

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

FPE-AMF-AMD

PRESSURE FILTERS

MATERIALS

Head: Aluminium alloy
Spin-on cartridge: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile
(FKM - on request fluoroelastomer)
Indicator housing: Brass

PRESSURE

Max working: 1,2 MPa (12 bar)
Collapse, differential for the filter element (ISO 2941):
400 kPa (4 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

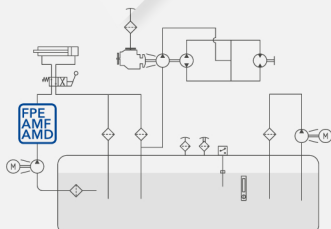
WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website.

FPE

PRESSURE FILTERS

ORDERING AND OPTION CHART

F	P	E	COMPLETE FILTER FAMILY	11	12	21	22	31*	32*	41*	42*	FILTER ELEMENT FAMILY	E	S	E
			SIZE & LENGTH									SIZE & LENGTH			
			PORT TYPE												
			B = BSP thread	B	B	B	B	B	B	B	B				
			F = SAE flange 3000 psi	-	-	-	-	-	-	F	F				
			PORT SIZE												
			06 = 3/4"	06	06	-	-	-	-	-	-				
			10 = 1" 1/4	-	-	10	10	-	-	-	-				
			12 = 1" 1/2	-	-	-	-	12	12	12	12				
			BYPASS VALVE												
			W = without	W	W	W	W	W	W	W	W				
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B				
			SEALS									SEALS			
			N = NBR Nitrile	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F				
			FILTER MEDIA									FILTER MEDIA			
			FA = fibreglass 5 µm(c) β>1.000	FA	FA	FA	FA	FA	FA	FA	FA				
			FB = fibreglass 7 µm(c) β>1.000	FB	FB	FB	FB	FB	FB	FB	FB				
			FC = fibreglass 12 µm(c) β>1.000	FC	FC	FC	FC	FC	FC	FC	FC				
			FD = fibreglass 21 µm(c) β>1.000	FD	FD	FD	FD	FD	FD	FD	FD				
			CC = impregnated cellulose 10 µm β>2	CC	CC	CC	CC	CC	CC	CC	CC				
			CD = impregnated cellulose 25 µm β>2	CD	CD	CD	CD	CD	CD	CD	CD				
			CLOGGING INDICATOR												
			06 = port, plugged	06	06	06	06	06	06	06	06				
			31 = pressure gauge, rear connection	31	31	31	31	31	31	31	31				
			P1 = SPDT, pressure switch	P1	P1	P1	P1	P1	P1	P1	P1				
X	X		ACCESSORIES												
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX				

SPARE PARTS ELEMENTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	E		E	S	E					

AMF

PRESSURE FILTERS

ORDERING AND OPTION CHART

A	M	F	COMPLETE FILTER FAMILY							FILTER ELEMENT FAMILY	C	C	A	
			SIZE & LENGTH	151	152	301	302	601*	602*	801*	802*			
			FILTER MEDIA											
			FT = fibreglass 5 µm(c) β>1.000	FT	FT	FT	FT	FT	FT	FT	FT			
			FC = fibreglass 7 µm(c) β>1.000	FC	FC	FC	FC	FC	FC	FC	FC			
			FD = fibreglass 12 µm(c) β>1.000	FD	FD	FD	FD	FD	FD	FD	FD			
			FV = fibreglass 21 µm(c) β>1.000	FV	FV	FV	FV	FV	FV	FV	FV			
			CD = impregnated cellulose 10 µm(c) β>2	CD	CD	CD	CD	CD	CD	CD	CD			
			CV = impregnated cellulose 25 µm(c) β>2	CV	CV	CV	CV	CV	CV	CV	CV			
			SEALS											
			1 = NBR 1itrile	1	1	1	1	1	1	1	1			
			2 = FKM Fluoroelastomer	2	2	2	2	2	2	2	2			
			BYPASS VALVE											
			S = without	S	S	S	S	S	S	S	S			
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B			
			PORT TYPE											
			B = BSP thread	B	B	B	B	B	B	B	B			
			F = SAE flange 3000 psi	-	-	F	F	F	F	F	F			
			PORT SIZE											
			4 = 3/4"	4	4	-	-	-	-	-	-			
			6 = 1" 1/4	-	-	6	6	-	-	-	-			
			7 = 1" 1/2	-	-	-	-	7	7	7	7			
			CLOGGING INDICATOR											
			06 = port, plugged	06	06	06	06	06	06	06	06			
			31 = pressure gauge, rear connection	31	31	31	31	31	31	31	31			
			P1 =SPDT, pressure switch	P1	P1	P1	P1	P1	P1	P1	P1			
X	X		ACCESSORIES											
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX			

NOTE

* When ordering the filter elements, please consider the following information:

ESE31 = 2 x ESE21

ESE32 = 2 x ESE22

ESE41 = 2 x ESE21

ESE42 = 2 x ESE22

CCA601 = 2 X CCA301

CCA602 = 2 X CCA302

CCA801 = 2 X CCA301

CCA802 = 2 X CCA302

FPE

PRESSURE FILTERS

ORDERING AND OPTION CHART - VERSION WITH DIFFERENTIAL INDICATOR

F	P	E	COMPLETE FILTER FAMILY									FILTER ELEMENT FAMILY			E	S	E
			SIZE & LENGTH	A1*	A2*	B1*	B2*	31*	32*	41*	42*	SIZE & LENGTH					
			PORT TYPE														
			B = BSP thread	B	B	B	B	B	B	B	B	B	B				
			F = SAE flange 3000 psi	-	-	-	-	-	-	-	F	F					
			PORT SIZE														
			06 = 3/4"	06	06	-	-	-	-	-	-	-					
			10 = 1" 1/4	-	-	10	10	-	-	-	-						
			12 = 1" 1/2	-	-	-	-	12	12	12	12						
			BYPASS VALVE														
			W = without	W	W	W	W	W	W	W	W	W					
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B	B					
			SEALS														
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N					
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F					
			FILTER MEDIA														
			FA = fibreglass 5 µm(c) β>1.000	FA	FA	FA	FA	FA	FA	FA	FA	FA					
			FB = fibreglass 7 µm(c) β>1.000	FB	FB	FB	FB	FB	FB	FB	FB	FB					
			FC = fibreglass 12 µm(c) β>1.000	FC	FC	FC	FC	FC	FC	FC	FC	FC					
			FD = fibreglass 21 µm(c) β>1.000	FD	FD	FD	FD	FD	FD	FD	FD	FD					
			CC = impregnated cellulose 10 µm β>2	CC	CC	CC	CC	CC	CC	CC	CC	CC					
			CD = impregnated cellulose 25 µm β>2	CD	CD	CD	CD	CD	CD	CD	CD	CD					
			CLOGGING INDICATOR**														
			03 = port, plugged	-	-	-	-	03	03	03	03						
			5B = visual differential 130 kPa (1,3 bar)	-	-	-	-	5B	5B	5B	5B						
			6B = electrical differential 130 kPa (1,3 bar)	-	-	-	-	6B	6B	6B	6B						
			7B = indicator 6B with LED	-	-	-	-	7B	7B	7B	7B						
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	-	-	-	-	T0	T0	T0	T0						
			0U = ports, plugged	0U	0U	0U	0U	-	-	-	-						
			U0 = visual differential 130 kPa (1,3 bar)	U0	U0	U0	U0	-	-	-	-						
			N0 = visual-electrical differential 130 kPa (1,3 bar)	N0	N0	N0	N0	-	-	-	-						
X	X		ACCESSORIES														
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX	XX					

SPARE PARTS ELEMENTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	E		E	S	E					

AMD

PRESSURE FILTERS

ORDERING AND OPTION CHART - VERSION WITH DIFFERENTIAL INDICATOR

A	M	D	COMPLETE FILTER FAMILY									FILTER ELEMENT FAMILY	C	C	A
			SIZE & LENGTH	151	152	301	302	601	602	801	802	SIZE & LENGTH			
			FILTER MEDIA									FILTER MEDIA			
			FT = fibreglass 5 µm(c) β>1.000	FT	FT	FT	FT	FT	FT	FT	FT				
			FC = fibreglass 7 µm(c) β>1.000	FC	FC	FC	FC	FC	FC	FC	FC				
			FD = fibreglass 12 µm(c) β>1.000	FD	FD	FD	FD	FD	FD	FD	FD				
			FV = fibreglass 21 µm(c) β>1.000	FV	FV	FV	FV	FV	FV	FV	FV				
			CD = impregnated cellulose 10 µm β>2	CD	CD	CD	CD	CD	CD	CD	CD				
			CV = impregnated cellulose 25 µm β>2	CV	CV	CV	CV	CV	CV	CV	CV				
			SEALS									SEALS			
			1 = NBR Nitrile	1	1	1	1	1	1	1	1				
			2 = FKM Fluoroelastomer	2	2	2	2	2	2	2	2				
			BYPASS VALVE												
			S = without	S	S	S	S	S	S	S	S				
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B				
			PORT TYPE												
			B = BSP thread	B	B	B	B	B	B	B	B				
			F = SAE flange 3000 psi	-	-	-	-	-	-	-	F	F			
			PORT SIZE												
			4 = 3/4" (F06 not available)	4	4	-	-	-	-	-	-				
			6 = 1" 1/4 (N10 not available)	-	-	6	6	-	-	-	-				
			7 = 1" 1/2 (G12 option not available)	-	-	-	-	7	7	7	7				
			CLOGGING INDICATOR **												
			03 = port, plugged	-	-	-	-	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	-	-	-	-	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	-	-	-	-	6B	6B	6B	6B				
			7B = indicator 6E with LED	-	-	-	-	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	-	-	-	-	T0	T0	T0	T0				
			0U = ports, plugged	0U	0U	0U	0U	-	-	-	-				
			U0 = visual differential 130 kPa (1,3 bar)	U0	U0	U0	U0	-	-	-	-				
			N0 = visual-electrical differential 130 kPa (1,3 bar)	N0	N0	N0	N0	-	-	-	-				
X	X		ACCESSORIES												
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX				

NOTE

* When ordering the filter elements, please consider the following information:

ESEA1 = ESE11	CCA601 = 2 X CCA301
ESEA2 = ESE12	CCA602 = 2 X CCA302
ESEB1 = ESE21	CCA801 = 2 X CCA301
ESEB2 = ESE22	CCA802 = 2 X CCA302
ESE31 = 2 x ESE21	
ESE32 = 2 x ESE22	
ESE41 = 2 x ESE21	
ESE42 = 2 x ESE22	

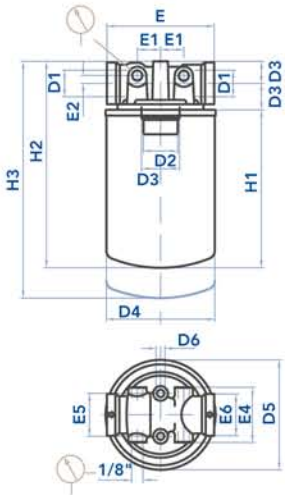
** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter
(please see Clogging Indicator Chapter for further details)

FPE-AMF-AMD

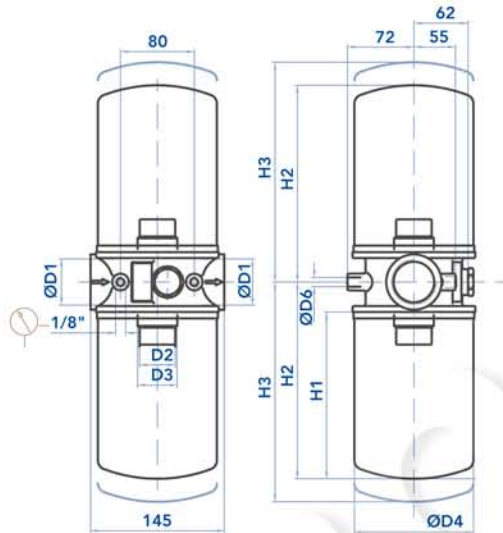
PRESSURE FILTERS

INSTALLATION DRAWING

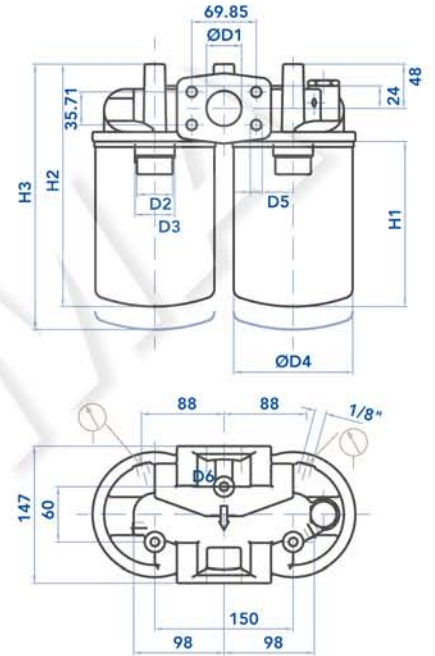
FPE 1+ & FPE 2+



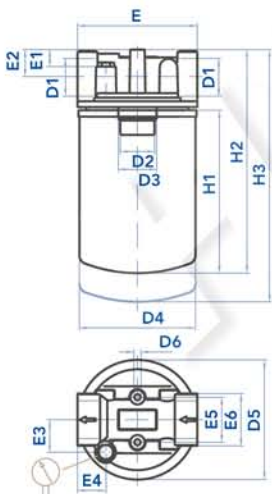
FPE 3+



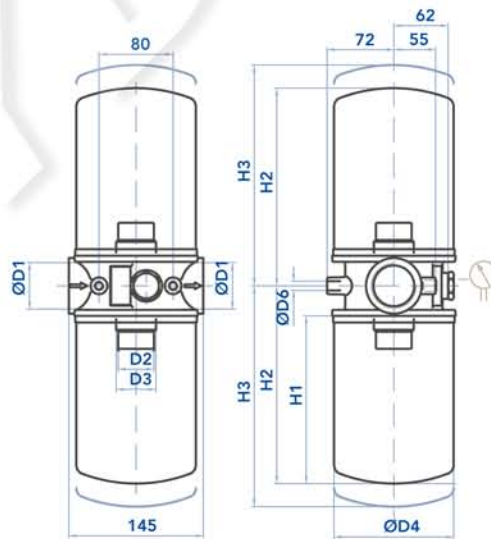
FPE 4+



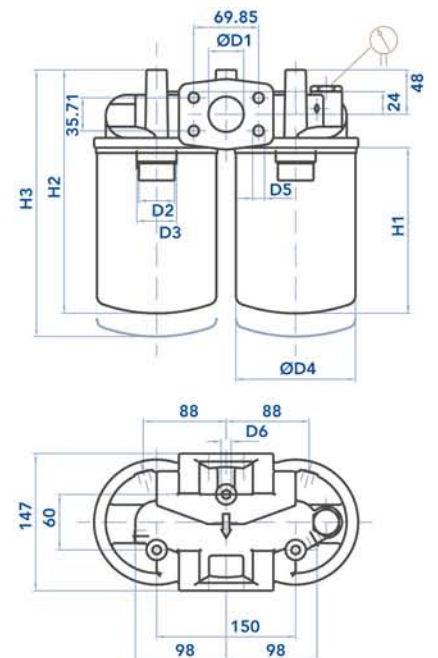
FPE A+ & FPE B+



FPE 3+



FPE 4+



FILTER HOUSING

	D1	D2	D3	D4	D5	D6	E	E1	E2	E3	E4	E5	E6	H1	H2	H3	Kg
FPE11 AMF151	3/4"	3/4" BSP	-	96	96	M8	95	20,5	7	20	48	38	37	145	188	208	1,2
FPE12 AMF152	3/4"	3/4" BSP	-	96	96	M8	95	20,5	7	20	48	38	37	191	234	254	1,5
FPE21 AMF301	1"1/4	1"1/2 16 UN	1"1/4 BSP	129	134	M8	133	35	10	30	64	50	57	181	248	278	1,9
FPE31 AMF601	1"1/2	1"1/2 16 UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	181	216	246	3,6
FPE41 AMF601	1"1/2	1"1/2 16 UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	181	269	299	4,8
FPE22 AMF302	1"1/4	1"1/2 16 UN	1"1/4 BSP	129	134	M8	133	35	10	30	64	50	57	226	293	323	2,0
FPE32 AMF602	1"1/2	1"1/2 16 UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	226	261	291	3,8
FPE42 AMF602	1"1/2	1"1/2 16 UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	226	314	344	5,0

FILTER HOUSING - VERSIN WITH DIFFERENTIAL INDICATOR

	D1	D2	D3	D4	D5	D6	E	E1	E2	E3	E4	E5	E6	H1	H2	H3	Kg
FPEA1 AMD151	3/4"	3/4" BSP	-	96	96	M8	95	-	23	24,5	21,5	38	32	145	188	208	1,2
FPEA2 AMD152	3/4"	3/4" BSP	-	96	96	M8	95	-	23	24,5	21,5	38	32	191	234	254	1,5
FPEB1 AMD301	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	19	30	36	35	50	54	181	248	278	1,9
FPE31 AMD601	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	181	216	246	3,6
FPE41 AMD801	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	181	269	299	4,8
FPEB2 AMD302	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	19	30	36	35	50	54	226	293	323	2,0
FPE32 AMD602	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	226	261	291	3,8
FPE42 AMD802	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	226	314	344	5,0

MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. For this reason, we recommend to monitor the pressure of the hydraulic oil flowing through the filter with a clogging indicator. When it is time to change the filter element, switch off the system and make sure there is no pressure in the filter. Remove the dirty filter element. Replace it with an original UFI element, verifying

the part number on the filter label or on the catalogue. Lubricate the spin-on gasket, screw on the head until it stops and tighten by turning it 3/4 of a turn

We recommend the stocking of a spare UFI filter element for timely replacement when required.

FPE-AMF-AMD

PRESSURE FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)	
					Media F+	MediaC+
ESE11 CCA151	96,5	3/4" BSP	146	0,70	2.140	3.305
ESE12 CCA152	96,5	3/4" BSP	191	0,80	3.630	4.745
ESE21 CCA301	129	1"1/4 BSP	181	1,20	4.450	5.560
ESE22 CCA302	129	1"1/4 BSP	226	1,40	5.890	7.360

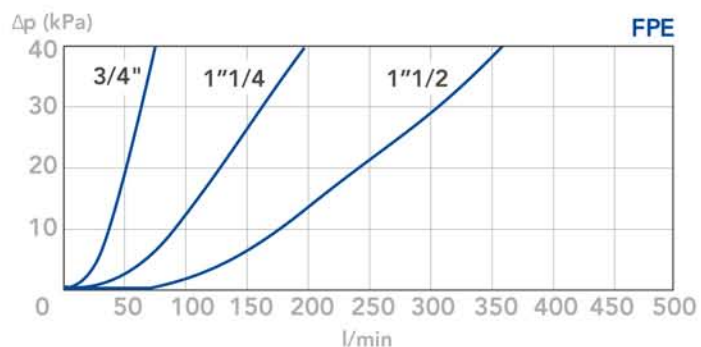
The used filter elements cannot be cleaned and are classified as "Dangerous waste material". They must be disposed according to local laws by authorized Companies. Verify that the Company you choose has the expertise and authorization to dispose this type of waste material.

PRESSURE DROP CURVES (Δp)

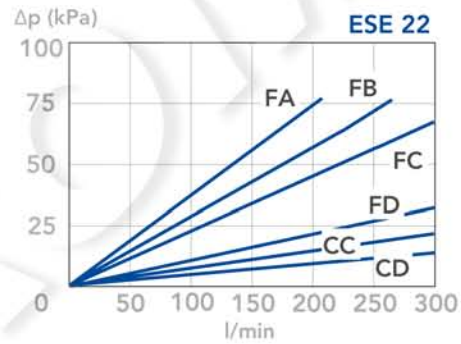
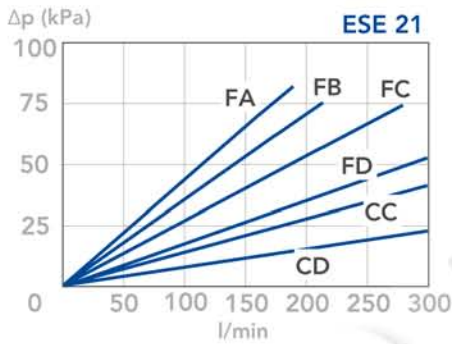
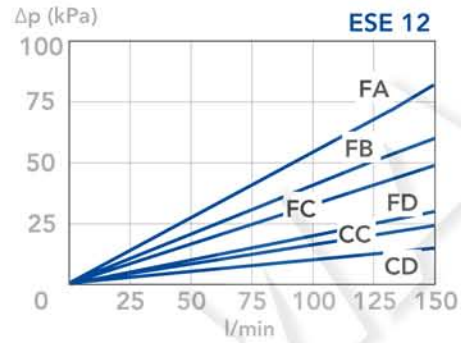
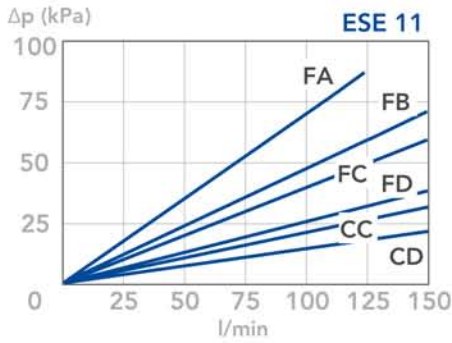
The "Assembly Pressure Drop (Δp)" is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

Rate and it must be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

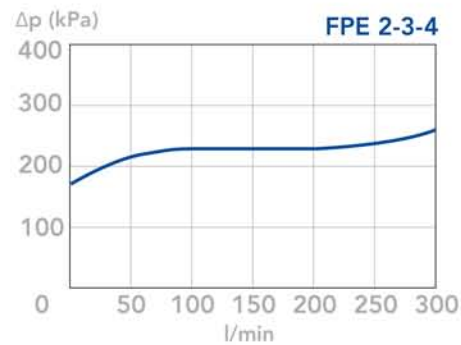
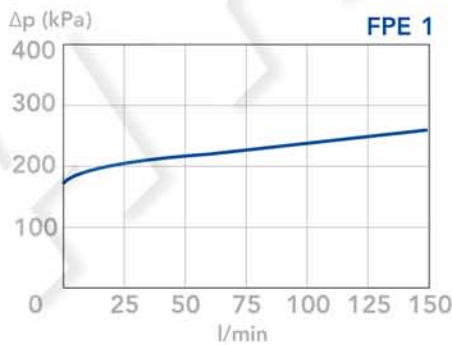


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)



BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI HYDRAULIC DIVISION Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.

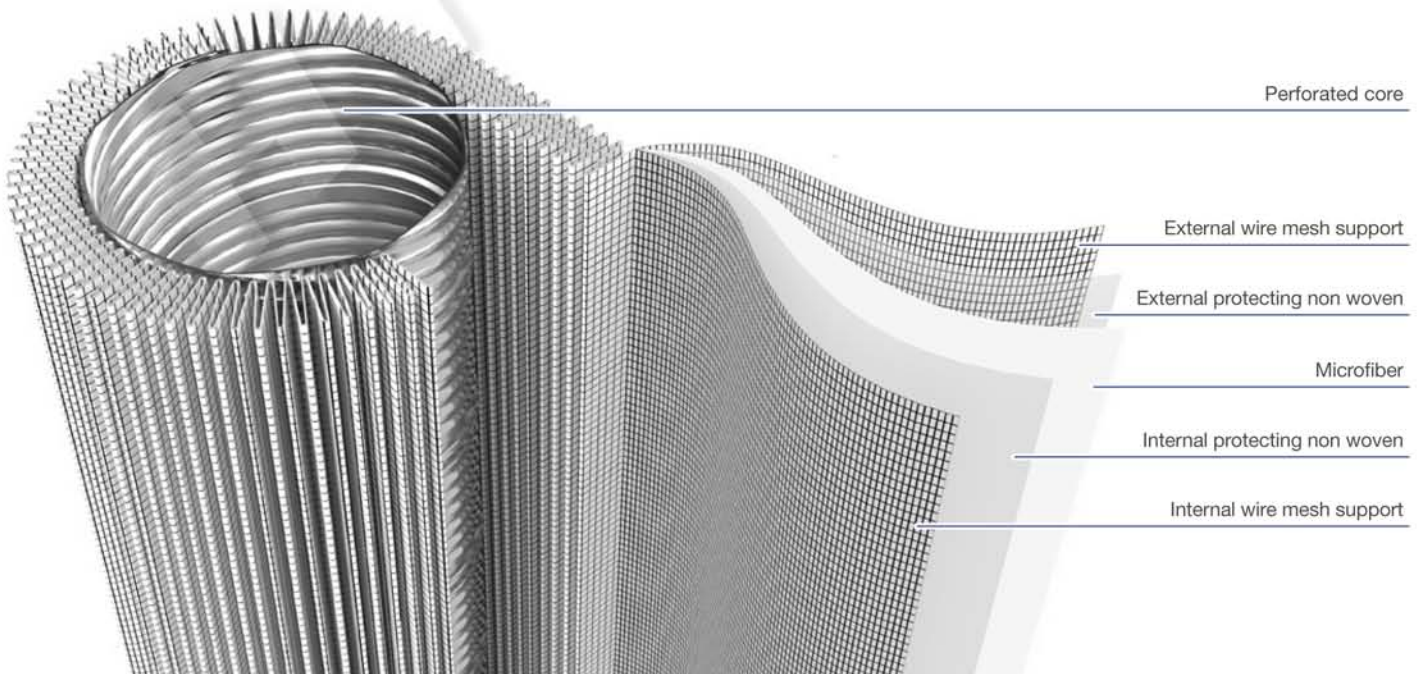
FILTER MEDIA AND CONTAMINATION CLASSES

Each hydraulic component manufacturer specifies the contamination class required for the best performance and life of their components.

To achieve the required contamination class, the proper UFI filter media must be chosen according to this table:

Typical application	Aeronautic, test rigs.	Aeronautic, ind. Robotics	Ind. robotics, precision machine tools	High reliability ind. machines, Hydrostatic transmissions	Industrial machines, earth moving machines	Mobile machines	Machines for heavy industry	Machines for agriculture systems not continuous service
Pumps and/or motors	-	Piston, variable > 21 Mpa	Piston, variable < 21 MPa Vane, variable > 14 Mpa	Pist./vane, variable < 14 MPa Pist./vane, fixed > 14 Mpa	Pistons, fixed < 14 Mpa Vane, fixed > 14 Mpa	Vane, fixed gear > 14 Mpa	Vane, fixed gear < 14 Mpa	Vane, fixed gear < 14 Mpa
Valves	Servovalves > 21 Mpa	Servovalves < 21 MPa Proportional > 21 Mpa	Proportional < 21 MPa Cartridge > 14 Mpa	Cartridge < 14 Mpa	Solenoid > 21 Mpa	Solenoid < 21 Mpa	Solenoid > 14 Mpa	Solenoid > 14 Mpa
Contamination class ISO 4406	15/13/10	16/14/11	17/15/12	18/16/13	19/17/14	20/18/15	21/19/16	22/20/17
Recommended UFI filter media	FA $\beta_{5(c)} > 1.000$	FA - FB $\beta_{5(c)} > 1.000$ $\beta_{7(c)} > 1.000$	FB $\beta_{7(c)} > 1.000$	FB - FC $\beta_{7(c)} > 1.000$ $\beta_{12(c)} > 1.000$	FC - FD $\beta_{12(c)} > 1.000$ $\beta_{21(c)} > 1.000$	FD $\beta_{21(c)} > 1.000$	FD - CC $\beta_{21(c)} > 1.000$ $\beta_{10} > 2$	CC $\beta_{10} > 2$

N.B. NAS 1638 is officially inactive for new designs after May 30, 2001.

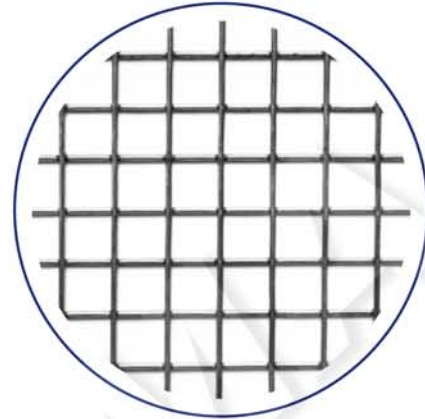




DESCRIPTION

FormulaUFI.Web, that is used e.g. in the ZF Automatic Transmission Filter and in pressure line as last chance filter, provides protection to sensitive and critical components, e.g. in the Danfoss Hydraulic Integrated Circuit and in the Carraro specialty tractors as protection of the hydraulic power lift.

FormulaUFI.Web is based on stainless steel mesh having such characteristics of good strength, flexibility, wide range of fluids compatibility, high temperature resistance and extremely low pressure drop with high flow rates as required for suction applications.



APPLICATIONS

AGRICULTURAL
CONSTRUCTION
HEAVY DUTY

INDUSTRIAL
MATERIAL HANDLING
POWER GENERATION

PLUS

- + **Very robust structure** and high level of heat, chemical, corrosion, abrasion and differential pressure resistance.
- + **Geometrical structure:** precise and uniform surface area.
- + **Multiple construction layout** for multiple filtration rate requests.

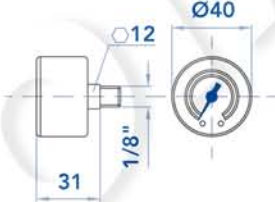
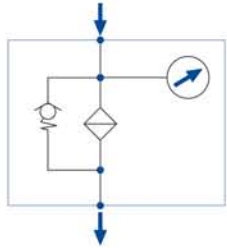
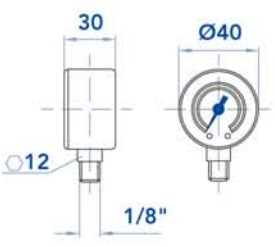
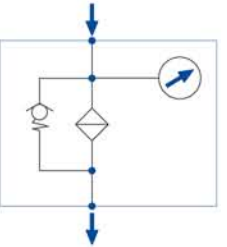
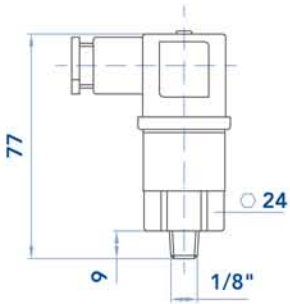
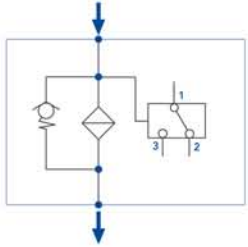
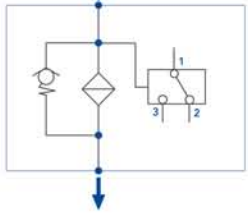
Main FormulaUFI.Web available options are highlighted in the following table. Additional customized options are available on request under technical evaluation of the specific application requirements.

FormulaUFI	FILTRATION RATING	UFI CODIFICATION	SOFIMA CODIFICATION
FormulaUFI.WEB	10 µm	MC	RD
FormulaUFI.WEB	30 µm	MD	MV-RT
FormulaUFI.WEB	60 µm	ME	MS
FormulaUFI.WEB	90 µm	MF	MN
FormulaUFI.WEB	150 µm	MQ	MC
FormulaUFI.WEB	250 µm	MG	DC
FormulaUFI.WEB	400 µm	SH	QC
FormulaUFI.WEB	500 µm	SK	CQ
FormulaUFI.WEB	600 µm	SL	SC
FormulaUFI.WEB	2000 µm	SR	DM
FormulaUFI.WEB - High collapse version	10 µm	TC	TD
FormulaUFI.WEB - High collapse version	25 µm	TD	TV
FormulaUFI.WEB - High collapse version	60 µm	TE	TS
FormulaUFI.WEB - High collapse version	90 µm	TF	TN

RETURN FILTERS

CLOGGING INDICATORS



INDICATOR SERIE		DESCRIPTION	FOR RETURN FILTERS SERIES
NPT	BSPT	Pressure gauge	
30	039.0197.1	Scale 0÷6 bar (0÷600 kPa)	FRA - FRB - FRC - FRF - FRH RFM - RFA - MAR - RFC  
NPT	BSPT	Pressure gauge	
32	039.0198.1	Scale 0÷6 bar (0÷600 kPa)	FRA - FRB - FRC - FRF - FRH RFM - RFA - MAR - RFC  
NPT	BSPT	Pressure switch	
P1	039.0202.1	Setting 1,5 bar (150 kPa)-SPDT	FRA - FRB - FRC - FRH RFM - RFA - MAR  
P2	039.0203.1	Setting 3 bar (300 kPa)-SPDT	FRF (special version, without bypass valve) RFC (special version, without bypass valve) <p style="text-align: right;">ATEX 3 GD EEx e T6</p>
P4	039.0204.1	Setting 1,3 bar (130 kPa)-SPDT	FRF RFC 
P6	039.0205.1	Setting 2 bar (200 kPa)-SPDT	FRB RFA 