

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) $\pm 10\%$

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

Flow rates [l/min]

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.

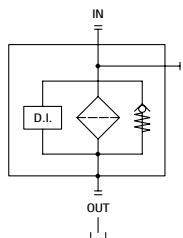
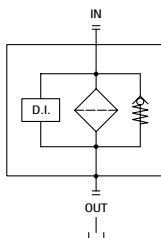
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

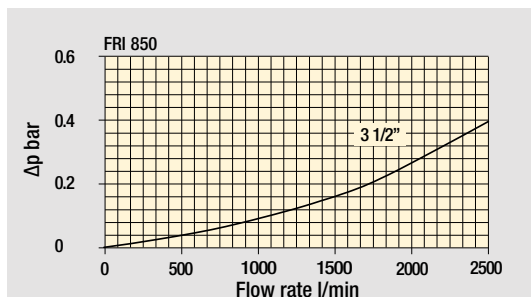
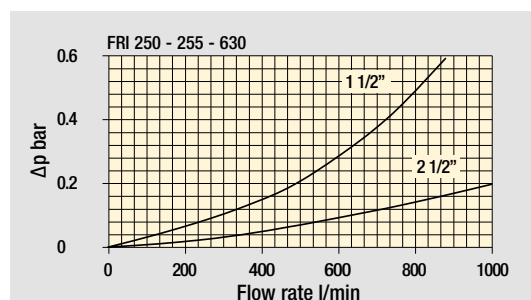
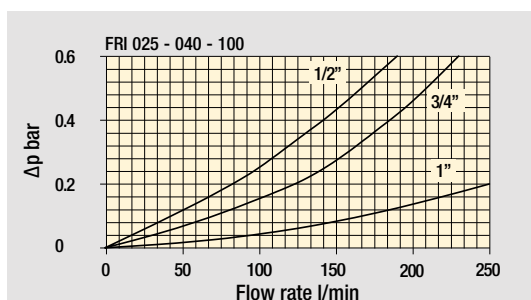
Hydraulic symbols

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	•	

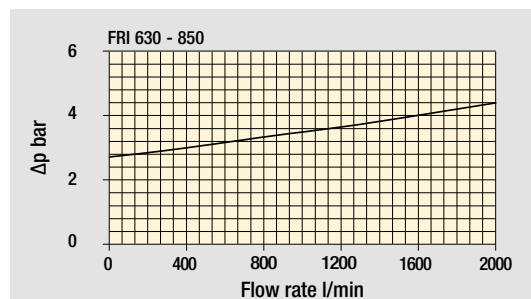
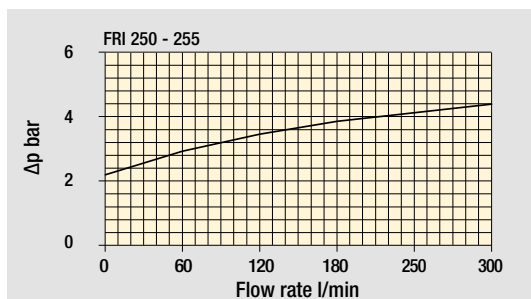
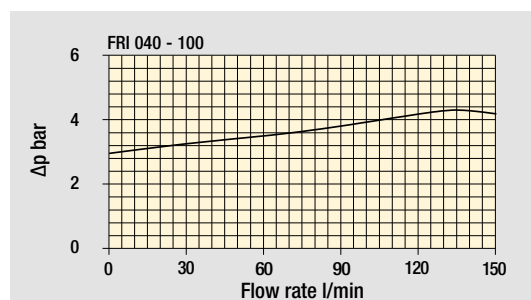
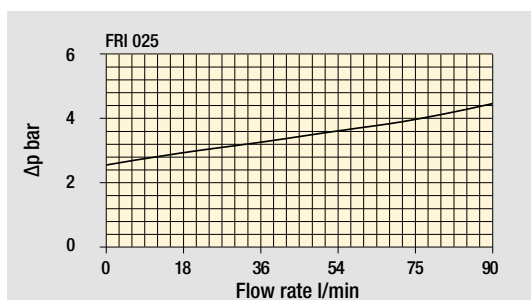


Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm^3 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"		G3/4"								
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

[illegible]

CLOGGING INDICATORS

See page 720-721

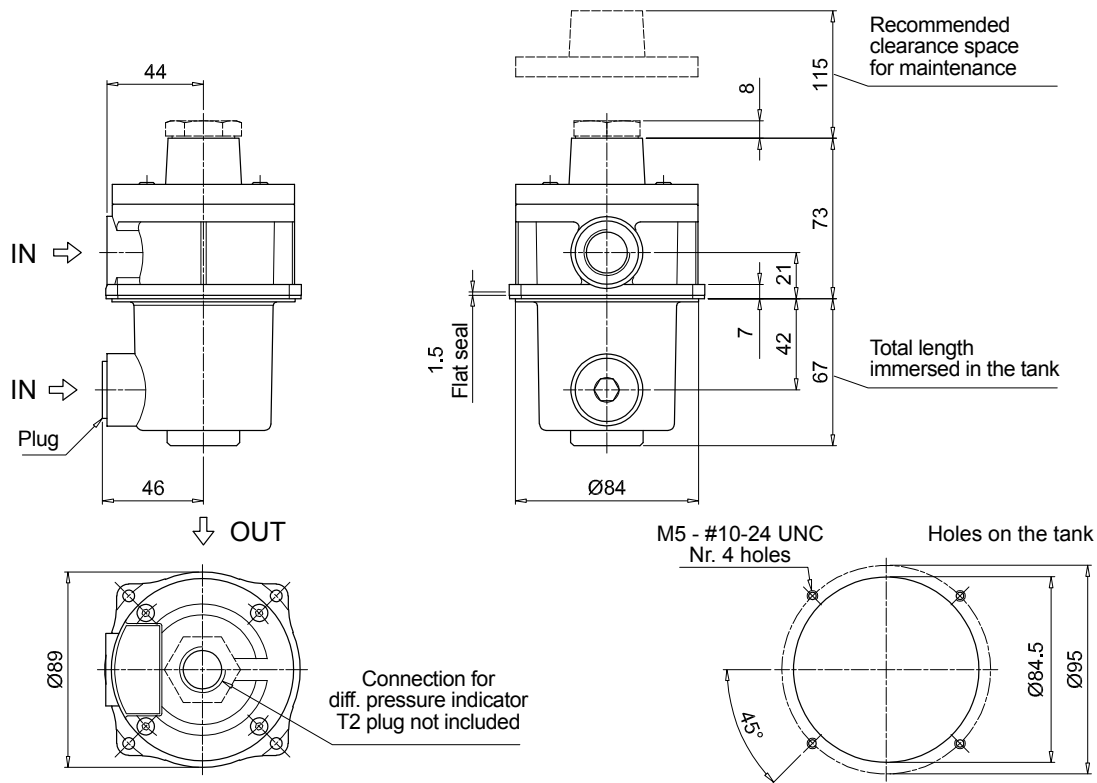
DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical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

PLUGS

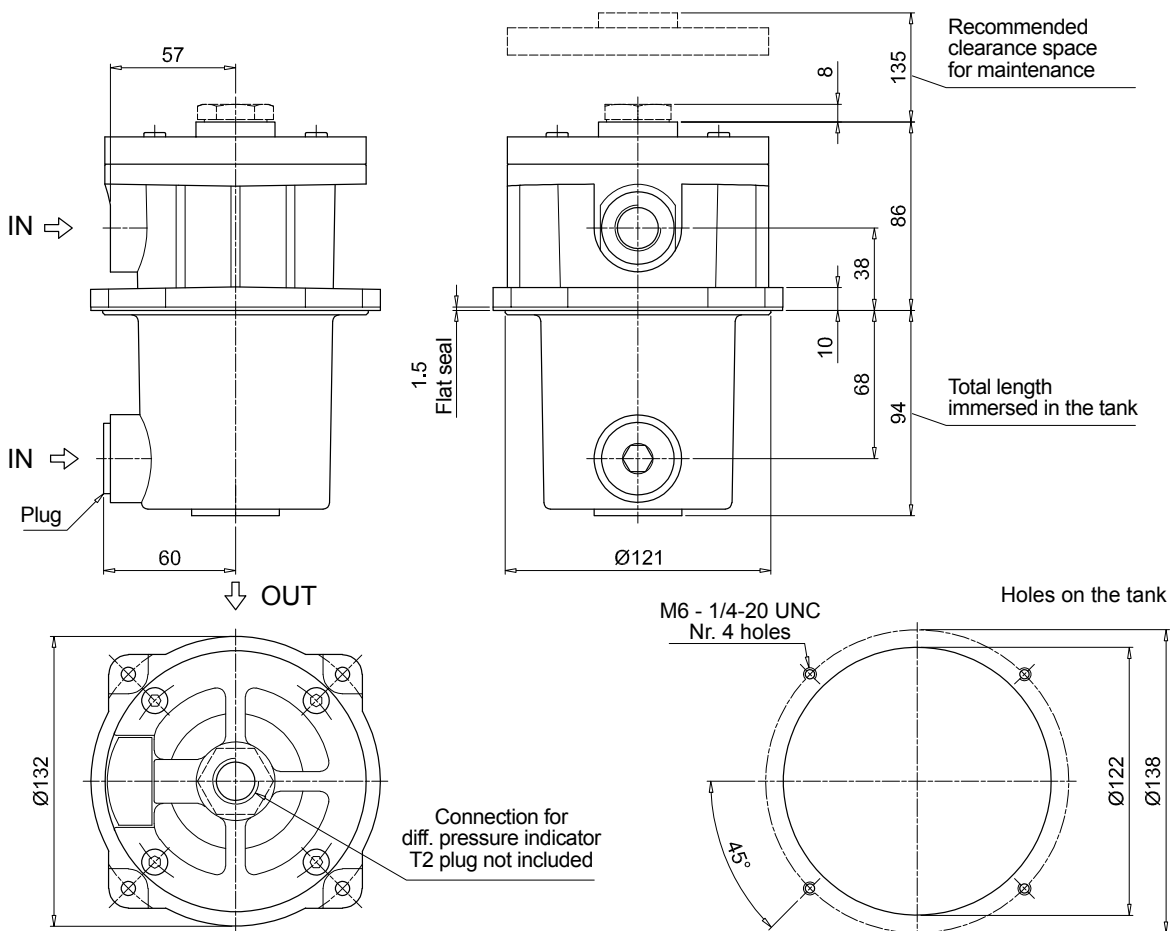
See page 747

T2 Plug (not included)

FRIO25



FRIO40



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

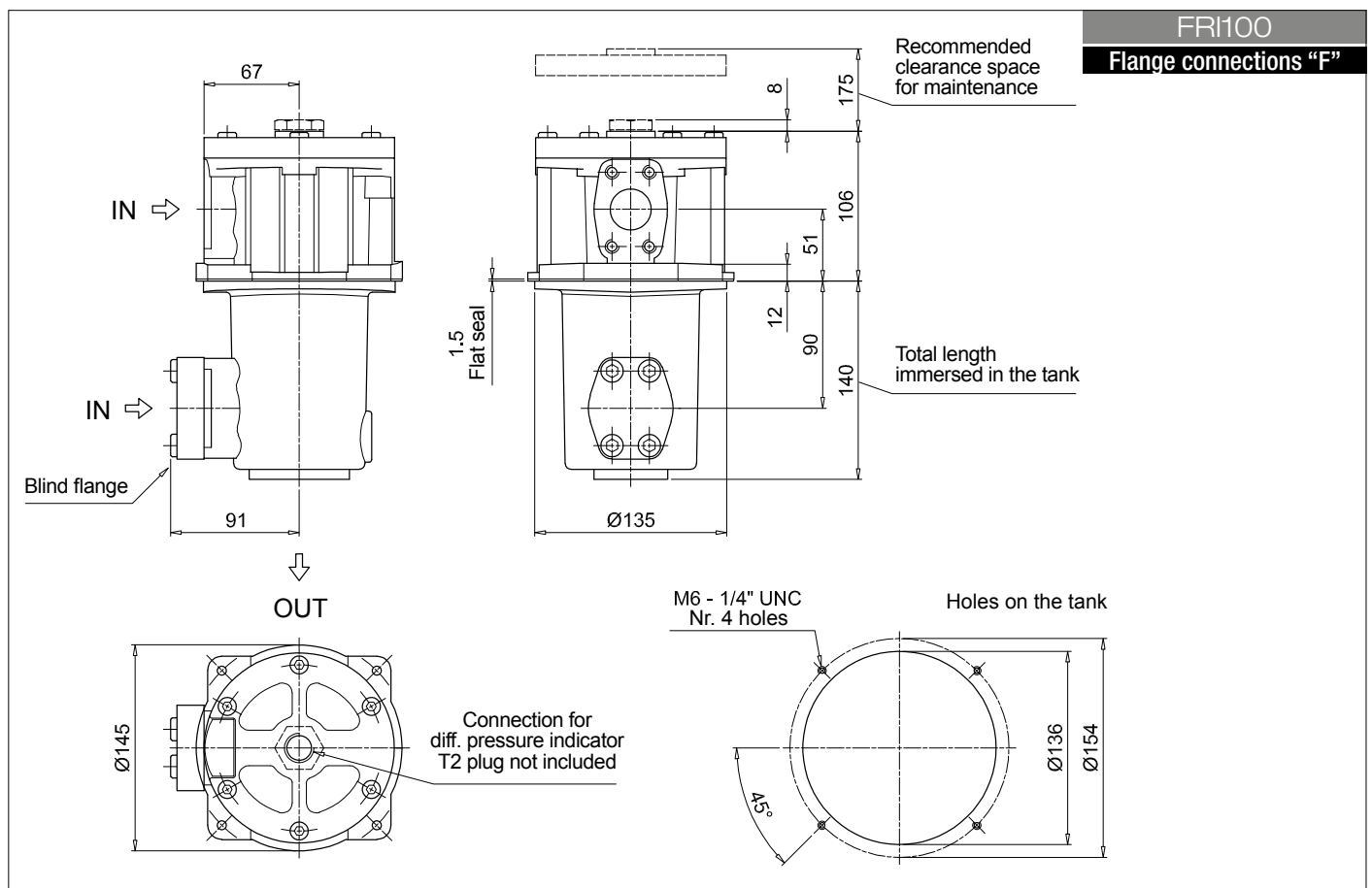
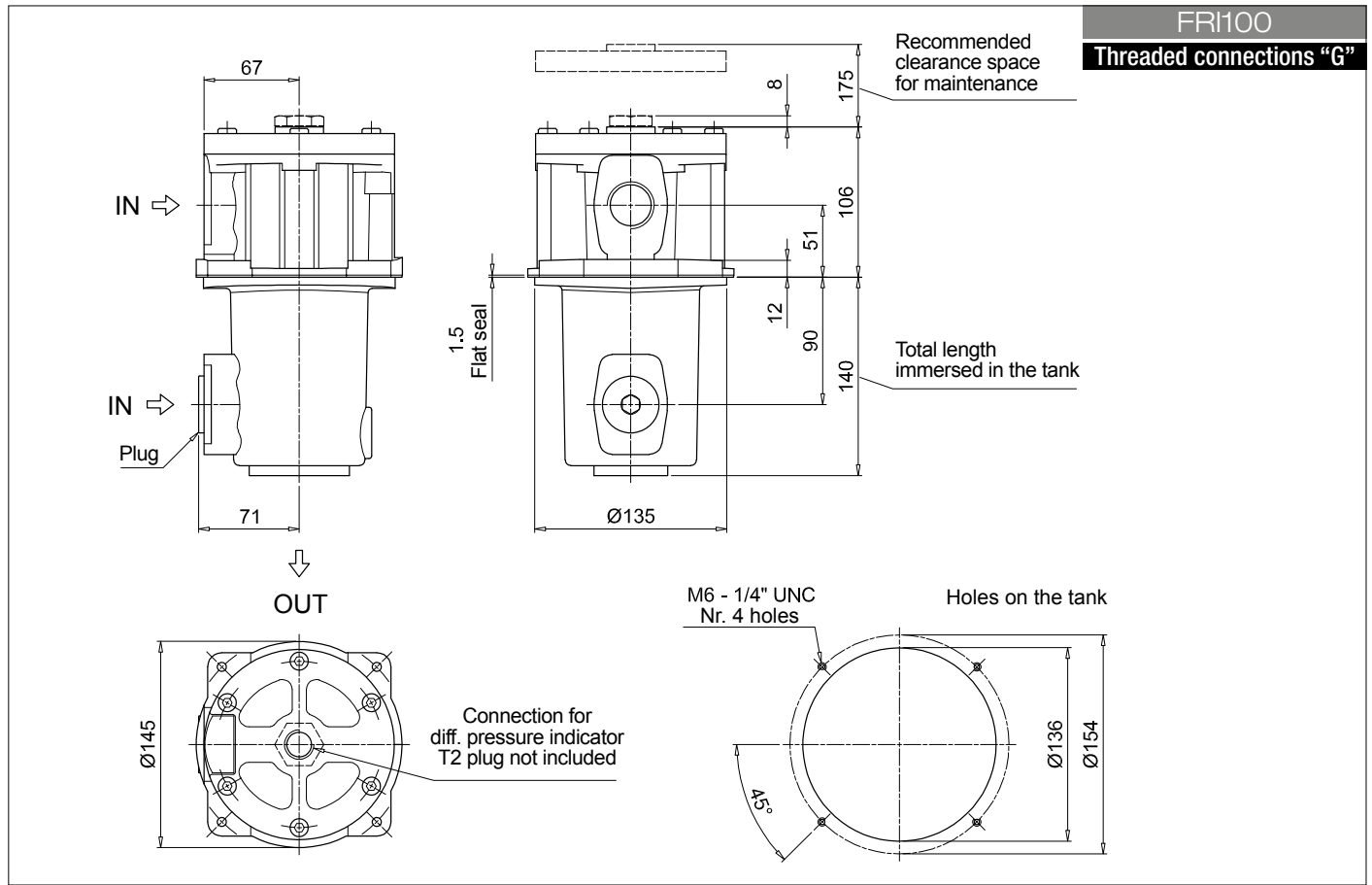
See page 720-721

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

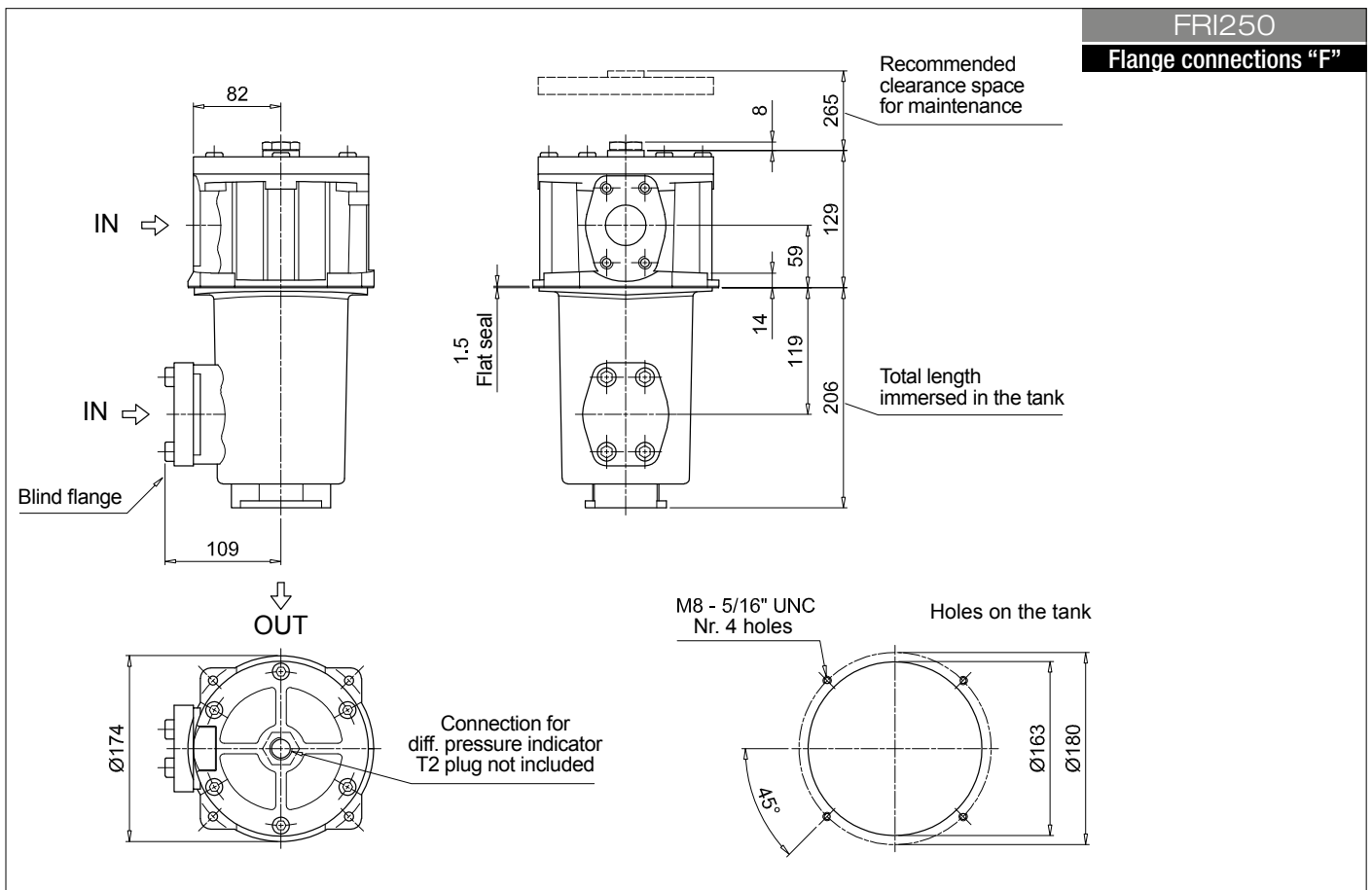
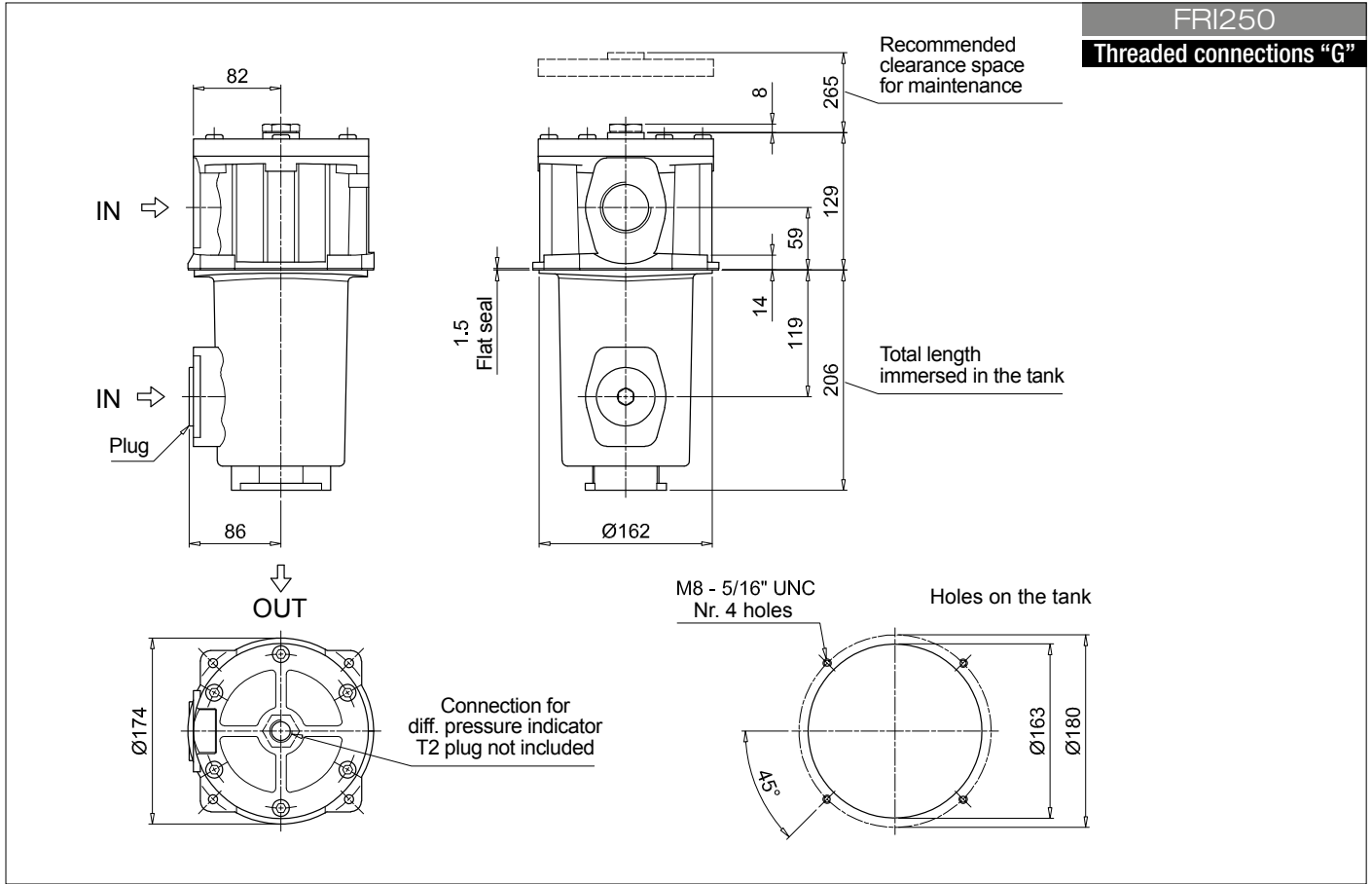
PLUGS

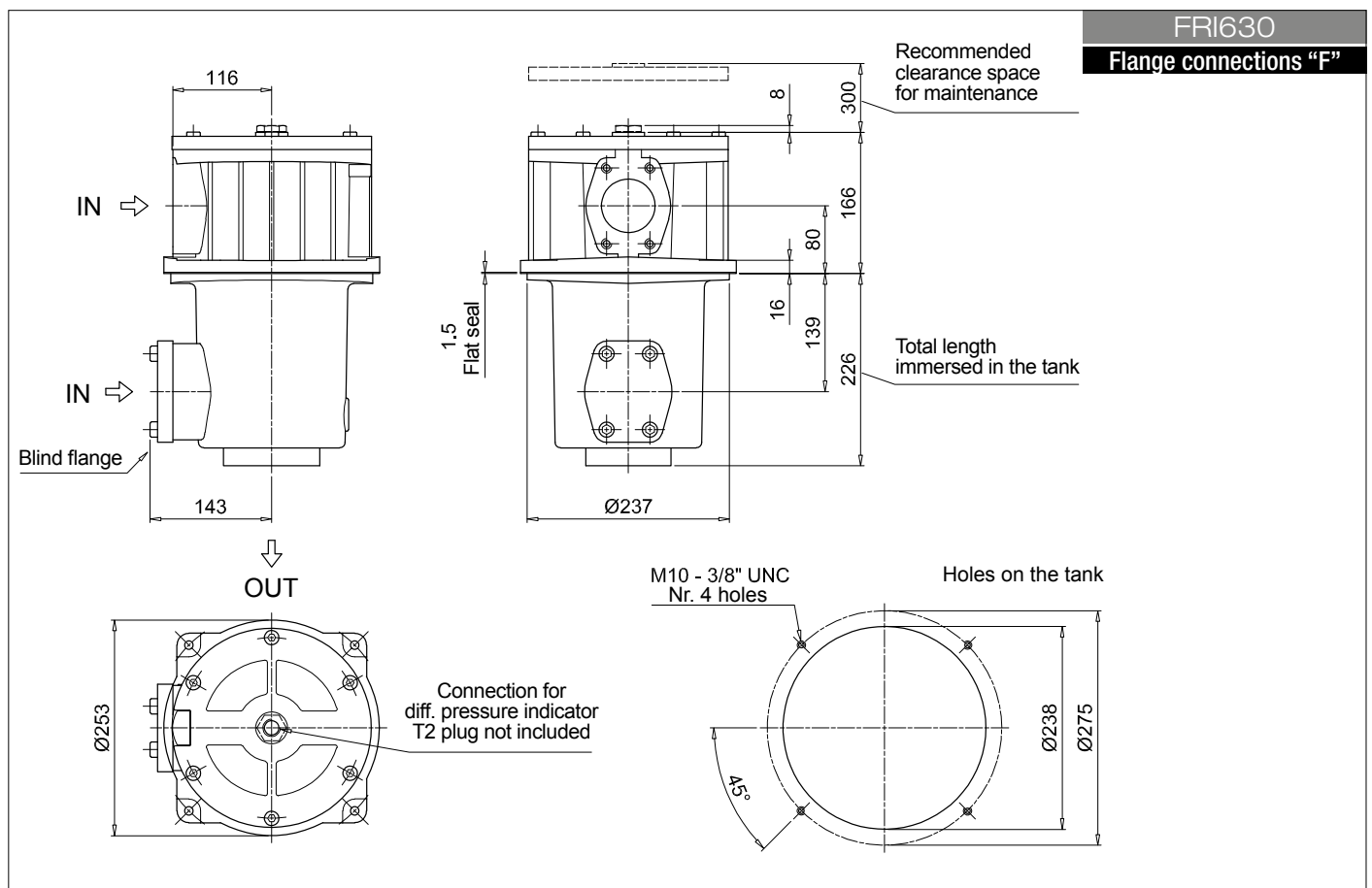
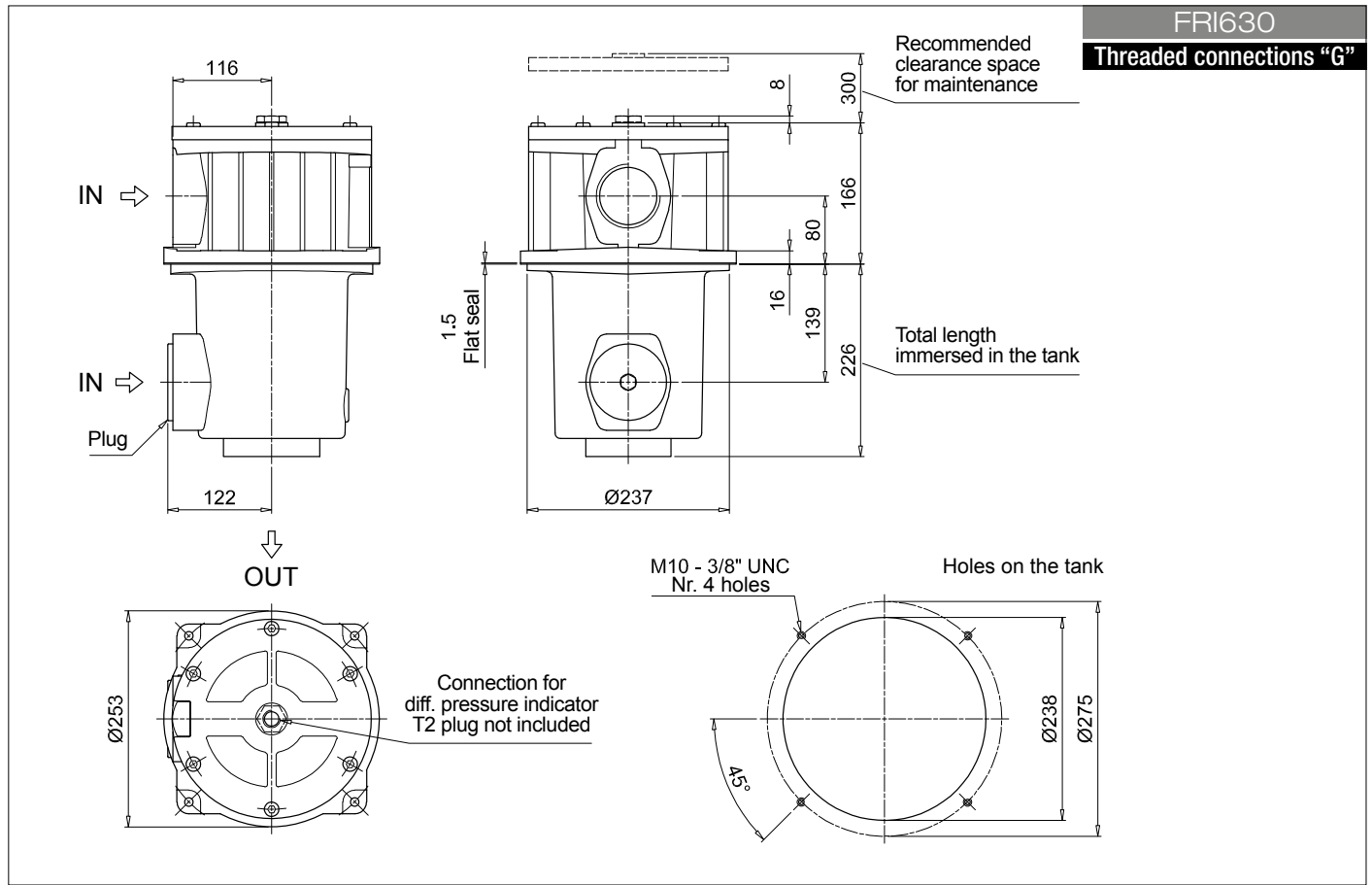
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T2 Plug (not included)



Dimensions



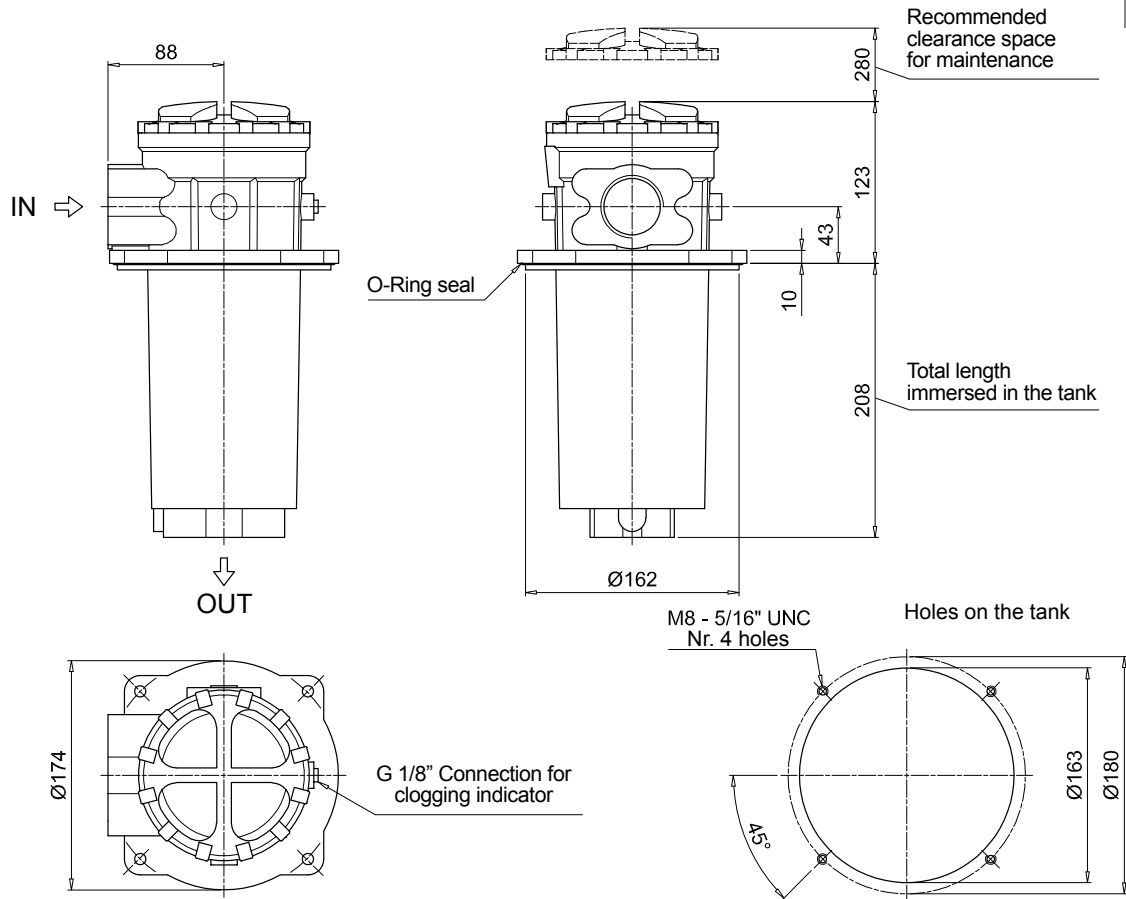


Designation & Ordering code

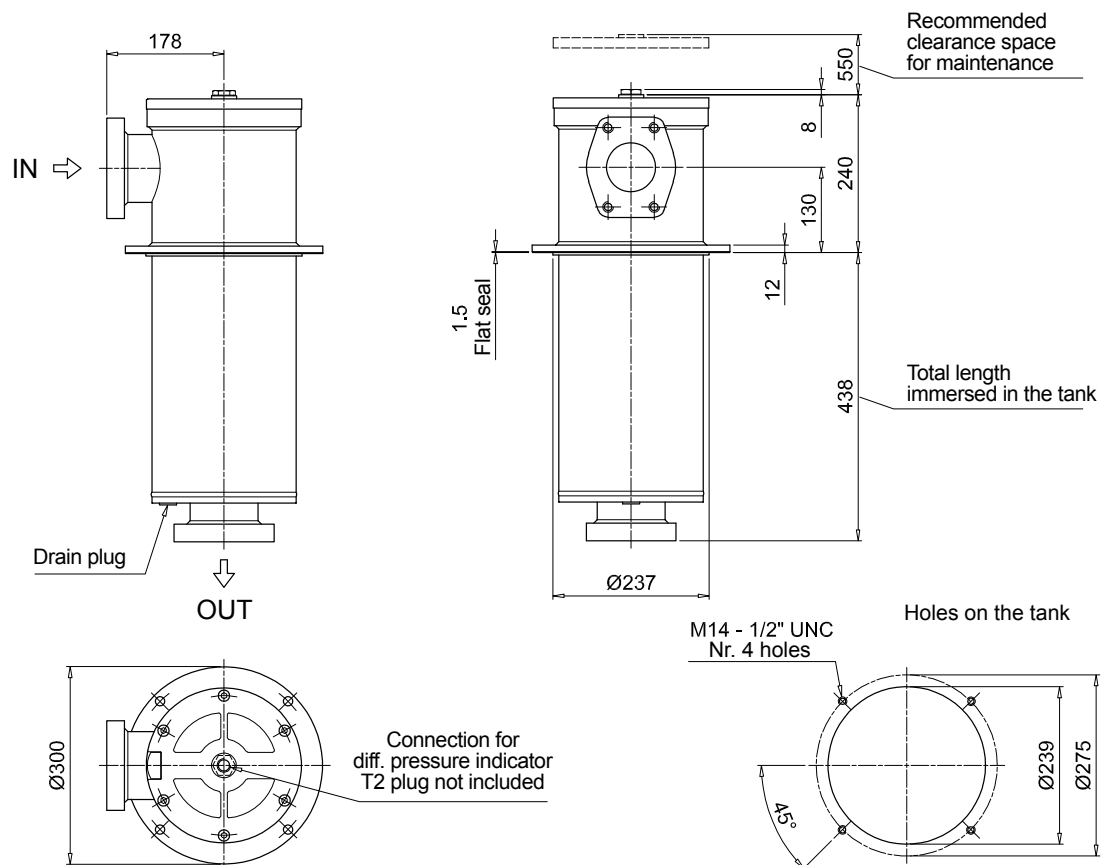
COMPLETE FILTER

Series and size		Configuration example 1:						
FRI255		FRI255	S	V	F2	M25	N	P01
FRI850		Configuration example 2:						
		FRI850	B	A	F1	A25	V	P01
Bypass valve								
B With bypass 2.4 bar								
S Without bypass								
Seals for FRI255		Seals and treatments for FRI850		Filtration rating				
A NBR		A	NBR	Axx	Mxx	Pxx		
V FPM		V	FPM	•	•	•		
		W	NBR head anodized	•	•	-		
		Z	FPM head anodized	•	•	-		
Connections for FRI255		Connections for FRI850						
G1 G 1 1/2"		F1	3 1/2" SAE 3000 psi/M					
G2 1 1/2" NPT		F2	3 1/2" SAE 3000 psi/UNC					
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								
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				

FRI255

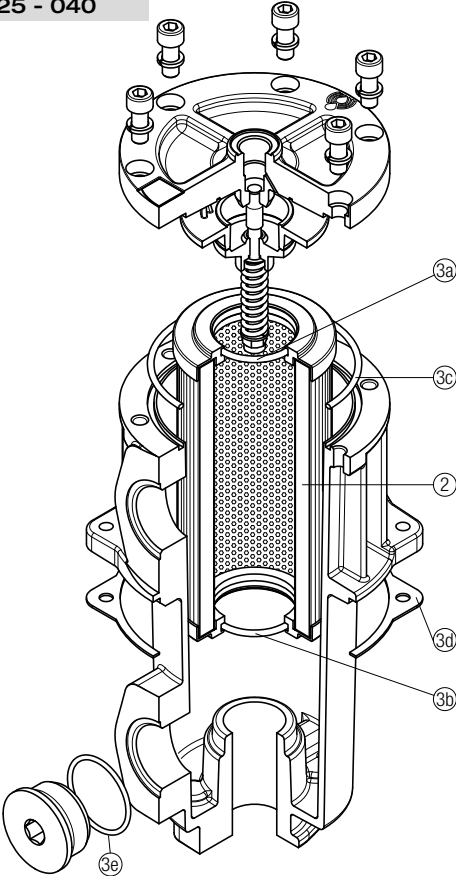


FRI850



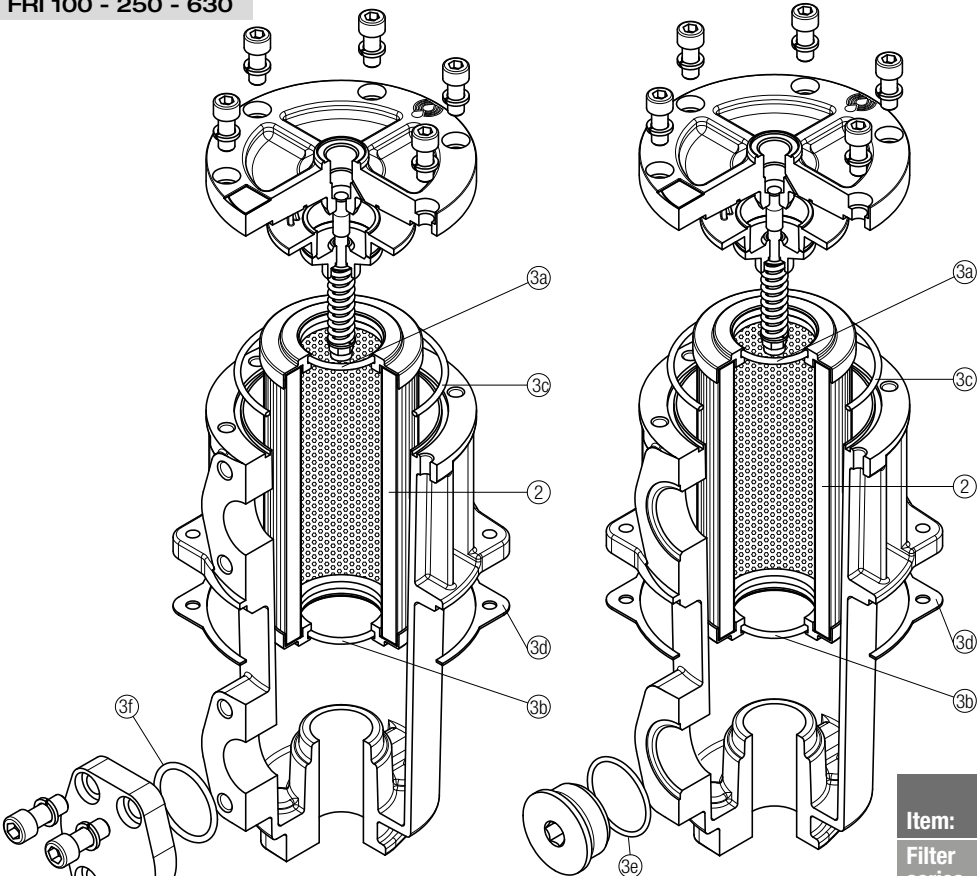
Order number for spare parts

FRI 025 - 040



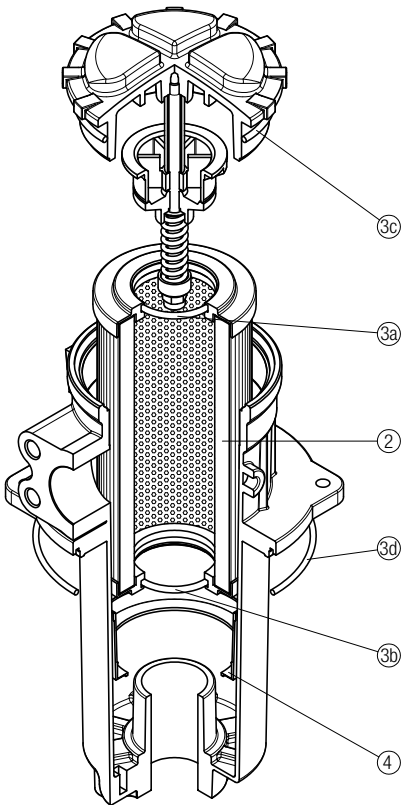
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element See order table	Seal Kit code number NBR	FPM
FRI 025		02050213	02050220
FRI 040		02050214	02050221

FRI 100 - 250 - 630



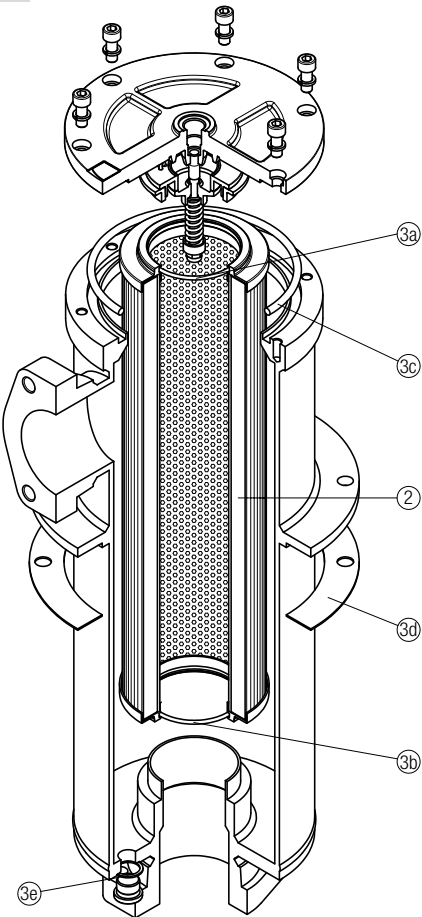
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)	
Filter series	Filter element See order table	Seal Kit code number NBR	FPM
FRI 100		02050215	02050222
FRI 250		02050216	02050223
FRI 630		02050217	02050224

FRI 255



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

FRI 850



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

Designation & Ordering code

BAROMETRIC (PRESSURE) INDICATORS

Series				Configuration example 1: BEA A 15 H A 41 P01 EX									
BE Electrical pressure indicator				Configuration example 2: BL A 20 H A 71 P01									
BL Electrical/Visual pressure indicator				Configuration example 3: BV R 14 P01									
BV Visual pressure indicator				Configuration example 4: BV P 20 H P01									
Type	BE	BL	BV										
A Standard type	•	•	A Axial connection pressure gauge										
M With wired electrical connection	•	-	R Radial connection pressure gauge										
T With thermal switch	•	-	P Visual indicator with automatic reset										
			Q Visual indicator with manual reset										
Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ								
14 1.4 bar	-	-	-	•	-								
15 1.5 bar	•	-	•	-	•								
20 2.0 bar	•	•	•	-	•								
25 2.5 bar	-	•	-	•	-								
Seals	BE	BLA	BVA-BVR	BVP-BVQ									
H HNBR	•	•	-	•									
Thermostat	BEA-BEM	BET	BLA										
A Without thermostat	•	-	•										
F With thermostat	-	•	-										
Electrical connections					BEA	BEM	BET	BL					
10 Connection AMP Superseal series 1,5					-	-	•	-					
30 Connection Deutsch DT-04-2-P					-	-	•	-					
41 Connection via four-core cable					-	•	-	-					
50 Connection EN 175301-803					•	-	-	-					
51 Connection EN 175301-803, transparent base with lamps 24 Vdc					-	-	-	•					
52 Connection EN 175301-803, transparent base with lamps 110 Vdc					-	-	-	•					
53 Connection EN 175301-803, transparent base with lamps 230 Vac					-	-	-	•					
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc					-	-	-	•					
Option													
P01 MP Filtri standard													
Pxx Customized													
Certifications					BEA	BEM-BET	BL	BV					
Without					•	•	•	•					
EX ATEX certification					•	-	-	-					
UL UL certification					•	-	-	-					

DIFFERENTIAL PRESSURE INDICATORS

Series
DE Electrical differential pressure indicator
DL Electrical/Visual differential pressure indicator
DT Electrical differential pressure indicator
DV Visual differential pressure indicator

Configuration example 1:	DE	M	20	H	F	50	P01
Configuration example 2:	DE	U	50	V	A	50	P01
Configuration example 3:	DL	E	20	V	A	71	P01
Configuration example 4:	DT	A	20	H	F	70	P01
Configuration example 5:	DV	M	20	V			P01

Type	DE	DL	DT
A Standard type	•	•	•
M With wired electrical connection	•	-	-
U Standard type 210 bar, UL certified	•	-	-
E For high power supply	-	•	-
S Compact version	•	-	-

DV
A With automatic reset
M With manual reset
S With automatic reset

Pressure setting	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
12 1.2 bar	-	-	-	•	-	-	-	-	•
20 2.0 bar	•	•	•	-	•	•	•	•	-
25 2.5 bar	-	-	-	•	-	-	-	-	•

Seals	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
H HNBR	•	•	-	•	•	•	•	•	•
V FPM	•	•	•	-	•	•	•	•	-

Thermostat	DEA	DEM	DEU	DES	DLA	DLE	DT
A Without thermostat	•	•	•	•	•	•	-
F With thermostat	-	•	-	-	-	•	•

Electrical connections	DEA	DEM	DEU	DES	DLA	DLE	DT
10 Connection AMP Superseal series 1.5	-	•	-	•	-	-	-
20 Connection AMP Timer Junior	-	•	-	-	-	-	-
30 Connection Deutsch DT-04-2-P	-	•	-	•	-	-	-
35 Connection Deutsch DT-04-3-P	-	•	-	-	-	-	-
50 Connection EN 175301-803	•	-	•	-	-	•	-
51 Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	-	•	-	-
52 Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	-	•	-	-
70 Connection IEC 61076-2-101 D (M12)	-	-	-	-	-	-	•
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	-	•	-	-
80 Connection Stud #10-32 UNF	-	-	-	•	-	-	-

Option
P01 MP Filtri standard
Pxx Customized

Certifications	DEU	OTHERS
Without	-	•
UL UL certification	•	-

PLUGS

Series
T2 Plug
T4 Plug

Seals	T2	T4
A NBR	-	•
H HNBR	•	-
V FPM	•	-

Configuration example	T2	H
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