

CI/SfB

(57.7)

1st Edition



Lo-Carbon Kitchen Box Fan (EKF)



ERP 2015 COMPLIANT

New 2013 Part L Building Regulation
compliant for Kitchen Ventilation

Vent-Axia[®]



A New Generation of Lo-Carbon Kitchen Box Fans

Looking towards the future

Vent-Axia has been at the forefront of technical innovation in the ventilation industry for over 75 years. Manufactured in the UK, the Industrial product range continues to develop and improve towards more energy efficient solutions.

Following on from the successful Sentinel Demand range, we are proud to introduce the new Lo-Carbon Kitchen Box Fan Range. These state of the art fans are designed specifically for kitchen extract systems and are suitable for increased in duct temperatures of up to 120°C. The latest 2013 edition of the Non Domestic Buildings Compliance Guide calls for Kitchen Ventilation Systems to have a Specific Fan Power (SFP) of less than 1.0W/l/s, comfortably achieved by this advanced range of Kitchen Ventilation fans.

By looking closely at the operation of a kitchen system we understand that activities vary during the day, and so our new Lo-Carbon Kitchen Box Fans offer a simple user-friendly speed control, allowing the end-user to control the extract rate depending on the demands placed on the kitchen, ensuring the best combination of good indoor air quality and energy efficiency by not over ventilating.

The fans are supplied fully assembled and ready for installation in any application together with a comprehensive range of accessories and controllers ensuring the optimum selection for all installation and control requirements.

Investing in life-time cost reduction

The new generation of Lo-Carbon Kitchen Box Fans offers an energy efficient solution without compromising on performance. Incorporating an advance long-life EC motor and efficient backward curved impeller reduces the running costs of the fan system, yet allows for further energy savings by utilising a simple manual speed control that can be mounted in the kitchen area. The combination of reduced running costs and longevity of the motor can easily outweigh the higher cost of this advanced technology making it more cost effective over the lifetime of the system.

Furthermore by moving the EC motor and electronics out of the airstream the motor is protected from grease build up and high temperatures ensuring reliability. Cleaning is also aided as there is minimal possibility of duct steam cleaning affecting the motor.



Reduces your potential fan running costs by **up to 44% per day !**

The Consultants Choice

- Reduces CO₂ Emissions - utilising high efficiency EC motors and Backward Curved impellers ensures the highest efficiency. An integrated control system ensures that the system is not over ventilated with the resultant wasted energy.
- Designed with interchangeable access panels and discharge spigot for flexible installation.
- An innovative design allows for duct connections in any direction, blowing straight through, turning through 90° with ducts vertical, horizontal or both. With the addition of the weather cowl the unit is suitable for external mounting as well as internal.
- Compliant with the New 2013 Non Domestic Building Services Compliance Guide for Kitchen Extract (fan remote from zone with grease filter) SFP 1.0W/l/s.



- The innovative mounting arrangement and extensive range of duct accessories ensures that one unit can be used for almost any duct installation arrangement, internal or external.

The End-User's Choice

- Up to 44% reduction in running costs by utilising high efficiency fans and motors and coupling this with an efficient speed control method results in maximum possible energy and running cost savings.
- The high efficiency EC motor results in less stress on the motor and lower wear, extending the running life for the motor.
- An integral potentiometer provides basic efficient speed control via the inbuilt electronics on the motor. Alternatively the motor speed can be varied via a 0-10V input from proportional sensors or Building Management system.
- Multiple access panels and the easily removeable motor and impeller set facilitates easy cleaning of the system. The motor out of the airstream minimises the exposure of the motor to any dirt and grease build up, removing the necessity to steam clean the motor casing. 5 year motor warranty.
- Quiet in operation providing comfortable ambience in the workplace.



The Contractors Choice

- In depth product support - With Vent Axia's extensive Distribution network, large and highly experienced Sales Team and unrivalled after sales support assures you, the contractor, of continuing support at all stages of the contract.



Technology payback within 12 months!

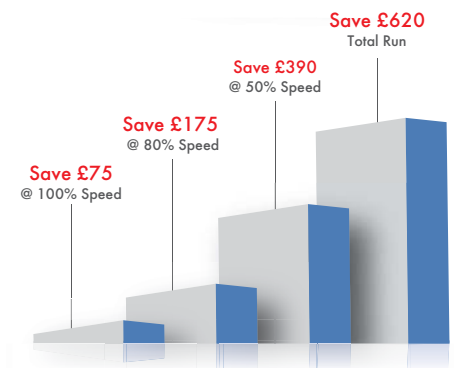
EC Motor vs Traditional AC Motor

The graphs below shows the running cost difference between a traditional AC motor controlled via transformer and an EC motor in a typical commercial kitchen environment.

Daily power saving with the Lo-Carbon Kitchen Box Fan*



Annual cost saving with the Lo-Carbon Kitchen Box Fan*



*EC motor vs AC with transformer control based on the assumption of 3.0kW AC motor, £0.12 per kW, 365 days per year. 4 hours per day at @ 100%, peak kitchen service. 4 hours per day at 80% speed, off peak kitchen service. 8 hours per day at 50% speed, prep and wash down time (kitchen closed to service).

Lo-Carbon Kitchen Box Fan (EKF)

Features and Benefits

- Energy efficient EC motor
- 120°C airstream rated
- Sealed for life motor
- Flexible installation, straight through or turn through 90° as standard
- Internal or external mounting as standard
- 25mm Double skin casing
- Integral IP65 Isolator
- Simple potentiometer control
- ERP 2015 compliant
- Compliant part L 2013 SFP for requirements for kitchen ventilation systems

Vent-Axia's latest product offering in the Non Residential sector is a centrifugal box fan specifically designed for kitchen operation at elevated duct temperatures of up to 120°C. Working closely with our Engineering partner, the motor impeller arrangement has been specifically engineered to benefit from the efficiencies of an EC external rotor motor mounted out of the airstream to allow for operation at 120°C in duct temperatures.

Construction



The casing is constructed from a framed 25mm double skin with acoustic insulation to minimise unit noise. With careful thought to maximising the installation possibilities from one unit Vent-Axia have managed to create a single unit that is suitable for both internal and external mounting as standard. In addition to this the

duct configuration can be either straight blow through or turn through 90° and with the motor shaft either horizontal or vertical enables the fan to be mounted in any orientation.

Motor

The Kitchen box range of fans are powered by highly efficient, electronically commutated (EC) motors with permanent magnets, exceeding the minimum efficiency requirements for IE3 motors. All units are fully speed controllable via the onboard electronics utilising a 0-10V input signal. Motors and the onboard electronics are protected to IP54 as standard mounted and are out of the airstream.

The combination of an EC high efficiency motor and a high efficiency backward curved impeller ensures ERP 2015 compliance.

Impeller

A backward curved welded Aluminium impeller is mounted on an extended shaft from the EC external motor. Motor and impeller balanced as a finished assembly to G2.5 to ensure vibration free operation. Impeller matched to inlet cone for optimum performance.

Speed Control

By utilising EC motors the EKF range has been designed for simple Demand Ventilation control facilitated by use of a 0-10V Potentiometer. This low voltage controller can then be mounted within the kitchen area thereby removing the risk of overheating or damaging the control circuits.

Performance

The fan performance has been tested in accordance with ISO 5801 DIN 24163

Sound Levels

Fan sound levels, measured in a reverberant chamber in accordance with EN ISO 3745. Published dB(A) figures are free field at a distance of 3m with hemispherical propagation at a reference level of 2×10^{-5} . The sound power

level spectra figures are dB with a reference level of 10^{-12} Watts.

Electrical

Depending on unit size the EKF range are suitable for either single phase 220-240V 50Hz or Three phase 380-414V 50Hz. All mains wiring is direct to the built in IP65 Isolator mounted on the motor support plate providing simple and safe connection and operation.

Accessories

A full range of accessories are available for the EKF range including:

- Potentiometer speed controller (included as standard)
- Square to round duct connectors
- Flexible connectors
- Mounting support and A/V mount set
- Weather Cowl
- Discharge louvre

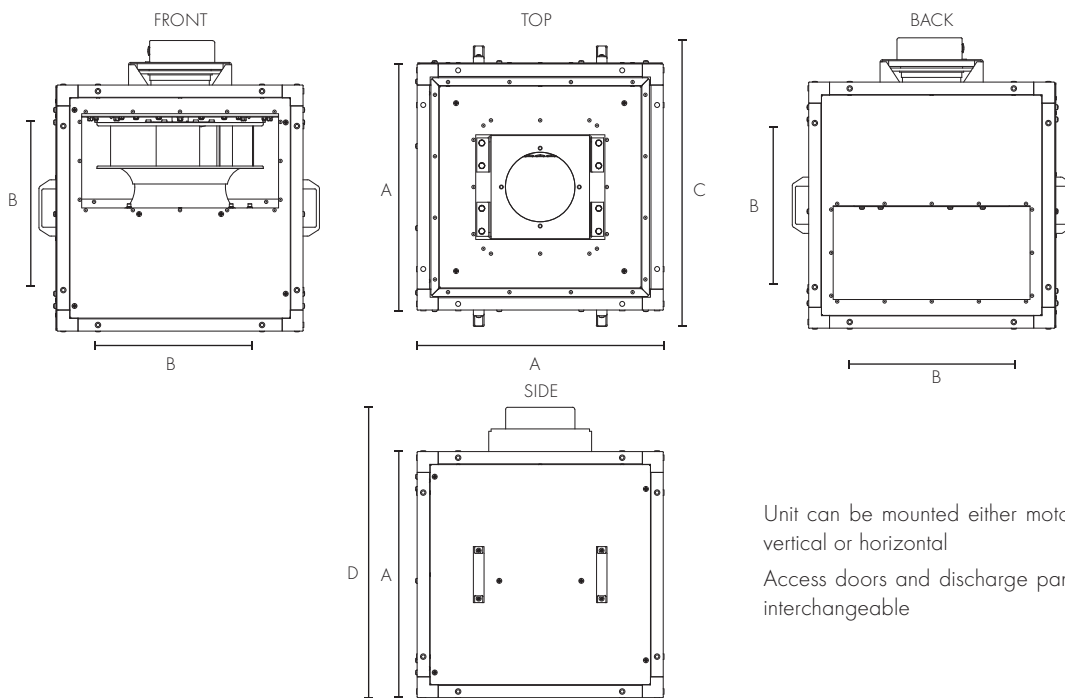
Online Documentation

For digital catalogue information, fitting & wiring instructions and online fan selection programme scan the QR code or visit www.vent-axia.com/ekf





Fan Dimensions (mm)

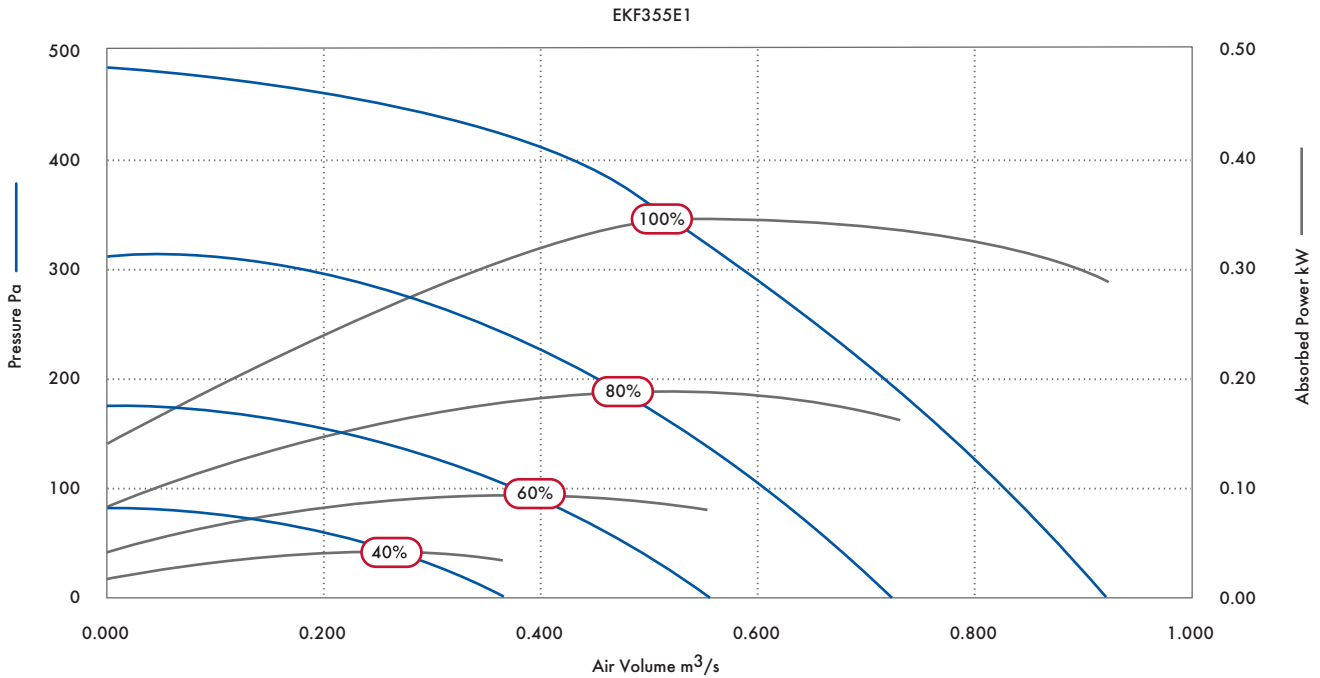


Unit can be mounted either motor shaft vertical or horizontal
Access doors and discharge panel are interchangeable

Model	A	B	C	D	Weight (kg)
EKF355E1	600	400	684	708	63
EKF400E1	700	500	784	826	81
EKF450E1	700	500	784	826	83.5
EKF450E3	700	500	784	826	83.5
EKF500E3	850	650	929	1017	130
EKF560E3	850	650	929	1017	132

Lo-Carbon Kitchen Box Fan (EKF)

Performance Curve



Performance Guide

Speed	Airflow, m³/s @ Pa											Fans F.L.C.	Supply Voltage	
	0	50	100	150	200	250	300	350	400	450				
100%	m³/s	0.920	0.866	0.815	0.767	0.700	0.630	0.600	0.510	0.435	0.275	1.7	220V/ 1/ 50Hz	
	kW	0.29	0.31	0.32	0.32	0.33	0.34	0.34	0.34	0.33	0.27			
	SFP	0.32	0.35	0.39	0.42	0.48	0.54	0.60	0.66	0.76	0.97			
80%	m³/s	0.737	0.665	0.605	0.538	0.455	0.360	0.140				1.0		
	kW	0.16	0.17	0.18	0.19	0.18	0.18	0.13						
	SFP	0.22	0.26	0.30	0.35	0.41	0.50	0.90						
60%	m³/s	0.554	0.475	0.375	0.230							0.7		
	kW	0.08	0.09	0.09	0.08									
	SFP	0.14	0.18	0.24	0.36									
40%	m³/s	0.368	0.230											0.5
	kW	0.04	0.04											
	SFP	0.095	0.172											

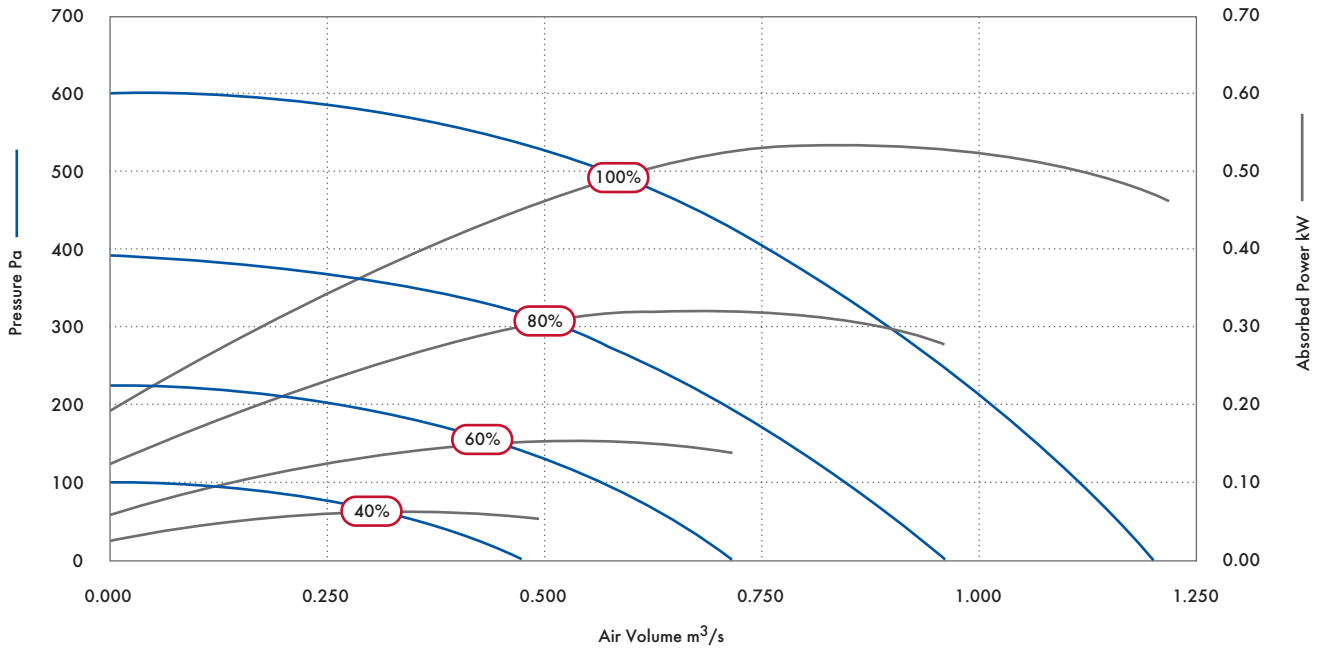
Sound Data

Speed	Test Mode	Octave Band Frequency SWL								SPL dB(A) @ 3m
		63	125	250	500	1K	2K	4K	8K	
100%	Intake	50	66	66	63	60	61	58	52	49
	Discharge	48	66	67	67	69	66	62	55	
	Breakout	62	71	72	64	66	58	53	47	
90%	Intake	46	62	58	57	55	55	51	46	47
	Discharge	42	61	59	61	63	60	55	48	
	Breakout	61	77	72	61	59	53	47	41	
80%	Intake	43	51	50	51	48	48	43	37	38
	Discharge	36	39	48	52	56	55	52	46	
	Breakout	58	70	62	54	48	44	37	32	
60%	Intake	40	46	45	45	40	39	33	30	29
	Discharge	34	36	44	43	40	39	35	30	
	Breakout	57	59	51	46	39	33	27	31	

ErP conform 2015, N=79.6, statA=69. 9%, VSD integrated, Integrated controller.

Performance Curve

EKF400E1



Performance Guide

Speed	Airflow, m³/s @ Pa													Fans F.L.C.	Supply Voltage
	0	50	100	150	200	250	300	350	400	450	500	600			
100%	m³/s	1.206	1.160	1.115	1.065	1.020	0.965	0.907	0.845	0.765	0.685	0.586	0.175	3.0	220V/ 1/ 50Hz
	kW	0.53	0.55	0.56	0.58	0.59	0.60	0.61	0.61	0.60	0.59	0.56	0.33		
	SFP	0.44	0.47	0.50	0.55	0.58	0.62	0.67	0.72	0.79	0.86	0.96	1.90		
80%	m³/s	0.961	0.907	0.845	0.780	0.705	0.622	0.520	0.350					2.2	
	kW	0.28	0.30	0.31	0.32	0.32	0.32	0.31	0.26						
	SFP	0.29	0.33	0.36	0.40	0.45	0.51	0.59	0.75						
60%	m³/s	0.721	0.640	0.552	0.438	0.235							1.6		
	kW	0.13	0.14	0.15	0.14	0.12									
	SFP	0.18	0.22	0.27	0.33	0.51									
40%	m³/s	0.480	0.351	0.012										0.8	
	kW	0.06	0.05	0.03											
	SFP	0.11	0.16	2.50											

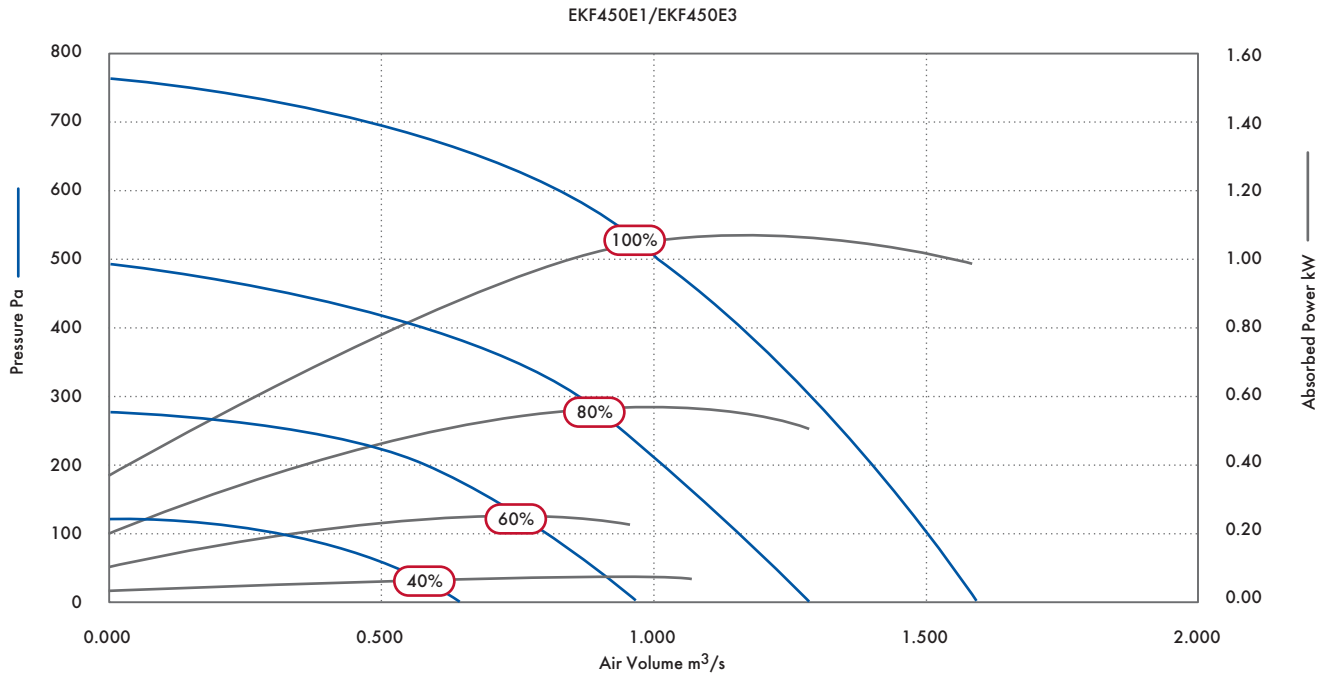
Sound Data

Speed	Test Mode	Octave Band Frequency SWL								SPL dB(A) @ 3m
		63	125	250	500	1K	2K	4K	8K	
100%	Intake	61	70	69	66	65	64	60	54	56
	Discharge	58	70	73	72	73	69	64	57	
	Breakout	69	90	94	70	67	63	57	53	
80%	Intake	54	61	60	59	59	58	54	47	49
	Discharge	50	61	65	66	67	63	58	51	
	Breakout	65	81	73	65	61	56	50	44	
60%	Intake	49	52	52	51	51	50	45	38	42
	Discharge	45	52	57	59	59	54	49	45	
	Breakout	62	75	64	57	52	46	40	34	
40%	Intake	44	47	47	44	44	43	40	33	32
	Discharge	40	46	47	45	45	43	42	35	
	Breakout	60	62	54	49	44	35	28	31	

ErP conform 2015, N=79.6, statA=69.9%, VSD integrated, Integrated controller.

Lo-Carbon Kitchen Box Fan (EKF)

Performance Curve



Performance Guide

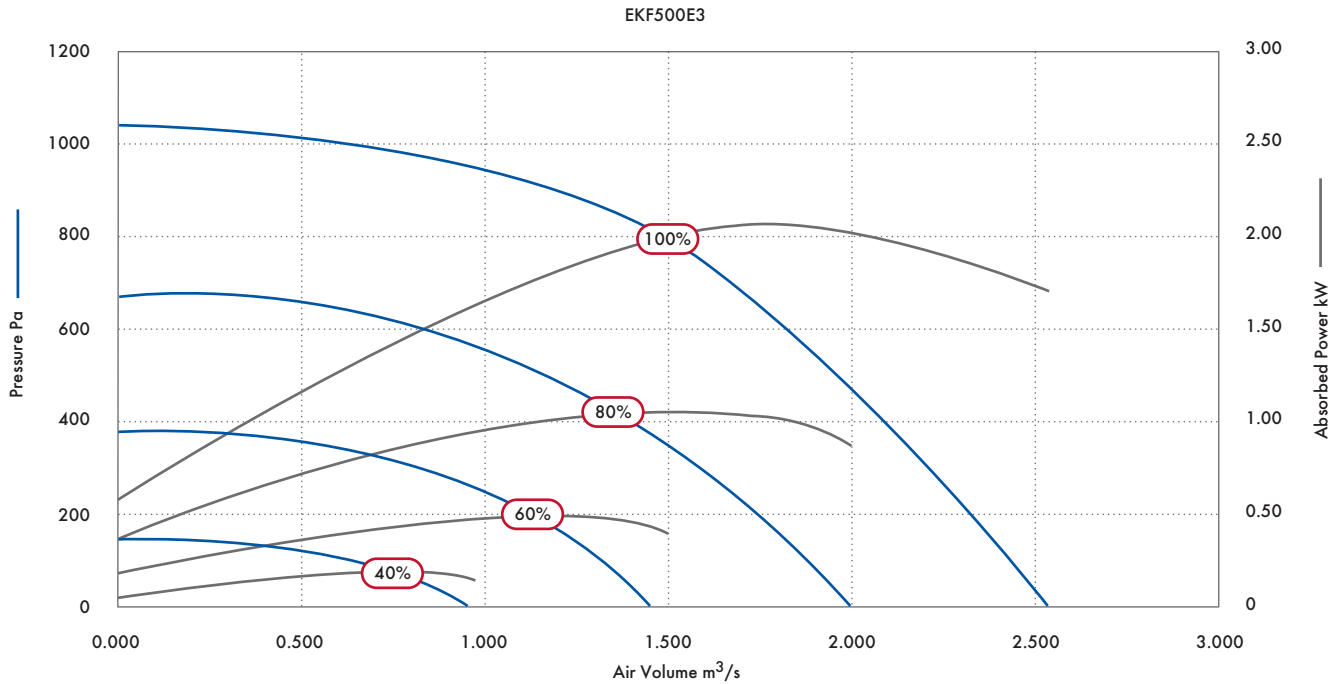
Speed	Airflow, m ³ /s @ Pa														E1 Model		E3 Model		
	0	50	100	150	200	250	300	350	400	450	500	550	600	700	Fans F.L.C.	Supply Voltage	Fans F.L.C.	Supply Voltage	
100%	m ³ /s	1.602	1.555	1.505	1.458	1.408	1.356	1.290	1.220	1.160	1.092	1.012	0.925	0.840	0.462	5.2	220V/ 1/50Hz	1.8	400V/ 3/50Hz
	kW	0.99	1.01	1.03	1.04	1.05	1.07	1.07	1.07	1.06	1.06	1.05	1.03	1.00	0.76				
	SFP	0.62	0.65	0.68	0.71	0.75	0.79	0.83	0.87	0.92	0.97	1.04	1.12	1.19	1.64				
80%	m ³ /s	1.285	1.228	1.166	1.095	1.015	0.938	0.855	0.762	0.582						3.8	220V/ 1/50Hz	1.0	400V/ 3/50Hz
	kW	0.51	0.53	0.54	0.55	0.55	0.55	0.55	0.54	0.49									
	SFP	0.40	0.43	0.46	0.50	0.55	0.59	0.64	0.71	0.84									
60%	m ³ /s	0.962	0.881	0.786	0.685	0.556	0.350									2.7	220V/ 1/50Hz	0.8	400V/ 3/50Hz
	kW	0.23	0.24	0.25	0.24	0.24	0.20												
	SFP	0.24	0.27	0.31	0.35	0.43	0.58												
40%	m ³ /s	0.640	0.511	0.290												1.9	220V/ 1/50Hz	0.5	400V/ 3/50Hz
	kW	0.08	0.09	0.08															
	SFP	0.13	0.17	0.26															

Sound Data

Speed	Test Mode	Octave Band Frequency SWL								SPL dB(A) @ 3m
		63	125	250	500	1K	2K	4K	8K	
100%	Intake	55	70	67	68	70	70	66	60	59
	Discharge	54	70	77	77	78	75	70	63	
	Breakout	70	81	86	74	68	63	57	52	
80%	Intake	51	70	59	63	65	64	60	54	52
	Discharge	46	48	68	69	72	72	69	64	
	Breakout	71	84	76	69	63	57	50	44	
60%	Intake	50	57	53	55	58	55	50	44	45
	Discharge	36	45	56	62	64	65	60	54	
	Breakout	66	78	66	62	54	49	40	40	
40%	Intake	45	50	46	48	51	50	43	37	34
	Discharge	31	42	48	53	55	56	52	38	
	Breakout	65	66	55	52	46	37	29	32	

Three phase unit ErP conform 2015, N=79.6, statA=69.9%, VSD integrated, Integrated controller.
 Single phase unit ErP conform 2015, N=76.1, statA=66.6%, VSD integrated, Integrated controller

Performance Curve



Performance Guide

Speed	Airflow, m ³ /s @ Pa												Fans F.L.C.	Supply Voltage	
	0	100	200	300	400	500	600	700	800	900	1000	1000			
100%	m ³ /s	2.543	2.450	2.320	2.190	2.075	1.935	1.835	1.700	1.458	1.250	0.539	5.5	400V/ 3/ 50Hz	
	kW	1.71	1.76	1.82	1.89	1.96	2.03	2.07	2.10	2.00	1.85	1.25			
	SFP	0.67	0.72	0.78	0.86	0.95	1.05	1.13	1.23	1.37	1.53	2.29			
80%	m ³ /s	2.002	1.900	1.765	1.570	1.372	1.178	0.754							3.9
	kW	0.88	1.01	1.04	1.05	1.04	1.02	0.87							
	SFP	0.44	0.53	0.59	0.67	0.76	0.87	1.16							
60%	m ³ /s	1.499	1.330	1.129	0.850								2.8		
	kW	0.40	0.47	0.49	0.46										
	SFP	0.26	0.35	0.43	0.54										
40%	m ³ /s	0.966	0.665										1.3		
	kW	0.18	0.22												
	SFP	0.19	0.33												

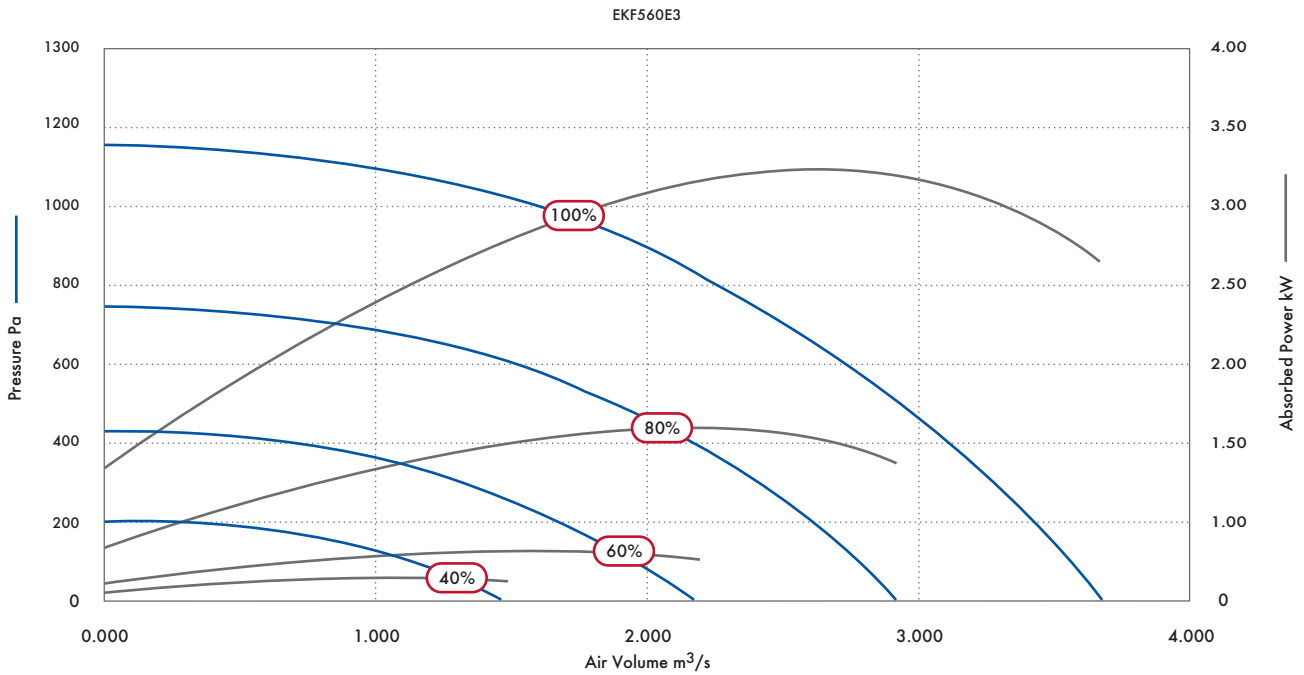
Sound Data

Speed	Test Mode	Octave Band Frequency SWL								SPL dB(A) @ 3m
		63	125	250	500	1K	2K	4K	8K	
100%	Intake	62	73	70	71	77	73	74	69	60
	Discharge	60	76	82	80	83	81	79	75	
	Breakout	75	82	88	73	69	68	65	59	
80%	Intake	60	66	62	66	67	67	61	56	52
	Discharge	56	67	72	74	75	71	66	60	
	Breakout	70	81	77	69	64	62	59	51	
60%	Intake	51	61	56	58	61	60	55	50	45
	Discharge	50	62	65	66	68	64	60	55	
	Breakout	66	74	70	61	57	53	49	43	
40%	Intake	46	56	51	53	50	55	50	43	35
	Discharge	43	55	56	57	59	55	51	48	
	Breakout	63	62	58	52	48	41	34	31	

ErP conform 2015, N=73.4, statA=66.9%, VSD integrated, Integrated controller.

Lo-Carbon Kitchen Box Fan (EKF)

Performance Curve



Performance Guide

Speed	Airflow, m³/s @ Pa													Fans F.L.C.	Supply Voltage
	0	100	200	300	400	500	600	700	800	900	1000	1100			
100%	m³/s	3.693	3.570	3.440	3.310	3.135	2.940	2.725	2.507	2.278	2.004	1.650	0.930	3.6	400V/ 3/ 50Hz
	kW	2.58	2.75	2.92	3.00	3.10	3.14	3.17	3.20	3.15	3.08	2.83	2.16		
	SFP	0.70	0.77	0.85	0.91	0.99	1.07	1.16	1.27	1.38	1.54	1.72	2.32		
80%	m³/s	2.926	2.780	2.585	2.405	2.155	1.860	1.500	0.900					2.6	
	kW	1.33	1.45	1.56	1.61	1.62	1.60	1.51	1.20						
	SFP	0.45	0.52	0.60	0.67	0.75	0.86	1.01	1.33						
60%	m³/s	2.192	1.987	1.672	1.293	0.600							1.8		
	kW	0.59	0.65	0.69	0.69	0.49									
	SFP	0.27	0.33	0.42	0.53	0.81									
40%	m³/s	1.481	1.081	0.019										1.0	
	kW	0.27	0.32	0.11											
	SFP	0.18	0.30	5.74											

Sound Data

Speed	Test Mode	Octave Band Frequency SWL								SPL dB(A) @ 3m
		63	125	250	500	1K	2K	4K	8K	
100%	Intake	64	78	81	74	77	76	72	67	65
	Discharge	62	76	83	83	83	81	76	70	
	Breakout	82	87	87	81	73	70	67	62	
80%	Intake	65	78	75	72	75	74	70	64	60
	Discharge	63	77	79	81	81	79	74	67	
	Breakout	77	85	80	76	68	65	61	56	
60%	Intake	60	67	63	60	64	60	56	50	52
	Discharge	56	65	67	70	70	66	60	54	
	Breakout	73	78	72	68	62	58	52	50	
40%	Intake	53	60	56	53	57	53	49	43	44
	Discharge	48	55	57	60	60	56	51	46	
	Breakout	68	67	64	60	55	47	38	41	

ErP conform 2015, N=72.4, statA=67.8%, VSD integrated, Integrated controller.

Accessories

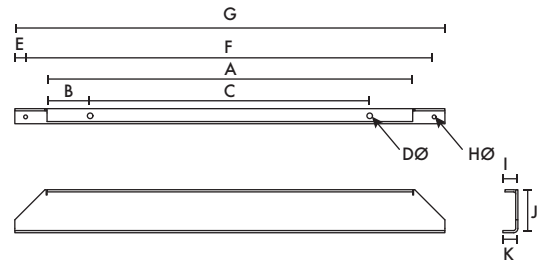


Fan Size	Mounting Bracket & A/V Mount Set	Flexible Connector	Square to circular duct Transformation section	Discharge Cowl	Weather Roof Louvre
EKF355	EKFMF355	EKFFC355	EKFTP35-35	EKFDC355	EKFWR355
EKF400	EKFMF400	EKFFC400	EKFTP40-40	EKFDC400	EKFWR400
EKF450	EKFMF400	EKFFC400	EKFTP40-45	EKFDC400	EKFWR400
EKF500	EKFMF500	EKFFC500	EKFTP50-50	EKFDC500	EKFWR500
EKF560	EKFMF500	EKFFC500	EKFTP50-56	EKFDC500	EKFWR500

Accessories Dimensions

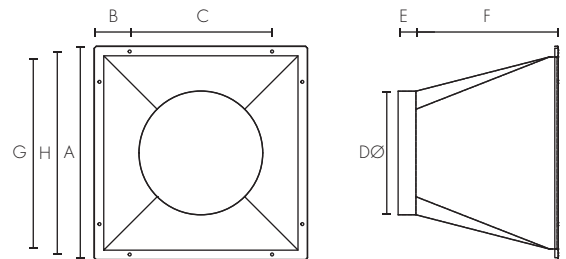
Mounting Bracket & A/V Mount Set

Stock Ref	A	B	C	DØ	E	F	G	HØ	I	J	K
EKFMF355	600	100	400	13	25	700	750	9	30	100	35
EKFMF400	700	100	500	13	25	800	850	9	30	100	35
EKFMF400	700	100	500	13	25	800	850	9	30	100	35
EKFMF500	850	100	650	13	25	950	1000	9	30	100	35
EKFMF500	850	100	650	13	25	950	1000	9	30	100	35



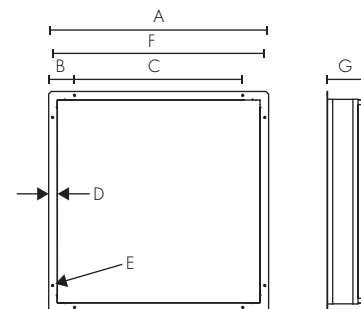
Square to circular duct Transformation section

Stock Ref	A	B	C	DØ	E	F	G	H
EKFTP35-35	600	100	400	348	50	400	540	570
EKFTP40-40	700	100	500	398	50	400	640	670
EKFTP40-45	700	100	500	448	50	400	640	670
EKFTP50-50	850	100	650	558	50	400	790	820
EKFTP50-56	850	100	650	498	50	400	790	820



Flexible Connector

Stock Ref	A	B	C	D	EØ	F	G
EKFFC355	600	100	400	34	8	570	150
EKFFC400	700	100	500	34	8	670	150
EKFFC500	850	100	650	34	8	820	150



Note: weather roof and cowl dimensions on application



By Appointment to H.M. The Queen
Suppliers of Unit Ventilation Equipment
Vent-Axia, Crawley, West Sussex

Vent-Axia®

VENT-AXIA CONTACT NUMBERS

Free technical, installation and sales advice is available

Sales Centre:

Domestic & Commercial

Sales Tel: 0844 856 0590
Sales Fax: 01293 565169
Tech Support Tel: 0844 856 0594
Tech Support Fax: 01293 539209

Industrial

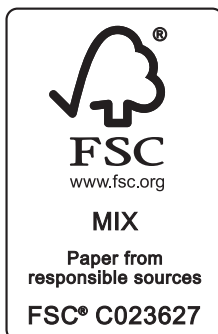
Sales Tel: 0844 856 0591
Sales Fax: 01293 534898
Tech Support Tel: 0844 856 0595
Tech Support Fax: 01293 455197

Web: www.vent-axia.com

Email: sales@vent-axia.com

Supply & Service

All sales made by Vent-Axia Limited are made only upon the terms of the Company's Conditions of Sale, a copy of which may be obtained on request. As part of the policy of continuous product improvement Vent-Axia reserves the right to alter specifications without notice.



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