KSI ECOCLEAN®
Mobile breathing air system MAK

Rev 01_0421

Mobile preparation of compressed air and technical breathing air

Clean air for mobile applications

KSI Filtertechnik has mastered the two central challenges for mobile breathing air systems in the **KSI ECOCLEAN®** MAK. The breathing air[1] is not only provided in the required purity, but also exactly where the user needs it. Even difficult to access working environments with adverse conditions are made accessible, and the user is supplied with breathing air safely. Cleaning of tank installations, painting work, construction sites, ... - no problem with the **KSI ECOCLEAN®** MAK.

The KSI ECOCLEAN® MAK Plus-Effects +++

+ filtration technology in industrial quality from the manufacturer with many years of experience
+ technically silicone-free! None of the components used is silicone-containing or releases silicone-containing substances.
+ pressure reducer at the outlet ensures more effective separation in the filter stages
+ condensate drainage also possible at the ultra-fine filter stage
+ practical, robust and portable case solution

Oil components, condensate, particles

High-quality compressed air treatment is absolutely essential for many jobs, as air sucked in and compressed by the compressor is always contaminated, for example by oil components from the compressor, condensate and dust particles.

With the **KSI ECOCLEAN®** MAK, the compressed air flows through three filtration stages. After the first filtration for particles down to 1 micron and the second filtration stage with 0.01 micron, the air still flows through an activated carbon filter: the end result is 100% technically particle-free and oil-free air.

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Practical mobile solution for the filtration of particles, condensate and oil components

The outstanding properties of the new APF filter series are now also available for mobile applications: with the practical **KSI ECOCLEAN® MAK 63** breathing air system.

The three-stage, fully equipped treatment unit not only provides pure breathing air, but with a weight of 15 kilograms and the components housed in a compact and robust steel housing, it is also ideally suited for use „on site“.

The list of conceivable applications can easily be extended. Whether for pollutant remediation, painting work, sandblasting, powder coating, tank cleaning or even on construction sites: The MAK 63 is a handy and extremely reliable companion even under adverse working conditions. The breathing air system requires no additional power supply to supply two colleagues with pure breathing air.

Portable lightweight with three-stage breathing air treatment

With dimensions of 40 cm × 64.8 mm × 18.6 mm, the MAK 63 is only slightly larger than a piece of air travel luggage to take on board, and with its weight of 15 kg it is still portable despite its sturdy construction.

Just as important as the compact exterior are the high-quality components built into the interior: The core of the system is the three-stage processing unit, consisting of an MFO filter, an SMA filter and a CA filter. Water components and particles of 1 micron, 0.01 micron and, in the CA filter element, oil aerosols with a residual oil content of < 0.003 mg/m³ are separated in sequence. Further advantages: Due to the clever arrangement of the APF filter elements in the filter bell of the housing, the change can be carried out quickly and cost-effectively with KSI-manufactured, comparatively inexpensive elements.

The filters of the APF series ensure not only air quality according to ISO quality class 1, but also high energy and cost efficiency with maximum operational reliability. Thanks to their innovative design and high-density deep-bed pleating, the APF filter elements achieve significantly lower differential pressure losses and thus significant cost savings compared to the competition.

Other components of the mobile breathing air system include a pressure regulator and the pressure gauge for pressure monitoring. The respirators are connected to two connections with safety coupling.

The condensate collected by the automatic drains installed as standard is collected in two tanks. In addition, the KSI breathing air system is equipped with two connections for external oil-water separators.

[1] The operator must ensure that the air drawn in by the compressor is free of harmful gases, vapours and particles to such an extent that the requirements of DIN EN 12021 regarding carbon dioxide content and carbon monoxide content are met. The use of oxygen or oxygen-enriched air is not permitted.

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Lieferumfang	
Betriebsfertige Filterkombination bestehend aus:	
1. Stufe	APF63MFO mit automatischen Kondensatableiter D150
2. Stufe	APF63SMA mit automatischen Kondensatableiter D150
3. Stufe	APF63CA mit manuellem Kondensatablass HAM12
	Manometer für die Anzeige des Betriebsdrucks
	Druckregler
	Kondensatauffangbehälter
	2 Abnahmeanschlüsse mit Sicherheitskupplung
	2 Anschlüsse für externe Öl-Wasser-Trenner

Scope of supply	
Ready-to-operate filter combination including:	
1. stage	*APF63MFO with automatic condensate drain D150*
2. stage	*APF63SMA with automatic condensate drain D150*
3. stage	*APF63CA with manual condensate drain HAM12*
	Manometer for displaying the operating pressure
	Pressure regulator
	Condensate collector
	2 connections with safety couplings
	2 connections for external oil-water-separators

Typ	Leistung*		Abmessungen (mm)				Gewicht
Type	*Capacity**		*Dimensions (mm)*				*Weight*
	m³/h	cfm	A	B	C	D	kg
MAK63	60	35	414	304	648	186	15

*bezogen auf 1 bar (abs.) und 20°C bei 7 bar ü Betriebsdruck | *calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure*

Serviceteile | *Service parts*

Bestell-Nr.	Inhalt	Service Intervall
Order code	*Content*	*Service interval*
APE-MAK63	Filterelemente für den Austausch an den 3 Stufen	1 Jahr
	Filter elements for the change at the 3 stages	*1 year*
FT-MAK63	O-Ringe für Filtergehäuse, Manometer, Kondensatableiter	2 Jahre
	O-rings for filter housings, manometer, condensate drain	*2 years*
APE26-CA	Filterelement Aktivkohle für den Austausch an der 3. Stufe	6 Monate
	Filter element activated carbon for the change at the 3rd stage	*6 months*

Notice: Compressed breathing air must have a dew point low enough to avoid condensation and freezing. Under known temperature conditions, the pressure dew point must be at least 5 °C below the lowest temperature to be expected. Otherwise, the pressure dew point must not exceed -11 °C. The upstream connection of a refrigeration dryer or an adsorption dryer (e.g. from our ECOTROC ATK or ATT series) is therefore necessary.

If you have any further questions, please do not hesitate to contact us.

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Specifications

Spezifikationen		*Specifications*
Höchsttemperatur	50°C	***Max. temperature***
Mindesttemperatur	1°C	***Min. temperature***
Max. Arbeitsdruck	16 bar ü/*g*	***Max. working pressure***
Material Koffer	S235JR	***Case material***
Farbausführung Koffer	RAL 7035 pulverbeschichtet | *RAL 7035 powder coated*	***Case colour***
Farbe Filter	RAL 7012 pulverbeschichtet | *RAL 7012 powder coated*	***Colour filter***

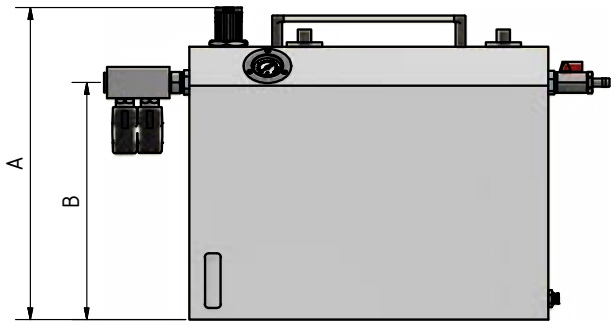
Correction factors

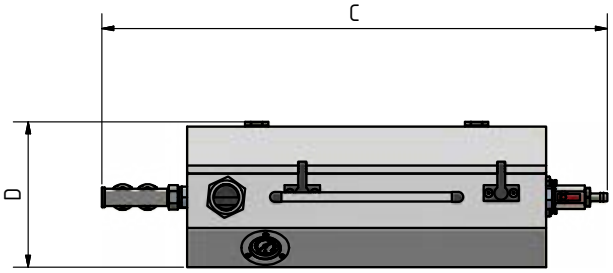
Correction factors										
Operating pressure	bar g	2	3	4	5	6	7	8	9	10
	factor	0,38	0,50	0,63	0,75	0,88	1,00	1,12	1,25	1,37

Please multiply the capacity of the filter with the correction facotor of the table above.

Example: Capacity MAK at 10 bar g - capacity nominal (216 m³/h) x factor (1,37) = corrected capacity (295,9 m³/h)

Dimensional drawing





Quality control

Development/Manufacturing **DIN EN ISO 9001**

Air purity class according to ISO 8573-1:2010

Solid particles	**Class 1**
Moisture (gaseous)	**n.a.**
Residual oil	**Class 1**

Meets the requirements of EN 12021:2014 regarding particles, residual oil content and oxygen.

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