



Research
Design and
High Technology

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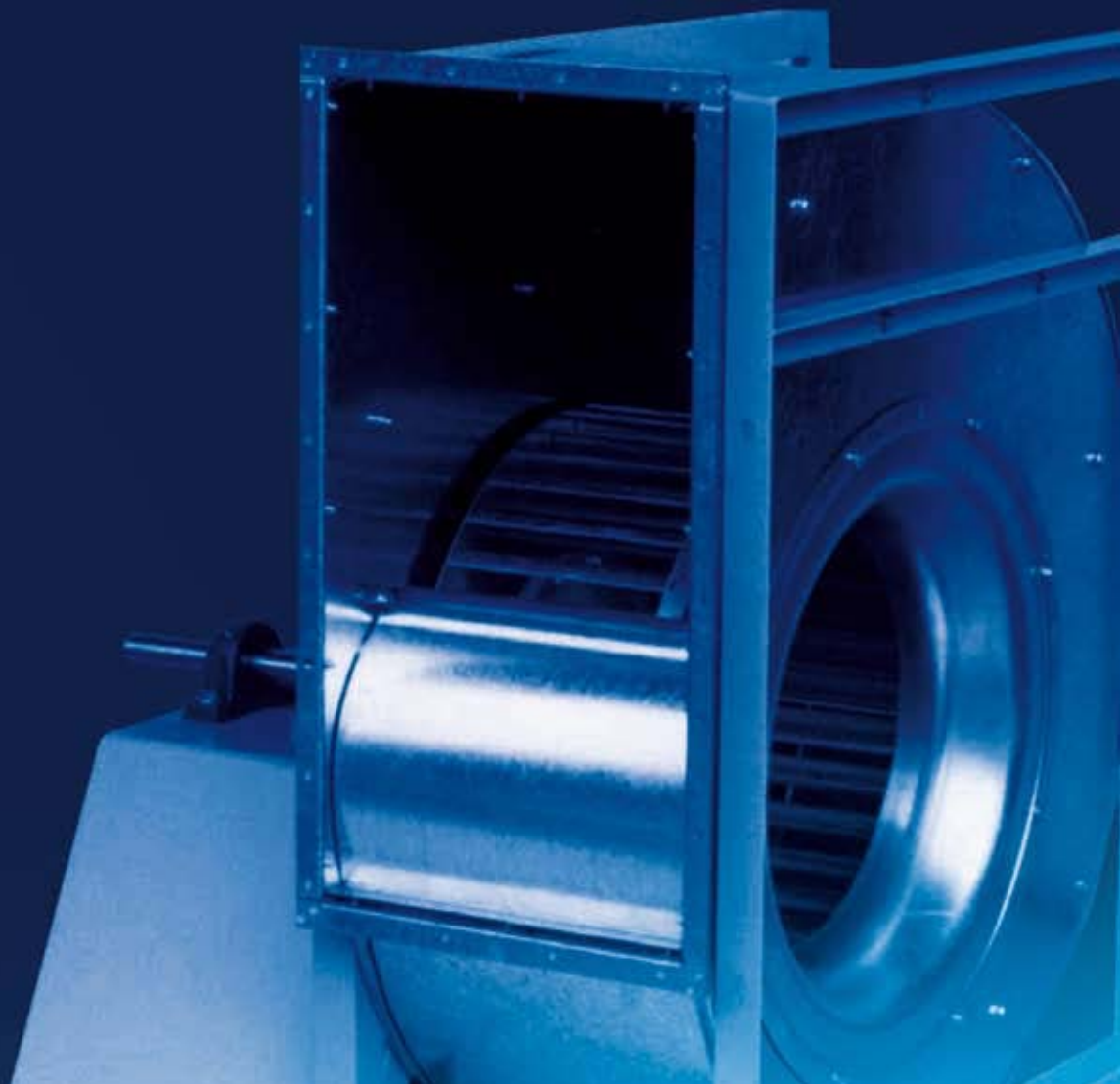
Web: <http://www.solerpalau.com>





FSA

Single Inlet
Centrifugal Fan
with Forward Wheels

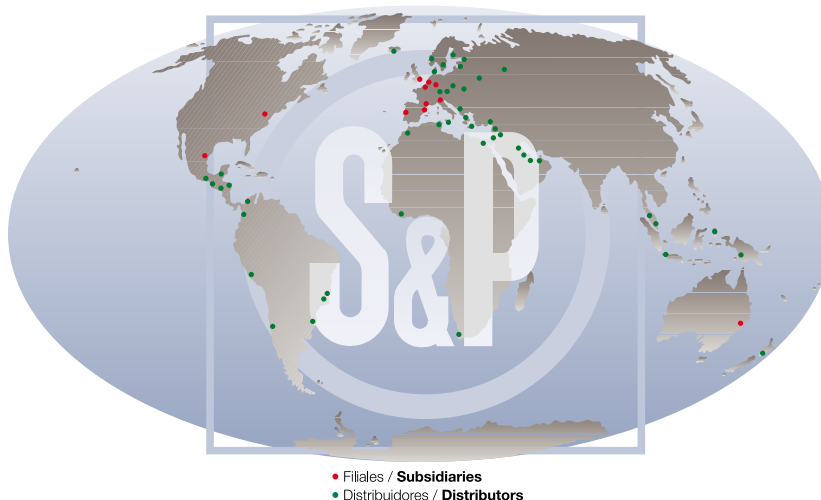


Introducción Introduction

S&P - LA EMPRESA

Desde su fundación en el año 1951, en la localidad de Ripoll (España), Soler & Palau, S.A. se ha convertido, desde hace ya bastantes años, en uno de los líderes mundiales en la fabricación y venta de todo tipo de equipos de ventilación y de extracción de aire.

Ocho plantas productivas y once empresas filiales propias de comercialización, ubicadas en diversos países y continentes constituyen el actual Grupo S&P que, con un cualificado equipo de más de 1300 personas, ejerce su actividad en todos los países del mundo.



S&P - LA ESTRATEGIA

Investigación y Desarrollo de productos y tecnología propios; Calidad de producción por encima de la media de su campo de actividad y Vocación de Expansión sostenible son, y han sido entre otros, tres de los pilares fundamentales sobre los que descansa la trayectoria de Soler & Palau, S.A. Contar hoy con más de 60 Ingenieros titulados en las áreas de Investigación, Desarrollo, Innovación y Producción; Certificaciones ISO 9001:2000 y 14001:1996 acreditadas por AENOR (Soler & Palau fue la primera empresa registrada en España). Laboratorios propios de ensayo con certificación oficial EN-45001-89 y crecimientos anuales, sostenidos en las últimas décadas, muy superiores a los de su mercado son algunos de los logros de la correcta aplicación de la mencionada estrategia de empresa.

Nuevos y apasionantes proyectos que verán la luz muy en breve, están hoy en marcha en el Grupo S&P.



S&P - THE COMPANY

Soler & Palau was founded in 1951 in Ripoll (Spain) and since this date has become one of the world's leading companies engaged in the manufacture, sales and distribution of all types of ventilating and air moving products. Today Soler & Palau has eight production plants and eleven wholly owned commercial subsidiary companies located across the globe. Supporting the design, development production and commercial facilities are a professional team of more than 1300 employees who ensure that Soler & Palau continue to have an active presence in all global market sectors.

S&P - THE STRATEGY

At the heart of Soler & Palau's company strategy is the continued substantial investment in product and manufacturing research, development and quality control. Since 1951 the sustained investment in these critical areas has enabled Soler & Palau to offer to its customers products with unparalleled quality and reliability. These critical elements of success today form the fundamental cornerstones of the company's strategy for growth within increasingly competitive global markets.

Today Soler & Palau has more than 60 highly qualified engineers working in areas such as product and manufacturing technology research, development, innovation and production. The engineers work closely with international safety standards agencies to ensure that all of Soler & Palau's products are manufactured and supplied in accordance with only the very latest mechanical and electrical safety standards. All products are extensively tested with the company's comprehensive in-house airflow, acoustic and environmental test laboratories which have been officially certified by AENOR to EN-45001-89 standards. Currently Soler & Palau hold both ISO 9001:2000 and ISO 14001:1996 certifications and were also the first company in Spain to be registered to the original ISO 9000 standards.

Through operating a continual rigorous program of new and existing product development and improvement means that Soler & Palau's customers are assured that they will continue to receive products of only the very highest quality and reliability both now and in the future.

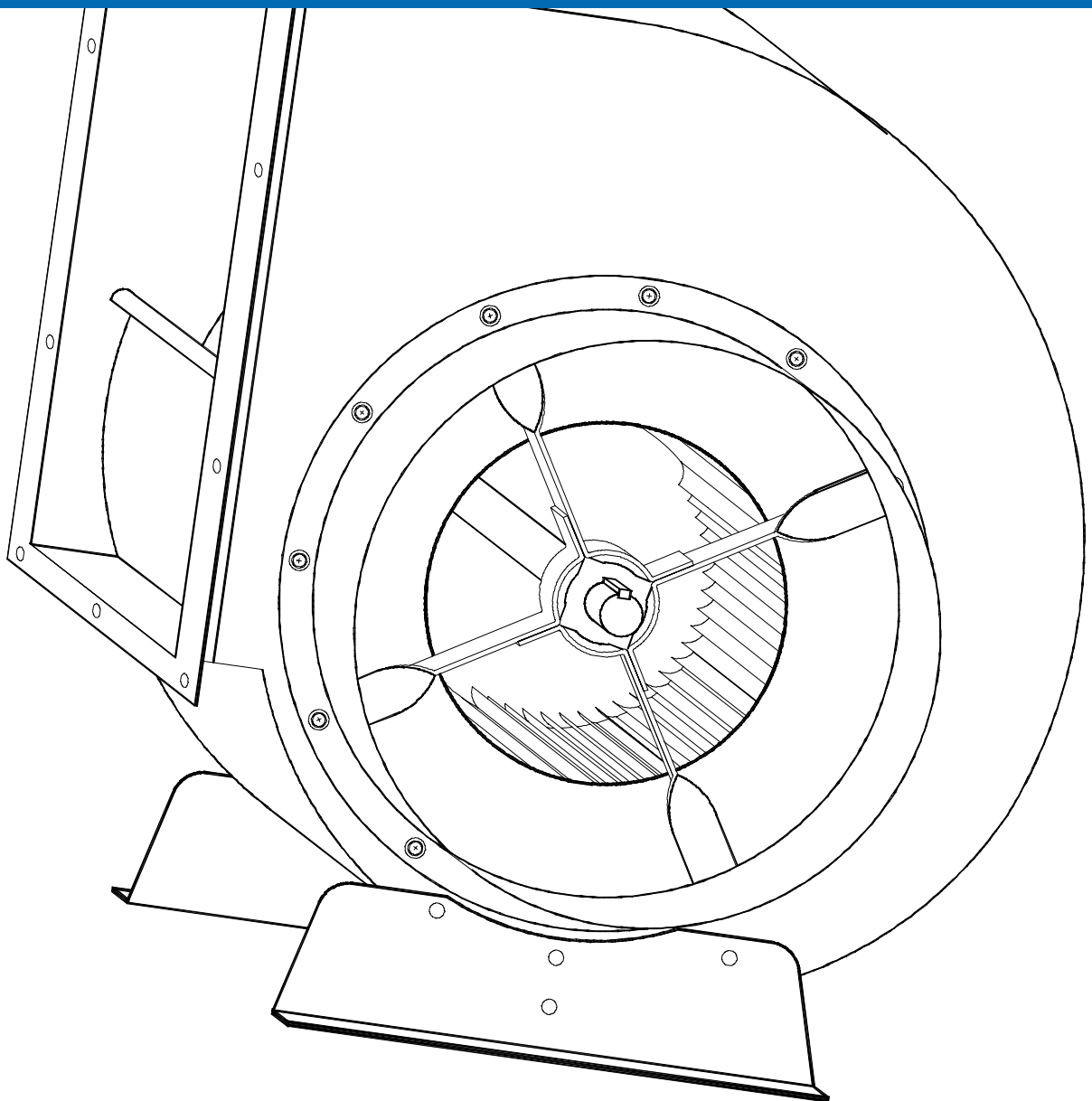


Soler & Palau S.A. certifies that the **FSA series: version S, C, T and U - model 200 to 1000** shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 211 and AMCA publication 311 and comply with the requirements of the AMCA Certified Ratings Program.



FSA Series

SINGLE INLET CENTRIFUGAL FAN
with Forward Wheels



FSA Series

Single Inlet Forward Curved Centrifugal Fans

The FSA series is SISW centrifugal fans with forward curved impellers.

Sizes of this series are in accordance with AMCA standard 99-0098-76 and DIN 323 R20.

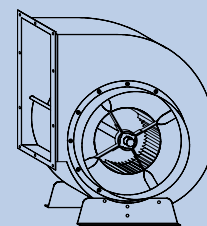
Type

The FSA series is available in type S, C, T or U as shown in Fig. 1:

Type S

This type is supplied with mounting feet and can be mounted in three different fan orientations. Inlet flange 'L' and outlet flange are supplied as standard.

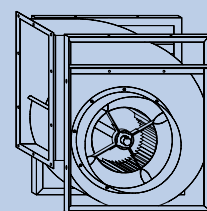
Fan size	200 to 450
Volume	800 to 8.000 m³/h
Total Pressure	up to 1.600 Pa



Type C

This type has a frame fitted on both sides of the fan which gives better strength and rigidity and allows mounting in four different orientation.

Fan size	200 to 630
Volume	800 to 18.000 m³/h
Total Pressure	up to 1.600 Pa

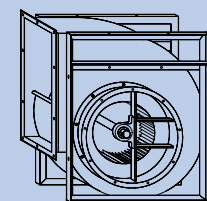


Type T

This type has a welded frame giving increased stiffness and rigidity required for higher operating performance.

Performance of 1120, 1250 & 1400 are not AMCA licensed.

Fan size	315 to 1.400
Volume	3.000 to 80.000 m³/h
Total Pressure	up to 2.000 Pa



Type U

This type is manufactured with a special frame with two bearing fixed externally to the airflow eliminating any obstruction to the inlet and allow operation with air temperature up to max. of 180°C.

Performance of 1120, 1250 & 1400 are not AMCA licensed.

Fan size	315 to 1.400
Volume	3.000 to 80.000 m³/h
Total Pressure	up to 2.000 Pa

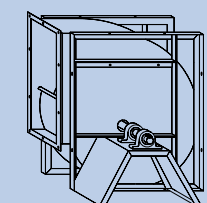


Fig. 1

Technical Specification

Wheel

The wheel of FSA series has forward curved blades manufactured in galvanised sheet steel.

Housing

For all sizes except 1250 and above, the housing is manufactured in galvanized sheet steel with the housing fixed to the side plates in "pittsburg lock" form system.

Housings for 1250 and 1400 are manufactured in mild steel finished with polyester powder coating.



Frame

The frame is manufactured with galvanized angular bars for type “C”. For type “T” and “U”, they are manufactured with sections of steel and finished with polyester powder coating.

Bearings

Bearings used are either deep groove ball bearing type with an eccentric locking collar or an adapter sleeve, or spherical roller bearings type sealed at both sides for different duty application.

For type “S” and “C”, they are mounted in a rubber housing, whereas for type “T” and “U”, they are mounted on cast iron supports with grease points.

The bearings are lubricated for life and maintenance free. If relubrication is necessary, it is recommended to use a lithium base grease suitable for all temperatures within the operational limits.



Shaft

Shafts are manufactured from C45 carbon steel using an automatic process for positioning and cutting of the keyways. All dimensional tolerances of the shaft are fully checked to ensure a precision fit and then coated with an anti-corrosion varnish after assembly.



Balancing Quality

All wheels are statically and dynamically balanced to ISO1940 or AMCA 204 – G2.5 standards.

Paintings

Special powder-paint coatings of various thicknesses can be supplied on request.

Accessories

Casing Drain

This option is available when using fans exposed to the atmosphere or operating in high humidity conditions.

Inspection Doors

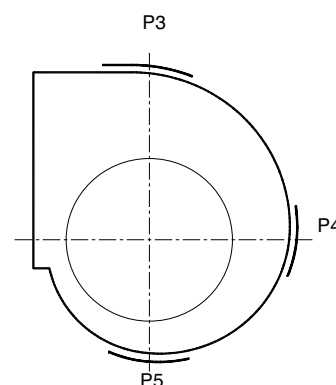
The inspection door can be supplied upon request. It can be supplied in one of the three positions (P3, P4 & P5) shown.

Outlet Flanges

Outlet flanges are available upon request. For more details, refer to page 31.

Inlet Flanges

This option is set against the fan to facilitate installation. It is available in 2 types - “L” flange or “U” flange. For more details, refer to page 33.



Fan Rotation and Discharge

The rotation and discharge of the fan is in accordance with AMCA standard 99-2406-83.

The direction of rotation is determined from the drive side of the fan [refer Fig. 2]:

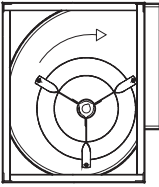
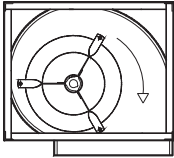
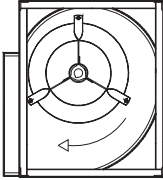
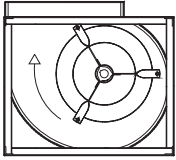
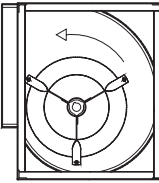
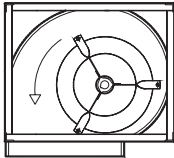
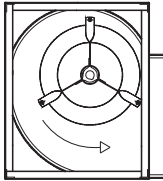
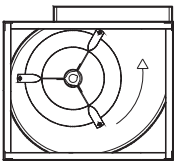
	90°	180°	270°	360°
CW				
CCW				

Fig. 2 – Fan rotation and discharge

Motor Position

The position of the motor for belt drive centrifugal fan is in accordance with AMCA standard 99-2407-66.

Location of motor is determined by facing the drive side of fan and designating the positions by letters W, X, Y, or Z. [refer to Fig.3]

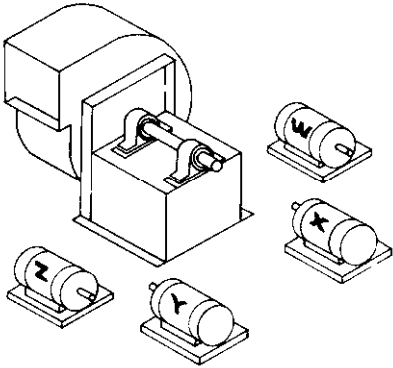


Fig. 3 - Motor Position

Motor Selection

The power curve shown on each performance curve represents the absorbed power at the shaft of the fan measured in kW.

To determine the power of the motor to be installed, a correction factors as shown in fig.4 should be applied to compensate for transmission losses:

For conversion to horsepower (HP), use multiplying factor 1.34.

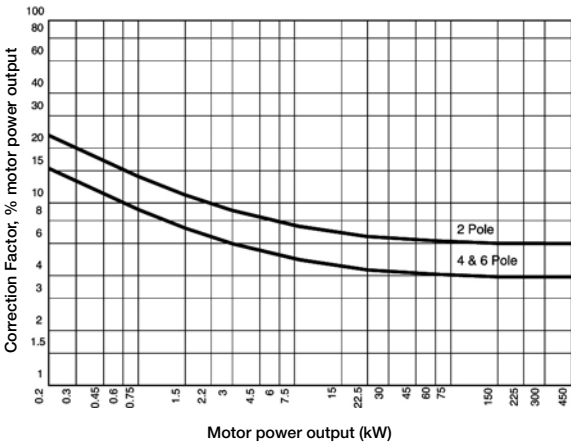


Fig. 4 – Recommended for compensation

Dynamic Pressure

The dynamic pressure and outlet air velocity shown on each curve are both calculated on the full air discharge area - ducted outlet conditions.

With free outlet conditions the velocity pressure is higher. To determine this new value, multiply the velocity pressure of the ducted outlet obtained from the fan curve by the following correction factor, K.

Fan performances calculated with this correction factors are not licensed by AMCA.

[K = 2.6]

Performance

The performance data shown on each diagram has been tested and measured in accordance to AMCA standard 210 Fig 12 – installation type B (free inlet and ducted outlet condition).

Rating are referred to the standard air density with the total pressure as a function of the air volume, using logarithmic scales.

It is essential that, the same installation type and test standards are used at all times, when comparing fan performances.

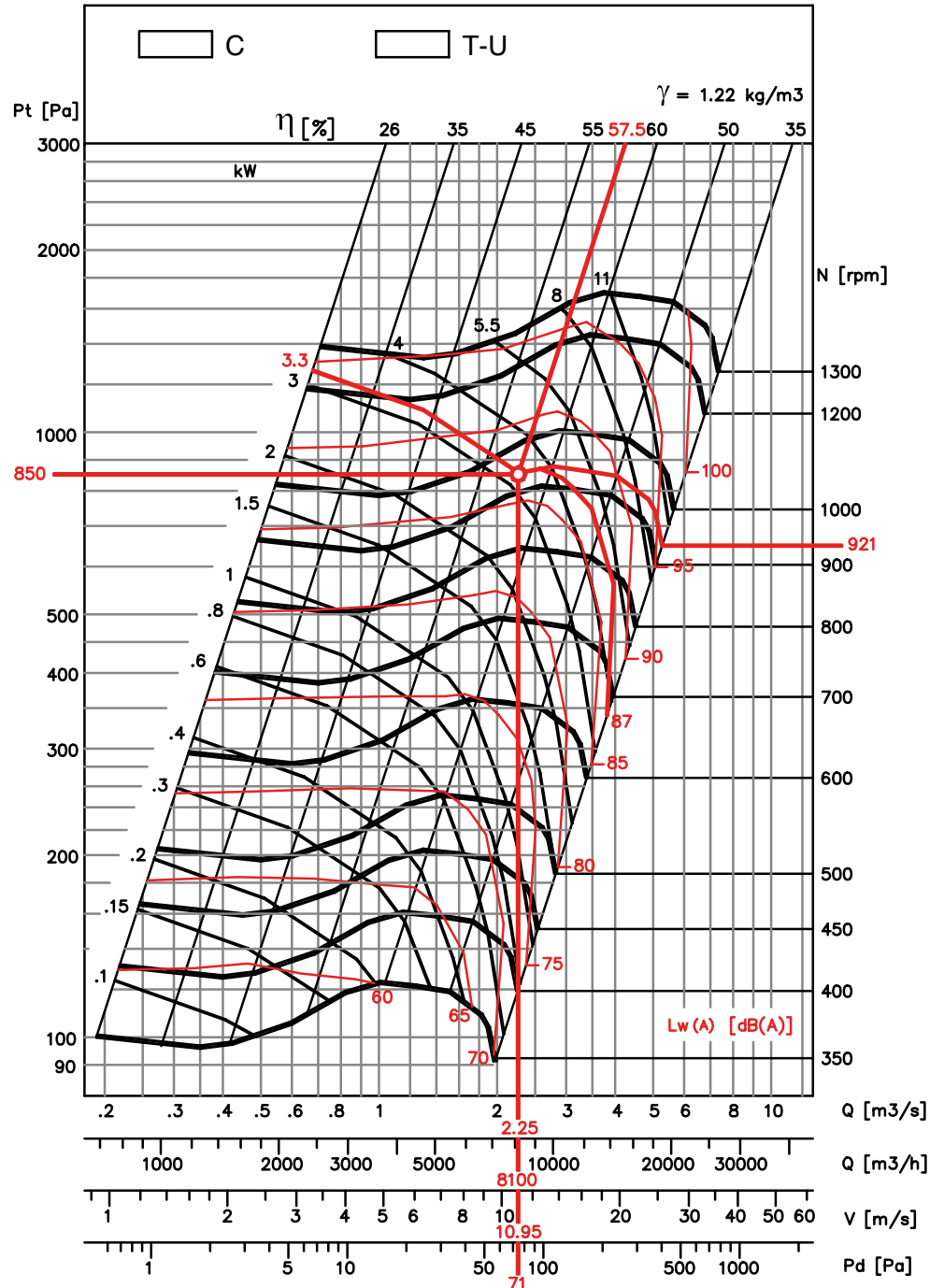
Noise

The noise level shown on each diagram refer to the sound power “A-weighted” and the data on the inlet side has been measured in accordance with AMCA Standard 300 diag. 2 - configuration “B”. The noise levels of the fans are determined as follows:

- Sound power level - (“A” scale): $L_w(A)$ as catalogue.
- Octave band spectrum: $L_w = L_w(A) + L_w \text{ rel. dB}$ [refer to Soler & Palau for more details].
- Sound pressure level:
 - a) free field
$$L_p(A) = L_w(A) - (20 \log_{10} d) - 11$$
 - b) room conditions
$$L_p(A) = L_w(A) - (20 \log_{10} d) - 7$$where d = distance of fan (m)

Example of Selection

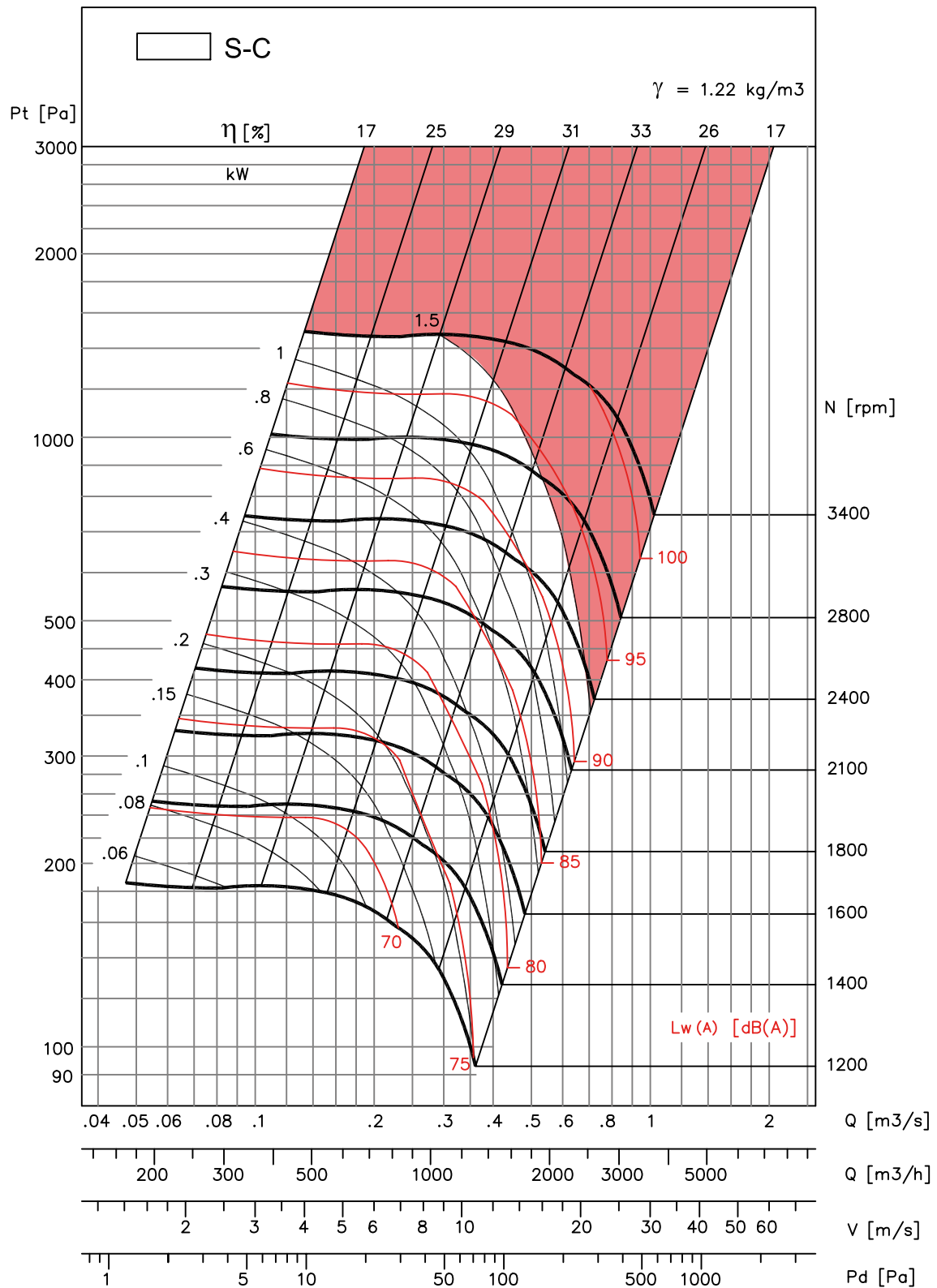
FSA 500



Air Volume $Q = 8100 \text{ m}^3/\text{h}$
 Outlet Velocity $V = 10.95 \text{ m/s}$
 Dynamic Pressure $P_d = 71 \text{ Pa}$
 Total Pressure $P_t = 850 \text{ Pa}$
 Fan Speed $N = 921 \text{ rpm}$
 Absorbed Power $W = 3.3 \text{ kW}$
 Total Efficiency $\kappa = 57.5 \%$
 Sound Power Level $L_w(A) = 87 \text{ dB(A)}$

- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.
 - The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

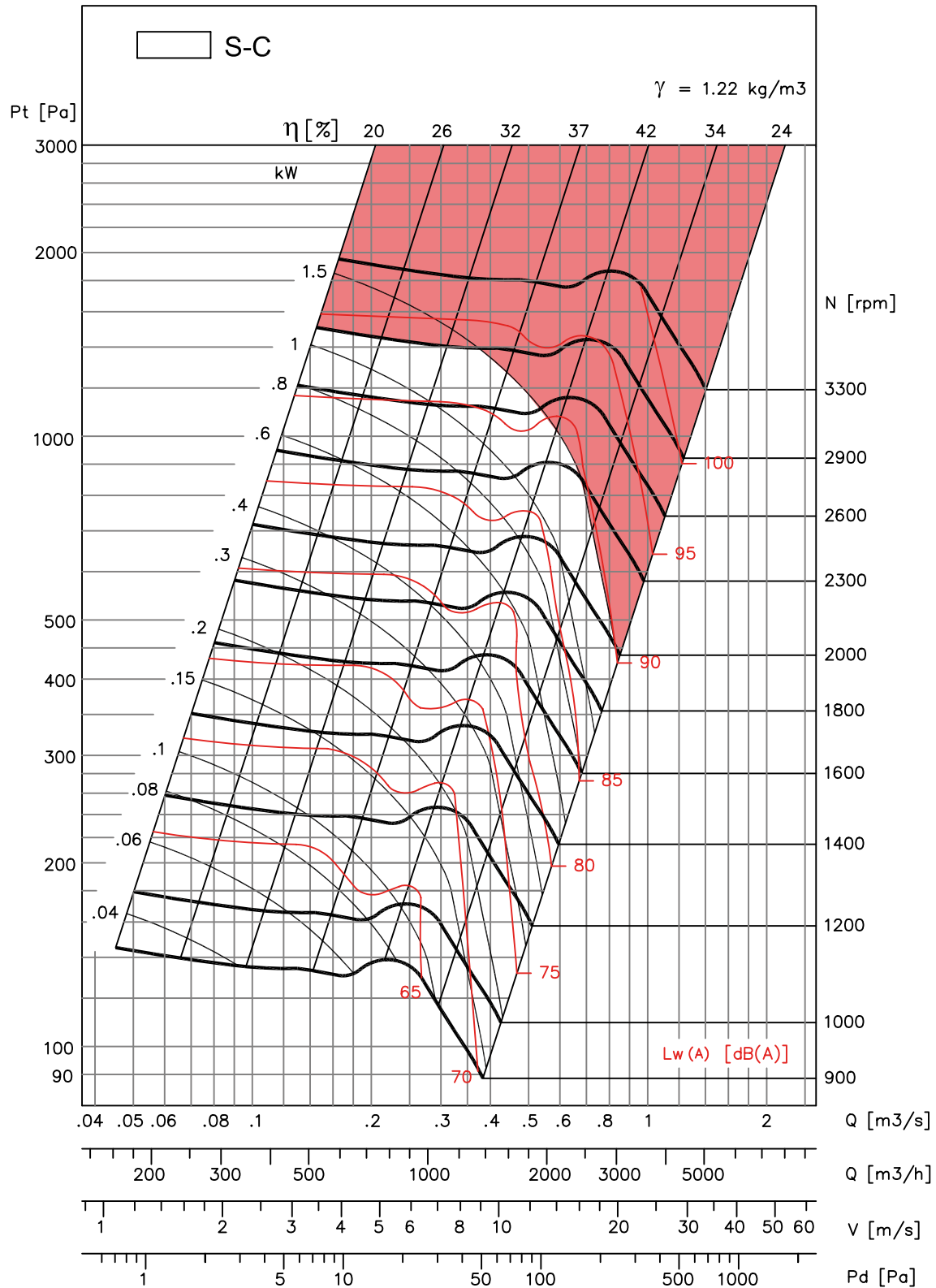
FSA 200



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

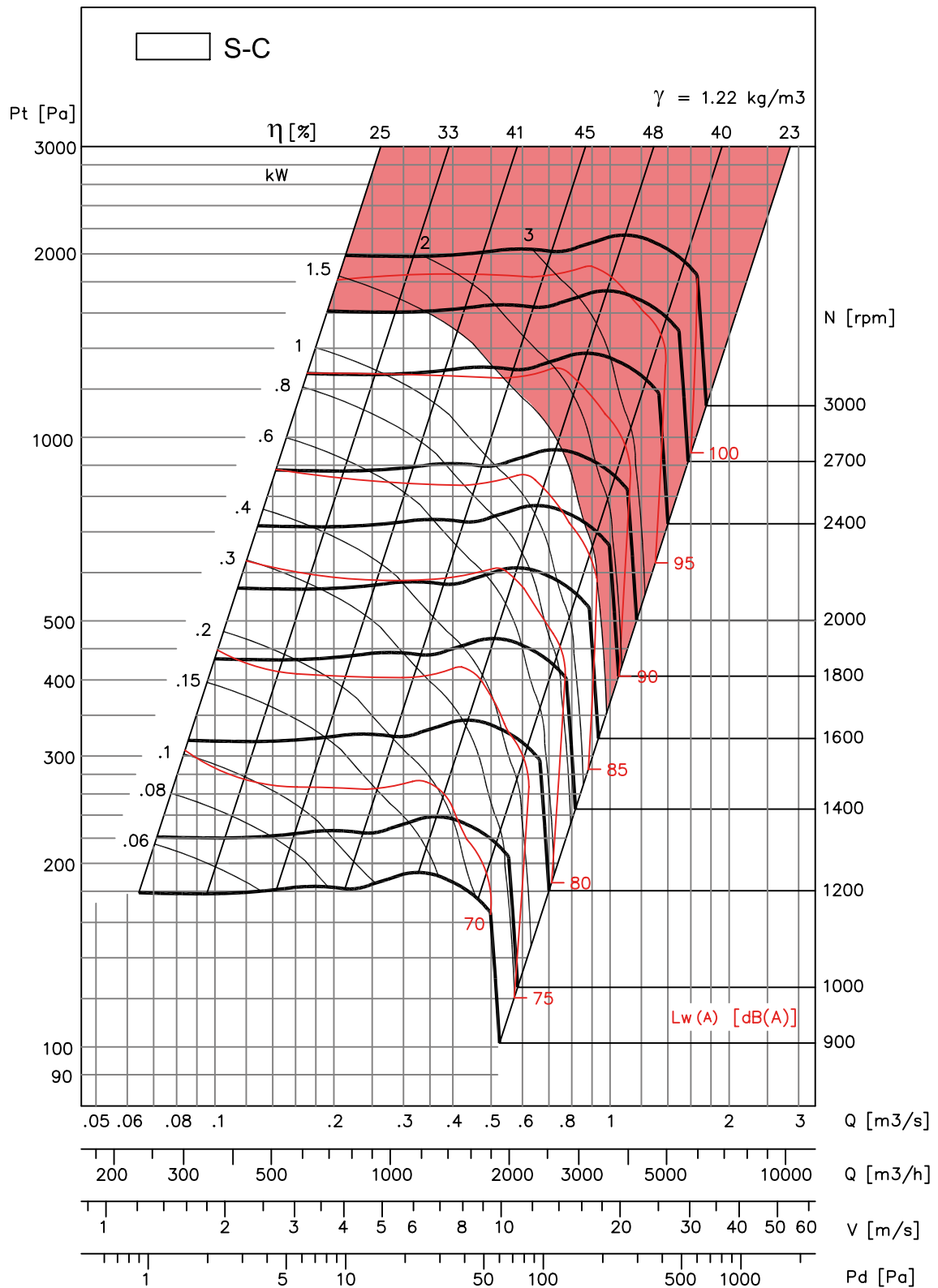
FSA 225



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

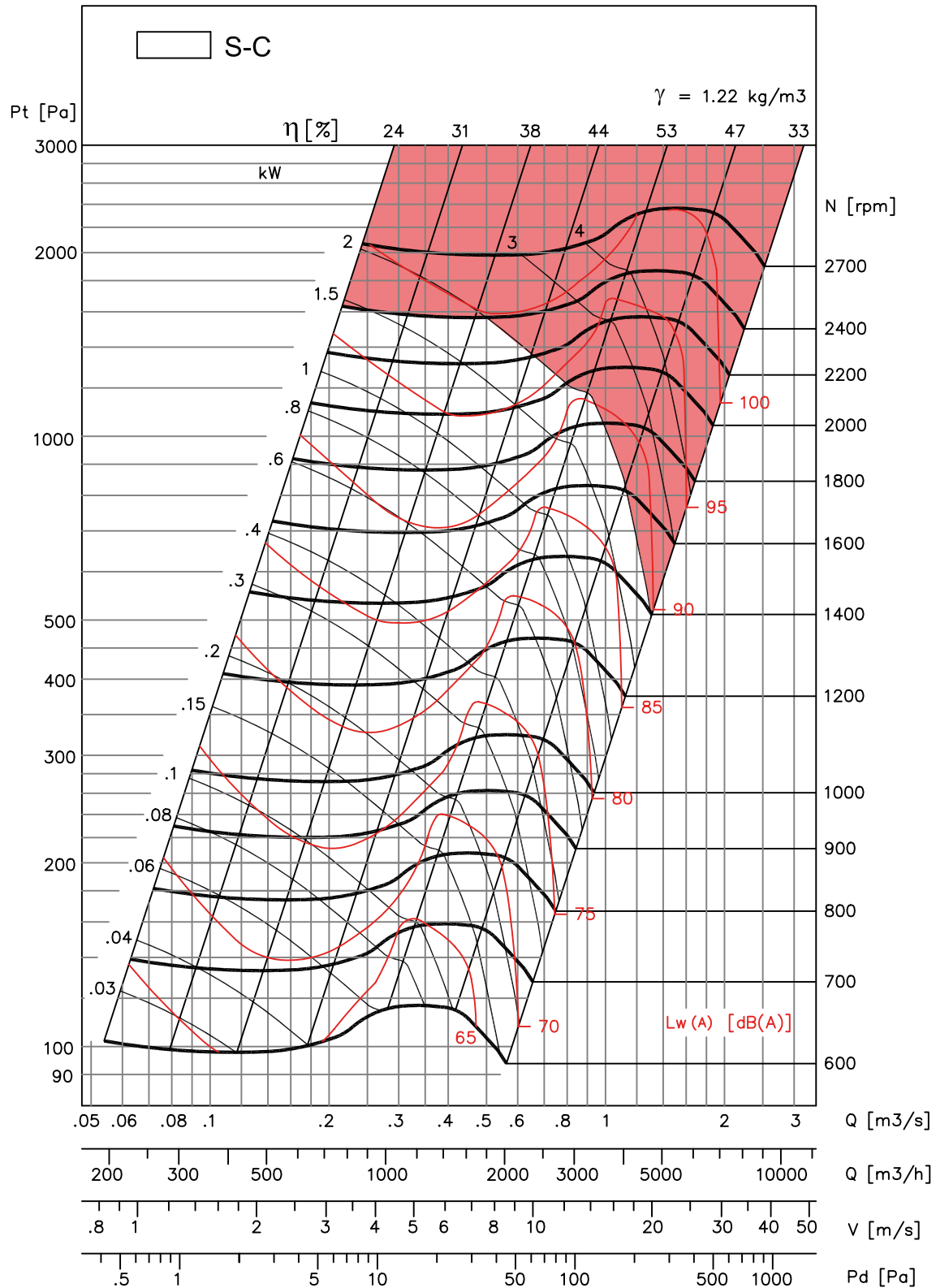
FSA 250



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

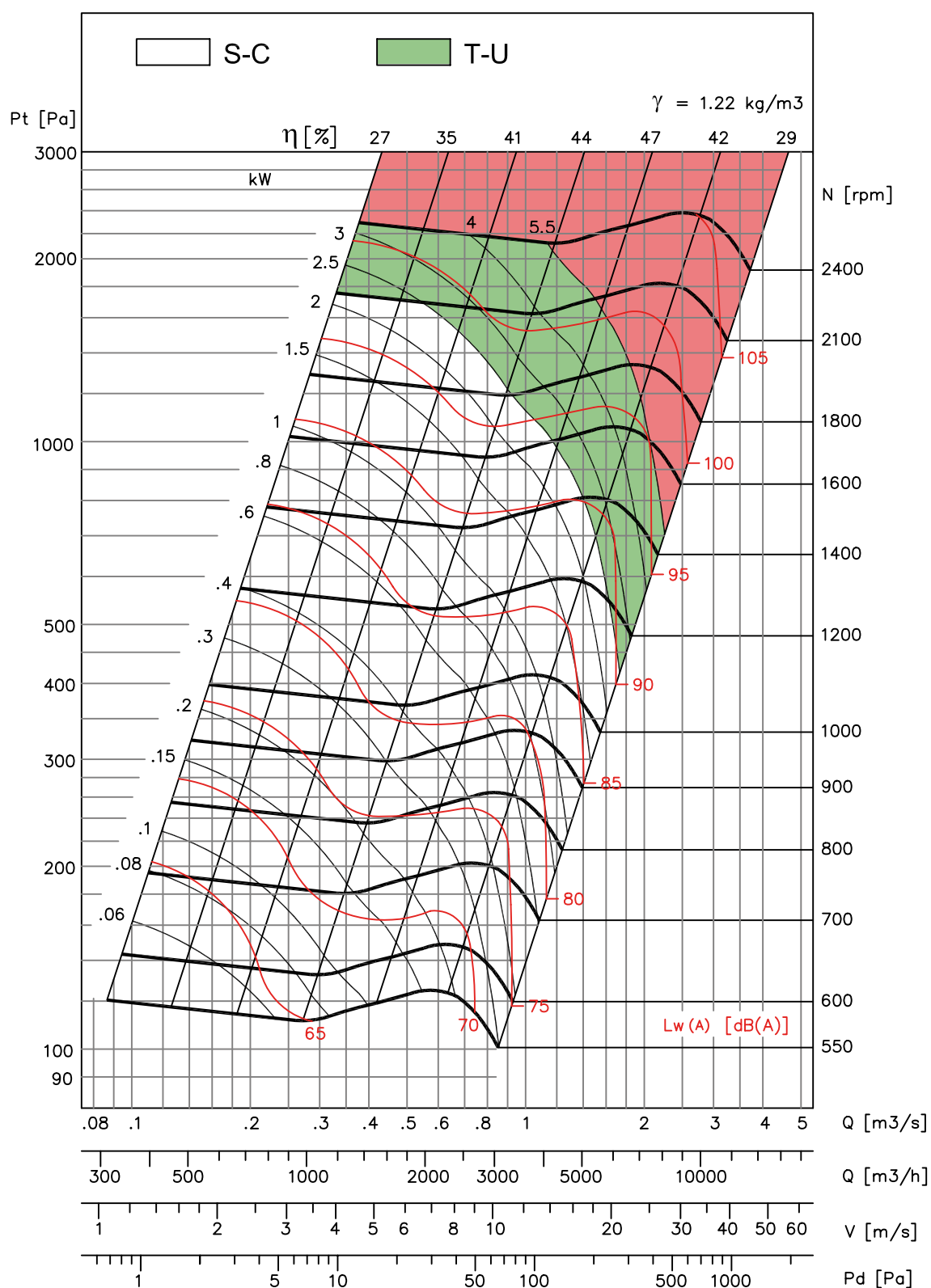
FSA 280



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

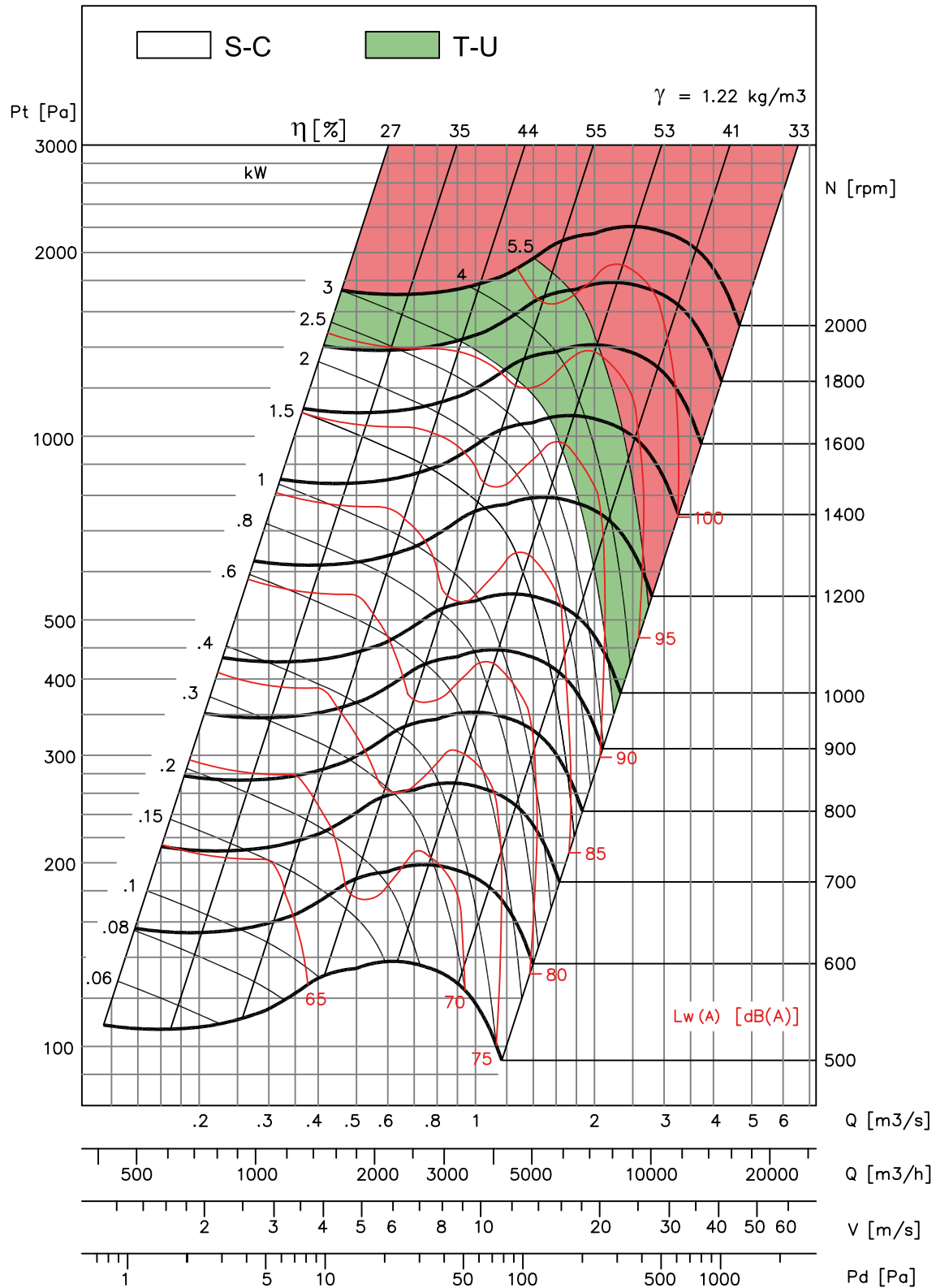
FSA 315



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

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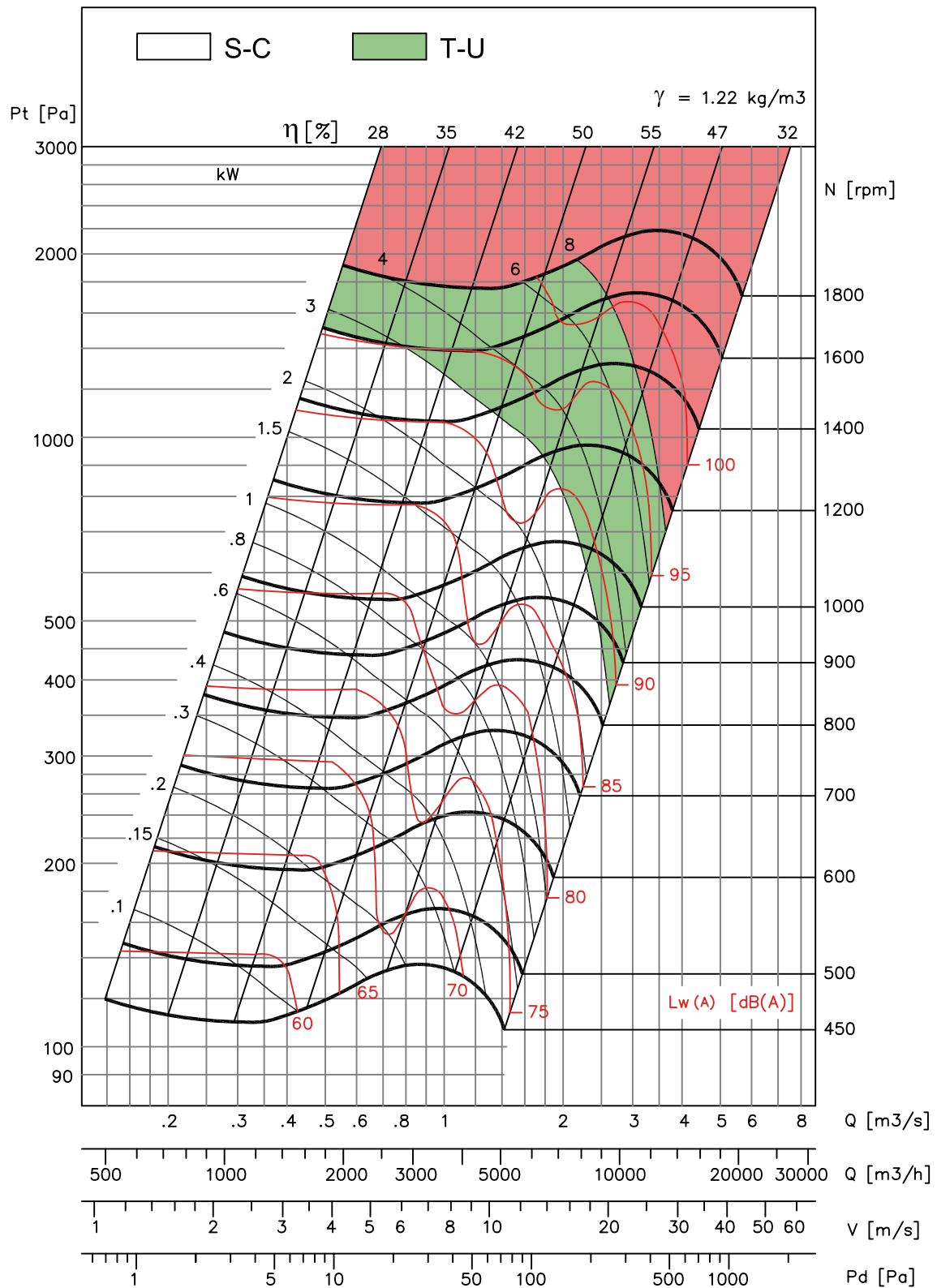
FSA 355



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

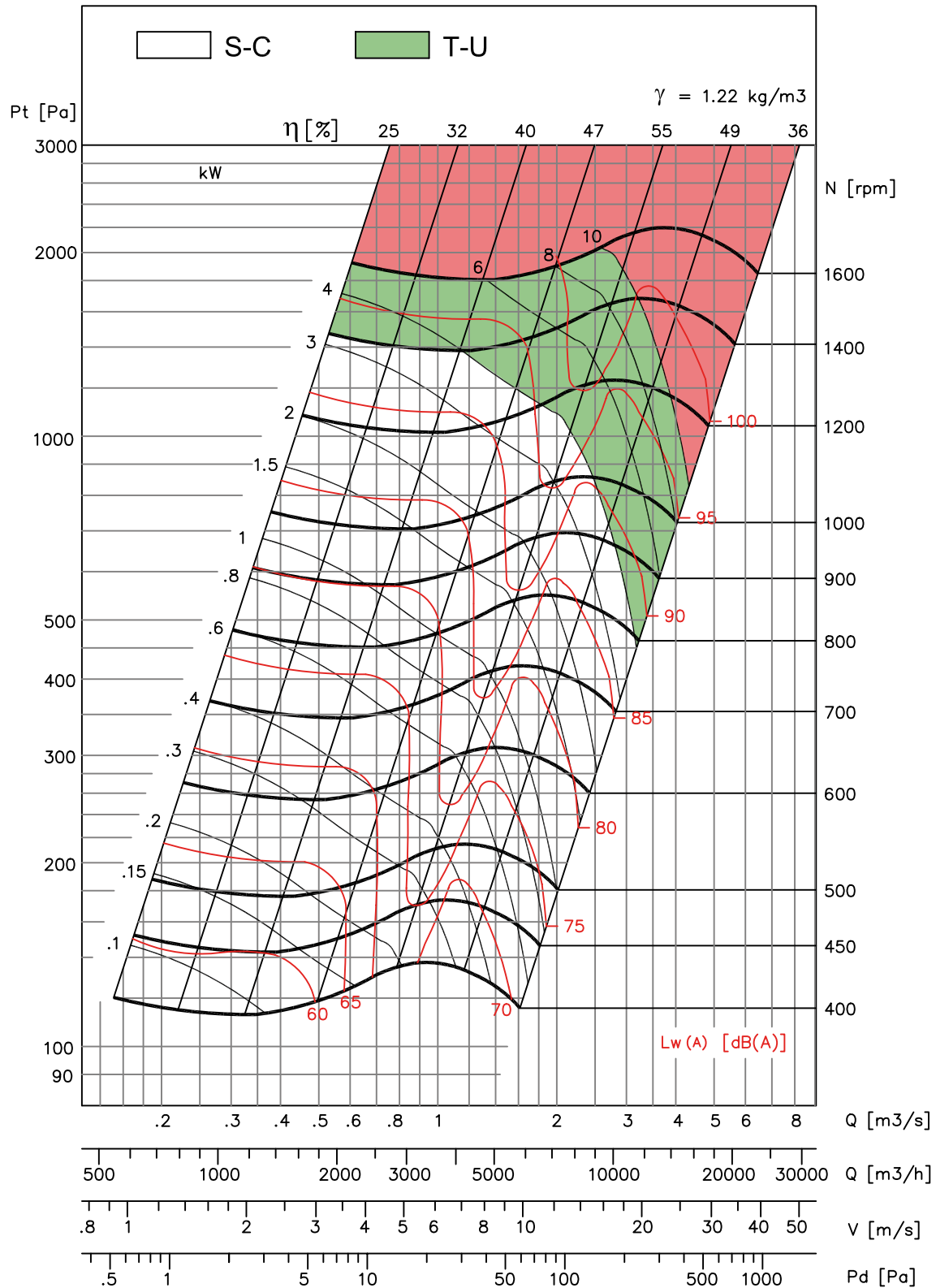
FSA 400



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

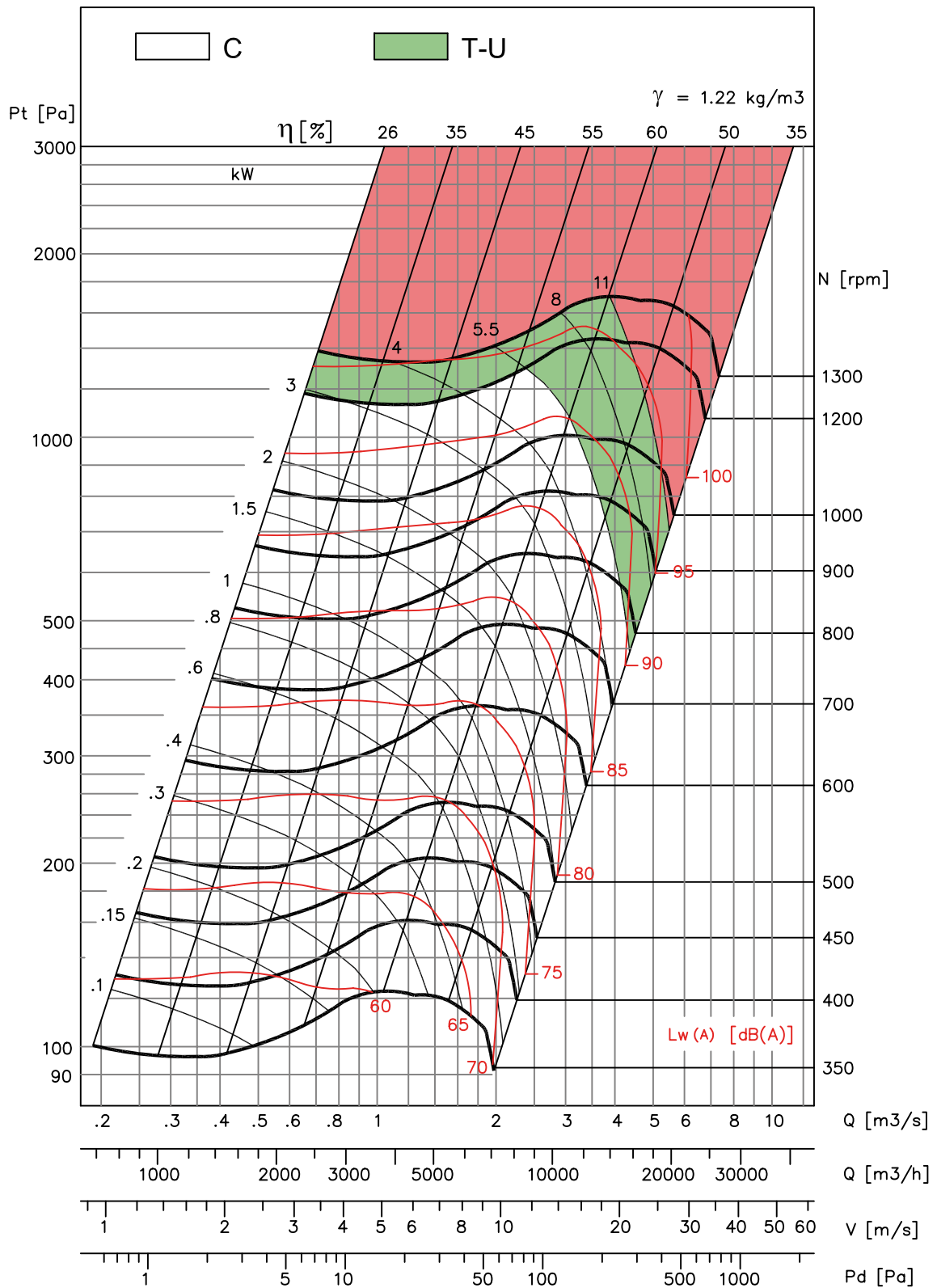
- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

FSA 450



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.
- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

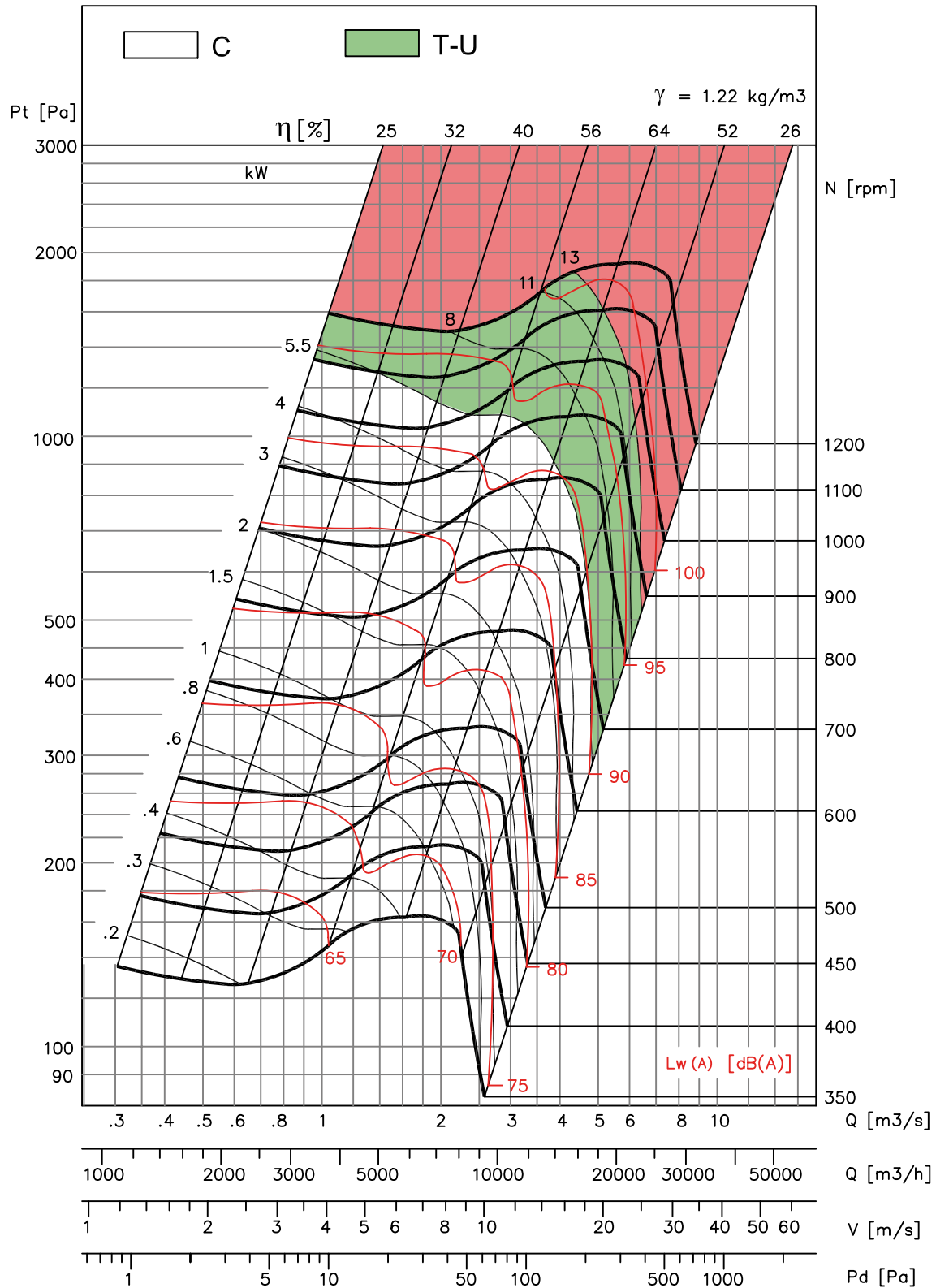
FSA 500



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

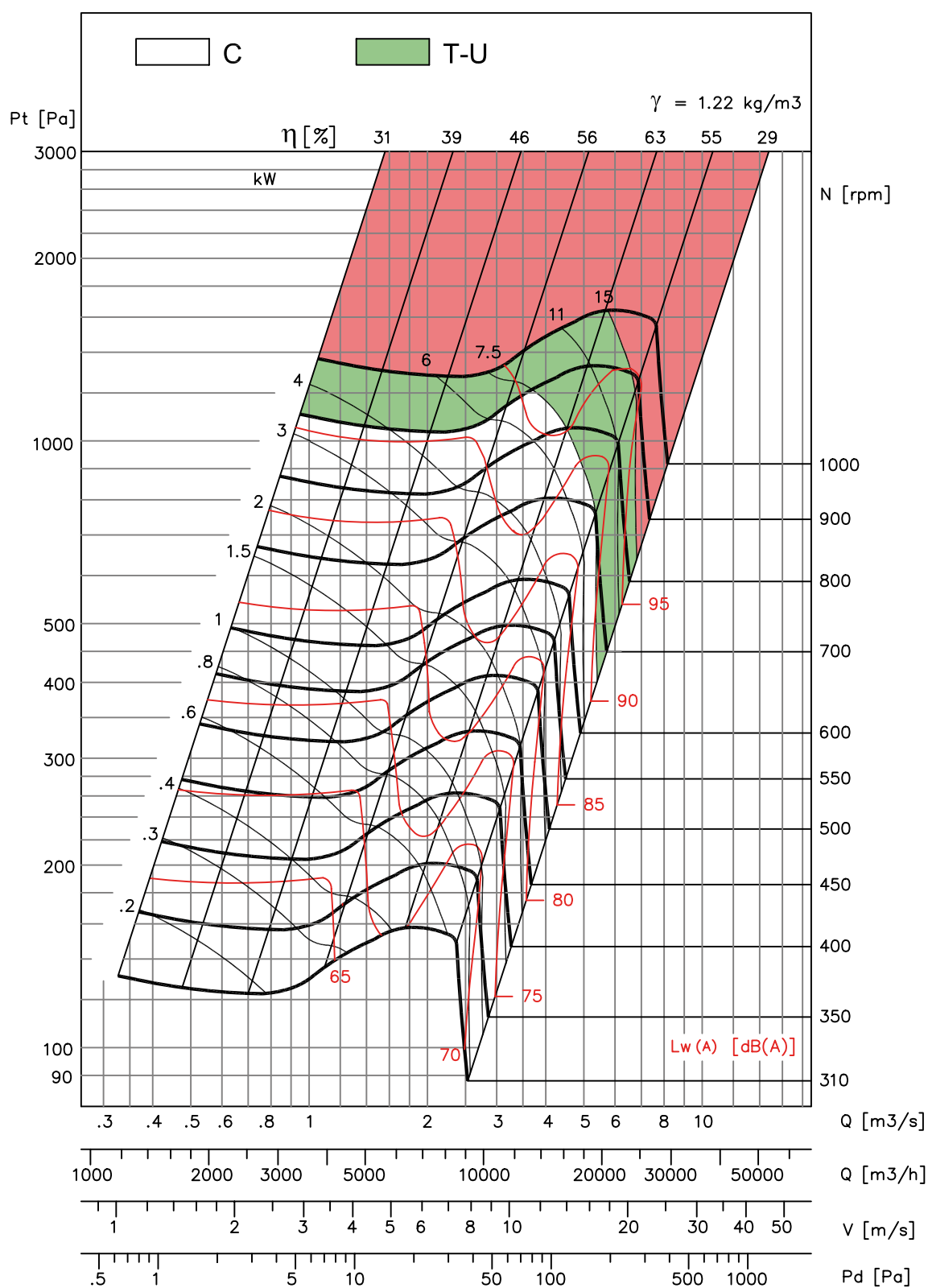
FSA 560



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

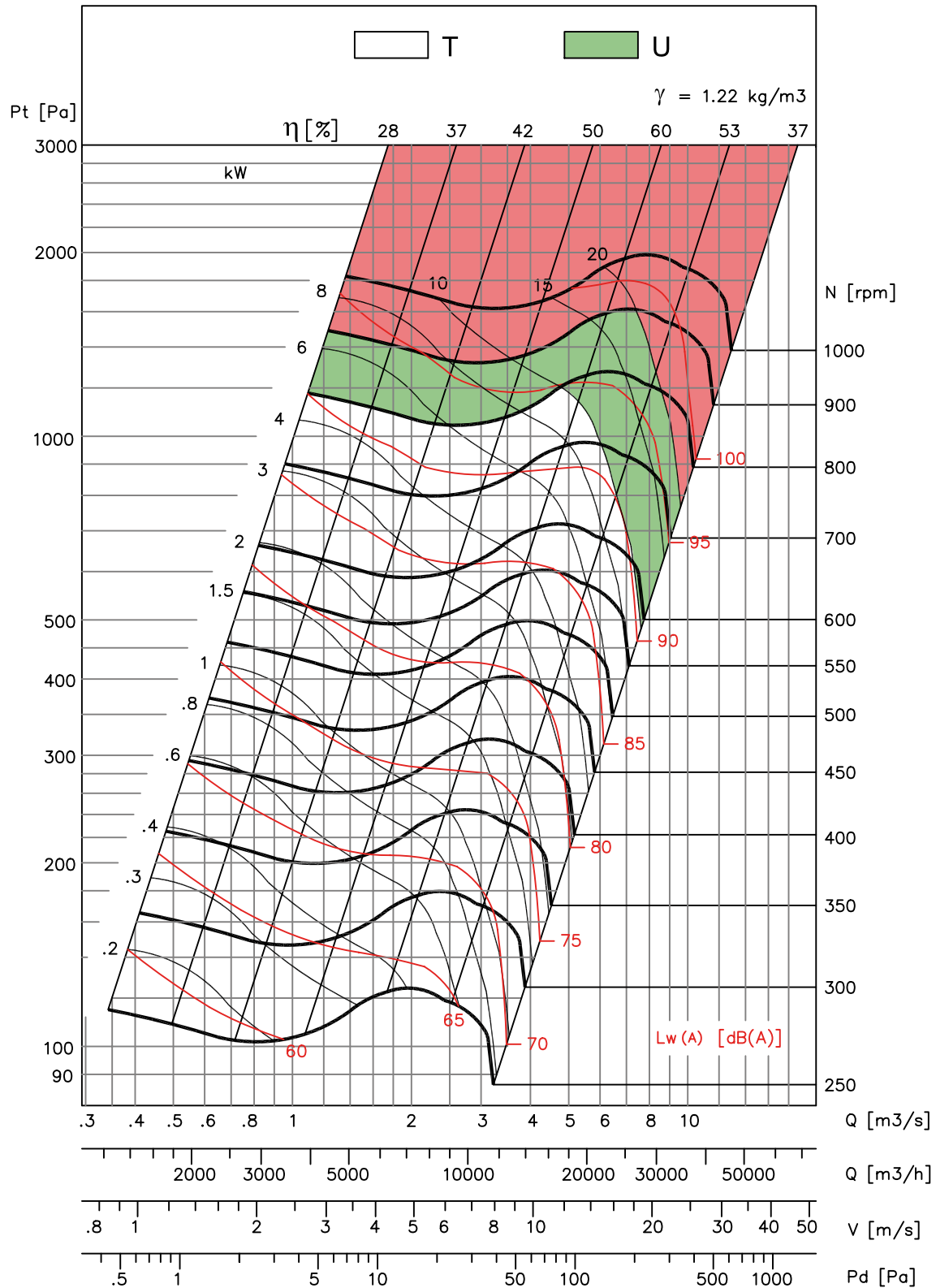
FSA 630



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

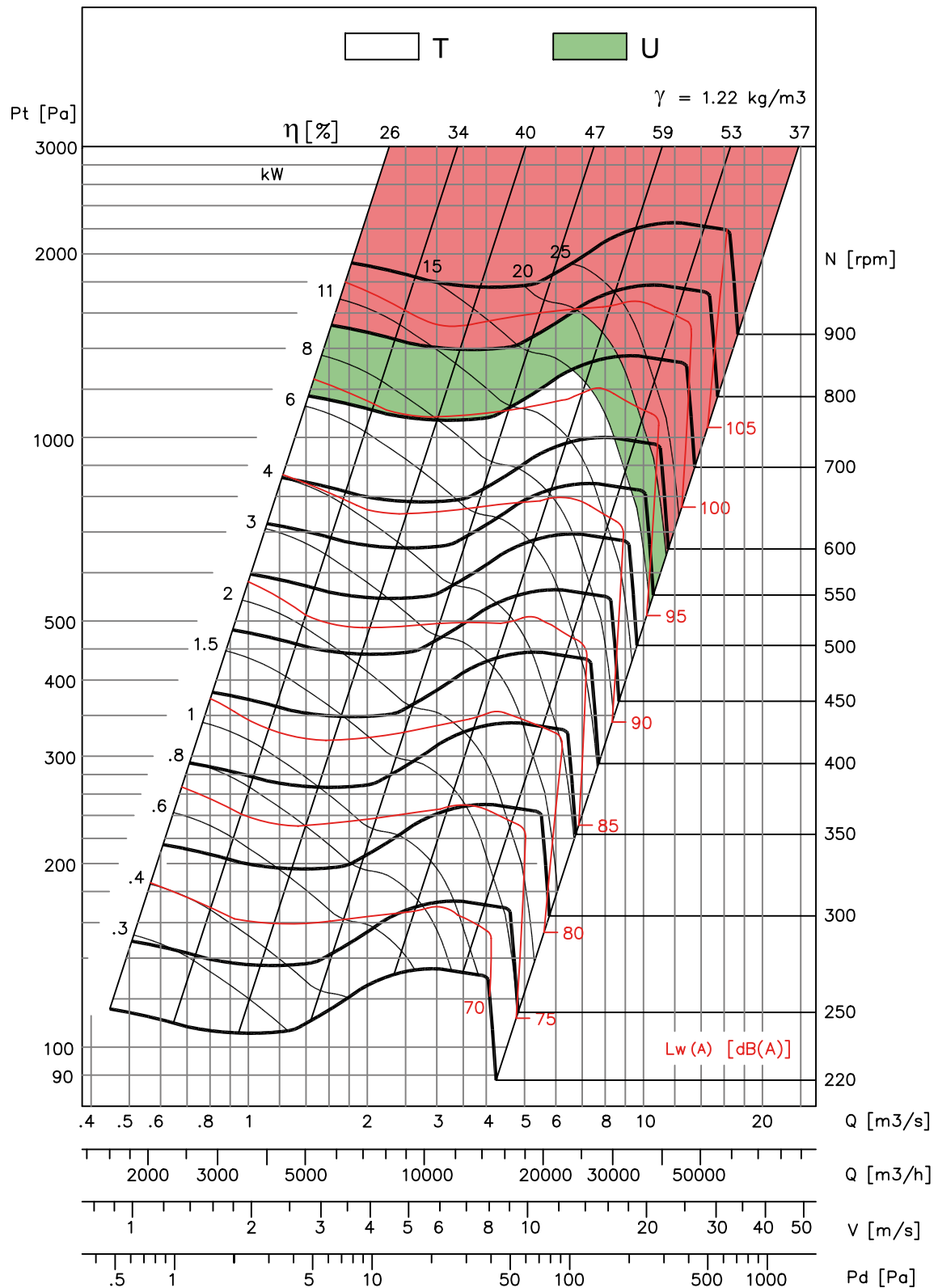
FSA 710



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

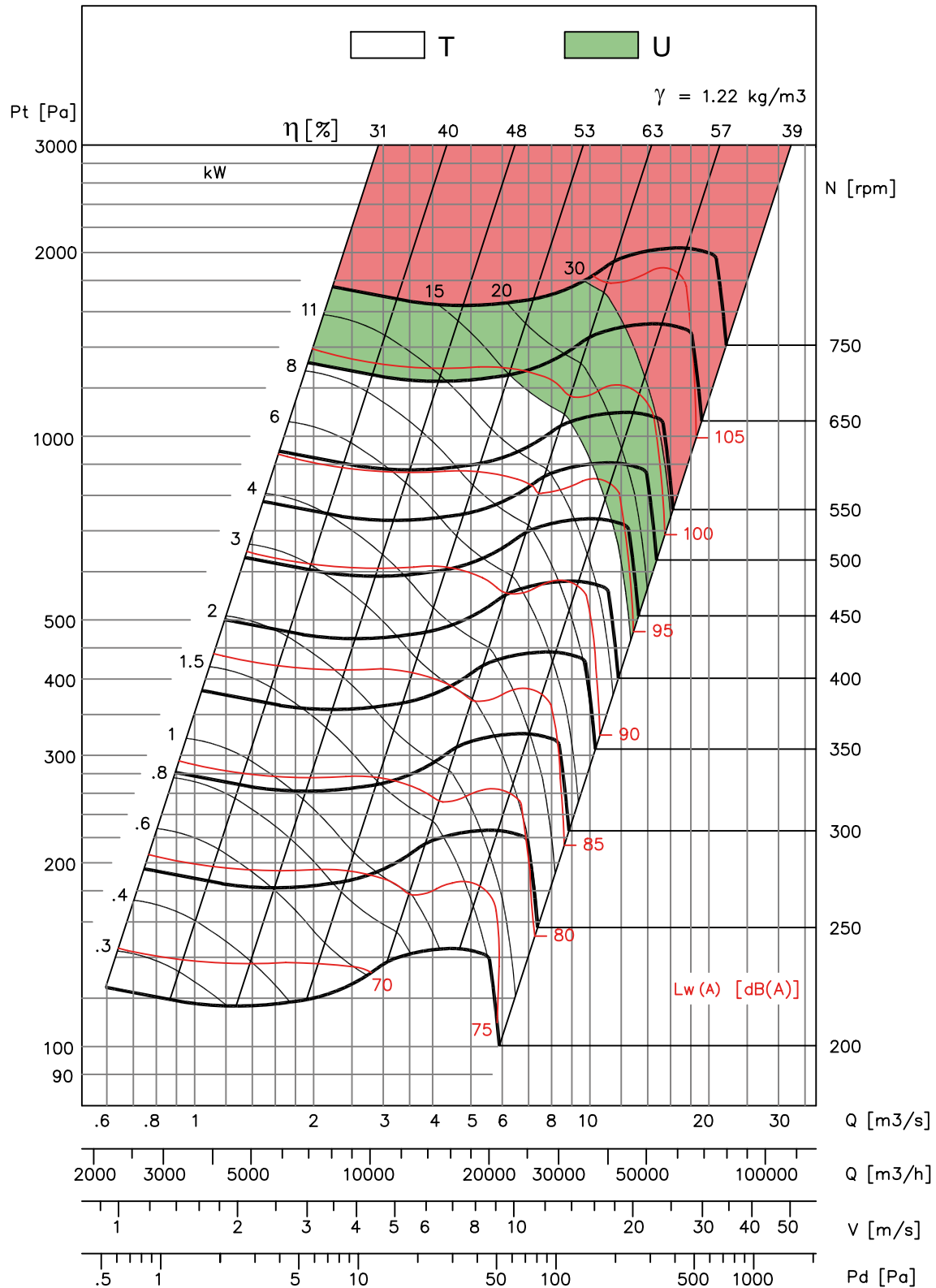
FSA 800



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

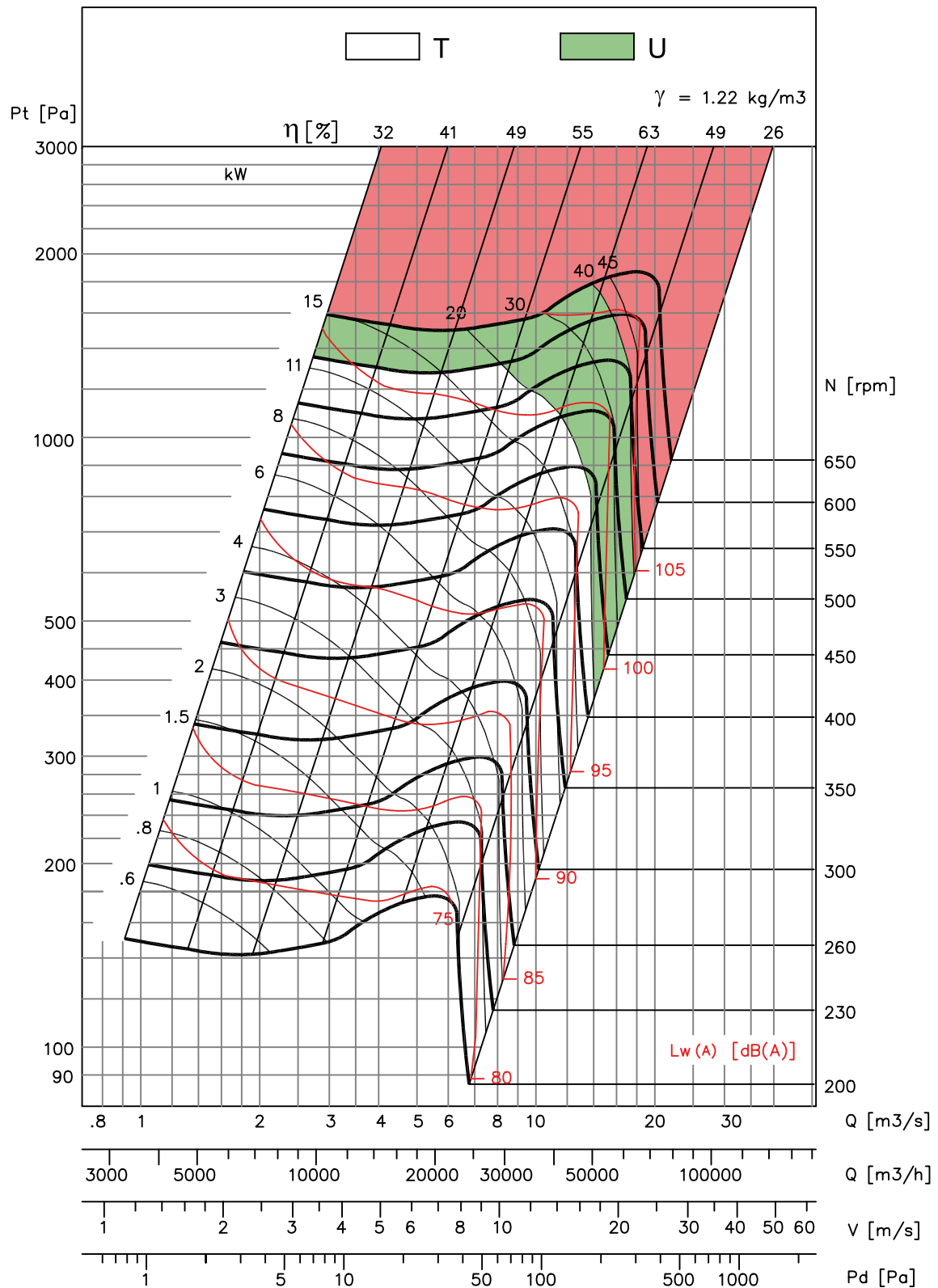
FSA 900



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

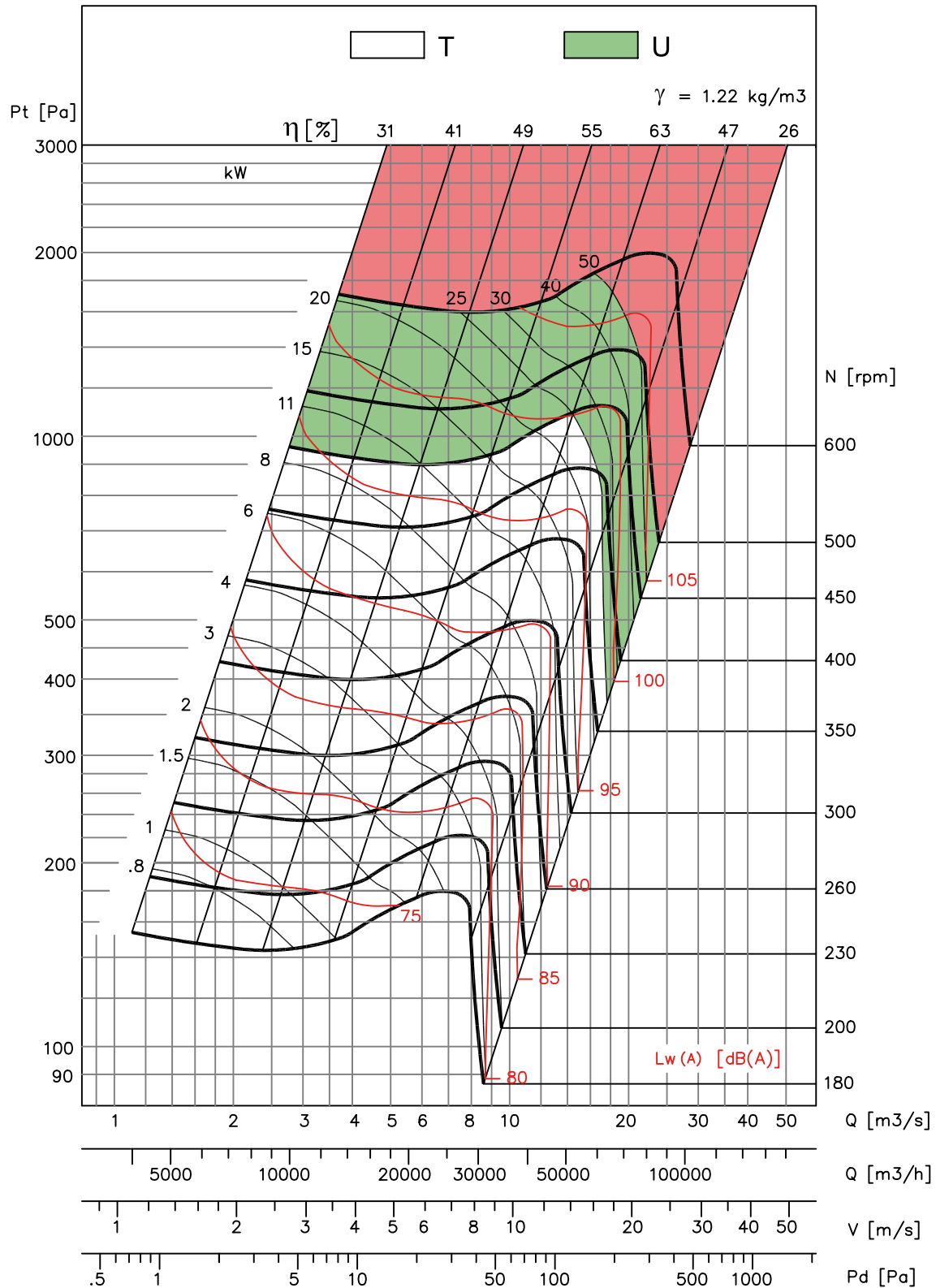
FSA 1000



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

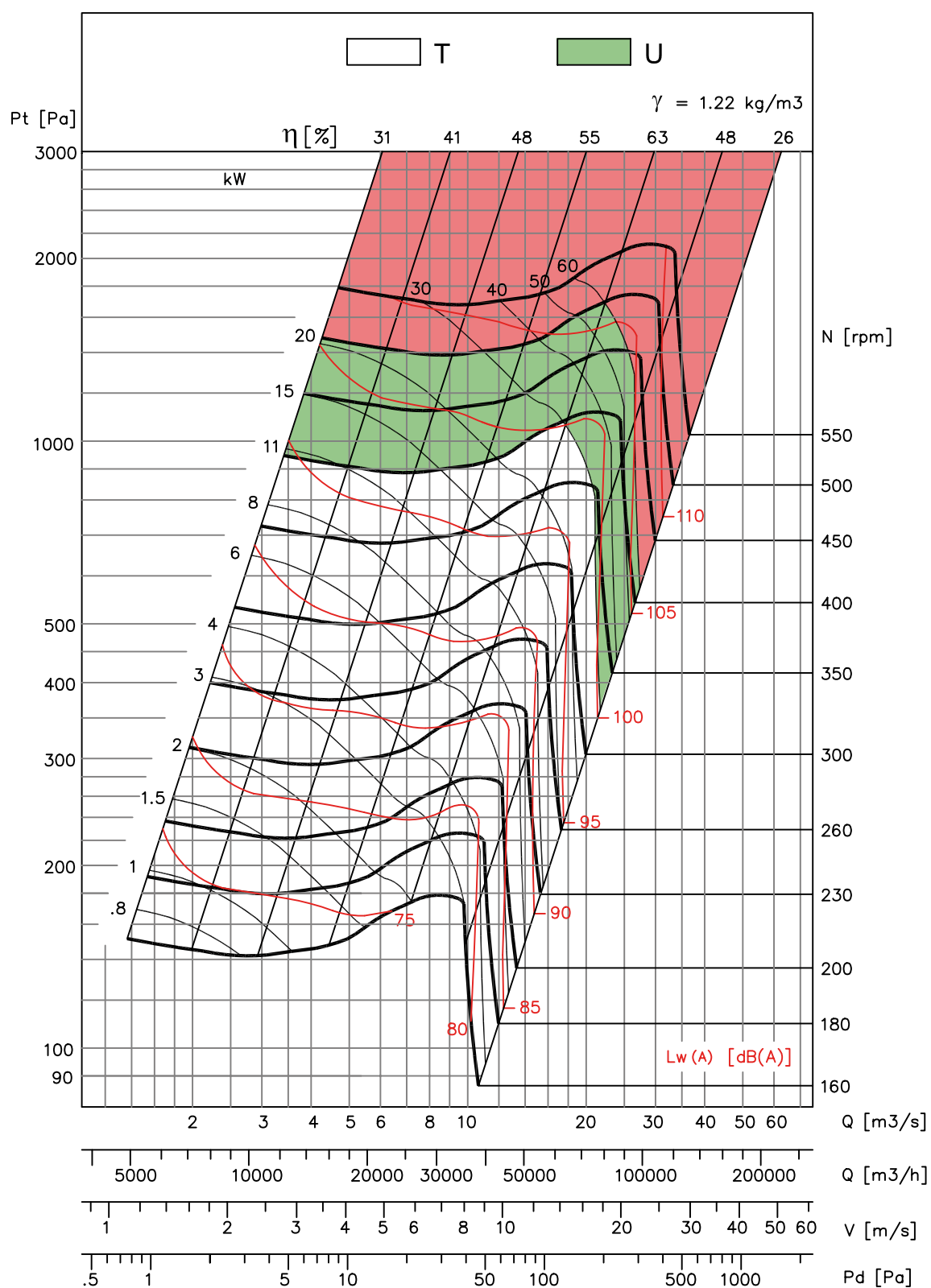
- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

FSA 1120



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.
- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.
- MODEL FSA1120 IS NOT LICENSED TO BEAR THE AMCA CERTIFIED RATINGS SEAL.

FSA 1250

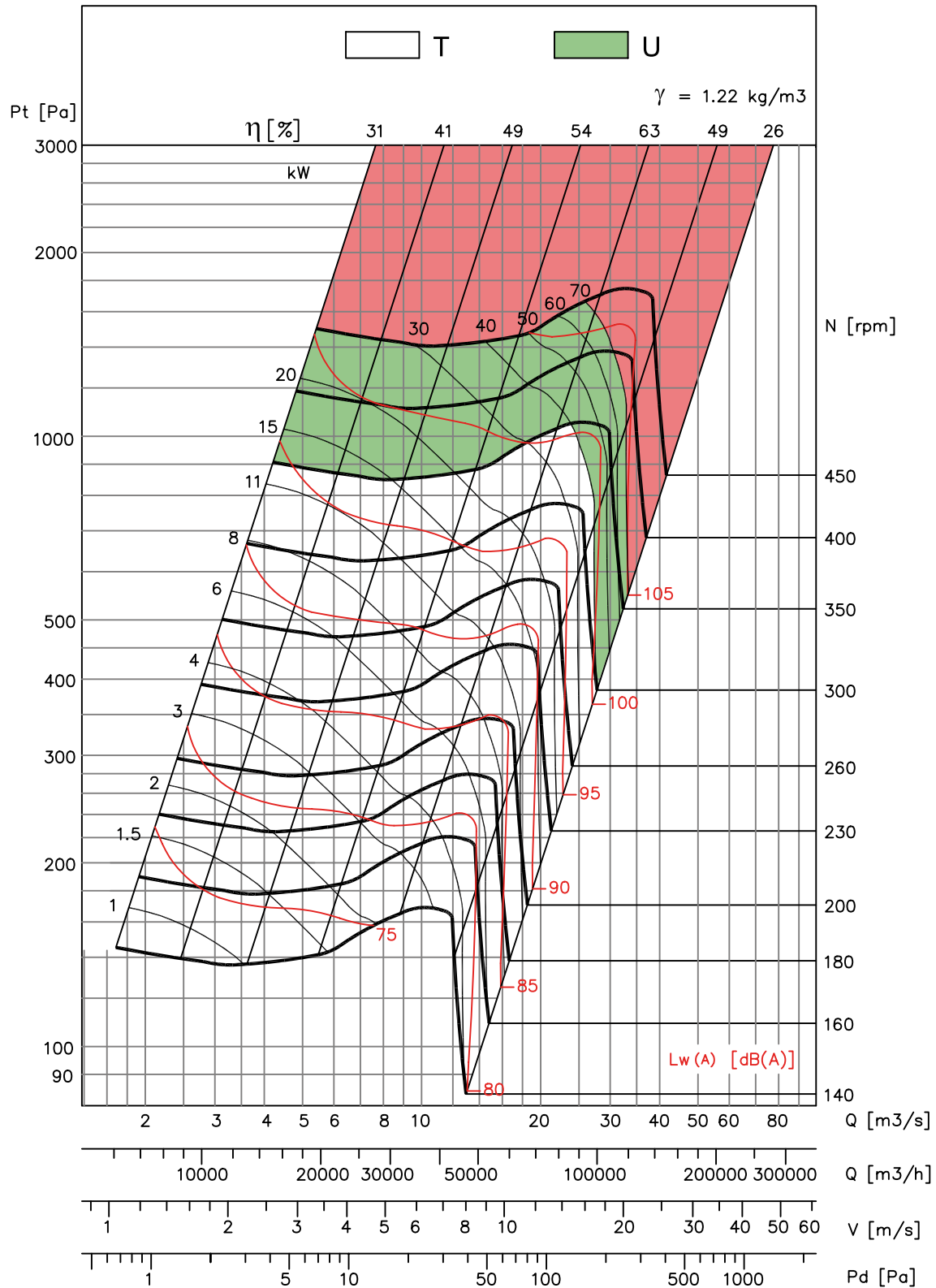


- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.

- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.

- MODEL FSA1250 IS NOT LICENSED TO BEAR THE AMCA CERTIFIED RATINGS SEAL.

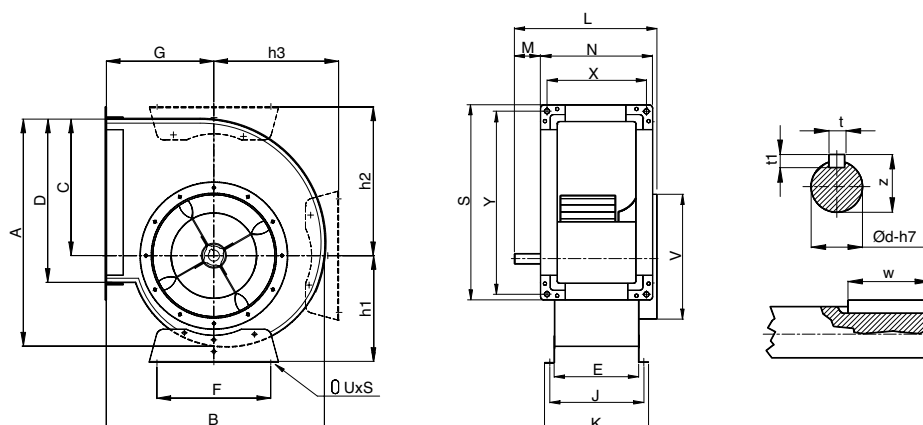
FSA 1400



- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances in the airstream. Power rating kW does not include drive losses.
- The A-weighted sound ratings shown have been calculated per AMCA standard 301. Values shown are for inlet $L_{wi}(A)$ sound power levels for installation type B - free inlet, ducted outlet. Ratings do not include the effect of duct end corrections.
- MODEL FSA1400 IS NOT LICENSED TO BEAR THE AMCA CERTIFIED RATINGS SEAL.

FSA 'S'

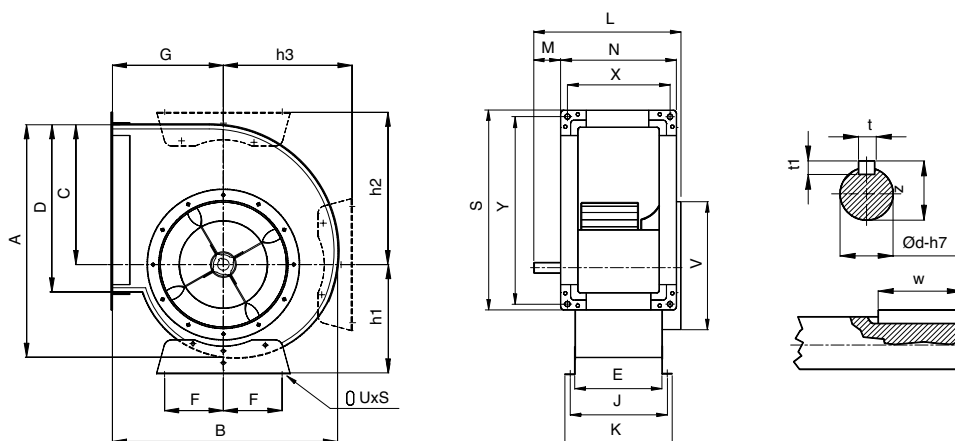
FSA 200-400 'S'



Model	A	B	C	D	E	F	G	J	K	L	M	N	S	V	X	Y	h1	h2	h3	t	t1	w	z	ød	uxs
200	364	342	215	256	130	224	164	155	180	303	65	186	312	203	158	284	181	245	184	6	6	30	22.5	20	11x16
225	408	380	243	288	146	224	180	171	196	319	65	202	344	228	174	316	197	274	204	6	6	30	22.5	20	11x16
250	452	416	270	322	164	224	194	189	214	337	65	220	378	253	192	350	210	299	227	6	6	30	22.5	20	11x16
280	508	464	302	360	182	280	214	212	242	370	80	238	416	283	210	388	236	331	255	8	7	40	28	25	11x16
315	572	516	340	404	204	280	236	234	264	432	80	260	460	319	232	432	261	370	283	8	7	40	28	25	11x16
355	644	576	383	452	228	315	260	268	308	460	84	284	508	359	256	480	274	411	320	8	7	40	33	30	11x16
400	724	644	432	506	256	355	290	296	336	488	84	312	562	404	284	534	302	462	359	8	7	40	33	30	11x16

All Dimensions in mm.

FSA 450 'S'

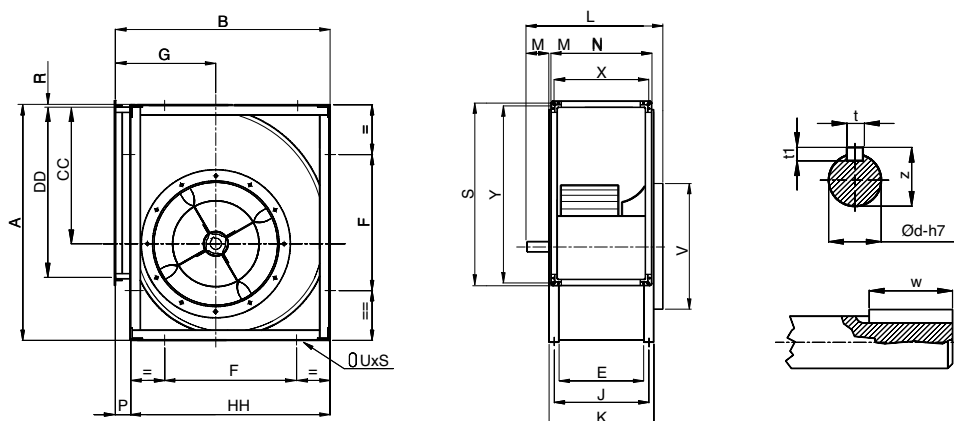


Model	A	B	C	D	E	F	G	J	K	L	M	N	S	V	X	Y	h1	h2	h3	t	t1	w	z	ød	uxs
450	816	722	486	568	288	200	322	328	368	536	100	344	624	454	316	596	336	518	407	10	8	50	38	35	13x18

All Dimensions in mm.

FSA 'C'

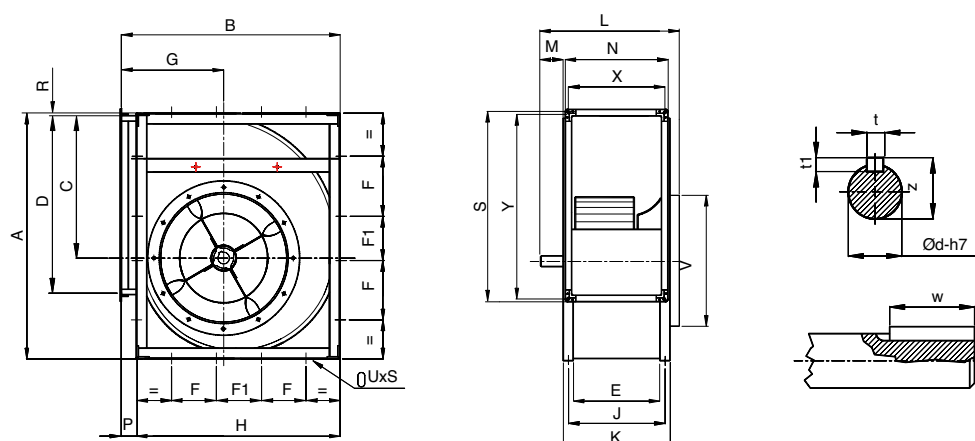
FSA 200-400 'C'



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	X	Y	t	t1	w	z	ød	uxs
200	370	343	215	256	130	224	164	306	155	180	303	68	186	37	4	312	203	158	284	6	6	30	22.5	20	11x16
225	415	382	243	288	146	224	180	348	171	196	319	68	202	34	3	344	228	174	316	6	6	30	22.5	20	11x16
250	460	418	270	322	164	224	194	383	189	214	337	68	220	35	4	378	253	192	350	6	6	30	22.5	20	11x16
280	518	466	302	360	182	280	214	432	212	242	370	78	238	34	5	416	283	210	388	8	7	40	28	25	13x18
315	578	518	340	404	204	330	236	480	234	264	432	78	260	38	3	460	319	232	432	8	7	40	28	25	13x18
355	654	578	383	452	228	368	260	548	268	308	460	72	284	30	6	508	359	256	480	8	7	40	33	30	13x18
400	736	650	432	506	256	402	290	612	296	336	488	72	312	38	5	562	404	284	534	8	7	40	33	30	13x18

All Dimensions in mm.

FSA 450-630 'C'

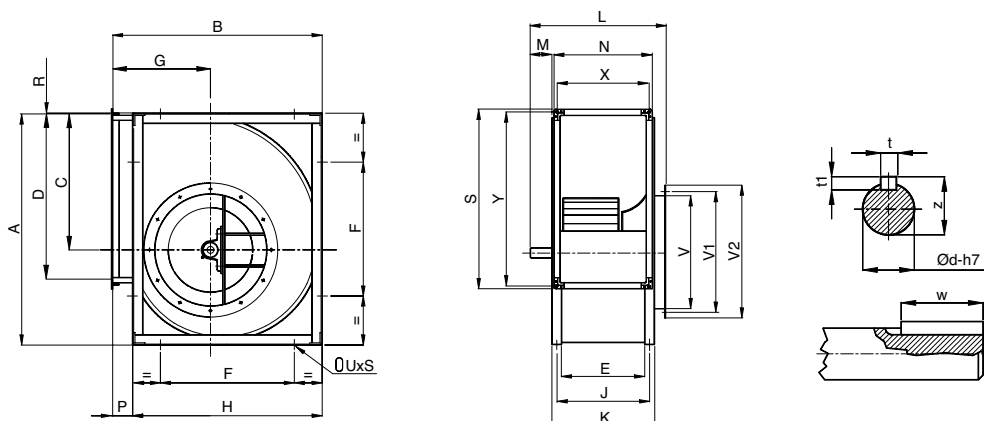


Model	A	B	C	D	E	F	F1	G	H	J	K	L	M	N	P	R	S	V	X	Y	t	t1	w	z	ød	uxs
450	827	726	486	568	288	200	111	322	681	328	368	536	88	344	45	5	624	454	316	596	10	8	50	38	35	13x18
500	918	800	538	638	322	245	120	352	750	362	402	570	88	378	50	5	694	504	350	666	10	8	50	38	35	13x18
560	1030	892	603	714	360	280	125	390	844	410	460	630	100	416	48	7	770	564	388	742	12	8	70	43	40	13x18
630	1157	998	679	800	404	328	110	434	945	454	504	674	100	460	53	6	856	634	432	828	12	8	70	43	40	13x18

All Dimensions in mm.

FSA 'T'

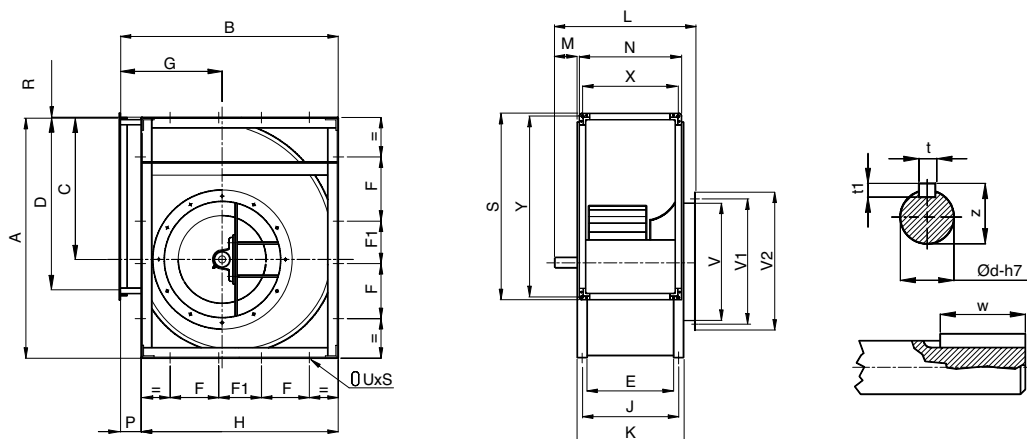
FSA 315-400 'T'



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
315	578	518	340	404	204	330	236	480	234	264	438	84	260	38	3	460	315	356	395	232	432	8	7	40	33	30	13x18
355	654	578	383	452	228	368	260	548	268	308	484	96	284	30	6	508	355	395	435	256	480	10	8	50	38	35	13x18
400	736	650	432	506	256	402	290	612	296	336	512	96	312	38	5	562	400	438	480	284	534	10	8	50	38	35	13x18

All Dimensions in mm.

FSA 450-1000 'T'

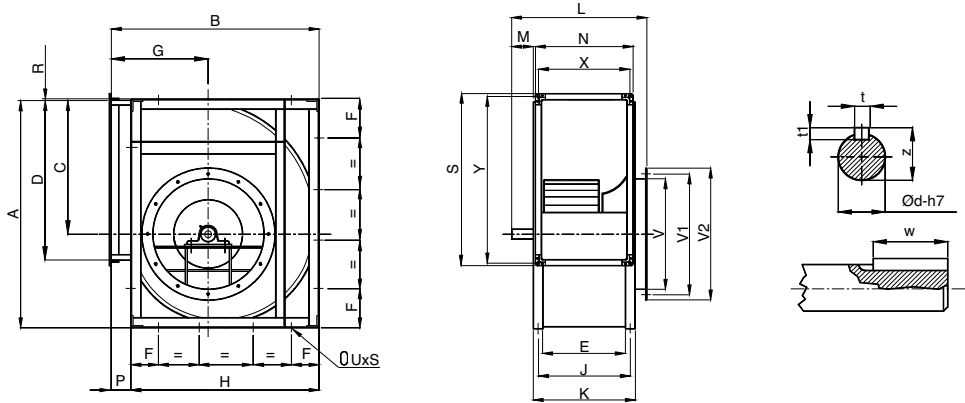


Model	A	B	C	D	E	F	F1	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
450	827	726	486	568	288	200	111	322	681	328	368	566	118	344	45	5	624	450	487	530	316	596	12	8	70	43	40	13x18
500	918	800	538	638	322	245	120	352	750	362	402	600	118	378	50	5	694	500	541	580	350	666	12	8	70	43	40	13x18
560	1030	892	603	714	360	280	125	390	844	410	460	644	114	416	48	7	770	560	605	646	388	742	14	9	70	48.5	45	13x18
630	1157	998	679	800	404	328	110	434	945	454	504	688	114	460	53	6	856	630	674	716	432	828	14	9	70	48.5	45	13x18
710	1302	1120	765	898	452	360	150	484	1057	502	552	760	138	508	63	7	954	710	751	796	480	926	14	9	90	53.5	50	17x22
800	1468	1254	862	1006	506	405	171	540	1180	556	606	814	138	562	74	7	1062	800	837	886	534	1034	14	9	90	53.5	50	17x22
900	1648	1408	971	1130	568	455	189	604	1319	618	668	884	146	624	89	7	1186	900	934	986	596	1158	18	11	90	64	60	17x22
1000	1810	1540	1066	1266	638	500	200	656	1450	688	738	954	146	694	90	9	1322	1000	1043	1086	666	1294	18	11	90	64	60	17x22

All Dimensions in mm.

FSA 'T'

FSA 1120-1400 'T'

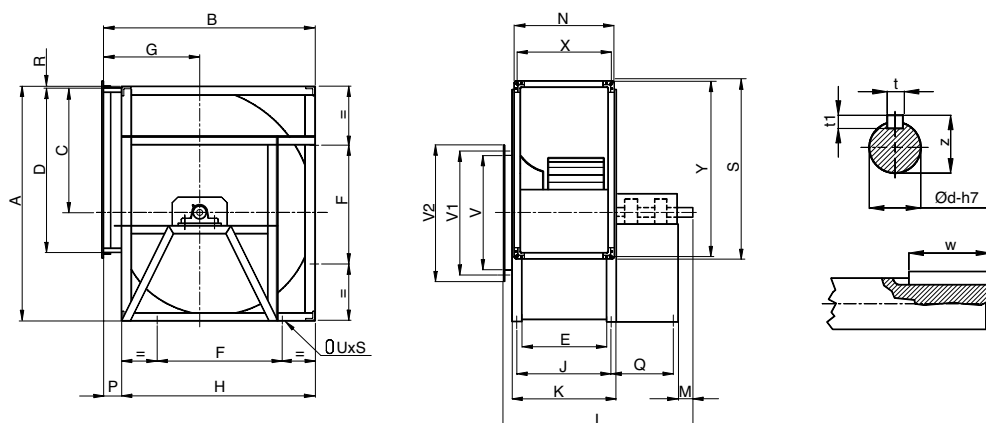


Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
1120	2033	1725	1200	1422	716	290	748	1630	776	842	1145	160	772	95	9	1478	1120	1180	1226	744	1450	18	11	110	69	65	17x22
1250	2285	1930	1353	1524	804	300	830	1831	879	954	1251	166	860	99	9	1580	1250	1303	1356	832	1552	20	12	110	74.5	70	17x22
1400	2568	2170	1515	1794	902	310	963	2057	977	1052	1373	190	958	113	13	1850	1400	1480	1506	930	1822	20	12	110	79.5	75	17x22

All Dimensions in mm.

FSA 'U'

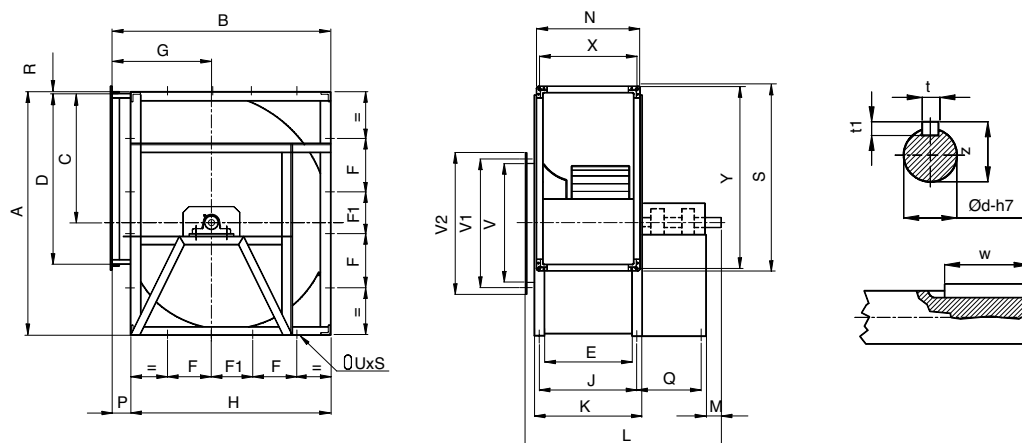
FSA 315-400 'U'



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
315	578	518	340	404	204	330	236	480	234	264	438	84	260	38	3	460	315	356	395	232	432	8	7	40	33	30	13x18
355	654	578	383	452	228	368	260	548	268	308	484	96	284	30	6	508	355	395	435	256	480	10	8	50	38	35	13x18
400	736	650	0432	506	256	402	290	612	296	336	512	96	312	38	5	562	400	438	480	284	534	10	8	50	38	35	13x18

All Dimensions in mm.

FSA 450-1000 'U'

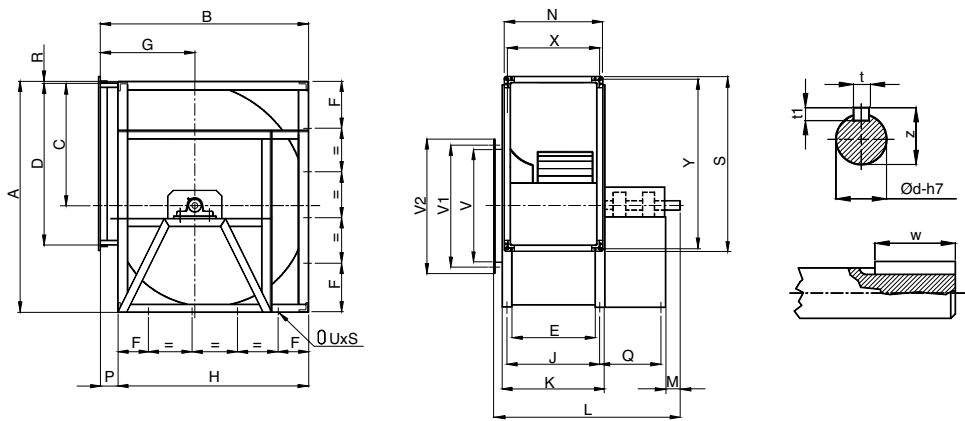


Model	A	B	C	D	E	F	F1	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
450	827	726	486	568	288	200	111	322	681	328	368	566	118	344	45	5	624	450	487	530	316	596	12	8	70	43	40	13x18
500	918	800	538	638	322	245	120	352	750	362	402	600	118	378	50	5	694	500	541	580	350	666	12	8	70	43	40	13x18
560	1030	892	603	714	360	280	125	390	844	410	460	644	114	416	48	7	770	560	605	646	388	742	14	9	70	48.5	45	13x18
630	1157	998	679	800	404	328	110	434	945	454	504	688	114	460	53	6	856	630	674	716	432	828	14	9	70	48.5	45	13x18
710	1302	1120	765	898	452	360	150	484	1057	502	552	760	138	508	63	7	954	710	751	796	480	926	14	9	90	53.5	50	17x22
800	1468	1254	862	1006	506	405	171	540	1180	556	606	814	138	562	74	7	1062	800	837	886	534	1034	14	9	90	53.5	50	17x22
900	1648	1408	971	1130	568	455	189	604	1319	618	668	884	146	624	89	7	1186	900	934	986	596	1158	18	11	90	64	60	17x22
1000	1810	1540	1066	1266	638	500	200	656	1450	688	738	954	146	694	90	9	1322	1000	1043	1086	666	1294	18	11	90	64	60	17x22

All Dimensions in mm.

FSA 'U'

FSA 1120-1400 'U'



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	V1	V2	X	Y	t	t1	w	z	ød	uxs
1120	2033	1725	1200	1422	716	290	748	1630	776	842	1145	160	772	95	9	1478	1120	1180	1226	744	1450	18	11	110	69	65	17x22
1250	2285	1930	1353	1524	804	300	830	1831	879	954	1251	166	860	99	9	1580	1250	1303	1356	832	1552	20	12	110	74.5	70	17x22
1400	2568	2170	1515	1794	902	310	963	2057	977	1052	1373	190	958	113	13	1850	1400	1480	1506	930	1822	20	12	110	79.5	75	17x22

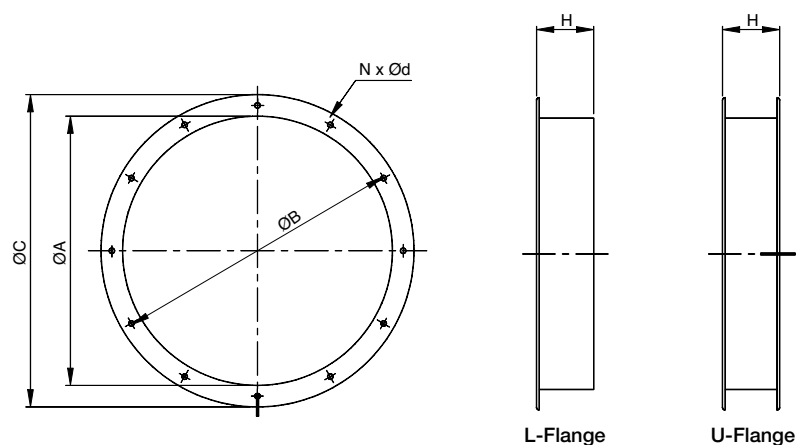
All Dimensions in mm.

Accessories

Inlet Flange

Model	A	B	C	H	n x d
200	200	235	260	80	6 x 10
225	225	259	285	80	6 x 10
250	250	286	315	80	6 x 10
280	280	322	350	80	6 x 10
315	315	356	395	120	8 x 10
355	355	395	435	120	8 x 10
400	400	438	480	120	8 x 10
450	450	487	530	120	8 x 10
500	500	541	580	120	8 x 12
560	560	605	646	120	8 x 12
630	630	674	716	120	8 x 12
710	710	751	796	120	8 x 12
800	800	837	886	120	12 x 12
900	900	934	986	120	12 x 12
1000	1000	1043	1086	120	12 x 12
1120	1120	1180	1226	200	12 x 12
1250	1250	1303	1356	200	12 x 12
1400	1400	1480	1506	200	16 x 14

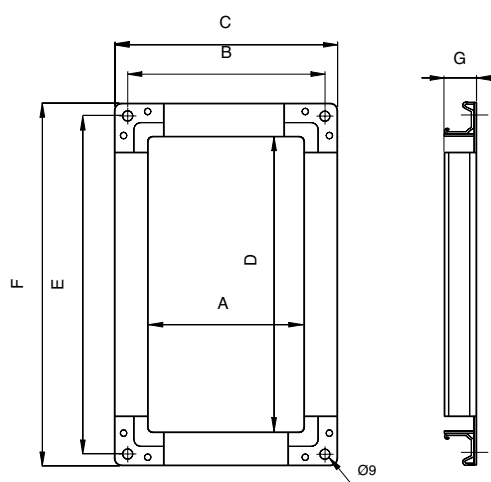
All Dimensions in mm.



Outlet Flange

Model	A	B	C	D	E	F	G
200	130	158	186	256	284	312	28
225	146	174	202	288	316	344	28
250	164	192	220	322	350	378	28
280	182	210	238	360	388	416	28
315	204	232	260	404	432	460	28
355	228	256	284	452	480	508	28
400	256	284	312	506	534	562	28
450	288	316	344	568	596	624	28
500	322	350	378	638	666	694	28
560	360	388	416	714	742	770	28
630	404	432	460	800	828	856	28
710	452	480	508	898	926	954	28
800	506	534	562	1006	1034	1062	28
900	568	596	624	1130	1158	1186	28
1000	638	666	694	1266	1294	1322	28
1120	716	744	772	1422	1450	1478	28
1250	804	832	860	1524	1552	1580	28
1400	902	930	958	1794	1822	1850	28

All Dimensions in mm.



Operational Limits - "FSA"

			200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400
Maximum Absorbed Power	S	kW	1.5	1.5	1.5	2	2.5	3	3	4										
	C	kW	1.5	1.5	1.5	2	2.5	3	3	4	5.5	5.5	7.5							
	T	kW					5.5	5.5	8	10	11	13	15	10	15	15	20	25	30	40
	U	kW					5.5	5.5	8	10	11	13	15	20	25	30	40	50	60	70
Maximum Fan Speed	S	rpm	3400	2900	2700	2400	2100	1800	1600	1400										
	C	rpm	3400	2900	2700	2400	2100	1800	1600	1400	1200	1100	900							
	T	rpm					2400	2000	1800	1600	1300	1200	1000	800	700	650	600	450	400	350
	U	rpm					2400	2000	1800	1600	1300	1200	1000	900	800	750	650	600	500	450
Temperature Range Min. -20°C	S-C	Max.°C	85	85	85	85	85	85	85	85	85	85	85							
	T	Max.°C					100	100	100	100	100	100	100	100	100	100	100	100	100	100
	U	Max.°C					180	180	180	180	180	180	180	180	180	180	180	180	180	180
Wheel	Diameter	mm	200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400
	Weight	kg	1	1.1	1.6	2	2.7	3.2	5.4	6.5	10.2	13.5	18.2	23	36	42	51	88	142	172
	$J = PD^2/4$	kgm ²	0.008	0.012	0.021	0.034	0.057	0.087	0.18	0.28	0.53	0.89	1.49	2.44	4.81	7.21	10.86	24.03	44.9	73.1
Fan weight	S	kg	5.9	6.7	9	11.5	13.6	17.2	25	32										
	C	kg	7.5	8.5	12	15	17.5	21.9	30	38	48	60	76							
	T	kg					26	39	47	52	69	94	110	162	202	245	276	518	768	1040
	U	kg					33	49	58	66	84	114	130	186	232	280	316	557	847	1147

