

**FANS
WITH ENERGY EFFICIENT EC TECHNOLOGY**



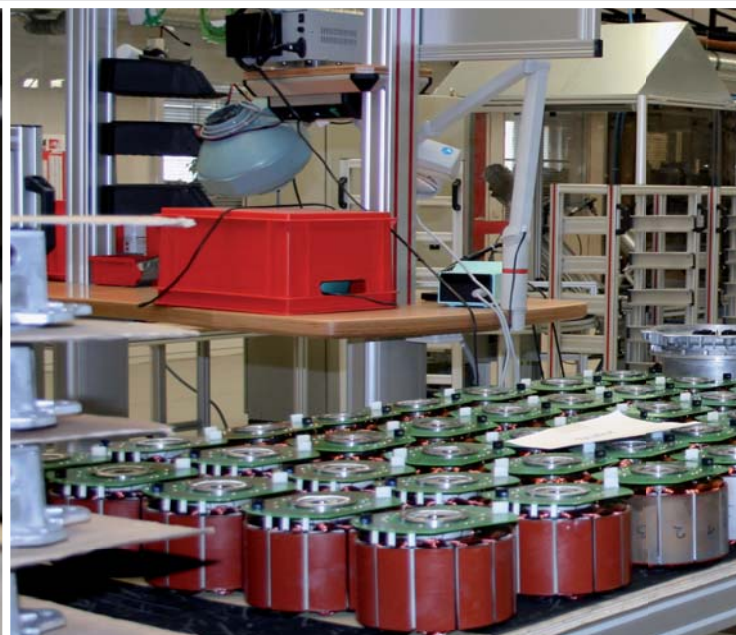
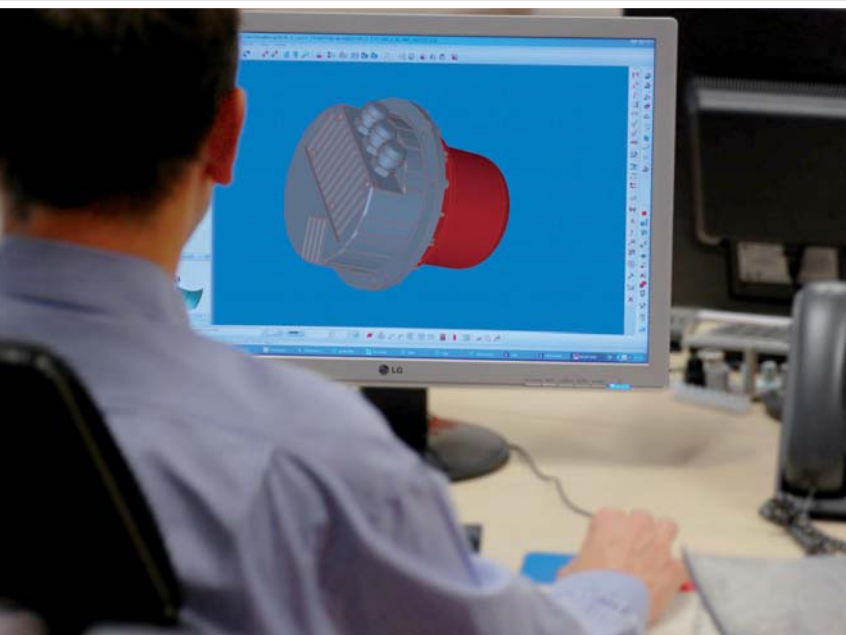
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Our success factors

Development, Production & Sales



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 (EuP)**, 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

We combine many years of experience, innovative development and state-of-the-art production techniques.

Leading the way!

Energy efficient EC technology



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.

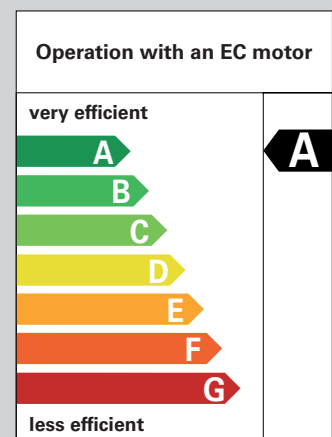
Advantages of EC technology

- 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

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



Functional Principle

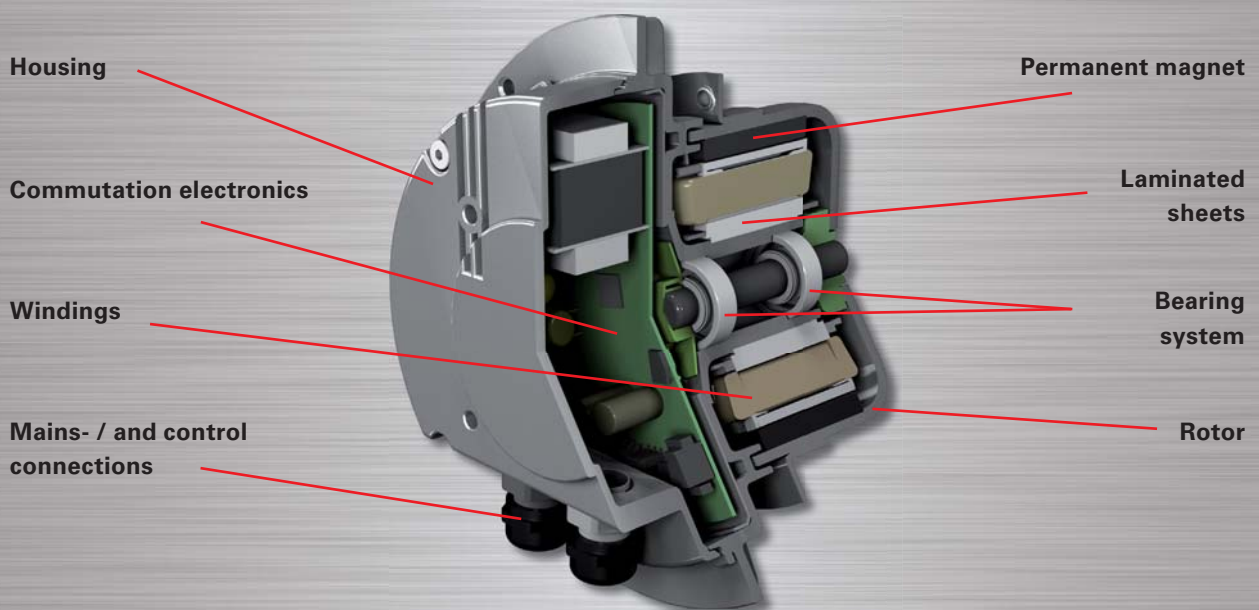
Energy efficient EC motor technology



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.



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.



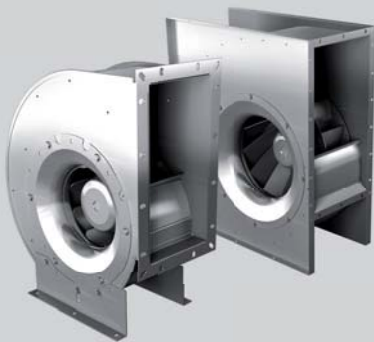
EC Centrifugal fans

with backward curved impellers

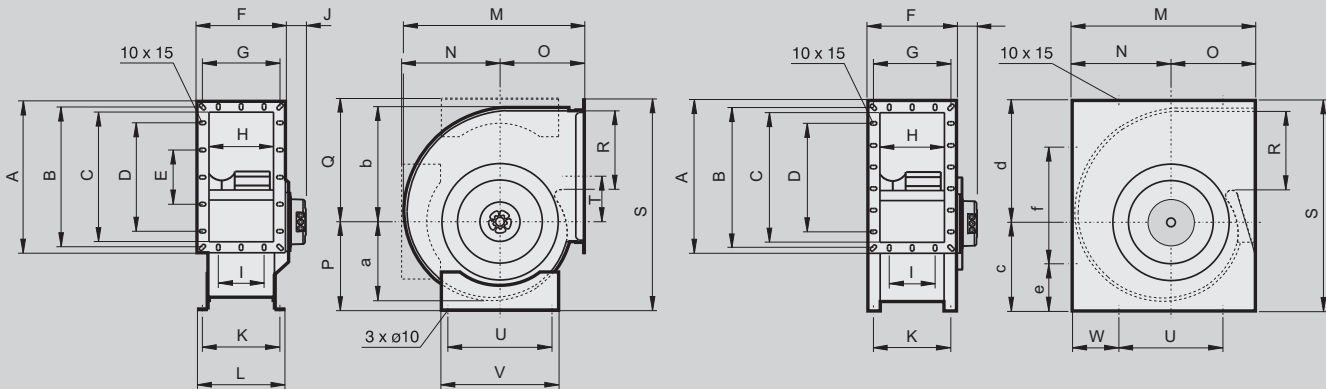
Features and Designs

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).



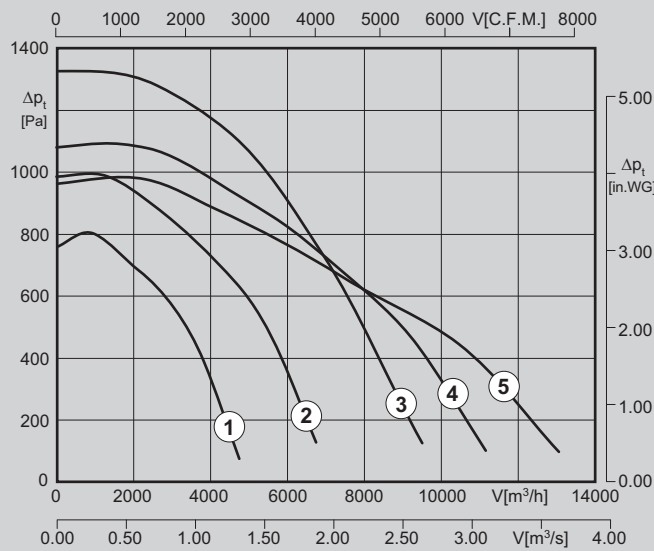
Dimensions:




Type	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!

Air volume performance curves:



- 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	No.	Art.-No.	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:

Type	L _{WA rel} A-weighted at V = 0,5 * V _{max}															
	L _{Wag} [dB(A)] Suction side								L _{Wag} [dB(A)] Pressure side							
	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

with backward curved impellers, swing-out

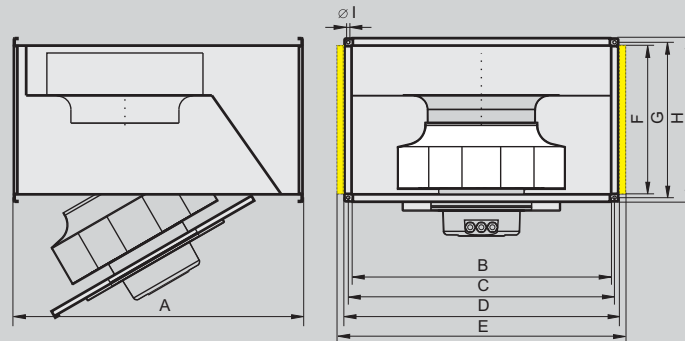
Features and Designs



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).

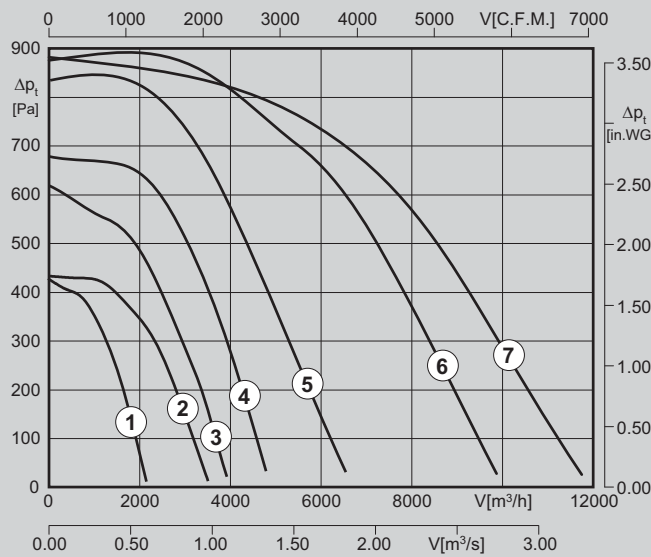
Dimensions:





Type	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 450.5HF W	780	700	720	740	-	400	420	440	9
KHAG 450.5HF WS	780	700	720	740	780	400	420	440	9
KHAG 500.6FF W	880	800	820	840	-	500	520	540	9
KHAG 500.6FF WS	880	800	820	840	880	500	520	540	9
KHAG 560.6IF W	982	1000	1020	1040	-	500	520	540	9
KHAG 560.6IF WS	982	1000	1020	1040	1080	500	520	540	9

all dimensions in mm / Changes and errors excepted!

Air volume performance curves:



- 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	Art.-No.	Type	Art.-No.	No.	U [V]	P [kW]	I _N [A]	n [min ⁻¹]	t _R [°C]		 [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:

Type	L _{WA rel} A-weighted at V = 0,5 * V _{max}																								
	L _{WA2} [dB(A)] Housing								L _{WA5} [dB(A)] Suction side								L _{WA6} [dB(A)] Pressure side								
	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	47	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

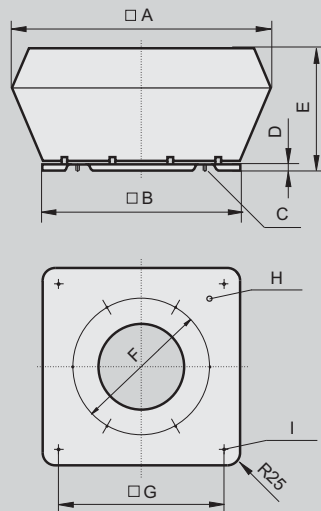
with backward curved impellers

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).

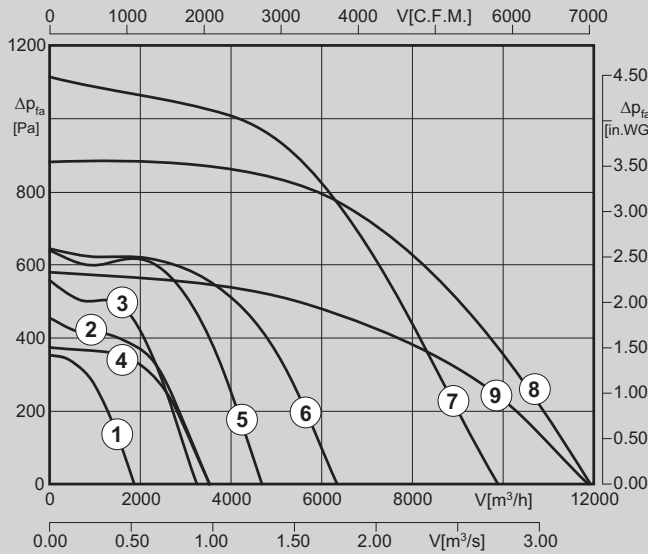
Dimensions:



Type	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
DVW 500-G.6IF	900	665	M6	30	450	438	535	M20 x 1,5	4 x ø12
DVW 560-G.6IF	1150	939	M8	30	570	605	750	M20 x 1,5	4 x ø14
DVW 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!

Air volume performance curves:



- 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 (Pressure control)*	Art.-No.	Type (Control operation)	Art.-No.	No.	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

Sound levels:

Type	L _{WA ref} A-weighted at V = 0,5 * V _{max}															
	L _{was} [dB(A)] Suction side								L _{was} [dB(A)] Pressure side							
	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

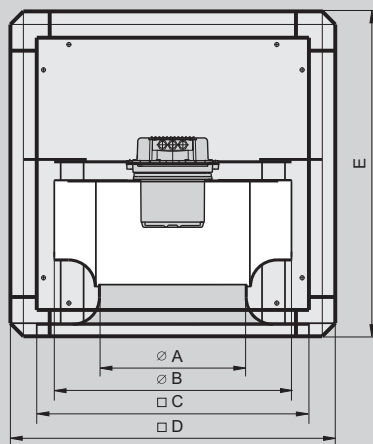
Features and Designs

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 chambers 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 impellers are made of aluminium. Integrated motor protection is indicated via an alarm relay. In the model "Control Operation" (Standard), the motor speed is continuously provided via a 0-10V signal or a potentiometer (accessories).

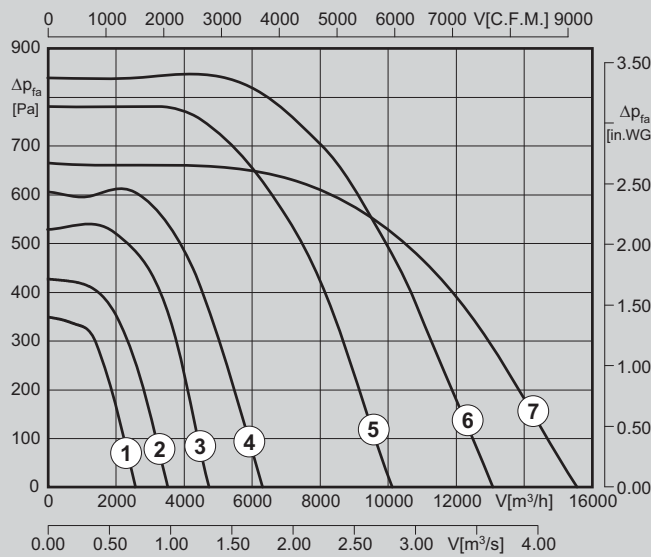
Dimensions:



Type	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!

Air volume performance curves:



- 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	Art.-No.	No.	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:

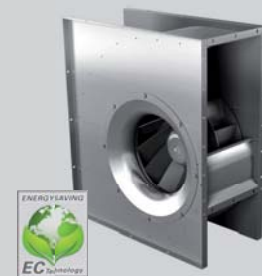
Type	L _{WA,rel} A-weighted at V = 0,5 * V _{max}																								
	L _{WA2} [dB(A)] Housing								L _{WA5} [dB(A)] Suction side								L _{WA6} [dB(A)] Pressure side								
	fM [Hz]								fM [Hz]								fM [Hz]								
	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	4K	8K	Σ	125	250	500	1K	2K	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

Examples of potential energy-saving

Potential saving of an EC Centrifugal fan (size 560)

Operating point:	short term 100%	day operation 80%	night operation 60%	
Volume flow	8.000 m³/h	6.400 m³/h	4.800 m³/h	
Static pressure	500 Pa	320 Pa	180 Pa	
Power EC ¹	2.023 W	1.063 W	478 W	
Power AC ²	2.622 W	1.789 W	1.069 W	
Running time per day	2 hours	10 hours	12 hours	
Energy consumption per year				Sum
Power consumption EC ¹	1.473 kWh/a	3.869 kWh/a	2.090 kWh/a	7.431 kWh/a
Power consumption AC ²	1.910 kWh/a	6.512 kWh/a	4.670 kWh/a	13.091 kWh/a
Power saving	437 kWh/a	2.643 kWh/a	2.580 kWh/a	5.660 kWh/a
Saving in %	22,9 %	40,6 %	55,2 %	43,2 %
Cost saving per year: ³				1.132 EUR
Emission reductions per year: 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

Potential saving of an EC Duct fan (size 400)

Operating point:	short term 100%	day operation 80%	night operation 60%	
Volume flow	2.500 m³/h	2.000 m³/h	1.500 m³/h	
Static pressure	250 Pa	160 Pa	90 Pa	
Power EC ¹	358 W	200 W	98 W	
Power AC ²	472 W	353 W	238 W	
Running time per day	2 hours	10 hours	12 hours	
Energy consumption per year				Sum
Power consumption EC ¹	261 kWh/a	728 kWh/a	428 kWh/a	1.417 kWh/a
Power consumption AC ²	344 kWh/a	1.285 kWh/a	1.040 kWh/a	2.668 kWh/a
Power saving	83 kWh/a	557 kWh/a	612 kWh/a	1.251 kWh/a
Saving in %	24,2 %	43,3 %	58,8 %	46,9 %
Cost saving per year: ³				251 EUR
Emission reductions per year: 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

Potential saving of an EC Roof fan (size 450)

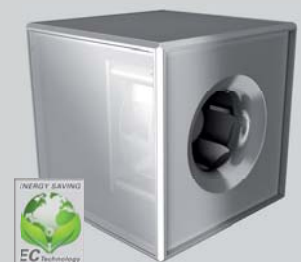
Operating point:	short term 100%	day operation 80%	night operation 60%	
Volume flow	4.000 m ³ /h	3.200 m ³ /h	2.400 m ³ /h	
Static pressure	360 Pa	230 Pa	130 Pa	
Power EC ¹	736 W	392 W	183 W	
Power AC ²	927 W	667 W	422 W	
Running time per day	2 hours	10 hours	12 hours	
Energy consumption per year				Sum
Power consumption EC ¹	536 kWh/a	1.428 kWh/a	801 kWh/a	2.765 kWh/a
Power consumption AC ²	675 kWh/a	2.426 kWh/a	1.843 kWh/a	4.944 kWh/a
Power saving	139 kWh/a	998 kWh/a	1.042 kWh/a	2.179 kWh/a
Saving in %	20,6 %	41,2 %	56,5 %	44,1 %
Cost saving per year: ³				436 EUR
Emission reductions per year: 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

Potential saving of an EC Unobox (size 450)

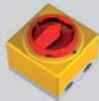
Operating point:	short term 100%	day operation 80%	night operation 60%	
Volume flow	3.600 m ³ /h	2.880 m ³ /h	2.160 m ³ /h	
Static pressure	280 Pa	180 Pa	100 Pa	
Power EC ¹	504 W	273 W	134 W	
Power AC ²	663 W	456 W	279 W	
Running time per day	2 hours	10 hours	12 hours	
Energy consumption per year				Sum
Power consumption EC ¹	367 kWh/a	994 kWh/a	585 kWh/a	1.946 kWh/a
Power consumption AC ²	483 kWh/a	1.660 kWh/a	1.219 kWh/a	3.361 kWh/a
Power saving	116 kWh/a	666 kWh/a	633 kWh/a	1.415 kWh/a
Saving in %	24,0 %	40,1 %	52,0 %	42,1 %
Cost saving per year: ³				283 EUR
Emission reductions per year: 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


Accessories

for EC Centrifugal fans / EC Duct fans




EC Centrifugal fan	Accessories		
	Switch GS	Potentiometer in housing IP54 POT 1	Potentiometer in housing IP30 POT 2
Type	Type / Art.-No.	Art.-No.	Art.-No.
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 Duct fan	Accessories		
	Switch GS	Potentiometer in housing IP54 POT 1	Potentiometer in housing IP30 POT 2
Type	Type / Art.-No.	Art.-No.	Art.-No.
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					
	Outlet flange ABF	Outlet collar ABS	Inlet collar ASS	Inlet flange ASF	Protection guard BG
Accessories for type:	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
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

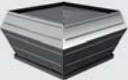


Accessories						
	Duct silencer KD	Flexible duct connection FKV	Flange GF	Plastic shutter VK	Air damper motor driven JKL	Filterbox incl. filter G4 KFB
Accessories for type:	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
KHAG 315.4EA W / WS	D20-50250	130-22501	100-22502	V10-22500	V21-10001	D22-50250
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


for EC Roof fans / EC Unoboxes



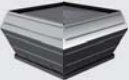
EC Roof fan	Accessories					
	Potentiometer in housing IP54 POT 1	Potentiometer in housing IP30 POT 2	Flange GF	Flexible tube connection FRV	Shutter VS¹ / VM²	Swing-out frame KR
Type	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DV 310L-G.4EA	H55-00053	H55-00055	I00-31000	I30-31000	A60-31000/A70-31000	A71-31000
DV 355-G.4FF	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-35500
DV 355-G.5FA	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-35500
DV 400-G.4FF	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-35500
DV 400-G.5FA	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-35500
DV 450-G.5FA	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-45000
DVW 500-G.6IF	H55-00053	H55-00055	I00-35501	I30-35502	A60-35500/A70-35500	A71-45000
DVW 560-G.6IF	H55-00053	H55-00055	I10-56000	I20-56000	A60-56000/A70-56000	A71-56000
DVW 630-G.6IF	H55-00053	H55-00055	I10-56000	I20-56000	A60-56000/A70-56000	A71-56000

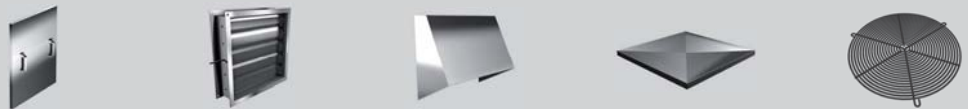
1) automatic 2) motor driven




EC Unobox	Accessories				
	Switch GS	Potentiometer in housing IP54 POT 1	Potentiometer in housing IP30 POT 2	Flexible connection ELS	Side covering SV
Type	Type / Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
UNO 50-310-G.4EA	GS 1 / H80-00230	H55-00053	H55-00055	I30-50081	SV500-0001U
UNO 50-355-G.4FF	GS 5 / H80-00034	H55-00053	H55-00055	I30-50081	SV500-0001U
UNO 67-400-G.5FA	GS 5 / H80-00034	H55-00053	H55-00055	I30-67081	SV670-0001U
UNO 67-450-G.5FA	GS 5 / H80-00034	H55-00053	H55-00055	I30-67081	SV670-0001U
UNO 80-500-G.6FF	GS 5 / H80-00034	H55-00053	H55-00055	I30-80080	SV800-0007N
UNO 80-560-G.6IF	GS 5 / H80-00034	H55-00053	H55-00055	I30-80080	SV800-0007N
UNO 102-630-G.6IF	GS 5 / H80-00034	H55-00053	H55-00055	I30-10080	SV100-0007N



Accessories						
	Flat roof socket FS	Base for sloping roof 1-45° FSS	Socket sound absorber SD	Sound abs. for sloping roof 1-45° SSD	Protection guard BG	Adapter plate AP
Accessories for type:	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
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 BT	Air damper JKL	Outlet cover ABH	Weather protection roof WSD	Protection guard BG
Accessories for type:	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
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

Fans and AHU's with energy efficient EC drives

For ventilation of residential, office and industrial buildings: For every application area we offer suitable EC solutions.

- **Centrifugal fans** with backwards curved impellers
- **Axial fans for cooling**
- **Duct fans** with backwards curved impellers in swing-out and sound-attenuated designs
- **Roof fans** vertical blowing
- **Unobox** sound attenuated exhaust boxes
- **Air curtains**
- **Air Handling Units**
- **Compact Air Handling Unit with heat recovery (SupraBox)**



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



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



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 Unobox
 for ventilation of residential,
 commercial and industrial buildings



EC Roof fan
 for central air extraction of resi-
 dential, commercial and industrial
 buildings



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



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

Your sales representative: