



CASTING INTEGRATED GROUP



Series **GFSO**

Air/oil separation **FAI FILTRI**

INTRODUCTION

Thanks to many years of in-field experience regarding research, design and production of oil filters and oil separation for compressors applications, the high quality standard reached by FAI FILTRI has made it possible for the company to design and manufacture integrated groups equipped with oil filters and oil separators, thermostats and minimum pressure valves, suitable for assembly on rotary and screw compressors, which also allow a more and more accurate air cleaning in order to make it suitable for several industrial application such as: food industry, electronic, pharmaceutical, textile and mechanical industries. FAI FILTRI integrated groups are the most technologically and functionally "User Friendly" equipment on the compressed air market since they allow both air-lubricating oil separation and oil filtering. All this is made avoiding further clutter and specific operational exigencies and making any possible intervention and replacement of worn out parts definitely quicker while sharply reducing maintenance costs

The unique feature of FAI FILTRI integrated groups is the recovery/collection of most part of the oil contained in the compressed air flux due to screws or vanes entrainment at the lubricating stage, operated thanks to the employ of top quality materials and a better control on oil contamination levels, which allows longer intervals between maintenance interventions.

TECHNICAL DATA

MATERIALS

- ❑ Painted and galvanized steel plate container for the air/oil separator
- ❑ Painted steel plate container for the oil filter
- ❑ Support drilled hoses and galvanized steel bottoms
- ❑ Oil separation baffle in glass microfibers layers made of high quality borosilicate
- ❑ Oil filter baffle made of resin impregnated cellulose fibers.
- ❑ Filter casing unit made of oxidated aluminium casting
- ❑ Brass minimum pressure valve
- ❑ Brass thermostat

FILTER PRESSURE VALUES

Air/oil separation filter:

Max operating pressure:	16 bar
Pulsing fatigue pressure:	0/20/0 bar 1 Hz 50.000 min. cycles

Oil filter:

Max operating pressure:	12 bar
Pulsing fatigue pressure:	0/12/0 bar 1 Hz 50.000 min. cycles
By-pass valve:	1,75 bar

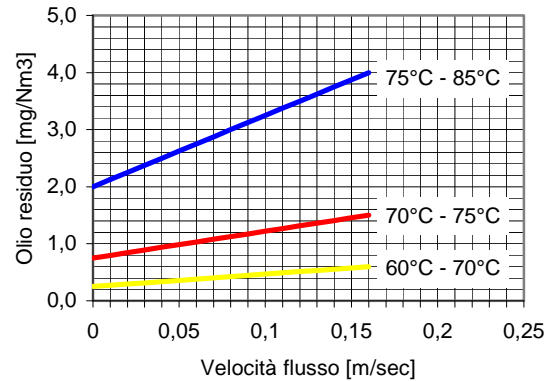
FILTERING ELEMENTS

5 bar collapse differential pressure tested in accordance with : ISO 2941
Axial strain strength tested in accordance with : ISO 3723
Manufacturing compliance and first bubble point determination tested in accordance with : ISO 2942

SEPARATION EFFICIENCY

By avoiding overcoming suggested nominal flow rates it is possible to reach a residual oil waste lower than **1÷3 ppm**

Oil residual in relation to speed and temperature



OPERATING TEMPERATURES

Da -20°C a +110°C

FLOW RATES

Air/oil separation filter:

With an operating pressure up to 7 bars from 1 to 5,5 m³/min (See dimensional table)

Oil filter:

From 20 to 70 l/min (See dimensional table)

ASSEMBLY

For filter assembly on the block, lubricate the seal with a thin oil film and tighten by hand. Remove them by using a belt wrench

AIR/OIL SEPARATOR WORKING LIFE

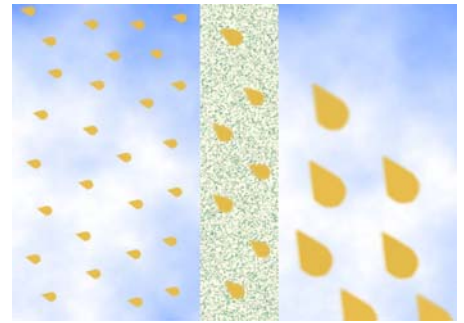
The air/oil separator shall be replaced when reaching a differential pressure (ΔP) up to **1-1,2 bar**. Market research have shown that the average life in normal working conditions can reach over **2500 hours**. Increases in the head loss and the consequent filter operating life depend on the cleanliness of the lubricating oil and of the compressed air ingested by the compressor.

FILTERING SURFACES

Air/oil separator		Oil filter					
Type	Filtering surface	Type	Filtering surface		Type	Filtering surface	
			P10/P25	A10/A25		P10/P25	A10/A25
DSP 012.0	2065 cm ²	CTT 012	2300 cm ²	1370 cm ²	CTT 350	9350 cm ²	5440 cm ²
DSP 050.0	3190 cm ²	CTT 025	1460 cm ²	1020 cm ²	CTT 400	13580 cm ²	7900 cm ²
DSP 070.0	5440 cm ²	CTT 050	2440 cm ²	1700 cm ²			
DSP 300.0	6380 cm ²	CTT 070	3960 cm ²	2125 cm ²			
DSP 400.0	13680 cm ²	CTT 300	6160 cm ²	3580 cm ²			

COALESCENCE EFFECT

The compressed air flux polluted by solid particles and micro drops of oil passes through the first layer of borosilicate micro fibers. At this stage micro drops, smaller than 1 micron, are agglomerated to form bigger drops according to the coalescence principle and are therefore collected and drained by the second layer of porous and synthetic material and end up, due to gravity, on the dry side of the separator.

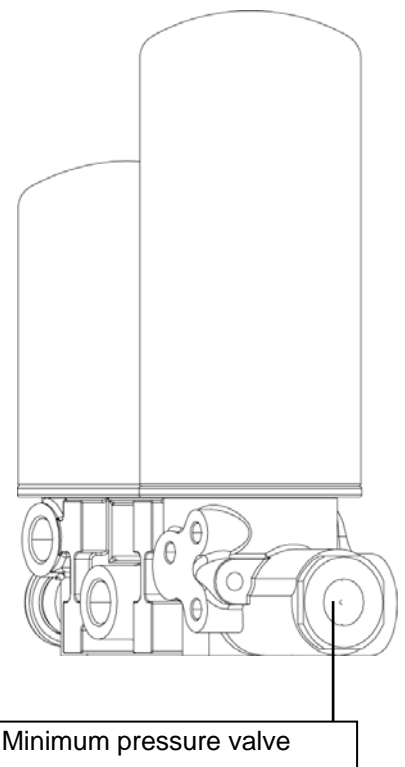


Coalescence principle diagram

MINIMUM PRESSURE VALVE

Setting: 4,5 bar

The minimum pressure valve is assembled on the **GSO** integrated group on the air/oil separator side or on the **GS** group. This valve has to stop the outlet compressed air flux of the compressor when this latter goes under certain values. This grants the minimum pressure in the air/oil separator necessary for lubricating the screw block when restarting the compressor up.

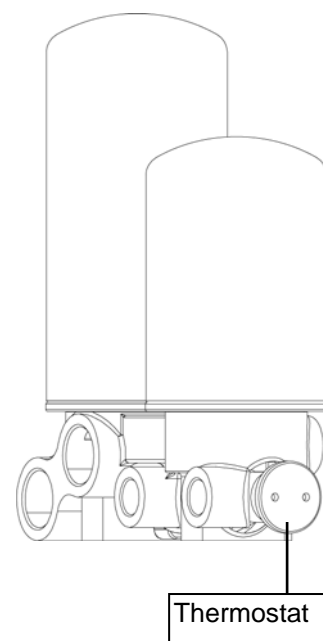


THERMOSTAT

Thermostat operative temperature:

See table for choosing the operative setting

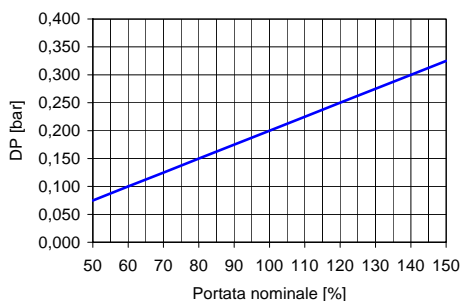
The thermostat is assembled on the **GO / GSO** integrated group on the oil filter side. When set up temperature is reached the oil flux is diverted for cooling by the radiator.



PRESSURE DROP

Air/oil separation filter

With nominal flow rate and 7 bars pressure the head pressure drop with a clean filter is up to 0,2 bars.



Oil filter

Curves are valid for mineral oil with kinematic viscosity up to 30 mm²/sec. (cSt). The ΔP varies alongside the kinematic viscosity in accordance with the following formulas:

① Kinematic viscosity variations ≤ 5

$$\Delta P_1 = \frac{v_1}{v} \Delta P$$

② Kinematic viscosity variations > 5

$$\Delta P_1 = \frac{\frac{v_1}{v} + \sqrt{\frac{v_1}{v}}}{2} \Delta P$$

In both formulas ΔP stands for pressure drop is derived from the curves, v is the reference kinematic viscosity (as to say 30 mm²/sec); ΔP_1 is the pressure drop to be calculated and v_1 is the actual kinematic viscosity of the fluid used.

Air oil integrated group equipped with thermostat and minimum pressure valve

Model:

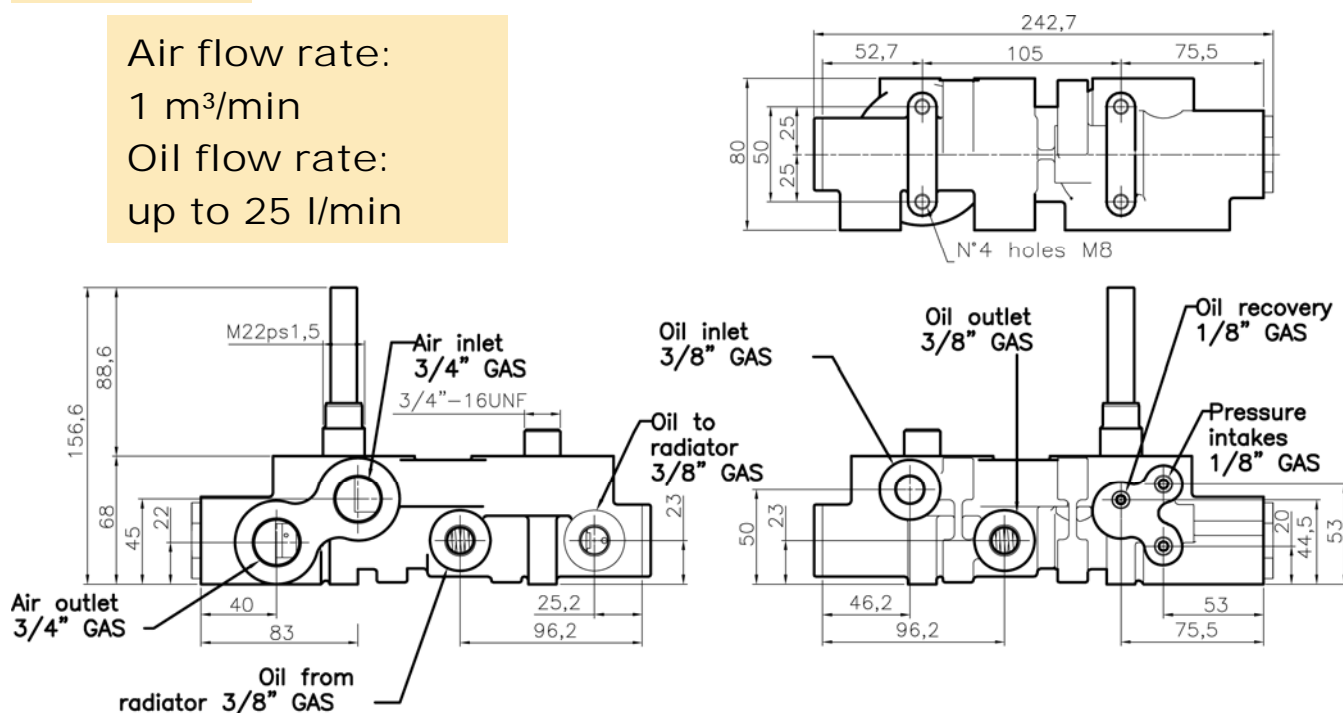
GFSO 10

Air flow rate:

1 m³/min

Oil flow rate:

up to 25 l/min



Choice of oil filter integrated group – air/oil separator filter equipped with thermostat and minimum pressure valve

GFSO 10					
Thermostat	Clogging indicator	Separator filter	Oil filter	Filtration type oil filter	
55°C	A	X	X	A	P10 – Paper 10μ
65°C	B	012	012	B	P25 – Paper 25μ
71°C	C			C	A10 – Microfiber 10μ
83°C	D		025	D	A16 – Microfiber 16μ
	E			E	A25 – Microfiber 25μ

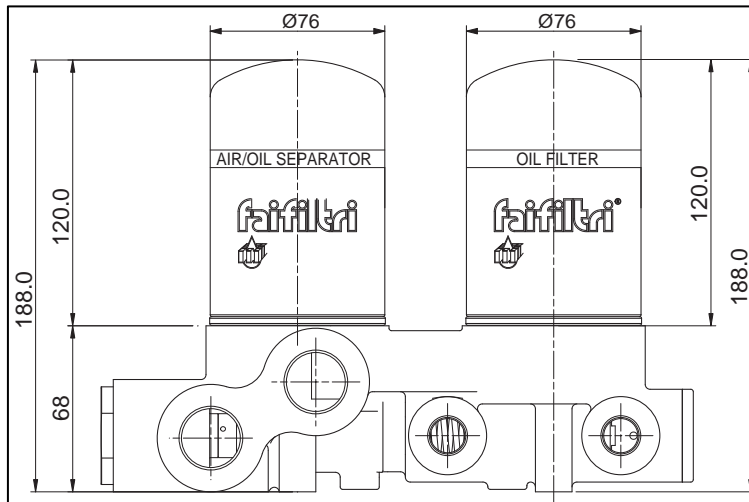
Clogging indicator:

For oil group setting: **1.5 bar**

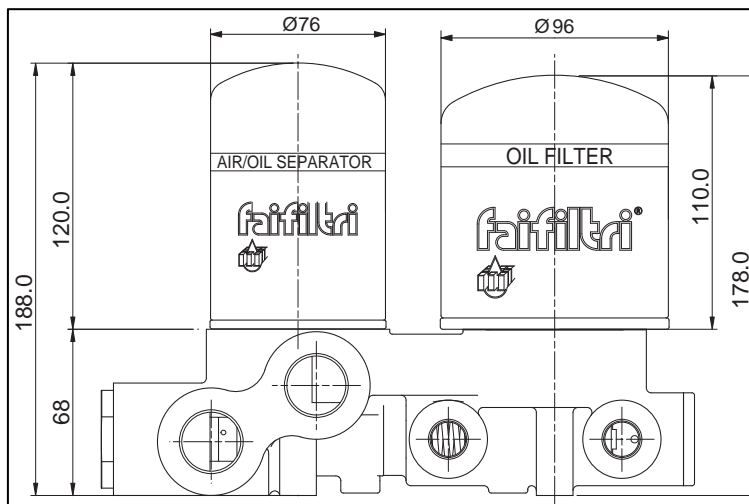
Oil filter filtering baffles legend:

P10 – P25: Cellulose fibers impregnated with phenolic resins, 10 and 25μ

A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25μ



Dimensions integrated group equipped with CTT012 oil filter and DSP012.0 separator filter

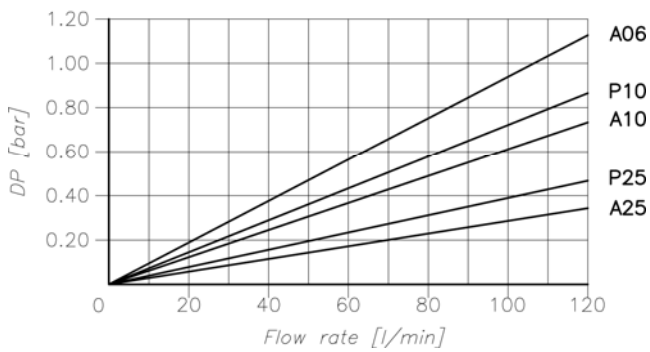


Dimensions integrated group equipped with CTT025 oil filter and DSP012.0 separator filter

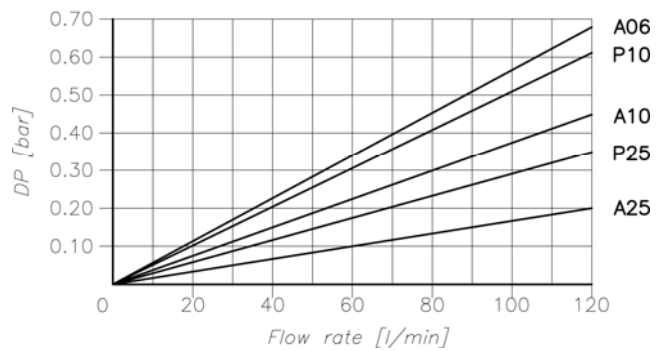
Oil filter pressure drop

Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt)
(For oil filter viscosity variations see page 5)

CTT 012



CTT 025

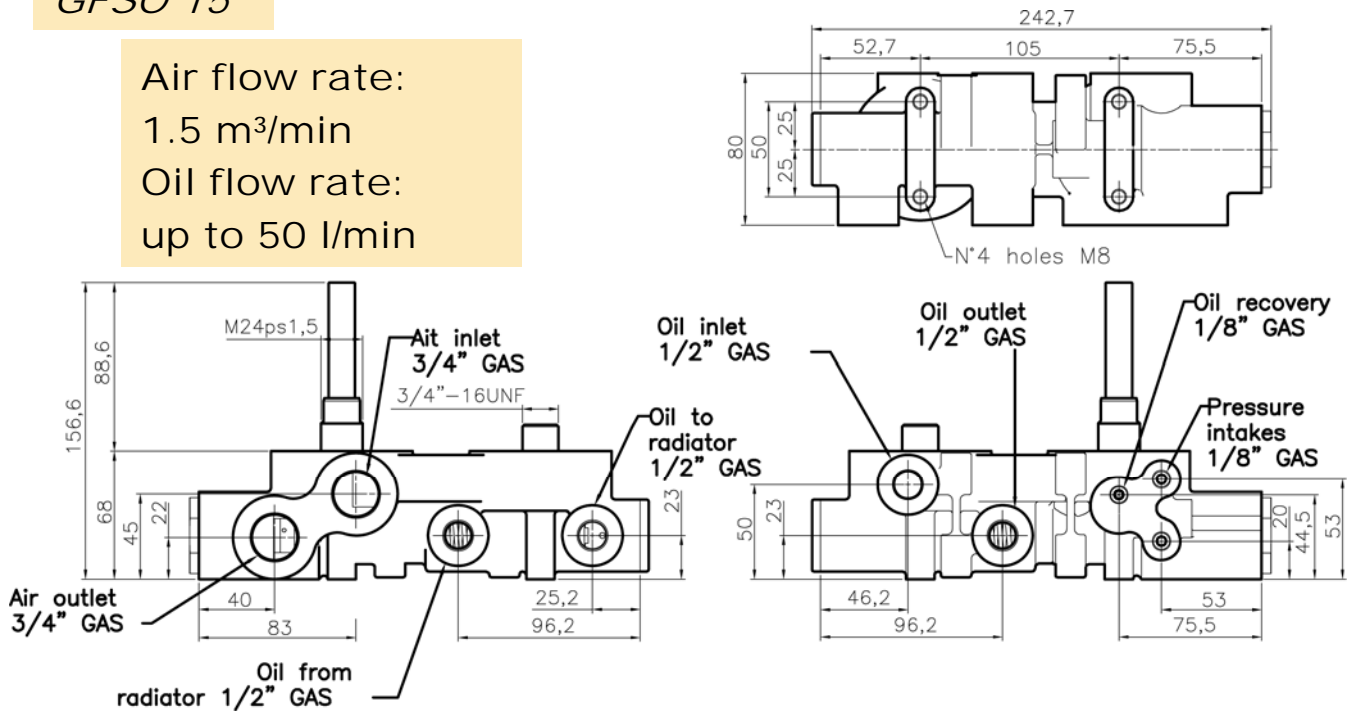


Air oil integrated group equipped with thermostat and minimum pressure valve

Model:

GFSO 15

Air flow rate:
1.5 m³/min
Oil flow rate:
up to 50 l/min



Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve

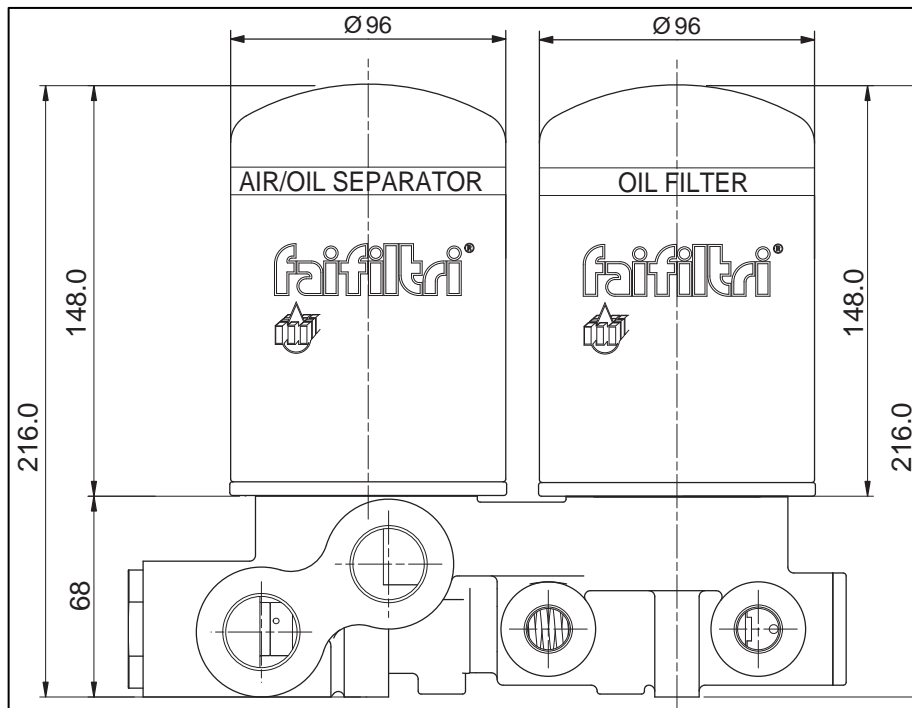
GFSO 15					
Thermostat	Clogging indicator	Separator filter	Oil filter	Filtration type Oil filter	
55°C	A	X	X	A	P10 – Paper 10µ
65°C	B		012	B	P25 – Paper 25µ
71°C	C		025	C	A10 – Microfiber 10µ
83°C	D		050	D	A16 – Microfiber 16µ
	E			E	A25 – Microfiber 25µ

Clogging indicator:
For oil group setting:
1.5 bar

Oil filter filtering baffles legend:

P10 – P25: Cellulose fibers impregnated with phenolic resins, 10 and 25µ

A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ

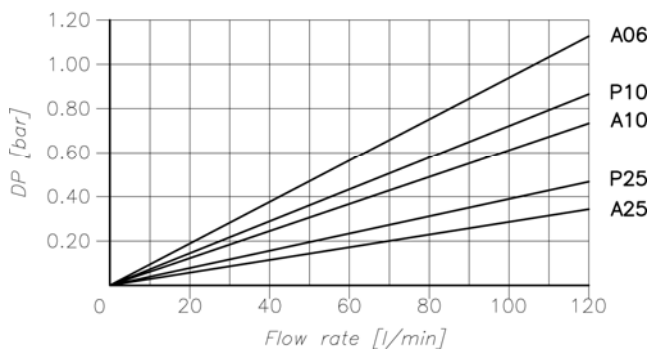


Dimensions integrated group equipped with CTT050oil filter DSP050.0 and separator filter

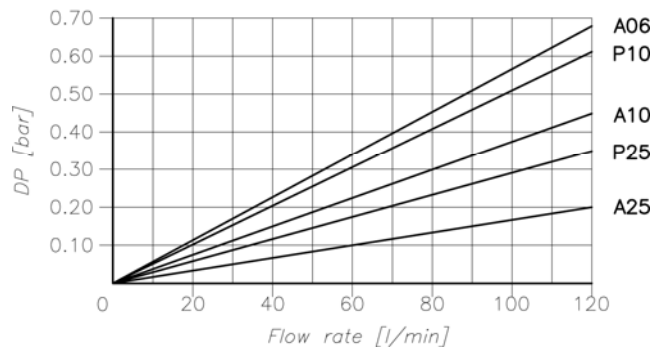
Oil filter pressure drop

Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt)
(For oil filter viscosity variations see page 5)

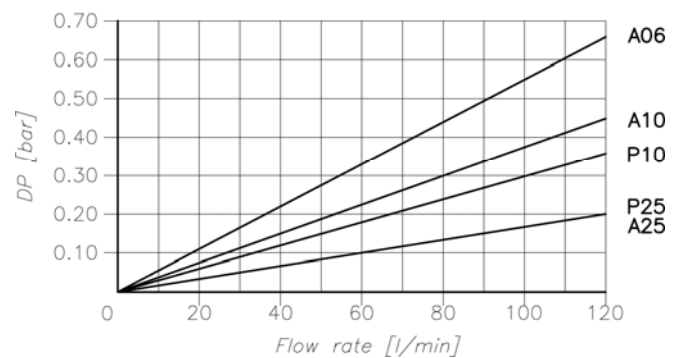
CTT 012



CTT 025



CTT 050

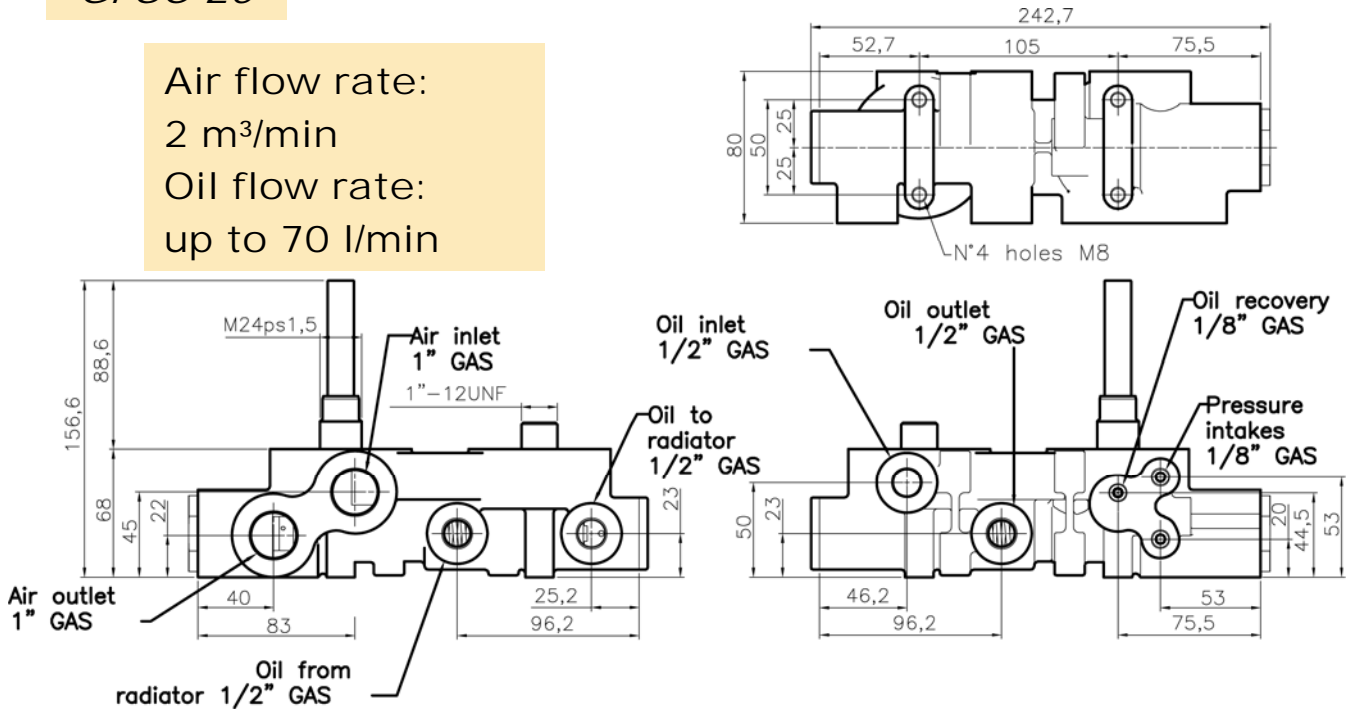


Air oil integrated group equipped with thermostat and minimum pressure valve

Model:

GFSO 20

Air flow rate:
2 m³/min
Oil flow rate:
up to 70 l/min



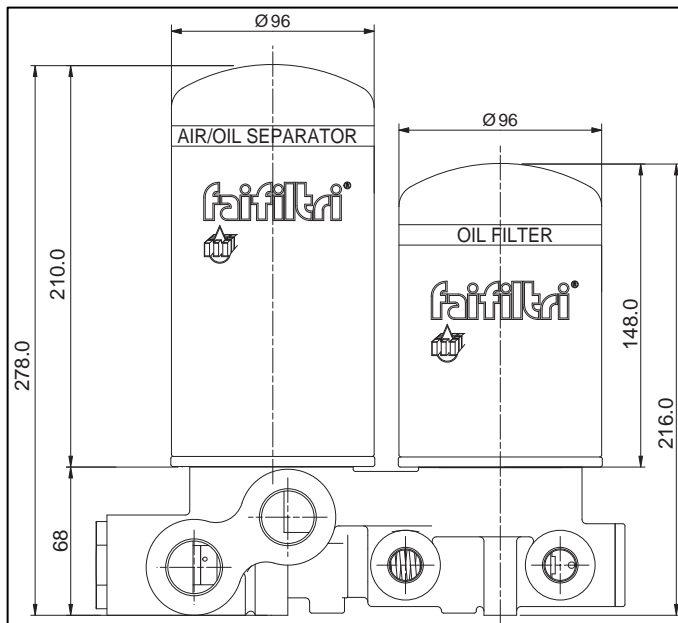
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve

GFSO 20					
Thermostat	Clogging indicator	Separator filter	Oil filter	Filtration type Oil filter	
55°C	A	X	X	A	P10 – Paper 10µ
65°C	B		050	B	P25 – Paper 25µ
71°C	C			C	A10 – Microfiber 10µ
83°C	D		070	D	A16 – Microfiber 16µ
	E			E	A25 – Microfiber 25µ

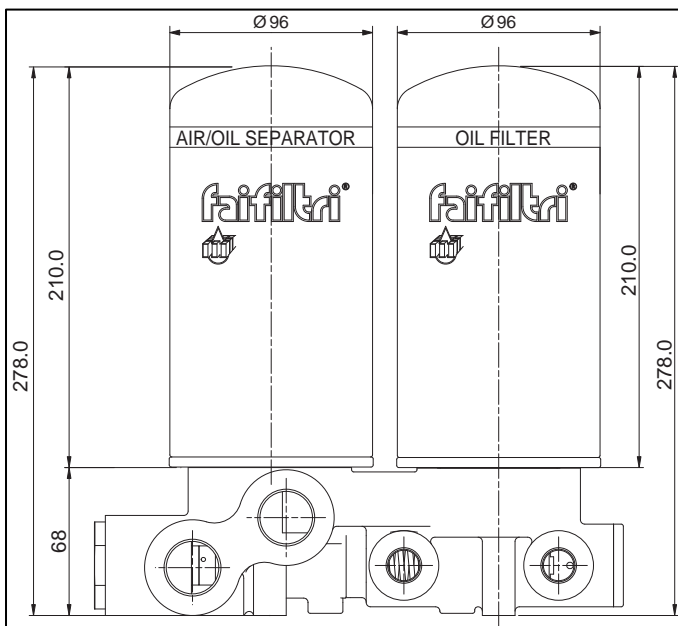
Clogging indicator:

For oil group setting:
1.5 bar

Oil filter filtering baffles legend:
 P10 – P25: Cellulose fibers impregnated with phenolic resins, 10 and 25µ
 A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ



Dimensions integrated group equipped with CTT050 oil filter and DSP070.0 separator filter

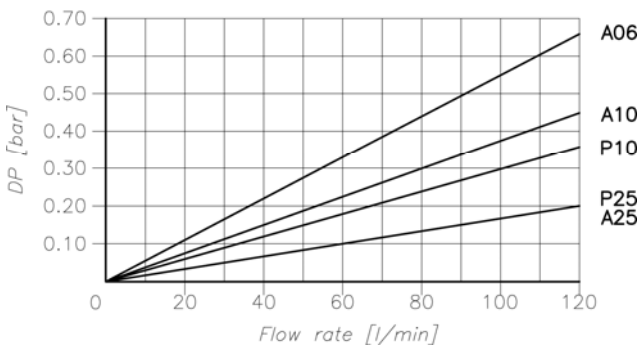


Dimensions integrated group equipped with CTT070 oil filter and DSP070.0 separator filter

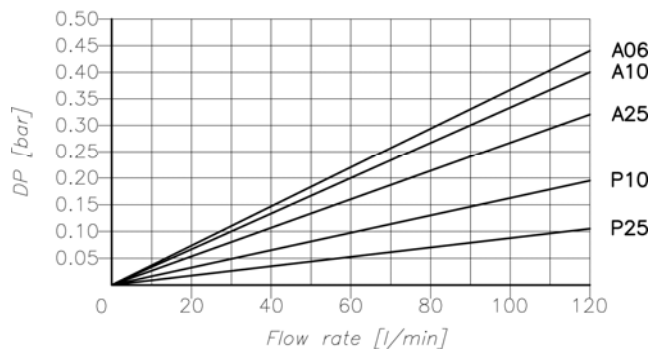
Oil filter pressure drop

Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt)
 (For oil filter viscosity variations see page 5)

CTT 050



CTT 070

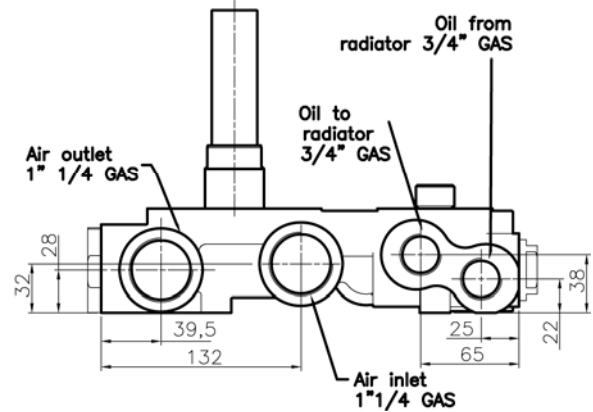
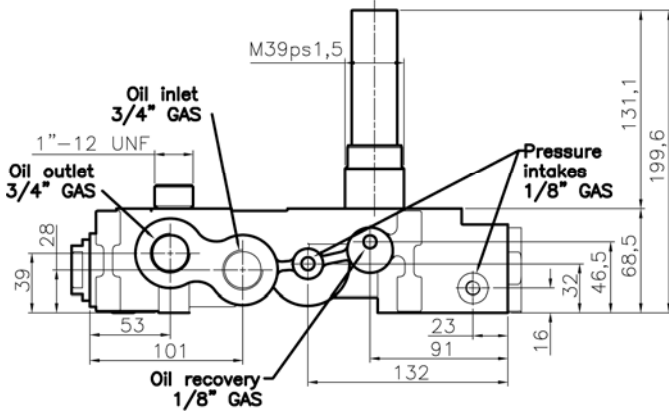
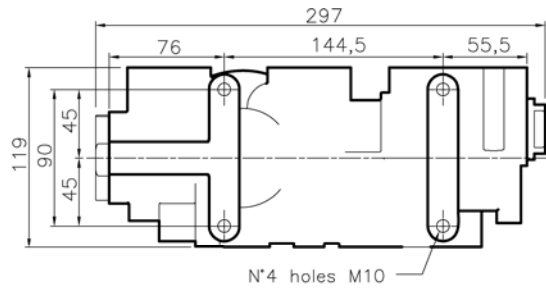


Air oil integrated group equipped with thermostat and minimum pressure valve

Model:

GFSO 55

Air flow rate:
fino a 5.5 m³/min
Oil flow rate:
up to 70 l/min



Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve

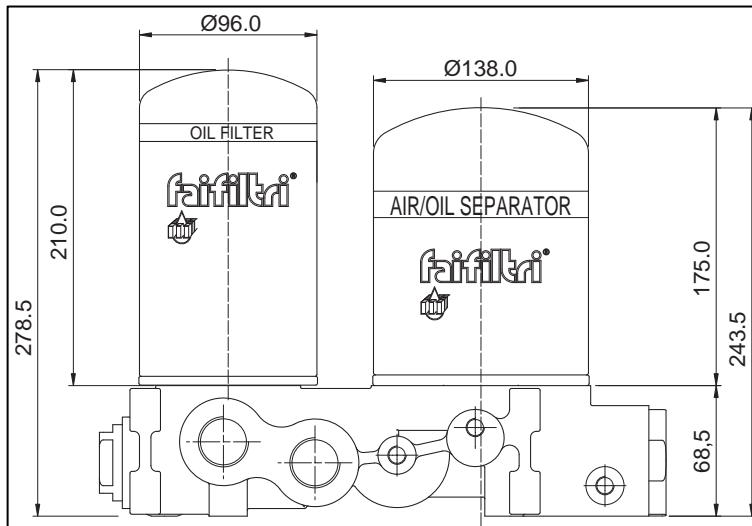
GFSO 55									
Thermostat		Clogging indicator		Separator filter		Oil filter		Filtration type Oil filter	
55°C	A	S	Without	X	Without	X	Without	A	P10 – Paper 10µ
65°C	B	V	Visual diff. indicator	300	With DSP300.0	070	With CTT07033	B	P25 – Paper 25µ
71°C	C	E	Electric diff. indicator	400	With DSP400.0			C	A10 – Microfiber 10µ
83°C	D							D	A16 – Microfiber 16µ
								E	A25 – Microfiber 25µ

Clogging indicator:
For oil group setting:
1.5 bar

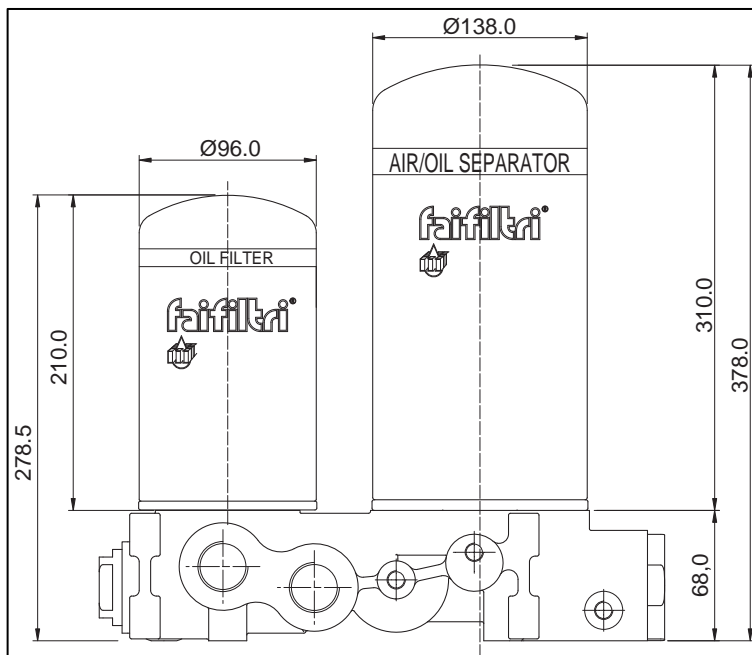
Oil filter filtering baffles legend:

P10 – P25: Cellulose fibers impregnated with phenolic resins, 10 and 25µ

A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ



Dimensions integrated group equipped with CTT070 oil filter and DSP300.0 separator filter

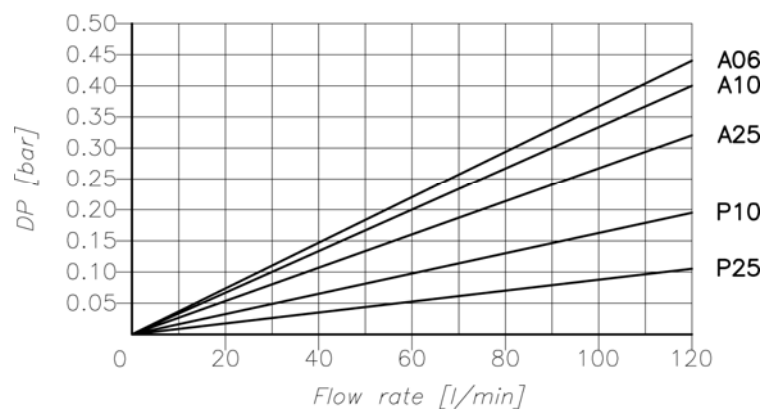


Dimensions integrated group equipped with CTT070 oil filter and DSP400.0 separator filter

Oil filter pressure drop

Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt)
 (For oil filter viscosity variations see page 5)

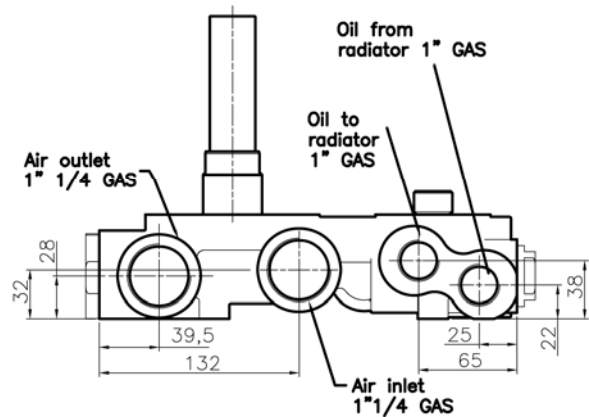
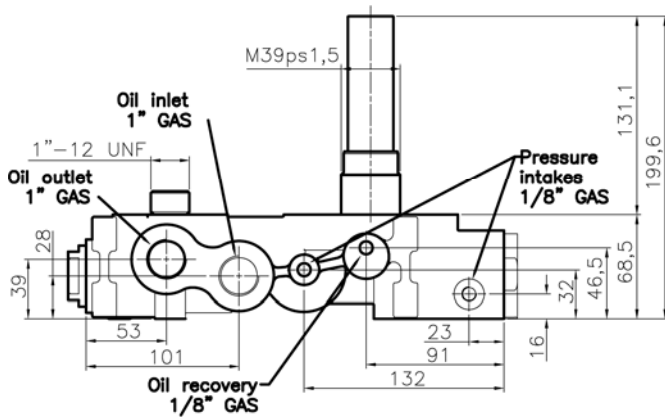
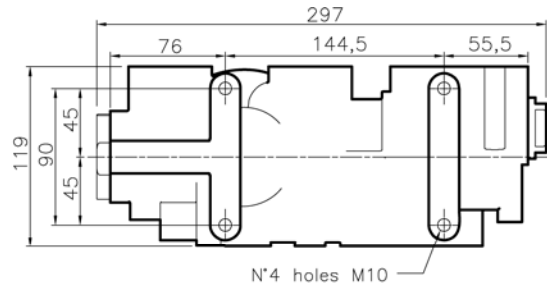
CTT 070



Air oil integrated group equipped with thermostat and minimum pressure valve

Model:
GFSO 56

Air flow rate:
fino a 5.5 m³/min
Oil flow rate:
up to 70 l/min



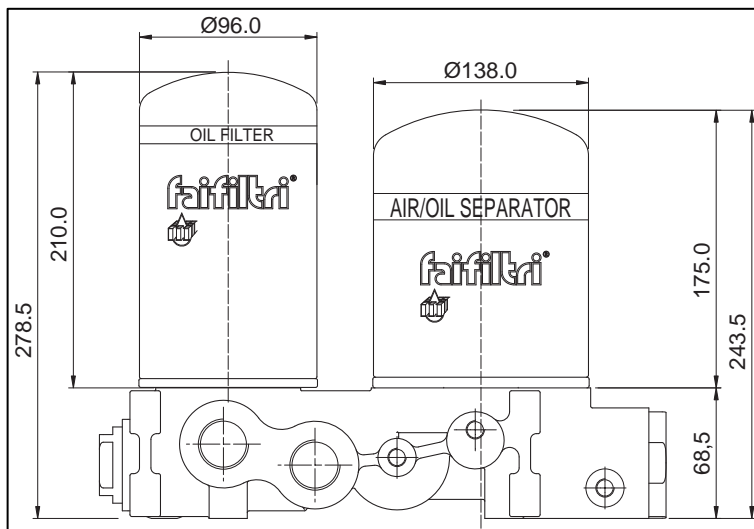
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve

GFSO 56																																							
Thermostat	Clogging indicator	Separator filter	Oil filter	Filtration type Oil filter																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">55°C</td><td style="width: 50%;">A</td></tr> <tr><td>65°C</td><td>B</td></tr> <tr><td>71°C</td><td>C</td></tr> <tr><td>83°C</td><td>D</td></tr> </table>	55°C	A	65°C	B	71°C	C	83°C	D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">S</td><td style="width: 50%;">Without</td></tr> <tr><td>V</td><td>Visual diff. indicator</td></tr> <tr><td>E</td><td>Electric diff. indicator</td></tr> </table>	S	Without	V	Visual diff. indicator	E	Electric diff. indicator	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">X</td><td style="width: 50%;">Without</td></tr> <tr><td>300</td><td>With DSP300.0</td></tr> <tr><td>400</td><td>With DSP400.0</td></tr> </table>	X	Without	300	With DSP300.0	400	With DSP400.0	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">X</td><td style="width: 50%;">Without</td></tr> <tr><td>070</td><td>With CTT07033</td></tr> </table>	X	Without	070	With CTT07033	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">A</td><td style="width: 50%;">P10 – Paper 10µ</td></tr> <tr><td>B</td><td>P25 – Paper 25µ</td></tr> <tr><td>C</td><td>A10 – Microfiber 10µ</td></tr> <tr><td>D</td><td>A16 – Microfiber 16µ</td></tr> <tr><td>E</td><td>A25 – Microfiber 25µ</td></tr> </table>		A	P10 – Paper 10µ	B	P25 – Paper 25µ	C	A10 – Microfiber 10µ	D	A16 – Microfiber 16µ	E	A25 – Microfiber 25µ
55°C	A																																						
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070	With CTT07033																																						
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C	A10 – Microfiber 10µ																																						
D	A16 – Microfiber 16µ																																						
E	A25 – Microfiber 25µ																																						
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>Clogging indicator:</p> <p>For oil group setting: 1.5 bar</p> </div>																																							

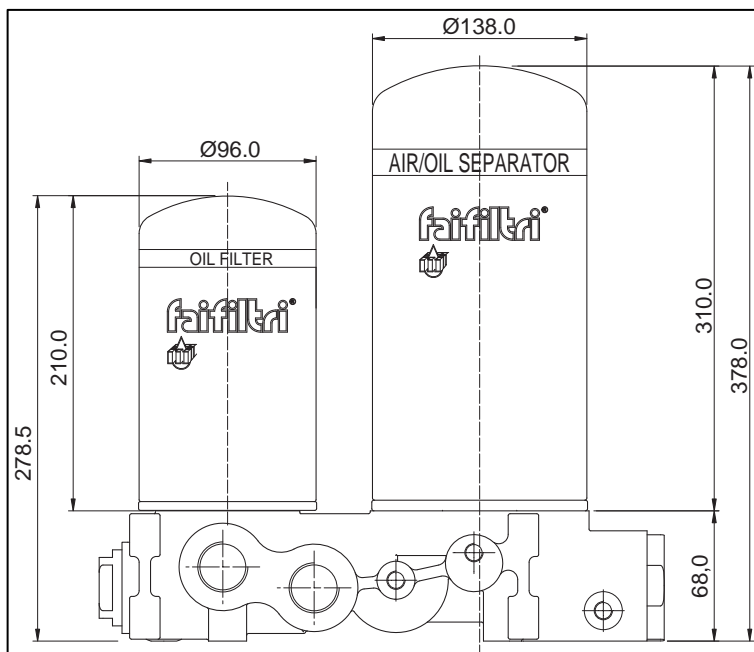
Oil filter filtering baffles legend:

P10 – P25: Cellulose fibers impregnated with phenolic resins, 10 and 25µ

A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ



Dimensions integrated group equipped with CTT070 oil filter and DSP300.0 separator filter

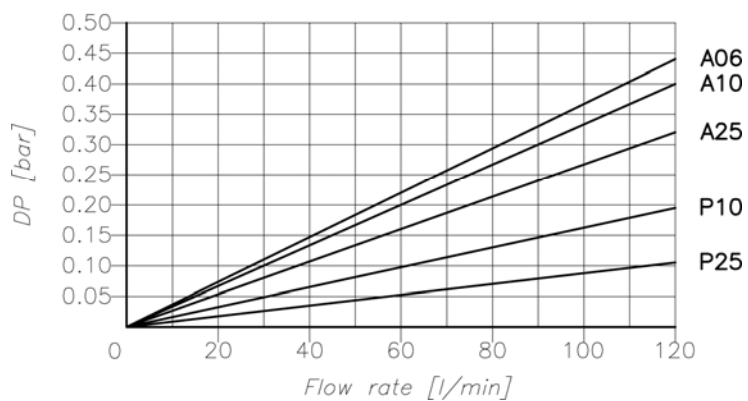


Dimensions integrated group equipped with CTT070 oil filter and DSP400.0 separator filter

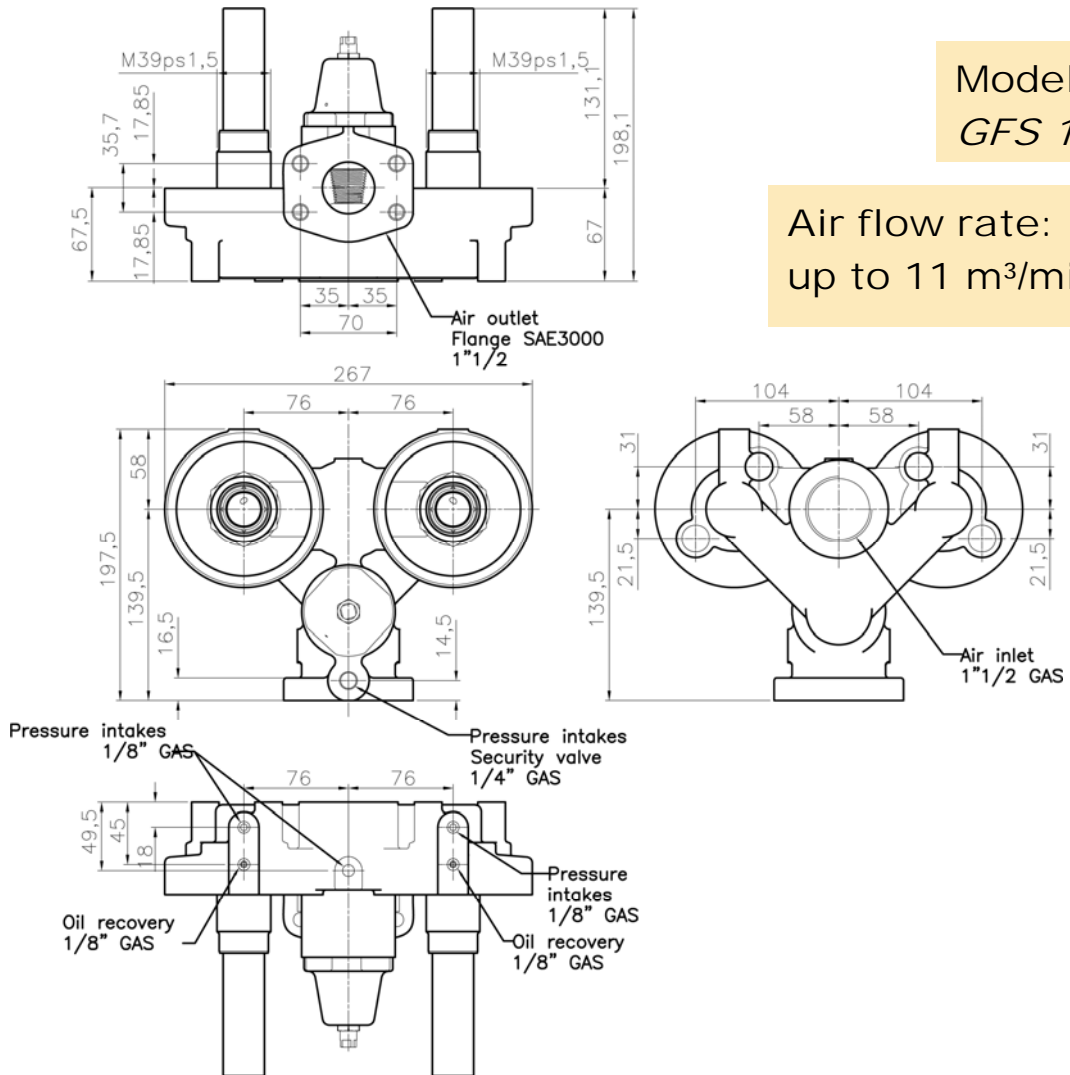
Oil filter pressure drop

Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt)
 (For oil filter viscosity variations see page 5)

CTT 070



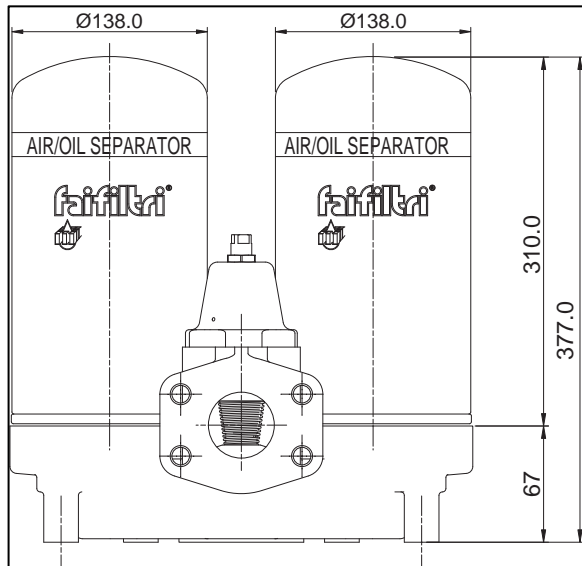
Air oil integrated group equipped with minimum pressure valve



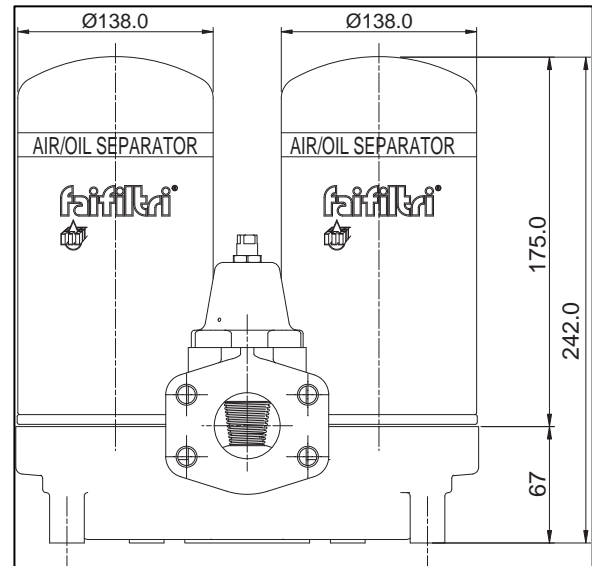
Choice of integrated group equipped with minimum pressure valve

GFS 110		
	Minimum pressure valve	Separator filter
55°C	A	X Without
65°C	B	300 With DSP300.0
71°C	C	400 With DSP400.0
83°C	D	

Separator filter:
 With No.2 DSP300.0
 Max flow rate. 6 m³/min
 With No. DSP400.0
 Max flow rate.: 11 m³/min



Dimensions integrated group equipped with No.2 air/oil separator DSP400.0



Dimensions integrated group equipped with No.2 air/oil separator DSP300.0

Spare parts



1	Pivot	016.1.0010
2	Nut	015.1.0036
3	Minimum press. valve plug	033.1.0020
4	OR 3187	032.1.8105
5	Washer for spring	034.1.5013
6	Spring	003.1.0179
7	Shutter	036.1.0067
8	OR 3131	032.1.8057
9	Springs	003.1.5015
10	Minimum press. Valve	001.2.0175
11	Integrated group head	029.1.0340
12	OR 3212	032.1.8107
13	OR 2131	032.1.8102
14	OR Parker 2-30	032.1.8101
15	Adapter for Spin-on	011.2.0068

Integrated group spare parts

1	Thermostatic closing plug for GFSO10÷GFSO20	<i>033.1.0012</i>
	Thermostatic closing plug for GFSO55÷GFSO56	<i>033.1.0018</i>
2	Thermostat O-Ring seal for GFSO10÷GFSO20 (OR-3118)	<i>032.1.8092</i>
	Thermostat O-Ring seal for GFSO55÷GFSO56 (OR 2137)	<i>032.1.8087</i>
3	Thermosensitive element for oil groups	
	55°C	<i>036.1.0055</i>
	65°C	<i>036.1.0071</i>
	71°C	<i>036.1.0056</i>
	83°C	<i>036.1.0072</i>
4	Shutter for group GFSO55-GFSO56	<i>001.1.6096</i>
5	Thermostat shutter for group GFSO10÷GFSO20	<i>036.1.0054</i>
	Thermostat shutter for group GFSO55÷GFSO56	<i>036.1.0063</i>
6	Thermostat spring for group GFSO10÷GFSO20	<i>003.1.0162</i>
	Thermostat spring for group GFSO55÷GFSO56	<i>003.1.0174</i>
7	Integrated group head GFSO10	<i>029.1.0309</i>
	Integrated group head GFSO15	<i>029.1.0360</i>
	Integrated group head GFSO20	<i>029.1.0310</i>
	Integrated group head GFSO55	<i>029.1.0335</i>
	Integrated group head GFSO56	<i>029.1.0338</i>
8	Reduction unit for GFSO10÷GFSO15	<i>011.1.0299</i>
	Reduction unit for GFSO20÷GFSO56	<i>011.1.0300</i>
9	Adaptor for GFSO10	<i>011.2.0063</i>
	Adaptor for GFSO15÷GFSO20	<i>011.2.0064</i>
	Adaptor for GFSO55÷GFSO56	<i>011.2.0068</i>
10	2087 O-Ring for GFSO10÷GFSO20	<i>032.1.8096</i>
	2162 O-Ring for GFSO55÷GFSO56	<i>032.1.8101</i>
11	2068 O-Ring for GFSO10÷GFSO20	<i>032.1.8086</i>
	2131 O-Ring for GFSO55÷GFSO56	<i>032.1.8102</i>
12	Minimum pressure valve shutter for GFSO10÷GFSO20	<i>001.2.0171</i>
	Minimum pressure valve shutter for GFSO55÷GFSO56	<i>001.2.0174</i>
13	Minimum pressure valve spring	<i>003.1.0171</i>
14	2093 O-Ring for GFSO10÷GFSO20	<i>032.1.8095</i>
	3100 O-Ring for GFSO55÷GFSO56	<i>032.1.8055</i>
15	Minimum pressure valve cursor for GFSO10÷GFSO20	<i>036.1.0060</i>
	Minimum pressure valve cursor for GFSO55÷GFSO56	<i>036.1.0065</i>
16	Minimum pressure valve spring for GFSO10÷GFSO20	<i>003.1.0170</i>
	Minimum pressure valve spring for GFSO55÷GFSO56	<i>003.1.0175</i>
17	2137 O-Ring for GFSO10÷GFSO20	<i>032.1.8087</i>
	3175 O-Ring for GFSO55÷GFSO56	<i>032.1.8103</i>
18	Minimum pressure valve plug for GFSO10÷GFSO20	<i>033.1.0011</i>
	Minimum pressure valve plug for GFSO55÷GFSO56	<i>033.1.0019</i>
19	Washer De.18.5 Di.10 Sp.2	<i>034.1.0044</i>
20	M20x1 ring nut for Minimum pressure valve GFSO010÷056	<i>030.1.0009</i>
21	Visual differential pressure indicator 1.5 bar for separator group	<i>016.2.0003</i>
	Electric differential pressure indicator 1.5 bar for separator group	<i>016.2.0005</i>

