

ECOCLEAN®

Compressed air filters - new generation

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. The

new filter grades DMF 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.

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.

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

ECOCLEAN® · High performance compressed air filters

Compressed air filter elements

Type SMA/DSF

0,01 micron separation efficiency
max. residual oil content at 20°C: 0,01 mg/m³
max. temperature: 120°C

Type MFO/DMF

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

Type FF5

5 micron separation efficiency
max. residual oil content at 20°C: 5 mg/m³
max. temperature: 120°C

Type VF25:

25 micron separation efficiency
max. residual oil content at 20°C: 10 mg/m³
max. temperature: 120°C

Type CA (activated carbon)

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



Element Type	SMA/DSF	MFO/DMF	FF5	VF25	CA
Max. particle Ø [micron]	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
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]	0,01	0,1	5	10	0,003

*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)

Water Separators

WS Water separators

Cyclone separators that safely separate condensate using centrifugal force.



Element Type	CAK	MSK	HC
Housing KSI	Cartridge	Cartridge	Cartridge
GTF70	FE5111 CAK	FE5111 MSK	FE5111 HC
GTF90	FE7111 CAK	FE7111 MSK	FE7111 HC
GTF110	FE7311 CAK	FE7311 MSK	FE7311 HC
GTF130	FE7411 CAK	FE7411 MSK	FE7411 HC

ECOCLEAN® · High performance compressed air filters

Capacities and dimensions compressed air filters

Type	Capacity*		Dimensions (mm)				Connection	Element	Amount
	m ³ /h	cfm	A	B	C	D			
GTF25	35	21	90	21	220	110	1/4"	GTE3711	1
GTF50	52	31	90	21	220	110	3/8"	GTE3711	1
GTF60	52	31	90	21	220	110	1/2"	GTE3711	1
GTF70	120	71	90	21	281	160	1/2"	GTE5111	1
GTF80	120	71	90	21	281	160	3/4"	GTE5111	1
GTF90	216	127	130	40	332	260	3/4"	GTE7111	1
GTF100	216	127	130	40	332	260	1"	GTE7111	1
GTF110	360	212	130	40	478	310	1"	GTE7311	1
GTF120	540	318	130	40	482	390	1 1/4"	GTE7411	1
GTF130	725	426	130	40	545	435	1 1/2"	GTE7411	1
GTF135	725	426	130	40	545	435	2"	GTE7411	1
GTF140	800	471	184	51	704	490	2"	GTE8501	1
GTF160	1200	706	184	51	704	560	2"	GTE8601	1
GTF170	1500	882	250	74	620	440	2 1/2"	GTE8701	1
GTF190	1900	1460	250	74	1062	630	3"	GTE8901	1
FFo80-01	1400	823	360	162	841	550	DN 80	FE8601	1
FF100-02	2800	1647	550	245	1115	550	DN 100	FE8601	2
FF100-03	4200	2470	550	245	1115	550	DN 100	FE8601	3
FF150-04	5600	3294	620	276	1237	550	DN 150	FE8601	4
FF150-06	8400	4941	800	300	1270	680	DN 150	FE8601	6
FF200-08	11200	6588	800	328	1275	680	DN 200	FE8601	8

*refer to 1 bar (abs.) and 20°C at 7 bar g operating pressure | Max. operating pressure: GTF25 – GTF170: 16 bar g, GTF190: 12 bar g, FFo80-01 – FF200-08: 16 bar g

For drawings and correction factors turn to page 9.

Field of application

Installation site	Installation inside in non-aggressive atmosphere
Ambient temperature max.	50°C
Ambient temperature min.	+2°C
Operating pressure	2 to 16 bar g, GTF190: 2 to 12 bar g
Medium	Compressed air and gases

Technical features

Separation efficiency	VF25	FF5	MFO/DMF	SMA/DSF
Particle filtration	25 micron	5 micron	1 micron	0,01 micron
Max. residual oil at 20°C	10 mg/m ³	5 mg/m ³	0,1 mg/m ³	0,01 mg/m ³
Pressure drop - clean and dry	30 mbar	40 mbar	75 mbar	100 mbar
Pressure drop - oil saturated	50 mbar	75 mbar	150 mbar	300 mbar
Pressure drop - change element	400 mbar	400 mbar	400 mbar	400 mbar

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Water Separators capacity and dimensions

Type	Capacity*		Dimensions (mm)			Connection
	m ³ /h	cfm	A	B	C	
GTF25 WS	35	21	90	21	220	1/4"
GTF50 WS	52	31	90	21	220	3/8"
GTF60 WS	52	31	90	21	220	1/2"
GTF70 WS	120	71	90	21	281	1/2"
GTF80 WS	120	71	90	21	281	3/4"
GTF90 WS	216	127	130	40	332	3/4"
GTF100 WS	216	127	130	40	332	1"
GTF110 WS	360	212	130	40	478	1"
GTF120 WS	540	318	130	40	482	1 1/4"
GTF130 WS	725	426	130	40	545	1 1/2"
GTF135 WS	725	426	130	40	545	2"
GTF140 WS	800	471	184	51	704	2"
GTF160 WS	1200	706	184	51	704	2"
GTF170 WS	1500	882	250	74	620	2 1/2"
GTF190 WS	1900	1460	250	74	1062	3"
FFo80-01 WS	1400	823	360	162	841	DN 80
FF100-02 WS	2800	1647	550	245	1115	DN 100
FF100-03 WS	4200	2470	550	245	1115	DN 100
FF150-04 WS	5600	3294	620	276	1237	DN 150
FF150-06 WS	8400	4941	800	300	1270	DN 150
FF200-08 WS	11200	6588	800	328	1275	DN 200

*refer to 1 bar (abs.) and 20°C at 7 bar g operating pressure | Max. operating pressure: GTF25 – GTF170: 16 bar g, GTF190: 12 bar g, FFo80-01 – FF200-08: 16 bar g

For drawings and correction factors turn to page 9.

Field of application

Installation site	Installation inside in non-aggressive atmosphere
Ambient temperature max.	50°C
Ambient temperature min.	+2°C
Operating pressure	2 to 16 bar g, GTF190 WS: 2 to 12 bar g
Medium	Compressed air and gases

Technical features

Max. operating pressure	GTF25 WS - 170 WS: 16 bar g GTF190 WS: 12 bar g FFo80-01 WS - FF200-08 WS: 16 bar g
Max. temperature	70°C
Min. temperature	2°C
Pressure drop	70 mbar

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Approvals for Pressure Equipment

EU	Approved for fluid group 2 according to Pressure Equipment Directive 97/23/EG, 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 21 cfm to 1460 cfm
- **ECOCLEAN® FF** with flanged connection for volume flows from 823 cfm to 6588 cfm
- Various filter grades: VF25, FF5, MFO, SMA, CA, DMF, DSF (DMF and DSF filters are run through vice versa)
- **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 8



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 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).

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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

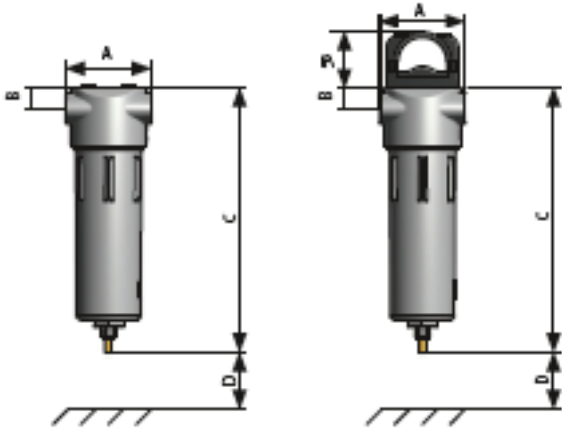
PRODUCT DATASHEET

GENERATION 2
GTF

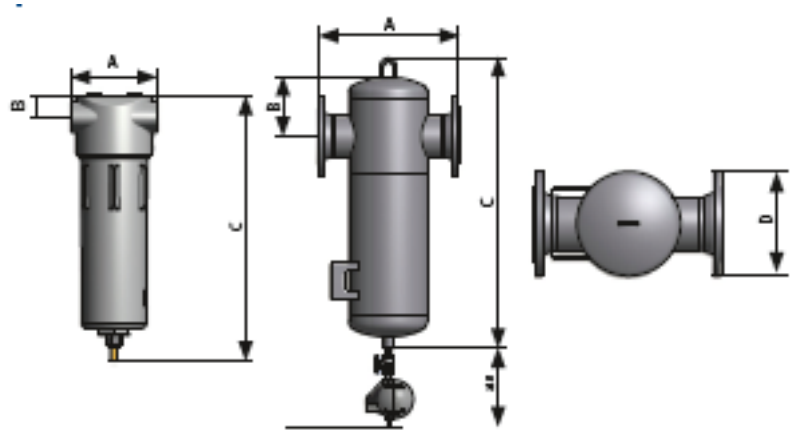


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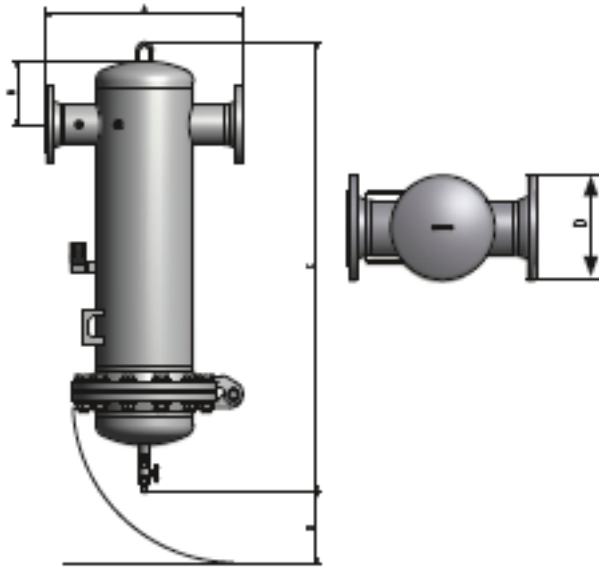
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Drawing compressed air filter with threaded connection



Drawing water separators



Drawing compressed air filter with flanged connection

Correction factors

Operating 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 with the correction factor in the table above. Example: Capacity Type GTF70 at 10 bar g · Capacity nominal (71 cfm) x factor (1,37) = Capacity corrected (97,3 cfm)