Lo-Carbon Kitchen Box Fan (EKF)

- 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
- 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 this enables the fan to be mounted in any orientation.

Motor

The Kitchen Box Fan range is 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 is 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 cicuits.

Performance

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

Sound Levels

Fan sound levels were 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 $2x10^{-5}$. The sound power level spectra figures are dB with a reference level of 10^{-12} Watts.

Electrical

Depending on unit size the EKF range is 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

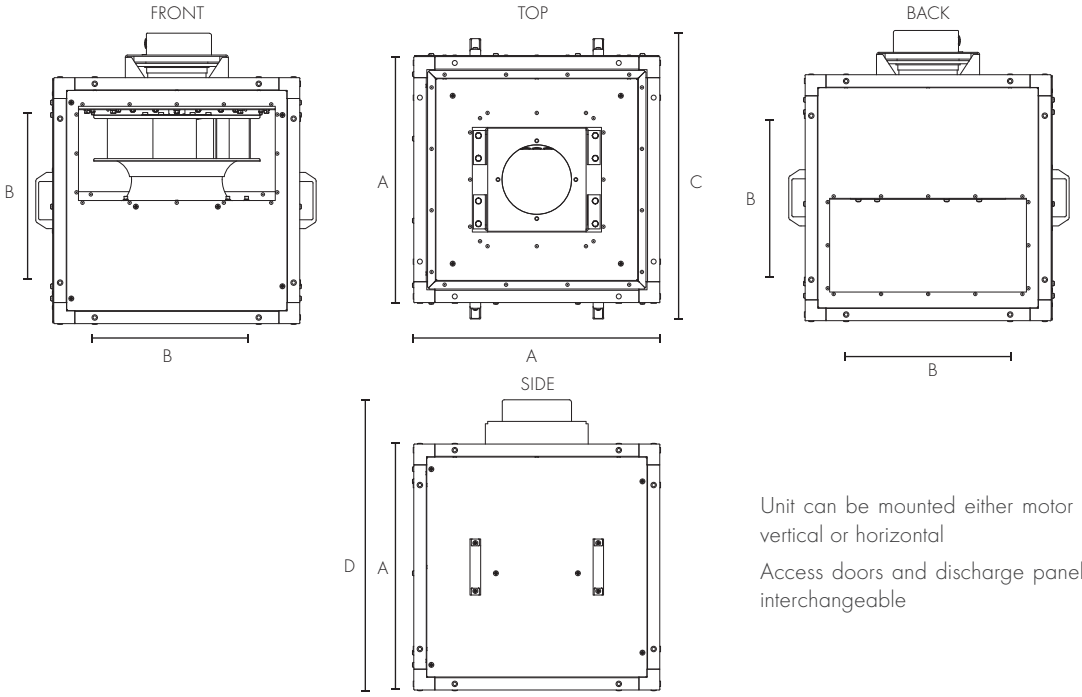
A full range of accessories are available for the EKF range including:

- 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 visit www.vent-axia.com/ekf

Fan Dimensions (mm)

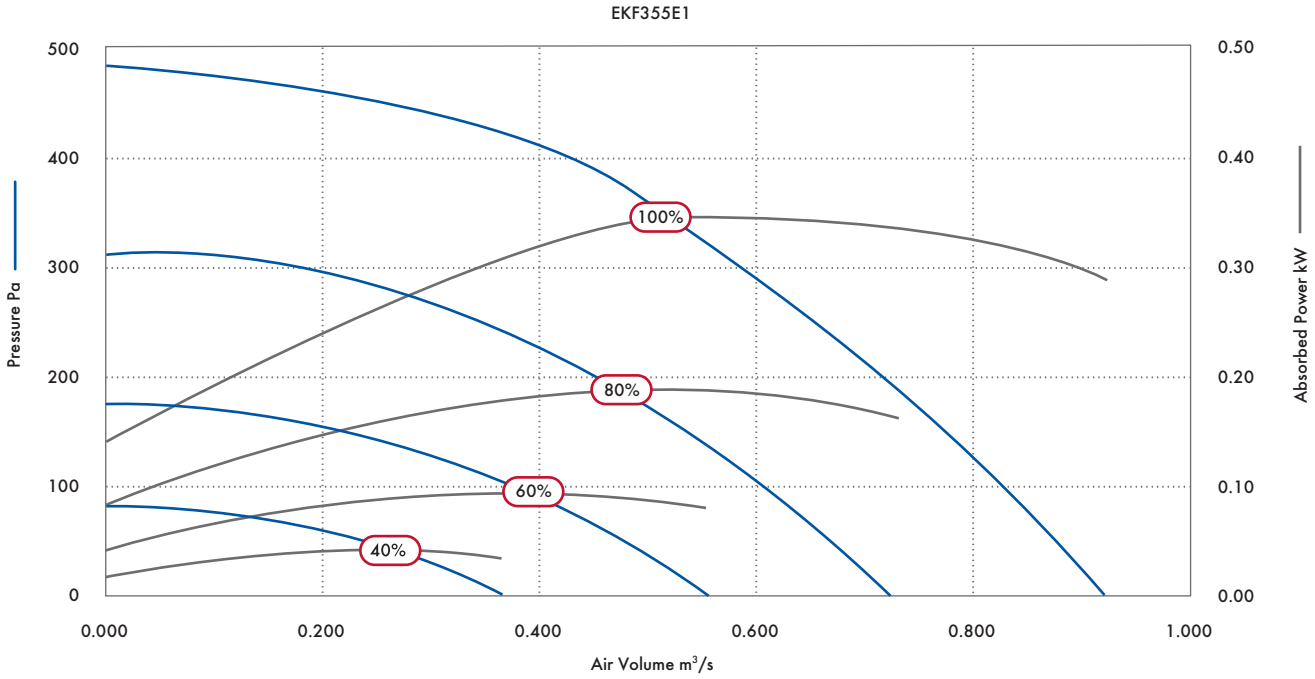


Unit can be mounted either motor shaft vertical or horizontal

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

Performance Guide

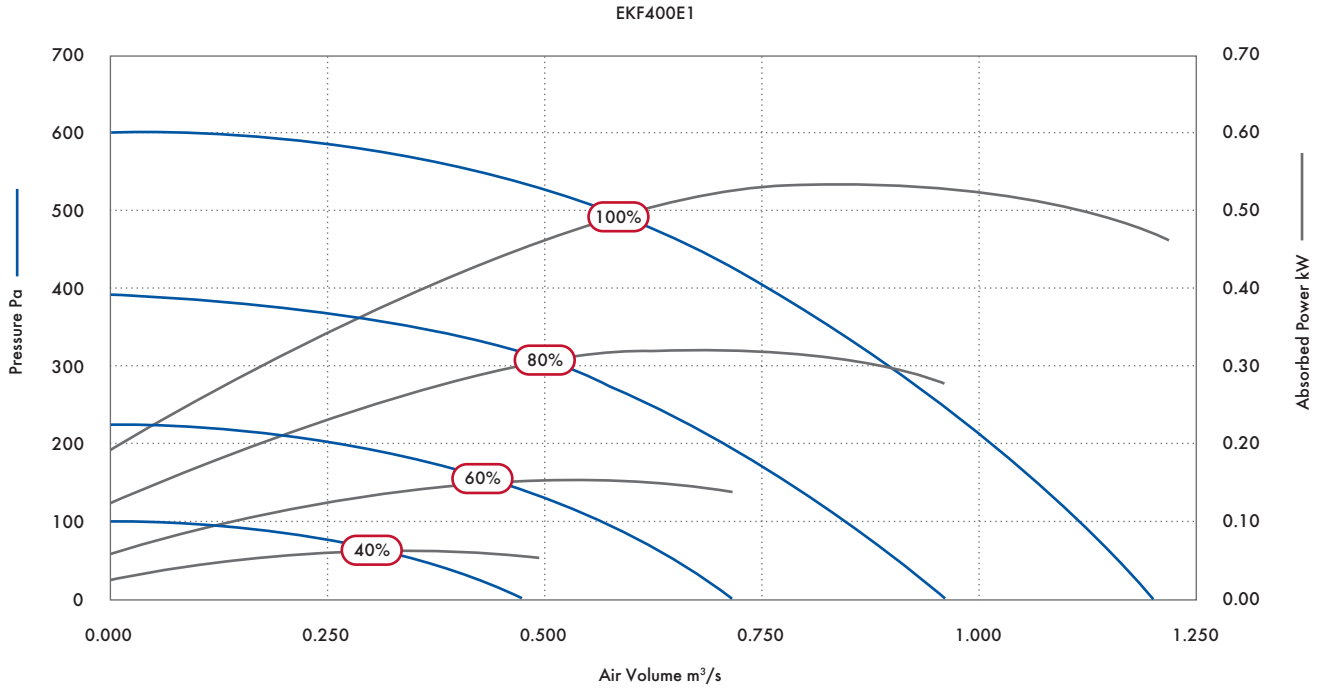


Speed		Airflow, m³/s @ Pa 0	50	100	150	200	250	300	350	400	450	Fans F.L.C.	Supply Voltage
100%	m³/s	0.920	0.866	0.815	0.767	0.700	0.630	0.600	0.510	0.435	0.275		
	kW	0.29	0.31	0.32	0.32	0.33	0.34	0.34	0.34	0.33	0.27	1.7	
	SFP	0.32	0.35	0.39	0.42	0.48	0.54	0.60	0.66	0.76	0.97		
80%	m³/s	0.737	0.665	0.605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

Sound Data

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

Performance Guide



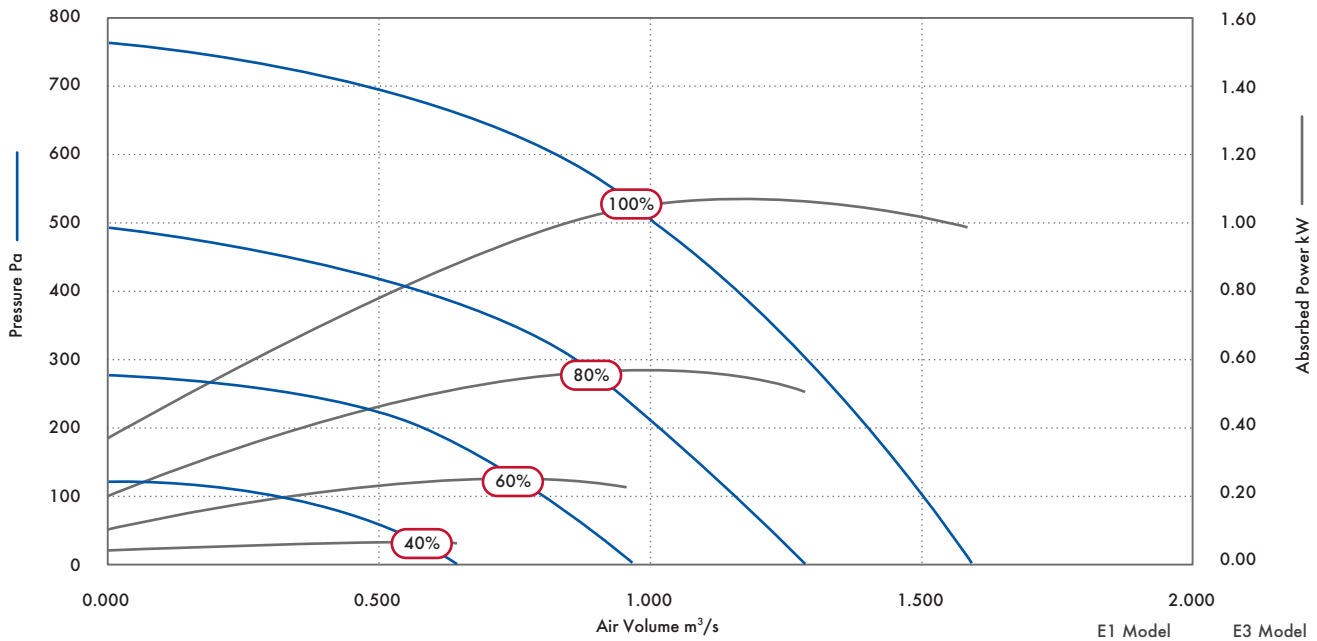
Speed		Airflow, m³/s @ Pa 0	50	100	150	200	250	300	350	400	450	500	600	Fans F.L.C.	Supply Voltage
100%	m³/s	1.206	1.160	1.115	1.065	1.020	0.965	0.907	0.845	0.765	0.685	0.586	0.175	3.0	220V/ 1/ 50Hz
	kW	0.53	0.55	0.56	0.58	0.59	0.60	0.61	0.61	0.60	0.59	0.56	0.33		
	SFP	0.44	0.47	0.50	0.55	0.58	0.62	0.67	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 63	125	250	500	1K	2K	4K	8K	SPL dB(A) @ 3m
100%	Inlet	61	70	69	66	65	64	60	54	56
	Outlet	58	70	73	72	73	69	64	57	
	Breakout	69	90	94	70	67	63	57	53	
80%	Inlet	54	61	60	59	59	58	54	47	49
	Outlet	50	61	65	66	67	63	58	51	
	Breakout	65	81	73	65	61	56	50	44	
60%	Inlet	49	52	52	51	51	50	45	38	42
	Outlet	45	52	57	59	59	54	49	45	
	Breakout	62	75	64	57	52	46	40	34	
40%	Inlet	44	47	47	44	44	43	40	33	32
	Outlet	40	46	47	45	45	43	42	35	
	Breakout	60	62	54	49	44	35	28	31	

Performance Guide

EKF450E1/EKF450E3

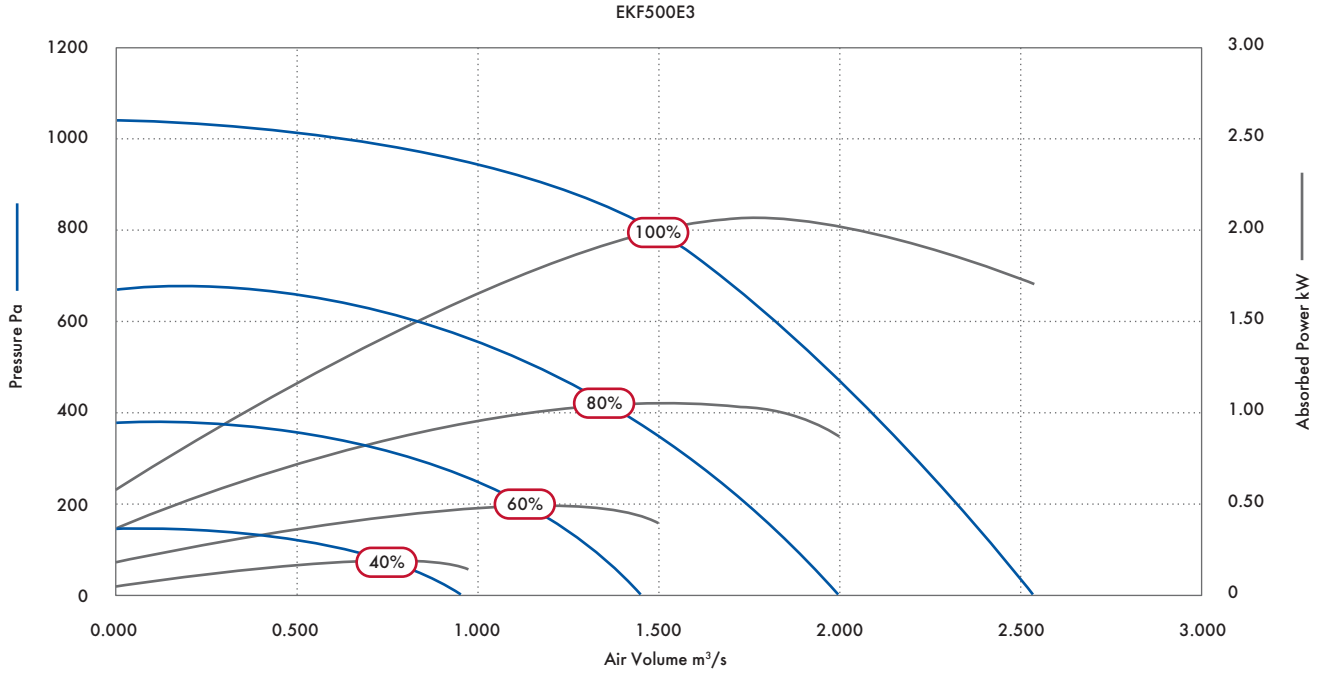


		Airflow, m³/s @ Pa														E1 Model		E3 Model	
Speed		0	50	100	150	200	250	300	350	400	450	500	550	600	700	Fans F.L.C.	Supply Voltage	Fans F.L.C.	Supply Voltage
100%	m³/s	1.602	1.555	1.505	1.458	1.408	1.356	1.290	1.220	1.160	1.092	1.012	0.925	0.840	0.462	5.2	220V/ 1/ 50Hz	1.8	400V/ 3/ 50Hz
	kW	0.99	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%	m³/s	1.285	1.228	1.166	1.095	1.015	0.938	0.855	0.762	0..582						3.8		1.0	
	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%	m³/s	0.962	0.881	0.786	0.685	0.556	0.350									2.7		0.8	
	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%	m³/s	0.640	0.511	0.290												1.9		0.5	
	kW	0.08	0.09	0.08															
	SFP	0.13	0.17	0.26															

Sound Data

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

Performance Guide

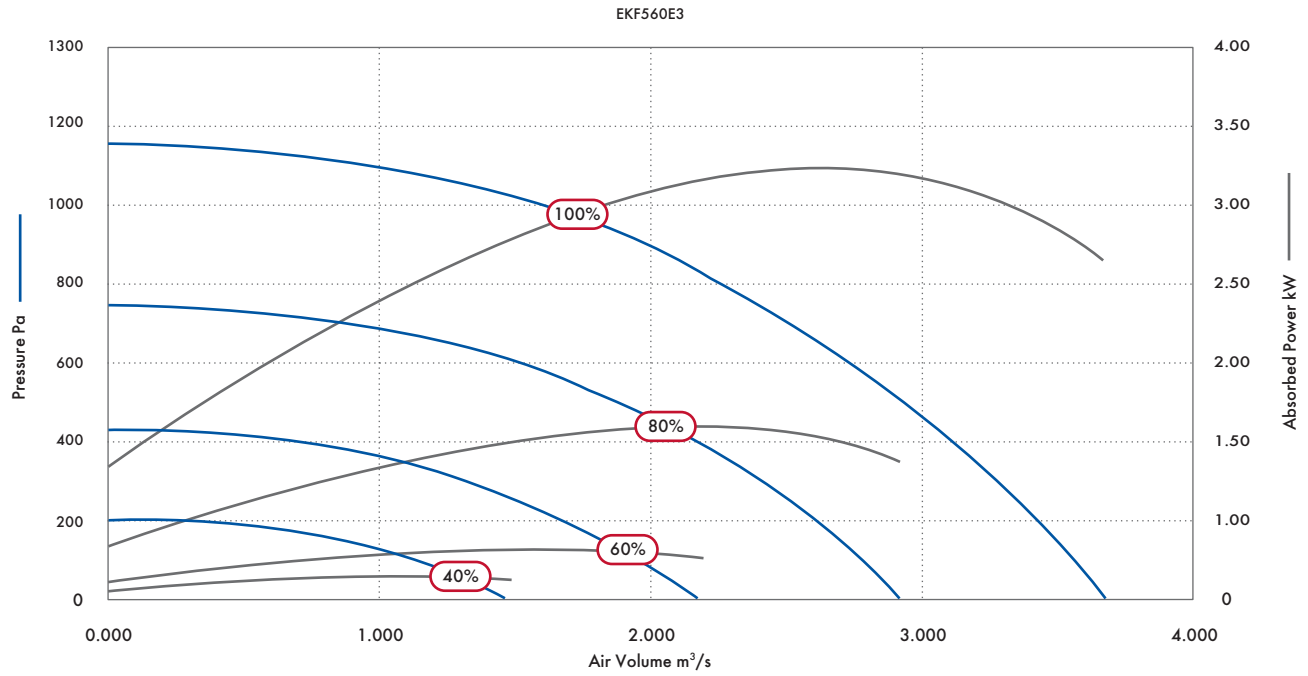


Speed		Airflow, m³/s @ Pa 0	100	200	300	400	500	600	700	800	900	1000	Fans F.L.C.	Supply Voltage
100%	m³/s	2.543	2.450	2.320	2.190	2.075	1.935	1.835	1.700	1.458	1.250	0.539		
	kW	1.71	1.76	1.82	1.89	1.96	2.03	2.07	2.10	2.00	1.85	1.25	3.6	
	SFP	0.67	0.72	0.78	0.86	0.95	1.05	1.13	1.23	1.37	1.53	2.29		
80%	m³/s	2.002	1.900	1.765	1.570	1.372	1.178	0.754						
	kW	0.88	1.01	1.04	1.05	1.04	1.02	0.87					2.6	
	SFP	0.44	0.53	0.59	0.67	0.76	0.87	1.16						400V/ 3/ 50Hz
60%	m³/s	1.499	1.330	1.129	0.850									
	kW	0.40	0.47	0.49	0.46								1.8	
	SFP	0.26	0.35	0.43	0.54									
40%	m³/s	0.966	0.665											
	kW	0.18	0.22										1.0	
	SFP	0.19	0.33											

Sound Data

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

Performance Guide



Speed		Airflow, m³/s @ Pa 0	100	200	300	400	500	600	700	800	900	1000	1100	Fans F.L.C.	Supply Voltage
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	5.5	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					3.9	
	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								2.8	
	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										1.3	
	kW	0.27	0.32	0.11											
	SFP	0.18	0.30	5.74											

Sound Data

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

Accessories



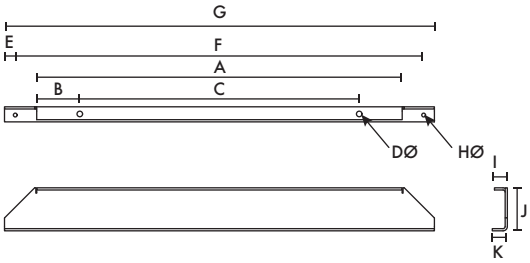



Unit Size	Mounting Bracket & A/V Mount Set	Flexible Connector	Square to Circular Duct Transformation Section	Discharge Cowl	Weather Roof
EKF355	EKFMF355	EKFFC355	EKFTP35-35	EKFDC355	EKFWR355
EKF400	EKFMF400	EKFFC400	EKFTP40-40	EKFDC400	EKFWR400
EKF450	EKFMF400	EKFFC400	EKFTP40-45	EKFDC400	EKFWR400
EKF500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

Accessories Dimensions

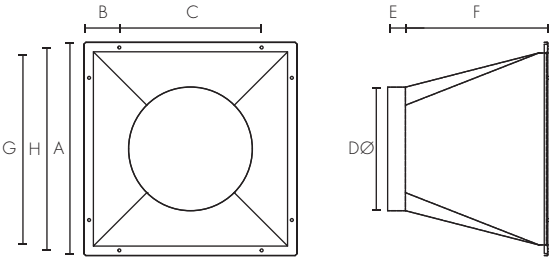
Mounting Bracket & A/V Mount Set

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	498	50	400	790	820
EKFTP50-56	850	100	650	558	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