

ECOCLEAN®

Compressed Air Filters - Generation 2

Reliable high-performance filtration and separation for treating compressed air and gas to the highest industrial quality.

Compressed air filters and separators to guarantee the quality of compressed air in modern production processes.



High quality through manufacturer expertise

Modern production methods make ever increasing demands on the quality of compressed air. However, the ambient air taken in and compressed by the compressor is heavily contaminated by impurities. Moreover, depending on the compressor Type, the delivered air will contain oil, which is conveyed with the compressed air in fine aerosols, together with impurities from the compressed air network, e.g. rust and scale. In addition, any condensate formed must be removed from the system. The function of the **ECOCLEAN®** compressed air filter is to remove these impurities and formed condensate, thereby preventing damage to the downstream equipment.

KSI Filtertechnik GmbH produces **ECOCLEAN®** compressed air filters and filter elements in-house. This ensures complete control for safeguarding our certified KSI industrial equipment quality. For that reason our compressed air treatment components satisfy current as well as future market demands. This assurance is provided through long term and continuous cooperation with market specialists, specialised trade channels, the institutes, as well as our ongoing and intensive development work.

The heart of every compressed air filter is the filter element (element). This component has to be chosen very carefully to ensure that the filter works according to its purpose. A filter can remove, depending on the selected element, solid particles, oil droplets, condensate, oil vapour, odours etc. from the compressed air system.

Function

Water separation

To provide best quality compressed air a water separator should be installed in front of a compressed air filter. The water separator extracts condensate by using a simple physical law. Besides the higher compressed air quality a water separator prolongs the durability of the filter element in the compressed air filter.

The new filter grades DMF, DF1 and DSF are specifically designed for the removal of dust particles.

The combination of operation security and efficiency in one product is the idea behind the **ECOCLEAN®** product line. This idea is also envisioned in the **ECOCLEAN®** high performance filter elements.

All advantages of **ECOCLEAN®** filter elements are not only feasible when using the element in an **ECOCLEAN®** compressed air filter, but also when using in nearly *all filter housings of other manufacturers available on the market*. Another advantage: These filter elements are available for a price which is *up to 30% cheaper* (compared to filter elements in the market which show equal quality).

Compressed air filters of the new generation have several advantages in comparison to former generations. First, the differential pressure is much lower thanks to the removal of the tie rod. This change also simplifies the installation as the element is only placed in the filter housing. An inconvenient mounting via tie rod is no longer needed. Another aspect is about the space under the filter. Formerly the filter bowl needed to be removed before the element could be changed. The filter bowl can be moved to the side directly after turning it out of the filter head now.

Compressed air filtration

Due to the arch-shaped compressed air inlet the filter volume is completely used and there is up to 75% less flow resistance. The actual filtration is performed by the different layers of the filter element. The compressed air flows through them from inside to outside. In the different layers the different unwanted components of the medium are extracted. Behind the compressed air filter high quality compressed air is ready to use.

ECOCLEAN® · High performance compressed air filters

ECOCLEAN® Compressed air filters offer a double advantage

Reliability



1. Optimum Operational Reliability

Filter Housing

- A** High-quality cast aluminium with anticorrosion coating (on the inside and outside), plus an impact and scratch-resistant resin powder coating provide a corrosion-resistant filter housing.
- B** Condensate is continually removed via the automatic D150 (from GTF140/ D200) condensation drain. As a user-friendly feature the internal pressure can be released via the condensate drain.
- C** Highest quality with every ECOCLEAN® filter verified as 100% leak-proof.

Filter element

- D** Suspension anchoring positions the element securely and reliably. Differential pressure is reduced due to the removal of the tie rod.
- E** A special compound adhesive securely fixes the end caps to the stainless steel support cages and the filter media.
- F** The ECOCLEAN® high performance media is securely fixed and supported between stainless steel support cages.
- G** The plasticizer-free plastic end caps prevent corrosion. This means no efflorescence and no increased bacteria growth.

High Performance Filter media

- H** The filter drainage layer made of special fleece stabilizes the filter media and prevents efflorescence and cracking - meaning it safely counteracts the loss of filtering action.
- I** The high-performance filter fleece has a high chemical, mechanical and thermal loading capacity (up to 120°C), and it is silicone-free.



A hexagonal nut on the outside of the filter housing base facilitates quick and easy service.

Cost



2. Maximum Cost Effectiveness

Filter Housing

- A** KSI high-performance filters lower energy costs drastically through minimized investment costs and low differential pressure, while providing maximum efficiency.
- B** The differential pressure indicator displays the most economical point in time for a filter element change, reducing operational costs.
- C** Ideally sized connections and optimized flow paths achieve high flow efficiency to avoid pressure losses that increase cost.
- D** ECOCLEAN® filter housings achieve up to 75% lower flow resistance compared to housings with right-angle flow paths.

Filter Element

- E** The specially designed interior and exterior ECOCLEAN® support cages achieve up to 45% less differential pressure as compared with conventional support cylinders.

Energy Saving Filter Media

- F** The KSI high-performance element achieves maximum filter surface area through the specially optimized winding of the filter media. The construction-based surface filtration, in contrast to the usual 2-layer pleated elements, achieves a significantly higher internal surface area (filter depth volume) for maximum depth filtration. Due to this very high depth filtration capacity of ECOCLEAN® filter elements the differential pressure rises very slowly giving long life and reduced energy costs.
- G** The media depth volume ensures the highest contaminant removal, whilst allowing maximum filtration performance.

PRODUCT DATASHEET

GENERATION 2
GTF



ECOCLEAN® · High performance compressed air filters

Compressed air filter elements



Type CA (activated carbon)

max. residual oil content
at 20°C: 0,003 mg/m³
max. temperature:
70°C (effective up to 30°C)

Type SMA

Separation: 0,01 micron
max. residual oil content
at 20°C: 0,01 mg/m³
max. temperature: 120°C
(50°C recommended)

Type MF1

Separation: 0,1 micron
max. residual oil content
at 20°C: 0,1 mg/m³
max. temperature: 120°C

Type MFO

Separation: 1 micron
max. residual oil content
at 20°C: 0,5 mg/m³
max. temperature: 120°C

Type FF5

Separation: 5 microns
max. residual oil content
at 20°C: 5 mg/m³
max. temperature: 120°C

Type VF25

Separation: 25 microns
max. residual oil content
at 20°C: 10 mg/m³
max. temperature: 120°C

Compressed air quality achieved with ECOCLEAN® filter elements according to ISO 8573.1*

Element Type	SMA	MF1	MFO	FF5	VF25
Max. particle Ø [micron]					
Compressed air class	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Max. residual oil [mg/m ³]					

*ECOCLEAN® high performance filter elements exceed ISO 8573.1 requirements.

Cartridges

CAK Activated carbon cartridges:

Removal of oil vapour and odours,
residual oil content 0,003 mg/m³ (at 20°C)

MSK Molecular sieve cartridges:

The removal of moisture (Dew point to -40°C possible)

HC Catalyst cartridges:

For the removal of carbon monoxide (CO)

Element Type	CAK	MSK	HC
Housing KSI	Cartridge	Cartridge	Cartridge
F70	FE5111 CAK	FE5111 MSK	FE5111 HC
F90	FE7111 CAK	FE7111 MSK	FE7111 HC
F110	FE7311 CAK	FE7311 MSK	FE7311 HC
F130	FE7411 CAK	FE7411 MSK	FE7411 HC

Water Separators

WS Water separators

Cyclone separators that safely separate
condensate using centrifugal force.



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Capacities and dimensions compressed air filters

Threaded connection

Type	Capacity*	Dimensions (mm)			Connection	Prod. Grp.	Replacement element		
		A	B	C			Element	Quantity	Prod. Grp.
	m ³ /h								
GTF25 ▶	35	190	21	90	¼"	010	GTE3711 ▶	1	110
GTF50 ▶	52	190	21	90	⅜"	010	GTE3711 ▶	1	110
GTF60 ▶	52	190	21	90	½"	010	GTE3711 ▶	1	110
GTF70 ▶	120	251	21	90	½"	010	GTE5111 ▶	1	110
GTF80 ▶	120	251	21	90	¾"	010	GTE5111 ▶	1	110
GTF90 ▶	216	301	40	130	¾"	010	GTE7111 ▶	1	110
GTF100 ▶	216	302	40	130	1"	010	GTE7111 ▶	1	110
GTF110 ▶	360	452	40	130	1"	010	GTE7311 ▶	1	110
GTF120 ▶	540	515	40	130	1¼"	010	GTE7411 ▶	1	110
GTF130 ▶	725	515	40	130	1½"	010	GTE7411 ▶	1	110
GTF135 ▶	725	515	40	130	2"	010	GTE7411 ▶	1	110
GTF140 ▶	800	678	51	184	2"	010	GTE8501 ▶	1	110
GTF160 ▶	1200	678	51	184	2"	010	GTE8601 ▶	1	110
GTF170 ▶	1500	601	74	250	2½"	010	GTE8701 ▶	1	110
GTF190 ▶	1900	1066	74	250	3"	010	GTE8901 ▶	1	110

*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure

Flange connection

Type	Capacity*	Dimensions (mm)					Connection	Prod. Grp.	Replacement element		
		A	B	C	D	E			Element	Quantity	Prod. Grp.
	m ³ /h										
FFo80-01 ▶	1400	872	116	360	285	510	DN 80	011	FE8601 ▶	1	110
FFo80-02 ▶	2800	1152	177	550	405	510	DN 80	011	FE8601 ▶	2	110
FF100-02 ▶	2800	1152	177	550	405	510	DN 100	011	FE8601 ▶	2	110
FF100-03 ▶	4200	1152	177	550	405	510	DN 100	011	FE8601 ▶	3	110
FF150-04 ▶	5600	1222	207	620	460	540	DN 150	011	FE8601 ▶	4	110
FF150-06 ▶	8400	1317	223	680	580	626	DN 150	011	FE8601 ▶	6	110
FF200-07 ▶	9800	1706	288	800	715	760	DN 200	011	FE8601 ▶	7	110
FF200-08 ▶	11200	1706	288	800	715	760	DN 200	011	FE8601 ▶	8	110
FF200-09 ▶	12600	1706	288	800	715	760	DN 200	011	FE8601 ▶	9	110

*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure

Correction factors

Working pressure	bar g	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor		0,38	0,50	0,63	0,75	0,88	1,00	1,12	1,25	1,37	1,49	1,62	1,74	1,86	1,98	2,10

Please multiply the capacity of the filter by the correction factor in the above table. Example: Capacity Type GTF70 at 10 bar g - Capacity nominal (120 m³/h) x Factor (1,37) = Capacity corrected (164,4 m³/h)

PRODUCT DATASHEET

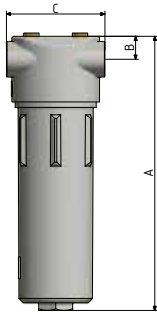
GENERATION 2
GTF



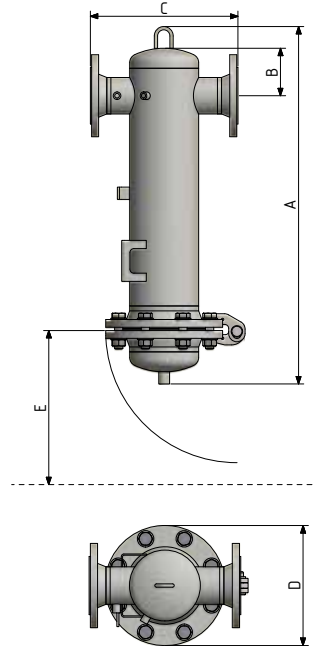
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Dimensional drawings

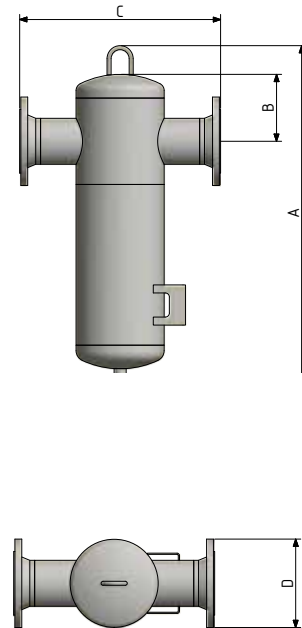
GTF25 – GTF190



FF080-03 - FF200-09



FF080WS - FF150-WS



Field of application

Installation site	Installation inside in non-aggressive atmosphere
Ambient temperature max.	50°C
Ambient temperature min.	+1°C
Working pressure	Housings: 80°C · elements: 120°C · SMA/DSF: 50°C recommended
Operating pressure	GTF25 - GTF170 FF080-02 - FF200-09: 2 to 16 bar g, GTF190: 2 to 12 bar g
Medium	Compressed air and gases

Standard filtration					
Specifications	▶ VF25	▶ FF5	▶ MFO	▶ MF1	▶ SMA
Particle filtration	25 Microns	5 Microns	1 Micron	0,1 Micron	0,01 Micron
max. residual oil content at 20°C	10 mg/m ³	5 mg/m ³	0,5 mg/m ³	0,1 mg/m ³	0,01 mg/m ³

Dust filtration			
Specifications	▶ DMF	▶ DF1	▶ DSF
Particle filtration	1 Micron	0,1 Micron	0,01 Micron

Activated carbon stage	
Specifications	▶ CA
max. residual oil content at 20°C	0,003 mg/m ³
max. temperature	effective up to 30°C
Element change	every 6 months

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Water Separators capacities and dimensions

Threaded connection

Type	Capacity*	Dimensions (mm)			Connection	Prod.
	m ³ /h	A	B	C		Grp.
F25WS	35	190	21	90	1/4"	012
F50WS	52	190	21	90	3/8"	012
F60WS	52	190	21	90	1/2"	012
F70WS	120	251	21	90	1/2"	012
F80WS	120	251	21	90	3/4"	012
F90WS	216	302	40	130	3/4"	012
F100WS	216	302	40	130	1"	012
F110WS	360	452	40	130	1"	012
F120WS	540	515	40	130	1 1/4"	012
F130WS	725	515	40	130	1 1/2"	012
F135WS	725	515	40	130	2"	012
F140WS	1200	678	51	184	2"	012
F170WS	1500	601	74	250	2 1/2"	012
F190WS	1900	1066	74	250	3"	012

*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure

Flange connection

Type	Capacity*	Dimensions (mm)				Connections	Prod.
	m ³ /h	A	B	C	D		Grp.
FFo80WS	1400	640	119	360	200	DN 80	011
FF100WS	4200	815	167	400	220	DN 100	011
FF150WS	8400	904	202	500	285	DN 150	011

*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure

Higher capacities on request

Dimensional drawings on page 5, correction factors on page 6

Field of application

Installation site	Installation inside in non-aggressive atmosphere
Ambient temperature max.	50°C
Ambient temperature min.	+1°C
Working temperature max.	70°C
Working pressure	GTF25WS - GTF170WS FFo80WS - FF150WS: 2 to 16 bar g, GTF190WS: 2 to 12 bar g
Medium	Compressed air and gases

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Approvals for Pressure Equipment

EU	Approved for fluid group 2 according to Pressure Equipment Directive 2014/68/EU, module B+D (categorie IV)
Other	ASME

Quality Management

Development/Production	DIN EN ISO 9001
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Air purity class according to ISO 8573-1:2010

Solid particles	according to filter element, page 2
Humidity (gaseous)	according to filter element, page 2
Total oil	according to filter element, page 2

Versions and options

- ECOCLEAN® GTF with threaded connection for volume flows from 35 m³/h to 1900 m³/h
- ECOCLEAN® FF with flanged connection for volume flows from 1400 m³/h to 12600 m³/h
- ECOCLEAN® CAK/MSK/HC cartridge filters with threaded connection for various applications
- ECOCLEAN® FHP high pressure filter in grades 50 bar, 100 bar and 350 bar
- Special filters like process filters, sterile filters, stainless steel filters and vacuum filters available
- Options: page 9

The ECOCLEAN® Plus Effect +++

- + protects production & processes => extends machine & installation cycle time
- + minimizes operating costs => saves energy
- + maximises operational reliability => protection against production or machine downtime
- + best industrial equipment quality => long lifetime
- + easy serviceability => minimized service costs
- + quick and secure assembly => quick installation
- + user-oriented filtration (25, 5, 1, 0,1 and 0,01 micron as well as activated carbon) => optimum selection
- + activated carbon-, molecular sieve & hopcalite cartridges => can be combined individually

KSI alternative filter elements

The customer enjoys all of the advantages of the ECOCLEAN® filter elements not only if the filter elements are used in an ECOCLEAN® compressed air filter, but also when they are used in almost any of the housings from other manufacturers that are on the market. A further advantage: KSI offers these filter elements at prices that are up to 30% lower (than qualitatively comparable filter elements on the market).



PRODUCT DATASHEET

ECOCLEAN® · High performance compressed air filters

Options



Differential pressure indicator



Volt free digital differential pressure manometer



Moisture indicator



Oil indicator



Filter connection set



Wall mount
incl. filter connection set

Condensate drains



automatic drain D150,
standard for threaded filter
GTF25 - GTF135



automatic drain D200,
standard for threaded filter
GTF140 - GTF190, as well as
for all flanged filters



level-regulated condensate
drain **KONDRAIN®** N1
(option for **ECOCLEAN®**
standard filter)



manual drain HAM12,
standard in CA activated carbon
grade, as well as in all cartridge
filters