

High-performance compressed air filtration

The increasing requirements of modern production processes place high demands on the quality of compressed air. The suctioned air from the compressed air network is usually enriched with oils as aerosols in the finest form, fine dust, rust particles, scale, parts of sealing material etc. and condensate (water). The high-performance filtration of the airclean series protects pneumatic production plants, machines, tools, measuring instruments or other products against such contamination. As the heart of the filter system, the filter element (filter element) must therefore be optimally adjusted to the respective requirements. The filter system offers a multi-stage programme with individual units or combinations: from technically clean compressed air for work equipment to process air and odour-free ambient air. The highly efficient polyester drainage layer improves performance and serves to **reduce the differential pressure to 110 mbar**. This means that the barrier layer improves coalescence and drainage, thereby preventing particles from re-entering the system.

Components:

Differential pressure gauge: indicates the pressure drop in the filter. Full utilisation of the filter service life saves costs, timely replacement stops energy loss. Can be mounted either at the front or at the rear (reading always possible due to the double scale). Mounting bracket: available as an accessory for single units and combinations. Filter elements: three different inserts with identical installation dimensions for each size. Detailed description on the next pages.

Condensate drain valves are available in different versions:

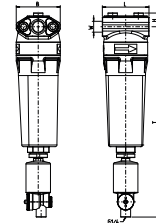
- Automatic attachable drain valve: standard for pre-filter and microfilter. External, easily accessible for maintenance work. Minimum operating pressure 4 bar/ 58 psi.
- Manual drain valve: standard drain valve for activated carbon filters, as no condensate is produced here.



438.1112

Individual units: pre-filter, microfilter, activated carbon filter

Available in two housing sizes and four installation sizes. Connection sizes from G ¼ to G ¾ according to DIN-ISO 228. Housing and reservoir are made of aluminium, cathodic electrocoating (CEC) of the housing prevents corrosion and offers optimum protection and easy cleaning.



Combinations

pre-filter – microfilter (VF - MF)

microfilter – activated carbon filter (MF - AF)

pre-filter – microfilter – activated carbon filter (VF - MF - AF)

Combinations of individual units are assembled by simply flanging them together using two tie bolts with a screw and nut. The sequence for flanging together is as follows:

1. Place the first unit flat on the table. Flange surface upwards.
2. Insert the seal and the tie bars into the corresponding holes.
3. Place the next unit on the tie bars with the flange face downwards.
4. Put on the nuts one by one and tighten them with the screw lightly.
5. Tighten the screws one by one uniformly.

Operation: to protect the differential pressure gauge, the unit must be pressurised slowly after assembly so that there can be pressure equalisation.



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436.3132

Filter elements

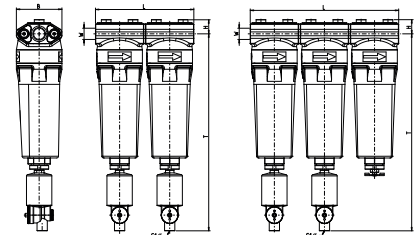
Pre-filter element (VF) – microfibre fleece for solid and liquid filtration

Microfilter element (MF) – microfibre fleece preferably for aerosol filtering

Activated carbon filter element (AF) – activated carbon filter for adsorption of oil vapours

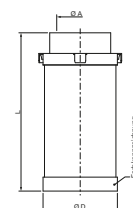
The filter service life up to the recommended replacement point (pressure drop 0.6 bar) is approx. 2,000 operating hours, depending on the amount of dirt. We recommend a flow rate between 10 % and 80 % of the flow rate specifications. The installation dimensions of the three filter elements, according to their size, can be taken from the table.

When mounting or taking the compressed air filters into operation, please fill in the information label for filter change on the filter housing. Replace the filter element after approx. 2,000 operating hours.



Dimensions (mm)

Size	BG 50			BG 60	
	Thread	G ¼	G ⅜	G ½	G ¾
A (∅)			31.8		40.7
D (∅)			48		64
B (∅)			59		78
L	103	103	130	136	197



438-312



Pre-filter (VF)

High-density and high-efficiency deep-bed pleating with an approximately 25 % larger filtration surface compared to a conventionally pleated element, enables a new, highly efficient filter media.

- Application:** pre-filters for microfilters and combination of microfilters–activated carbon filters, secondary filters for adsorption, absorption and cryogenic dryers, dust filters for compressed air and other compressed gases.
- Structure:**
1. Inner support: stainless steel mantle
 2. Support fabric: polyester fibre fleece
 3. Filtration medium: borosilicate microfibre fabric
 4. Outer support: stainless steel support mantle
 5. Drainage layer: polyester fibre felt
 6. End caps made of plastic (PE)
- Mode of operation:** when the unpurified compressed air enters the filter, the solid particles from 1 µm are retained. When flowing through the element from the inside to the outside, increased moisture separation is achieved by the coalescence effect. The flow rate remains unchanged.
- Cleaning:** not possible. Replacement recommended once the red area on the differential pressure gauge has been reached or after approx. 2,000 operating hours.

01 | Compressed air preparation



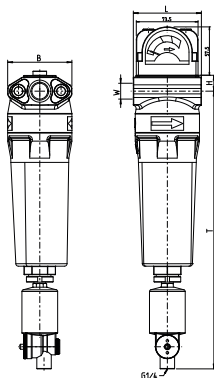
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438-311



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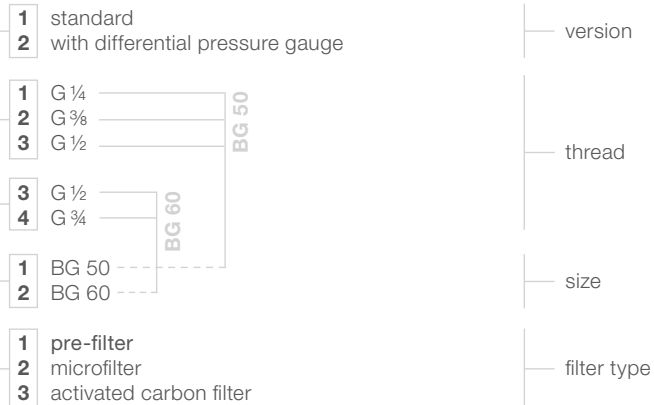
Standard version: with automatic attachable drain valve A

Size	Thread	Order No.	
		Pre-filter complete	Filter element
BG 50	G ¼*	438.1111	438-311
	G ⅜*	438.1121	438-311
	G ½*	438.1131	438-321
BG 60	G ½*	438.1231	438-331
	G ¾	438.1241	438-341

*inlet and outlet reduced

Order key for all variants

438.XXXX



Technical data

Thread	G ¼ up to G ¾ (see table)
Max. operating pressure (p ₁)	16 bar (12 bar with automatic attachable drain valve A)
Min. operating pressure	4 bar (with automatic attachable drain valve A)
Operating temperature	+1.5 °C up to +80 °C
Mounting position/flow direction	vertical/see arrow direction (from inside to outside)
Particle filtration	99.99 % referred to 1 µm (solid impurities)
Residual oil content	0.5 mg/m ³
Compressed air quality	particle 2/oil 3 (according to ISO 8573-1)
Material housing, bowl	aluminium, coated
Filtration medium	borosilicate microfibre-glass fabric
Supporting mantle, drainage layer	stainless steel, polyester fibre fleece
End caps, O-rings	PA, NBR
Colour coding	red

Dimensions/flow rates

Size	Thread W			Device dimensions (mm)				Weight (g)	Flow rate Q**				
				L	B	H	T		BG 50			BG 60	
BG 50	G ¼	G ⅜	G ½	80	75.5	23	327	1,350	G ¼	G ⅜	G ½	G ½	G ¾
BG 60	G ½	G ¾		104	98	27.5	399	2,180	35 (583)	60 (1,000)	90 (1,500)	120 (2,000)	220 (3,666)

** flow rate in m³/h (l/min) measured at p₁ = 7 bar and Δp = 0.1 bar



Microfilter (MF)

Borosilicate filter. Preferably for filtering out aerosols and solid impurities above 0.01 µm. The use of a pre-filter is recommended.

Application: paint spraying plants, sandblasting plants, automatic controls, vacuum plants, measuring instruments, fluidics, conveying air, process air, air bearings, air-conditioning technology.

- Structure:**
1. Inner support: stretched stainless steel mantle
 2. Support fabric: pre-filtration fabric
 3. Filtration medium: borosilicate microfibre fleece free of binding agents, 0.01 µm
 4. Supporting fabric
 5. Outer support: stretched stainless steel mantle
 6. Foam mantle
 7. End caps made of plastic (PE)

Mode of operation: The precleaned air (pre-filter) circulates from the inside outwards through the filter element. Coarser impurities are stopped by the pre-filtration fleece, and the three-dimensional filter effect takes place in the multi-layered borosilicate. The large hollow volume of 94 % between the glass fibres ensures a high absorption rate of solid components. The separated liquid coalesces into droplets and is collected in the foam. This liquid then drips into the container and can be discharged to the outside.

Cleaning: not possible. Replacement recommended once the red area on the differential pressure gauge has been reached or after approx. 2,000 operating hours.

Standard version: with automatic attachable drain valve A

Size	Thread	Order No.	
		Microfilter complete	Filter element
BG 50	G ¼*	438.2111	438-312
	G ⅜*	438.2121	438-312
	G ½*	438.2131	438-322
BG 60	G ½*	438.2231	438-332
	G ¾	438.2241	438-342

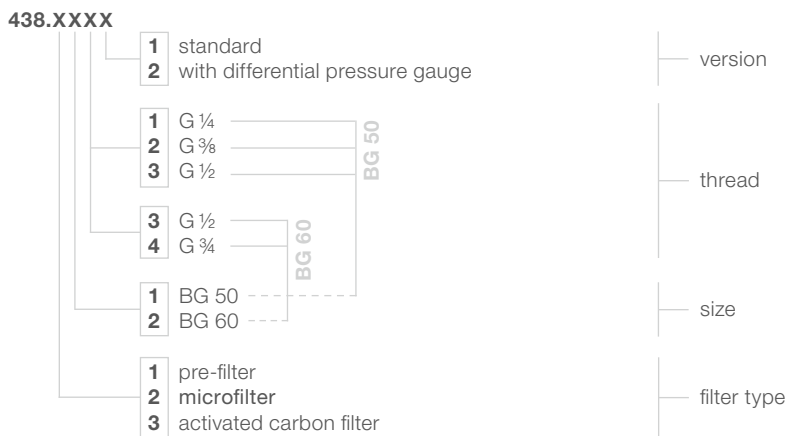
*inlet and outlet reduced



438-322

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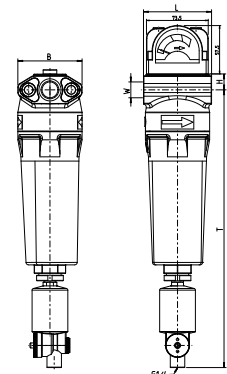
Order key for all variants



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Technical data

Thread	G ¼ up to G ¾ (see table)
Max. operating pressure (p ₁)	16 bar (12 bar with automatic attachable drain valve A)
Min. operating pressure	4 bar (with automatic attachable drain valve A)
Operating temperature	+1.5 °C up to +80 °C
Mounting position/flow direction	vertical/see arrow direction (from inside to outside)
Particle filtration	0.01 µm
Residual oil content	0.01 mg/m ³
Compressed air quality	particle 1/oil 1 (according to ISO 8573-1)
Material housing, bowl	aluminium, coated
Filtration medium	borosilicate microfibre/fabric
Supporting mantle, drainage layer	stainless steel, polyester fibre fleece
End caps, O-rings	PA, NBR
Colour coding	blue



Dimensions/flow rates

Size	Thread W			Device dimensions (mm)				Weight (g)	Flow rate Q**				
				L	B	H	T		BG 50			BG 60	
BG 50	G ¼	G ⅜	G ½	80	75.5	23	327	1,350	G ¼	G ⅜	G ½	G ½	G ¾
BG 60	G ½	G ¾		104	98	27.5	399	2,180	35 (583)	60 (1,000)	90 (1,500)	120 (2,000)	220 (3,666)

** flow rate in m³/h (l/min) measured at p₁ = 7 bar and Δp = 0.1 bar

accessories and main spare parts see page 22
condensate drain valves starting from page 95



Activated carbon filter (AF)

Activated carbon filter for adsorption of vaporous liquids. The use of a microfilter is strongly recommended if dried air is not used.

Application: food industry, packaging industry, beverage industry, respiratory air, pressure chambers, medical technology, dental technology, measurement technology. (Units may only be used for indirect use in the food industry, beverage industry, medical technology, in other words, the food etc. may not be passed directly through the filter).

Structure:

1. Filtration medium: finely grained activated carbon
2. Support fabric: filtration layer made of binder-free microfibre fleece
3. Outer support: stretched stainless steel mantle
4. End caps made of plastic (PE)

Mode of operation: the pre-cleaned compressed air (dryer, microfilter or microfilter with pre-filter) flows through the activated carbon layer. The thickness of the activated carbon layer ensures sufficient contact time for adsorption of vaporous liquids. Activated carbon particles transported with the flow are trapped in the outer filter layer. To achieve a long service life, compressed air should not contain any liquid or solid impurities when entering the activated carbon filter.

Cleaning: not possible. Replacement recommended after approx. 2,000 operating hours.



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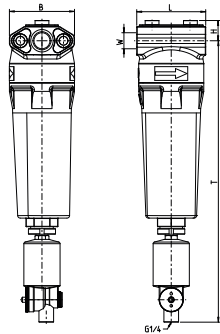


438-313

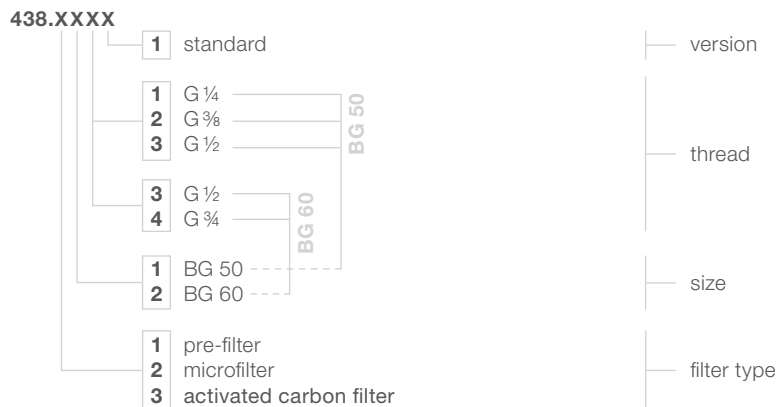
Standard version: with manual drain valve

Size	Thread	Order No.	
		Activated carbon filter complete	Filter element
BG 50	G ¼*	438.3111	438-313
	G ⅜*	438.3121	438-313
	G ½*	438.3131	438-323
BG 60	G ½*	438.3231	438-333
	G ¾	438.3241	438-343

* inlet and outlet reduced



Order key for all variants



Technical data

Thread	G ¼ up to G ¾ (see table)
Max. operating pressure (p ₁)	16 bar/232 psi
Min. operating pressure	0 bar (manual drain valve)
Operating temperature	+1.5 °C up to +80 °C
Mounting position/flow direction	vertical/see arrow direction (from inside to outside)
Residual oil content	0.003 mg/m ³
Compressed air quality	oil 1 (according to ISO 8573-1)
Housing, bowl	aluminium, coated
Filtration medium	non-woven medium, impregnated with activated carbon
Supporting mantle	stainless steel
Postfiltration	borosilicate microfibreglass fabric
End caps, O-rings	PA, NBR
Colour coding	black

Dimensions/flow rates

Size	Thread W			Device dimensions (mm)				Weight (g)	Flow rate Q**				
	L	B	H	T	BG 50				BG 60				
BG 50	G ¼	G ⅜	G ½	80	75.5	23	327	1,350	G ¼	G ⅜	G ½	G ½	G ¾
BG 60	G ½	G ¾		104	98	27.5	399	2,180	35 (583)	60 (1,000)	90 (1,500)	120 (2,000)	220 (3,666)

** flow rate in m³/h (l/min) measured at p₁ = 7 bar and Δp = 0.1 bar



Combinations

The delivery is made completely assembled or as individual units with connecting parts in the variants: pre-filter - microfilter (VF - MF), microfilter - activated carbon filter (MF - AF) and pre-filter - microfilter - activated carbon filter (VF - MF - AF).

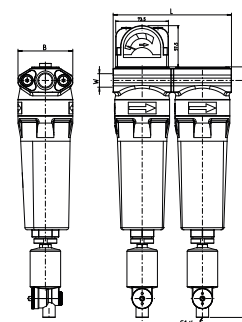
Standard version: without differential pressure gauge, with automatic attachable drain valve A, activated carbon filter with manual drain valve

Size	Thread	Order No.		
		VF - MF	MF - AF	VF - MF - AF
BG 50	G ¼*	436.1111	436.2111	436.3111
	G ⅜*	436.1121	436.2121	436.3121
	G ½*	436.1131	436.2131	436.3131
BG 60	G ½*	436.1231	436.2231	436.3231
	G ¾	436.1241	436.2241	436.3241

*inlet and outlet reduced

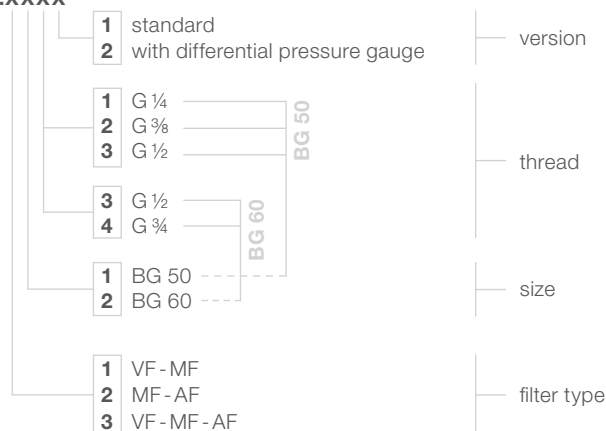


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Order key for all variants

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Dimensions (mm)

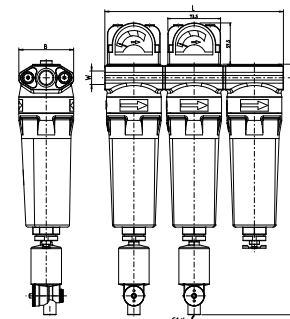
Size	Thread W			Device dimensions (mm)			Installation length L (mm)	
	B	H	T	VF - MF/MF - AF	VF - MF - AF			
BG 50	G ¼	G ⅜	G ½	75.5	23	327	163	249
BG 60	G ½	G ¾		98	27.5	399	246	318

Technical data

Connection	G ¼ up to G ¾
Max. Operating pressure (p ₁)	16 bar (12 bar with autom. attachable drain valve A)
Min. operating pressure	4 bar/0 bar (autom. attached blow-off valve A/ activated carbon filter AF)
Operating temperature	+1.5 °C up to +80 °C
Mounting position /flow direction	vertical/as indicated by the arrow (from the inside to outside)
Particle filtration (prefilter VF)	99.99 % referred to 1 µm (solid impurities)
Particle filtration (microfilter MF)	0.01 µm
Residual oil content (prefilter VF)	0.5 mg/m ³
Residual oil content (microfilter MF)	0.01 mg/m ³
Residual oil content (activated carbon filter AF)	0.003 mg/m ³
Compressed air quality (prefilter VF)	particle 2/ oil 3 (according to ISO 8573-1)
Compressed air quality (microfilter MF)	particle 1/ oil 1 (according to ISO 8573-1)
Compressed air quality (activated carbon filter AF)	oil 1 (according to ISO 8573-1)
Housing, bowl	Aluminium, painted
Filtration media (prefilter-microfilter VF-MF)	Borosilicate microfibreglass fabric
Filtration media (activated carbon filter AF)	non-woven medium, activated carbon impregnated
Post-filtration (activated carbon filter AF)	Borosilicate microfibreglass fabric
Supporting body, Drainage layer	Stainless steel, polyester fibre fleece
Cover caps, O-rings	PA, NBR
Colour coding	
prefilter (VF)	red
microfilter (MF)	blue
activated carbon filter (AF)	black



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Maintenance unit G ¼

The G ¼ service units consist of the filter combination pre-filter and microfilter incl. automatic attachable drain valves A, supplemented by pressure regulators and optionally a differential pressure gauge. Purified and reduced compressed air is provided by installing the maintenance units in the compressed air network (4–12 bar). The air cleaned by pre-filters and microfilters (solid contamination 0.01 µm and residual oil content 0.01 mg/m³) passes through the pressure regulator via appropriate distributors and pressure hoses to the specific consumer (e.g. blocking air for instruments). Flow rate at 1 bar (Δp 0.2 bar) 217 l/min.



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Standard version: filter combination (pre-filter and microfilter) with automatic attachable drain valves A and pressure regulator

Version	Order No.
Without differential pressure gauge, with automatic attachable drain valves A, bracket mounting, pressure regulator 0.5–3 bar with pressure gauge, set to 1 bar	437.1111
With differential pressure gauge, with automatic attachable drain valves A, bracket mounting, pressure regulator 0.5–3 bar with pressure gauge, set to 1 bar	437.1112

Order key for all variants

437.XXXX

1	without differential pressure gauge	version
2	with differential pressure gauge	version
1	G ¼	thread
1	BG 50	size
1	standard combination (pre-filter, microfilter, pressure regulator with pressure gauge, wall mounting)	combination of devices

Technical data

Connection	G ¼ up to G ¾
Max. Operating pressure (p ₁)	16 bar (12 bar with autom. attachable drain valve A)
Min. operating pressure	4 bar (autom. attached blow-off valve AF)
Operating temperature	+1.5 °C up to +80 °C
Mounting position / flow direction	vertical/as indicated by the arrow (from the inside to outside)
Particle filtration (prefilter VF)	99.99% referred to 1 µm (solid impurities)
Particle filtration (microfilter MF)	0.01 µm
Residual oil content (prefilter VF)	0.5 mg/m ³
Residual oil content (microfilter MF)	0.01 mg/m ³
Compressed air quality (prefilter VF)	particle 2/oil 3 (according to ISO 8573-1)
Compressed air quality (microfilter MF)	particle 1/oil 1 (according to ISO 8573-1)
Housing, bowl	Aluminium, painted
Filtration media (prefilter-microfilter VF-MF)	Borosilicate microfibreglass fabric
Supporting body, Drainage layer	Stainless steel, polyester fibre fleece
Cover caps, O-rings	PA, NBR
Colour coding	
prefilter (VF)	red
microfilter (MF)	blue



Filter regulator station airclean G 1/2

Air quality according to ISO 8573-1: 2010 Purity class 1

Multi-stage compressed air preparation with high-quality filter elements (pre-filter, microfilter and, if necessary, activated carbon filter) for optimum painting results – without expensive rework or operational downtimes. Removes impurities such as H₂O, hydrocarbons and dirt particles. High flow rate (3,260 l/min), with differential pressure gauge as individual contamination indicator. For maximum economy, service and safety.

Application areas: Sandblasting shops – chemical industry – plastics industry – paint production – packaging industry.

Structure and components:

Stage one – pre-filter

High-density deep-bed pleating, 1 µm filter fineness, for filtration of solids and liquids. Separation efficiency 99.99 %. With automatic attachable drain valve A.

Stage two – microfilter

Multi-stage depth filter with three-dimensional filter effect made of binder-free borosilicate fibre fleece and high contamination absorption capacity. For fine filtration of compressed air solid particles and water-oil aerosols up to a residual oil content of 0.01 mg/m³.

Chemically and biologically inactive, water-repellent. Stainless steel support mantle and PA end caps, separation efficiency 99.99998 % at 0.01 µm. With automatic attachable drain valve A.

Stage three – activated carbon filter (optional)

With the optionally added activated carbon filter, the filter regulator station can be upgraded. The advantage is a breathing air quality with much lower contamination than the ambient air.

Activated carbon filter: multi-layer activated carbon for adsorption of vaporous liquids and hydrocarbons (oil aerosols, odours), residual oil content 0.003 mg/m³. See individual description.

Stage four – pressure regulator

Pre-pressure independent with increased accuracy and without own air consumption, regulates the desired operating pressure from 0.5–10 bar. Pressure gauge with solvent-resistant glass screen.

Distributor block

For air extraction, available with two safety couplings.



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439.1232



439.3231

Version	Order No.
Pre-filter – microfilter – pressure regulator with distributor block, connection G 1/2, incl. two safety couplings DN 7.4	439.1231*
Pre-filter – microfilter – pressure regulator with distributor block, connection G 1/2, incl. two safety couplings DN 7.4 with differential pressure gauge	439.1232*
Pre-filter – microfilter – activated carbon filter – pressure regulator with distributor block, connection G 1/2, incl. two safety couplings DN 7.4	439.3231*
Pre-filter – microfilter – activated carbon filter – pressure regulator with distributor block, connection G 1/2, incl. two safety couplings DN 7.4 with differential pressure gauge	439.3232*

* mounting bracket pre-assembled

Main spare parts

	Order No.
VF-filter element (Pre-filter)	438-311
MF-filter element (Microfilter)	438-322
AF-filter element (Activated carbon filter)	438-313
Pressure gauge Ø50, vertical, 0–16 bar (on distributor block, without fig.)	102
Pressure gauge Ø50, horizontal, 0–16 bar (on pressure regulator)	89
Double nipple detachable, thread G 1/2 male × G 1/2 male, AF 22	185.77**

** delivery only in packaging unit (PU) of 5 pieces each

Technical data

Thread	G 1/2
Max. operating pressure (p ₁)	16 bar (12 bar with automatic attachable drain valve A)
Operating temperature	+1.5 °C up to +65 °C +1.5 °C up to +45 °C (with activated carbon filter)
Flow rate	3,260 l/min
Material sealings	NBR
Material housing	Al, CuZn39Pb3
Material distributor, bowl	aluminium plastic-coated



438-311

438-322

438-313



102



438-512



5370.200



438-412



438-600



5370.4

Accessories

Size	Order No.	
	BG 50	BG 60
Wall mounting kit (assembly kit) For mounting on vertical surfaces. Consisting of mounting bracket incl. connection kit for fastening to the unit, optionally at the front or the rear.	438-511 (1 filter)	438-521 (1 filter)
	438-512 (2 filters)	438-522 (2 filters)
	438-513 (3 filters)	438-523 (3 filters)
Electronic attachable drain valve 230 V AC contactless measurement of the collected condensate, which is safely drained without pressure loss.	5370.200	

Main spare parts

Size	Order No.	
	BG 50	BG 60
Connection kit Is used to flange two units together. Consisting of one rubber sealing and four cone sleeves and screws each as well as two tie rods.	438-412 (2 filters)	438-422 (2 filters)
	438-413 (3 filters)	438-423 (3 filters)
Differential pressure gauge , Height 57.5 mm for all filters. Multi-coloured scale (green area, yellow area, red area) Complete with flange-mounting parts (two screws, two sealings).	438-600	
Automatic attachable drain valve A when a certain condensate level is reached, the float actuates a pneumatic servo valve and opens the drain valve. Connection G 1/8.	5370.4	