

**FANS
WITH ENERGY EFFICIENT EC TECHNOLOGY**
采用了节能EC技术的风机

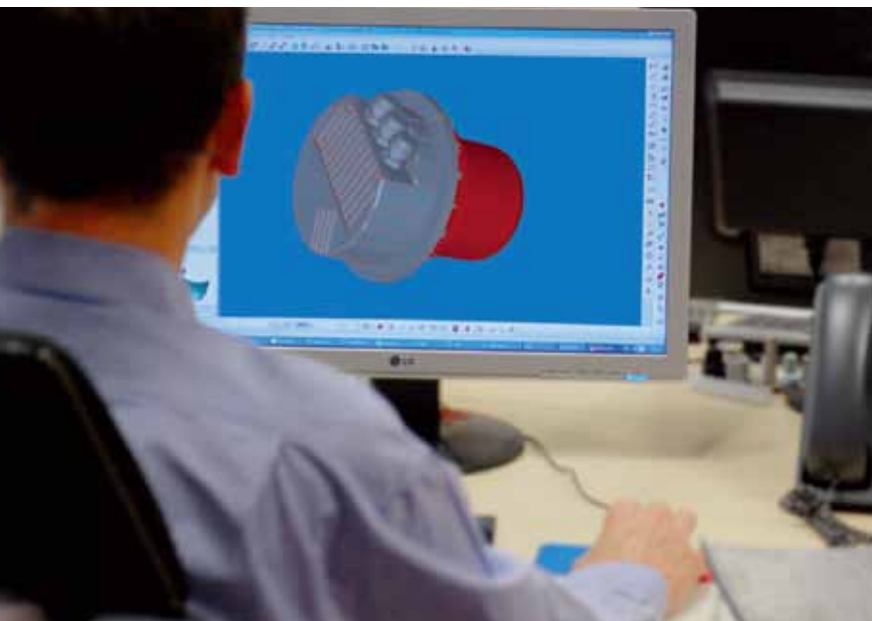


rosenberg ECOFT ETRI
THE AIR MOVEMENT GROUP



Our success factors 我们的成功因素

Development, Production & Sales 开发、生产与销售



完整系列的电机、风机和空气处理机组主要在德国洛森集团自己的生产基地生产。从有关组装的技术咨询到电线连接完毕且准备好下一步连接的空气处理机组，**德国洛森集团将会向客户提供直接服务。**

我们的节能EC电机式专为位于我们Künzelsau总部的现代化生产线而开发和制造的。

通过知识和创新生产技术的结合，我们实现了可满足最高需求的质量要求。

通过生态设计指令2009/125/EC (ErP)的引入，我们的使用能源的产品可满足最低能效要求。

自2013年起，配有EC电机的风机目前已经实现了100%极限值。

The complete range of motors, fans and air handling units is mainly manufactured at the Rosenberg Group's own production sites. From technical advice via assembly to delivery of air handling units that are wired ready for connection, the customer receives **all services first-hand from the Rosenberg Group.**

Our energy-saving EC motors are developed and manufactured exclusively on our modern production line at our Künzelsau headquarters.

By a combination of know-how and innovative production technology we achieve a quality that can cope with the highest demands.

With the introduction of **Ecodesign Directive 2009/125/EC (ErP)**, compliance with minimum energy efficiency requirements for Energy-using Products is required.

Rosenberg fans with EC motors currently already fulfil 100% of the limit values valid from 2013.





Complete solutions at first hand **完整的直接解决方案**

We combine many years of experience, innovative development and state-of-the-art production techniques.
我们结合了多年经验、创新开发以及国家最先进的生产技术。

Leading the way! 一路领先!

Energy efficient EC technology 高效节能的EC技术



作为一个具有高瞻远瞩的公司，我们很久以前就确定了能源的合理使用具有至关重要的**生态和经济意义**—特别是在二氧化碳排放和能源价格上涨方面。

由此，我们的工程师和技术人员正在一起不断地改善我们产品的能源使用效率-并获得了以下成功：与采用了传统电机技术的电机相比，我们的采用了现代EC技术的电机具有超过90%效率的性能并可**节省高达50%的能源**。低能耗不仅有助于实现环境保护也同时还可降低了客户的运营成本。

EC技术不仅仅是“节能奇迹”。EC电机具有免维护和无声的特点。通过**集成智能控制器**，可实现连续控制和其他附加功能如压力、流速和空气质量的控制。我们的EC产品可满足有关能源效率、成本效益和较高空气质量方面的**最严格要求**。

As a forward-thinking company, we identified a long time ago that a sensible processing of energy is of crucial **ecological and economic significance** – particularly with regard to CO₂ emissions and rising energy prices.

Therefore our engineers and technicians are constantly working to improve the energy efficiency of our products – and with success: Our motors with modern EC technology are more than 90% efficient and **save up to 50% in energy** as opposed to conventional motor technology. The low energy consumption not only contributes towards protecting the environment but at the same time also reduces our customers' operating costs.

EC technology is much more than an "energy efficient wonder". EC motors are maintenance free and silent. The **integrated, intelligent controller** allows a continuous control and further additional functions like pressure, volume flow, or air quality control. Our EC products **fulfil the strictest requirements** when it comes to energy efficiency, cost effectiveness and high air quality.

EC技术的优点

Advantages of EC technology

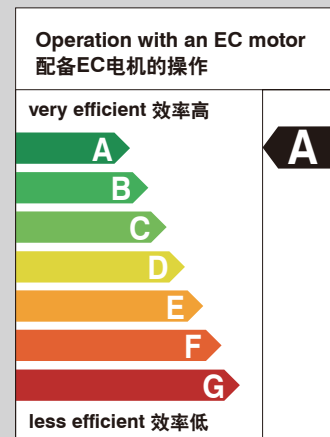
- 效率非常高
 - 采用了集成控制器 (实现连续控制)
 - 连接非常简单
 - 附加功能 (如压力控制等)
 - 具有相同性能等级电机的尺寸更小
 - 更低的功耗
- very high degree of efficiency
 - integrated controller (continuous control)
 - very simple connection
 - additional functions (pressure control, etc.)
 - smaller-sized motor for the same level of performance
 - less power consumption



**Fascinatingly efficient
更高效**

EC technology preserves the environment and reduces costs at the same time.

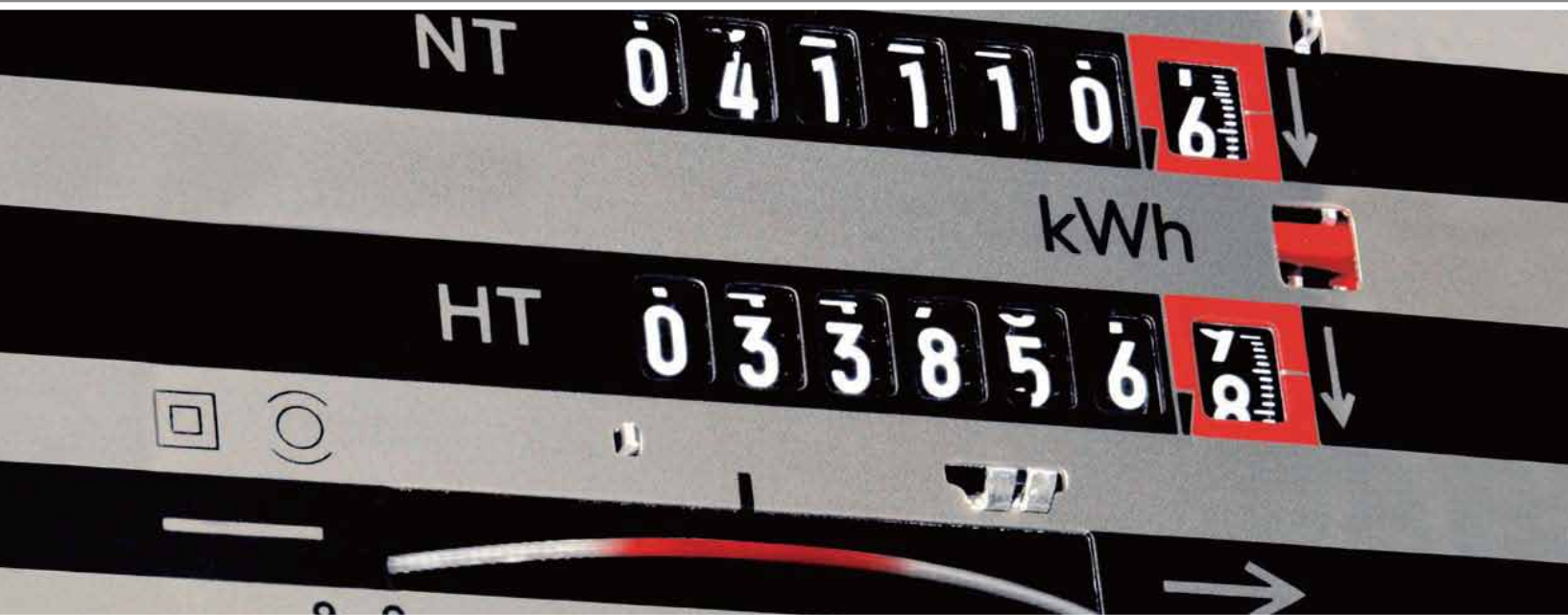
采用EC技术，既能保护环境又能降低成本。



Functional Principle

功能原理

Energy efficient EC motor technology
高效节能的EC电机技术



Rosenberg EC电机（EC=电子整流）是无刷、直流和外转子型电机。

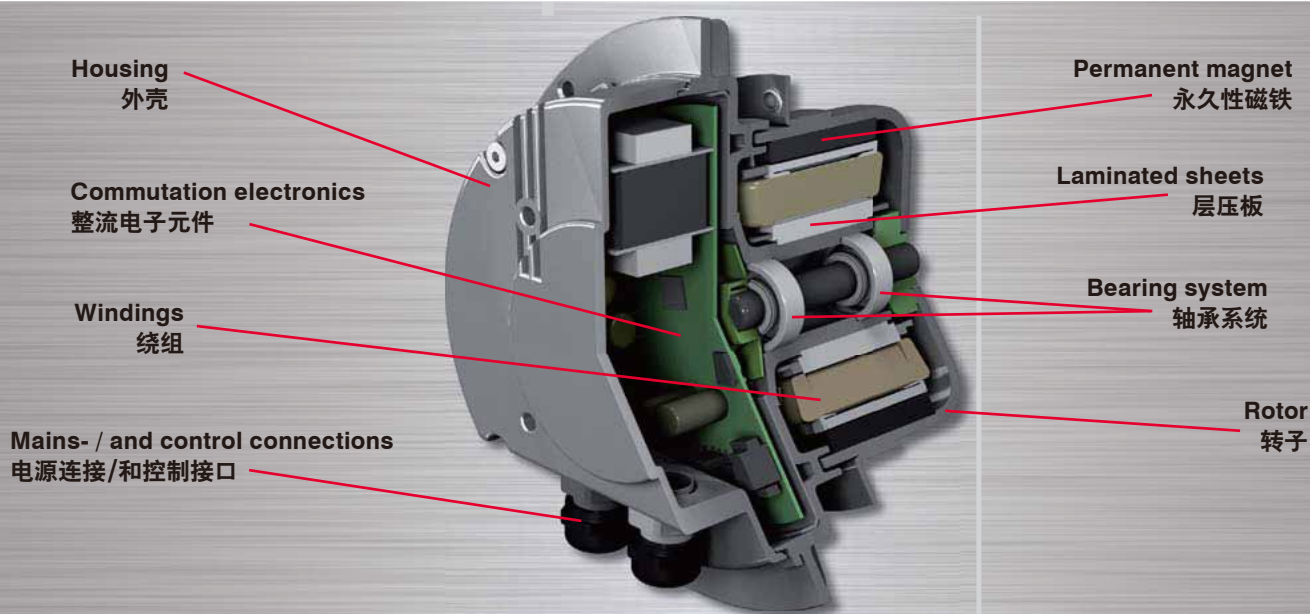
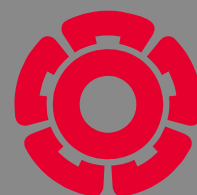
在整流电子设备中，交流电压将通过整流器转变为直流电压。电机位置取决于逆变器模块所提供的电压（类似于变频器原理）。EC整流电子设备不同于变频器，前者是根据位置、转向和默认状态来决定定子中的电机相位如何供给电流（整流）。转子中的永久磁铁将产生一个满负荷生产所需的磁场。因此可确保对高效、低噪音和连续电机转速的控制。而转子上的凸缘组件将用于叶轮的装配。

根据不同的电机类型，接线盒上将配有电缆连接螺钉或连接电缆，以确保方便快捷的连接。

A **Rosenberg EC motor** (EC = electronically commutated) is a brushless, direct current, external rotor type of motor.

In commutation electronics, an AC voltage is changed into a direct voltage by a commutator. The motor position is dependent upon voltage supplied via an inverter module (similar to the principle of a frequency inverter). The EC commutation electronics are different from a frequency inverter in that they decide how the motor phases in the stator are supplied with current (commutation) depending on position, rotation direction and default. Permanent magnets in the rotor produce a magnetic field which is required for full load production. A high efficiency, low noise, and continuous motor speed control is possible with this. An assembly flange on the rotor is used for impeller assembly.

Depending on the motor type, a terminal box is available with cable screw connections or connection cable for easy and quick connection.



根据不同的应用领域，可采用另外的控制功能（如，恒压控制、体积流量控制、以及温度控制等）。

传统的直流电机配有一个外壳，里面装有所有的装配组如碳刷、集电器、轴承、以及带有绕组的电枢等。它们被合理布置好。采用了EC电机组件，将会节省更多的空间且不再需要集电器和碳刷了。因此，电机尺寸将大大减少，从而具有了安装尺寸和静音运行的优势。

相对于传统电机，能耗和安装成本更低（无需变压器控制装置、变频器、或相位角控制装置），因此虽然EC风机的投资成本稍高，但很快会在最短的操作时间内被分摊掉。潜在节能的例子可见第16/17页。

Depending on the application area is possible to adopt further control functions (e.g. constant pressure control, volume flow control, temperature control).

Conventional DC motors have a housing which contains all the assembly groups like carbon brushes, the collector, bearing, armature with winding , etc. They are arranged one after another. With the EC motor assembly, more space is saved and a collector and carbon brush are not necessary. Therefore the motor is significantly shorter and consequently has advantages with regard to dimensions when installing and quiet operation.

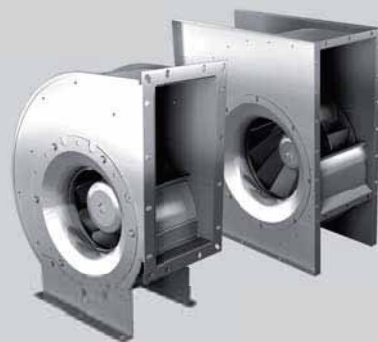
The slightly higher investment costs for EC fans in comparison with conventional motors are mostly amortized within the shortest operation time because of the low energy consumption and lower installation costs (no transformer control, frequency inverter, or phased angle control is necessary). Examples of potential savings can be found on pages 16/17.



EC Centrifugal fans

EC 离心风机

with backward curved impellers
配有后弯叶轮



功能和设计

配备了后弯叶轮的高效离心风机是专为现代通风装置和空调机组而设计的，并适合携带含有不太多灰尘、较少腐蚀性气体和蒸汽的空气。

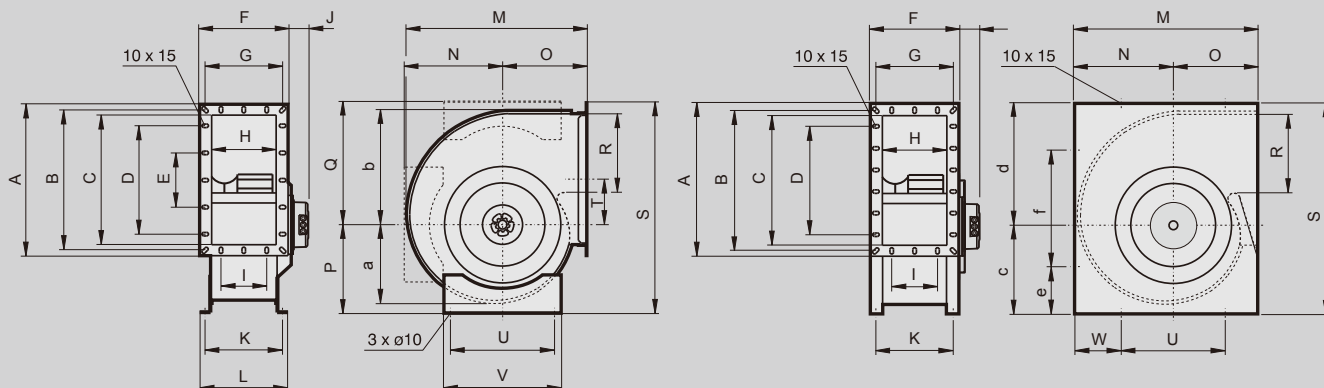
尺寸满足标准R20范围和DIN323要求。尺寸应与叶轮直径相对应。外壳采用镀锌钢板制成，且外壳侧部将通过立边咬合连接到一个螺旋式挡板上。在侧面上有几个钻孔，用于固定支脚。这些支脚可自由旋转90度。对于大于450尺寸的机器，则需要配备矩形外壳。由于可通过一个报警继电器对集成电机进行保护，因此不再需要单独的电机保护装置了。在“控制操作”（标准）设计中，可通过一个0-10V信号或电位器（配件）来提供持续的电机转速。

Features and Designs

High-efficiency centrifugal fans with backwards curved impellers were designed especially for application in modern ventilation and air conditioning units, and are suitable for carrying air that does not contain too much dust and less aggressive gases and vapours.

The sizes correspond to the standard R20 range as per DIN323. The size description corresponds to the impeller diameter. Housings are made of galvanised steel sheet metal with the housing's side parts connected to the spiral baffle plate via a standing seam. There are drilling holes in the side parts to fix the feet which can be changed around by 90°. From size 450 onwards, rectangular housings are supplied. Integrated motor protection is indicated by an alarm relay, so no separate motor protection device is needed. In the "Control Operation" (Standard) design, the motor speed is provided continuously via a 0-10V signal or a potentiometer (accessories).

Dimensions: 尺寸图:

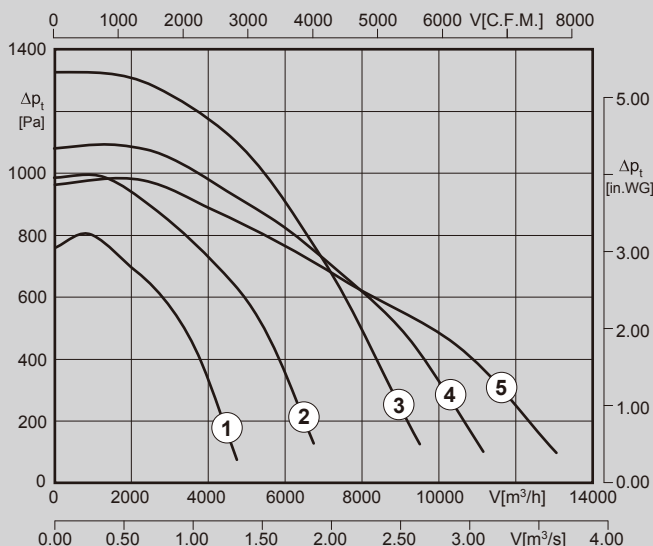


Type 类型	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	a	b	c	d	e	f
EHAG 355.5FA	512	489	452	400	200	286	263	226	200	25	268	308	600	327	275	281	418	278	696	156	355	400	--	271	393	--	--	--	--
EHAG 400.5HF	562	540	502	400	200	312	290	252	200	25	294	334	670	366	305	309	469	316	774	182	355	400	--	305	443	--	--	--	--
EHAG 450.6FF	629	605	569	448	--	348	324	284	224	83	324	--	726	428	298	--	--	353	828	--	450	--	112	--	--	342	486	189	450
EHAG 500.6IF	698	674	634	560	--	382	358	318	224	83	358	--	800	470	330	--	--	392	918	--	450	--	147	--	--	379	539	234	450
EHAG 560.6IF	775	751	711	672	--	421	397	357	224	83	397	--	892	524	368	--	--	436	--	500	--	169	--	--	435	595	265	500	

all dimensions in mm / Changes and errors excepted!
所有尺寸单位都采用mm/更改和错误情况除外!



Air volume performance curves:

风量性能曲线:



- 集成控制 (EC控制)
- 由于采用了EC技术, 可降低整个系统的运营成本
- 连续控制性
- 后弯叶轮
- 紧凑空间设计

- integrated control (EC Control)
- complete system with reduced operating costs due to use of EC technology
- continuous control
- backward curved impeller
- compact space-saving design

Type 类型	No. 编号	Art.-No. 货号	U [V]	P [kW]	I _N [A]	n [min ⁻¹]	t _R [°C]		 [kg]
EHAG 355.5FA	①	B34-35500	400	0.81	1.5	1900	50	IP54	27
EHAG 400.5HF	②	B34-40000	400	1.56	2.6	1900	40	IP54	33
EHAG 450.6FF	③	B34-45000	400	2.7	4.25	1900	40	IP54	55
EHAG 500.6IF	④	B34-50000	400	2.9	4.6	1600	40	IP54	61
EHAG 560.6IF	⑤	B34-56000	400	2.75	4.4	1300	40	IP54	71

Sound levels:

噪声级:

Type 类型	L _{WA,rel} A-weighted at V = 0,5 * V _{max} V = 0,5 * V _{max} 时的L _{WA,rel} A加权值															
	L _{was} [dB(A)] Suction side L _{was} [dB(A)] 吸入侧								L _{was} [dB(A)] Pressure side L _{was} [dB(A)] 压力侧							
	fM [Hz]								fM [Hz]							
	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ
EHAG 355.5FA	58	71	73	72	71	61	54	78	61	75	77	81	75	65	57	84
EHAG 400.5HF	62	75	77	76	75	65	58	82	65	79	81	85	79	69	61	88
EHAG 450.6FF	66	79	81	80	79	69	62	86	69	83	85	89	83	73	65	92
EHAG 500.6IF	64	77	79	78	77	67	60	84	67	81	83	87	81	71	63	90
EHAG 560.6IF	63	76	78	77	76	66	59	83	66	80	82	86	80	70	62	89

EC Duct fans

EC 管道风机

with backward curved impellers,
swing-out
带有摆动式后弯叶轮



功能和设计

Rosenberg 管道风机集轴流风机 – 直流和易组装 – 高压稳定性、低噪音等级、以及离心风机高效等优点于一体的特点。

尺寸应与叶轮直径相匹配。外壳采用了镀锌钢板制成，且其外形为矩形管道，因此可直接安装到风道的任何位置处。此外，电机轮组件可整个地外摆出来，以方便清洁。由于在连接点处包覆有紧凑型吸音板，因此声音衰减范围（WS）可提供非常低的噪音值。可通过报警继电器对集成电机进行保护。在“控制操作”（标准）模式中，可通过一个0-10V信号或电位器（配件）来持续提供电机的转速。

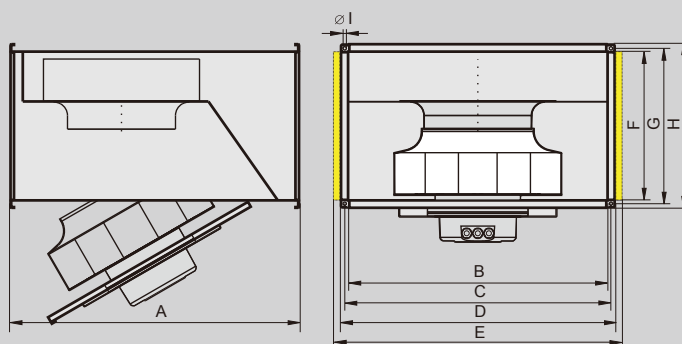
Features and Designs

Rosenberg duct fans combine the advantages of axial fans – straight flow and easy assembly – with high pressure stability, low noise levels, and the sophisticated efficiency of centrifugal fans.

The size description corresponds to the impeller diameter. Housings are made of galvanized steel sheet metal in the shape of rectangular ducts for direct installation into an air duct in every position. Complete motor wheel units swing out for cleaning purposes. The sound-attenuated range (WS) provides extremely low noise values with a space-saving, sound-absorbing punched plate coating at concise points. Integrated motor protection is indicated via an alarm relay. In the “Control Operation” (Standard) model, motor speed is continuously provided by a 0-10V signal or a potentiometer (accessories).

Dimensions:

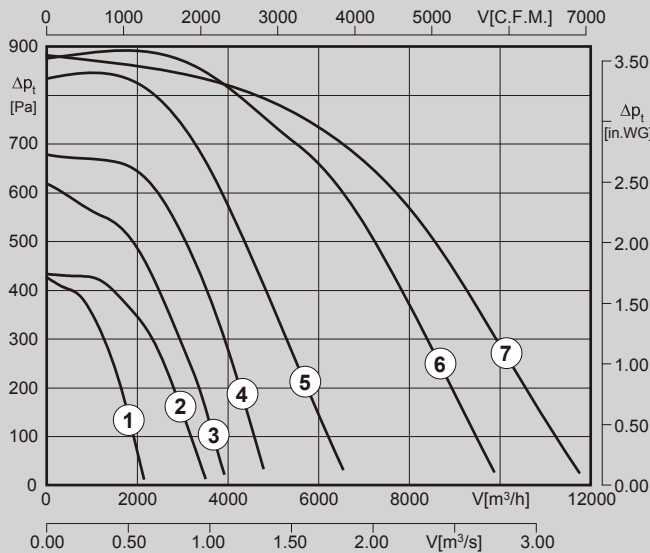
尺寸图:



Type 类型	A	B	C	D	E	F	G	H	I
KHAG 315.4EA W	530	500	520	540	-	250	270	290	9
KHAG 315.4EA WS	530	500	520	540	580	250	270	290	9
KHAG 355.4EA W	700	600	620	640	-	350	370	390	9
KHAG 355.4EA WS	700	600	620	640	680	350	370	390	9
KHAG 355.5FA W	700	600	620	640	-	350	370	390	9
KHAG 355.5FA WS	700	600	620	640	680	350	370	390	9
KHAG 400.5FA W	700	600	620	640	--	350	370	390	9
KHAG 400.5FA WS	700	600	620	640	680	350	370	390	9
KHAG 450.5HFW	780	700	720	740	--	400	420	440	9
KHAG 450.5HFWS	780	700	720	740	780	400	420	440	9
KHAG 500.6FFW	880	800	820	840	--	500	520	540	9
KHAG 500.6FFWS	880	800	820	840	880	500	520	540	9
KHAG 560.6IFW	982	1000	1020	1040	--	500	520	540	9
KHAG 560.6IFWS	982	1000	1020	1040	1080	500	520	540	9

all dimensions in mm / Changes and errors excepted!
所有尺寸单位都采用mm/更改和错误情况除外!

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风量性能曲线:



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Type 类型	Art.-No. 货号	Type 类型	Art.-No. 货号	No. 编号	U [V]	P [kW]	I _N [A]	n [min ⁻¹]	t _R [°C]		W [kg]
KHAG 315.4EA W	D15-31500	KHAG 315.4EA WS	D15-31510	①	230	0.21	1.3	1650	50	IP54	27
KHAG 355.4EA W	D15-35550	KHAG 355.4EA WS	D15-35560	②	230	0.37	2.2	1500	50	IP54	30
KHAG 355.5FA W	D15-35500	KHAG 355.5FA WS	D15-35510	③	400	0.6	1.15	1800	60	IP54	36
KHAG 400.5FA W	D15-40000	KHAG 400.5FA WS	D15-40010	④	400	0.8	1.45	1700	50	IP54	36.5
KHAG 450.5HF W	D15-45020	KHAG 450.5HF WS	D15-45010	⑤	400	1.3	2.3	1700	50	IP54	51
KHAG 500.6FF W	D15-50000	KHAG 500.6FF WS	D15-50010	⑥	400	2.0	3.1	1500	40	IP54	78
KHAG 560.6IF W	D15-56000	KHAG 560.6IF WS	D15-56011	⑦	400	2.4	3.8	1400	50	IP54	91

Sound levels:
噪声级:

Type 类型	L _{WA,rel} A-weighted at V = 0,5 * V _{max} V = 0,5 * V _{max} 时的L _{WA,rel} A加权值																							
	L _{WA2} [dB(A)] Housing L _{WA2} [dB(A)] 外壳								L _{WA2} [dB(A)] Suction side L _{WA2} [dB(A)] 吸入侧								L _{WA2} [dB(A)] Pressure side L _{WA2} [dB(A)] 压力侧							
	fM [Hz]								fM [Hz]								fM [Hz]							
	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ
KHAG 315.4EA W	55	57	49	48	46	41	33	60	61	62	63	63	60	53	41	69	58	66	68	68	67	59	52	73
KHAG 315.4EA WS	51	53	45	44	42	37	29	56	57	58	59	59	56	49	37	65	58	66	68	68	67	59	52	73
KHAG 355.4EA W	59	58	51	51	48	42	36	63	61	67	63	63	65	61	52	72	66	67	70	71	70	63	54	76
KHAG 355.4EA WS	55	54	47	44	44	38	32	59	57	63	59	59	61	57	48	68	66	67	70	71	70	63	54	76
KHAG 355.5FA W	64	63	56	56	53	47	41	68	66	72	68	68	70	66	57	77	71	72	75	76	75	68	59	81
KHAG 355.5FA WS	59	58	51	51	48	42	36	63	59	65	61	61	63	59	50	70	71	72	75	76	75	68	59	81
KHAG 400.5FA W	64	65	57	55	50	47	40	68	70	72	66	68	69	65	57	77	71	73	74	75	74	70	60	81
KHAG 400.5FA WS	59	60	52	50	45	42	35	63	63	65	59	61	62	58	50	70	71	73	74	75	74	70	60	81
KHAG 450.5HF W	62	65	61	58	54	49	42	69	66	71	77	73	72	66	58	80	69	75	77	79	76	71	61	84
KHAG 450.5HF WS	60	63	59	56	52	47	40	67	60	65	71	67	66	60	52	74	69	75	77	79	76	71	61	84
KHAG 500.6FF W	61	68	64	63	60	54	46	71	62	73	77	76	75	69	60	82	70	80	82	85	82	76	66	89
KHAG 500.6FF WS	56	63	59	58	55	49	41	66	55	66	70	69	68	62	53	75	70	80	82	85	82	76	66	89
KHAG 560.6IF W	64	65	62	58	51	44	41	70	73	75	76	77	77	74	67	84	73	79	80	81	81	78	71	88
KHAG 560.6IF WS	62	63	60	56	49	42	39	68	65	67	68	69	69	66	59	76	73	79	80	81	81	78	71	88

EC Roof fans EC 屋顶风机



with backward curved impellers 功能和设计

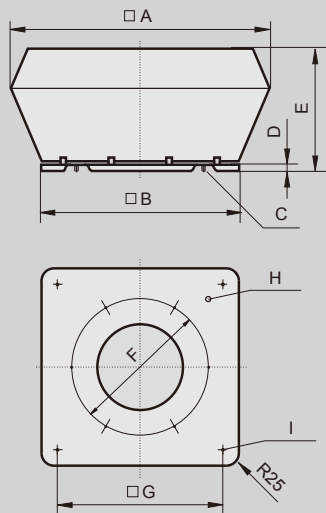
功能和设计

尺寸为310-450的机器配有一个防风雨的塑料叶轮，材料为PA6（聚酰胺）；尺寸为500-630的机器配有一个防海水侵蚀的铝合金叶轮。由于两侧配有一个加入了长期润滑剂的免维护球轴承，因此确保了较长的使用寿命。基架带有螺纹螺栓，用于紧固吸入侧配件和镀锌钢板制成的可伸缩喷嘴。防雨罩和方形外壳采用了耐海水侵蚀的铝合金材料。电机笼配有一个带有塑料涂层圆钢制成的集成防震装置。预装配设备的开关的电气连接将取决于单相或三相设计。由于报警继电器可对集成电机进行保护，因此不再需要单独的电机保护装置了。在“控制操作”（标准）模式下，可通过0-10V信号或电位器（配件）来持续提供电机的转速。在“调节操作”（标准）模式下，可通过接线盒组件的电位计、电位计（配件）、或0-10V信号来连续提供压力设置点。预组装的压力传感器配有一个显示器，可提供（100Pa、300Pa、500Pa和1000Pa）的可调节压力测量范围。

Features and Designs

Sizes 310-450 have a weather proof plastic impeller made of PA6 (polyamide) and sizes 500-630 have an impeller made of sea water proof aluminium. Maintenance-free ball bearings enclosed on both sides with a long-term lubricant provide a long service life. Base frames with threaded bolts for tightening of suction side accessories and retracted injection nozzle made of galvanized sheet metal steel. Rain protective hood and square housing made of sea water proof aluminium. Motor cage with integrated shock-protection made of plastic coated round bar steel. Electrical connection is at the pre-assembled device's switch depending upon the design single-phase or three-phase. Integrated motor protection is indicated via an alarm relay so no separate motor protection device is needed. In the "Control Operation" (Standard) model motor speed is continuously provided by a 0-10V signal or a potentiometer (accessories). In the "Regulation Operating" (Standard) model, the pressure setpoint is continuously provided via a potentiometer provided for terminal box assembly, a potentiometer (accessories), or a 0-10V signal. The pre-assembled pressure sensor has a display with an adjustable pressure measurement range of (100Pa, 300Pa, 500Pa, 1000Pa).

Dimensions: 尺寸图:

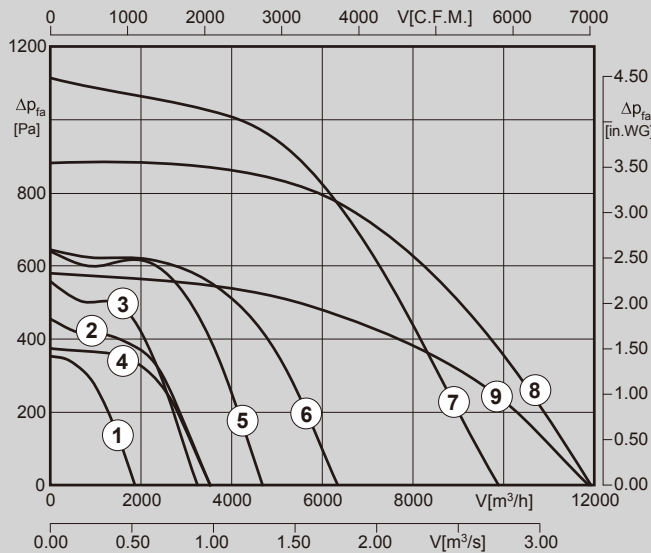


Type 类型	A	B	C	D	E	F	G	H	I
DV 310L-G.4EA	560	435	M6	30	330	286	330	M20 x 1,5	4 x ø10
DV 355-G.4FF	720	595	M6	30	400	438	450	M20 x 1,5	4 x ø12
DV 355-G.5FA	720	595	M6	30	400	438	450	M20 x 1,5	4 x ø12
DV 400-G.4FF	720	595	M6	30	400	438	450	M20 x 1,5	4 x ø12
DV 400-G.5FA	720	595	M6	30	400	438	450	M20 x 1,5	4 x ø12
DV 450-G.5FA	900	665	M6	30	450	438	535	M20 x 1,5	4 x ø12
DVV 500-G.6IF	900	665	M6	30	450	438	535	M20 x 1,5	4 x ø12
DVV 560-G.6IF	1150	939	M8	30	570	605	750	M20 x 1,5	4 x ø14
DVV 630-G.6IF	1150	939	M8	30	570	605	750	M20 x 1,5	4 x ø14

all dimensions in mm / Changes and errors excepted!
所有尺寸单位都采用mm/更改和错误情况除外!



Air volume performance curves:
风量性能曲线:



- 集成控制 (EC控制)
- 由于采用了EC技术, 可降低整个系统的运营成本
- 连续控制或调节
- 后弯叶轮
- 预组装装置的开关

- integrated control (EC Control)
- complete system with reduced operating costs due to use of EC technology
- continuous control or regulation
- backward curved impeller
- pre-assembled device switch

Type 类型 (Pressure control)* (压力控制)*	Art.-No. 货号	Type 类型 (Control operation) (控制控制)	Art.-No. 货号	No. 编号	U [V]	P [kW]	I _N [A]	n [min ⁻¹]	t _r [°C]	⚠	⚖ [kg]
DV 310L-G.4EA	A05-31020	DV 310L-G.4EA	A05-31030	①	230	0.18	1.1	1650	60	IP54	15
DV 355-G.4FF	A05-35521	DV 355-G.4FF	A05-35531	②	230	0.39	2.3	1550	50	IP44	24
DV 355-G.5FA	A05-35520	DV 355-G.5FA	A05-35530	③	400	0.44	0.9	1650	60	IP54	27
DV 400-G.4FF	A05-40021	DV 400-G.4FF	A05-40022	④	230	0.38	2.2	1330	50	IP54	25
DV 400-G.5FA	A05-40020	DV 400-G.5FA	A05-40030	⑤	400	0.71	1.35	1700	55	IP54	27
DV 450-G.5FA	A05-45020	DV 450-G.5FA	A05-45030	⑥	400	0.95	1.8	1500	55	IP54	36
DVW 500-G.6IF	A05-50000	DVW 500-G.6IF	A05-50010	⑦	400	2.75	4.3	1750	40	IP54	67
DVW 560-G.6IF	A05-56000	DVW 560-G.6IF	A05-56010	⑧	400	2.5	3.9	1400	40	IP54	69
DVW 630-G.6IF	A05-63000	DVW 630-G.6IF	A05-63010	⑨	400	1.75	2.9	1000	40	IP54	69

* assembled pressure sensor by default
* 默认组装的压力传感器

Sound levels:
噪声级:

Type 类型	L _{WA,rel} A-weighted at V = 0,5 * V _{max} V = 0,5 * V _{max} 时的L _{WA,rel} A加权值															
	L _{was} [dB(A)] Suction side L _{was} [dB(A)] 吸入侧								L _{was} [dB(A)] Pressure side L _{was} [dB(A)] 压力侧							
	fM [Hz]								fM [Hz]							
	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ
DV 310L-G.4EA	54	60	60	63	62	56	49	70	53	62	67	69	66	60	54	73
DV 355-G.4FF	55	61	61	64	63	57	50	71	54	63	68	70	67	61	55	74
DV 355-G.5FA	55	61	61	64	63	57	50	71	54	63	68	70	67	61	55	74
DV 400-G.4FF	53	58	59	62	64	57	50	71	58	64	68	69	68	61	52	74
DV 400-G.5FA	58	63	64	67	69	62	55	76	63	69	73	74	73	66	57	79
DV 450-G.5FA	60	65	66	69	71	64	57	78	65	71	75	76	75	68	59	81
DVW 500-G.6IF	63	69	69	72	71	65	59	80	67	75	77	78	75	69	60	83
DVW 560-G.6IF	62	68	68	71	70	64	58	79	66	74	76	77	74	68	59	82
DVW 630-G.6IF	61	66	67	72	70	65	57	79	66	73	77	77	74	69	61	82

EC Unoboxes

with backward curved impellers
带有后弯叶轮



功能和设计

Rosenberg Unoboxes是专为携带小型到中型空气流而设计的。典型的应用领域包括公寓、商场、超市、车间和车库的通风装置。

外壳由带有双倒棱塑料边缘的挤压铝材制成的支架和双层20mm厚的面板组成，其中面板采用了镀锌钢板材料且其绝缘层采用了不易燃、隔音和隔热玻璃棉毡材料。其中一个外壳壁处于打开状态。标称尺寸达到450的风机配有后弯塑料叶片和一个钢板制成的支撑板。对于尺寸大于500的风机，其高效叶轮应采用铝合金材料。可通过一个报警继电器来对集成电机提供保护。在“控制操作”（标准）模式下，可通过0-10V信号或电位器（配件）来提供持续的电机转速。

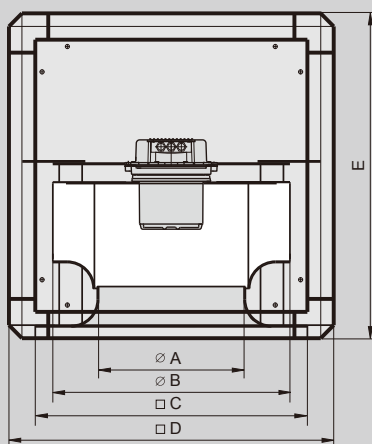
Features and Designs

Rosenberg Unoboxes are designed for carrying small to medium-sized volume flows. Typical areas of application are, e.g. ventilation of apartments, shopping malls, supermarkets, workshops and garages.

The housing consists of a frame made of extruded aluminium profile with 2 cham-bers and plastic edges as well as double-skinned, 20mm thick panels made of galvanized steel sheet metal with insulation made up of non-combustible, sound- and heat-insulated glass wool mats. One housing wall is left open. Fans up to a nominal size of 450 are fitted with backwards-curved plastic blades and a support plate made of steel sheet metal. From size 500 onwards, the high-efficiency im-pellers are made of aluminium. Integrated motor protection is indicated via an alarm relay. In the model “Control Operation” (Standard), the motor speed is con-tinuously provided via a 0-10V signal or a potentiometer (accessories).

Dimensions:

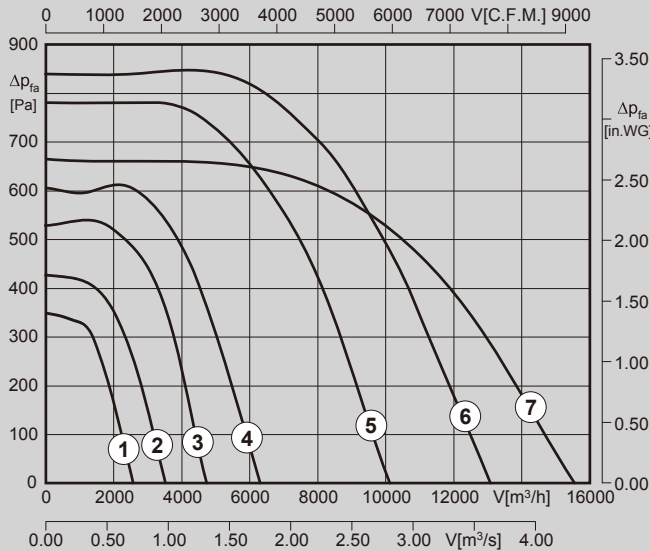
尺寸图:



Type 类型	A	B	C	D	E
UNO 50-310-G.4EA	193	316	450	500	500
UNO 50-355-G.4FF	224	365	450	500	500
UNO 50-355-G.5FA	224	365	450	500	500
UNO 67-400-G.5FA	253	404	620	670	670
UNO 67-450-G.5FA	286	454	620	670	670
UNO 80-500-G.6FF	321	504	720	800	800
UNO 80-560-G.6IF	361	570	720	800	800
UNO 102-630-G.6IF	407	634	940	1020	1020

all dimensions in mm / Changes and errors excepted!
所有尺寸单位都采用mm/更改和错误情况除外!

Air volume performance curves:
风量性能曲线:



- 集成控制 (EC控制)
- 由于采用了EC技术, 可降低整个系统的运营成本
- 连续控制或调节
- 可向任何方向进行排放
- 非常低的噪音等级

- integrated control (EC Control)
- complete system with reduced operating costs due to use of EC technology
- continuous control
- exhaust possible in all directions
- extremely low noise levels

Type 类型	Art.-No. 编号	No. 货号	U [V]	P [kW]	I _N [A]	n [min ⁻¹]	t _R [°C]		 [kg]
UNO 50-310-G.4EA	F15-31000	①	230	0.19	1.19	1650	60	IP54	28
UNO 50-355-G.4FF	F15-35520	②	230	0.38	2.3	1550	45	IP54	31.5
UNO 67-400-G.5FA	F15-40000	③	400	0.68	1.3	1600	55	IP54	47
UNO 67-450-G.5FA	F15-45020	④	400	0.9	1.7	1500	55	IP54	53
UNO 80-500-G.6FF	F15-50010	⑤	400	2.0	3.15	1500	40	IP54	84
UNO 80-560-G.6IF	F15-56000	⑥	400	2.55	4.0	1400	40	IP54	86
UNO 102-630-G.6IF	F15-63010	⑦	400	2.45	3.8	1100	40	IP54	102

Sound levels:
噪声级:

Type 类型	L _{WA,rel} A-weighted at V = 0,5 * V _{max} V = 0,5 * V _{max} 时的L _{WA,rel} A加权值																							
	L _{W,a2} [dB(A)] Housing L _{W,a2} [dB(A)] 外壳								L _{W,a2} [dB(A)] Suction side L _{W,a2} [dB(A)] 吸入侧								L _{W,a2} [dB(A)] Pressure side L _{W,a2} [dB(A)] 压力侧							
	fM [Hz]								fM [Hz]								fM [Hz]							
	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ
UNO 50-310-G.4EA	47	44	45	44	46	44	36	53	54	57	61	60	58	56	46	66	57	60	64	62	61	60	51	69
UNO 50-355-G.4FF	51	51	51	46	46	45	40	57	58	63	65	60	59	55	49	69	64	66	69	68	65	59	53	74
UNO 67-400-G.5FA	56	56	51	47	44	39	31	60	57	66	71	64	62	59	52	72	65	66	68	71	66	61	52	75
UNO 67-450-G.5FA	58	58	53	49	46	41	33	62	59	68	73	66	64	61	54	74	67	68	70	73	68	63	54	77
UNO 80-500-G.6FF	59	62	57	56	47	41	33	65	59	68	71	71	70	68	61	77	63	68	72	76	74	70	62	80
UNO 80-560-G.6IF	63	62	52	51	49	45	39	66	60	72	73	73	71	68	59	79	63	72	75	80	74	70	61	83
UNO 102-630-G.6IF	67	66	56	55	53	49	43	70	64	76	77	77	75	72	63	83	67	76	79	84	78	74	65	87

Sustainable efficiency

高效率的持续性

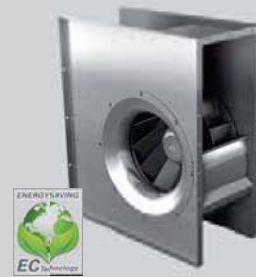
Examples of potential energy-saving

潜在节能的例子

Potential saving of an EC Centrifugal fan (size 560)

EC 离心风机的节能潜力 (560)

Operating point: 操作点:	short term 100% 短期 100%	day operation 80% 白天操作 80%	night operation 60% 夜晚操作 60%	
Volume flow 流量	8.000 m ³ /h	6.400 m ³ /h	4.800 m ³ /h	
Static pressure 静压力	500 Pa	320 Pa	180 Pa	
Power EC ¹ 功率EC ¹	2.023 W	1.063 W	478 W	
Power AC ² 功率AC ²	2.622 W	1.789 W	1.069 W	
白天的运行时间	2小时 hours	10小时 hours	12小时 hours	
Energy consumption per year 每年的能耗				Sum 总计
功率消耗 EC ¹	1.473 kWh/a	3.869 kWh/a	2.090 kWh/a	7.431 kWh/a
功率消耗 AC ²	1.910 kWh/a	6.512 kWh/a	4.670 kWh/a	13.091 kWh/a
Power saving 节能	437 kWh/a	2.643 kWh/a	2.580 kWh/a	5.660 kWh/a
Saving in % 节能 %	22,9 %	40,6 %	55,2 %	43,2 %
Cost saving per year:³ 每年的节省成本:³				1.132 EUR
Emission reductions per year:⁴ 每年的减排量:⁴				3,06 t CO₂

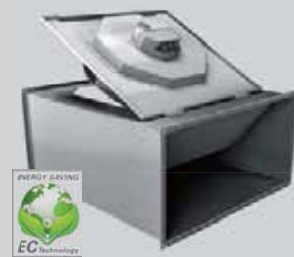


1) Type: EHAG 560.6IF 2) comparable AC fan 3) Electricity costs per kWh: 0,20 EUR 4) Source: www.compense.de
1) 类型: EHAG 560.6IF 2) 其他参照交流风机 3) 每千瓦的电费: 0.20 EUR 4) 网址: www.compense.de

Potential saving of an EC Duct fan (size 400)

EC 管道风机的潜在节能(400)

Operating point: 操作点:	short term 100% 短期 100%	day operation 80% 白天操作 80%	night operation 60% 夜晚操作 60%	
Volume flow 流量	2.500 m ³ /h	2.000 m ³ /h	1.500 m ³ /h	
Static pressure 静压力	250 Pa	160 Pa	90 Pa	
Power EC ¹ 功率EC ¹	358 W	200 W	98 W	
Power AC ² 功率AC ²	472 W	353 W	238 W	
白天的运行时间	2小时 hours	10小时 hours	12小时 hours	
Energy consumption per year 每年的能耗				Sum 总计
功率消耗 EC ¹	261 kWh/a	728 kWh/a	428 kWh/a	1.417 kWh/a
功率消耗 AC ²	344 kWh/a	1.285 kWh/a	1.040 kWh/a	2.668 kWh/a
Power saving 节能	83 kWh/a	557 kWh/a	612 kWh/a	1.251 kWh/a
Saving in % 节能 %	24,2 %	43,3 %	58,8 %	46,9 %
Cost saving per year:³ 每年的节省成本:³				251 EUR
Emission reductions per year:⁴ 每年的减排量:⁴				0,67 t CO₂



1) Type: KHAG 400.5FA 2) comparable AC fan 3) Electricity costs per kWh: 0,20 EUR 4) Source: www.compense.de
1) 类型: KHAG 400.5FA 2) 其他参照交流风机 3) 每千瓦的电费: 0.20 EUR 4) 网址: www.compense.de

Potential saving of an EC Roof fan (size 450)
EC 屋顶风机的节能潜力 (450)

Operating point: 操作点:	short term 100% 短期 100%	day operation 80% 白天操作 80%	night operation 60% 夜晚操作 60%	
Volume flow 流量	4.000 m ³ /h	3.200 m ³ /h	2.400 m ³ /h	
Static pressure 静压力	360 Pa	230 Pa	130 Pa	
Power EC ¹ 功率EC ¹	736 W	392 W	183 W	
Power AC ² 功率AC ²	927 W	667 W	422 W	
白天的运行时间	2小时 hours	10小时 hours	12小时 hours	
Energy consumption per year 每年的能耗				Sum 总计
功率消耗 EC ¹	536 kWh/a	1.428 kWh/a	801 kWh/a	2.765 kWh/a
功率消耗 AC ²	675 kWh/a	2.426 kWh/a	1.843 kWh/a	4.944 kWh/a
Power saving 节能	139 kWh/a	998 kWh/a	1.042 kWh/a	2.179 kWh/a
Saving in % 节能 %	20,6 %	41,2 %	56,5 %	44,1 %
Cost saving per year:³ 每年的节省成本:³				436 EUR
Emission reductions per year:⁴ 每年的减排量:⁴				1,18 t CO₂



1) Type: DVW 450-G.5FA 2) comparable AC fan 3) Electricity costs per kWh: 0,20 EUR 4) Source: www.compense.de
1) 类型: DVW 450-G.5FA 2) 其他参照交流风机 3) 每千瓦的电费: 0.20 EUR 4) 网址: www.compense.de

Potential saving of an EC Unobox (size 450)
EC 管道风机的潜在节能 (450)

Operating point: 操作点:	short term 100% 短期 100%	day operation 80% 白天操作 80%	night operation 60% 夜晚操作 60%	
Volume flow 流量	3.600 m ³ /h	2.880 m ³ /h	2.160 m ³ /h	
Static pressure 静压力	280 Pa	180 Pa	100 Pa	
Power EC ¹ 功率EC ¹	504 W	273 W	134 W	
Power AC ² 功率AC ²	663 W	456 W	279 W	
白天的运行时间	2 hours	10 hours	12 hours	
Energy consumption per year 每年的能耗				Sum 总计
功率消耗 EC ¹	367 kWh/a	994 kWh/a	585 kWh/a	1.946 kWh/a
功率消耗 AC ²	483 kWh/a	1.660 kWh/a	1.219 kWh/a	3.361 kWh/a
Power saving 节能	116 kWh/a	666 kWh/a	633 kWh/a	1.415 kWh/a
Saving in % 节能 %	24,0 %	40,1 %	52,0 %	42,1 %
Cost saving per year:³ 每年的节省成本:³				283 EUR
Emission reductions per year:⁴ 每年的减排量:⁴				0,77 t CO₂



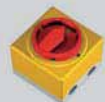
1) Type: Uno 67-450-G.5HF 2) comparable AC fan 3) Electricity costs per kWh: 0,20 EUR 4) Source: www.compense.de
1) 类型: Uno 67-450-G.5HF 2) 其他参照交流风机 3) 每千瓦的电费: 0.20 EUR 4) 网址: www.compense.de


Accessories 配件

for EC Centrifugal fans / EC Duct fans
适用于EC离心风机 / EC管道风机



EC Centrifugal fan EC 离心风机	Accessories 配件		
	Switch 开关 GS	Potentiometer in housing IP54 外壳内的电位计 IP54 POT 1	Potentiometer in housing IP30 外壳内的电位计 IP30 POT 2
Type 类型	Type / Art.-No. 类型/货号	Art.-No. 货号	Art.-No. 货号
EHAG 355.5FA	GS 2 / H80-00031	H55-00053	H55-00055
EHAG 400.5HF	GS 2 / H80-00031	H55-00053	H55-00055
EHAG 450.6FF	GS 2 / H80-00031	H55-00053	H55-00055
EHAG 500.6IF	GS 2 / H80-00031	H55-00053	H55-00055
EHAG 560.6IF	GS 2 / H80-00031	H55-00053	H55-00055



EC Centrifugal fan EC 离心风机	Accessories 配件		
	Switch 开关 GS	Potentiometer in housing IP54 外壳内的电位计 IP54 POT 1	Potentiometer in housing IP30 外壳内的电位计 IP30 POT 2
Type 类型	Type / Art.-No. 类型/货号	Art.-No. 货号	Art.-No. 货号
KHAG 315.4EA W / WS	GS 1 / H80-00230	H55-00053	H55-00055
KHAG 355.4EA W / WS	GS 1 / H80-00230	H55-00053	H55-00055
KHAG 355.5FA W / WS	GS 2 / H80-00031	H55-00053	H55-00055
KHAG 400.5FA W / WS	GS 2 / H80-00031	H55-00053	H55-00055
KHAG 450.5HF W / WS	GS 2 / H80-00031	H55-00053	H55-00055
KHAG 500.6FF W / WS	GS 2 / H80-00031	H55-00053	H55-00055
KHAG 560.6IF W / WS	GS 2 / H80-00031	H55-00053	H55-00055



Accessories 配件					
	Outlet flange 出口法兰 ABF	Outlet collar 出口卡箍 ABS	Inlet collar 入口卡箍 ASS	Inlet flange 入口法兰 ASF	Protection guard 防护罩 BG
各种类型的配件:	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号
EHAG 355.5FA	100-35500	130-35500	120-35500	110-35500	P25-35522
EHAG 400.5HF	100-40000	130-40000	120-39900	110-39900	P21-40001
EHAG 450.6FF	100-45000	130-45000	120-45000	110-45000	P21-45002
EHAG 500.6IF	100-50000	130-50000	120-50005	110-50000	P21-50001
EHAG 560.6IF	100-56005	100-56005	120-56000	110-56000	P21-56003

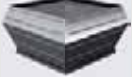


Accessories 配件						
	Duct silencer 管道消音器 KD	Flexible duct connection 柔性管道连接件 FKV	Flange 法兰 GF	Plastic shutter 塑料百叶窗 VK	Air damper motor driven 节气门驱动电机 JKL	Filterbox incl. filter G4 包含过滤器的 过滤箱G4 KFB
各种类型的配件:	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号
KHAG 315.4EA W / WS	D20-50250	130-22501	100-22502	V10-22500	V21-10001	D22-50250
KHAG 355.4EA W / WS	D20-60350	130-31501	100-31502	V10-31500	V21-10004	D22-60350
KHAG 355.5FA W / WS	D20-60350	130-31501	100-31502	V10-31500	V21-10004	D22-60350
KHAG 400.5FA W / WS	D20-60350	130-31501	100-31502	V10-31500	V21-10004	D22-60350
KHAG 450.5HF W / WS	D20-70400	130-35501	100-35502	V10-35500	V21-10005	D22-70400
KHAG 500.6FF W / WS	D20-80500	130-40001	100-40001	V10-40000	V21-10006	D22-80500
KHAG 560.6IF W / WS	D20-10500	130-56001	100-56001	V10-56000	V21-10007	D22-10500

Accessories 配件

for EC Roof fans / EC Unoboxes
适用于EC屋顶风机/ EC Unoboxes

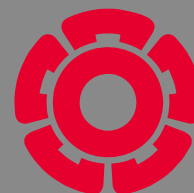


EC Roof fan EC 屋顶风机	Accessories 配件					
	Potentiometer in housing IP54 外壳内的电位计IP54 POT 1	Potentiometer in housing IP30 外壳内的电位计IP30 POT 2	Flange 法兰 GF	Flexible tube connection 柔性管接头 FRV	Shutter 百叶窗 VS¹ / VM²	Swing-out frame 摆动式支 KR
Type 类型	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号
DV 310L-G.4EA	H55-00053	H55-00055	100-31000	130-31000	A60-31000/A70-31000	A71-31000
DV 355-G.4FF	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-35500
DV 355-G.5FA	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-35500
DV 400-G.4FF	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-35500
DV 400-G.5FA	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-35500
DV 450-G.5FA	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-45000
DVW 500-G.6IF	H55-00053	H55-00055	100-35501	130-35502	A60-35500/A70-35500	A71-45000
DVW 560-G.6IF	H55-00053	H55-00055	110-56000	120-56000	A60-56000/A70-56000	A71-56000
DVW 630-G.6IF	H55-00053	H55-00055	110-56000	120-56000	A60-56000/A70-56000	A71-56000

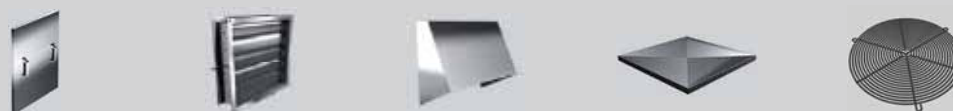
1) automatic
2) motor driven
1) 自动
2) 电机驱动



EC Unobox	Accessories 配件				
	Switch 开关 GS	Potentiometer in housing IP54 外壳内的电位计IP54 POT 1	Potentiometer in housing IP30 外壳内的电位计IP30 POT 2	Flexible connection 柔性连接 ELS	Side covering 侧盖 SV
Type 类型	Type/类型 Art.-No. 货号	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号	Art.-No. 货号
UNO 50-310-G.4EA	GS 1 / H80-00230	H55-00053	H55-00055	130-50081	SV500-0001U
UNO 50-355-G.4FF	GS 5 / H80-00034	H55-00053	H55-00055	130-50081	SV500-0001U
UNO 67-400-G.5FA	GS 5 / H80-00034	H55-00053	H55-00055	130-67081	SV670-0001U
UNO 67-450-G.5FA	GS 5 / H80-00034	H55-00053	H55-00055	130-67081	SV670-0001U
UNO 80-500-G.6FF	GS 5 / H80-00034	H55-00053	H55-00055	130-80080	SV800-0007N
UNO 80-560-G.6IF	GS 5 / H80-00034	H55-00053	H55-00055	130-80080	SV800-0007N
UNO 102-630-G.6IF	GS 5 / H80-00034	H55-00053	H55-00055	130-10080	SV100-0007N



Accessories 配件						
	Flat roof socket 平顶套接口 FS	Base for sloping roof 1-45° 斜顶套接口底座1-45° FSS	Socket sound absorber 套接口消音器 SD	Sound abs. for sloping roof 1-45° 斜顶式消音器1-45° SSD	Protection guard 防护罩 BG	Adapter plate 转接板 AP
各种类型的配件:	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号
DV 310L-G.4EA	A80-31000	A80-31050	A40-31021	A40-31050	P25-25020	A40-31030
DV 355-G.4FF	A80-35500	A80-35550	A40-35521	A40-35550	P21-40002	A40-35530
DV 355-G.5FA	A80-35500	A80-35550	A40-35521	A40-35550	P21-40002	A40-35530
DV 400-G.4FF	A80-35500	A80-35550	A40-35521	A40-35550	P21-40002	A40-35530
DV 400-G.5FA	A80-35500	A80-35550	A40-35521	A40-35550	P21-40002	A40-35530
DV 450-G.5FA	A80-45000	A80-45050	A40-45018	A40-45050	P21-40002	A40-45030
DVW 500-G.6IF	A80-45000	A80-45050	A40-45018	A40-45050	P21-40002	A40-45030
DVW 560-G.6IF	A80-56000	A80-56050	A40-56018	A40-56050	P21-56003	A40-56030
DVW 630-G.6IF	A80-56000	A80-56050	A40-56018	A40-56050	P21-56003	A40-56030



Accessories					
	Service door 维护门 BT	Air damper 风挡 JKL	Outlet cover 出口罩 ABH	Weather protection roof 防雨罩 WSD	Protection guard 防护罩 BG
各种类型的配件:	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号	Art.-No. 型号
UNO 50-310-G.4EA	TÜR501-0501V	JKL501-0001N	HAB501-0001N	F09-35553	P25-28022
UNO 50-355-G.4FF	TÜR501-0501V	JKL501-0001N	HAB501-0001N	F09-35553	P25-28022
UNO 67-400-G.5FA	TÜR671-0671V	JKL671-0003N	HAB671-0001N	F09-40053	P25-31522
UNO 67-450-G.5FA	TÜR671-0671V	JKL671-0003N	HAB671-0001N	F09-40053	P25-35522
UNO 80-500-G.6FF	TÜR800-0800V	JKL800-0001N	HAB800-0001N	F09-56053	P21-40001
UNO 80-560-G.6IF	TÜR800-0800V	JKL800-0001N	HAB800-0001N	F09-56053	P21-45002
UNO 102-630-G.6IF	TÜR100-1020V	JKL100-0001N	HAB100-0001N	F09-71053	P21-50001

Total overview of our EC product range

EC 产品系列总概述

Fans and AHU's with energy efficient EC drives
配有高效EC驱动器的风机和AHU

For ventilation of residential, office and industrial buildings: For every application area we offer suitable EC solutions.
对于住宅、写字楼及工业楼宇的通风：我们可为每个应用领域提供合适的EC解决方案。

- 配有后弯叶轮的**离心风机**
- **Centrifugal fans**
with backwards curved impellers
- **用于冷却的轴流风机**
- **Axial fans for cooling**
- 配有后弯叶轮的**管道风机**，
具有旋出和消声功能
- **Duct fans**
with backwards curved impellers in
swing-out and sound-attenuated designs
- 可进行垂直吹除的**屋顶风机**
- **Roof fans**
vertical blowing
- **Unobox** 消声排气箱
- **Unobox**
sound attenuated exhaust boxes
- **空气幕**
- **Air curtains**
- **空气处理机组**
- **Air Handling Units**
- 带有热回收装置的**紧凑型
空气处理机组 (SupraBox)**
- **Compact Air Handling Unit
with heat recovery (SupraBox)**



EC 管道风机 (旋出型)
可安装在管道系统中，如商业和工业建筑楼的通风装置中。

EC Duct fan (swing-out)
for installation in duct systems, i.e. ventilation of commercial and industrial buildings



SupraBox Comfort
热回收系统，用于写字楼和商业建筑楼中的舒适性通风装置。

SupraBox Comfort
Heat recovery system for comfort ventilation in offices and commercial buildings



EC 离心风机
可安装在管道系统中，如商业和工业建筑楼的通风装置中。

EC Centrifugal fan
for installation in duct systems, i.e. ventilation of commercial and industrial buildings



EC Air curtains
 for industrial and commercial buildings
EC 空气幕
 用于工业和商业建筑楼



EC 屋顶风机
 用于住宅、商业和工业建筑楼的中央抽气系统。

EC Roof fan
 for central air extraction of residential, commercial and industrial buildings



EC Unobox
 用于住宅、商业和工业建筑楼的通风装置。

EC Unobox
 for ventilation of residential, commercial and industrial buildings



用于冷却的轴流风机 (EC)
 用于冷却作用 (冷凝器和蒸发器)

Axial fan for cooling (EC)
 for use in cooling technology (condenser, evaporators)



可自由运转的叶轮 (EC)
 用在AHU和净化室技术中

Free running impeller (EC)
 for use in AHU's and clean room technology

您的销售代表 *your sales representative:*