4" NPT						
G3 SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN						
Filtration rating (filter media)							
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm						
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm						
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm						
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm						
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm						
	Element Δp			Execution			
	N 10 bar			P01 MP Filtri standard			
				Pxx Customized			

FILTER ELEMENT

Element series and size	Configuration example 1: CU025 A25 N P01			
CU025	Configuration example 2: CU040 M25 V P01			
CU040				
Filtration rating (filter media)				
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm			
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm			
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm			
Seals and treatments				
N NBR				
V FPM				
	Execution			
	P01 MP Filtri standard			
	Pxx Customized			

CLOGGING INDICATORS

See page 680-681

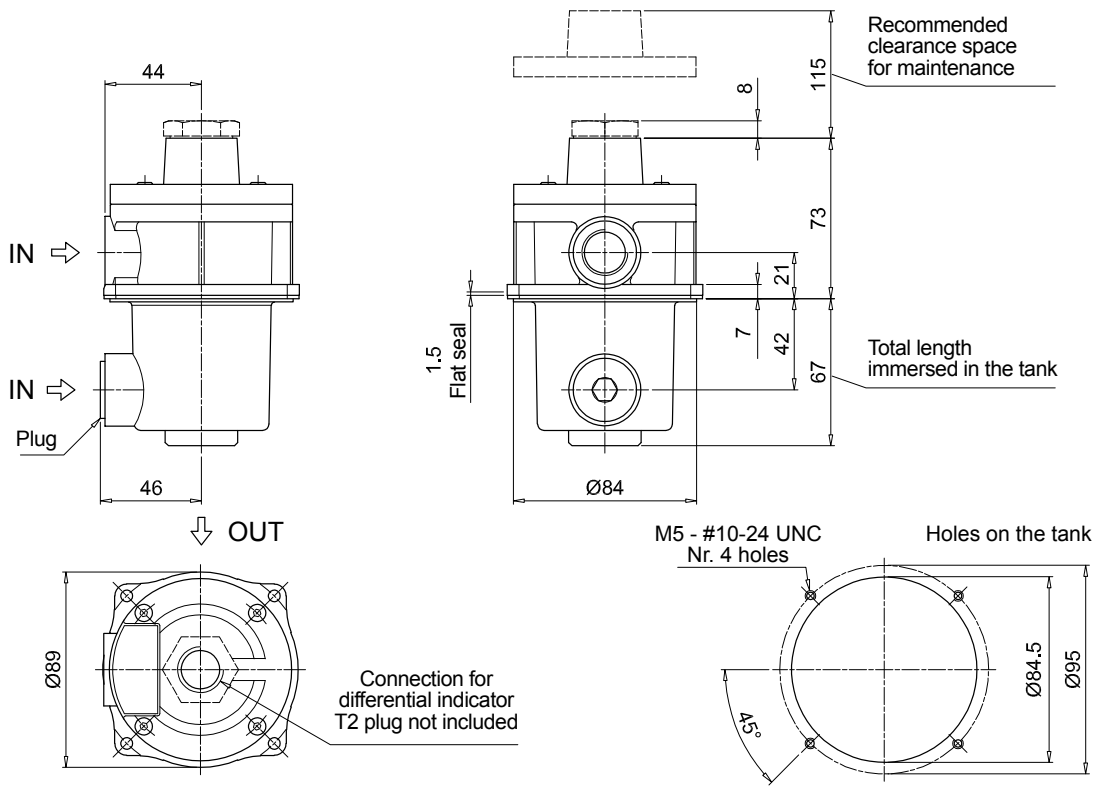
DEA Electrical differential indicator	DTA Electrical differential indicator
DEM Electrical differential indicator	DVA Visual differential indicator
DLA Electrical / visual differential indicator	DVM Visual differential indicator
DLE Electrical / visual differential indicator	

PLUGS

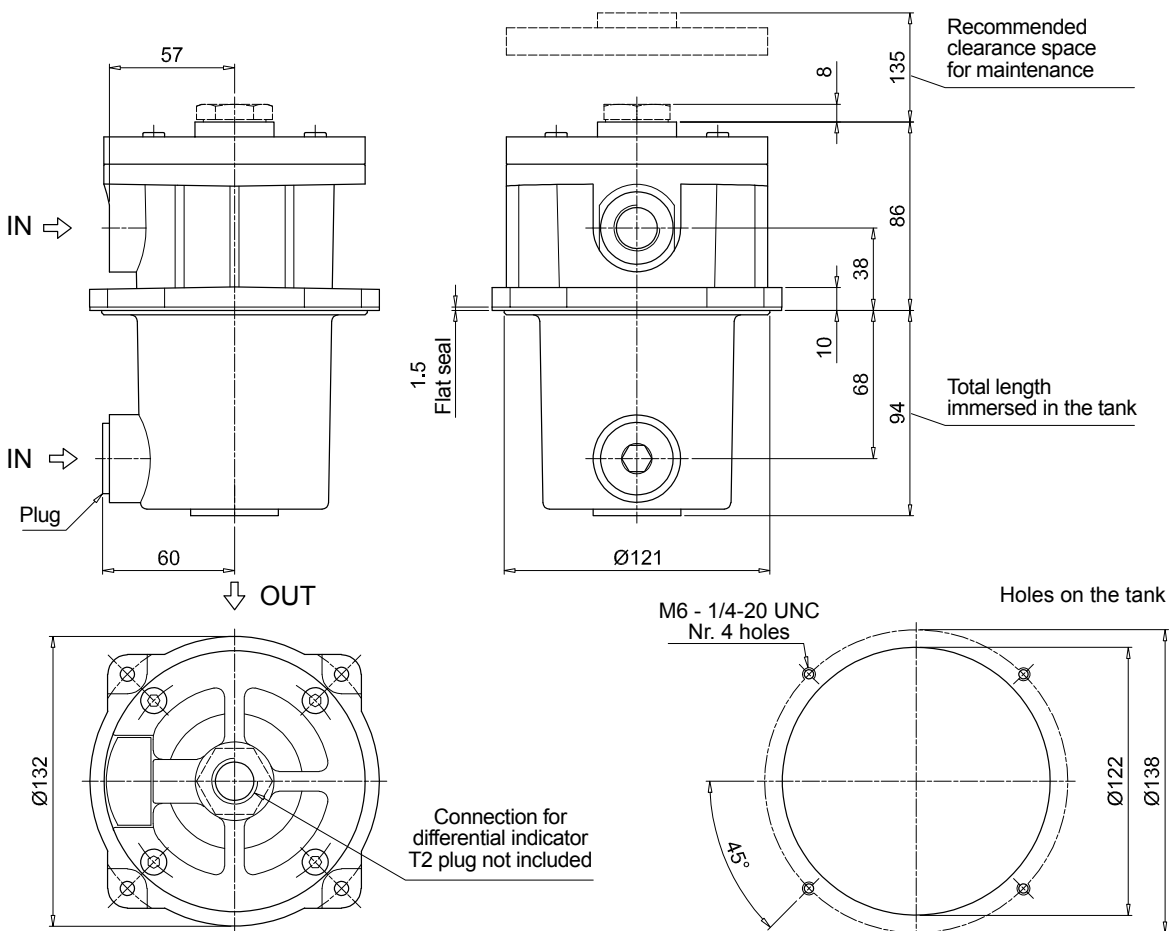
See page 706

T2 Differential indicator plug (not included)
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FRI025



FRI040



Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1: FRI100 B A G1 A25 N P01						
FRI100	Configuration example 2: FRI630 S V F2 M25 N P01						
FRI250							
FRI630							
Bypass valve							
B With bypass 2.4 bar							
S Without bypass							
Seals and treatments							
A NBR							
V FPM							
Connections for FRI100	Connections for FRI250	Connections for FRI630					
G1 G 1"	G 1 1/2"	G 2 1/2"					
G2 1" NPT	1 1/2" NPT	2 1/2" NPT					
G3 SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN	SAE 32 - 2 1/2" - 12 UN					
F1 1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M	2 1/2" SAE 3000 psi/M					
F2 1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC	2 1/2" SAE 3000 psi/UNC					
Filtration rating (filter media)							
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm						
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm						
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm						
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm						
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm						
	Element Δp		Execution				
	N 10 bar		P01 MP Filtri standard				
			Pxx Customized				

FILTER ELEMENT

Element series and size	Configuration example 1: CU100 A25 N P01			
CU100	Configuration example 2: CU630 M25 V P01			
CU250				
CU630				
Filtration rating (filter media)				
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm			
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm			
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm			
Seals and treatments				
N NBR				
V FPM				
	Execution			
	P01 MP Filtri standard			
	Pxx Customized			

CLOGGING INDICATORS

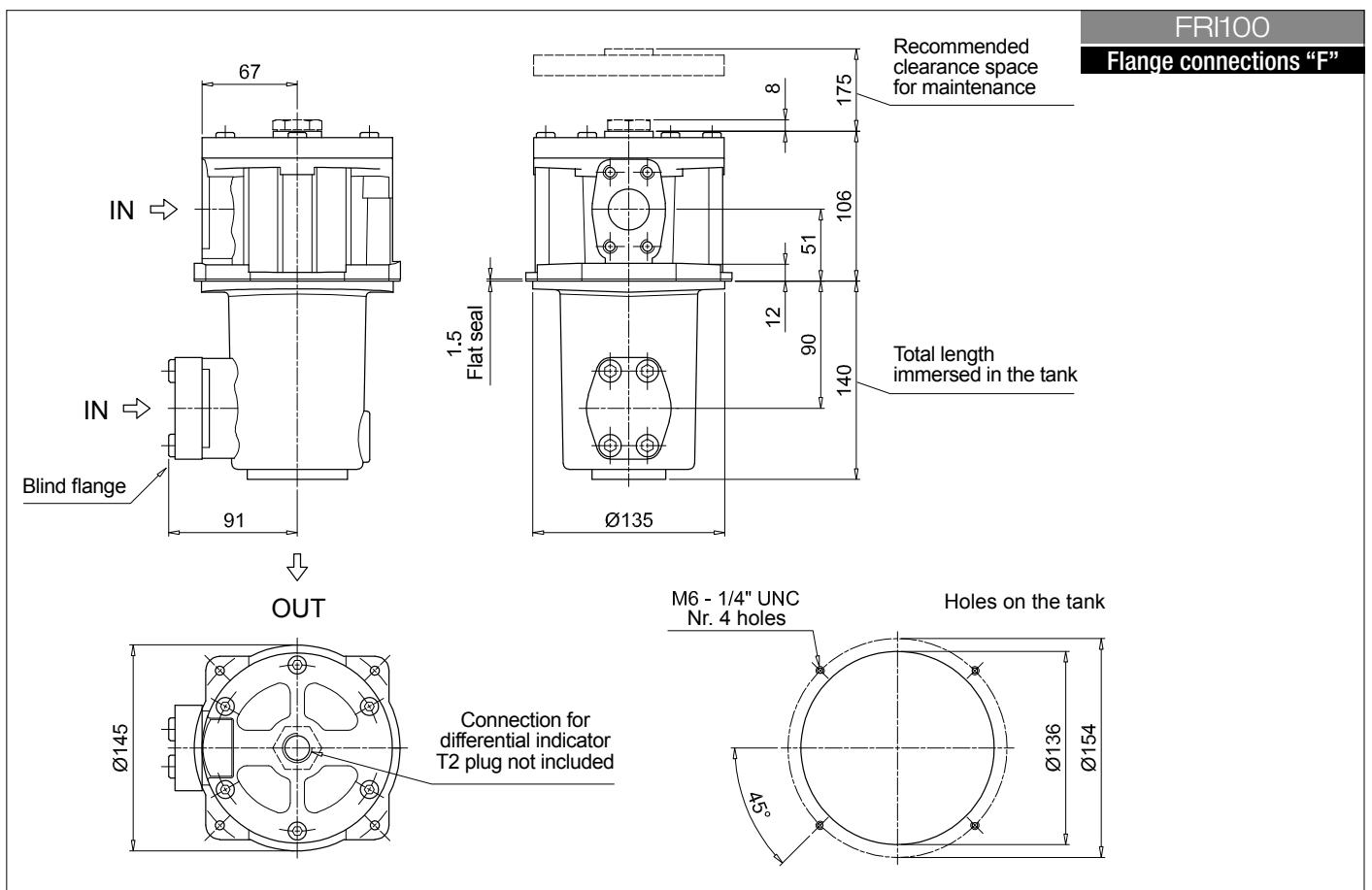
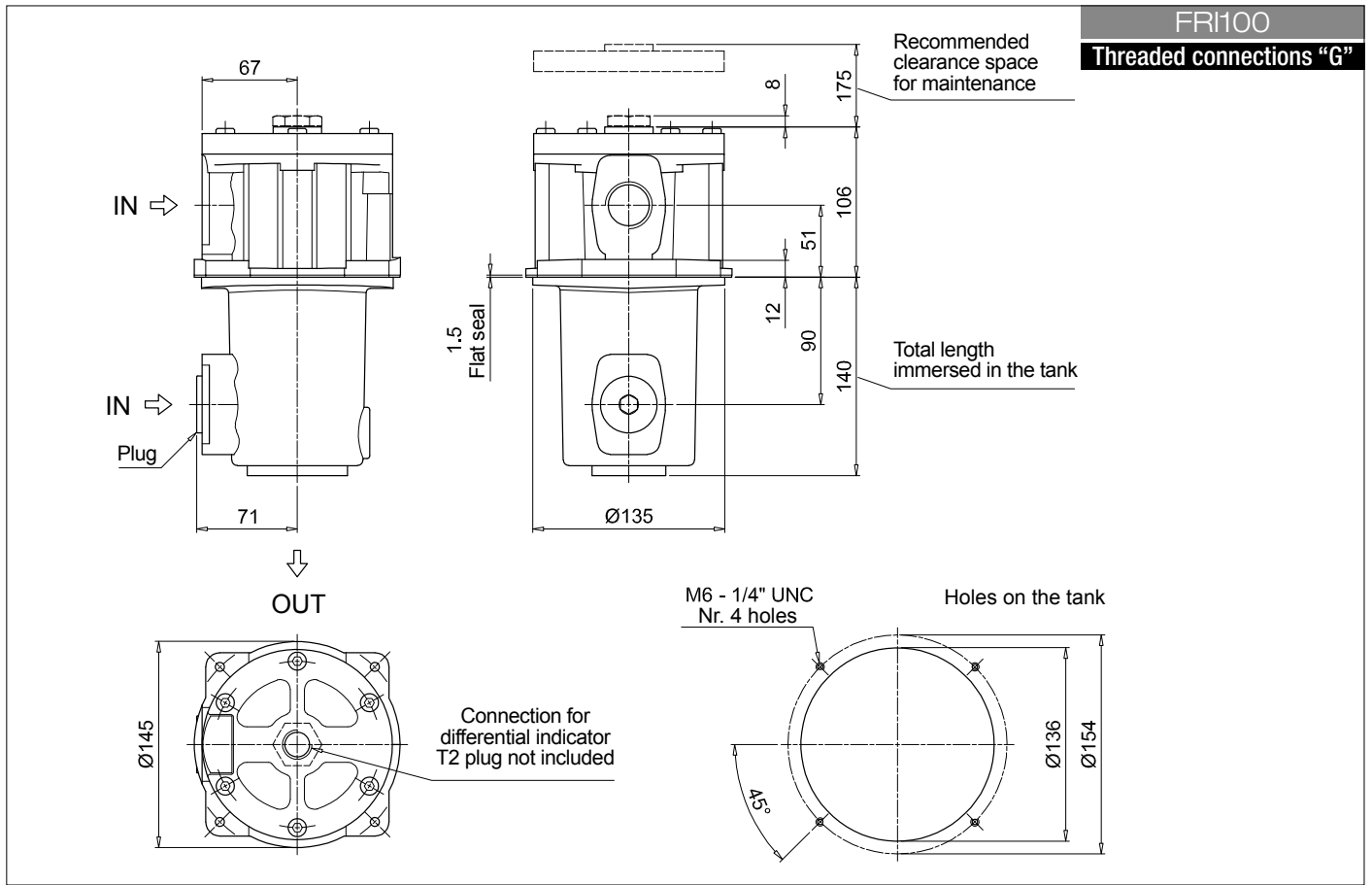
See page 680-681

DEA Electrical differential indicator	DTA Electrical differential indicator
DEM Electrical differential indicator	DVA Visual differential indicator
DLA Electrical / visual differential indicator	DVM Visual differential indicator
DLE Electrical / visual differential indicator	

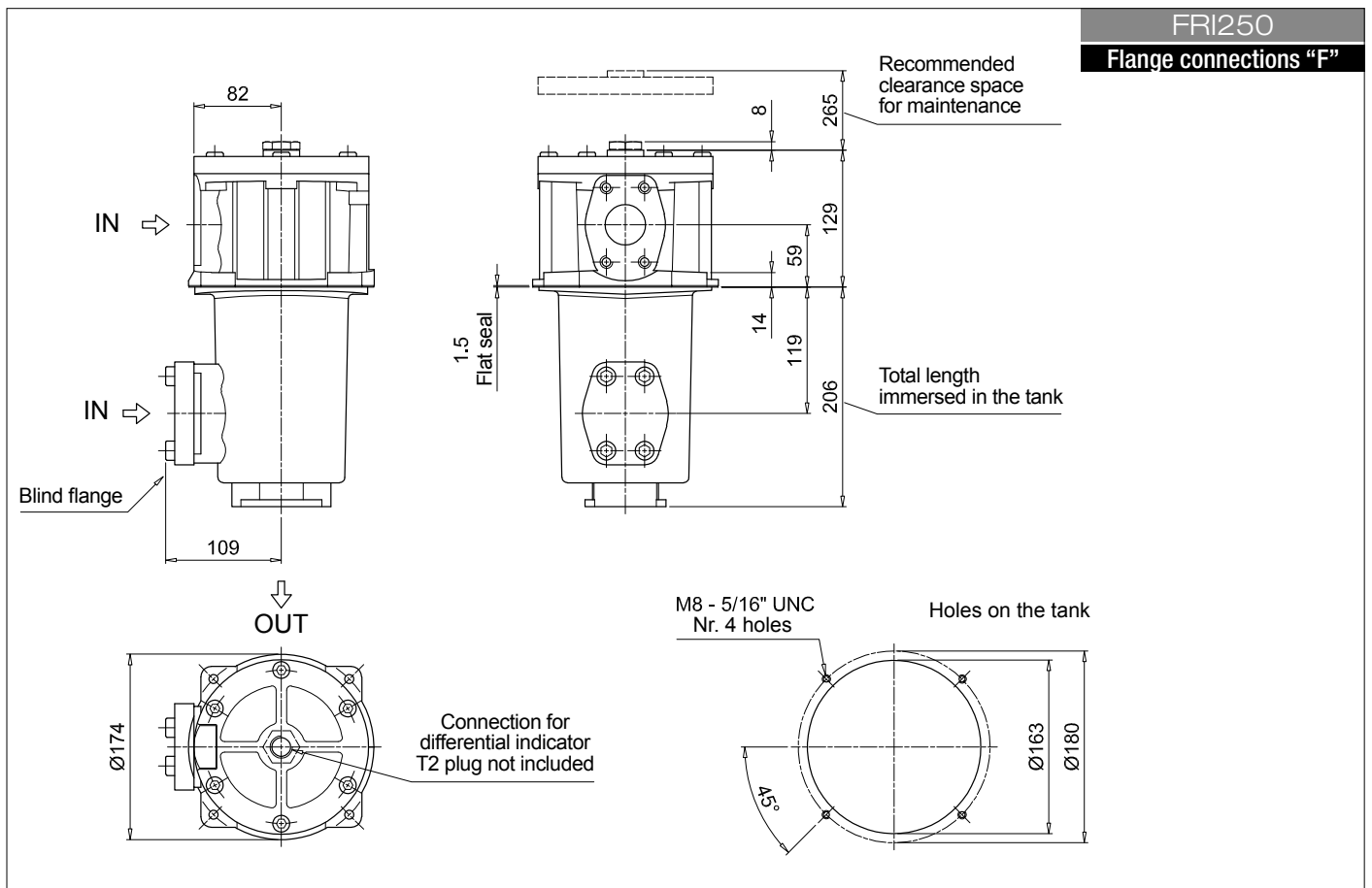
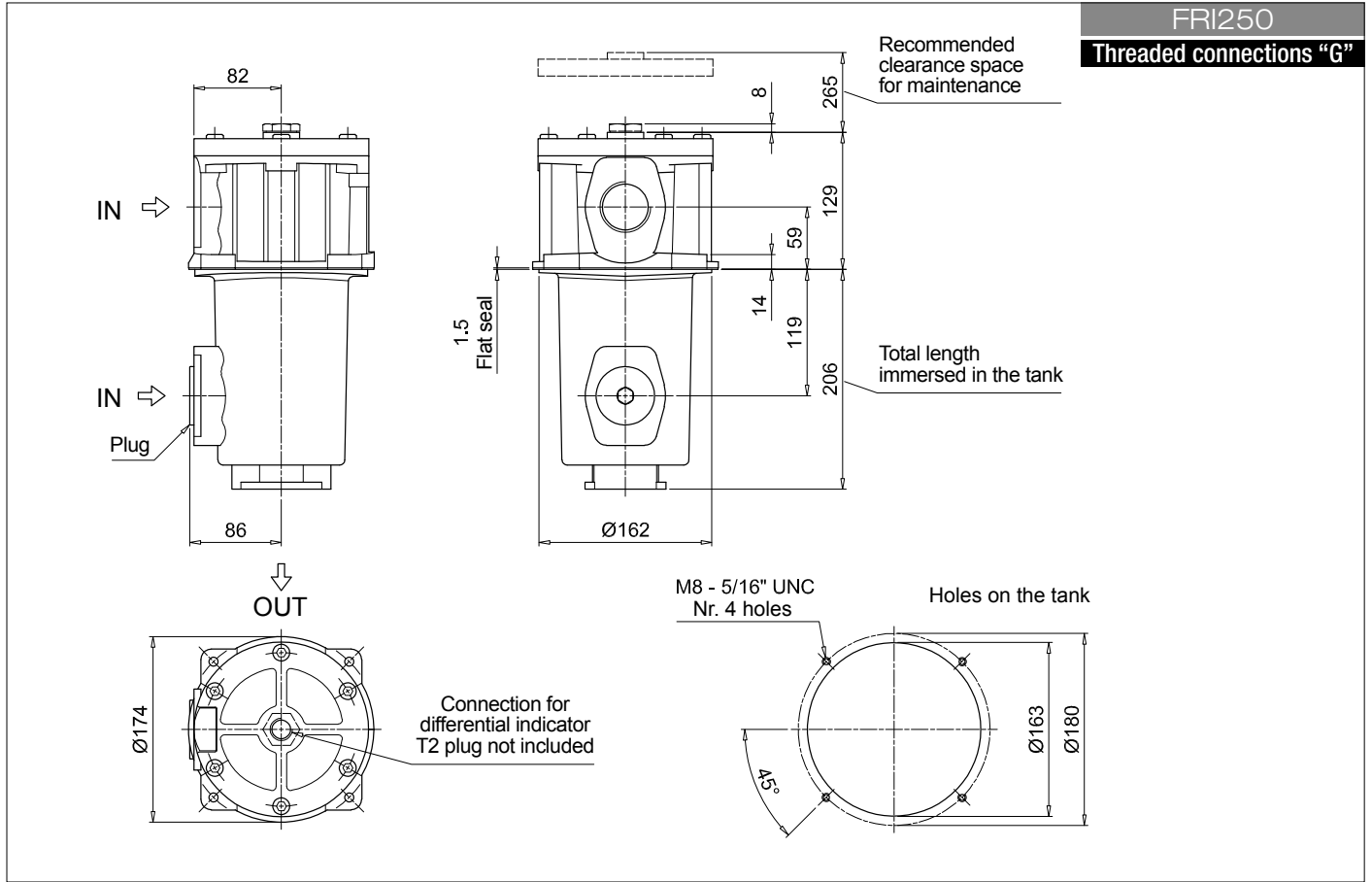
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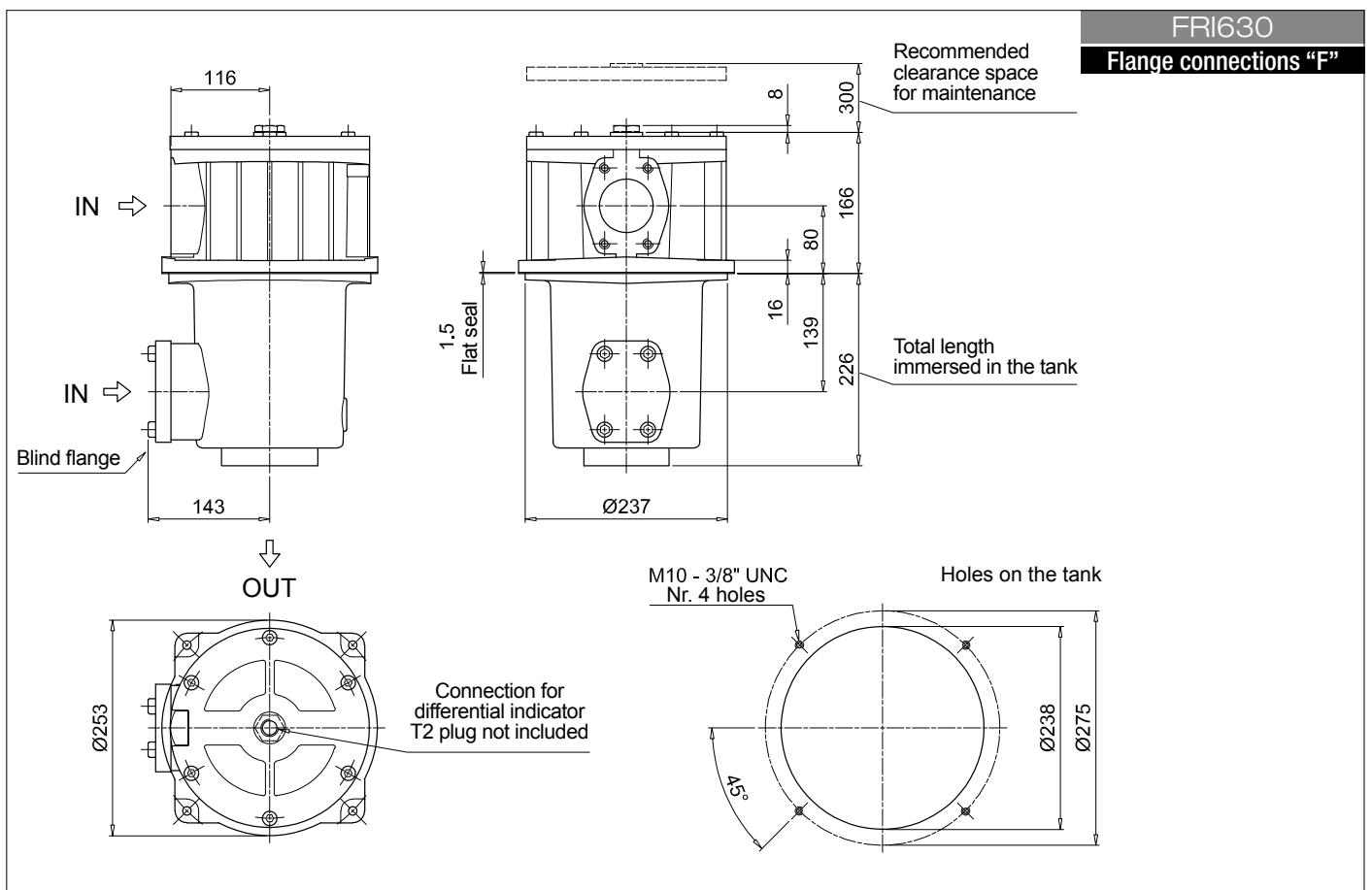
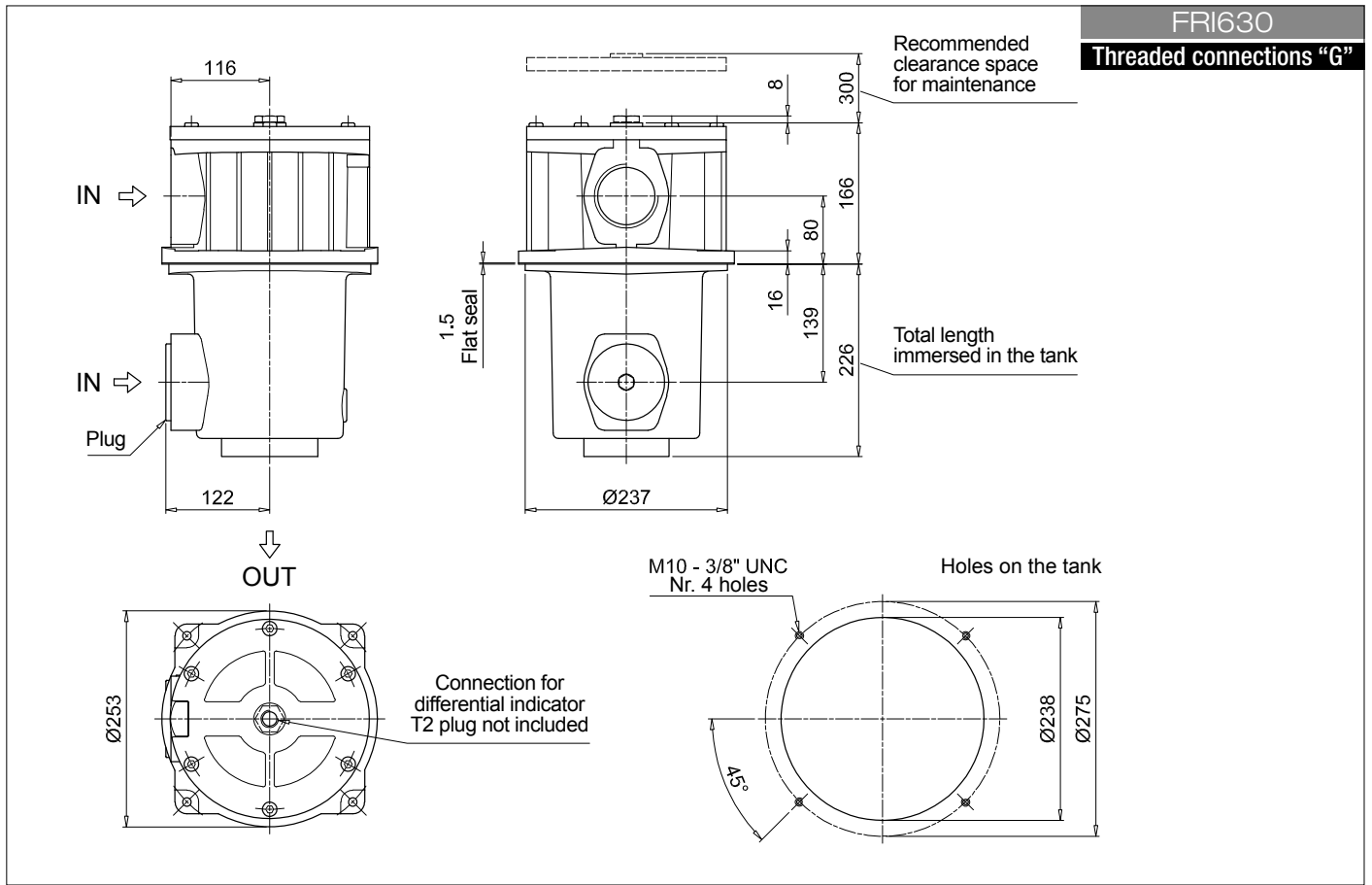
See page 706

T2 Differential indicator plug (not included)
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Dimensions





FRI FRI255 - FRI850

Designation & Ordering code

COMPLETE FILTER

Series and size FRI255 FRI850	Configuration example 1: FRI255 S V F2 M25 N P01 Configuration example 2: FRI850 B A F1 A25 V P01
Bypass valve B With bypass 2.4 bar S Without bypass	
Seals for FRI255 A NBR V FPM	Seals and treatments for FRI850 A NBR V FPM W NBR head anodized filter element compatible with fluids HFA-HFB-HFC Z FPM head anodized with fluids HFA-HFB-HFC
Connections for FRI255 G1 G 1 1/2" G2 1 1/2" NPT G3 SAE 24 - 1 7/8" - 12 UN G4 G 1 1/4" G5 1 1/4" NPT G6 SAE 20 - 1 5/8" - 12 UN F1 1 1/2" SAE 3000 psi/M F2 1 1/2" SAE 3000 psi/UNC	Connections for FRI850 F1 3 1/2" SAE 3000 psi/M F2 3 1/2" SAE 3000 psi/UNC
Filtration rating (filter media) A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm	Filtration rating (filter media) M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm P10 Resin impregnated paper 10 µm P25 Resin impregnated paper 25 µm
	Element Δp N 10 bar
	Execution P01 MP Filtri standard Pxx Customized

Only for FRI850: All filter media except M60, P10 and P25 are compatible with fluids HFA, HFB and HFC.

FILTER ELEMENT

Element series and size CU250 CU850	Configuration example 1: CU250 M25 V P01 Configuration example 2: CU850 A25 N P01
Filtration rating (filter media) A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm	Filtration rating (filter media) M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm P10 Resin impregnated paper 10 µm P25 Resin impregnated paper 25 µm
Seals for FRI255 N NBR V FPM	Seals and treatments for FRI850 N NBR V FPM W NBR head anodized filter element compatible with fluids HFA-HFB-HFC Z FPM head anodized with fluids HFA-HFB-HFC
	Execution P01 MP Filtri standard Pxx Customized

FRI255 CLOGGING INDICATORS

See page 680-681

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator

FRI850 CLOGGING INDICATORS

See page 680-681

DEA Electrical differential indicator
DEM Electrical differential indicator
DLA Electrical / visual differential indicator
DLE Electrical / visual differential indicator

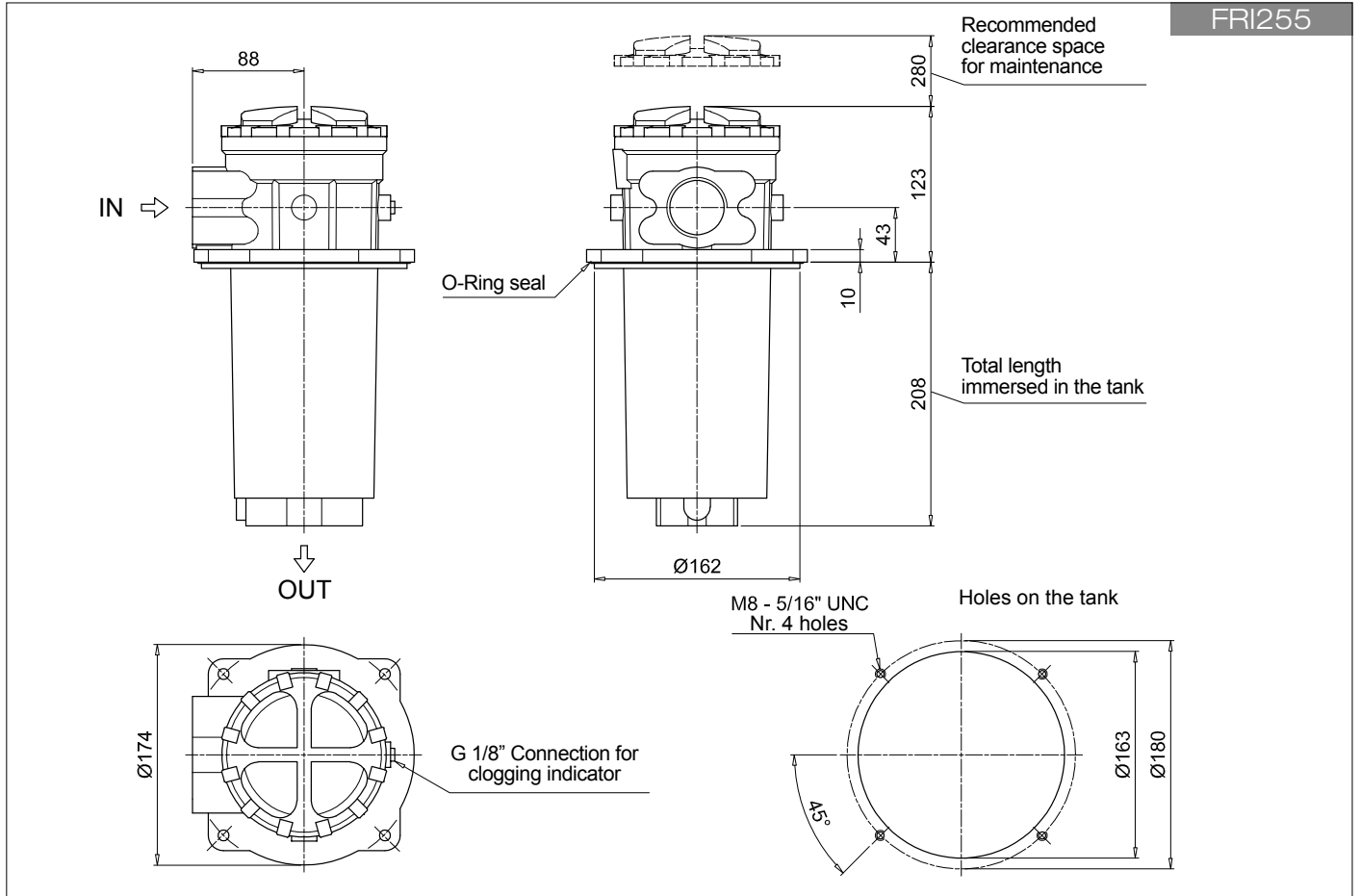
DTA Electrical differential indicator
DVA Visual differential indicator
DVM Visual differential indicator

PLUGS

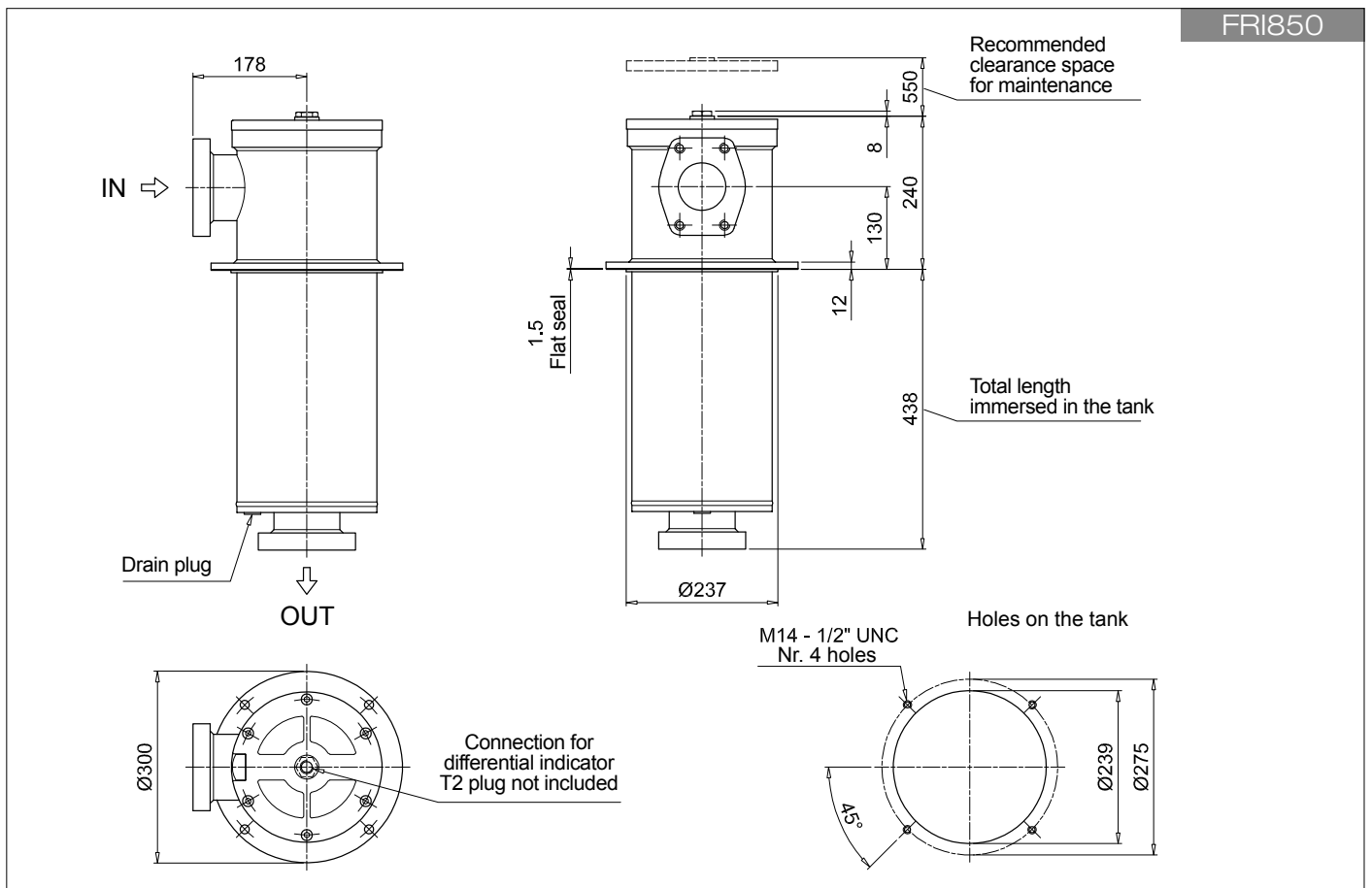
See page 706

T2 Differential indicator plug (not included)
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FRI255



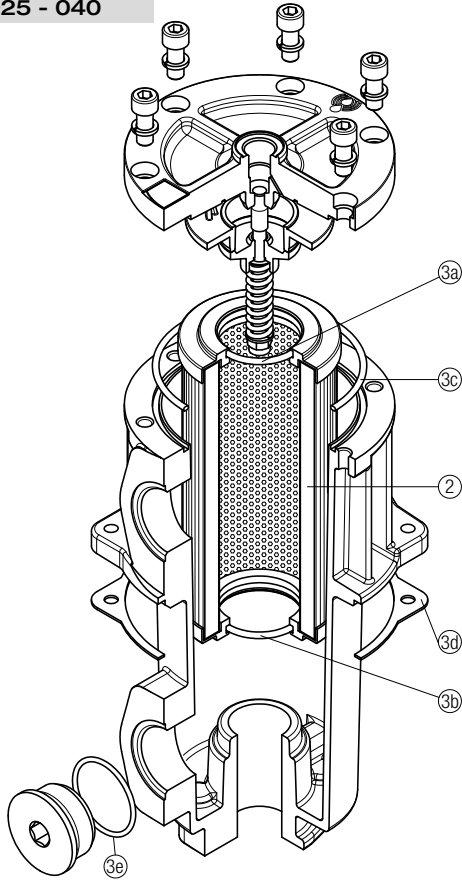
FRI850



FRI SPARE PARTS

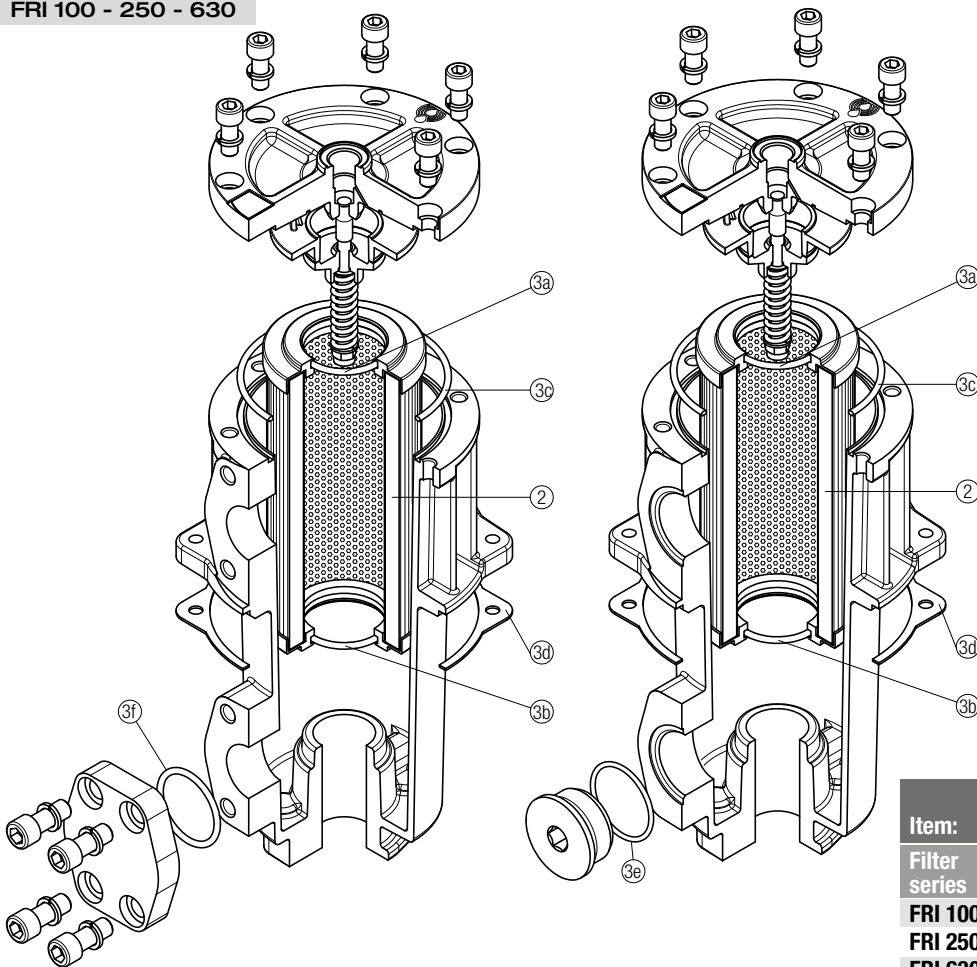
Order number for spare parts

FRI 025 - 040



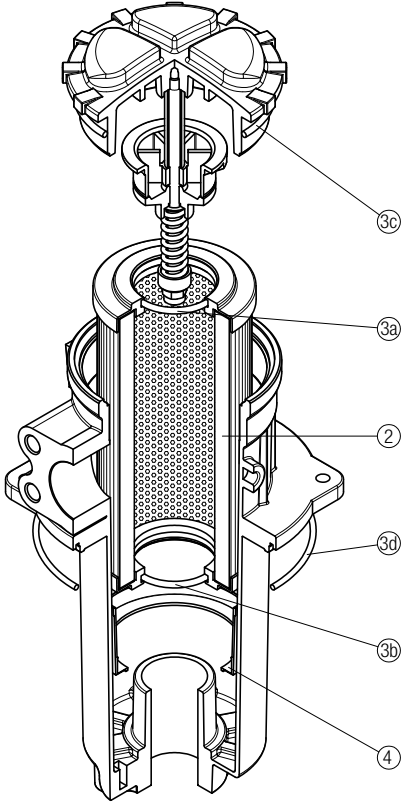
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	2	3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
FRI 025	See order table	02050213	02050220
FRI 040		02050214	02050221

FRI 100 - 250 - 630



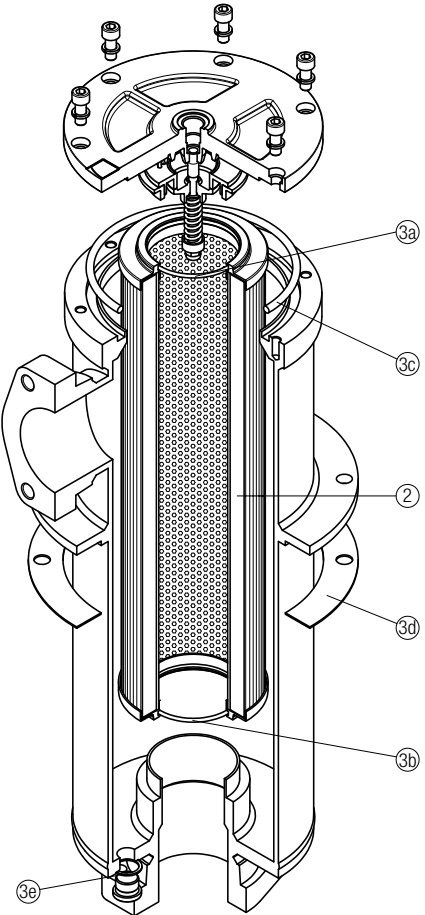
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	2	3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
FRI 100	See order table	02050215	02050222
FRI 250		02050216	02050223
FRI 630		02050217	02050224

FRI 255



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3d)	4
Filter series	Filter element	Seal Kit code number	
	See order table	NBR	FPM
FRI 255		02050013	02050014
		Contamination retainer binder	
		01060301	

FRI 850



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3e)
Filter series	Filter element	Seal Kit code number
	See order table	NBR
FRI 850		02050218
		FPM
		02050225

Accessories

POLYAMIDE EXTENSION TUBE

H1 - Total length immersed in the tank

Configuration example: **TE** **40** **A** **250**

Series	Size	Material	Length	H [mm]
TE			200	200
			250	250
			300	300
			350	350
			400	400
			450	450
			500	500

Size	Ø D [mm]	Material
25	25	A Polyamide
32	32	
40	40	

COMPATIBILITY TABLE															
Filter series	Filter size			Filter length	Tube length										
					TE25	TE32	TE40	200	250	300	350	400	450	500	
MPF - MPFX	30			1	•	-	-	266	316	366	416	466	516	566	
MPF	100	104	110	1	-	•	-	275	325	375	425	475	525	575	
				2	-	-	-	322	372	422	472	522	572	622	
				3	-	-	•	400	450	500	550	600	650	700	
				4	-	-	-	502	552	602	652	702	752	802	
MPFX	100	104	110	1	-	-	•	277	327	377	427	477	527	577	
				2	-	-	-	322	372	422	472	522	572	622	
				3	-	-	•	400	450	500	550	600	650	700	
				4	-	-	-	502	552	602	652	702	752	802	
MPF MPFX	181	182	184	1	-	-	•	410	460	510	560	610	660	710	
				2	-	-	-	623	673	723	773	823	873	923	
MPT MPTX	025		027		1	•	-	-	278	328	378	428	478	528	578
					2	-	-	-	342	392	442	492	542	592	642
					3	-	-	-	380	430	480	530	580	630	680
MPT	110	114	116	120	1	-	•	-	273	323	373	423	473	523	573
					2	-	-	-	320	370	420	470	520	570	620
					3	-	-	•	396	446	496	546	596	646	696
					4	-	-	-	498	548	598	648	698	748	798
MPTX	110	114	116	120	1	-	-	•	273	323	373	423	473	523	573
					2	-	-	-	318	368	418	468	518	568	618
					3	-	-	-	396	446	496	546	596	646	696
					4	-	-	-	498	548	598	648	698	748	798

STEEL EXTENSION TUBE

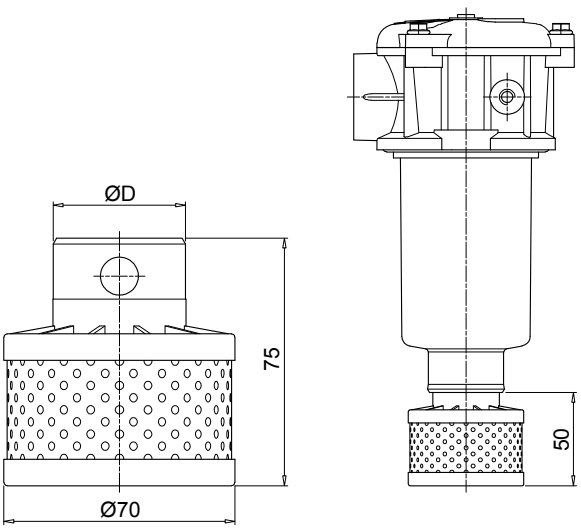
H1 - Total length immersed in the tank

Configuration example: **MPF191** **2** **A** **F1** **A10** **H** **B** **S60**

Length	H1 [mm]
S30	300
S35	350
S40	400
S45	450
S50	500
S60	600
S70	700
S80	800
S90	900

COMPATIBILITY TABLE							
Filter series	Filter size			Filter length	Ø D [mm]		
					52	65	
MPF	191			2	•	-	
	192			1	•	-	
	400	410	450	451	2	-	•
					3	-	•
	750			1	-	•	

DIFFUSER WITH FAST LOCK CONNECTION

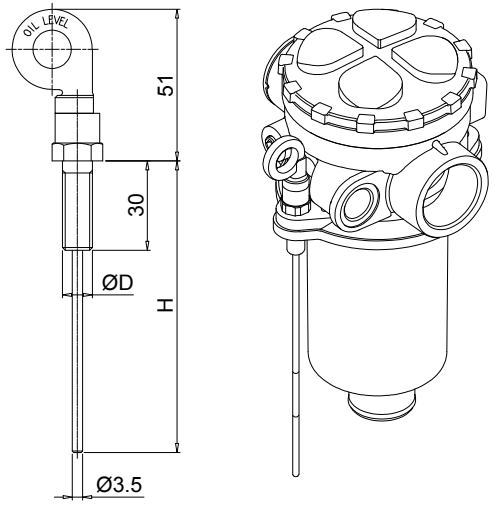


Configuration example: **DFS 32 A 075**

Series		DFS	
Size		ø D [mm]	
32	32		
40	40		
		Version	
		A Standard	
		Length	
		075 Standard	

COMPATIBILITY TABLE							
Filter series	Filter size			Filter Length	DFS32	DFS40	
MPF	100	104	110	1	•	-	
				2	-	-	
				3	-	•	
				4	-	-	
MPFX	100	104	110	1	-	•	
				2	-	•	
				3	-	-	
				4	-	-	
MPT	110	114	116	120	1	•	-
					2	-	-
					3	-	•
					4	-	-
MPTX	110	114	116	120	1	-	•
					2	-	•
					3	-	-
					4	-	-

DIPSTICK



Configuration example: **DPT 20 M10 A P01**

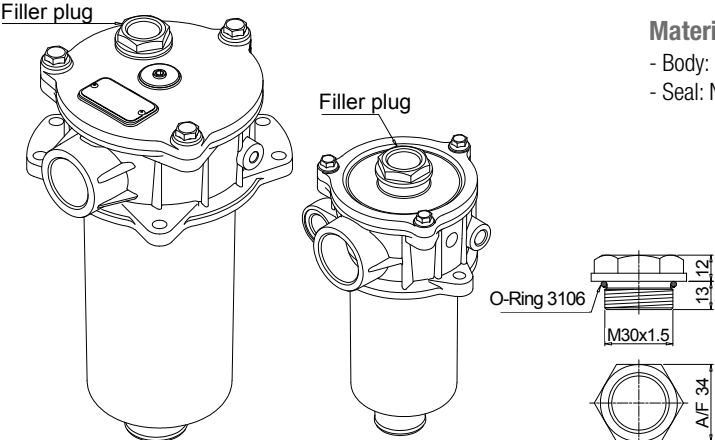
Series		DPT	
Length		H [mm]	
15	134		
20	184		
25	234		
30	284		
35	334		

Materials
 - Screw: phosphatized steel
 - Stick: phosphatized steel
 - Handle: Polyamide

Technical data
 Working temperature: from -25 °C to +110 °C

Fastening		Seals	
M8	Fastening with screws ø D = M8	A	NBR
M10	Fastening with screws ø D = M10	V	FPM
		Execution	
		P01 MP Filtri standard	
		Pxx Customized	

FILLER PLUG



Materials
 - Body: Polyamide
 - Seal: NBR

Technical data
 Tightening torque: 15 N·m

O-Ring 3106

For any further information, please, contact our commercial dept.