



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 airlubricating 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.

Integrated Groups are produced in three different ranges: **GS** series equipped with spin-on air/oil separation filter and minimum pressure valve, **GF** series equipped with spin-on oil filter and thermostat and finally **GFS** series equipped with spin-on air/oil separation filter, thermostat and minimum pressure valve.

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 presure: 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 bars collapse differential pressure tested in accordance with: : ISO 2941

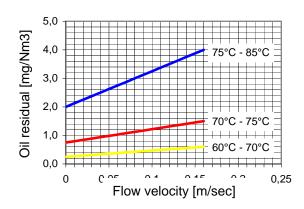
Axial strain strength tested in accordance with : ISO 3723

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

From -20°C to +110°C

FLOW RATES

Air/oil separation filter:

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

Oil filter:

From 20 to 70 l/min (See dimentional 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

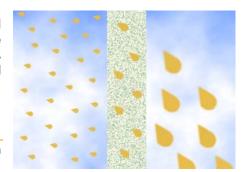
The air/oil separator shall be replaced when reaching a differential pressure (ΔP) up to **1-1,2 bar**. Market research have shown that the average life in normal working conditions can reach over **2500 hours**. Increases in the head loss and the consequent filter operating life depend on the cleanliness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

FILTERING SURFACES

Oil filter									
Туре	Filtering surface		Tuna	Filetring Surface					
	P10/P25	A10/A25	Туре	P10/P25	A10/A25				
CTT 012	2300 cm ²	1370 cm ²	CTT 300	6160 cm ²	3580 cm ²				
CTT 025	1460 cm ²	1020 cm ²	CTT 350	9350 cm ²	5440 cm ²				
CTT 050	2440 cm ²	1700 cm ²	CTT 400	13580 cm ²	7900 cm ²				
CTT 070	3960 cm ²	2700 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.



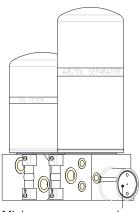
Coalescence principle diagram

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.

GSO series
Oil filter-Oil separator
Filter



Minimum pressure valve setting: 4.5 bar

GS series
Oil separator filter
Integrated group



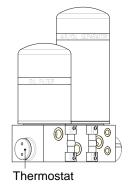
Minimum pressure valve setting: 4.5 bar

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.

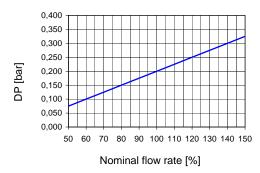




PRESSURE DROP

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:

$$\Delta P 1 = \frac{v1}{v} \Delta P$$

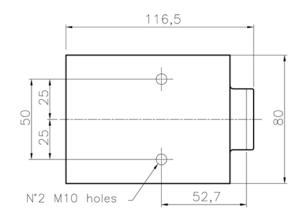
$$\Delta P1 = \frac{\frac{v1}{v} + \sqrt{\frac{v1}{v}}}{2} \Delta P$$

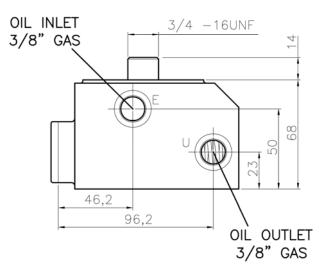
In both formulas ΔP stands for pressure drop is derived from the curves, \mathbf{v} is the reference kinematic viscosity (as to say 30 mm²/sec); $\Delta P1$ is the pressure drop to be calculated and $\mathbf{v1}$ is the actual kinematic viscosity of the fluid used.

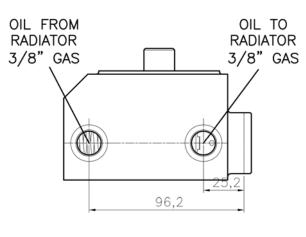
Oil group equipped with thermostat

Model: *GO 025*

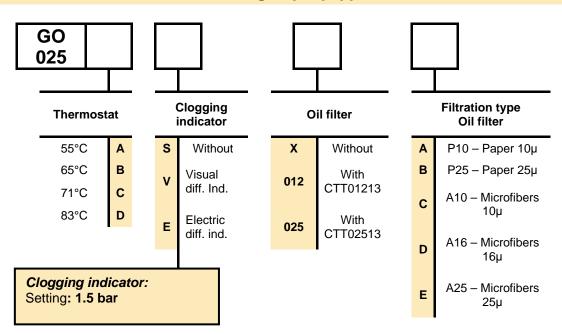
Oil flow rate: up to 25 l/min







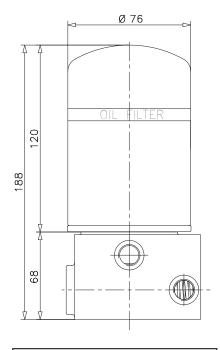
Choice of the oil filter group equipped with thermostat



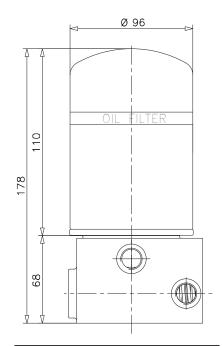
Oil Filters filtering baffles legend:

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

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



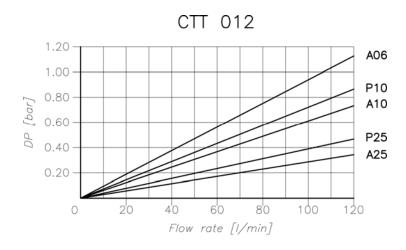
Dimensions of a filter equipped with CTT012 oil cartridge

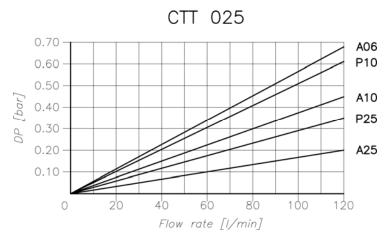


Dimensions of a filter equipped with CTT025 oil cartridge

Oil filter pressure drops

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

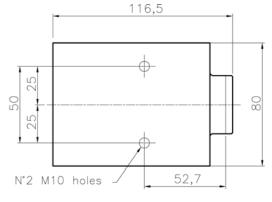


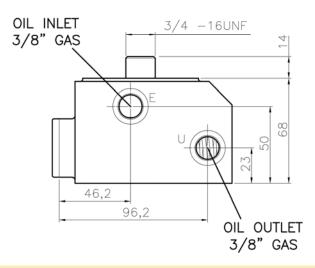


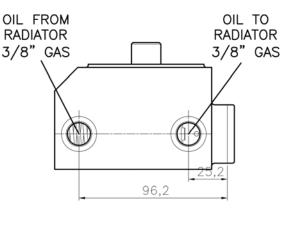
Oil group equipped with thermostat

Model: *GO 050*

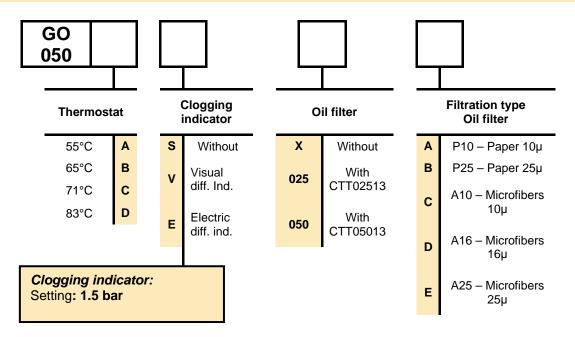
Oil flow rate: up to 50 l/min







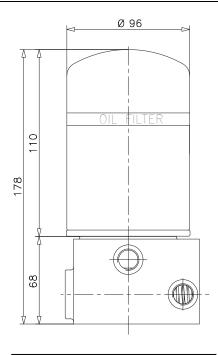
Choice of the oil filter group equipped with thermostat



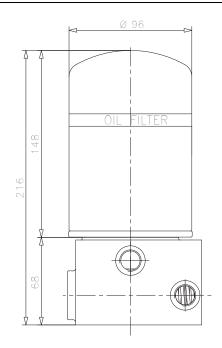
Oil filter filtering baffles legend:

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



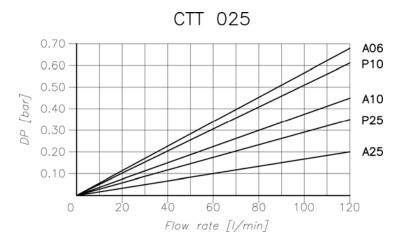
Dimensions of filter equipped with CTT025 oil cartridge

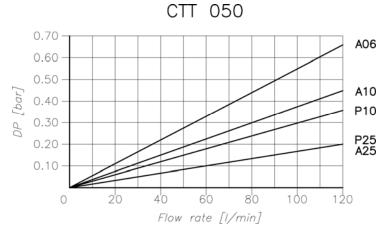


Dimensions of filter equipped with CTT050 oil cartridge

Oil filter pressure drops

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

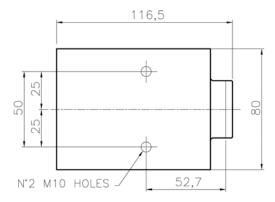


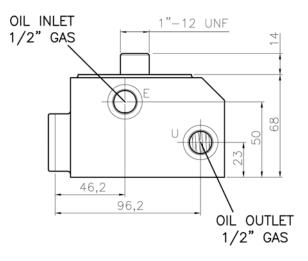


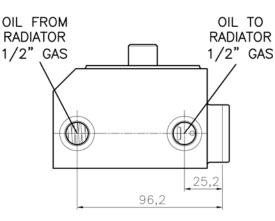
Oil group equipped with thermostat

Model: *GO 070*

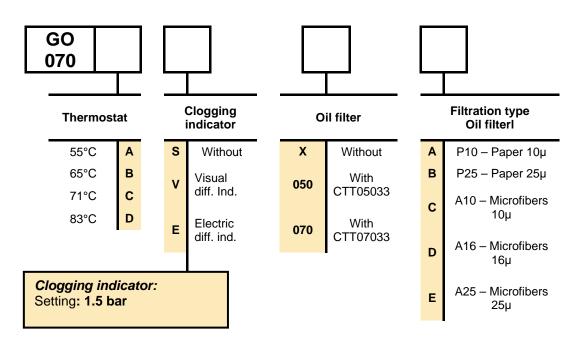
Oil flow rate: up to 70 l/min







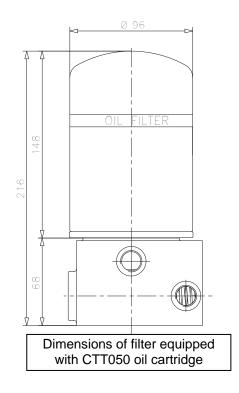
Choice of oil filter group equipped with thermostat

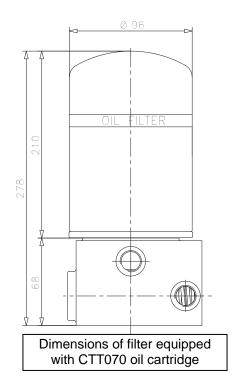


Oil filter filtering baffles legend:

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

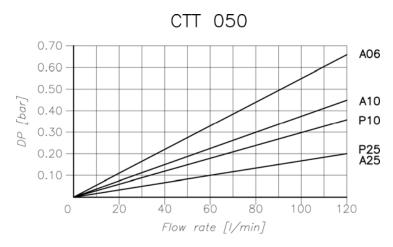
A10 - A16 - A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ

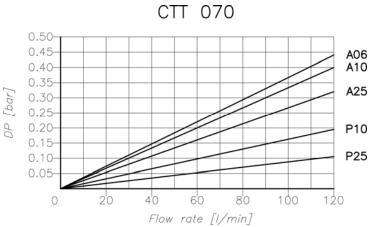


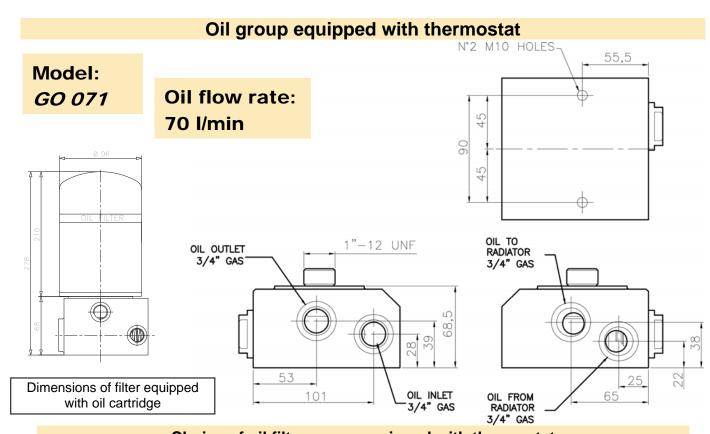


Oil filter pressure drop

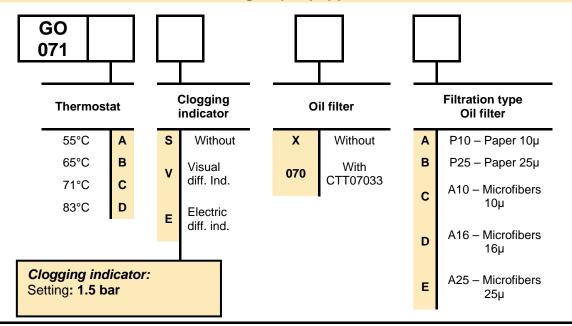
Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt) (For oil filter viscosity variations see page 5)







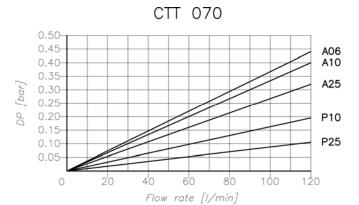
Choice of oil filter group equipped with thermostat



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

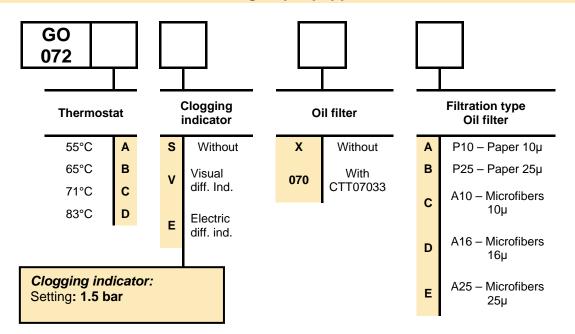


Oil filter pressure drop

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

Oil group equipped with thermostat 55,5 Model: GO 072 Oil flow rate: **70 l/min** 45 OIL TO 1"-12 UNF OIL INLET RADIATOR 1" GAS 1" GAS 39 101 OIL OUTLET OIL FROM Dimensions of filter equipped GAS RADIATOR with oil cartridge 1" GAS

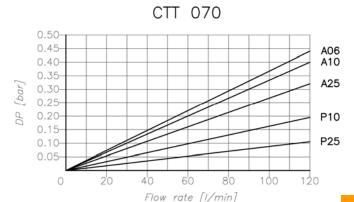
Choice of oil filter group equipped with thermostat



Oil filter filtering baffles legend:

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

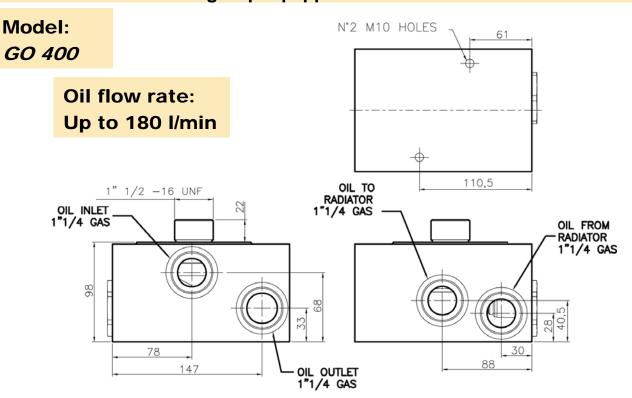
A10 - A16 - A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ



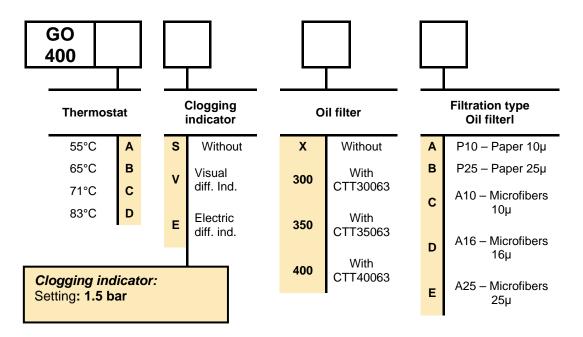
Oil filter pressure drop

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

Oil group equipped with thermostat



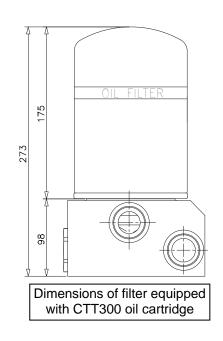
Choice of oil filter group equipped with thermostat

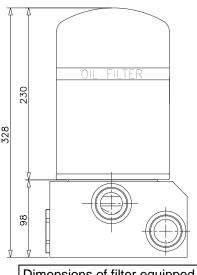


Oil filter filtering baffles legend:

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





OIL FILTER

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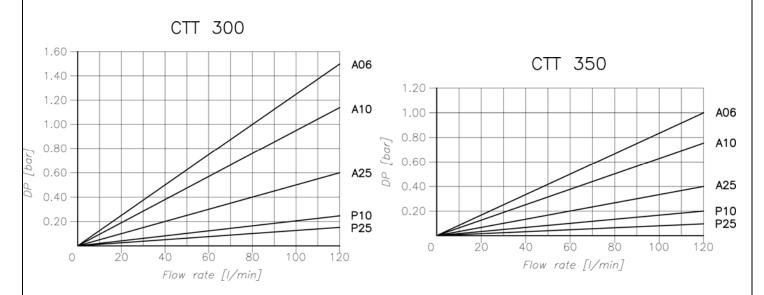
87

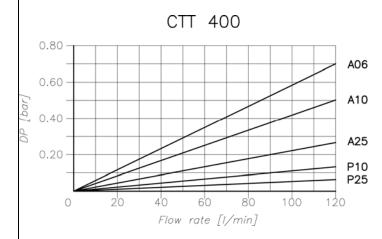
Dimensions of filter equipped with CTT350 oil cartridge

Dimensions of filter equipped with CTT400 oil cartridge

Oil filter pressure drops

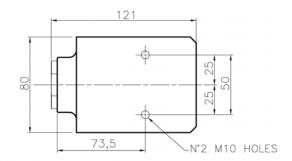
Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt) (For oil filter viscosity variations see page 5)

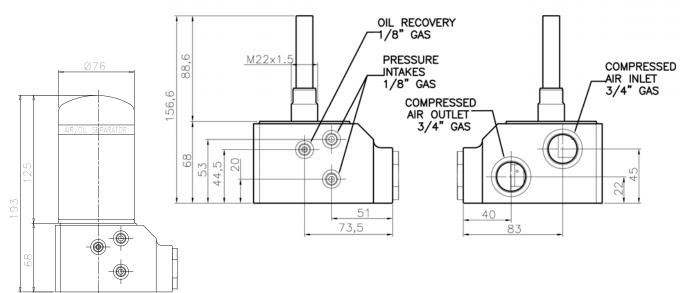




Model: *GS 10*

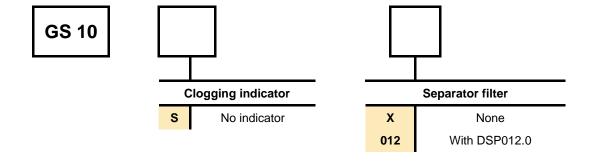
Air flow rate: 1 m³/min





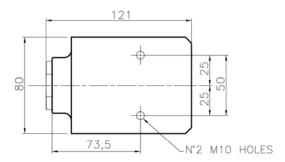
Dimensions separator group equipped with DSP012.0 filter

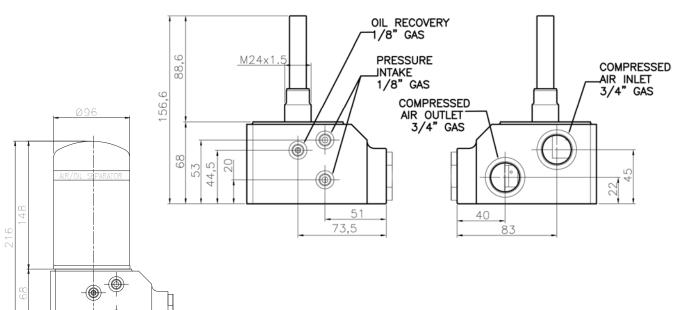
Choice of air/oil separator group equipped with minimum pressure valve



Model: *GS 15*

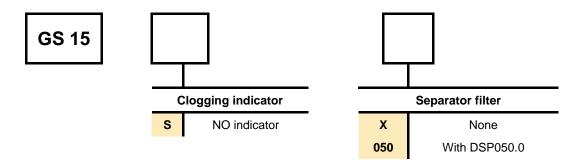
Air flow rate: 1.5 m³/min





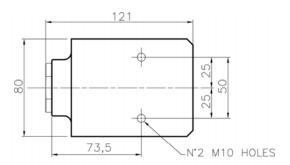
Dimensions separator group equipped with DSP050.0 filter

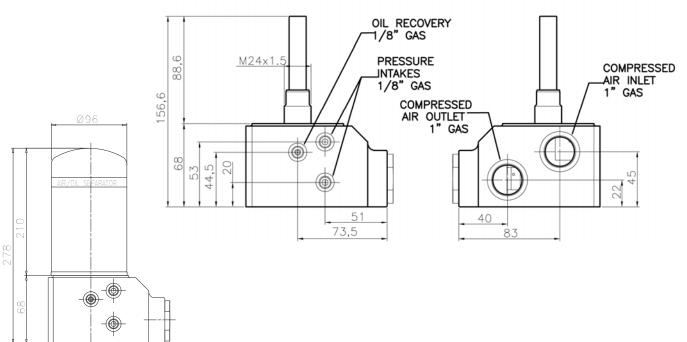
Choice of air/oil separator group equipped with minimum pressure valve



Modello: GS 20

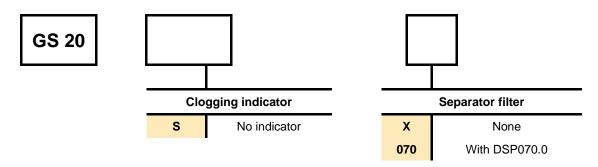
Air flow rate 2 m³/min





Dimensions separator group equipped with DSP070.0 filter

Choice of air/oil separator group equipped with minimum pressure valve

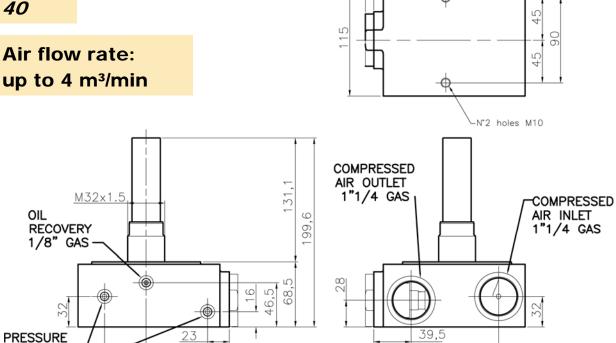


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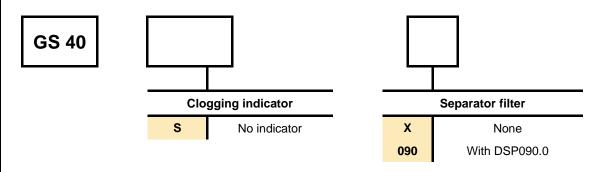
76

Model: GS 40

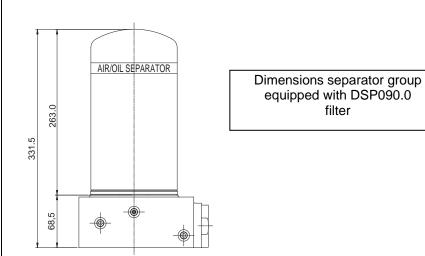
INTAKES 1/8" GAS



Choice of air/oil separator group equipped with minimum pressure valve



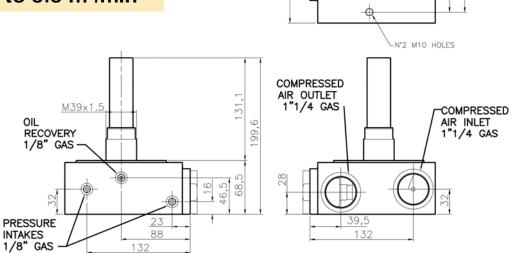
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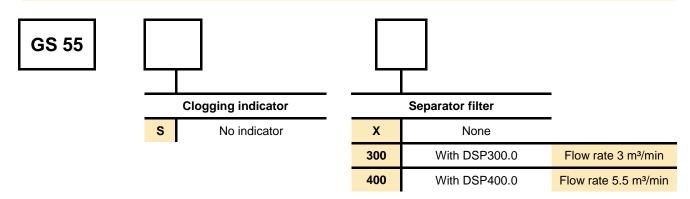
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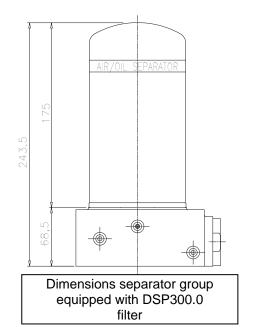
Model: *GS 55*

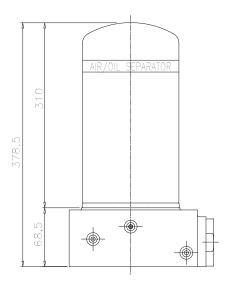
Air flow rate: up to 5.5 m³/min



Choice of air/oil separator group equipped with minimum pressure valve





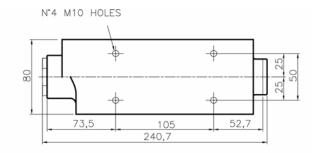


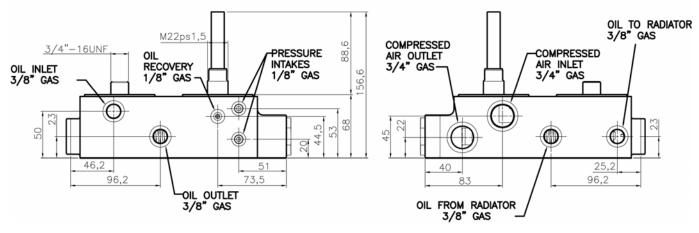
Dimensions separator group equipped with DSP400.0 filter

Air oil integrated group equipped with thermostat and minimum pressure valve

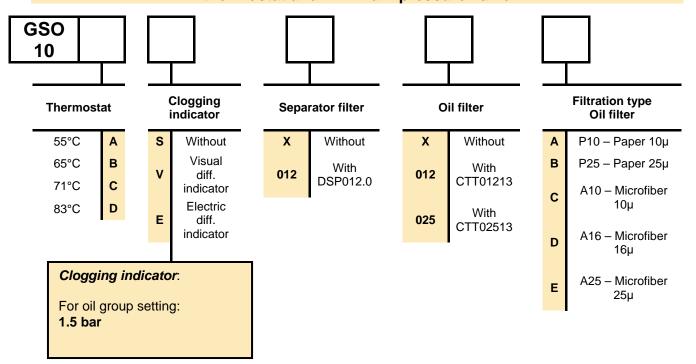
Model: *GSO 10*

Air flow rate: 1 m³/min Oil flow rate: up to 25 l/min





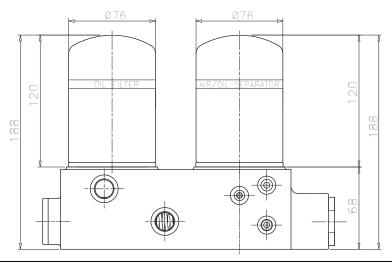
Choice of oil filter integrated group – air/oil separator filter equipped with thermostat and minimum pressure valve



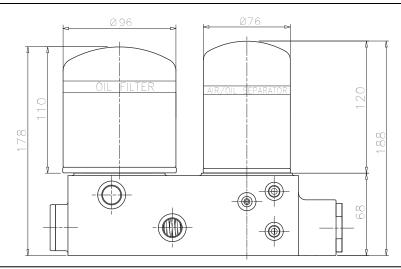
Oil filter filtering baffles legend:

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

A06 – A10 – A16 – A25: Multilayer baffle made of reinforced polyester fibers: 6, 10, 16 and 25µ



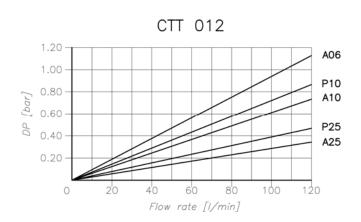
Dimensions integrated group equipped with CTT012 oil filter and DSP012.0 separator filter

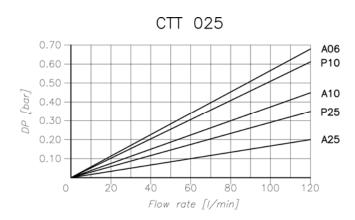


Dimensions integrated group equipped with CTT025 oil filter and DSP012.0 separator filter

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)

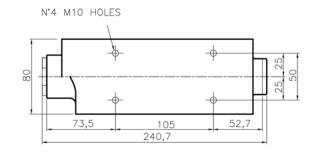


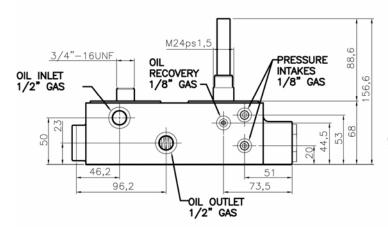


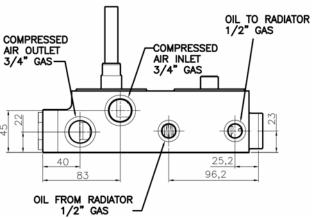
Air/oil integrated group equipped with minimum pressure valve

Model: *GSO 15*

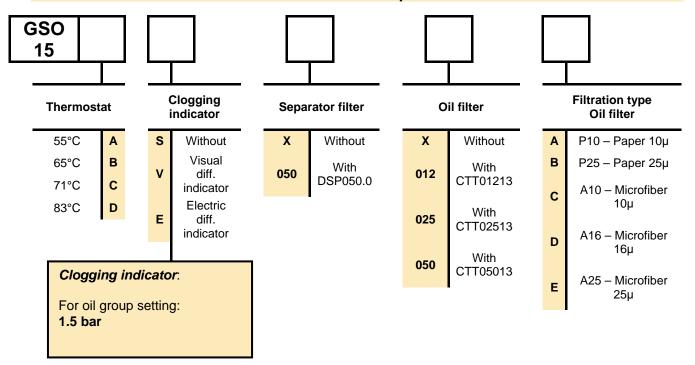
Air flow rate: 1.5 m³/min Oil flow rate: 50 l/min







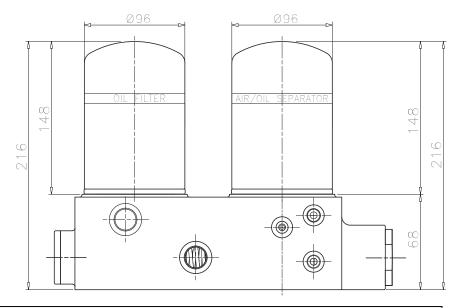
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve



Oil filter filtering baffles legend:

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

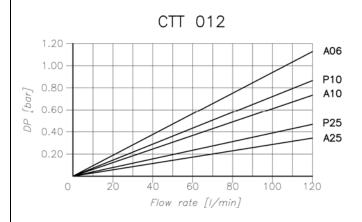
A10 - A16 - A25: Multilayer baffle made of reinforced polyester fibers: 10, 16 and 25µ

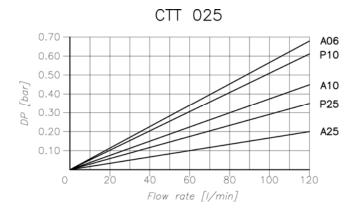


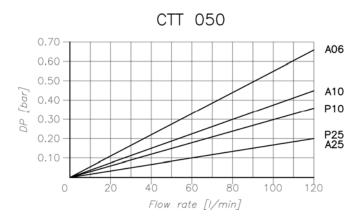
Dimensions integrated group equipped with CTT050oil filter DSP050.0 and separator filter

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)



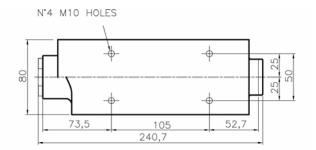


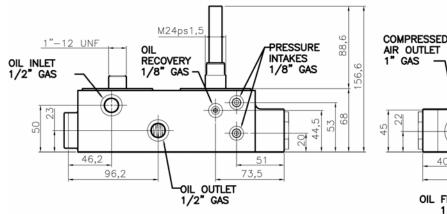


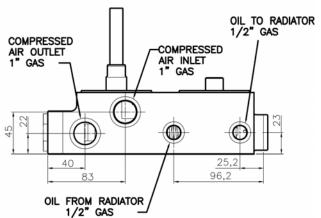
Air oil integrated group equipped with thermostat and minimum pressure valve

Model: GSO 20

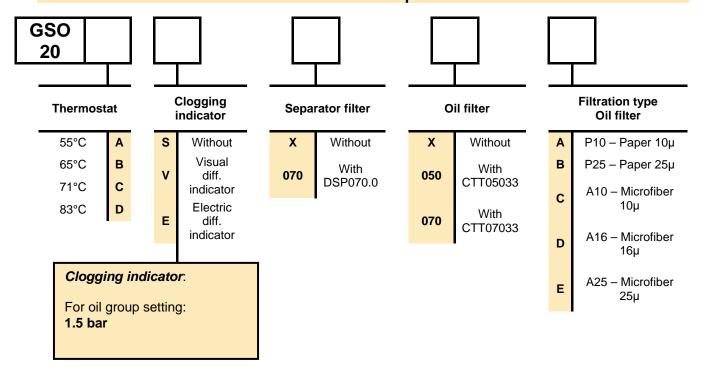
Air flow rate: 2 m³/min Oil flow rate: fino a 70 l/min







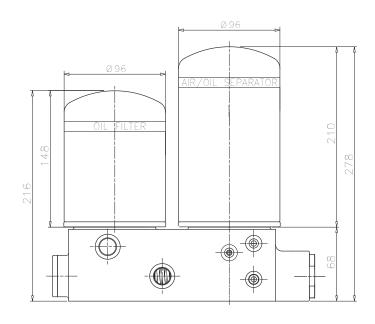
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve



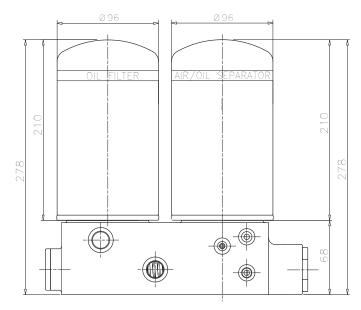
Oil filter filtering baffles legend:

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



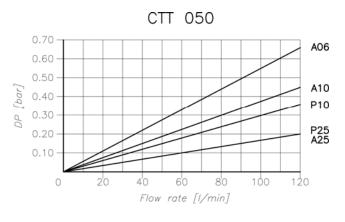
Dimensions integrated group equipped with CTT050 oil filter and DSP070.0 separator filter

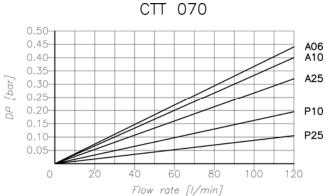


Dimensions integrated group equipped with CTT070 oil filter and DSP070.0 separator filter

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)

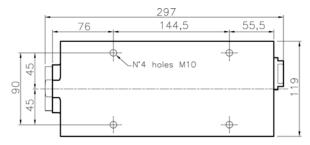


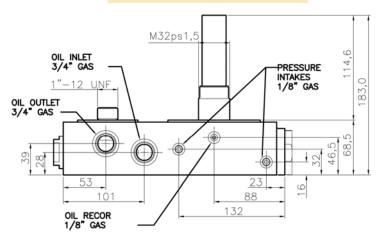


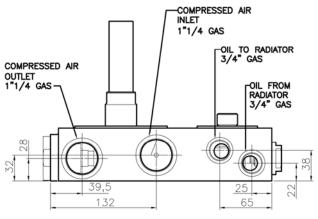
Air oil integrated group equipped with thermostat and minimum pressure valve

Model: GSO 40

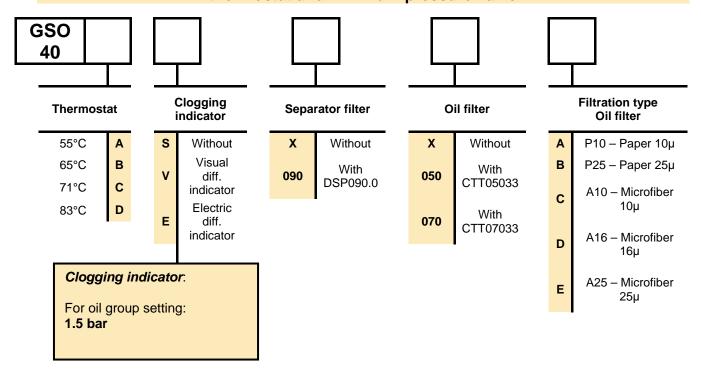
Air flow rate: Up to 4 m³/min Oil flow rate: 70 l/min







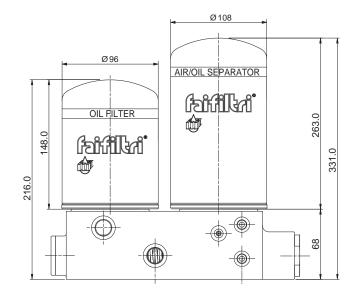
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve



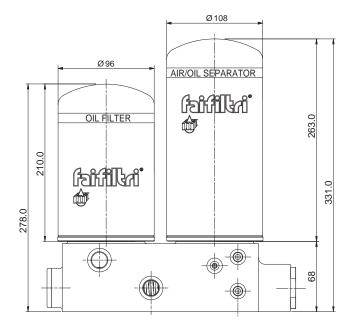
Oil filter filtering baffles legend:

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



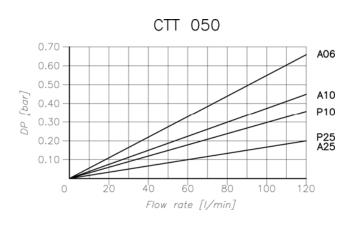
Dimensions integrated group equipped with CTT050 oil filter and DSP090.0 separator filter

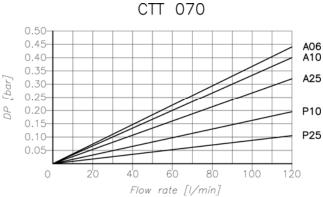


Dimensions integrated group equipped with CTT070 oil filter and DSP090.0 separator filter

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)

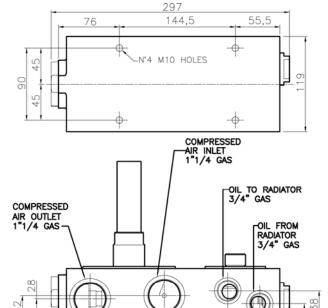


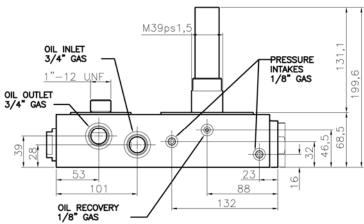


Air oil integrated group equipped with thermostat and minimum pressure valve

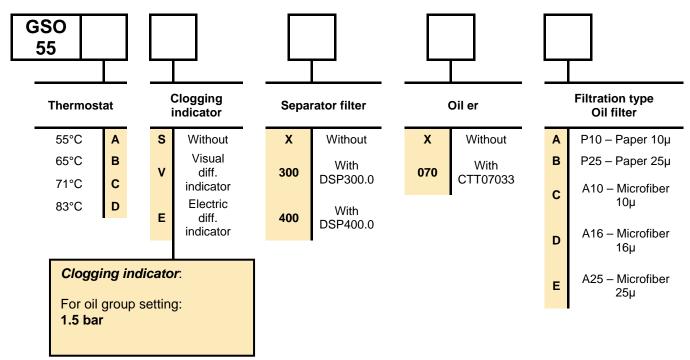


Air flow rate: Up to 5.5 m³/min Oil flow rate: 70 l/min





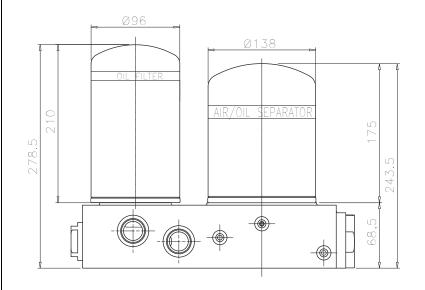
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve



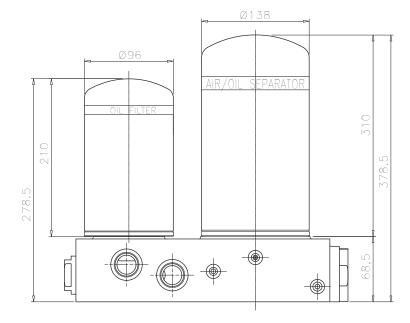
Oil filter filtering baffles legend:

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

 $A10-A16-A25 : Multilayer baffle made of reinforced polyester fibers: 10, 16 and <math display="inline">25 \mu$



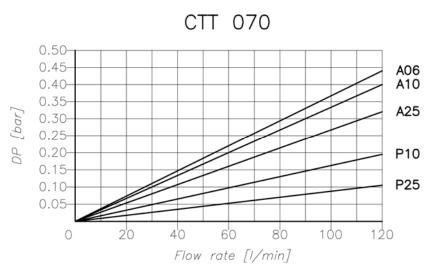
Dimensions integrated group equipped with CTT070 oil filter and DSP300.0 separator filter



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

Oil filter pressure drop

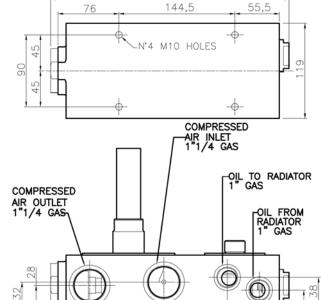
Curves are valid for mineral oil with viscosity up to 30 mm²/sec (cSt) (For oil filter viscosity variations see page 5)



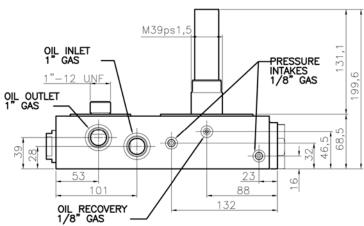
Air oil integrated group equipped with thermostat and minimum pressure valve

Model: *GSO 56*

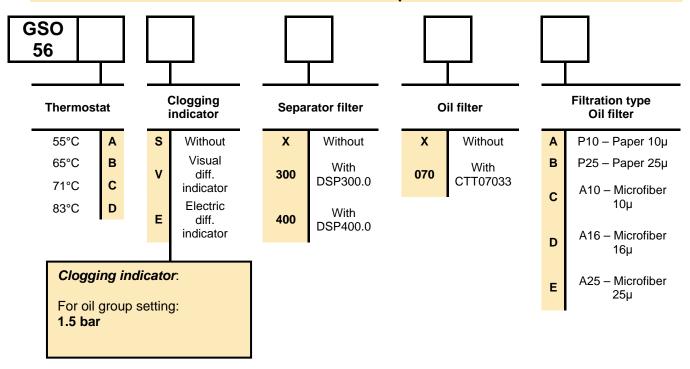
Air flow rate: up to 5.5 m³/min oil air flow rate: 70 l/min



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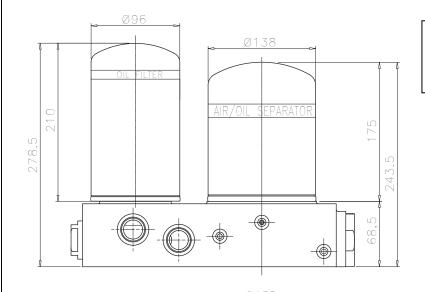
Choice of integrated group oil filter – air/oil separator filter equipped with thermostat and minimum pressure valve



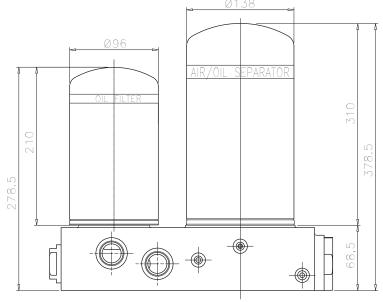
Oil filter filtering baffles legend:

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



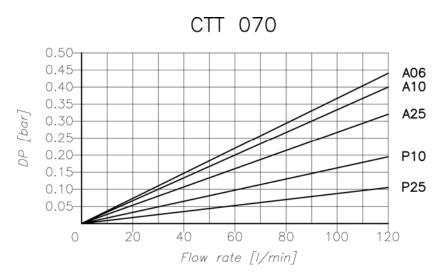
Dimensions integrated group equipped with CTT070 oil filter and DSP300.0 separator filter



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

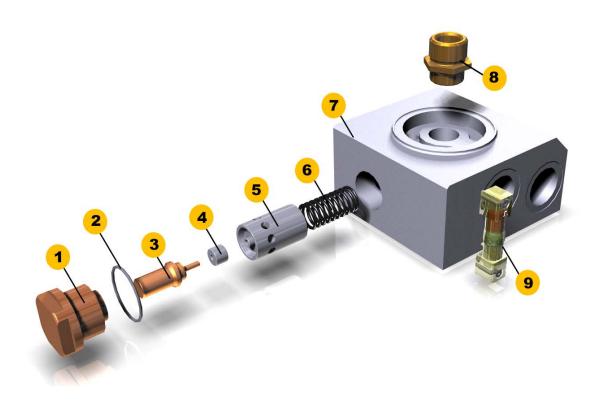
Oil filter pressure drop

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



Oil group spare parts

	T	
1	Thermostat closing plug. for group GO025-GO050-GO070	033.1.0012
	Thermostat closing plug. for group GO071-GO072	033.1.0018
	Thermostat closing plug. for group GO400	033.1.0013
	Thermostat O-Ring seal for group GO025-GO050-GO070 (OR 3118)	032.1.0204
2	Thermostat O-Ring seal for group GO071-GO072 (OR 2137)	032.1.0250
	Thermostat O-Ring seal for group GO400 (OR 2175)	033.1.0252
	Thermosensitive element for oil groups	
	55°C	036.1.0055
3	65°C	036.1.0071
	71°C	036.1.0056
	83°C	036.1.0072
4	Shutter for group GO400	001.1.6096
	Thermostat shutter for group GO025-GO050-GO070	036.1.0054
5	Thermostat shutter for group GO071-GO072	036.1.0063
	Thermostat shutter for group GO400	036.1.0057
	Thermostat spring for group GO025-GO050-GO070	003.1.0162
6	Thermostat spring for group GO071-GO072	003.1.0162
	Thermostat spring for group GO400	003.1.0163
	GO025 Oil group head with no holes for differential indicator	029.1.0275
	GO025 Oil group head with no holes for differential indicator	029.1.0276
	GO050-GO070 Oil group head with no holes for differential indicator	029.1.0278
	GO050-GO070 Oil group head with no holes for differential indicator	029.1.0279
7	GO071 Oil group head with no holes for differential indicator	029.1.0313
/	GO071 Oil group head with no holes for differential indicator	029.1.0315
	GO072 Oil group head with no holes for differential indicator	029.1.0314
	GO072 Oil group head with no holes for differential indicator	029.1.0316
	GO400 Oil group head with no holes for differential indicator	029.1.0298
	GO400 Oil group head with no holes for differential indicator	029.1.0349
	Reduction unit for GO025-GO050 oil filter group joint	011.1.0299
8	Reduction unit for GO070-GO071-GO072 oil filter group joint	011.1.0300
	Reduction unit for GO400 oil filter group joint	011.1.0302
9	Visual differential indicator 1,5 bar	016.2.0003
9	Electric differential indicator 1,5 bar	016.2.0005



Air oil separator group spare parts

1	M20x1 ring nut for Minimum pressure valve GS10-GS-15-GS20valve setting	030.1.0009
2	Washer De.18.5 Di.10 Sp.2	034.1.0044
	M36x1.5 Minimum pressure valve plug for GS10-GS15-GS20 group	033.1.0011
3	M46x1.5 Minimum pressure valve plug for GS55 group	033.1.0019
	2137 O-Ring seal for GS10-GS15-GS20 group	032.1.8087
4	3175O-Ring seal for GS55 group	032.1.8103
5	Minimum pressure valve spring for GS10-GS15-GS20 group	003.1.0170
5	Minimum pressure valve spring for GS55-GS56 group	003.1.0175
6	Minimum pressure valve cursor for GS10-GS15-GS20 group	036.1.0060
U	Minimum pressure valve cursor for GS55 group	036.1.0055
7	2093O-Ring seal for GS10-GS15-GS20 group	032.1.8095
	3100O-Ring seal for GS55 group	032.1.8055
8	Minimum pressure valve spring	003.1.0171
9	Minimum pressure valve shutter for GS10-GS15-GS20 group	001.2.0171
9	Minimum pressure valve shutter for GS55 group	001.2.0174
	GS10-GS15 Oil group head without holes for diff. Ind.	029.1.0303
	GS10-GS25 Oil group head with holes for diff. Ind.	029.1.0350
10	GS20 Oil group head without holes for diff. Ind.	029.1.0304
10	GS20 Oil group head with holes for diff. Ind.	029.1.0351
	GS55 Oil group head without holes for diff. Ind.	029.1.0323
	GS55 Oil group head with holes for diff. Ind.	029.1.0352
11	2068 O-Ring for GS10-GS15-GS20 group	032.1.8086
	2131O-Ring for GS55 group	032.1.8101
12	2087O-Ring for GS10-GS15-GS20 group	032.1.8096
12	2162 O-Ring for GS55 group	032.1.8102
13	Adaptor for GS10 – M22x1.5 group	011.2.0063
	Adaptor for GS15-GS20 – M24x1.5 group	011.2.0064
	Adaptor for GS550 – M39x1.5 group	011.2.0068



Notes			
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