faifiltri®
A Quality Filtration Company

12 bar
170 psi

Series FCS

Hydraulics FAI FILTRI

DESCRIPTION

FCS series: in line filters with spin-on cartridges (SPIN-ON) with flow rates from 10 l/min up to 360 l/min and operating pressure up to **12 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 **FCS** 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 drives.

FCS was engineered to be assembled specifically both onto return lines and on the suction 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 **FCS** 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 grant very high standards of performance even in the hardest conditions.

"A" type elements with absolute filtration power of 3, 6, 10, 25 micron ($\beta x \geq 200$), 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 starts and discharge flow rates.

The above mentioned characteristics make FAI FILTRI **FCS** 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/drilled supporting pipes and galvanized steel end-caps
- Aluminum casted head

CARTRIDGE PRESSURE

Max operating pressure:	**12 bar**
Impulse test in compliance with ISO 3724:	**from 0/12/0 bar 1Hz 50.000 min. cycles**

TESTS CARRIED OUT ON FILTERING ELEMENTS

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

"P" Type	**5 bar**
"A" and **"M"** Types	**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

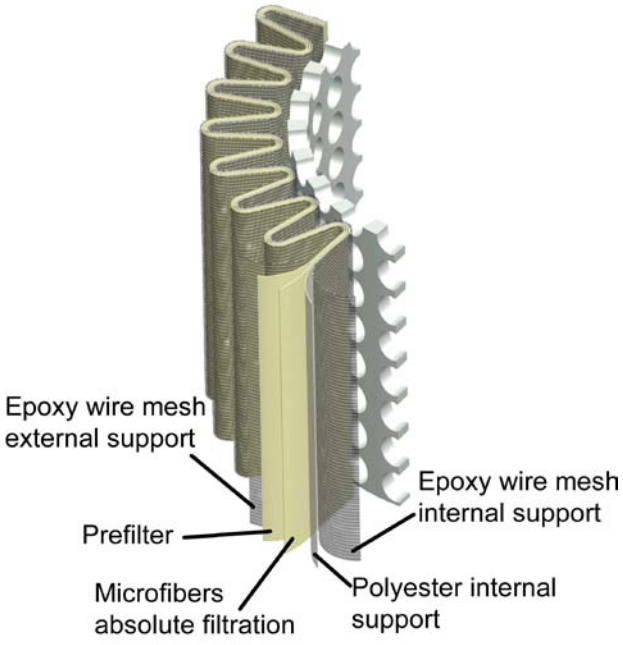
FILTERING ELEMENTS

"P" 10 and 25 nominal micron made of βx > 2 impregnated cellulose fibers2

"A" 3, 6, 10, 16 and 25 absolute micron made of βx ≥ 200 reinforced, inorganic fibers with polyester protections

"M" 60 and 90 nominal micron made of wire net

New generation "A" filtering elements structure



RETENTION POWER

In compliance with ISO 4572 Multi-pass test method

Filter element	Dimensions for β (μm) Value				Filtering rapport			final ΔP (bar)
	β ≥ 2 50%	β ≥ 20 95%	β ≥ 75 98,7%	β ≥ 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**		**βx ≥ 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

"R" series Opening differential pressures 1,75 bar
"S" series Opening differential pressure 0,2 bar (for suction lines)

Other values custom-made only

GASKETS

"A" in Buna-N Type

"V" viton type gaskets

COUPLINGS

"G" Series	GAS thread
"F" Series	SAE 3000 PSI flanging only for FCS 300-350 – FCS305-355
"N" Series	NPT thread
"S" Series	SAE thread

WORKING TEMPERATURES

From –25°C up to +110°C [For different temperatures, please contact our technical department

FLOW RATE

From 45 up to 360 l/min

N.B.: Choose the cartridge according to the filtration and to the recommended pressure drop

INDICATORS

FCS050-180 – FCS200-250 – FCS300-350 Series:

VS Type : Vacuum gauge with **0÷76 cmHg** scale

VR Type : Pressure gauge with **0÷10 bar** scale

ES Type : Vacuum gauge calibrated at **0,2 bar**: Max operating tension: 250V **(ES1)**
(Exchanging contacts) Max current: 6A resistive/1A inductive
Protection Index: IP65

L1 Type : Manostat/pressure switch calibrated at **1,5 bar**: Max operating tension: contactsN.A. 48V
(Exchanging contacts) Max current: 6A resistive/1A inductive
Protection Index: IP65

H1 Type : Manostat/ pressure switch calibrated at **1,5 bar**: Max commutable tension: 250 V
(360°revolving exchanging contacts) Max commutable current: 5A
Protection Index: IP65

Serie FCS055-185 – FCS305-355:

V1 Type : Differential visual inidcator gauging **1,5 bar** (for FCS050-185)

V5 Type : Differential visual inidcator gauging **1,5 bar** (for FCS300/303/350/353/380/383)

E1 Type : Differential visual-electrical inidcator gauging **1,5 bar** (for FCS050-185)

E5 Type : Differential visual-electrical inidcator gauging **1,5 bar** (for FCS300/303/350/353/380/383)

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 kg/dm^3 and a dynamic viscosity of 30 mm^2/sec (cSt).

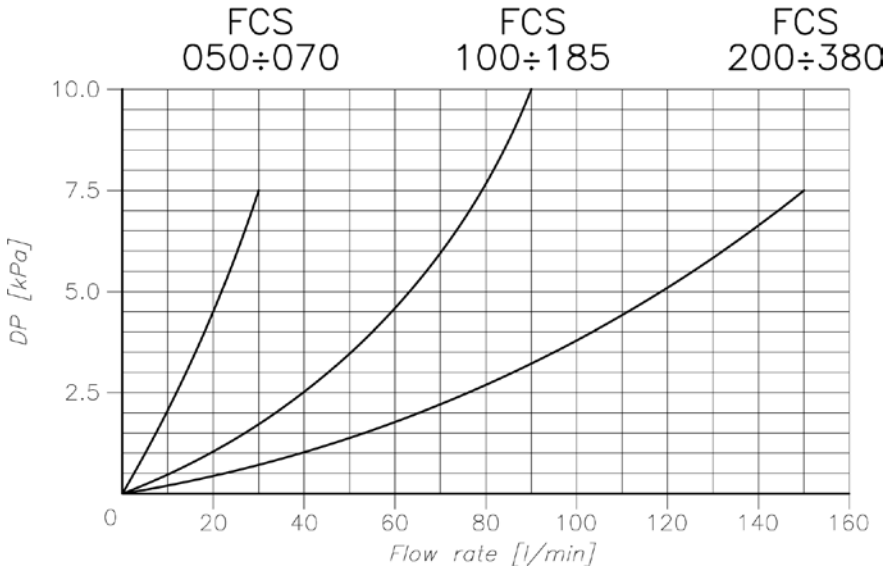
When choosing the filtering medium consider the pressure losses deriving from the flow rate:

Between **0,05 e 0,1 bar** for suction line

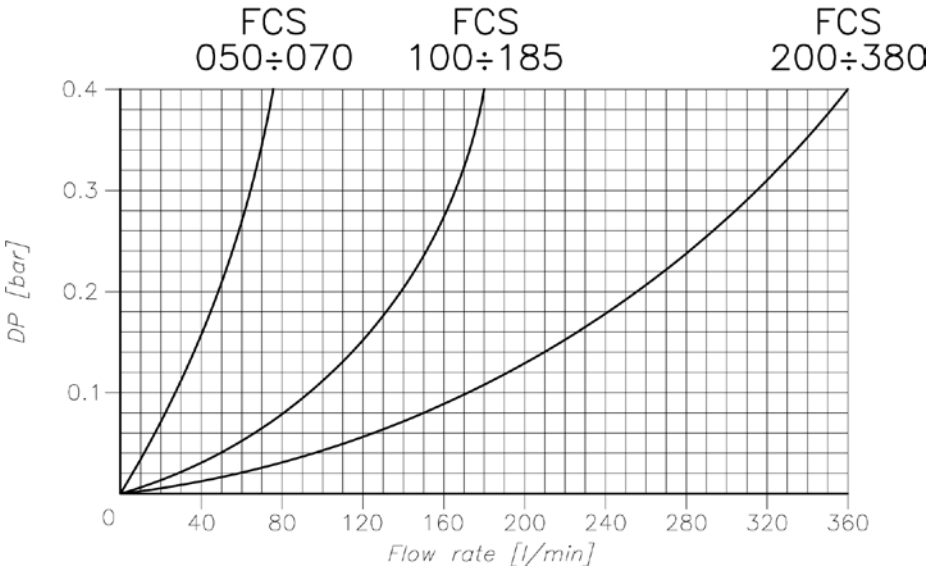
Up to **0,3÷0,5 bar** for filters fitted on return line

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

SUCTION LINES

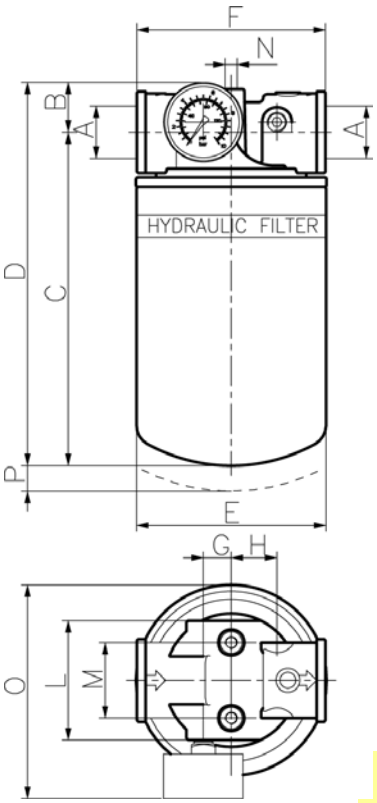


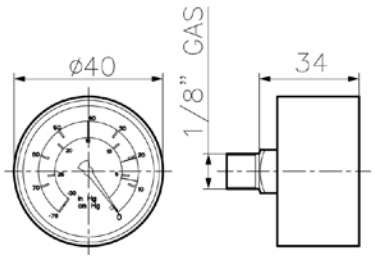
RETURN LINES



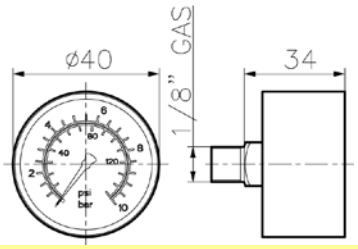
DIMENSIONAL INFORMATION

With electrical and visual indicators

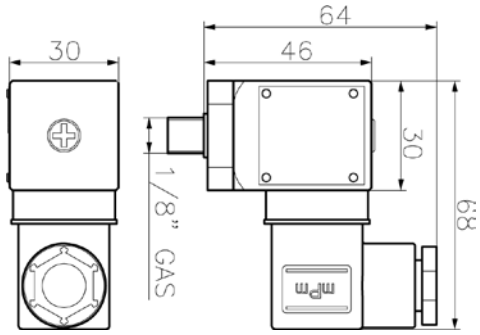




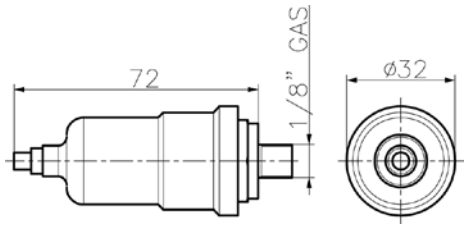
Intake filter indicator
Scale: 0÷76 cmHg - VS Type



Return filter indicator
Scale: 0÷10 bar - VR Type



Manostat with exchanging contacts
Gauging: 1.5 bar - H1 Type



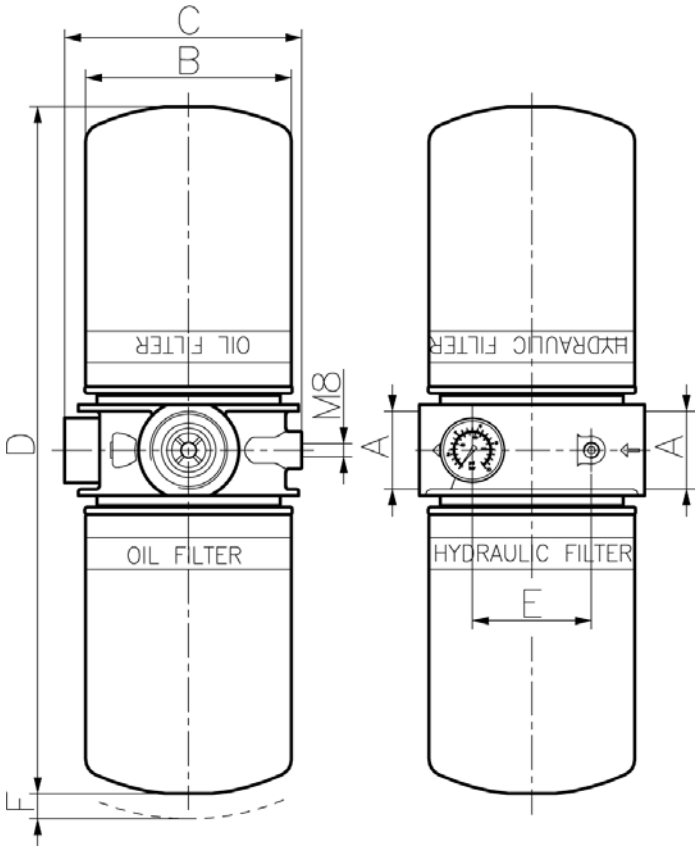
Vacuum gauge with exchanging contacts
Gauging: 0,2 bar - ES Type
Manostat with exchanging contacts
Gauging: 1.5 bar. - L1 Type

Figure "O" changes along with the following indicators:
ES-L1: 150mm
H2: 142mm

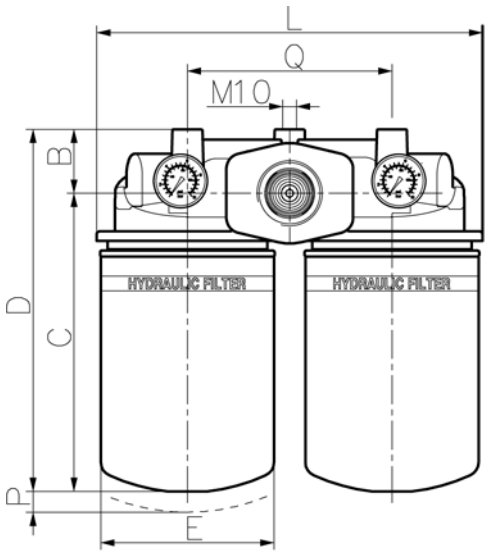
FCS 050 – equipped with N°1 CS050.0
FCS 070 – equipped with N°1 CS070.0
FCS 100 – equipped with N°1 CS100.0
FCS 150 – equipped with N°1 CS150.0
FCS 180 – equipped with N°1 CS400.6

Type	A	B	C	D	E	F	G	H	L	M	N	O*	P
FCS 050	3/4"	22	168	190	96	95	14	23	60	38	M6	63	20
FCS 070			233	255									
FCS 100	1 1/4"	30	211	241	127	133	16	35	94	50	M8	80	25
FCS 150			256	286									
FCS 180	1 1/2"	31	344	375	138	140			105	68			40

For dimensional information about the indicators
See previous page



Type	A	B	C	D	E	F
FCS 200	1 1/2”	126	175	432	75	25
FCS 250				522		



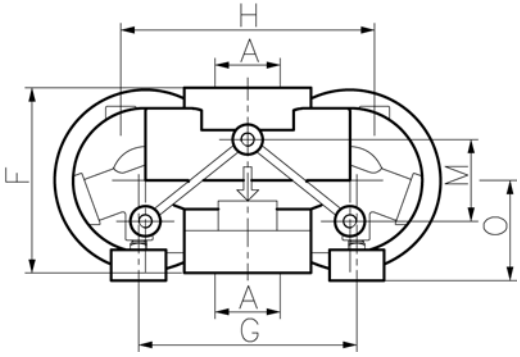


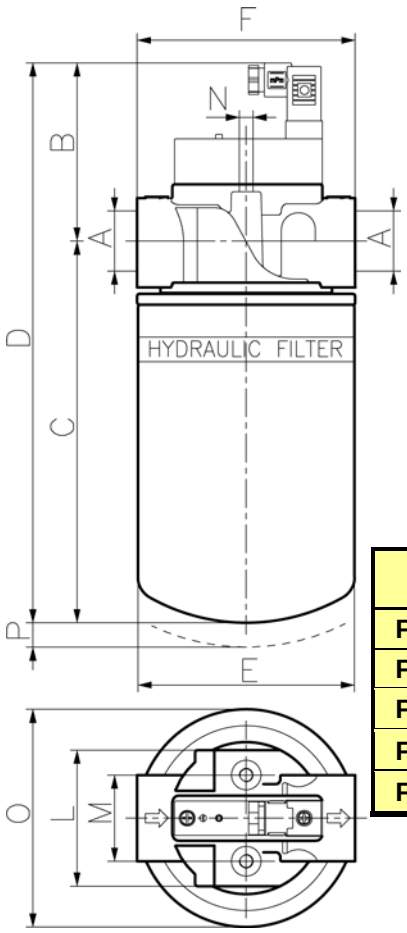
Figure “O” changes along with the following indicators:
ES-L1: 130 mm
H1: 120 mm

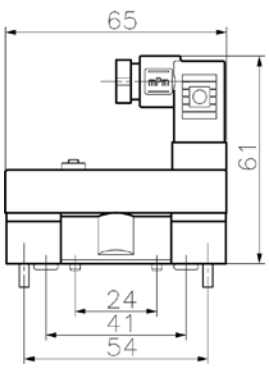
FCS 300 – equipped with N°2 CS100.0
FCS 350 – equipped with N°2 CS150.0
FCS 380 – equipped with N°2 CS400.6

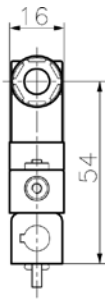
Type	A	B	C	D	E	F	G	H	L	M	O	P	Q
FCS 300	1 1/2”	47	220	267	127	136	160	186	283	60	88	25	150
FCS 350			263	310									
FCS 380			353	400	138								

DIMENSIONAL INFORMATION

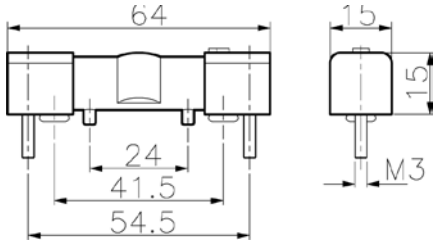
With visual-electrical differential indicators







Electrical differential indicator
Gauging: 1,5 bar - Type: E1

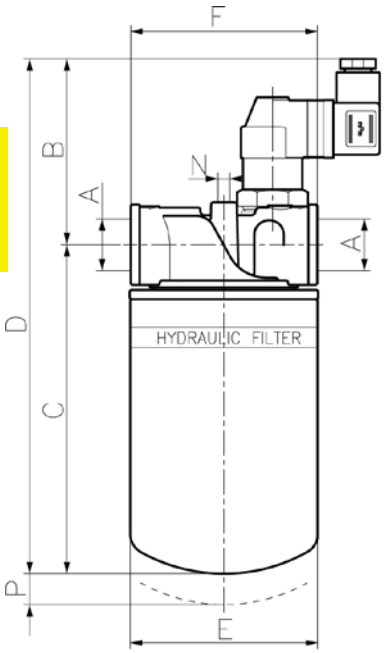


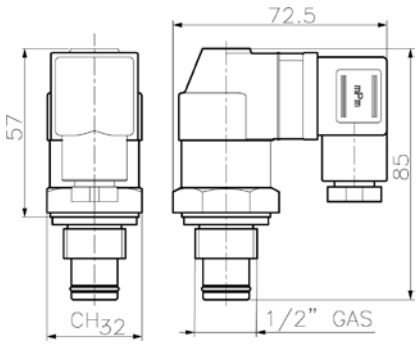
Optical differential indicator
Gauging: 1,5 bar - V1 Type

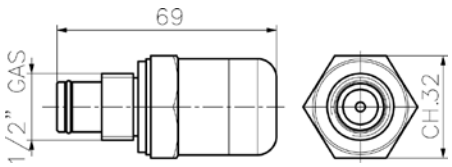
Type	A	B	C	D	E	F	L	M	N	O	P
FCS 055	3/4”	78	168	246	96	95	60	38	M6	96	20
FCS 075			233	311							
FCS 105	1 1/4”	86.5	213	300	127	133	94	50	M8	128	25
FCS 155			256	343							
FCS 185	1 1/2”		345	432	138	140	-	68			40

FCS 055 – equipped N°1 CS050.0
FCS 075 – equipped N°1 CS070.0
FCS 105 – equipped N°1 CS100.0
FCS 155 – equipped N°1 CS150.0
FCS 185 – equipped N°1 CS400.6

FCS 053 – equipped N°1 CS050.0
FCS 073 – equipped N°1 CS070.0
FCS 103 – equipped N°1 CS100.0
FCS 153 – equipped N°1 CS150.0

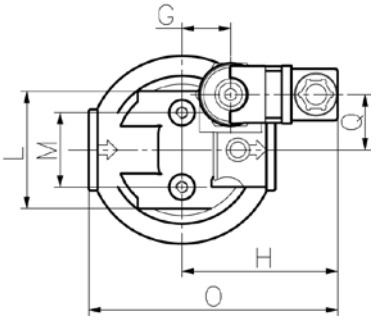




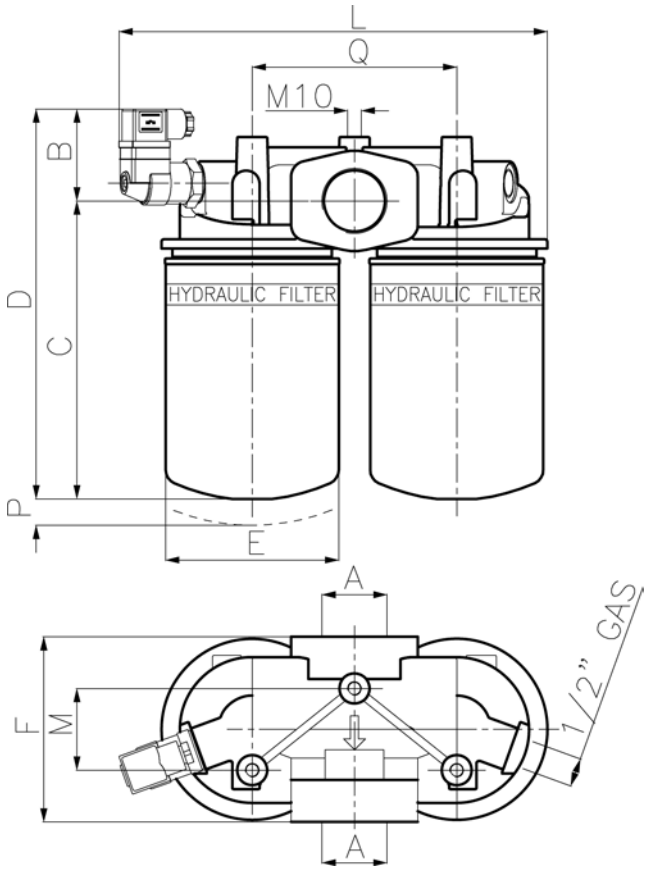


Optical differential indicator
Gauging: 1.5 bar - V5 type

Optical-electrical differential indicator
Gauging: 1.5 bar - Type: E5



Type	A	B	C	D	E	F	L	M	N	O	P	Q
FCS 053	3/4”	95	168	263	96	95	60	38	M6	127	20	28
FCS 073			233	328								
FCS 103	1 1/4”	105	213	318	127	133	94	50	M8	140	25	32
FCS 153			256	361								

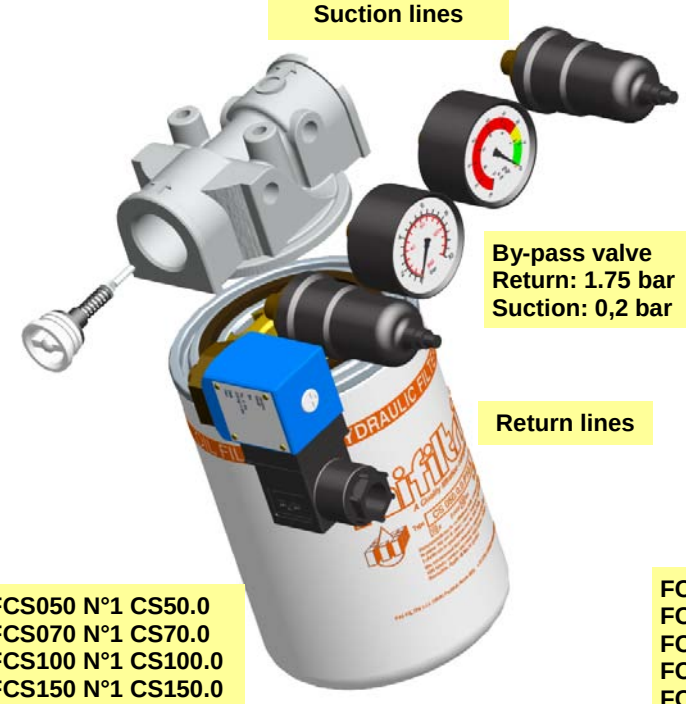


FCS 303 equipped with N°2 CS100.0
FCS 353 equipped with N°2 CS150.0
FCS 383 equipped with N°2 CS400.6

Type	A	B	C	D	E	F	G	H	L	M	O	P	Q
FCS 303	1 1/2"	47	220	267	127	136	160	186	283	60	74	25	150
FCS 353			263	310									
FCS 383			353	400	138								

FUNCTIONAL DIAGRAM

Suction lines



By-pass valve
Return: 1.75 bar
Suction: 0,2 bar

Return lines

FCS050 N°1 CS50.0
FCS070 N°1 CS70.0
FCS100 N°1 CS100.0
FCS150 N°1 CS150.0
FCS180 N°1 CS400.6

Return lines

FCS055 N°1 CS50.0
FCS075 N°1 CS70.0
FCS105 N°1 CS100.0
FCS155 N°1 CS150.0
FCS185 N°1 CS400.6

Filter element
FCS200 N°2 CS100.0
FCS250 N°2 CS150.0

Suction lines

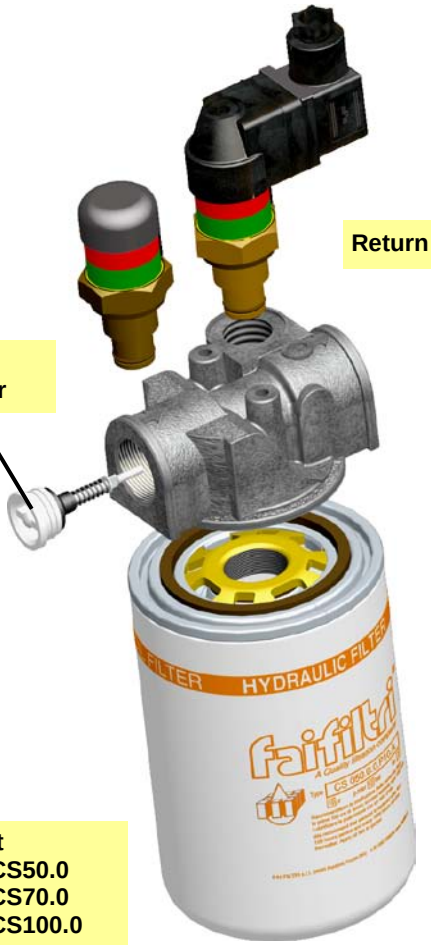
By-pass valve
Return: 1.75 bar

Intake: 0.2 bar

Return lines

Return lines

By-pass valve
Return: 1.75 bar



Filter element
FCS053 N°1 CS50.0
FCS073 N°1 CS70.0
FCS103 N°1 CS100.0
FCS153 N°1 CS150.0

Return lines

Filter element
FCS303 N°2 CS100.0
FCS353 N°2 CS150.0
FCS383 N°2 CS400.6

Suction lines

By-pass valve
Return: 1.75 bar
Suction: 0,2 bar

Return lines

Filter element
FCS300 N°2 CS100.0
FCS350 N°2 CS150.0
FCS380 N°2 CS400.6

ORDER CODE

FCS						

Type	
050-053-055 070-073-075 100-103-105 150-153-155 180-185 200/250 300/303 350/353 380/383	See dimensional table

By-pass valve	
0	Without by-pass
R	By-pass 1.75 bar
S	By-pass 0,2 bar

Gaskets	
A	Nitrili (buna-n)
V	Viton

Coupling	
G1	FCS050/053/055–3/4" GAS FCS070/073/075–3/4" GAS FCS100/103/105–1 1/4"GAS FCS150/153/155–1 1/4"GAS FCS180/185–1 1/2"GAS FCS200 – 1 1/2" GAS FCS250 - 1 1/2" GAS FCS300/305–1 1/2"GAS FCS350/355-1 1/2"GAS
G2	FCS050/053/055–1" GAS FCS070/073/075–1" GAS
F	Flange SAE 1 1/2" 3000 PSI solo FCS300-355
N1	FCS050/053/055–3/4" NPT FCS070/073/075–3/4" NPT FCS100/103/105–1 1/4"NPT FCS150/153/155–1 1/4"NPT FCS180/185–1 1/2"NPT FCS200 – 1 1/2" NPT FCS250 - 1 1/2" NPT FCS300/305–1 1/2"NPT FCS350/355-1 1/2"NPT
N2	FCS050/053/055–1" NPT FCS070/073/075–1" NPT

Spin-on type	
050.0	N°1 for FCS050/055
070.0	N°1 for FCS070/075
100.0	N°1 for FCS100/105 N°2 for FCS200 N°2 for FCS300/305
150.0	N°1 for FCS150/155 N°2 for FCS250 N°2 for FCS350/355
400.6	N°1 for FCS180/185 N°2 for FCS380/383

Filter element	
P10 P25	10 e 25µ impregnated paper
A03 A06 A10 A16 A25	3, 6, 10, 16 e 25µ Inorganic fibers ß ≥ 200
M60 M90	60 e 90 nominal µ wire mesh

Indicators	
S	Without
T	With plug for FCS200-355
TS	With holes during intake + plugs
TR	With holes during return + plugs
VS	Visual indicator during intake
VR	Visual indicator during retrun
ES	Vacuum gauge 0.2 bar with exchange contact
L1	Pressure swith 1.5 bar with exchange contact
H1	Pressure swith 1.5 bar with exchange rolling contact (360°)
V1	Visual diff. 1.5 bar FCS055/075/105/155
V5	Visual diff. 1.5 bar FCS053/073/103/153 FCS303/353/383
E1	Electrical diff. 1.5 bar FCS055/075/105155
E5	Electrical-optical diff. 1.5 bar FCS053/073/103/153 FCS303/353/383
Z1	Electrical diff. 1.5 bar FCS053/073/103/153 FCS303/353/383

CS		0		

Il mondo Fai Filtri é diventato più grande per offrirvi di più
Fai Filtri's world has grown bigger to offer you more and more

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