



25 bar
350 psi



Series **FSP**

Hydraulics FAI FILTRI

DESCRIPTION

FSP series: in line filter with spin-on expendable cartridge (SPIN-ON) supporting flow rates from a min. of 10 l/min up to 360 l/min and operating pressure up to **25 bar**.

FAI FILTRI technical team paid special attention to the engineering and manufacturing processes of these series during both the research stage and the production one.

The research and experimentation both on the filtering media and on the mechanical parts of the **FSP** series was aimed to lower pressure losses, increase the filtration efficiency and improve the performances on the side of the retention of contaminants.

This was made in order to match the new, sophisticated technological exigencies of the oleodynamic components and of the hydrostatic driver.

FSP was engineered to be assembled specifically both onto return lines and on the suction/inlet of hydraulic, lubricating plants and so on. They are particularly suitable for earthworks machines, agricultural machines, industrial vehicles and generally speaking movable machineries.

The fundamental characteristic of **FSP** filters is the possibility for old cartridges to be replaced by the new ones by a quick and clean procedure which doesn't require any particular equipment and can be carried out in any possible operational context.

Specifically, these new complete filters, equipped with new generation "A" filtering media, can great very high standards of performances even in the hardest conditions.

"A" type elements with absolute filtration power of 3, 6, 10, 16 and 25 microns ($\beta > 200$), are formed by inorganic impregnated and resin bonded inert micro-fibers, supported upstream and downstream. The result is a very compact filtering core which ensures the resistance of the media itself to deformation, distortion and strain, preventing any contaminants to get released, thus improving filtering performances and allowing contaminants to accumulate efficiently, also in the event of phenomena such as high differential pressure and water hammering derived from cold start and discharge flow rates.

The above mentioned characteristic make FAI FILTRI **FSP** complete filters consistent with the use of hydraulic, lubricating oils, fuels, glycol water, emulsions and most synthetic fluids.

TECHNICAL DATA

MATERIALS

- Galvanized stamped plate flange
- Sinned and painted sheet steel vessel
- Perforated supporting pipes and galvanized steel end-caps
- Aluminum casted head

CARTRIDGE PRESSURE VALUES

Max operating pressure: **25 bar for models FSP015÷FSP070**
20 bar for models FSP110÷FSP180

Impulse test in compliance with ISO 3724: **from 0/25/0 bar 1Hz 50.000 cycles min. (FSP015÷FSP070)**
from 0/20/0 bar 1Hz 50.000 cycles min. (FSP110÷FSP180)

TESTS CARRIED OUT ON FILTERING ELEMENTS

Filtering elements differential collapsing pressure tested in compliance with ISO 2941:

"P" Type **5 bar**
"A" Type **10 bar**

Resistance to axial deformation tested in compliance with ISO 3723

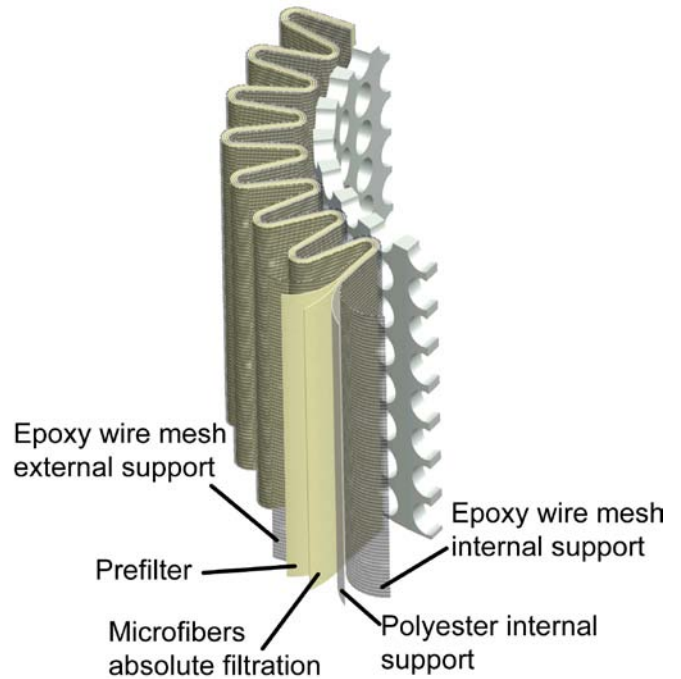
Manufacturing conformity and determination/assessment of the first bubble point in compliance with ISO 2942

FILTERING ELEMENTS

“P” 10 and 25 nominal micron made of $\beta_x > 2$ impregnated cellulose fibers

“A” 3, 6, 10, 16 and 25 absolute micron made of $\beta_x \geq 200$ reinforced, inorganic fibers with polyester protections

New generation “A” filtering elements structure



RETENTION POWER

In compliance with ISO 4572 Multi-pass test method

Filter element	Dimensions for β (μm) Value				Filtration rapport			Final ΔP (bar)
	$\beta \geq 2$ 50%	$\beta \geq 20$ 95%	$\beta \geq 75$ 98,7%	$\beta \geq 200$ 99,5%	β_2	β_{10}	β_{20}	
A03	-	2	2.4	3	20	>10000	>10000	7
A06	-	3	4.6	6	8	>2000	>10000	7
A10	3	6	7.8	10	1.5	≥ 200	>1000	7
A16	7	9	12	16	-	>25	>5000	7
A25	13	19	22	25	-	>1.5	>35	7
P10	10	>30	>30	-	1	2	4.5	4
P25	25	>30	>30	-	1	1	1.3	4

INTERNATIONAL STANDARDS FOR FLUIDS CONTAMINATION CONTROL

ISO 4406 CONTAMINATION CODES		NAS 1638 CORRESPONDING CLASS	SUGGESTED FILTRATION	APPLICATION FIELDS
5 μm	15 μm		$\beta_x \geq 200$	
12	9	3	1-2	High accuracy servo-plants – laboratory
15	11	6	3-6	Servo-plants – robotics – aeronautics
16	13	7	10-12	High sensitivity plants – where high standards of operating reliability are required
18	14	9	12-15	
19	16	10	15-25	General plant engineering with limited reliability
21	18	12	25-40	Low pressure plants – desultory services

BY-PASS VALVE

Opening differential pressure 1,75 bar assembled on the spin-on cartridge (Spin-on)
Other pressure values only under request (custom-made)

GASKETS

Buna-N "A" type gaskets
Viton "V" type gaskets

COUPLINGS

"G" Series	GAS thread
"F" Series	SAE 3000 PSI flanging only for FSP 200-360
"N" Series	NPT thread
"S" Series	SAE thread

OPERATING TEMPERATURE

From -25°C up to $+110^{\circ}\text{C}$ [For different temperatures, please contact our technical department]

FLOW RATE

From 20 up to 360 l/min
Choose the cartridge according to the filtration and to the recommended pressure drop

INDICATORS

V1 Type	:	Visual differential indicator gauging 1,5 bar (for FSP015-180)
V5 Type	:	Visual differential indicator gauging 1,5 bar (for FSP200-360)
E1 Type	:	Visual-electrical differential indicator gauging 1,5 bar (for FSP015-180)
E5 Type	:	Visual-electrical differential indicator gauging 1,5 bar (for FSP200-360)

PRESSURE DROP

Curves are calculated in accordance with ISO 3968 and are valid for clean filtering elements.

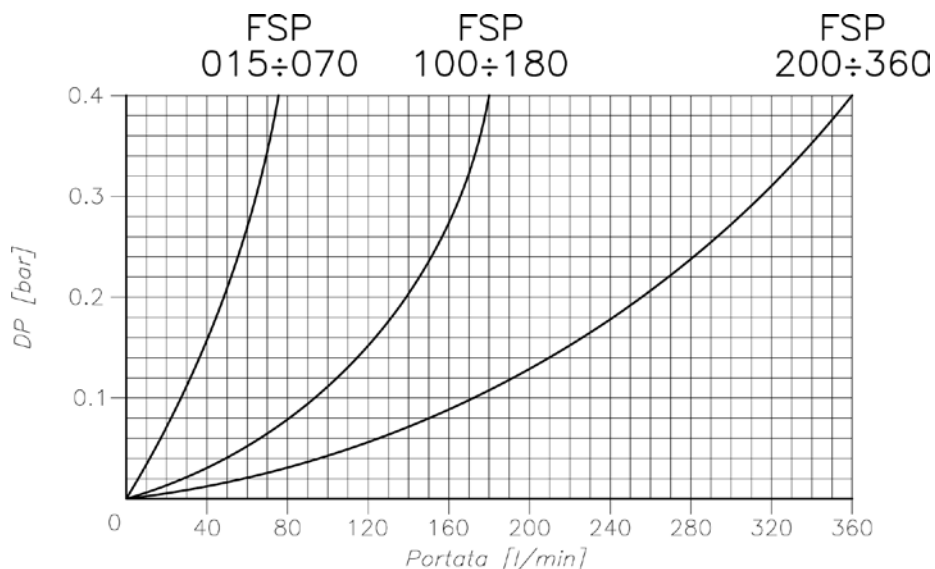
ΔP changes along with the density in presence of an eddy flow, and along with the dynamic viscosity in presence of a laminar flux. Curves are valid for mineral oils with a density of $0,86 \text{ kg/dm}^3$ and a dynamic viscosity of $30 \text{ mm}^2/\text{sec}$ (cSt).

When choosing the filtering medium consider the pressure losses deriving from the flow rate

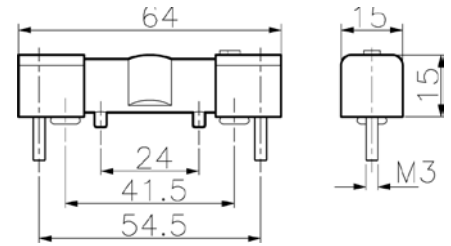
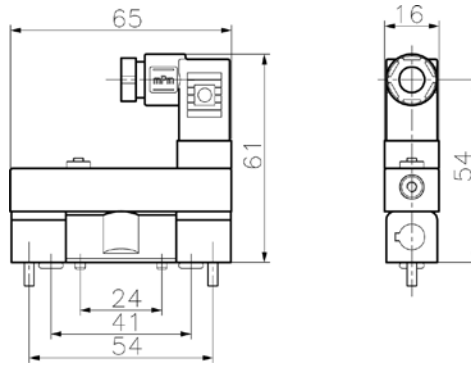
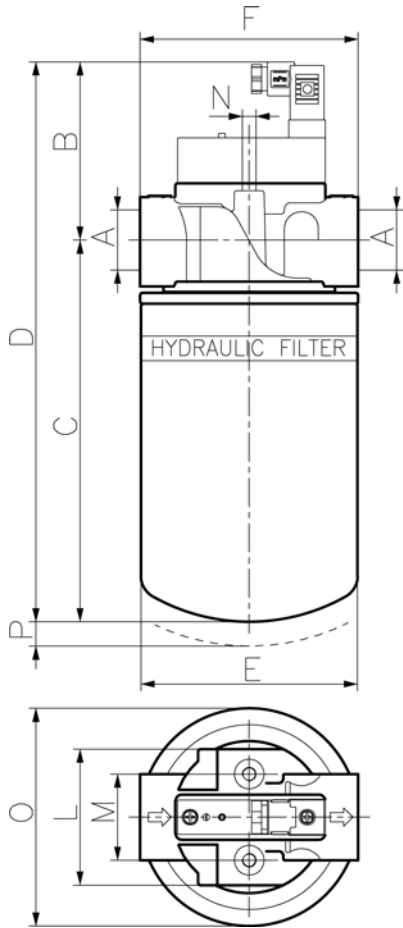
Up to **0,3÷0,5 bar** for filters fitted on the return line

Up to **1÷1,5 bar** for filters fitted on the pressure line

(The total pressure drop is to be calculated by adding up the spin-on filter pressure drop. See CSP catalogue)



DIMENSIONAL INFORMATION



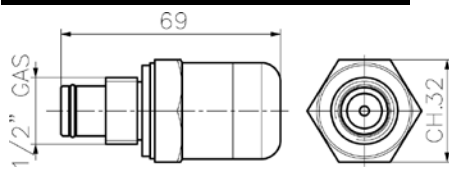
Electrical differential indicator
Setting: 1,5 bar - E1 type

Optical differential indicator
Setting: 1,5 bar - V1 type

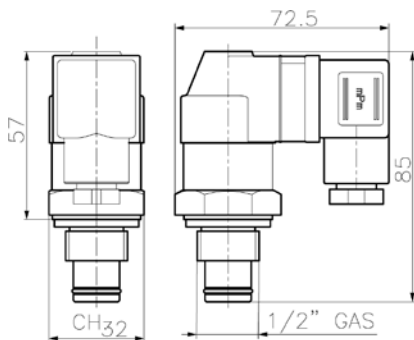
Type	A	B	C	D	E	F	L	M	N	O	P
FSP 015	1/2"	78	165	243	76	95	60	38	M6	78	20
FSP 020			120	198	96					96	
FSP 050			168	246	168					246	
FSP 051	1"	86.5	168	246	138	140	94	50	M8	138	40
FSP 070			233	311							
FSP 110	1 1/4"	86.5	210	297	138	140	94	50	M8	138	40
FSP 180			345	432							

- FSP 015 equipped N°1 CSP015.1.3
- FSP 020 equipped N°1 CSP020.1.3
- FSP 050 equipped N°1 CSP050.1.3
- FSP 051 equipped N°1 CSP050.3.3
- FSP 070 equipped N°1 CSP070.3.3
- FSP 110 equipped N°1 CSP300.6.3
- FSP 180 equipped N°1 CSP400.6.3

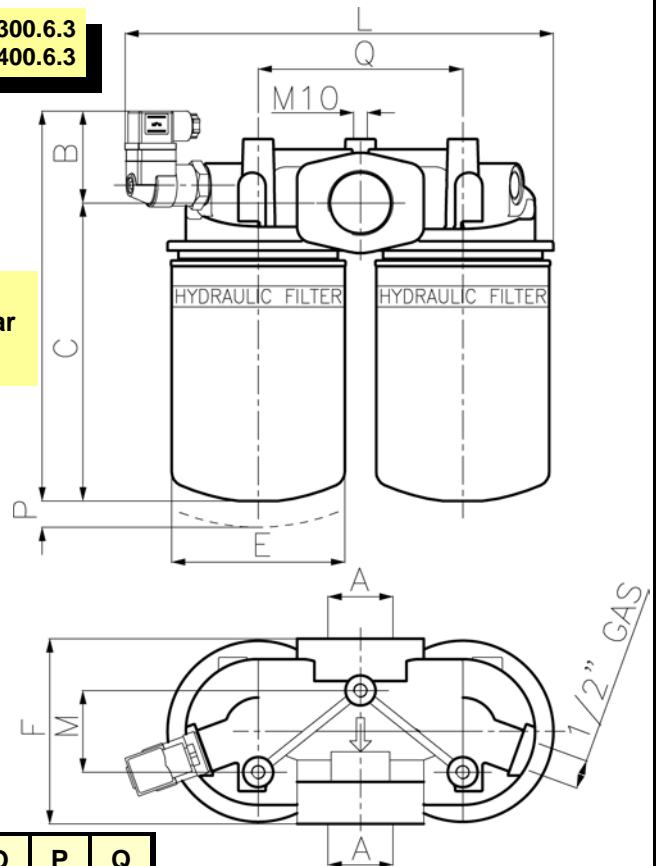
- FSP 200 equipped N°2 CSP300.6.3
- FSP 360 equipped N°2 CSP400.6.3



Optical differential indicator. Setting: 1.5 bar
V5 type

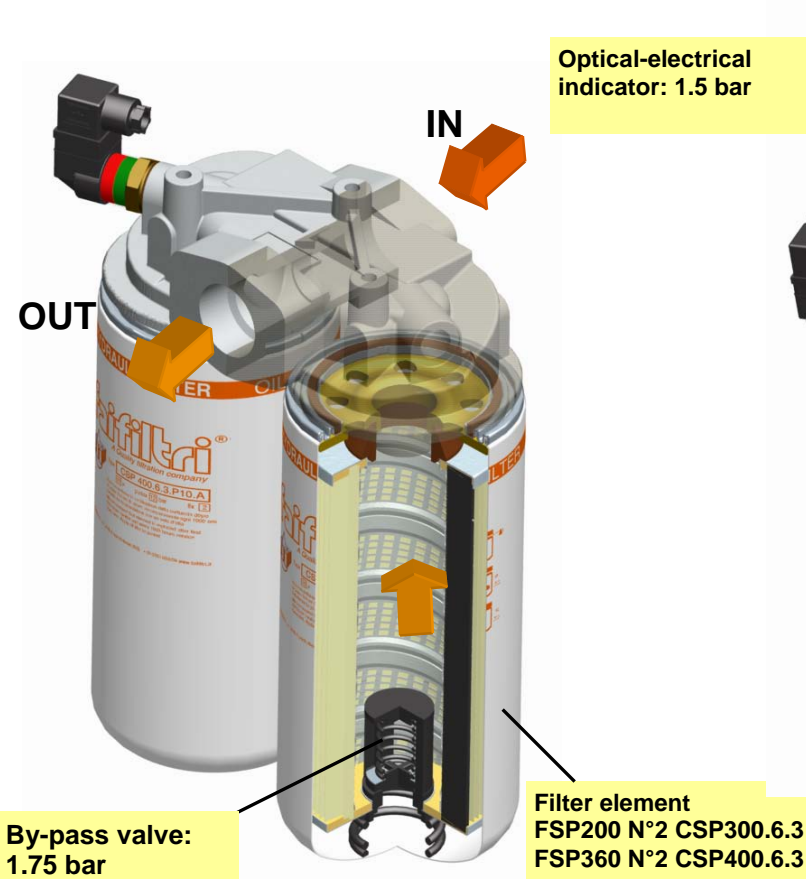
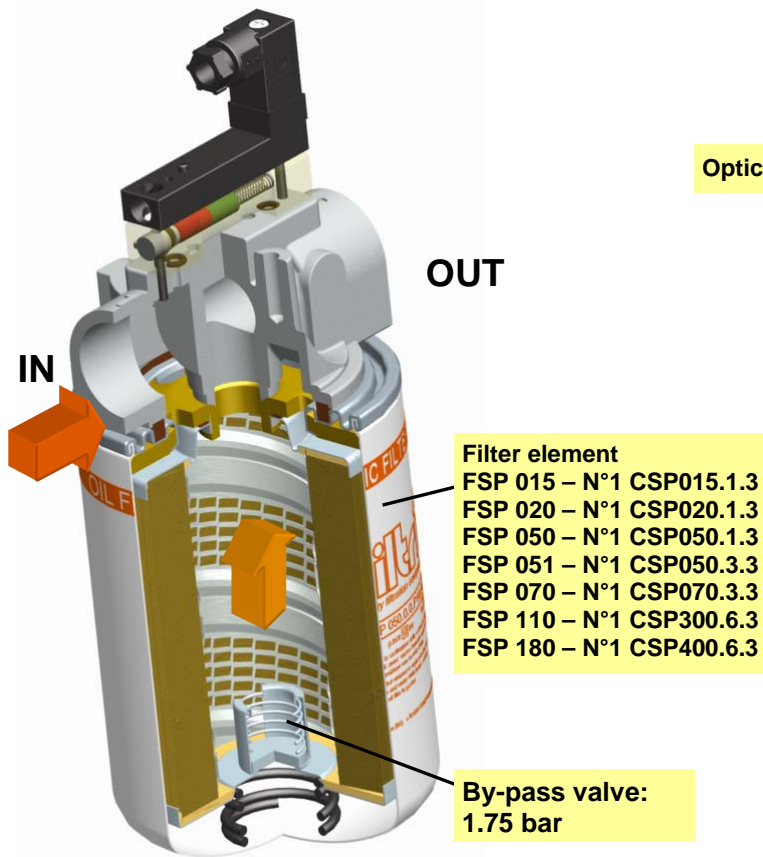


Optical-electrical differential indicator
Setting: 1.5 barE5 type

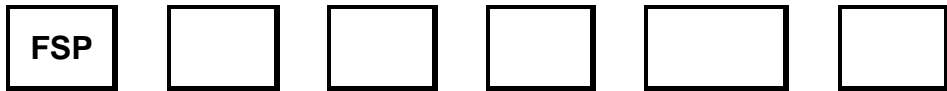


Type	A	B	C	D	E	F	L	M	O	P	Q
FSP 200	1 1/2"	47	210	257	138	136	283	60	74	25	150
FSP 360			346	393							

FUNCTIONAL DIAGRAM



ORDER CODE



Type	
015	See dimensional table
020	
050	
051	
070	
110	
180	
200	
360	

Gaskets	
A	Nitrile (buna-n)
V	Viton

Couplings	
G	FSP 015 – 1/2" GAS
	FSP 020 – 1/2" GAS
	FSP 050 – 1/2" GAS
	FSP 051 – 1" GAS
	FSP 070 – 1" GAS
	FSP 110 – 1 1/4" GAS
	FSP 180 – 1 1/4" GAS
	FSP 200 – 1 1/2" GAS
FSP 360 – 1 1/2" GAS	

F	SAE 1 1/2" 3000 PSI flanged Only for FSP 200/360
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N	As above but with NPT thread
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Filter element	
P10	10 e 25 nominal μ impregnated paper
P25	
A03	3, 6, 10, e 25 absolute μ inorganic fiber
A06	
A10	
A16	
A25	

Indicators	
S	Without
V1	Optical differential indicator for FSP015/020/050/051/070 110/180 – 1.5 bar
V5	Optical differential indicator for FSP 200/360 – 1,5 bar
E1	Electrical differential indicator for FSP015/020/050/051/070 110/180 – 1,5 bar
E5	Optical-electric differential indicator for FSP 200/360 – 1,5 bar

Spin-on type	
015	N°1 CSP015.1
020	N°1 CSP020.1
050	N°1 CSP050.1
051	N°1 CSP050.3
070	N°1 CSP070.3
110	N°1 CSP300.6
180	N°1 CSP400.6
200	N°2 CSP300.6
360	N°2 CSP400.6

By-pass valve setting at 1.75 bar

