Axial Fans

Medium pressure fan series

Ventilatoren lti

www.lti.com.sg

About Us

LTi Ventilatoren, we deal in indoor air quality (IAQ), an important ingredient of life from past 10 years. With the long history & experience of manufacturing of ventilation products with our colleagues having more than 30 years of experience, LTi Ventilatoren have been able to setup several production plants across the globe. Our long experience & efforts we put into our R&D, we are successfully able to develop new innovative products with higher efficiencies & low noise levels.

Our name LTi, L-Long term T-Technical i-Innovative, supports our concept of continuous growth with our technical innovations on our existing product range & to develop new products for ever growing markets.

Our wide product range includes Axial fans, Bifurcated axial fans, belt driven axial fans, Jet fans, centrifugal fans, In-line fans, mixed flow fans, special application fans for chemical resistance & battery room applications. Our customers are in domestic sector, commercial sector, industries, power sector & infrastructure of ventilation market.

LTi Ventilatoren (Asia) Pte Ltd, established to support local market by producing complete range of fans with national/international technologies to serve our customers locally & globally.

Our experience in the ventilation systems give our customers confidence to have most efficient/economical solutions for their ventilation requirements. This confidence in LTi & its high quality products is backed by excellent pre/after sales services by our experienced sales & technical staff.

We provide complete solutions to ventilation problems arising from air & sound. With this catalogue of fans, we provide our customers the complete overview fan range LTi can offer to the market. For further detailed discussions & information kindly feel free to contact our local sales company/distributor/dealer worldwide.

Quality standards

Our focus is customer satisfaction, which comes through with best quality & accurate deliveries. We believe in quality products. Our products have been tested & endorsed in Singapore by PSB (Productivity& standard board) & all performances are in accordance to AMCA standards 210 for air & AMCA standard 300 for sound. For high temperature fans we follow BS/EN standards for different temperatures & time classifications.

Our Projects

Project Name : ITE College & HQ @ AMK

Project Name : The Estuary

Project Name : Suki Sushi

Project Name : Central Fire Station

Fan Code

AR/AE 450-7 /26 D -2 F400

- F400 ..... Smoke Extract Fan 400 C, 300° C
- -2 ..... Number of Poles
- D/S ..... Three Phase/ Single Phase
- /26 ..... pitch angle
- 450-7 ..... Impeller-Ø, hub-Ø and number of blade
- AR/AE ..... axial fan blade type

Features and construction

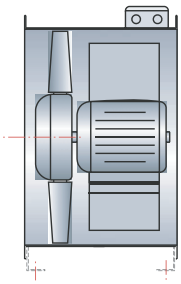
Types and duties

Lti-Axial flow-fans are specially manufactured for all applications and mounting positions in casing sizes 315 up to 1000 mm diameter. The performance range is from 1000 up to 360000 m^3/h on air volume, at static pressure up to 1500 Pa. Higher pressures are possible on multi-stage versions, contra-rotating. The curves show in this catalogue are for smoke extract version up to 300 C only. For F 400 C, please approach Lti's staff for assistance.

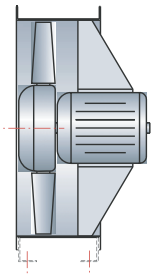
Casing:

Fan casing are fabricated using mild steel and treated with hot dip galvanised or epoxy coating after manufacturing. Standard length fans are large casing type which cover overall length of the impeller and motor. The motor leads (cover by flexible conduit) are connected to the terminal box on the fan casing. Where there is limited mounting for the ducts, short casing are used for installation. The motor cable are taken directly to the T-box of the motor.

Long Casing



Short Casing



lmpellers

Lti-impellers, hubs and blades are made of die-cast aluminium alloy, the sophisticated aerodynamical profile guarantees high efficiency and low noise. The manual pitch adjustable blades allow maximum flexibility to match individual airflow requirement. The variable number of blades increases the performance range. Each impeller is statically and dynamically balanced and checked to ensure smooth operation. All impeller examined by X-ray to ensure flawless castings

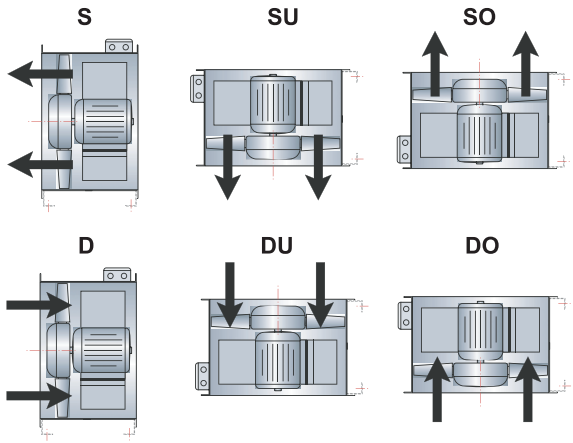
Motors

Lti uses totally enclosed fan cool squirrel cage motors rated to IEC 34, if required also in accordance to EPACT. The standard motors have Class F and H class of Insulation and protection class IP 55. Ambient temperature of the operation is +40°C, with 2 or 3 speeds, TAB-or DUAL-wounded are also available. The motor bearings have a L10 life.

Forms of running

Lti-Axial flow fans are available for all forms of running.

The chart information shows all standard forms of running, Standard form of running is Type D. Form of running is especially relevant when weather proof motors are required. Arrows indicating correct rotation and direction of airflow are shown on the fan casing.



Fan performance curves

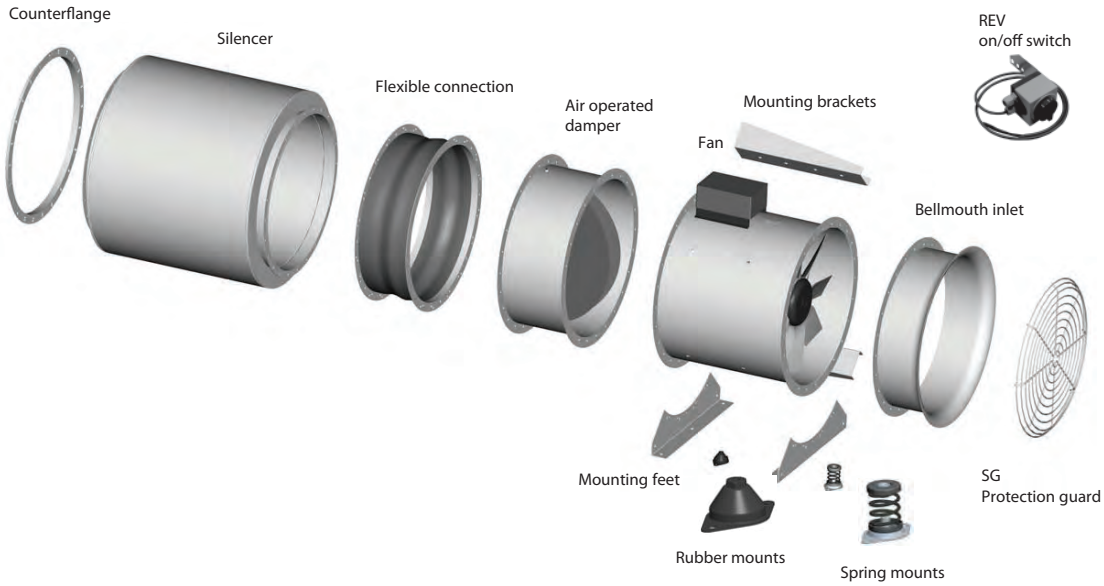
The performance curves for these fan types have been established in mounting position D (installed on the pressure side and suction side) and show the total pressure increase pt as a function of the volume flow. The dynamic pressure pd2 refers to the flange cross section at the outlet side of the fan.

Ordering the fan

After selection of the fan best for your needs please order as follows:

- Fan type, casing version and running form
- Fan code and type: see below
- Quantity required
- Duty required at standard air and temperature, air volume in m^3/h at static pressure in Pa.
- Motor power rating in KW
- Electrical supply
- Ancillaries required

Fan installation with accessories



Fan selection

The chosen operating point of the fan has to be on or under the curve for the selected blade angle. If a fan is selected outside the performance curve, the fan might start pumping, which could increase the mechanical stress on the impeller so much that it would be destroyed. In order to assure the highest possible security for operation of the fan, we have selected the motors depending on the highest possible power consumption of one whole blade angle setting, to avoid a possible motor overloading.

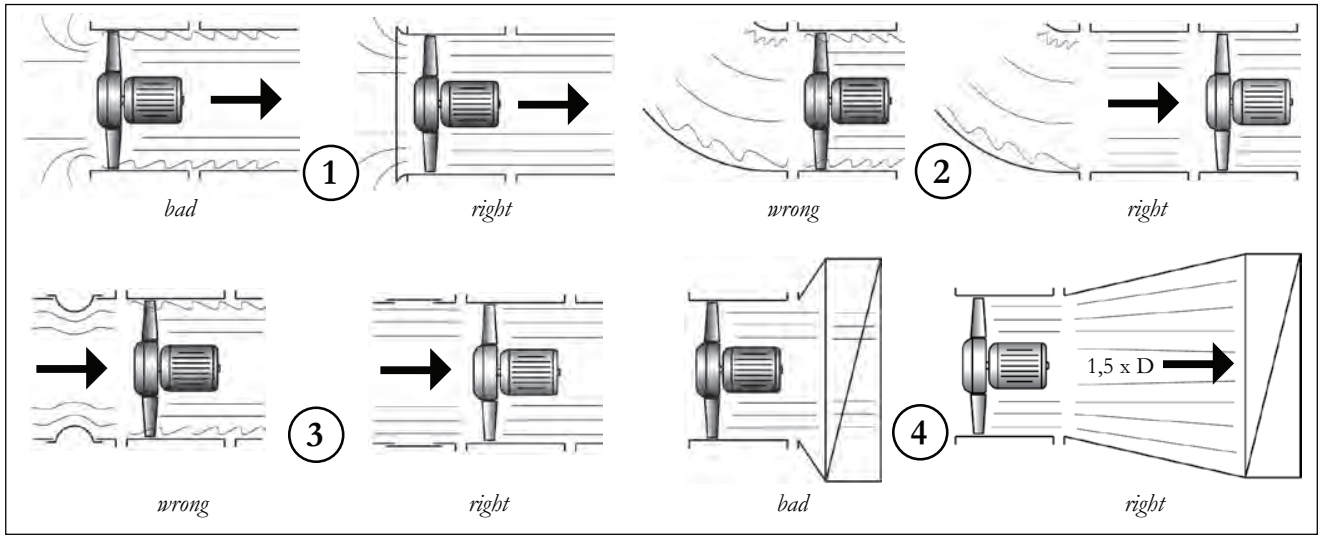
If the operating point of the fan is in an area of the performance curve with a high efficiency, we recommend to calculate the required motor power depending on the actual operating point. A possible over-dimensioning of the motor can be avoided.

Fan installation

Please note:

- In case fans are installed with free inlet or free outlet, a minimum distance of 1,5 times fan diameter to the next constructional element or component has to be observed. The inlet side should be equipped with an inlet cone to ensure a uniform incoming airflow.

- In case fans are installed in a duct, observe minimum distances (see drawings below) to accessories or connecting parts (duct bends, silencers, shutters) at the inlet or outlet side of the fan to avoid performance losses.



Duct length min. 1x Ø

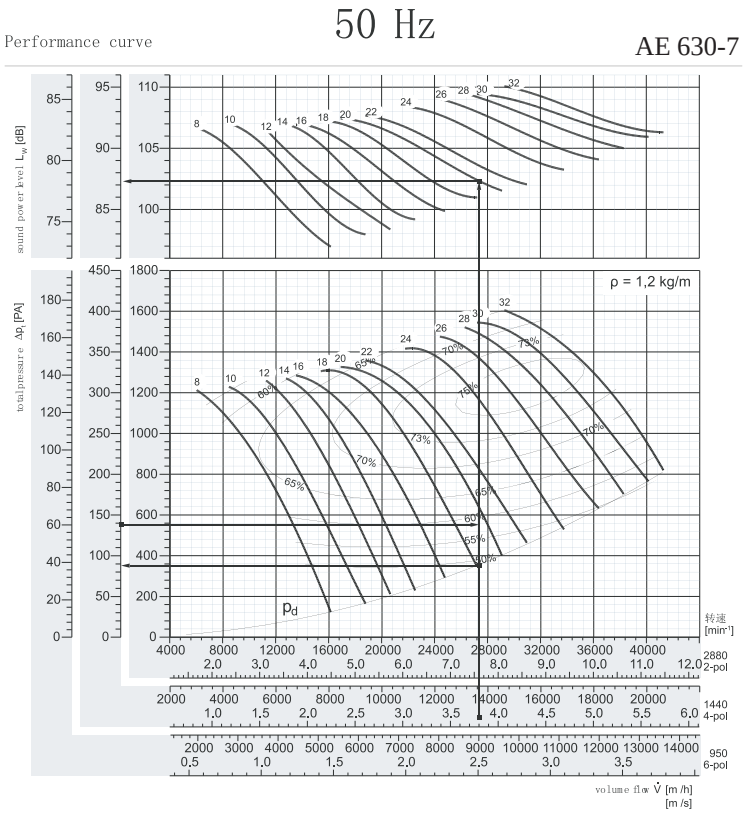
Selection example

Required duty point by customer Volume flow : 3,8 m³/s static pressure: 50 Pa
(for total pressure, please add velocity pressure to static pressure - 90 Pa dyn. pressure 50 Pa static pressure = 140 Pa total pressure) Fan speed: 1440 1/min (4-pole)

How to use:

After having chosen right fan performance curve please draw volume flow and pressure. In the cross you will find the following fan data:

- motor speed or number of poles 1440 1/min - 4-pole
- pitch angle: 20 degrees
- fan efficiency: 58 %
- sound power level: 87 dBa



Peak absorbed power [kW] — pitch angle [°] — relative frequency spectrum ΔL in dB/Okt — Octave b. midfr. [Hz]

n [min⁻¹]	8	10	12	14	16	18	20	22	24	26	28	30	32	63	125	250	500	1k	2k	4k	8k
950	0,15	0,20	0,25	0,28	0,29	0,33	0,36	0,40	0,47	0,55	0,61	0,64	0,71								
motor	0,37							5,5			1,1			-3	-5	-7	-7	-8	-12	-18	-24
1440	0,53	0,69	0,88	0,96	1,02	1,15	1,24	1,41	1,65	1,90	2,11	2,22	2,47								
motor	0,55	1,1				1,5			2,2			3,0		-5	-6	-5	-6	-7	-10	-15	-21
2880	4,24	5,52	7,04	7,68	8,16	9,20	9,92	11,3	13,2	15,2	16,9	17,8	19,8								
motor	5,5	7,5		11,0				15,0		18,5			22,0	-5	-10	-7	-5	-7	-8	-12	-18

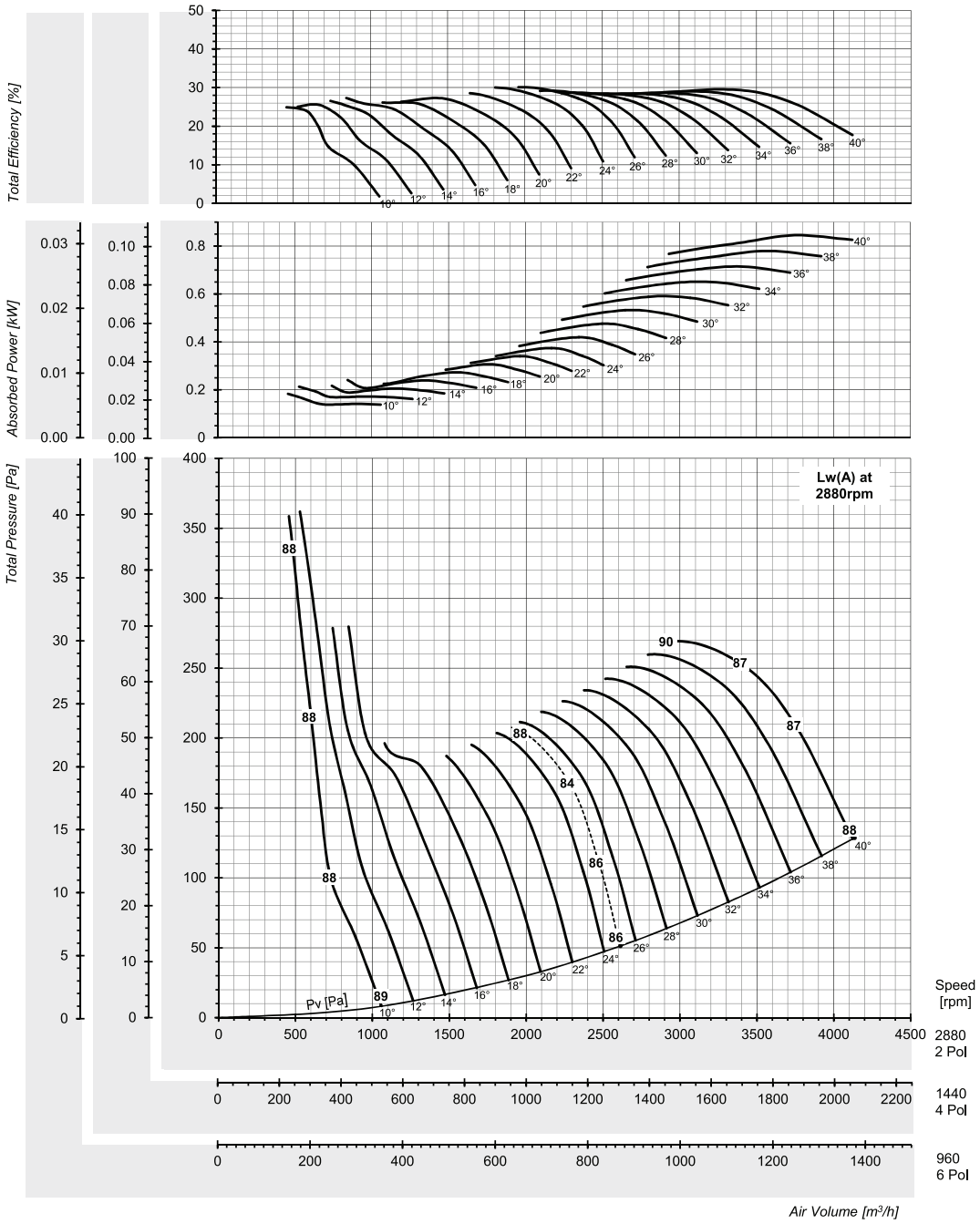
Choose motor power:
Two possibilities are practicable to choose the motor power
1) Calculation absorbed power in duly point

$$P_L\,[kW] = \frac{V[m^3/s] \cdot \Delta pt\,[Pa]}{\eta\,[\%] \cdot 10} = \frac{3{,}8\ m^3/s \cdot 140\ Pa}{58 \cdot 10} = 0{,}91\ kW$$

Motor power 1,1 kW
2) After peak-absorbed power, see chart: 1,24kW
Motor power : 1,5kW
Peak power is the max power over the whole pitch angle in the worst case.

AE 315-10 (150)

ρ = 1.2kg/m³



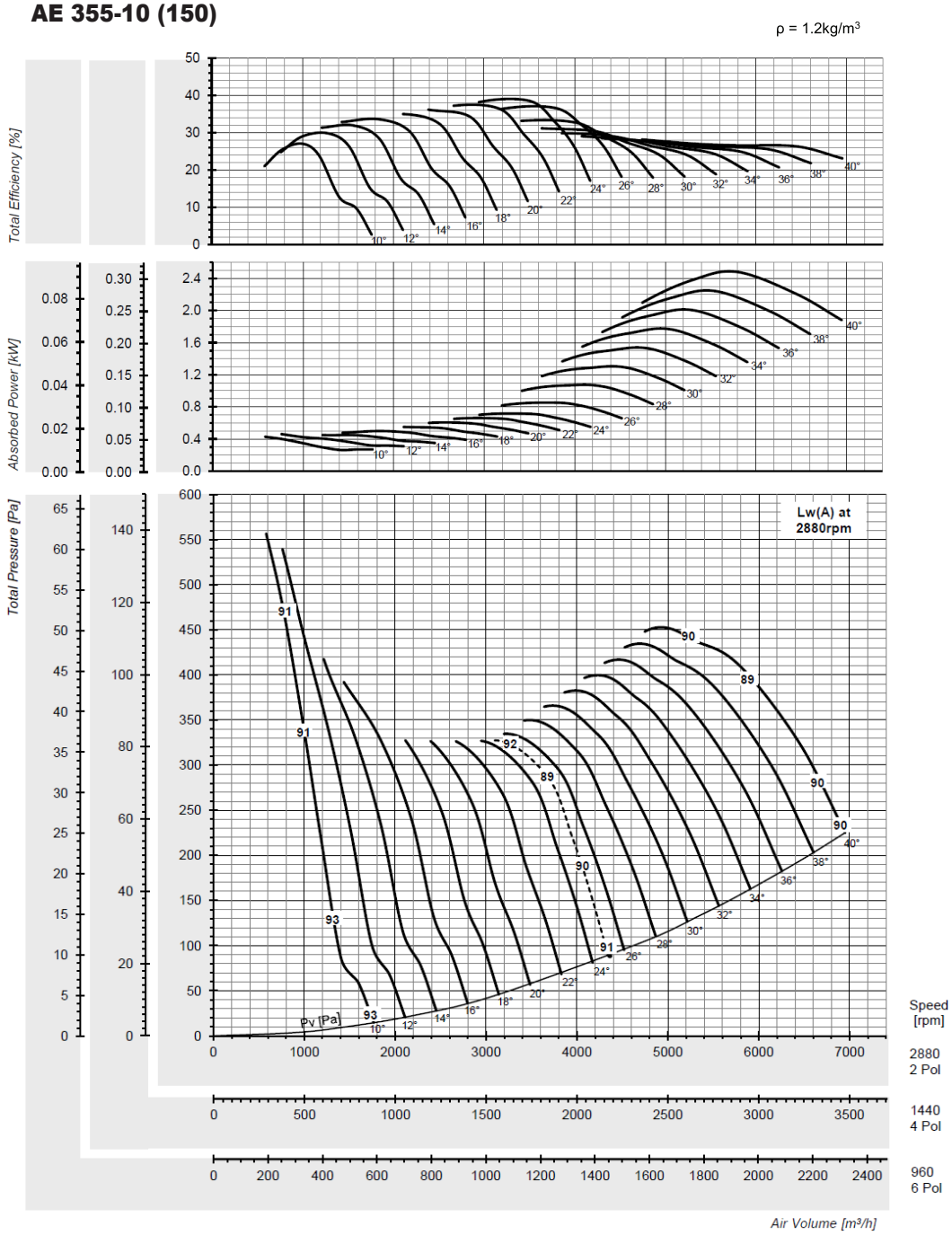
Peak Absorbed Power [kW]

N	Blade Pitch Angle [°]																Octave Band [Hz]								Lw(A)
(rpm)	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	40°	63	125	250	500	1k	2k	4k	8k	dBA
960	0.007	0.008	0.008	0.009	0.010	0.011	0.013	0.014	0.016	0.018	0.020	0.022	0.024	0.026	0.029	0.031	-20	-25	-27	-30	-32	-36	-41	-46	-27
motor								0.18																	
1440	0.023	0.027	0.027	0.030	0.034	0.036	0.043	0.047	0.052	0.060	0.067	0.074	0.081	0.089	0.098	0.106	-9	-9	-15	-18	-22	-24	-29	-34	-17
motor								0.18																	
2880	0.18	0.21	0.22	0.24	0.27	0.29	0.34	0.37	0.42	0.48	0.53	0.59	0.65	0.71	0.78	0.85	7	6	6	-1	-3	-7	-9	-14	0
motor				0.37					0.55				0.75		1.1										

* Performance certified is for installation type D - Ducted inlet, Ducted outlet. 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 LwiA sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

LTI Ventilatoren (Asia) Pte Ltd. certifies that axial fan AE 315 shown herein is 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.

AE 355-10 (150)



Peak Absorbed Power [kW]

N (rpm)	Blade Pitch Angle [°] 10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	40°	Octave Band [Hz] 63	125	250	500	1k	2k	4k	8k	Lw(A) dBA
960	0.016	0.017	0.018	0.018	0.021	0.022	0.024	0.026	0.032	0.040	0.048	0.057	0.065	0.074	0.083	0.091	-23	-23	-27	-30	-32	-35	-40	-45	-27
motor								0.18																	
1440	0.053	0.058	0.061	0.062	0.069	0.074	0.082	0.089	0.107	0.134	0.162	0.191	0.221	0.251	0.280	0.306	-13	-15	-14	-20	-22	-24	-29	-34	-17
motor						0.18								0.37											
2880	0.43	0.46	0.49	0.50	0.55	0.60	0.65	0.71	0.85	1.07	1.29	1.53	1.77	2.00	2.24	2.45	20	3	0	1	-5	-7	-9	-14	0
motor			0.55			0.75			1.1		1.5		2.2		3.0										

* Performance certified is for installation type D - Ducted inlet, Ducted outlet. 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 LwiA sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

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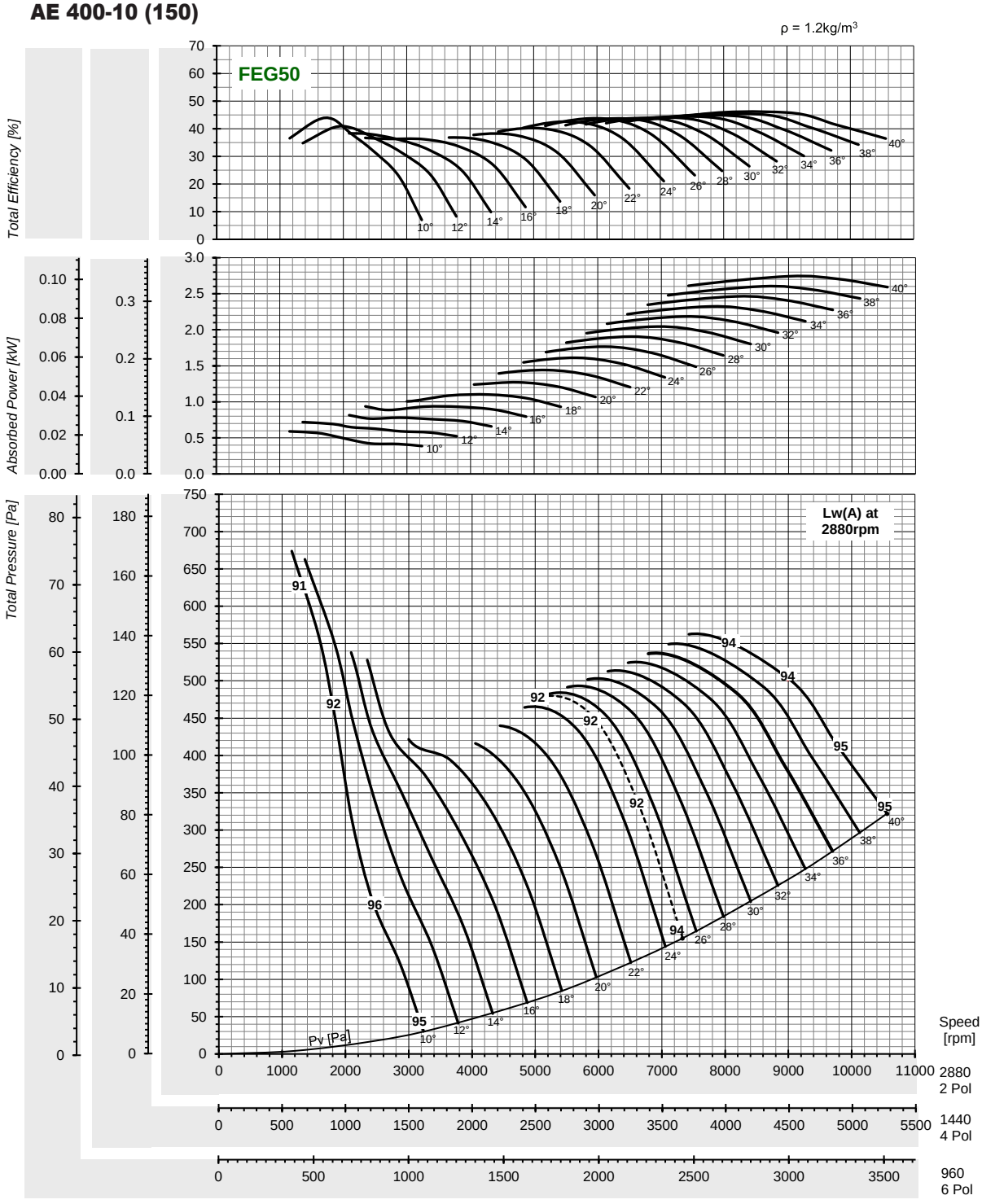
AE 400-10 (150)



N (rpm)	Blade Pitch Angle [°] 10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	40°	Octave Band [Hz] 63	125	250	500	1k	2k	4k	8k	Lw(A) dBA
960 motor	0.022	0.027	0.030	0.035	0.041	0.047	0.053	0.060	0.065	0.071	0.076	0.081	0.086	0.091	0.096	0.102	-24	-25	-27	-30	-33	-36	-40	-44	-28
									0.18																
1440 motor	0.074	0.090	0.102	0.117	0.138	0.159	0.180	0.201	0.221	0.238	0.256	0.273	0.291	0.308	0.325	0.343	-15	-15	-16	-19	-22	-24	-29	-33	-17
				0.18							0.37														
2880 motor	0.59	0.72	0.82	0.94	1.10	1.27	1.44	1.61	1.77	1.91	2.05	2.18	2.32	2.46	2.60	2.74	3	0	0	-1	-4	-7	-9	-14	0
	0.75			1.1		1.5				2.2															

* Performance certified is for installation type D - Ducted inlet, Ducted outlet. 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 LwiA sound power levels for installation type D: ducted inlet, ducted outlet. the effects of duct end correction.

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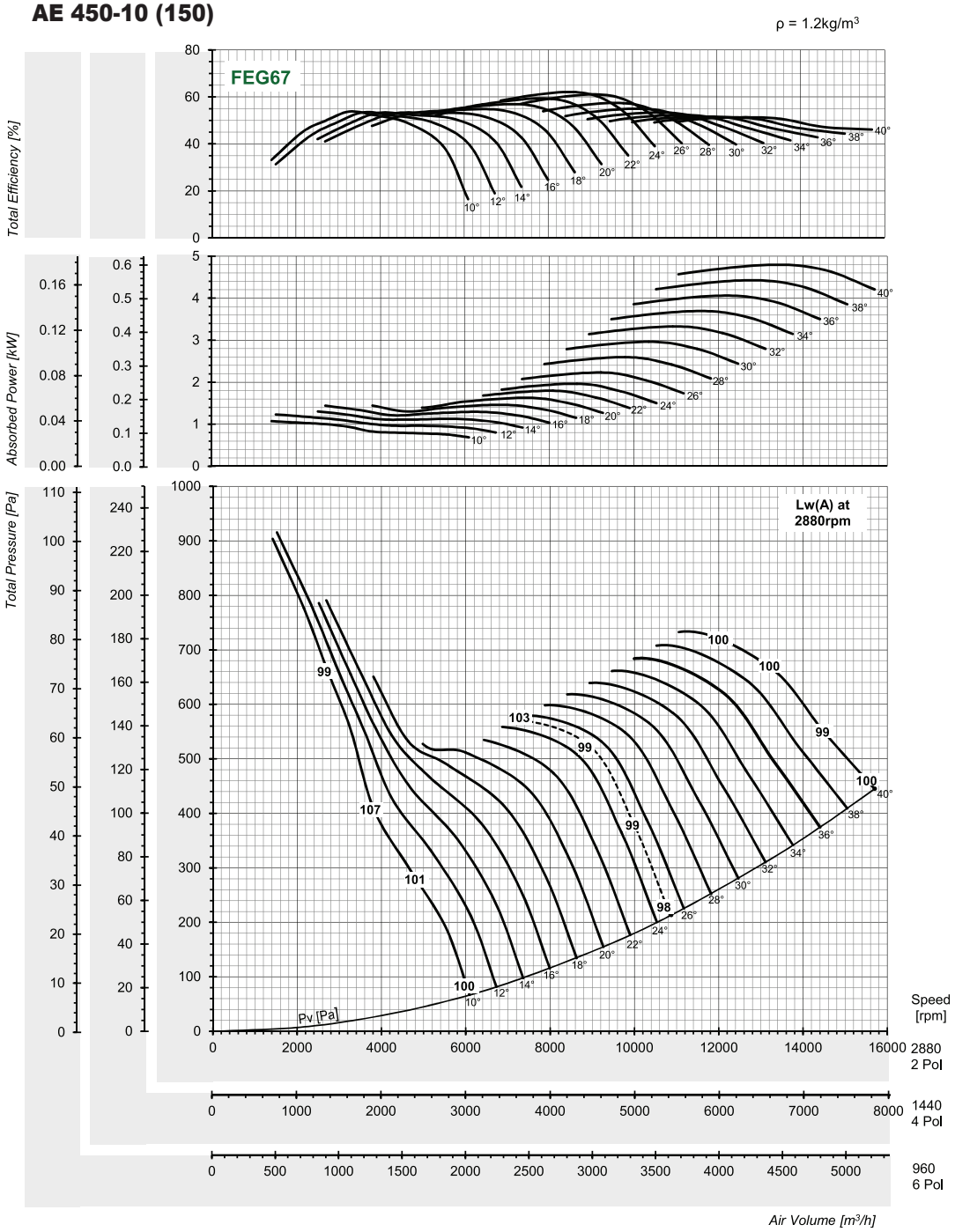
AE 450-10 (150)



Peak Absorbed Power [kW]

N	Blade Pitch Angle [°]															Octave Band [Hz]								Lw(A)
(rpm)	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	40°	63	125	250	500	1k	2k	4k	8k	dBA
960	0.040	0.046	0.048	0.053	0.054	0.060	0.067	0.073	0.083	0.096	0.110	0.123	0.137	0.150	0.164	0.177	-22	-22	-28	-30	-32	-35	-41	-49	-27
motor								0.18																	
1440	0.13	0.15	0.16	0.18	0.18	0.20	0.22	0.25	0.28	0.32	0.37	0.42	0.46	0.51	0.55	0.60	-12	-14	-14	-19	-22	-24	-28	-36	-17
motor		0.18					0.37					0.55			0.75										
2880	1.07	1.23	1.31	1.44	1.46	1.63	1.80	1.96	2.23	2.60	2.96	3.33	3.69	4.06	4.43	4.79	0	3	1	2	-4	-7	-8	-13	0
motor	1.1				2.2					3.0			4.0		5.5										

* Performance certified is for installation type D - Ducted inlet, Ducted outlet. 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 LwiA sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

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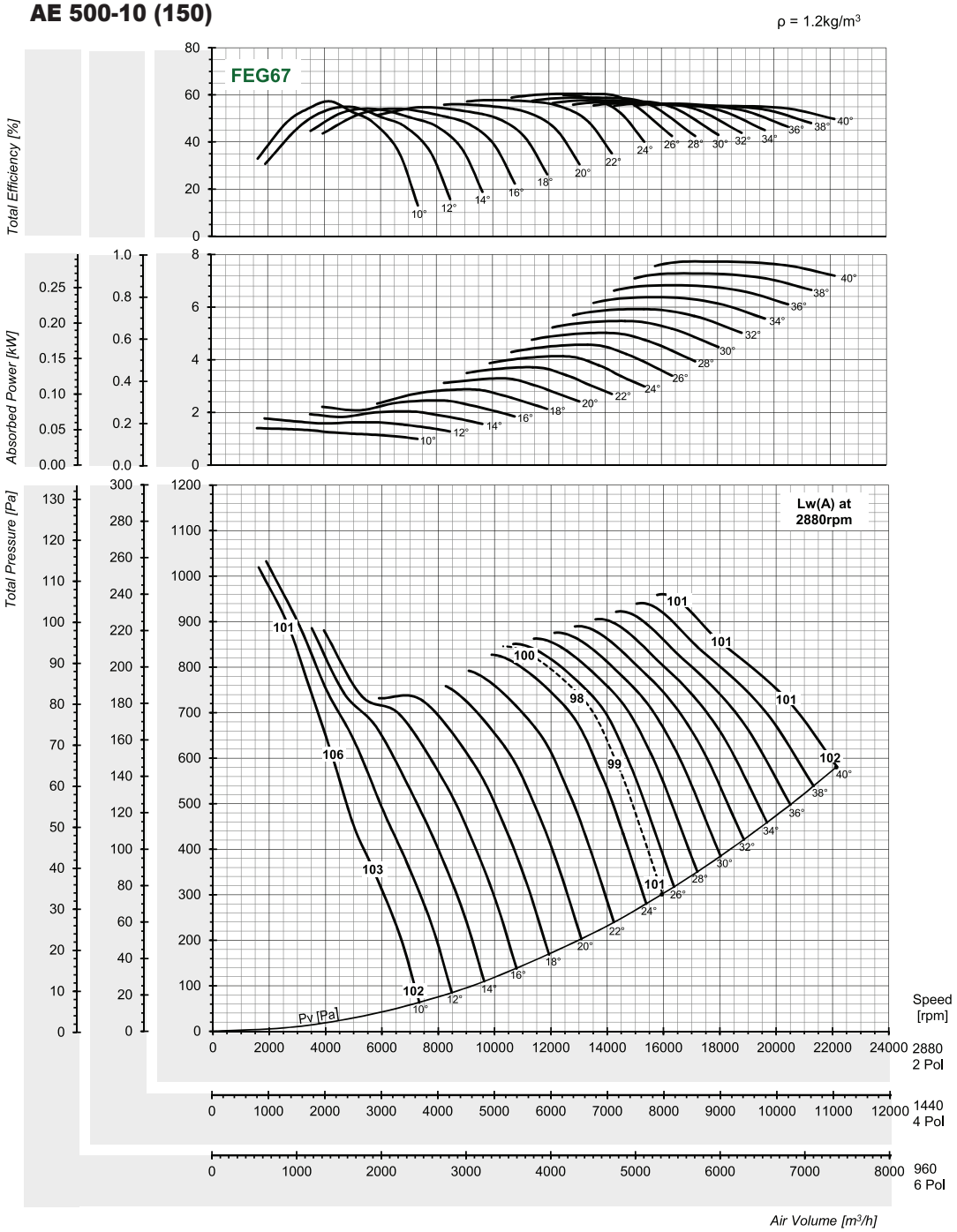
AE 500-10 (150)



Peak Absorbed Power [kW]

N	Blade Pitch Angle [°]																Octave Band [Hz]								Lw(A)
(rpm)	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	40°	63	125	250	500	1k	2k	4k	8k	dBA
960	0.05	0.07	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19	0.20	0.22	0.24	0.25	0.27	0.29	-24	-23	-27	-30	-32	-34	-40	-45	-27
motor					0.18								0.37												
1440	0.18	0.22	0.25	0.31	0.36	0.41	0.46	0.52	0.57	0.63	0.68	0.74	0.80	0.85	0.91	0.97	-14	-15	-14	-19	-22	-23	-27	-34	-17
motor			0.37				0.55			0.75				1.1											
2880	1.40	1.77	2.03	2.45	2.87	3.29	3.71	4.13	4.57	5.02	5.47	5.92	6.37	6.83	7.28	7.73	-1	2	0	1	-4	-7	-8	-11	0
motor	1.5		2.2		3.0		4.0			5.5				7.5		11									

* Performance certified is for installation type D - Ducted inlet, Ducted outlet. 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 LwiA sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

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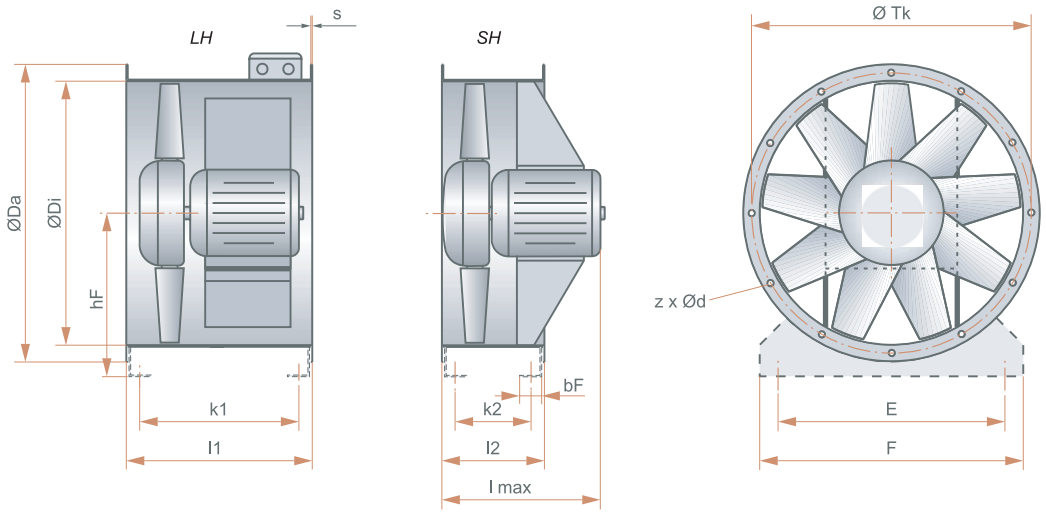
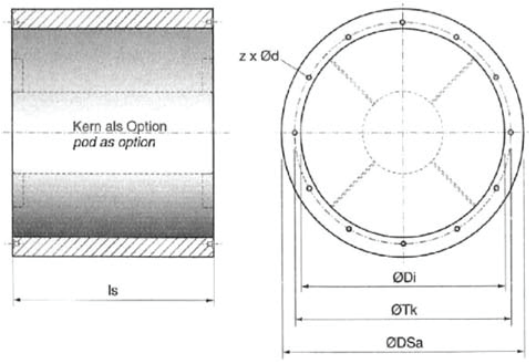
Axial flow fan dimensions

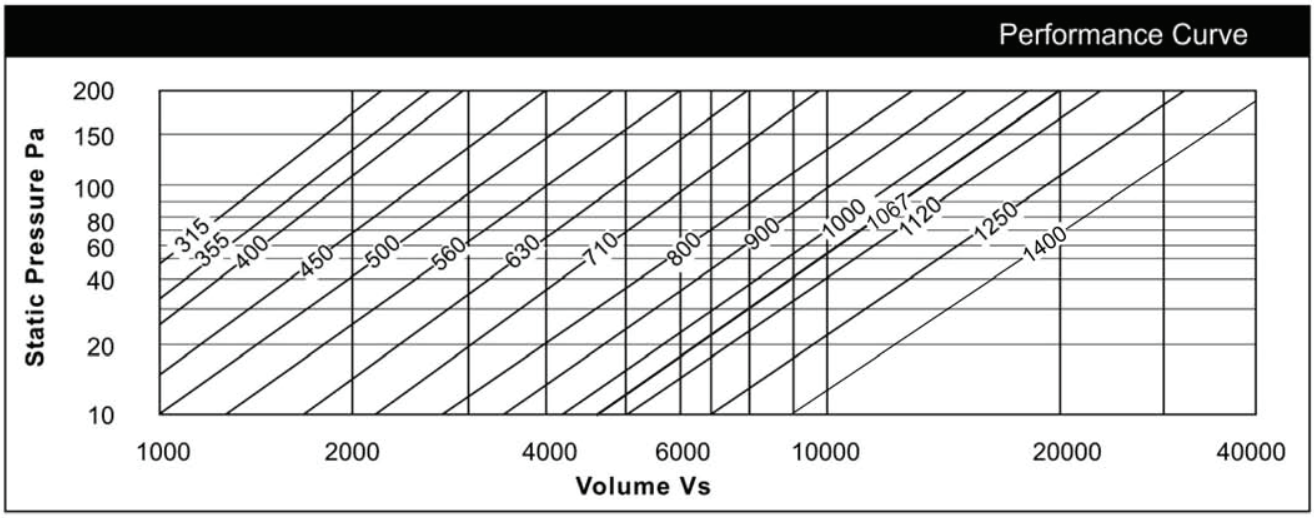


"Size [mm]"	"Di [mm]"	"Da [mm]"	"hF [mm]"	"zxd [mm]"	"Tk [mm]"	"E [mm]"	"F [mm]"	"bF [mm]"
315	315	395	231	8 x 12	355	265	315	60
355	355	435	262	8 x 12	395	305	355	60
400	400	480	297	12 x 12	440	350	400	60
450	450	530	332	12 x 12	490	400	450	60
500	500	580	350	12 x 12	540	440	500	70

"Size [mm]"	"s [mm]"	LH				SH	
		"k1 [mm]"	"l1 [mm]"	"motor max"	"k2 [mm]"	"l2 [mm]"	"Imax [mm]"
315/355	2	305	355	80	160	225	350
400	2	305	355	90	160	225	400
450	2	350	400	112	160	225	500
500	2	450	500	132	149	225	400



Size	Dsa	Di	Tk	Is	z x d		LP	LP	HP	HP
	mm	mm	mm	1D	2D	mm	1D	2D	1D	2D
315	465	315	355	315	630	8 x 8	10	18	20	29
355	505	355	395	355	710	8 x 8	12	19	22	30
400	600	400	440	400	800	12 x 8	13	20	23	31
450	650	450	490	450	900	12 x 8	18	26	29	37
500	700	500	540	500	1000	12 x 8	23	32	35	43



*Note: Performance curves relate to pressure losses through HP silencers only. The LP models have negligible pressure loss.

Model	Type	Insertion Loss at Hz							
		63	125	250	500	1K	2K	4K	8K
LP 315/355/400/450/500	1D	1	4	7	10	14	11	8	8
HP 315/355/400/450/500	1D(POD)	4	6	9	13	19	19	16	14
LP 315/355/400/450/500	2D	4	8	12	17	23	17	13	12
HP 315/355/400/450/500	2D(POD)	7	11	15	24	28	28	26	22

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*subject to technical modification

LTI AE -June 2024