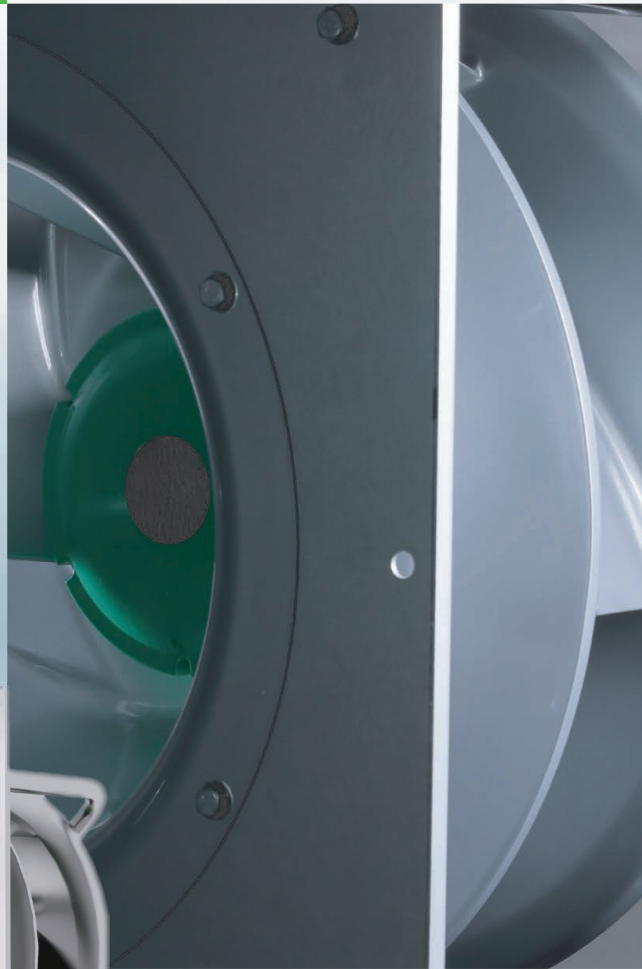




High Efficiency Plug Fan

- PFA-EC Series
- High Efficiency EC Motor

Air in Motion.
Wolter Fans.



R13.PFA-EC



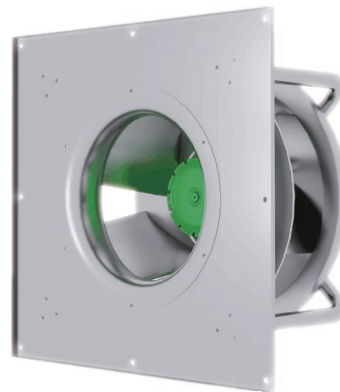
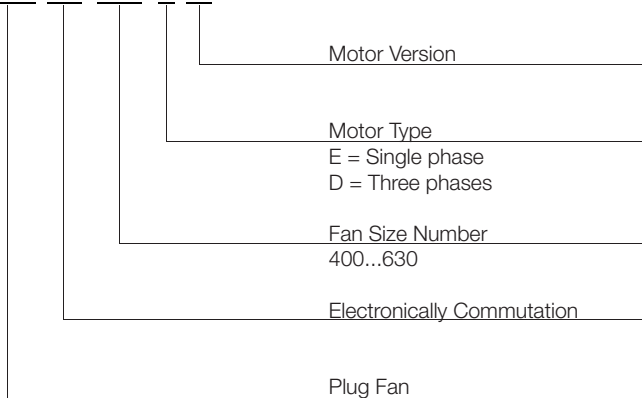
High Efficiency Plug Fan

PFA-EC Series with EC Motor



Fan type code

PFA-EC 450 D 18



Dongguan Wolter Chemco Ventilation Ltd. certifies that the Plug Fan PFA-EC Series shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

Design Features

Types and duty range

The PFA-EC series plug fan adopts an EC external DC brushless motor, equipped with an aluminum centrifugal impeller. The air volume can reach 25,000 m³/h, and the static pressure can reach 1,600 Pa. Its characteristics are high efficiency, low noise, convenient speed regulation, stable structure, and high reliability.

Fans can be modularly combined into various types of fan walls, which can flexibly adjust the operating status of the unit, and are also ideal supporting products for HVAC and purification equipment, such as ducted air conditioning units and variable air volume air conditioning systems

Impeller

The centrifugal plug fan impellers are made of aluminum with aerofoil backward curve blades. The impeller is aerodynamically designed for high efficiency, low power consumption and low noise.

The impellers are fitted directly onto the rotor of the external rotor motor and are optimized for stable performance and balanced according to G2.5 to ISO 21940-11:2016(E) / AMCA 204.

Inlet cone

The inlet cone is made of sheet metal, allows a uniform and stable airflow into the impeller assuring cataloged performance.

Overlap

The overlap distance is determined by empirical and airflow tests which take into account the aerodynamic characteristics of the impeller.

Motor

Efficient EC (Electronically Commutation) motors integrate the motor and control together, resulting in a more compact structure. It adopts an aluminum die-casting integrated rotor structure, which has a beautiful appearance, reliable heat dissipation, electronic commutation, and efficient magnetic circuit design, making the magnetization noise of the excitation system very low, and have maintenance free ball bearings & are capable of continuous operation (S1). Insulated bearing systems improve the reliability of motor operation

The fan motor is variable speed and totally enclosed fan cooled type with Class F insulation, IP55 standard. Motor assembly conforms to standards: EN 60034-1.

Fan performance curves

The performance curves for these fan types have been established as per installation type A (free inlet, free outlet) according to AMCA 210 and show the static pressure rise ΔP_{st} in reference to the volume air flow. The given velocity c refers to the outlet area of the impeller.

Sound levels

The ascertaining of the sound level follows the reverberant room method according to AMCA 300.

The data on the fan curve show the A-weighted sound power level L_{WA1} at the inlet side, unducted, in decibel figures.

The A-weighted sound power level at the outlet side L_{WA2} according to DIN 45 635, part 38, is obtained as follows:

$$L_{WA5} = L_{WA6} - 3 \text{ dB(A)}$$

The A-weighted sound pressure level L_{PA} at a distance of 1 metre is obtained approximately by deducting 7 dB(A) from the A-weighted sound power level L_{WA} .

It is important to note that reflexion and room characteristics as well as natural frequencies differently influence the sound pressure levels.

Summation of several congeneric sound levels:

$$L_{\Sigma} = L_1 + 10 \cdot \lg(z)$$

where: z = number of sources, L_1 = sound level of a single source,

L_{Σ} = resulting summation sound level

Supply Options

There are 2 different options:

- Motorised Fan Impeller
- Motorised Fan Impeller with fan cabinet c/w inlet cone

Accessories

The following accessories are available:

- Elastic Flexible connectors
- Anti-Vibration Mountings

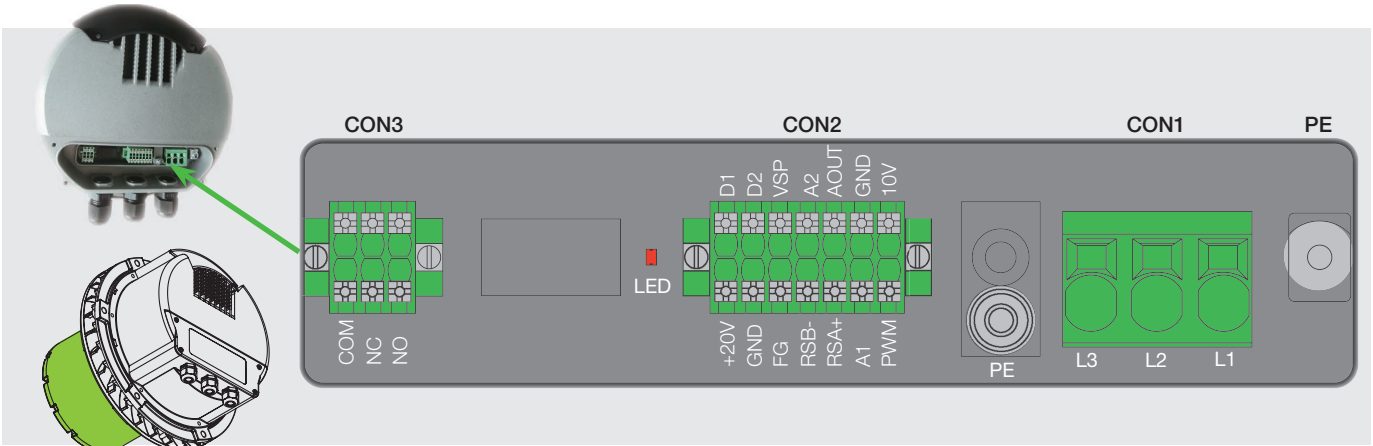


High Efficiency Plug Fan

PFA-EC Series with EC Motor



EC Motor Connection



Nr	Name	Function
PE	PE	Grounding terminal, PE interface
CON1	L1, L2, L3	Power Supply, Three-phase: AC 400V (380 ~ 480 V), 50/60Hz
CON2	+10V	Voltage output, maximum output current 10 mA
	GND	Reference ground potential for control interface
	A OUT	Cascaded 0 ~ 10 V output
	A2	Analog input 2, 4 ~ 20 mA
	VSP	Analog input 2, 0 ~ 10 V
	D2	High and low level input recognition, reserved
	D1	High and low level input recognition, reserved
	+20V	Voltage output, maximum output current 20 mA
	FG	Speed feedback
	RSB-	For RS485, RSB, MODBUS RTU
RSA+	For RS485, RSA, MODBUS RTU	
A1	Analog input 1, 4 ~ 20 mA	
PWM	Digital input. PWM duty cycle 0 ~ 100%	
CON3	NO	Status relay, floating state contact, no failure mode
	NC	Status relay, floating state contact, failure mode
	COM	Status relay, floating state contact, Public connection

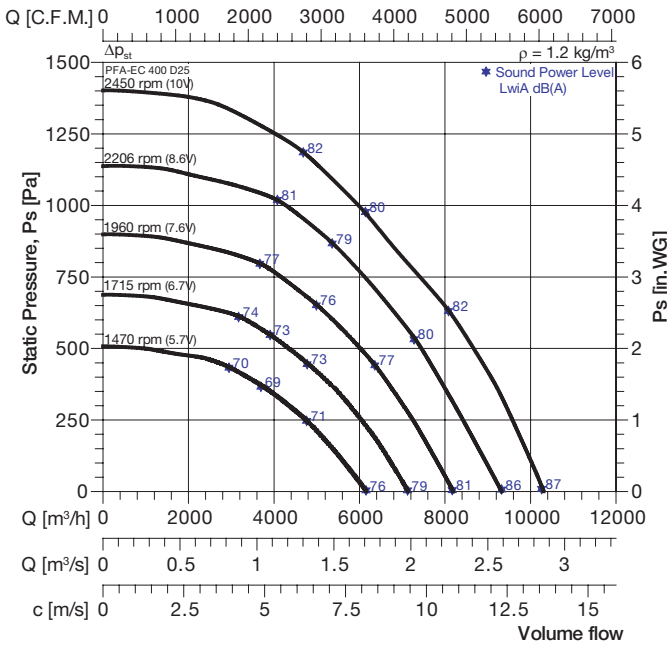


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 400 D25

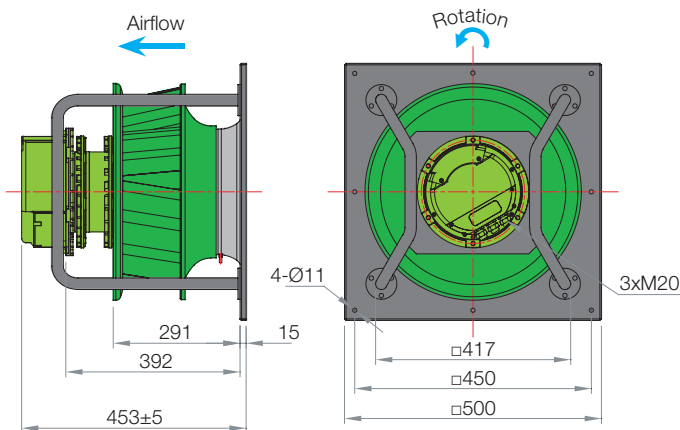


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
2423	400	50	3.6	632	8089	2.48	57.1
2390			3.8	857	6786	2.61	61.7
2391			3.8	979	6102	2.61	63.3
2408			3.8	1197	4590	2.56	59.2
2206			2.9	529	7322	1.87	57.2
2206	400	50	3.1	726	6264	2.05	61.5
2206			3.1	867	5378	2.05	63.0
2206			3.0	1019	4072	1.96	58.5
1960			2.2	443	6354	1.34	58.1
1960	400	50	2.3	575	5551	1.44	61.4
1960			2.3	652	5004	1.43	63.0
1960			2.3	792	3744	1.38	59.3
1715	400	50	1.7	346	5512	0.91	58.0
1715			1.7	452	4756	0.97	61.1
1715			1.7	537	4018	0.96	62.0
1715			1.7	614	3161	0.93	57.9
1471	400	50	1.2	243	4802	0.58	56.1
1471			1.3	330	4097	0.63	60.0
1471			1.3	369	3733	0.62	61.4
1471			1.2	437	2920	0.61	58.3

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

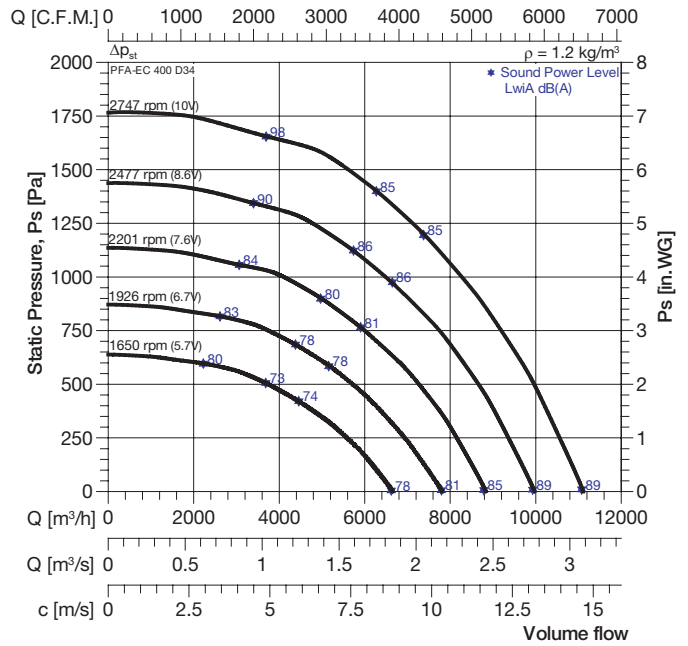
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 400 D34

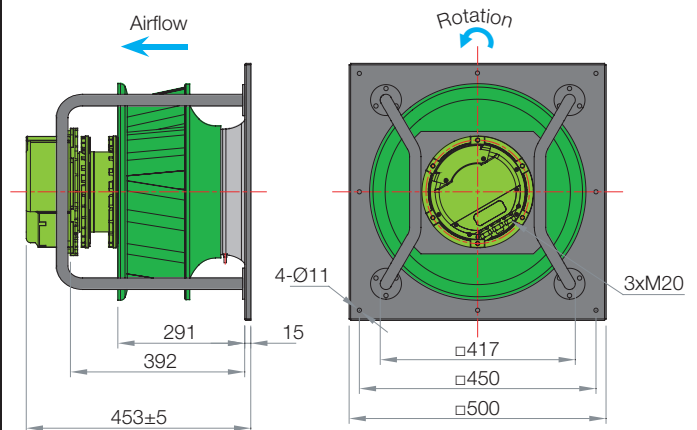


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
2747	400	50	5.5	906	8654	3.78	57.4
2747			5.8	1196	7398	4.02	60.8
2747			5.8	1400	6278	3.96	61.2
2747			5.2	1656	3686	3.51	47.8
2477			4.2	750	7751	2.79	57.6
2477	400	50	4.4	975	6628	2.96	60.5
2477			4.4	1126	5717	2.91	61.1
2477			3.9	1344	3391	2.6	48.3
2201			3.1	570	6970	1.96	56.2
2201	400	50	3.2	762	5929	2.08	60.1
2201			3.2	900	4986	2.06	60.1
2201			2.9	1059	3006	1.85	47.6
1927	400	50	2.2	437	6080	1.34	55.1
1927			2.3	582	5198	1.42	58.9
1927			2.3	686	4374	1.41	58.9
1927			2.1	817	2614	1.27	46.5
1650	400	50	1.6	320	5188	0.86	53.4
1650			1.7	422	4446	0.92	56.6
1650			1.7	504	3704	0.91	56.7
1650			1.5	597	2232	0.82	44.8

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



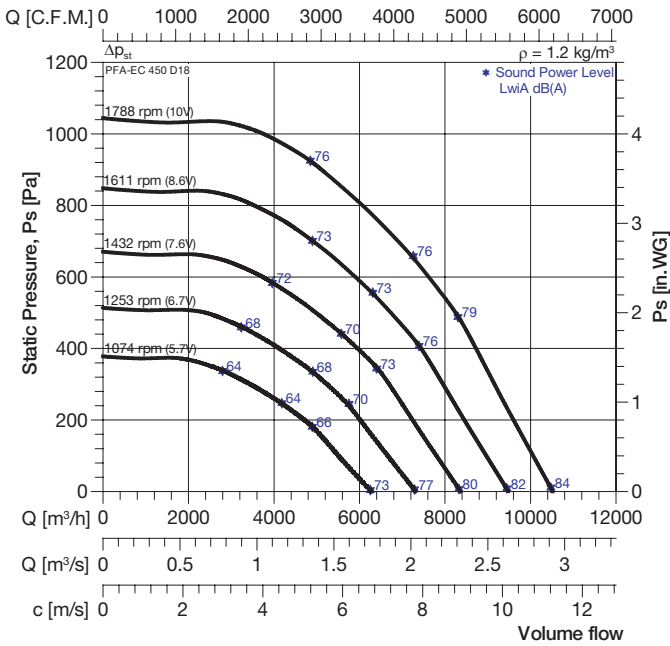


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 450 D18

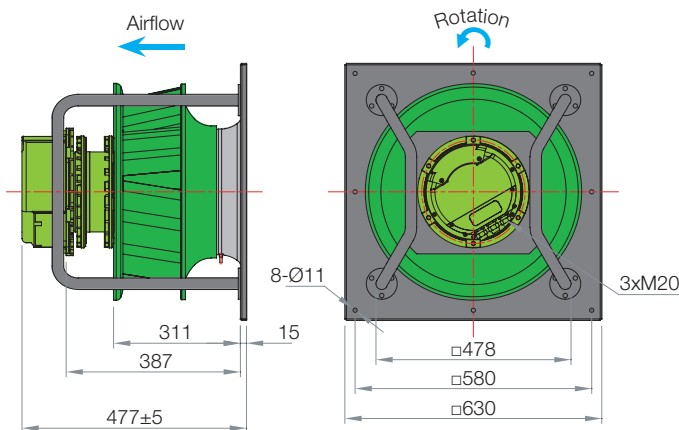


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency %
1789	400	50	2.9	489	8312	1.88	59.8
1788			3.2	661	7200	2.06	64.0
1788			3.2	788	6174	2.11	63.8
1788			3.1	929	4795	2.02	61.0
1611			2.2	409	7387	1.38	60.6
1611	2.4	553	6318	1.51	64.1		
1611	2.4	666	5278	1.53	63.7		
1611	2.3	754	4262	1.46	60.9		
1432	1.8	340	6448	1.00	60.8		
1432	1.8	445	5540	1.07	64.1		
1432	1.9	529	4666	1.07	63.6		
1432	1.8	603	3690	1.03	60.1		
1253	400	50	1.3	249	5684	0.67	59.0
1253			1.4	340	4846	0.72	63.4
1253			1.4	409	4003	0.73	62.6
1253			1.4	460	3262	0.70	59.5
1074	400	50	1.0	181	4903	0.43	57.5
1074			1.0	248	4158	0.46	62.0
1074			1.0	297	3496	0.47	61.7
1074			1.0	339	2790	0.45	58.4

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

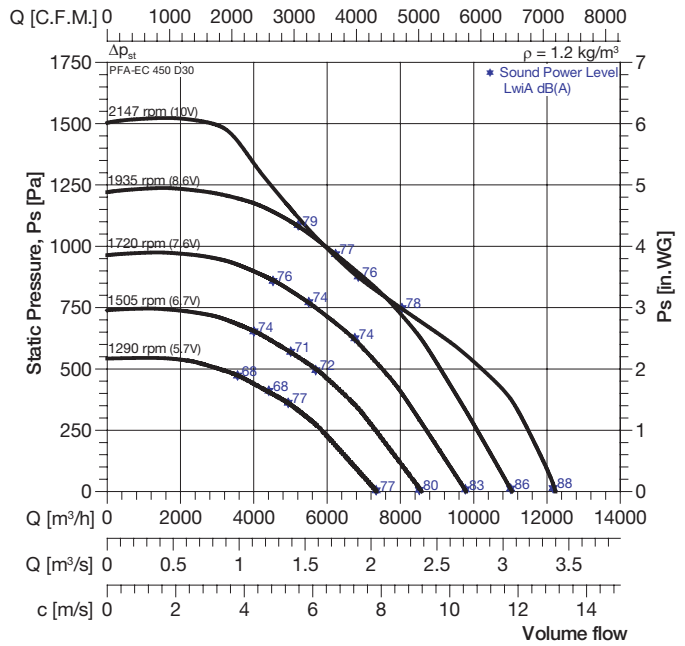
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 450 D30

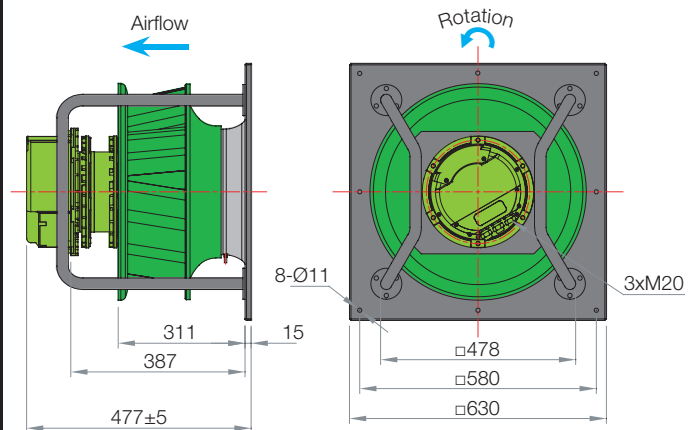


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency %
2048	400	50	4.3	588	9544	2.83	54.9
1959			4.1	747	8028	2.72	60.9
1923			4.0	885	6757	2.68	61.7
1944			4.1	1058	5566	2.71	60.1
1935			3.8	628	8539	2.52	59.1
1935	4.0	806	7502	2.71	61.7		
1933	4.0	961	6289	2.70	61.9		
1935	4.0	1090	5130	2.63	58.8		
1720	2.7	438	7859	1.69	56.4		
1720	2.9	633	6664	1.88	62.0		
1720	2.9	764	5555	1.89	62.1		
1720	2.9	858	4568	1.83	59.1		
1505	400	50	2.0	343	6826	1.15	56.5
1505			2.1	494	5742	1.28	61.5
1505			2.1	562	5069	1.28	61.7
1505			2.1	648	4086	1.24	59.0
1291	400	50	1.5	270	5717	0.76	56.4
1291			1.5	363	4921	0.82	60.3
1290			1.5	409	4378	0.82	60.6
1290			1.5	476	3528	0.80	58.2

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension





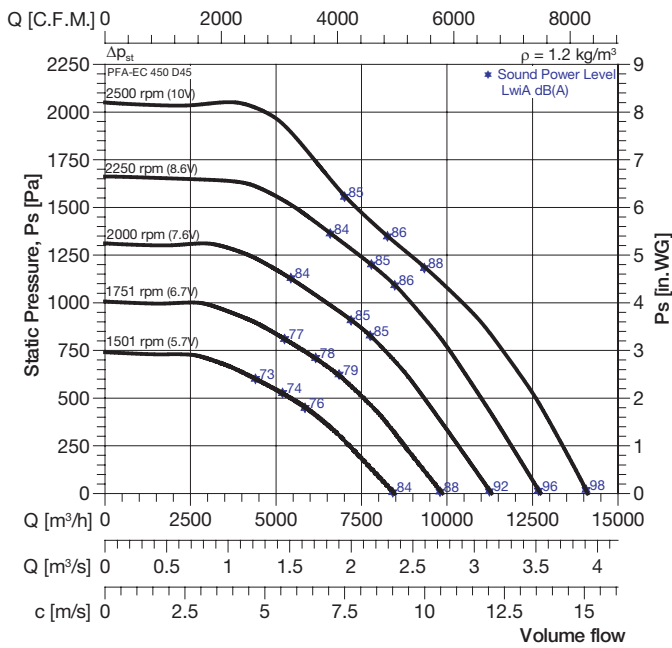
High Efficiency Plug Fan

PFA-EC Series with EC Motor

Performance Curves



PFA-EC 450 D45



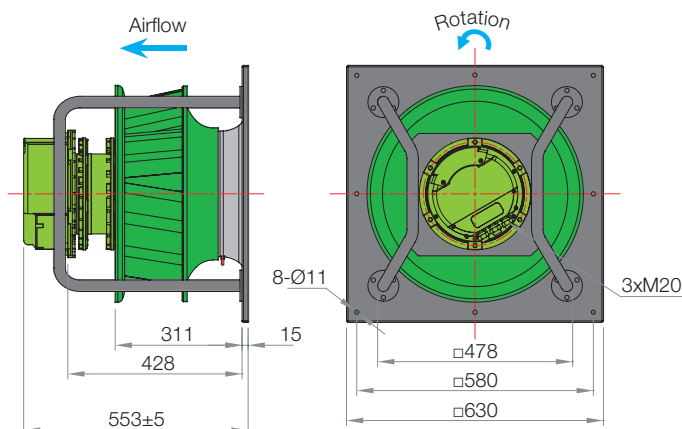
EC Motor: WEM197-D45, 400V, 50/60Hz, 7.1A, 4600W input power, 2480rpm, -25°C~+40°C

Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)		
2456	400	50	7.1	906	10962	4.89	56.1		
2399			7.1	1175	9425	4.88	62.7		
2384			7.1	1349	8262	4.83	63.6		
2399			7.1	1552	7052	4.85	62.2		
2250			5.7	806	9850	3.83	57.3		
2250	400	50	6.0	1094	8471	4.06	63.1		
2250			6.0	1205	7754	4.07	63.4		
2250			5.9	1368	6563	4.00	61.9		
2000			4.1	629	8791	2.71	56.5		
2000			400	50	4.3	834	7718	2.86	62.2
2000	4.3	906			7229	2.88	62.9		
2000	4.2	1120			5494	2.79	60.8		
1751	400	50			2.8	417	8017	1.78	52.1
1751					3.0	617	6862	1.94	60.4
1751			3.0	714	6116	1.95	62.0		
1751			3.0	817	5191	1.93	60.8		
1501			400	50	2.0	325	6732	1.17	51.8
1501	2.1	449			5882	1.25	58.6		
1501	2.1	530			5144	1.26	60.0		
1501	2.1	603			4381	1.24	58.8		

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

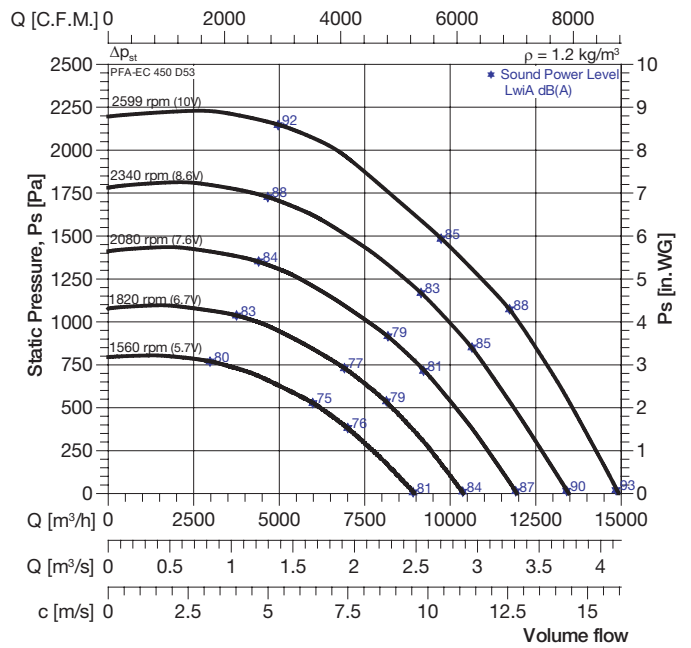
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 450 D53



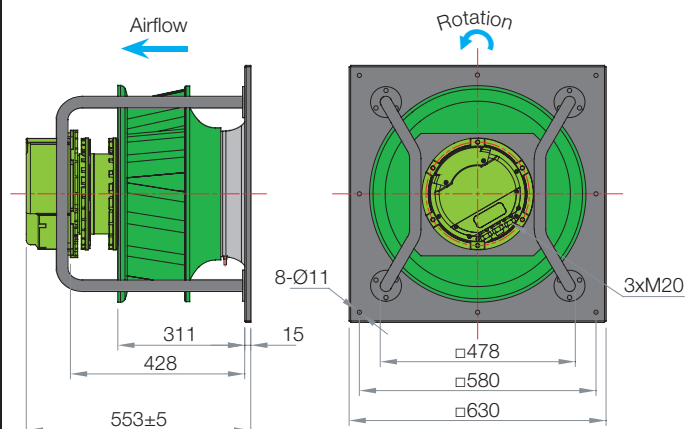
EC Motor: WEM197-D53, 400V, 50/60Hz, 9.8A, 6330W input power, 2600rpm, -25°C~+40°C

Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)		
2599	400	50	8.5	1069	11747	5.93	58.5		
2578			9.0	1481	9763	6.29	63.3		
2599			8.9	2006	6638	6.21	59.0		
2599			8.2	2144	5062	5.67	52.6		
2340			6.4	851	10624	4.28	58.4		
2340	400	50	6.9	1162	9184	4.66	63.2		
2340			6.7	1615	6044	4.53	59.3		
2340			6.2	1731	4615	4.15	53.0		
2080			4.7	716	9245	3.09	59.2		
2080			400	50	5.0	921	8143	3.29	62.9
2080	4.9	1280			5314	3.19	58.8		
2080	4.6	1363			4176	2.96	53.0		
1820	400	50			3.4	543	8082	2.09	58.2
1820					3.6	729	6916	2.24	62.4
1820			3.5	984	4579	2.15	57.9		
1820			3.3	1045	3586	1.99	51.9		
1560			400	50	2.4	383	6995	1.33	55.9
1560	2.6	524			6012	1.43	60.9		
1560	2.5	698			4230	1.40	58.3		
1560	2.4	767			3046	1.28	50.5		

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



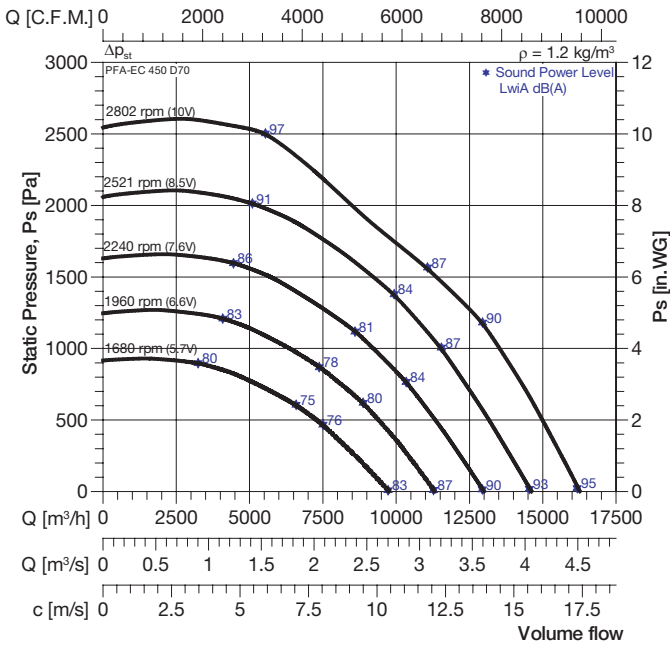


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 450 D70

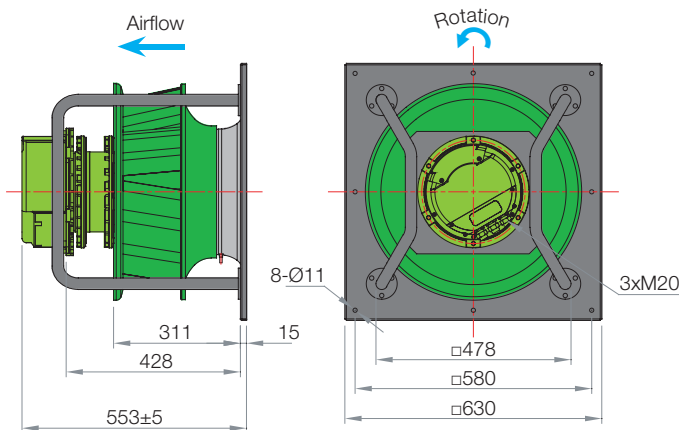


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
2786	400	50	10.3	1187	12892	7.14	59.1
2730			10.6	1568	11002	7.38	64.4
2754			10.6	2249	7160	7.36	60.1
2802			10.1	2511	5389	7.02	52.9
2521	400	50	8.0	1005	11506	5.39	59.3
2521			8.6	1379	9900	5.89	63.9
2521			8.7	1662	8222	5.94	63.4
2521			7.8	2009	5141	5.26	54.0
2240	400	50	5.7	767	10325	3.77	58.2
2240			6.3	1118	8608	4.17	63.7
2240			6.3	1301	7348	4.17	63.3
2240			5.6	1599	4406	3.66	53.0
1960	400	50	4.1	626	8824	2.60	58.8
1960			4.4	859	7456	2.80	63.3
1960			4.4	1001	6361	2.81	62.7
1960			4.0	1217	3935	2.49	53.1
1680	400	50	2.9	476	7430	1.68	58.5
1680			3.0	610	6530	1.78	62.0
1680			3.0	732	5432	1.79	61.5
1680			2.8	893	3326	1.59	51.7

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

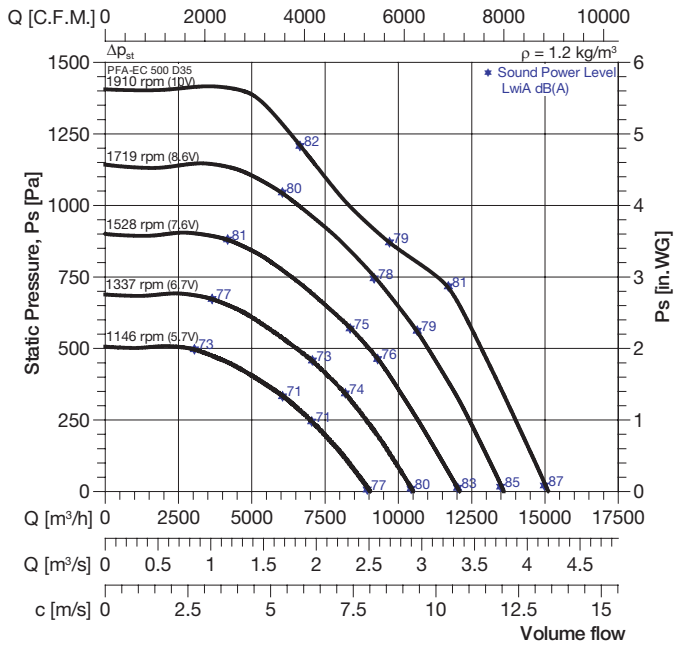
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 500 D35

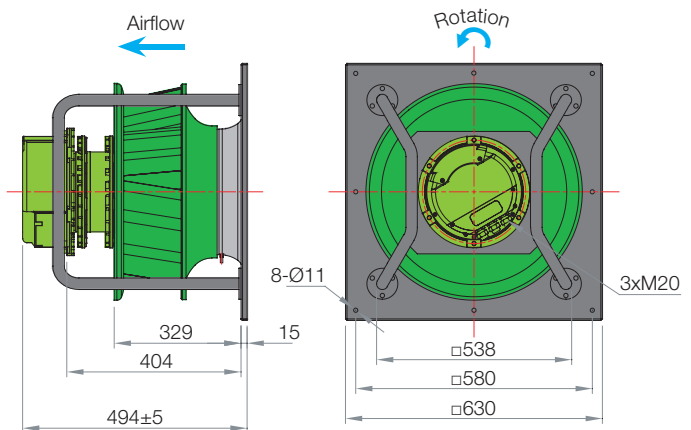


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1906	400	50	5.5	721	11632	3.74	62.1
1836			5.3	867	9742	3.60	64.8
1824			5.3	1010	8226	3.56	64.5
1858			5.3	1205	6682	3.62	61.3
1719	400	50	4.0	563	10613	2.69	61.4
1719			4.4	749	9198	2.95	64.7
1719			4.5	890	7880	3.01	64.5
1719			4.2	1046	5994	2.85	60.8
1528	400	50	3.0	457	9349	1.93	61.4
1528			3.2	572	8356	2.06	64.3
1528			3.2	721	6725	2.10	63.9
1528			2.9	882	4111	1.84	54.5
1337	400	50	2.1	343	8183	1.29	60.3
1337			2.3	458	7042	1.41	63.7
1337			2.3	550	5861	1.41	63.3
1337			2.1	676	3532	1.24	53.1
1146	400	50	1.5	248	7027	0.83	58.1
1146			1.6	332	6084	0.90	62.1
1146			1.7	404	5026	0.91	61.8
1146			1.5	498	2981	0.80	51.6

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



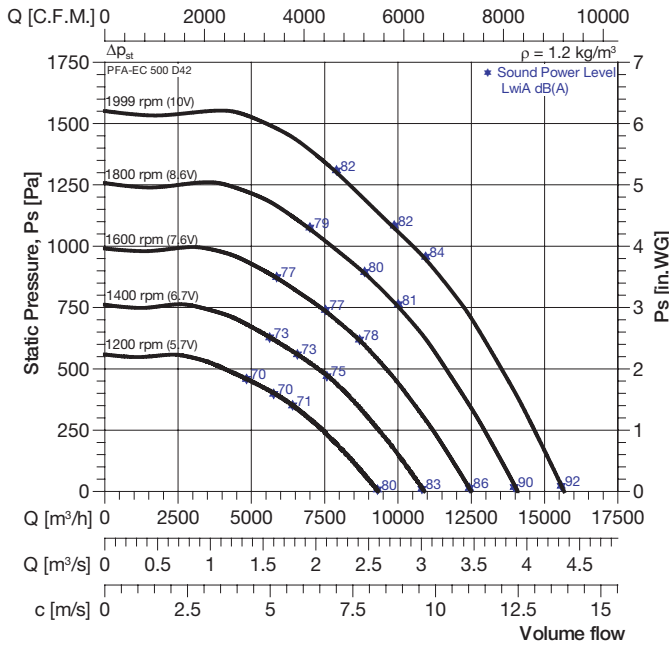


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 500 D42

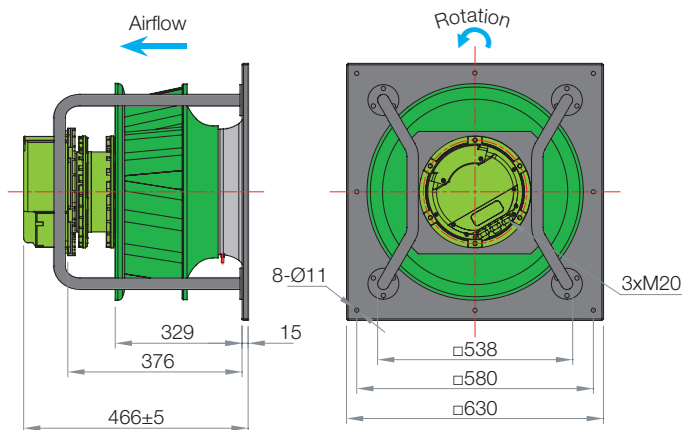


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1999	400	50	6.0	735	12341	4.14	60.6
1992			6.4	957	10865	4.36	65.9
1988			6.4	1089	9734	4.42	66.3
1996			6.4	1309	7826	4.39	64.4
1800	400	50	4.6	626	10919	3.13	60.5
1800			4.8	765	9914	3.23	65.0
1800			4.9	893	8834	3.32	65.6
1800			4.8	1068	7013	3.25	63.7
1601	400	50	3.3	461	9875	2.16	58.5
1600			3.5	611	8734	2.29	64.5
1600			3.6	742	7452	2.34	65.5
1600			3.5	876	5785	2.25	62.2
1400	400	50	2.4	357	8579	1.46	58.4
1400			2.5	465	7664	1.55	63.7
1400			2.5	554	6635	1.58	64.2
1400			2.5	636	5526	1.56	62.4
1200	400	50	1.7	252	7412	0.93	55.7
1200			1.8	345	6476	1.00	62.0
1200			1.8	396	5843	1.02	63.1
1200			1.8	452	4954	1.01	61.3

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

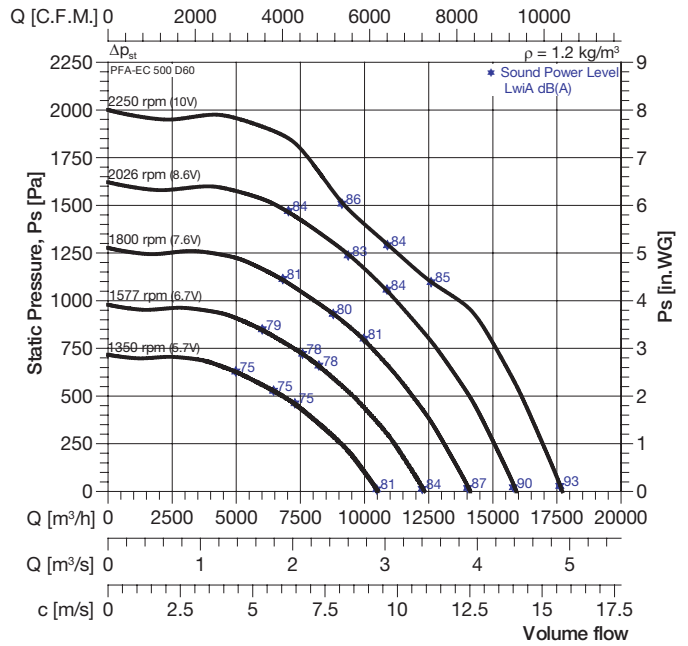
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 500 D60

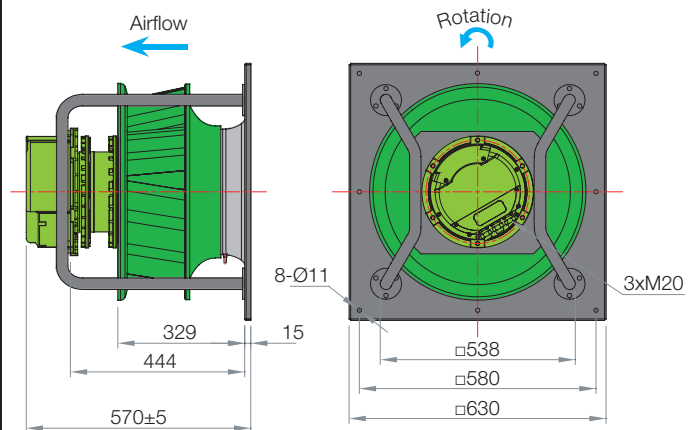


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
2251	400	50	9.1	953	14123	6.22	59.9
2183			8.9	1102	12564	6.06	63.1
2160			8.9	1284	10991	5.99	65.0
2160			8.8	1501	9212	5.97	63.9
2026	400	50	6.8	775	12668	4.55	59.6
2026			7.3	1064	10796	4.89	64.9
2026			7.4	1243	9371	4.94	65.1
2026			7.2	1411	7657	4.78	62.3
1800	400	50	4.9	608	11243	3.18	59.5
1800			5.3	808	9875	3.44	64.2
1800			5.3	924	8856	3.48	65.0
1800			5.1	1114	6757	3.35	62.0
1577	400	50	3.6	492	9612	2.20	59.6
1577			3.8	651	8280	2.33	64.2
1577			3.8	724	7546	2.35	64.5
1577			3.7	852	5933	2.26	61.8
1350	400	50	2.4	307	8633	1.31	56.0
1350			2.6	464	7232	1.48	62.8
1350			2.7	530	6419	1.50	63.0
1350			2.6	624	5029	1.44	60.5

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



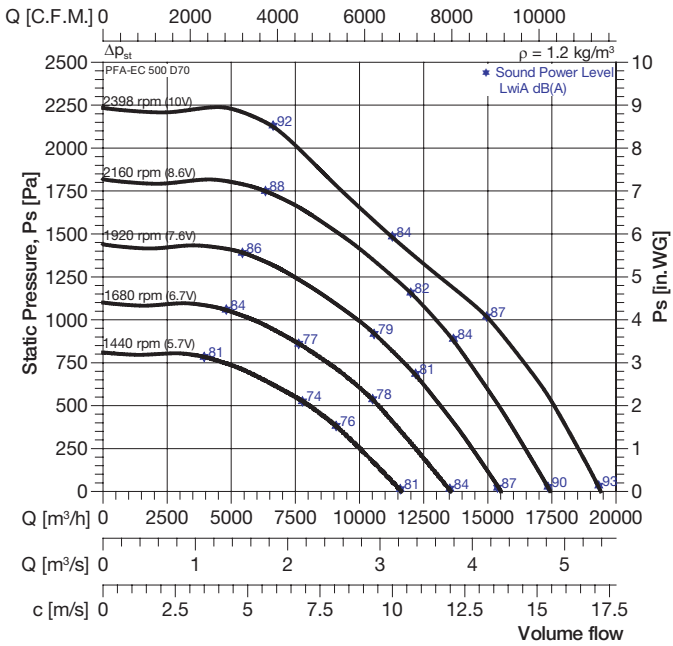


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 500 D70

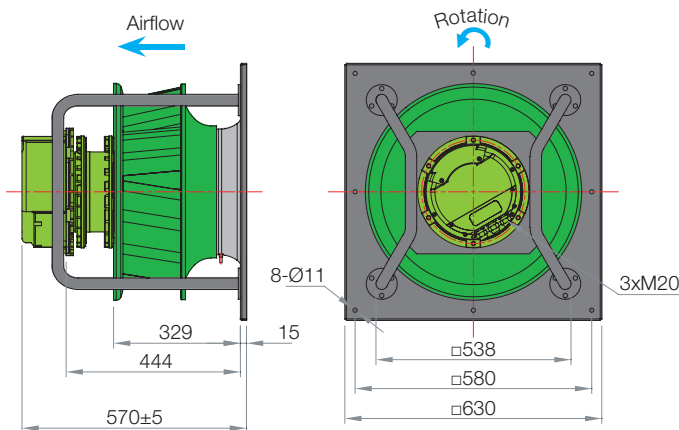


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency %
2343	400	50	10.1	1026	14904	7.05	59.9
2282			10.2	1479	11290	7.09	64.9
2295			10.2	1774	9148	7.09	63.0
2367			10.0	2122	6656	6.95	55.9
2160	400	50	8.1	896	13572	5.52	60.9
2160			8.6	1153	12024	5.92	64.7
2160			8.8	1435	9821	6.02	64.6
2160			7.8	1766	6016	5.28	55.5
1920	400	50	5.8	685	12143	3.84	60.1
1920			6.3	958	10282	4.18	65.2
1920			6.3	1161	8417	4.18	64.5
1920			5.6	1399	5252	3.68	55.1
1680	400	50	4.1	537	10505	2.60	60.0
1680			4.3	702	9209	2.79	64.2
1680			4.4	859	7657	2.81	64.7
1680			3.9	1069	4522	2.46	54.2
1440	400	50	2.9	385	9054	1.65	58.6
1440			3.0	521	7834	1.77	63.9
1440			3.0	640	6404	1.79	63.3
1440			2.8	784	3942	1.59	53.8

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appearances (accessories).

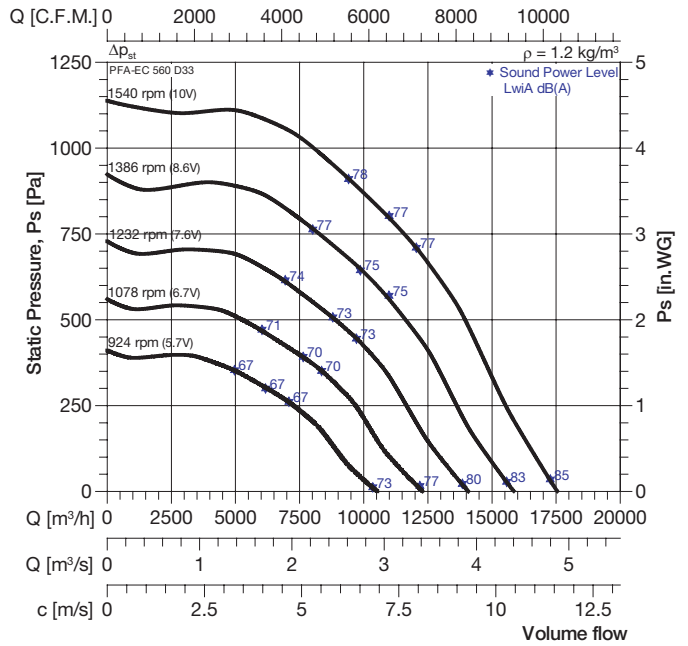
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 560 D33

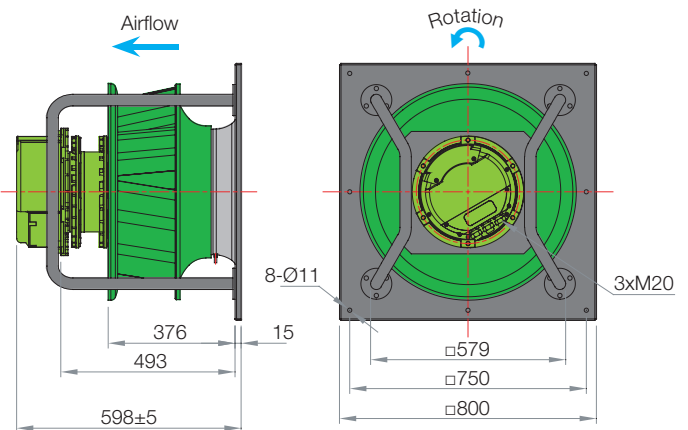


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency %
1540	400	50	4.9	537	13687	3.28	62.1
1540			5.3	705	12096	3.55	66.5
1540			5.3	796	11005	3.60	67.3
1540			5.3	917	9324	3.59	65.9
1386	400	50	3.6	411	12506	2.36	60.3
1386			3.9	568	10894	2.60	66.0
1386			4.0	643	9947	2.64	67.2
1386			3.9	766	8006	2.60	65.1
1232	400	50	2.7	349	10861	1.71	61.5
1232			2.9	445	9727	1.83	65.6
1232			2.9	510	8734	1.85	66.5
1232			2.8	621	6761	1.82	63.9
1078	400	50	2.0	258	9608	1.16	59.5
1078			2.1	355	8298	1.26	65.1
1078			2.1	393	7603	1.26	65.7
1078			2.1	478	5814	1.23	62.7
924	400	50	1.4	190	8204	0.75	58.1
924			1.5	265	6998	0.81	63.5
924			1.5	302	6185	0.81	63.8
924			1.5	352	4979	0.79	61.2

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appearances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension





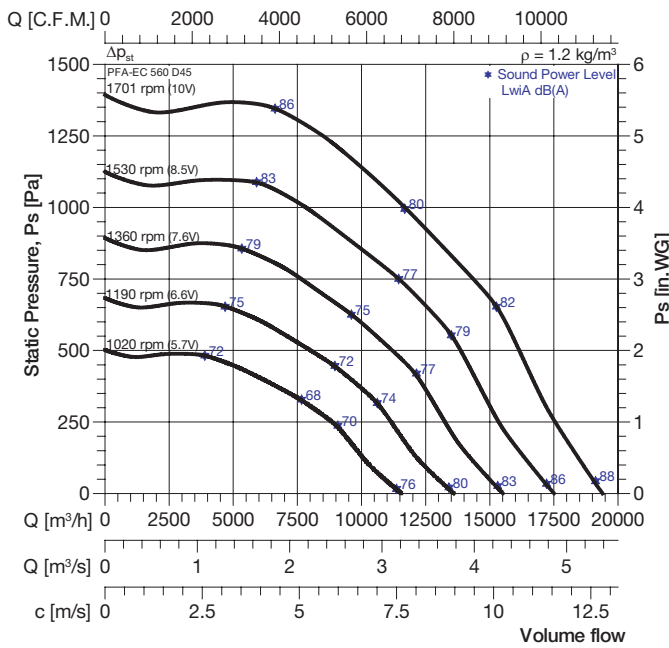
High Efficiency Plug Fan

PFA-EC Series with EC Motor

Performance Curves



PFA-EC 560 D45

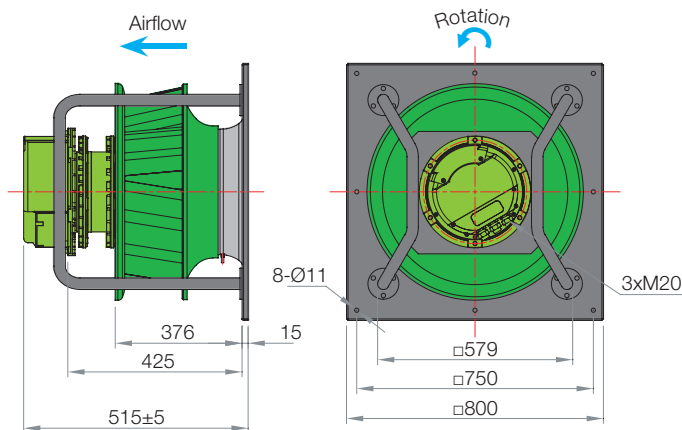


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1701	400	50	6.5	653	15268	4.49	61.4
1693			6.9	1001	11682	4.80	67.4
1701			6.8	1241	8636	4.67	63.4
1701			6.2	1352	6433	4.27	56.2
1530			4.9	557	13478	3.33	62.5
1530	400	50	5.2	749	11470	3.54	67.1
1530			5.0	1000	7837	3.42	63.4
1530			4.7	1085	6012	3.17	56.9
1360			3.5	424	12046	2.31	61.3
1360	400	50	3.7	623	9655	2.50	66.6
1360			3.6	788	7009	2.41	63.4
1360			3.3	862	5101	2.20	55.3
1190	400	50	2.5	318	10591	1.56	60.0
1190			2.6	447	8928	1.68	65.9
1190			2.6	604	6062	1.62	62.6
1190			2.4	660	4432	1.48	54.6
1020	400	50	1.8	239	8993	1.01	59.2
1020			1.9	329	7607	1.08	64.5
1020			1.8	442	5155	1.04	60.9
1020			1.7	484	3794	0.95	53.4

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

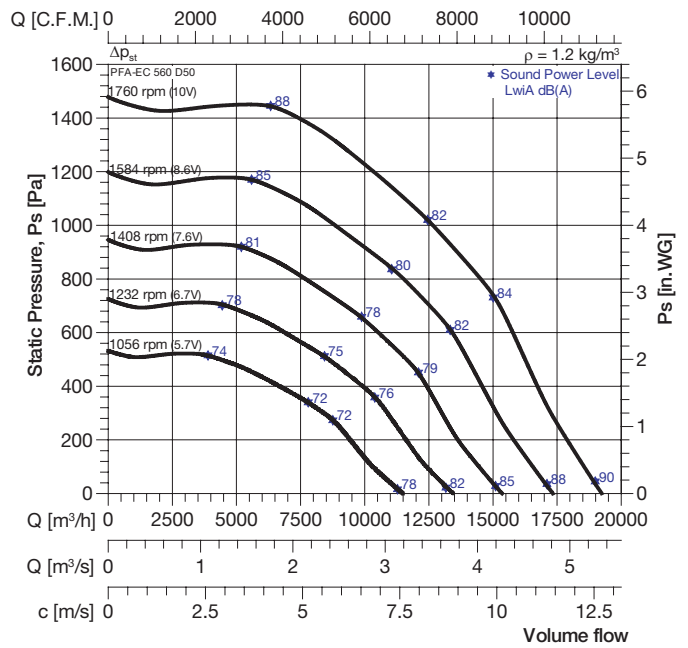
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 560 D50

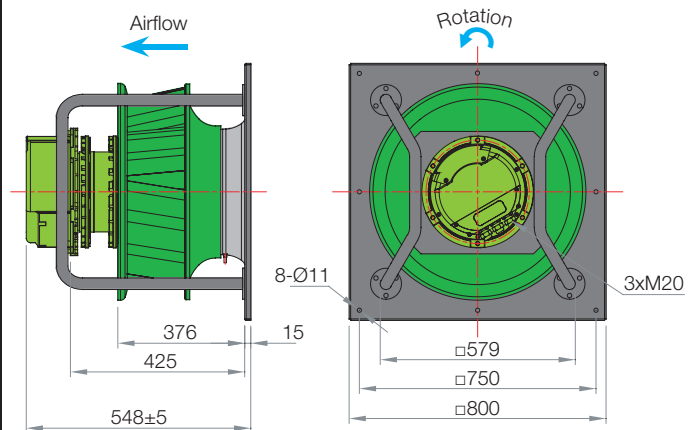


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1760	400	50	7.4	732	15062	5.04	60.6
1760			7.8	1023	12420	5.34	65.7
1760			7.5	1339	8492	5.11	61.4
1760			6.9	1443	6361	4.68	54.1
1584			5.6	612	13327	3.71	61.0
1584	400	50	5.9	828	11200	3.92	65.4
1584			5.6	1077	7697	3.74	61.2
1584			5.1	1171	5526	3.39	52.8
1408			4.1	458	12020	2.59	59.0
1408	400	50	4.3	663	9788	2.77	64.9
1408			4.1	858	6700	2.63	60.4
1408			3.9	923	5062	2.42	53.3
1232	400	50	3.0	355	10444	1.77	58.1
1232			3.1	509	8456	1.86	64.0
1232			3.0	638	6181	1.80	60.7
1232			2.8	707	4320	1.63	51.8
1056	400	50	2.2	271	8791	1.15	57.5
1056			2.3	347	7668	1.20	61.6
1056			2.2	473	5166	1.15	58.8
1056			2.1	518	3672	1.05	50.0

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



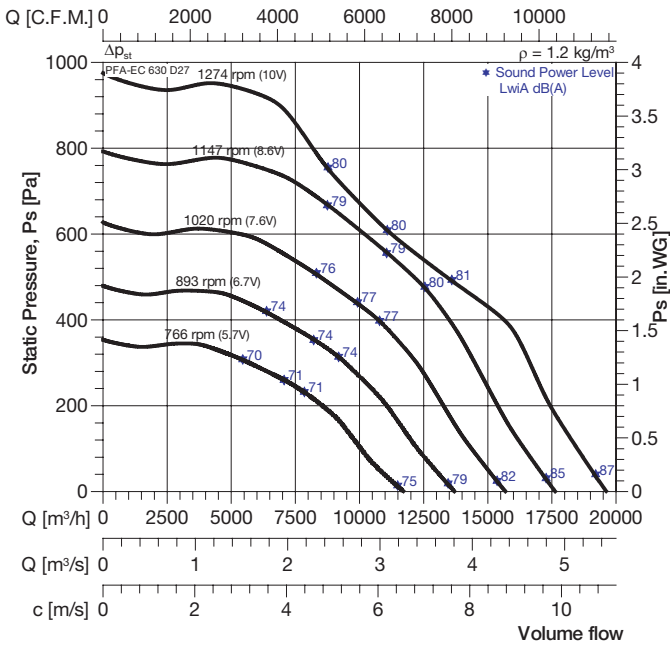


High Efficiency Plug Fan

PFA-EC Series with EC Motor
Performance Curves



PFA-EC 630 D27

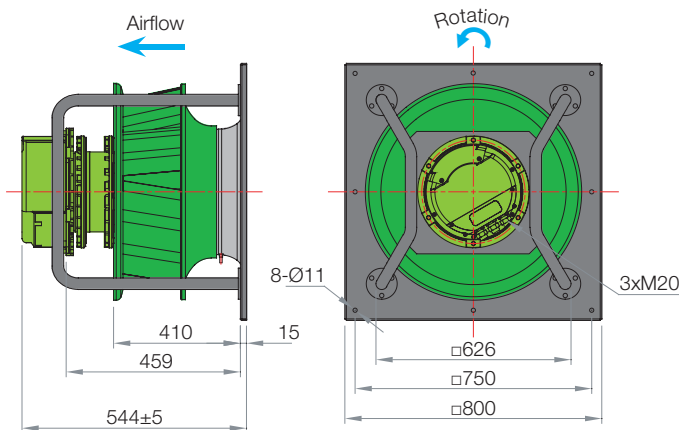


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1260	400	50	4.5	385	15865	3.03	55.9
1203			4.4	493	13558	2.90	63.9
1180			4.3	605	11142	2.85	65.6
1202			4.4	756	8712	2.89	63.1
1147	400	50	3.6	369	13846	2.37	59.7
1147			3.9	472	12586	2.55	64.5
1147			3.9	556	11092	2.60	65.6
1147			3.9	661	8921	2.55	63.9
1020	400	50	2.7	297	12269	1.70	59.4
1020			2.9	400	10732	1.83	65.1
1020			2.9	441	9853	1.84	65.4
1020			2.8	513	8161	1.81	64.0
893	400	50	1.9	212	10904	1.12	57.1
893			2.1	314	9187	1.24	64.4
893			2.1	358	8114	1.25	64.6
893			2.0	422	6246	1.19	61.4
766	400	50	1.4	171	9115	0.74	58.0
766			1.5	228	7945	0.80	63.1
766			1.5	257	7157	0.80	63.5
766			1.5	310	5314	0.76	60.1

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

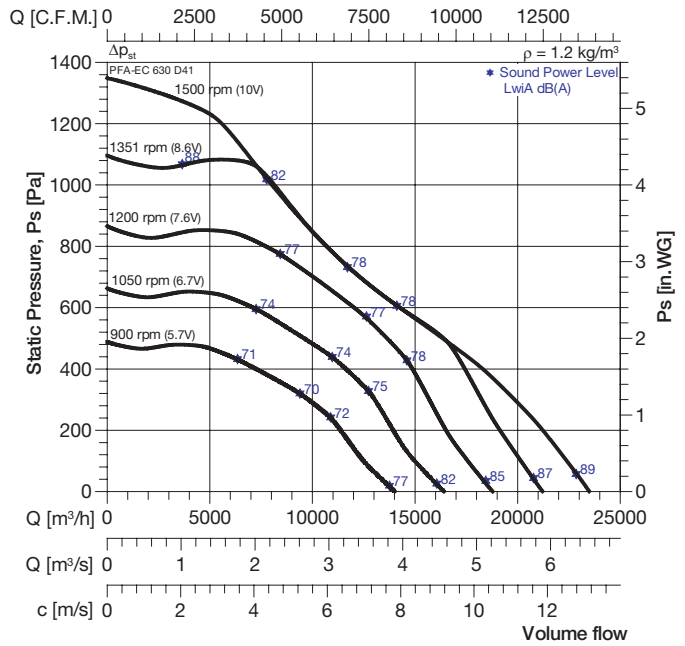
The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.

PFA-EC 630 D41

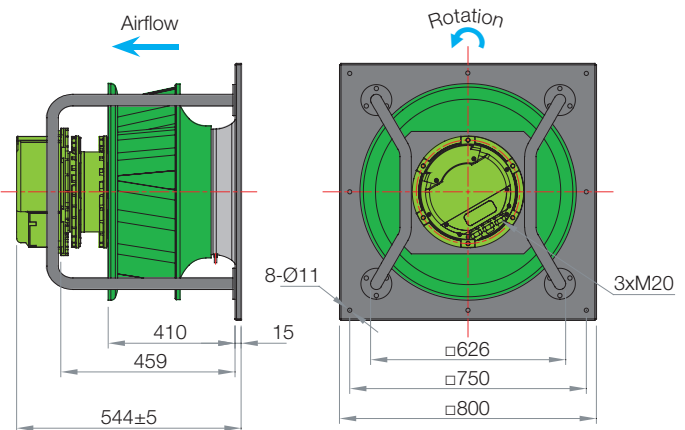


Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1378	400	50	5.7	402	18259	3.90	52.2
1274			5.3	662	13000	3.61	66.0
1283			5.4	816	10426	3.65	64.5
1336			5.5	1019	7790	3.76	58.3
1326	400	50	5.5	492	16524	3.76	59.9
1272			5.3	730	11761	3.61	65.9
1299			5.4	889	9468	3.68	63.2
1351			5.6	1068	7092	3.77	55.5
1200	400	50	4.2	427	14609	2.82	61.3
1200			4.5	573	12514	3.01	66.1
1200			4.5	682	10426	3.00	65.5
1200			4.3	777	8356	2.87	62.6
1050	400	50	2.9	323	12784	1.88	61.0
1050			3.1	440	10937	2.02	66.1
1050			3.1	519	9148	2.01	65.4
1050			3.0	594	7304	1.92	62.5
900	400	50	2.0	239	10904	1.20	60.4
900			2.1	321	9356	1.28	65.2
900			2.1	380	7805	1.27	64.6
900			2.1	434	6239	1.22	61.7

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension





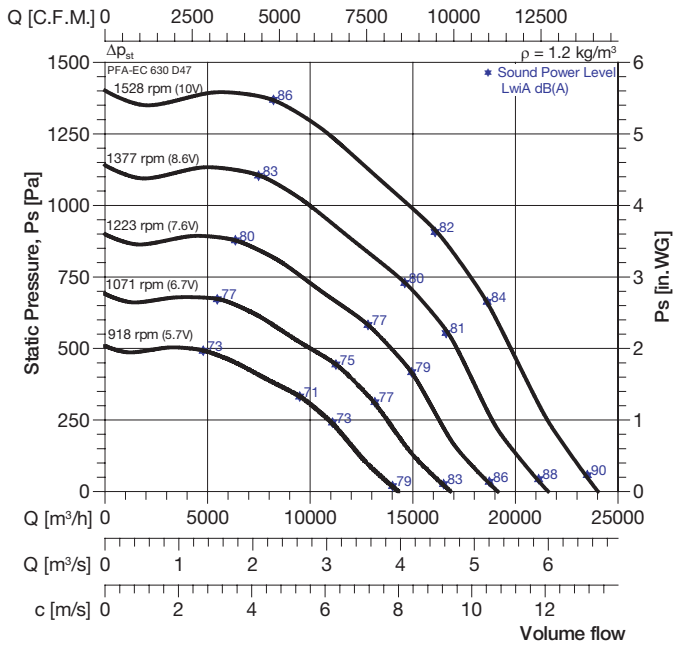
High Efficiency Plug Fan

PFA-EC Series with EC Motor

Performance Curves



PFA-EC 630 D47



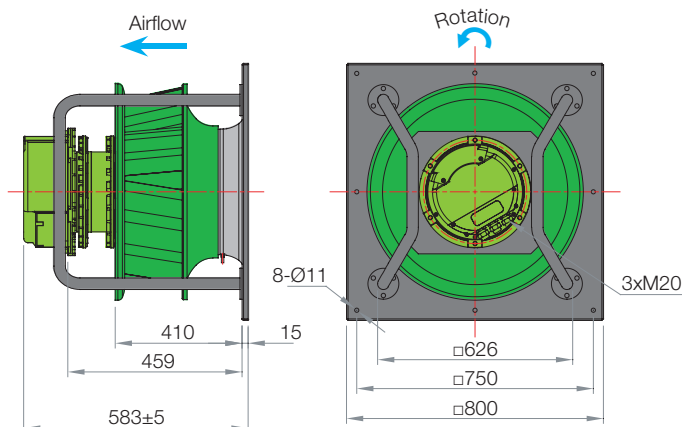
EC Motor: WEM197-D47, 400V, 50/60Hz, 9.8A, 6200W input power, 1530rpm, -25°C~+40°C

Speed (rpm)	Voltage (V)	Freq (Hz)	Current (A)	Static Pressure (Pa)	Air Volume (CMH)	Motor Control Input Watt (kW)	Static Efficiency (%)
1528	400	50	8.5	669	18554	5.78	59.5
1528			9.1	908	16164	6.22	65.3
1528			8.7	1266	10588	5.93	62.4
1528			8.0	1370	8125	5.43	56.6
1377	400	50	6.4	550	16751	4.28	59.6
1377			6.7	725	14695	4.53	65.0
1377			6.4	1017	9652	4.33	62.7
1377			6.0	1105	7524	4.02	57.1
1223	400	50	4.6	418	14929	2.96	58.4
1223			4.9	586	12766	3.19	65.0
1223			4.7	806	8496	3.05	62.2
1223			4.3	878	6340	2.78	55.4
1071	400	50	3.3	313	13100	1.99	57.0
1071			3.5	442	11304	2.16	64.2
1071			3.4	613	7502	2.06	61.7
1071			3.2	671	5627	1.89	55.3
918	400	50	2.4	238	11081	1.29	56.6
918			2.5	330	9544	1.39	63.0
918			2.4	453	6286	1.32	60.0
918			2.3	493	4788	1.22	53.7

Fan tested in an accredited laboratory in accordance to AMCA 210 Standard. Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).

The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet LwA sound power levels for installation Type A - free inlet, free outlet with partition.

Overall Dimension



We reserve the right to alter measurements without notice in case of technical improvements.



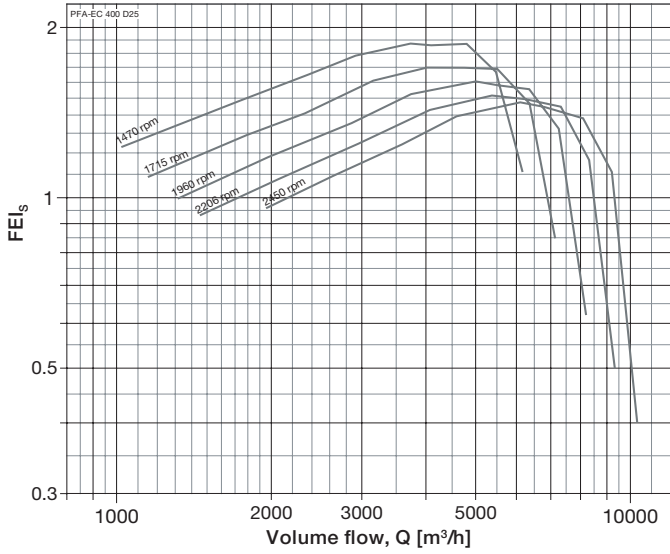
High Efficiency Plug Fan

PFA-EC Series with EC Motor

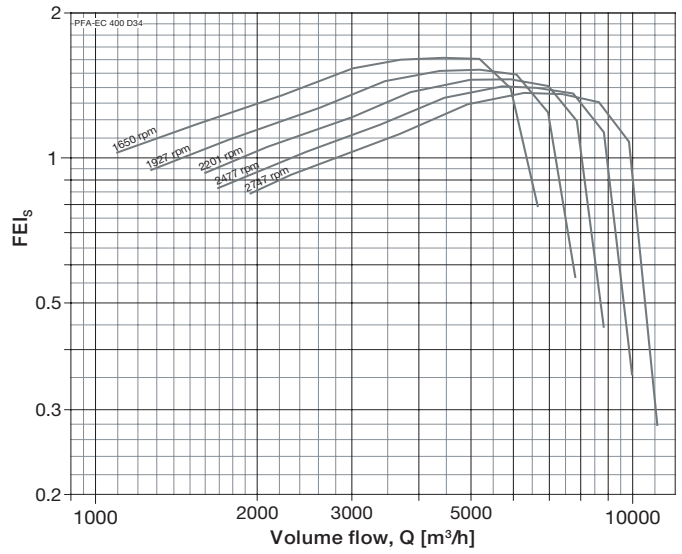
FEI Curves



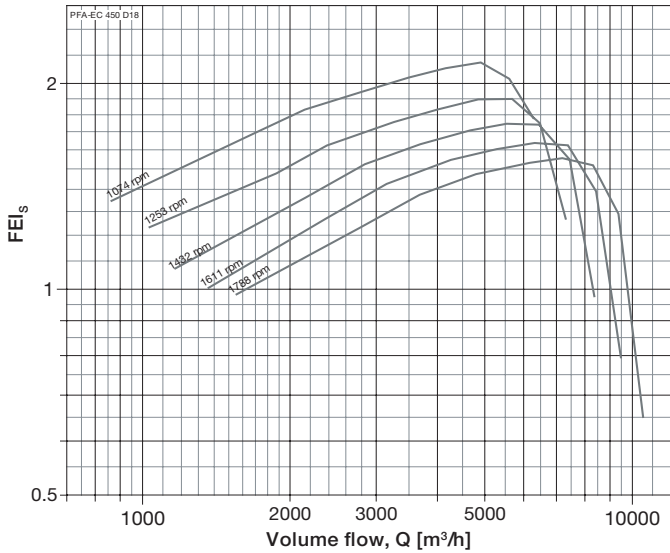
PFA-EC 400 D25



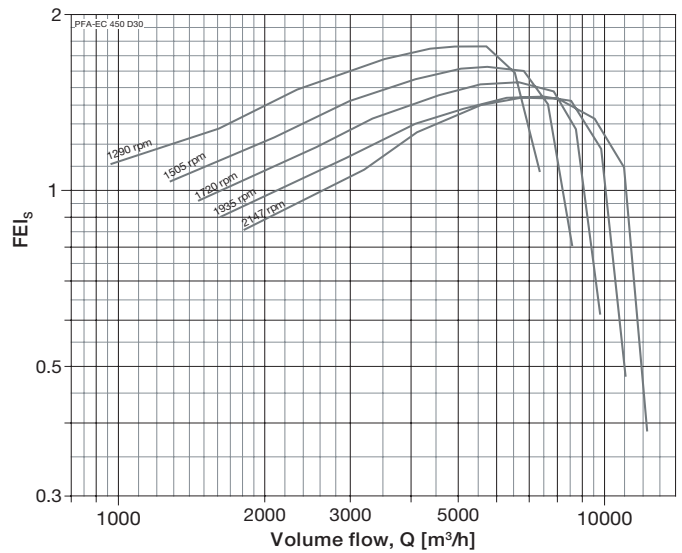
PFA-EC 400 D34



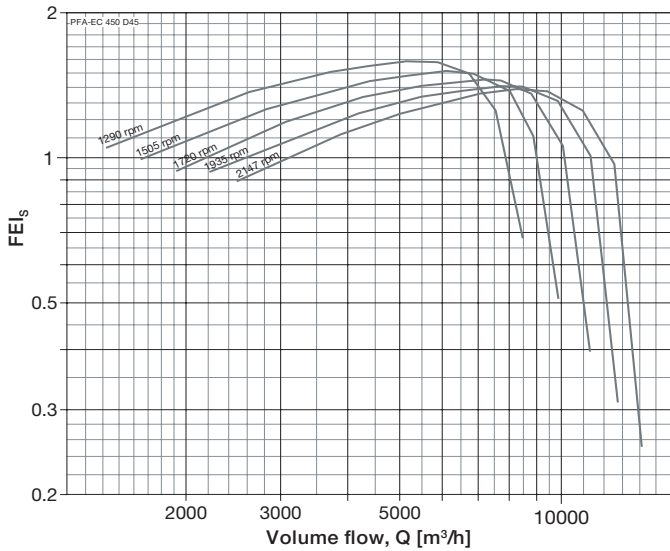
PFA-EC 450 D18



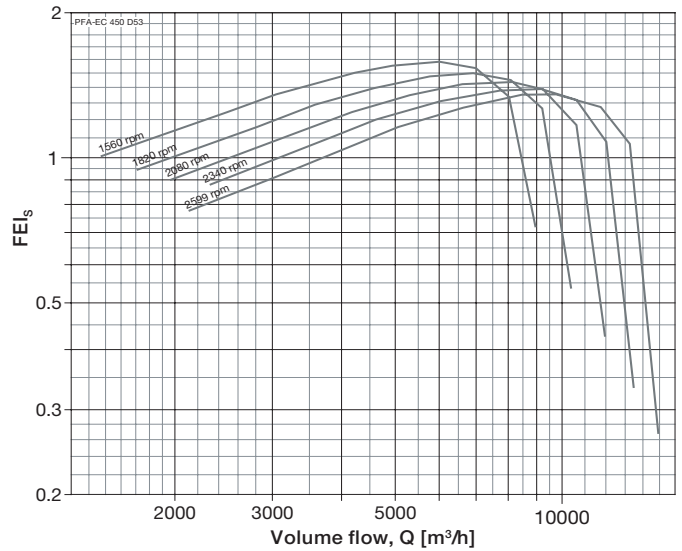
PFA-EC 450 D30



PFA-EC 450 D45



PFA-EC 450 D53



FEI_s calculation is based on wire-to-air test.



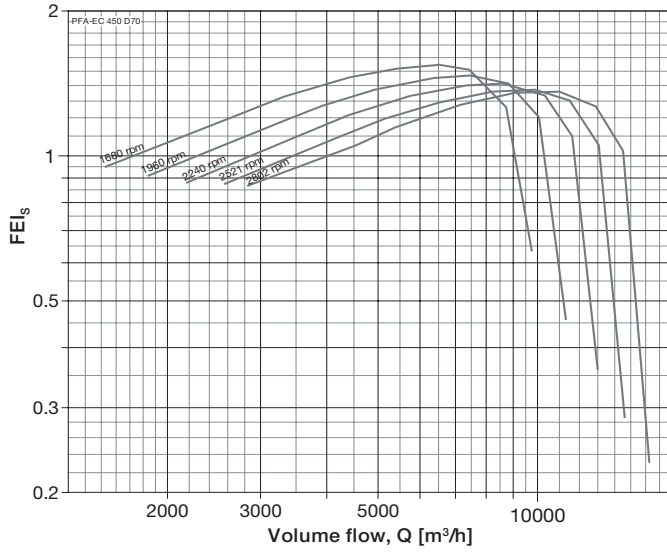
High Efficiency Plug Fan

PFA-EC Series with EC Motor

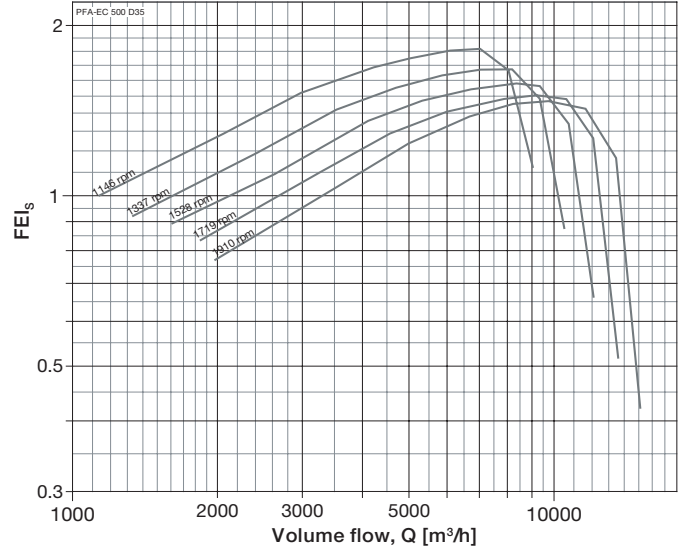
FEI Curves



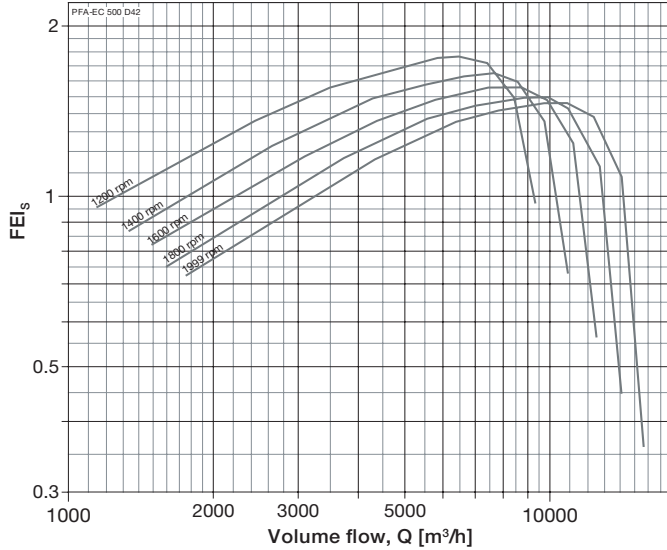
PFA-EC 450 D70



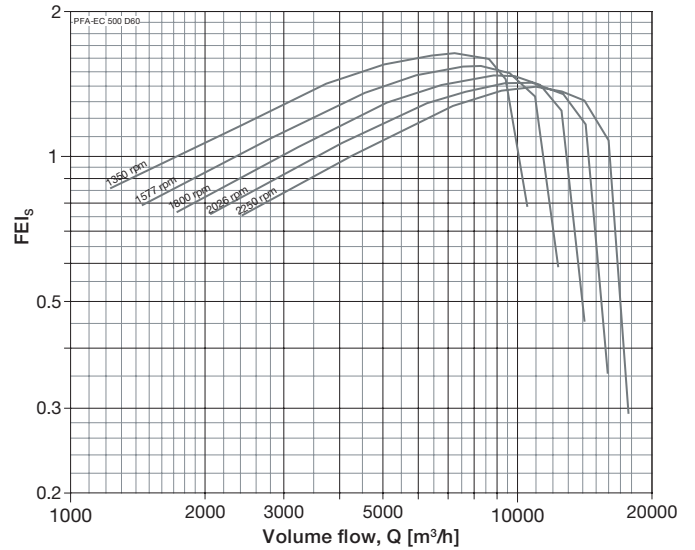
PFA-EC 500 D35



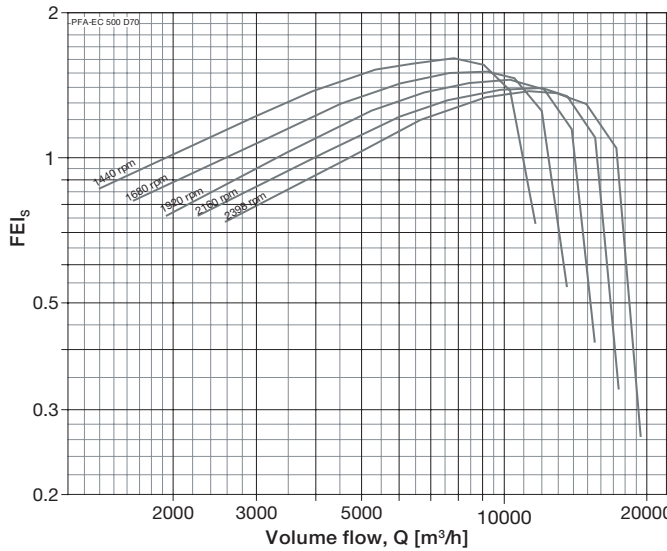
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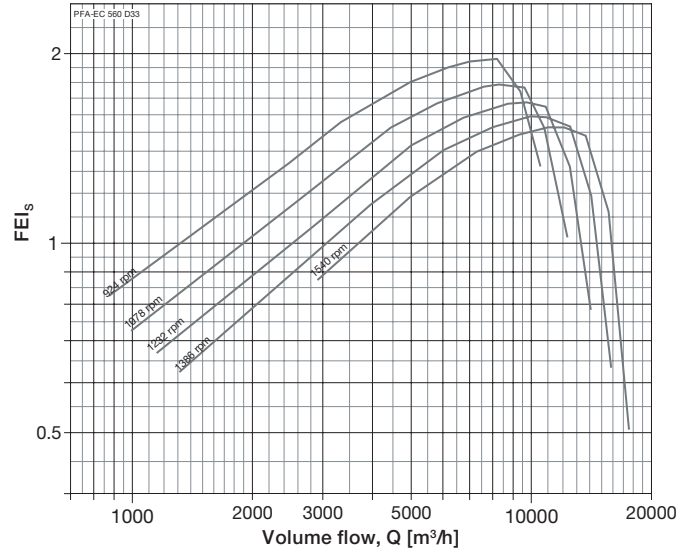
PFA-EC 500 D60



PFA-EC 500 D70



PFA-EC 560 D33



FEI_s calculation is based on wire-to-air test.



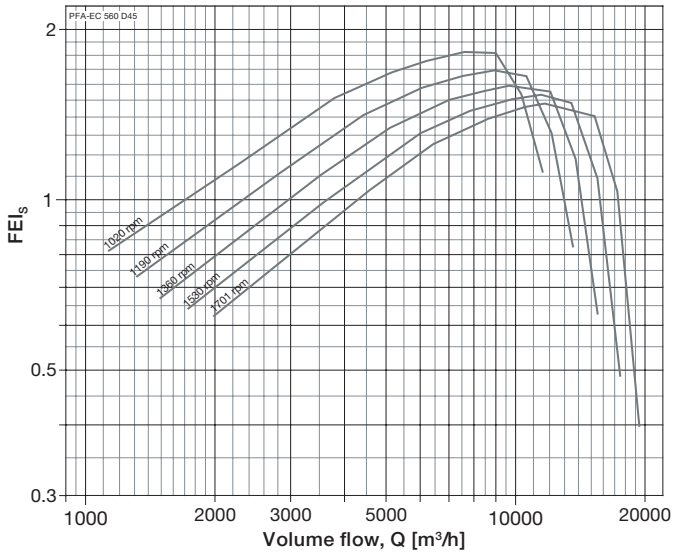
High Efficiency Plug Fan

PFA-EC Series with EC Motor

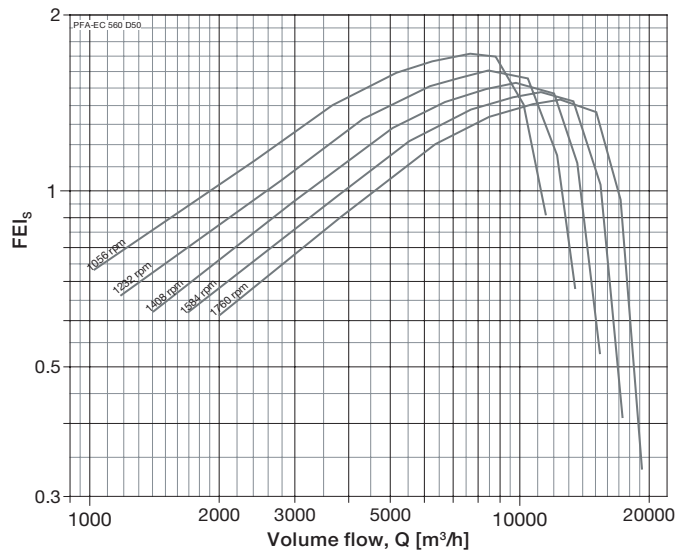
FEI Curves



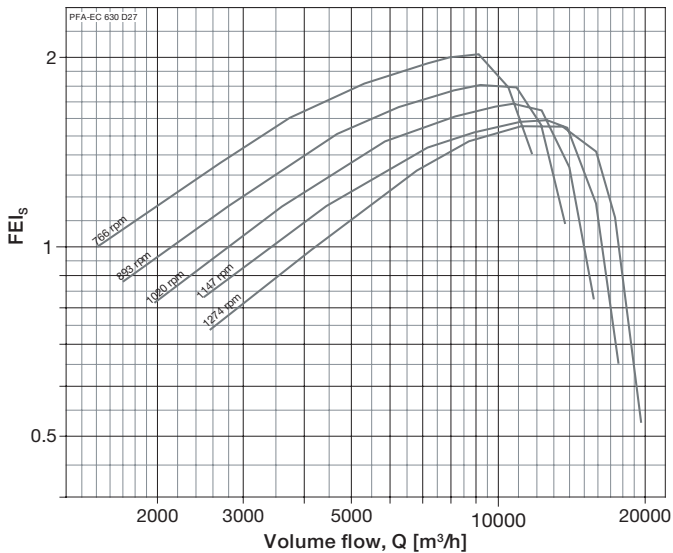
PFA-EC 560 D45



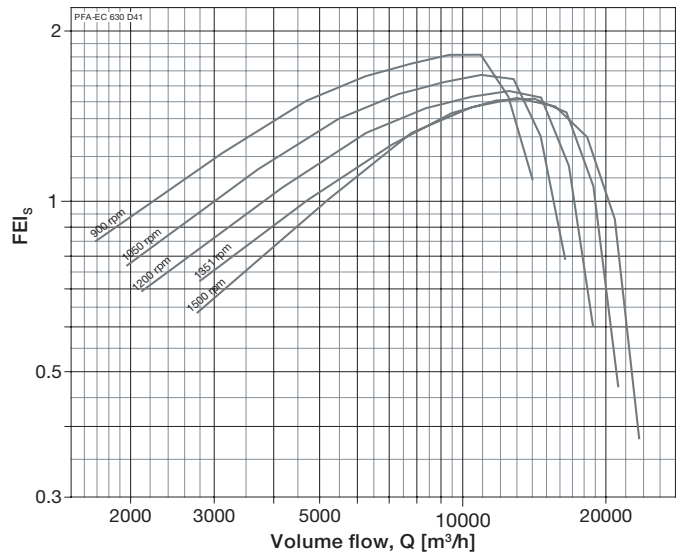
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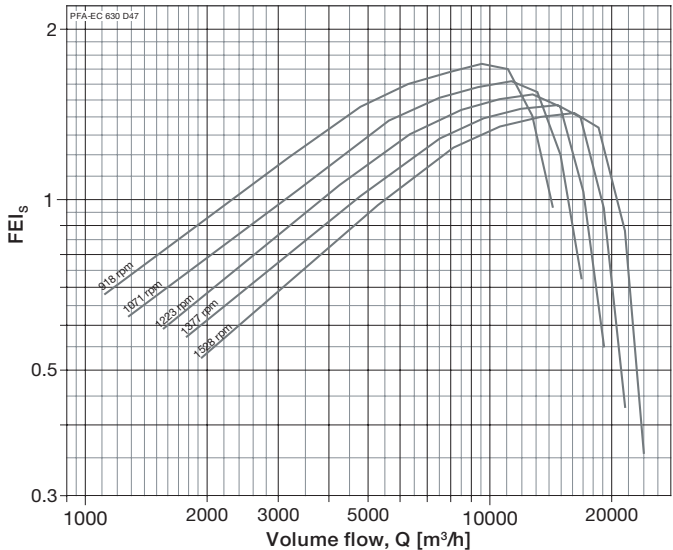
PFA-EC 630 D27



PFA-EC 630 D41



PFA-EC 630 D47



Introducing the Fan Energy Index

The FEI is a ratio of the actual fan efficiency to a baseline fan efficiency, both calculated at a given airflow and pressure point (FEI_s is calculated using a static pressure basis, FEI_t is calculated using a total pressure basis). Since these efficiencies are each calculated at the same airflow and pressure, FEI is also defined as the ratio of the baseline electrical power to the actual electrical power of a fan.

The FEI was designed to encourage responsible application of fans and drive significant and quantifiable energy savings through energy codes, utility rebate programs and federal regulations. This is accomplished by establishing the minimum fan efficiency or maximum fan electrical input power at design airflow and pressure. The FEI can be used by:

- ▶ Regulators to improve the efficiency of fan designs and limit market availability of less efficient fans
- ▶ Utilities to establish rebate programs to incentivize the efficient use of fans
- ▶ Code bodies to drive building owners and contractors to using more energy efficient fans for ventilation and process applications
- ▶ Purchasing agents to evaluate the fan selections and their suitability for specific applications

FEIs calculation is based on wire-to-air test.



High Efficiency Plug Fan

PFA-EC Series with EC Motor



Wall Fan (WF)

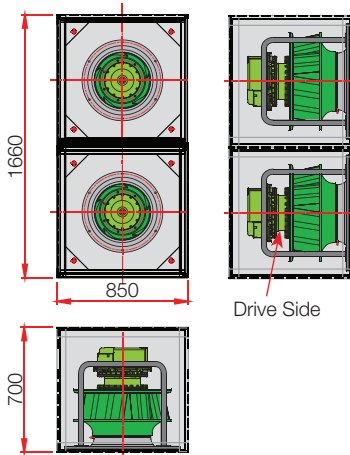


Fig.1 PFA-EC 500 WF25 1C/2R, TR

Wall fan design with a combination of high efficiency centrifugal plug fans to achieve high volume of air.

Fig.1: ie. Model PFE 500 with 25 mm acoustic cabinet of standard, 700 length x 850 Width x 1660 Height. EC motor, Connecting wiring as loose. c/w View ports as Standard.

Fig.2: ie. Model PFE 500 of Single Skin cabinet with optional double Removable Panel of 700 length x 2470 Width x 850 Height. EC motor. c/w View ports as Standard.

** RP-R/L = Double Removable Panel as Optional with choice at both Right & Left side

Fig.3: ie. Model PFE 500 with 50 mm acoustic cabinet, 750 length x 1710 Width x 1710 Height. EC motor, Unit with 3 fan units type. Connecting wiring as loose. c/w View ports as Standard.** RP-R = Single Removable Panel as Optional on requested on the RIGHT side

All combination units can be available to install Dummy plate as optional for 3, 5 or 7 etc fan units requirement. Wall Fan is not licensed by AMCA International.

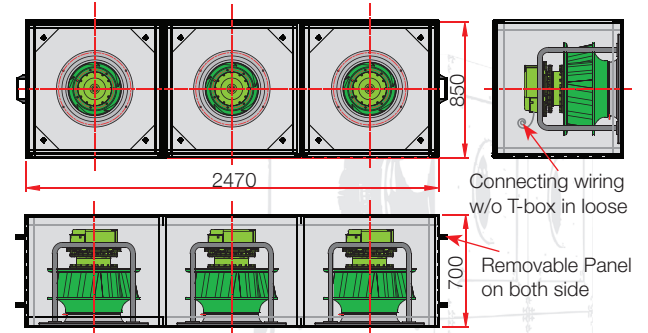


Fig.2 PFA-EC 500 WF1 3C/1R, RP-L/R, TL

Example of 2C/2R c/w Dummy plate for use with 3 fan units

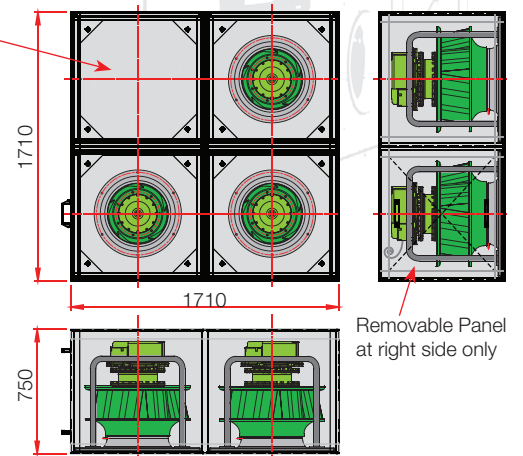


Fig.3 PFA-EC 500 WF50 2C/2R, RP-R, TR

WF Model Size	Acoustic Panle -	Standard Length [mm]	Width				Height			
			1C [mm]	2C [mm]	3C [mm]	4C [mm]	1R [mm]	2R [mm]	3R [mm]	4R [mm]
400	WF1	550	680	1320	1960	2600	680	1320	1960	2600
	WF25	550	680	1320	1960	2600	680	1320	1960	2600
	WF50	600	730	1370	2010	2650	730	1370	2010	2650
	WF75	650	780	1420	2060	2700	780	1420	2060	2700
450	WF1	700	680	1320	1960	-	680	1320	1960	-
	WF25	700	680	1320	1960	-	680	1320	1960	-
	WF50	750	730	1370	2010	-	730	1370	2010	-
	WF75	800	780	1420	2060	-	780	1420	2060	-
500	WF1	700	850	1660	2470	-	850	1660	2470	-
	WF25	700	850	1660	2470	-	850	1660	2470	-
	WF50	750	900	1710	2520	-	900	1710	2520	-
	WF75	800	950	1760	2570	-	950	1760	2570	-
560	WF1	800	850	1660	2470	-	850	1660	2470	-
	WF25	800	850	1660	2470	-	850	1660	2470	-
	WF50	850	900	1710	2520	-	900	1710	2520	-
	WF75	900	950	1760	2570	-	950	1760	2570	-
630	WF1	800	1020	2000	2980	-	1020	2000	2980	-
	WF25	800	1020	2000	2980	-	1020	2000	2980	-
	WF50	850	1070	2050	3030	-	1070	2050	3030	-
	WF75	900	1120	2100	3080	-	1120	2100	3080	-

- Note:
- WF 1 = Single skin, WF 25 = 25 mm acoustic, WF 50 = 50 mm Acoustic and WF 75 = 75 mm acoustic.
 - All units connecting wiring w/o T-box in loose, c/w 45 mm dia view ports as standard
 - Inlet Wire guard, Damper Adaptor Ring, Flexible Connectors, Dummy Plates, Central Terminal Connection as optional
 - All Removable Panel as Optional. Optional available only at RP-L as single Removable Panel on LEFT or RP-R/L as double panel on both side.
 - All Removable Panel, View port, Dummy plate at Right or Left position are view from Drive Side
 - We reserve the right to alter drawings / measurements without notice in case of technical improvements.



Acoustic data

Sound power levels

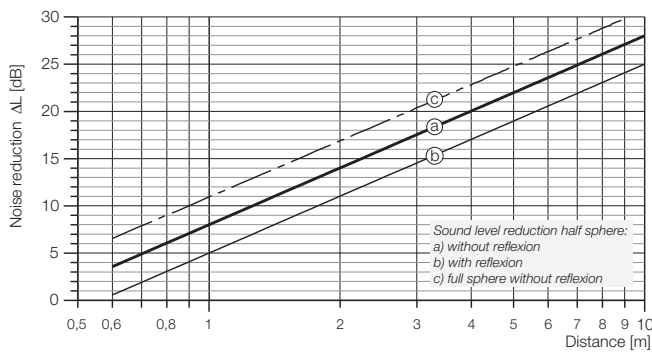
This term refers to the power which a source radiates as sound. Sound power levels are expressed in decibels with a reference level of 1 pWatt. The sound power level of a source remains the same regardless of its environment and the distance to the listener.

If the sound power frequency spectrum is needed, for as follows: example, the design of sound attenuators, the A- rated sound power levels at particular octave band frequency LWA can be calculated by subtracting the relative sound Lwrel.

$$L_{WA} = L_{wi} + L_{wrel}$$

Sound pressure level

These are pressure fluctuations generated by a source expressed in decibels with a reference level of 20 µPa. The sound pressure level varies with the distance of a sound source to the listener and its environment.



Frequencies

Sound is split into different frequencies. Frequencies of human hearing range from about 20 cycles per second (Hz) to 20,000 cycles per second (Hz). For practical purposes, WOLTER publishes noise data in eight octave bands with the centre frequencies of 63, 125, 250, 500, 1000, 2000, 4000 and 8000 Hz.

Each fan has its own specific correction factor which is to be deducted from sound power according to the octave band and is shown on the bottom line of each performance curve.

A-weighted sound pressure level in dB (A)

The human ear is more sensitive to sound in some frequencies than in others. The A-weighting is an attempt to reflect this natural perception of sound. The A-weighting is a set of figures which are applied to the sound pressure levels. The levels in each of the octave bands are added logarithmically to give a single figure. The A-weighting over the octave band is as follows:

Frequency [Hz]	63	125	250	500	1000	2000	4000	8000
A-weighting [dB]	-26,2	-16,1	-8,6	-3,2	0	+1,2	+1,0	-1,1

Table 1

Difference between two sound levels [dB]	Add to the higher level [dB]
0 - 1	3
2 - 3	2
4 - 9	1
≥10	0

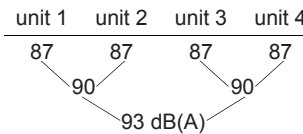
Table 2

Summation of several congenic sound levels

$$L_{\Sigma} = L_1 + 10 \cdot \lg(z)$$

where:
z = number of sources
L1 = sound level of a single source
LΣ = resulting summation sound level

can also be estimated based on table 2 as per below:



..... number of sound source
..... sound power level of each unit
..... logarithmic addition of sound levels

Relative Sound Power Frequency Spectrum (L_{wrel}) in ΔdB

Fan Model	63	125	250	500	1000	2000	4000	8000
Size	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]
PFA-EC 400 D25	-8.5	-6.2	-7.7	-9.6	-12.2	-12.8	-14.7	-18.0
PFA-EC 400 D34	-7.9	-6.9	-9.3	-11.1	-16.6	-17.3	-20.4	-24.4
PFA-EC 450 D18	-9.0	-4.4	-8.9	-13.2	-15.4	-15.3	-16.4	-21.1
PFA-EC 450 D30	-10.3	-3.6	-7.9	-12.0	-14.0	-15.6	-18.4	-19.4
PFA-EC 450 D45	-7.4	-6.9	-5.6	-7.2	-14.0	-14.6	-18.8	-21.4
PFA-EC 450 D53	-10.5	-5.7	-7.3	-11.2	-16.5	-17.2	-19.4	-22.9
PFA-EC 450 D70	-12.9	-6.8	-5.4	-11.7	-15.3	-16.2	-18.6	-20.4
PFA-EC 500 D35	-9.0	-4.7	-9.5	-11.3	-14.4	-14.9	-17.8	-18.0
PFA-EC 500 D42	-6.1	-6.5	-5.3	-9.4	-13.3	-16.1	-19.0	-20.5
PFA-EC 500 D60	-13.0	-3.4	-7.6	-11.2	-14.3	-13.7	-14.5	-13.9
PFA-EC 500 D70	-12.3	-4.0	-7.0	-12.5	-15.5	-17.3	-19.3	-20.7
PFA-EC 560 D33	-8.4	-4.9	-6.8	-11.6	-11.9	-14.3	-17.2	-19.3
PFA-EC 560 D45	-6.4	-6.5	-7.4	-13.6	-15.4	-17.6	-20.4	-22.6
PFA-EC 560 D50	-6.8	-5.1	-8.4	-13.0	-14.6	-16.8	-19.0	-20.5
PFA-EC 630 D27	-5.4	-8.3	-7.1	-12.5	-11.8	-10.7	-12.4	-15.4
PFA-EC 630 D41	-5.5	-7.3	-5.4	-13.4	-14.9	-17.8	-19.3	-20.4
PFA-EC 630 D47	-7.2	-6.5	-7.6	-12.7	-14.0	-16.6	-19.3	-19.3

Note: The noise data in 8 octave bands above are all for reference only, please follow Wolter fan selection program for more accurate details.

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