

# KAT

DOUBLE INLET  
CENTRIFUGAL FAN  
with Forward Wheels





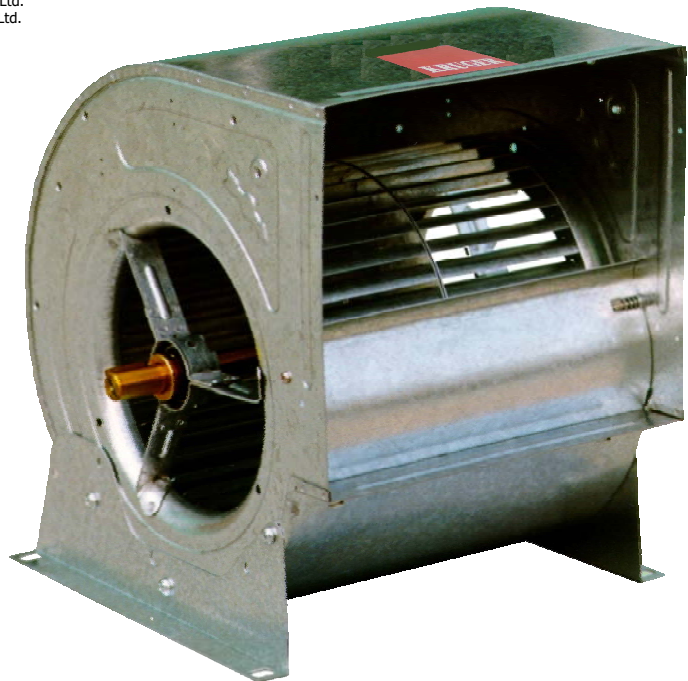
# KAT Series

DOUBLE INLET CENTRIFUGAL FAN with Forward Wheels



Kruger\* certifies that the **KAT series: version S and C - model 9-7 to 18-18** 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.

- \*Kruger Ventilation Industries Asia Co., Ltd.
- \*Guangzhou Kruger Ventilation Co., Ltd
- \*Shanghai Kruger Ventilation Co., Ltd
- \*Tianjin Kruger Ventilation Co., Ltd
- \*Wuhan Kruger Ventilation Co., Ltd.
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- \*Kruger Ventilation Industries (India) Pvt. Ltd.
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- \*P.T. Kruger Ventilation Indonesia
- \*Kruvent Industries (M) Sdn. Bhd
- \*Kruger M&E Industries Corporation
- \*Kruger Ventilation Industries (Thailand) Co., Ltd.
- \*Kruger Ventilation Industries (Vietnam) Co., Ltd.



## KAT Series Double Inlet Centrifugal Fans - Forward Wheel

The KAT series is DIDW centrifugal fans with forward curved impellers. The fans are suitable for supply or exhaust applications in commercial, process and industrial HVAC systems.

### Type

The KAT series is available in type S and C as shown in Fig. 1 :-

Size: 7-7 to 18-18  
Vol.: 1500 to 15000 m<sup>3</sup>/h  
Total Press. : up to 1500 Pa

Performance of 7-7 and 8-8 are not AMCA licensed.

### KAT Twin Fan

KAT series is also available in twin fan version, with two double inlet fans mounted on the same shaft. To select for twin fans, use the curves of single fan with the following factors :-

Volume                   x 2  
Absorbed Power       x 2.15  
Speed                    x 1.05  
Noise                    + 3 dB

This series is available in type S2 and C2 as shown in fig. 1 :-

Performance of twin fan series are not AMCA licensed.

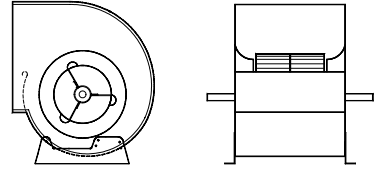
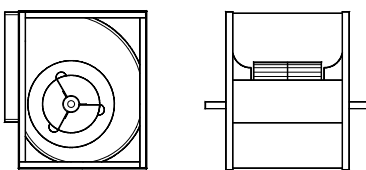
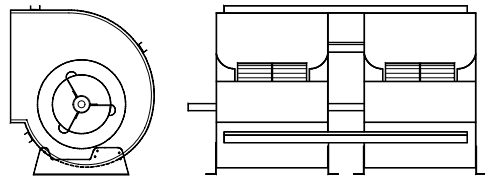
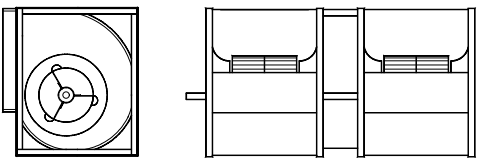
<p><b>Type S</b></p> <p>This type are supplied with mounting feet and can be mounted in three different fan orientation.</p>	
<p><b>Type C</b></p> <p>This type has a frame on both side of the fans which gives better strength and rigidity. Possibilities of mounting in four different fan orientation.</p>	
<p><b>Type S2</b></p> <p>Size: 7-7 to 18-18 Vol.: 3000 to 30000m<sup>3</sup>/h</p>	
<p><b>Type C2</b></p> <p>Size: 7-7 to 18-18 Vol.: 3000 to 30000m<sup>3</sup>/h</p>	

Fig.1

## Technical Specification

### Wheel

The wheel of KAT series is made of galvanised sheet steel forward curved blades. The wheels are specially profiled to obtain a maximum efficiency and low noise level.

### Housing

The housing is manufactured in galvanized sheet steel with the housing fixed to the side plates by means of "electric spot welding".

A series of holes previously formed in the side plate enable the housing to mount in four different orientation. All the unused holes in the side plate are plugged with a plastic cap to prevent air leakage.





### Frame

The frame is manufactured with galvanized angular bars. The frame is sheared, bent and spot welded in a way that ensures correct dimensions and also maximum rigidity.

### 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. All shafts are then coated with an anti-corrosion varnish after assembly.

### Bearings

All bearings used are deep groove ball bearing type sealed at both sides. The bearings are self-aligning with an eccentric locking collar for clamping onto the shaft and is mounted in a rubber housing.

All the bearings are lubricated for life and maintenance-free under normal operating conditions.

### Outlet Flanges

Outlet flanges are available upon request.

### Balancing Quality

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

All fans after assembly are trim-balanced to ISO1940 and AMCA 204 – G2.5 standard.

Clean room application fans with balancing grade of G1.0 are available upon request.

### Fan Rotation and Discharge

The rotation and discharge of the fan is in accordance with AMCA standard 99. The direction of rotation is determined from the drive side of the fan [refer Fig. 2] :-

- CW - clockwise rotation
- CCW - counter-clockwise rotation

	90°	180°	270°	360°
CW				
CCW				

Fig. 2 - Fan rotation and discharge

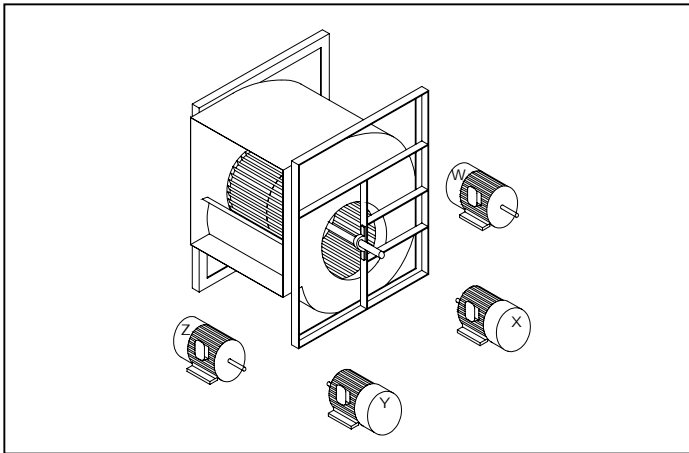


Fig. 3 - Motor Position

### Motor Position

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

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]

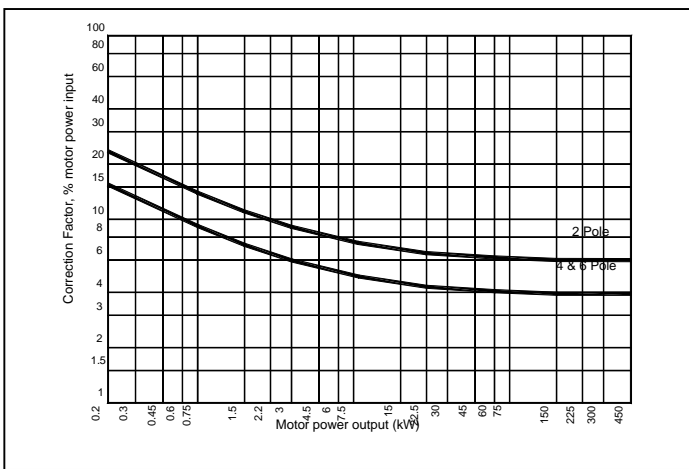


Fig. 4 – Recommended for compensation

### Motor Selection

The power curves shown on each performance graph represent the absorbed power at the shaft of the fan measured in kW.

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

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

### Dynamic Pressure

Both dynamic pressure and outlet air velocity shown on each curve are calculated on the full air discharge area, i.e 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.

**KAT 7 to 10 [K = 3.2]**

**KAT 12 to 18 [K = 2.6]**

### Noise

The noise level shown on each graph refer to the "A-weighted" sound power values 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:  $L_w = L_w(A) + L_w \text{ rel. dB [table 1]}$
- Sound pressure level:
  - a) free field  
 $L_p(A) = L_w(A) - (20\log_{10}d) - 11$
  - b) room conditions  
 $L_p(A) = L_w(A) - (20\log_{10}d) - 8$

where d = distance from fan (m)

**Performance**

The performance data shown on each diagram is derived from tests conducted in accordance to AMCA Standard 210- Fig 12- Installation type B (free inlet and duct outlet condition).

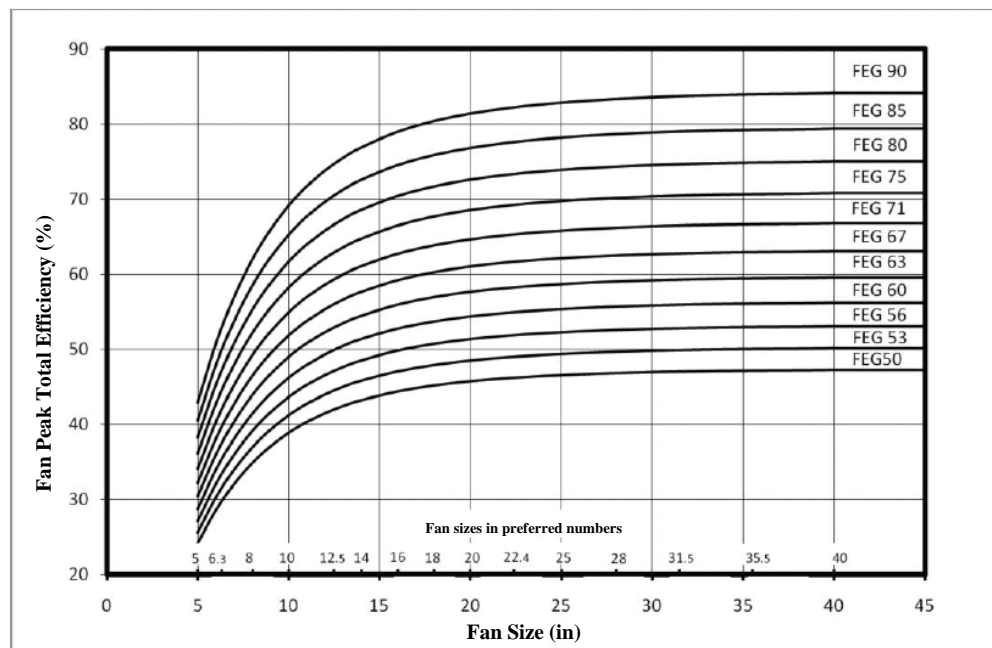
Ratings refer to standard air density with the total pressure as a function of the air volume, using logarithmic scale.

It is essential that the same installation type and test standards are used at all time when comparing fan performance.

According to AMCA 205, KAT series can be classify as FEG 71~85 based on fan peak efficiency. The follo wing is the explanation of FEG classification:

1. Fan size is the impeller diameter in mm.
2. The fan peak efficiency shall be calculated from t he fan (total) pressure.
3. If this method is used for a direct driven fan, the fan efficiency is the impeller efficiency.
4. The FEG label for a given fan size is assigned when the fan peak efficiency is equal to or lower than the efficiency at the grade upper limit, and higher than the efficiency at the grade upper limit of the next lower grade for the fan size.
5. For any fan sizes larger than 1016 mm, the values of the grade upper limits are the same as for a size of 1016 mm.
6. No labels are consid ered for t he fans wit h the fan p eak total efficiency below FEG 50.
7. The values of efficiencies are calculated for fan sizes in the preferred R40 Series.
8. Not all available fan sizes are shown.

**Fan Efficiency Grades (FEG) for Fans without Drives (SI) – AMCA 205**



## Example of Selection

Air Volume  $Q = 3996 \text{ m}^3/\text{h}$

Outlet Velocity  $V = 14.5 \text{ m/s}$

Dynamic Pressure  $P_d = 128 \text{ Pa}$

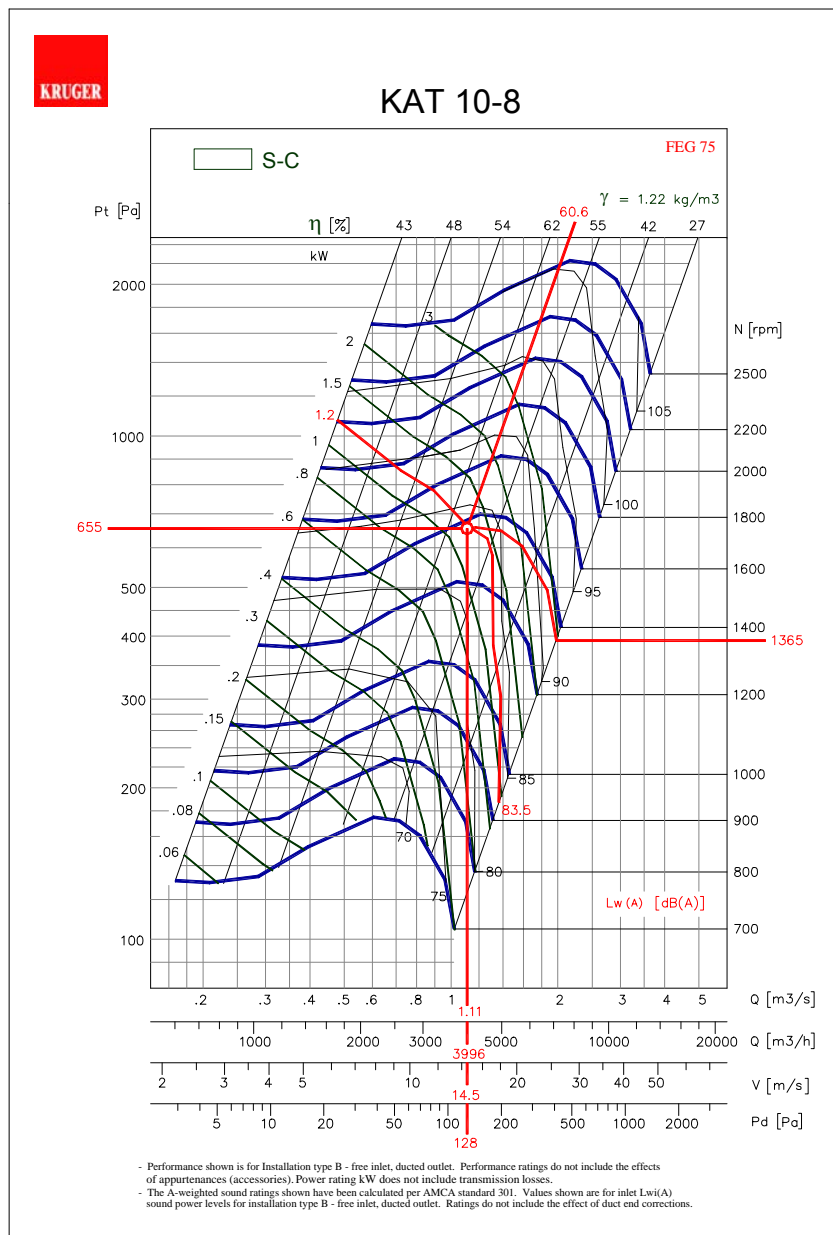
Total Pressure  $P_t = 655 \text{ Pa}$

Fan Speed  $N = 1365 \text{ rpm}$

Absorbed Power  $W = 1.2 \text{ kW}$

Total Efficiency  $\eta = 60.6 \%$

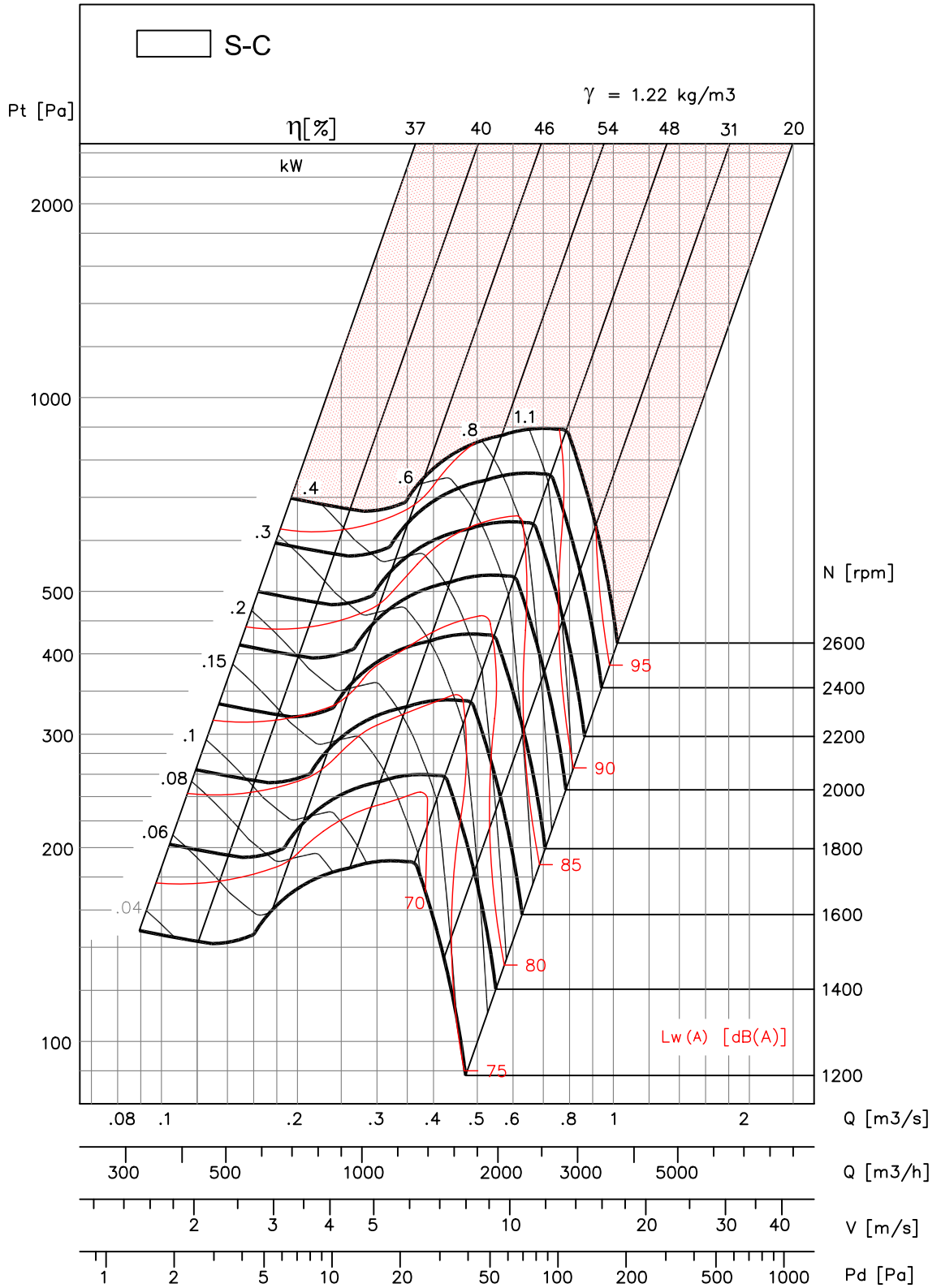
Sound Power Level  $L_w(A) = 83.5 \text{ dB(A)}$







## KAT 7-7



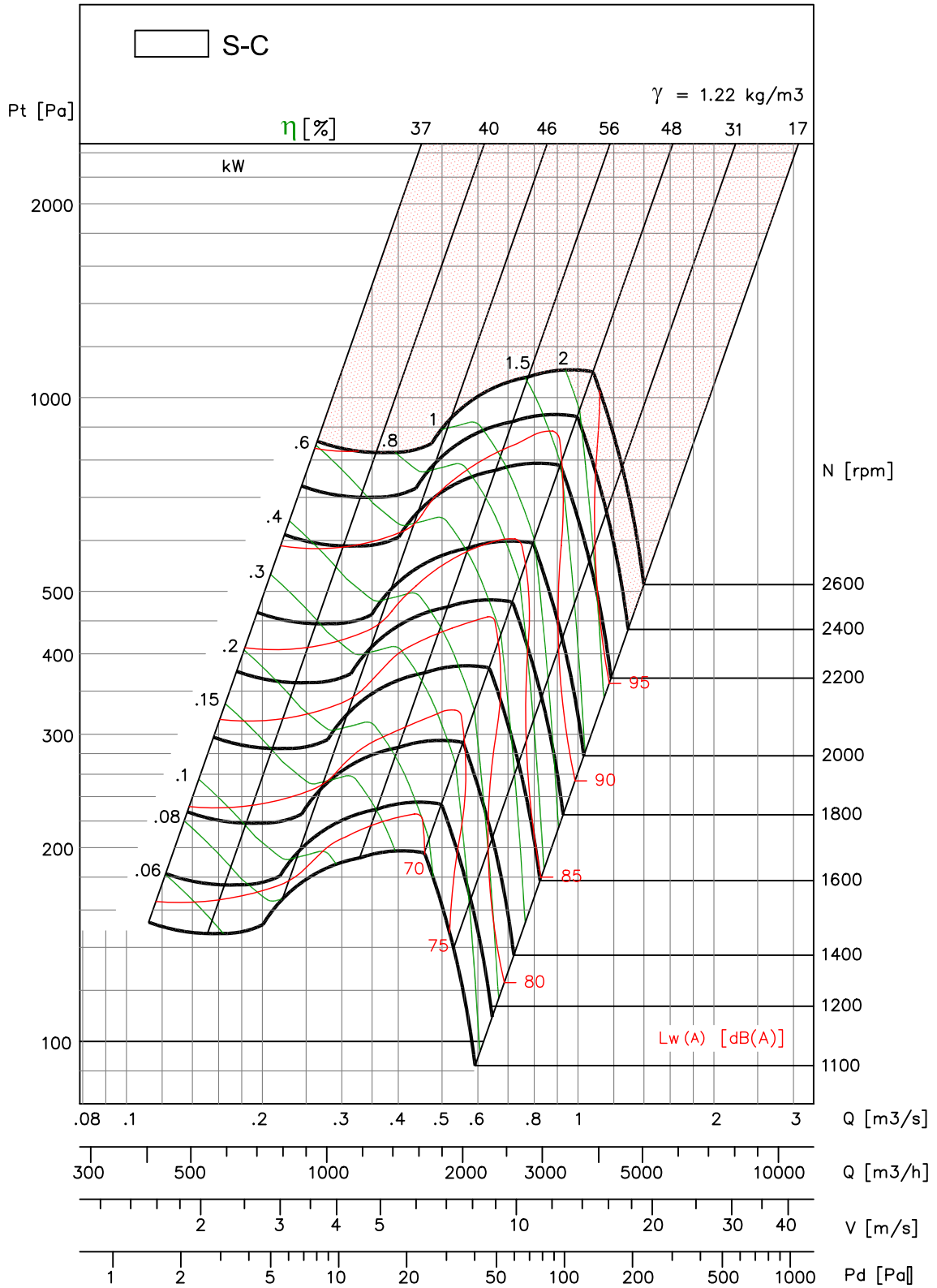
- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.

- Model KAT 7-7 is not licensed to bear the AMCA Certified Ratings Seal.



## KAT 8-8



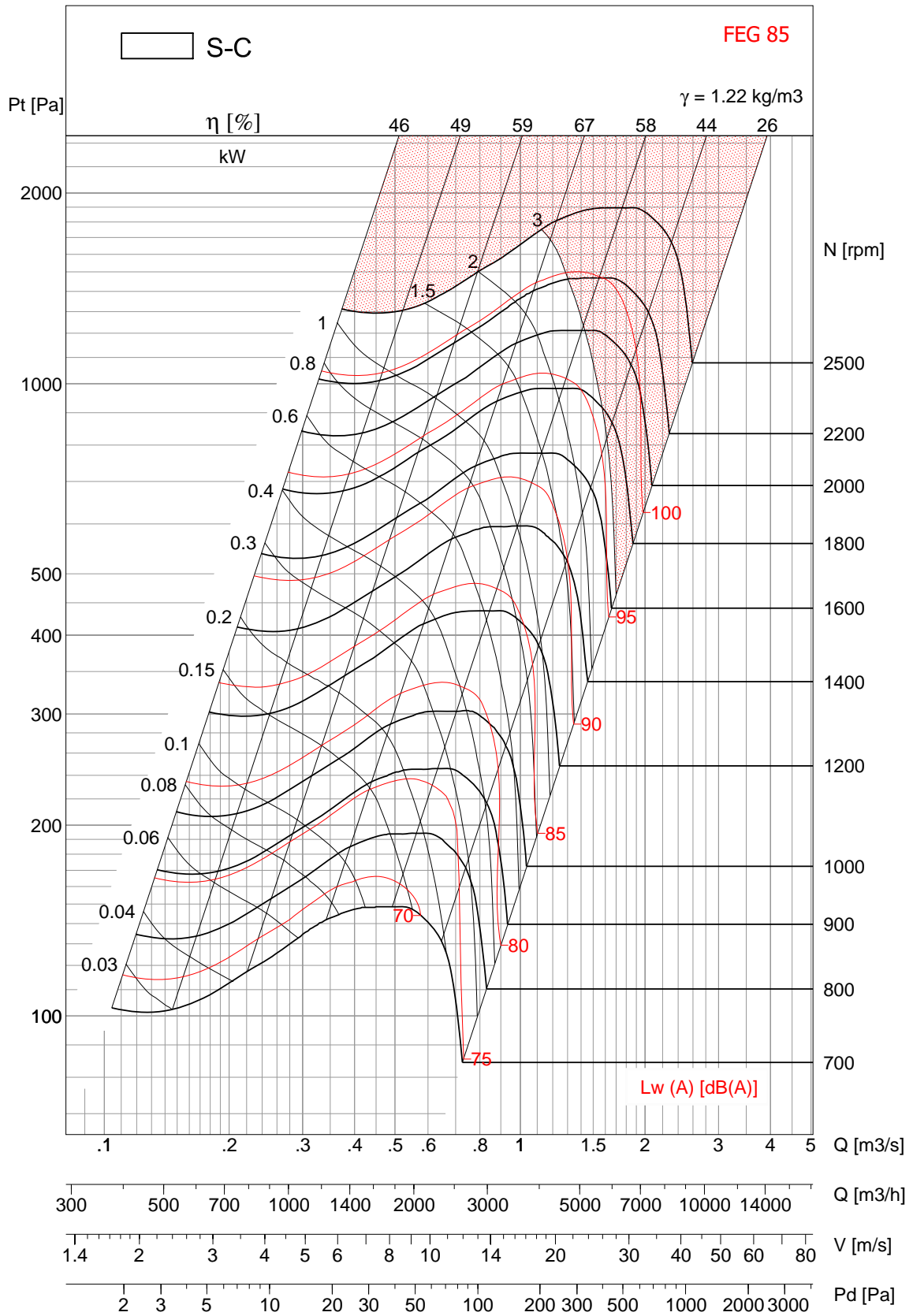
- Performance shown is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet  $L_{wi}$  (A) sound power levels for installation type B - free inlet, ducted outlet.

- Model KAT 8-8 is not licensed to bear the AMCA Certified Ratings Seal.



## KAT 9-7

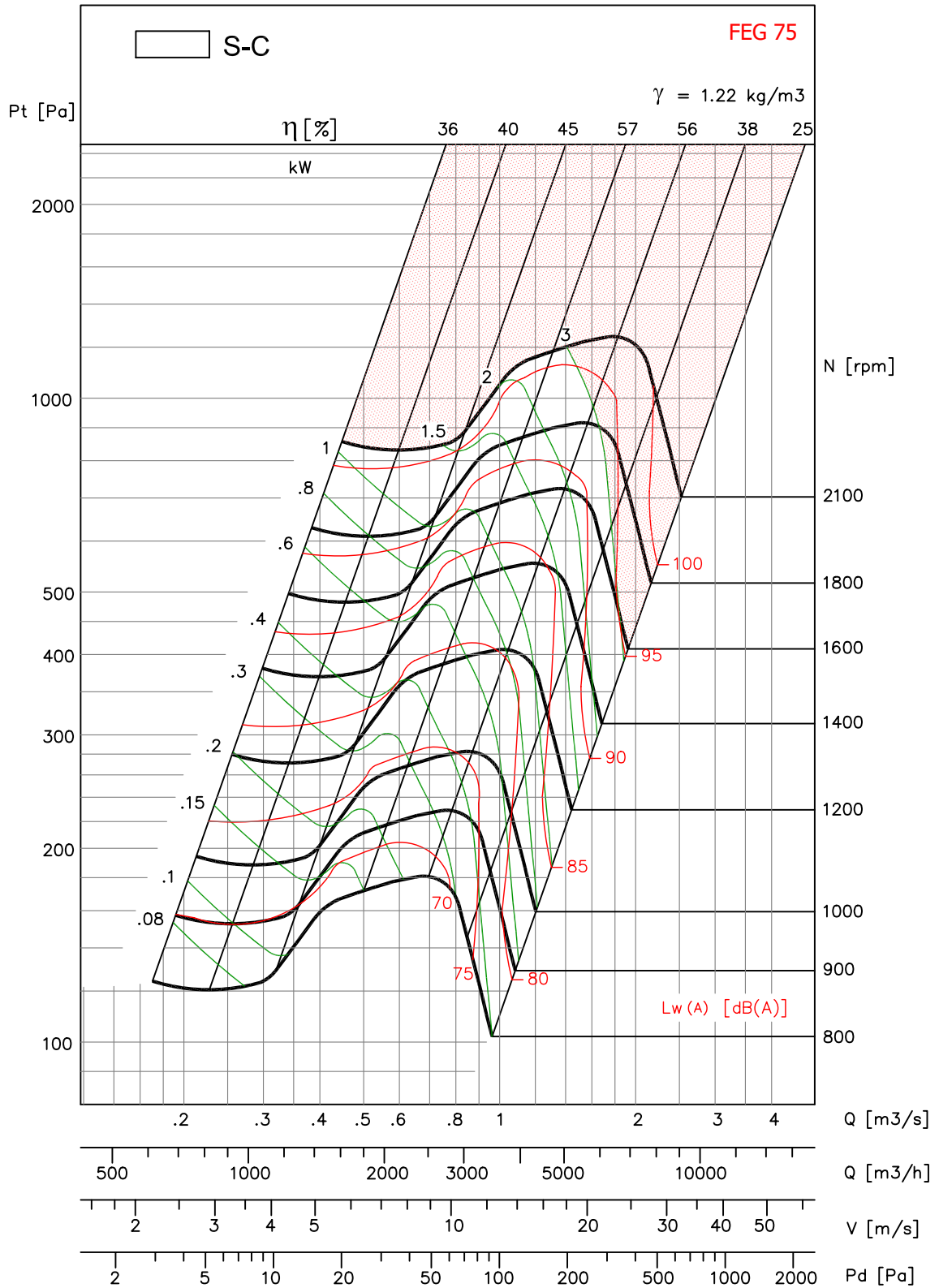


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.



## KAT 9-9

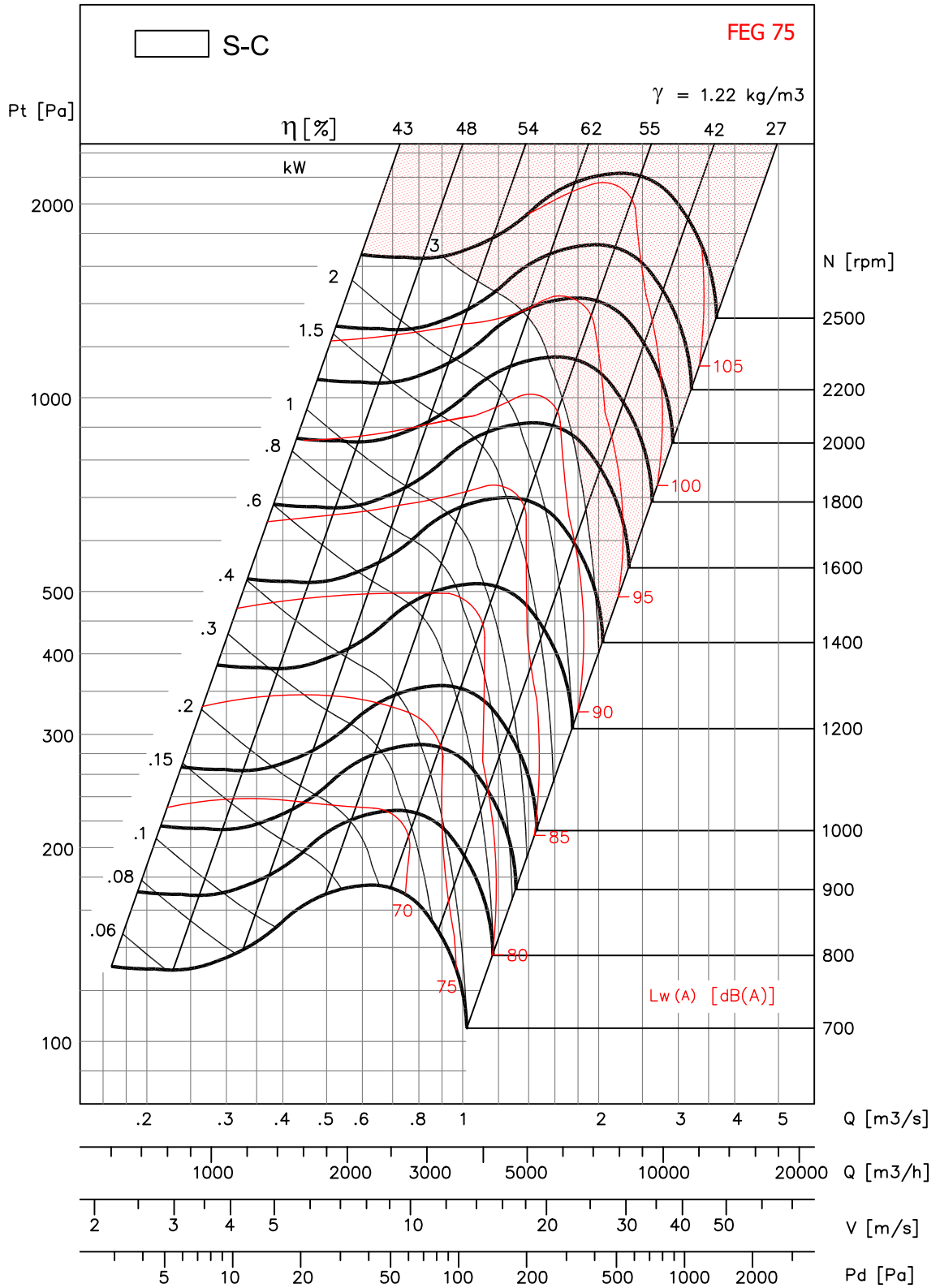


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.



## KAT 10-8

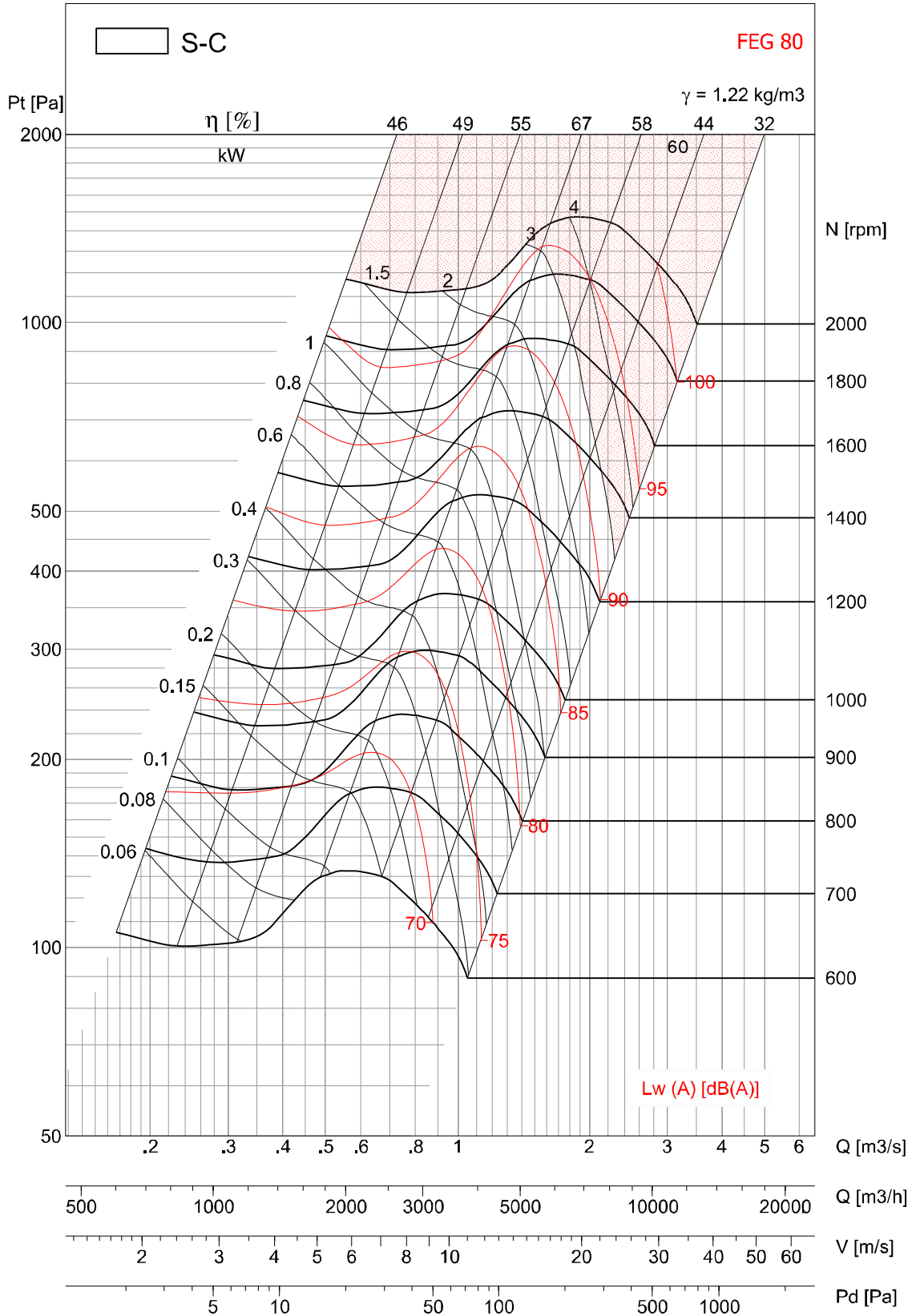


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.



## KAT 10-10

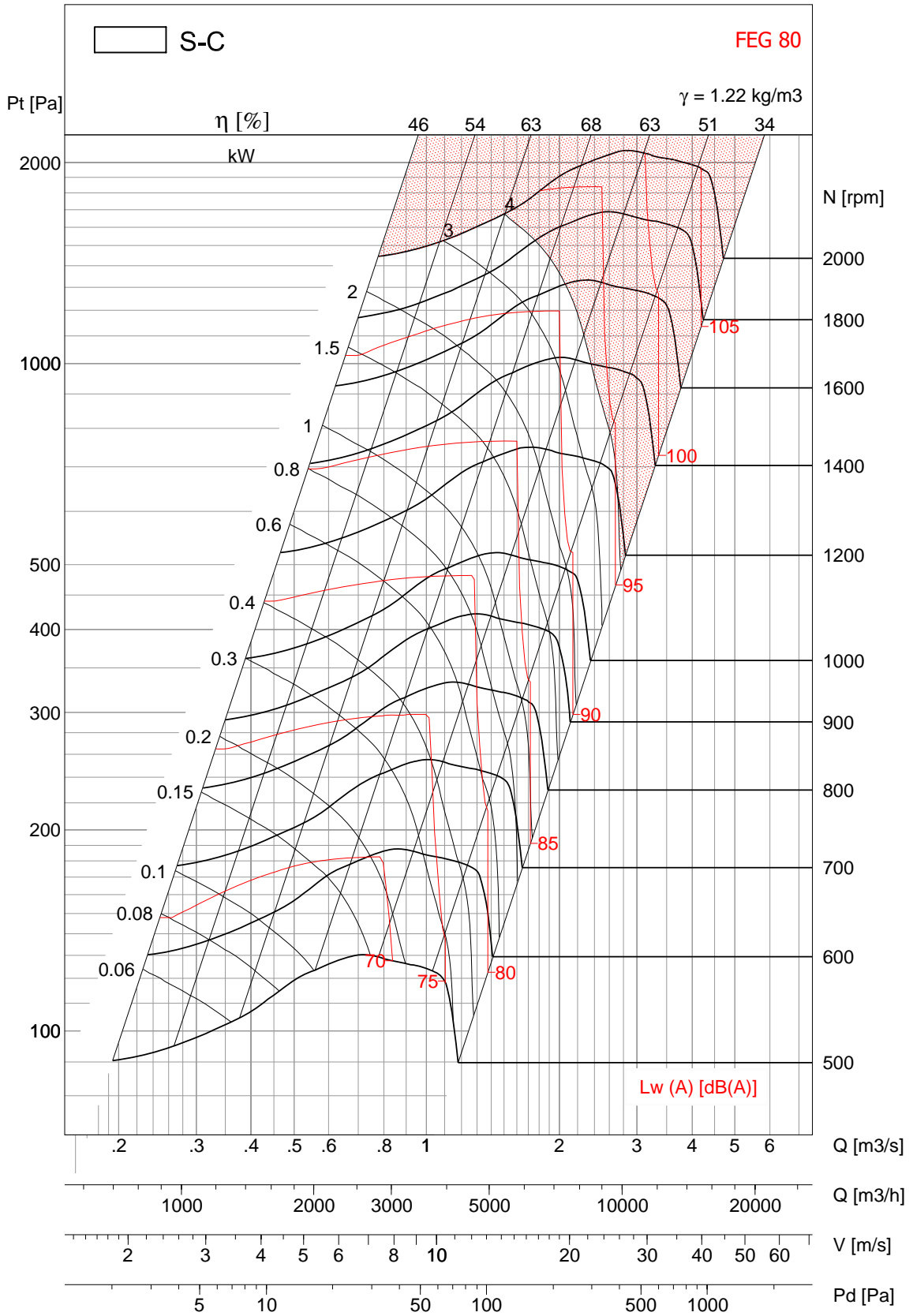


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.



## KAT 12-9

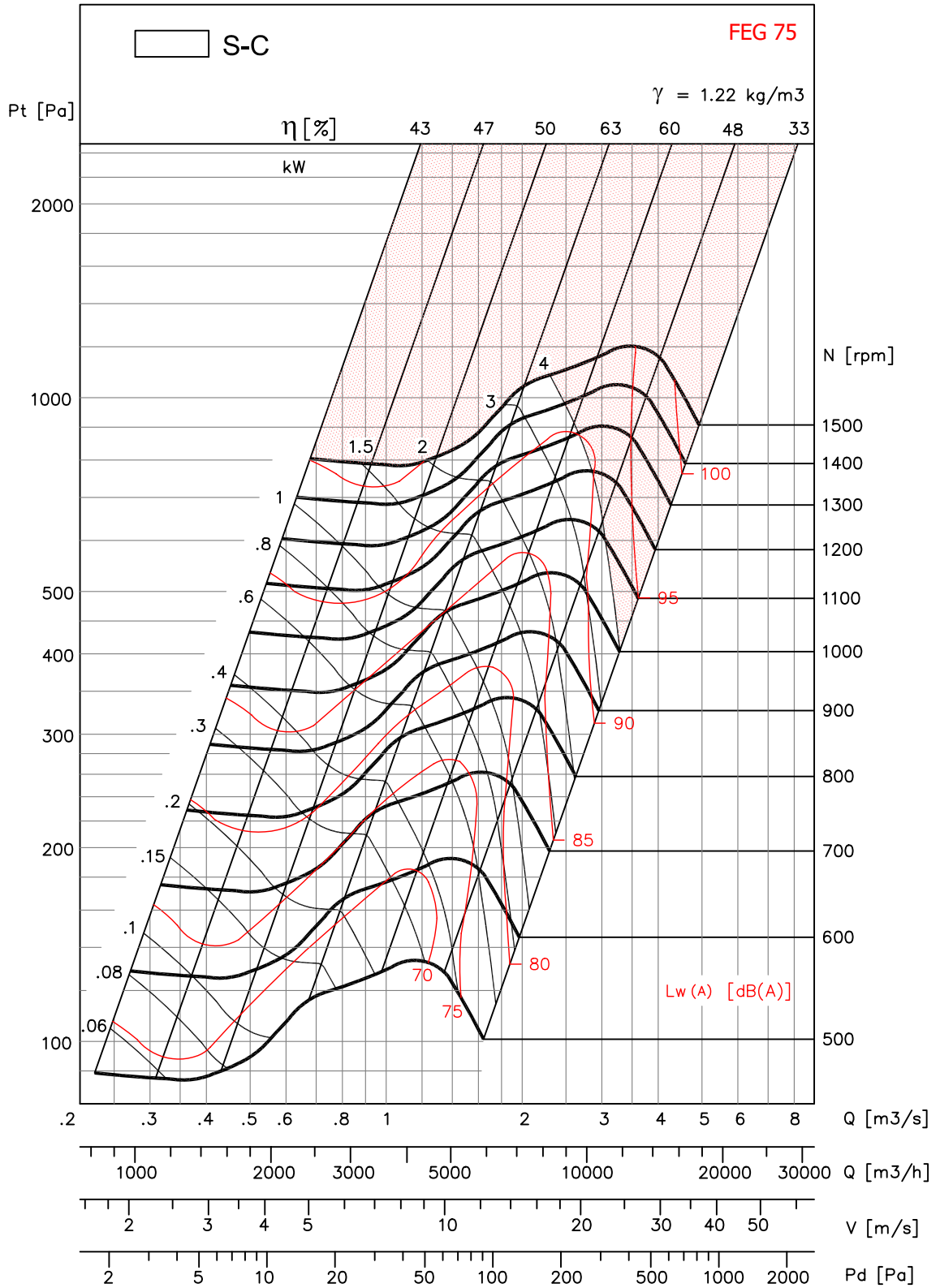


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.



## KAT 12-12



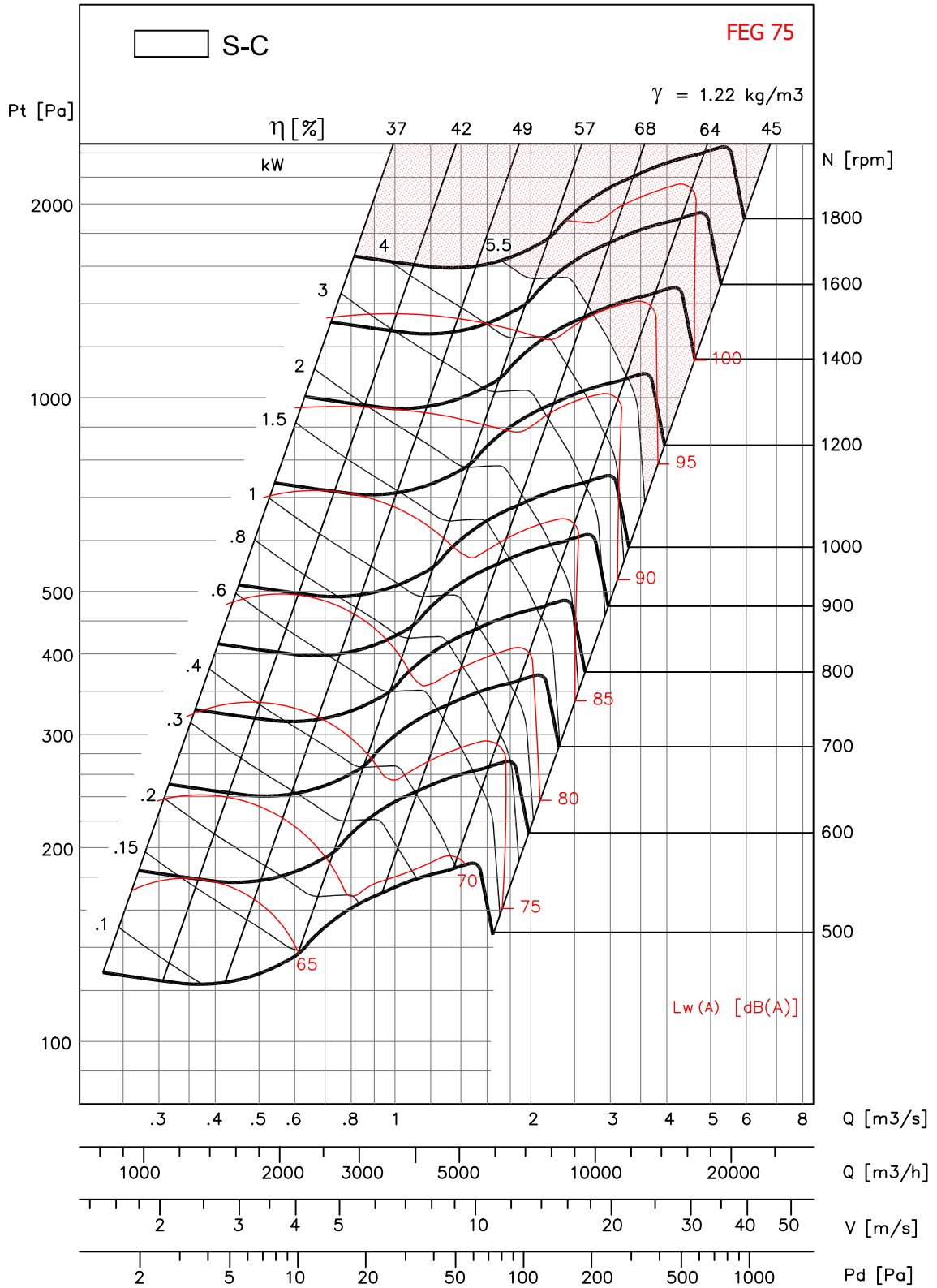
- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.





## KAT 15-11

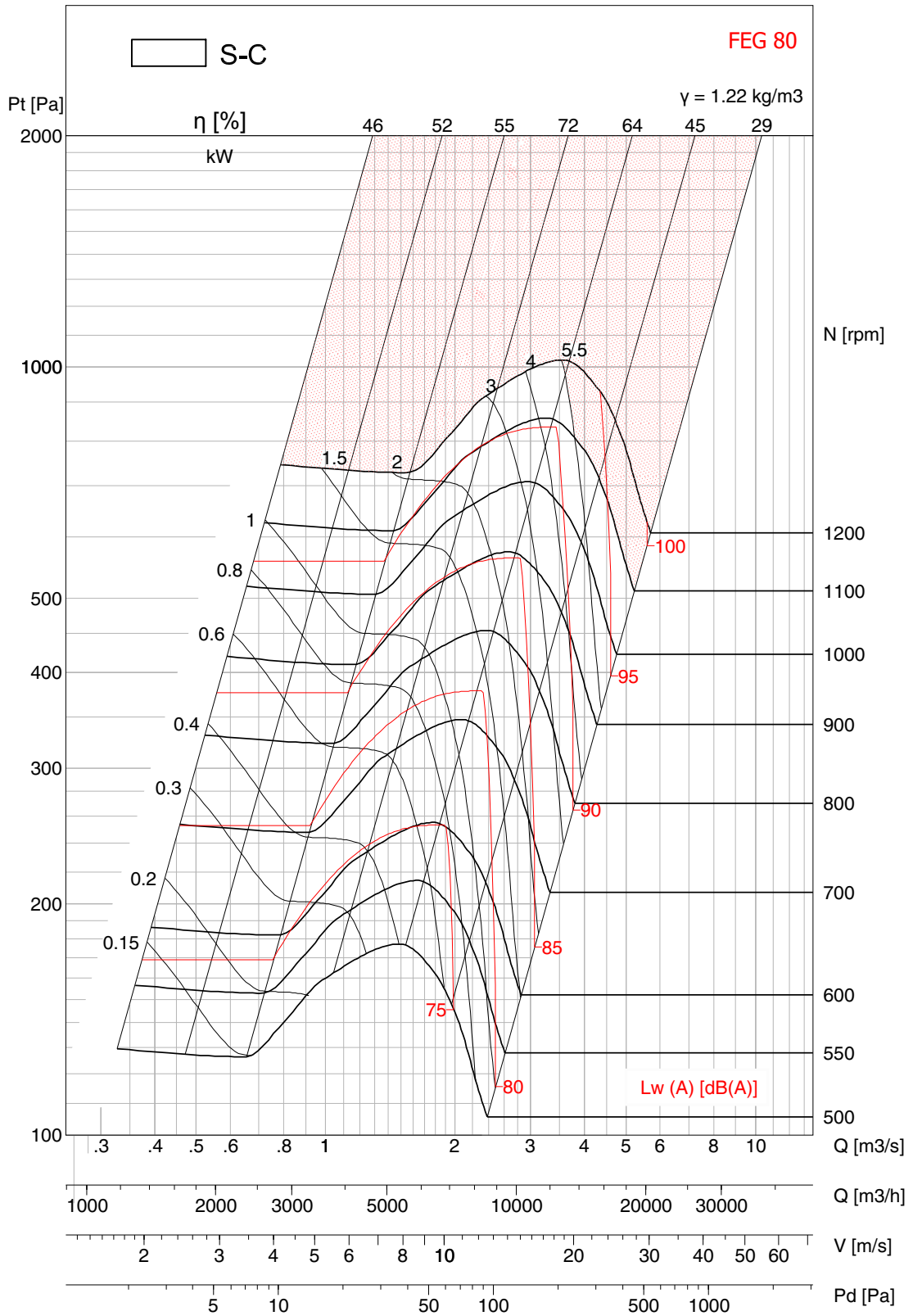


- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lw (A) sound power levels for installation type B - free inlet, ducted outlet.



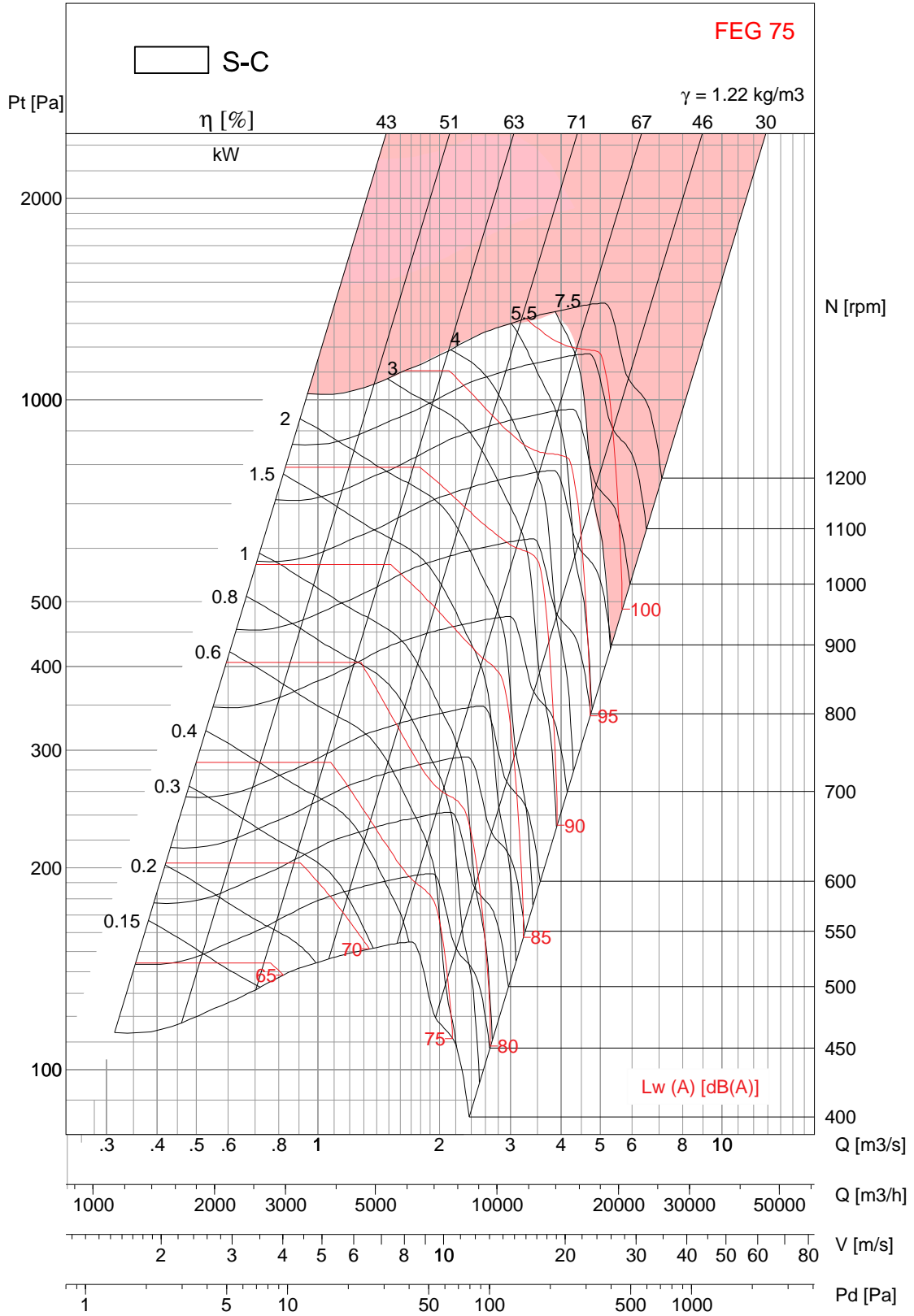
## KAT 15-15



- Performance certified for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.  
 - The A-weighted sound ratings shown have been calculated per AMCA International standard 301. Values shown are for inlet Lwi(A) sound power levels for installation type B - free inlet, ducted outlet.

**KRUGER**

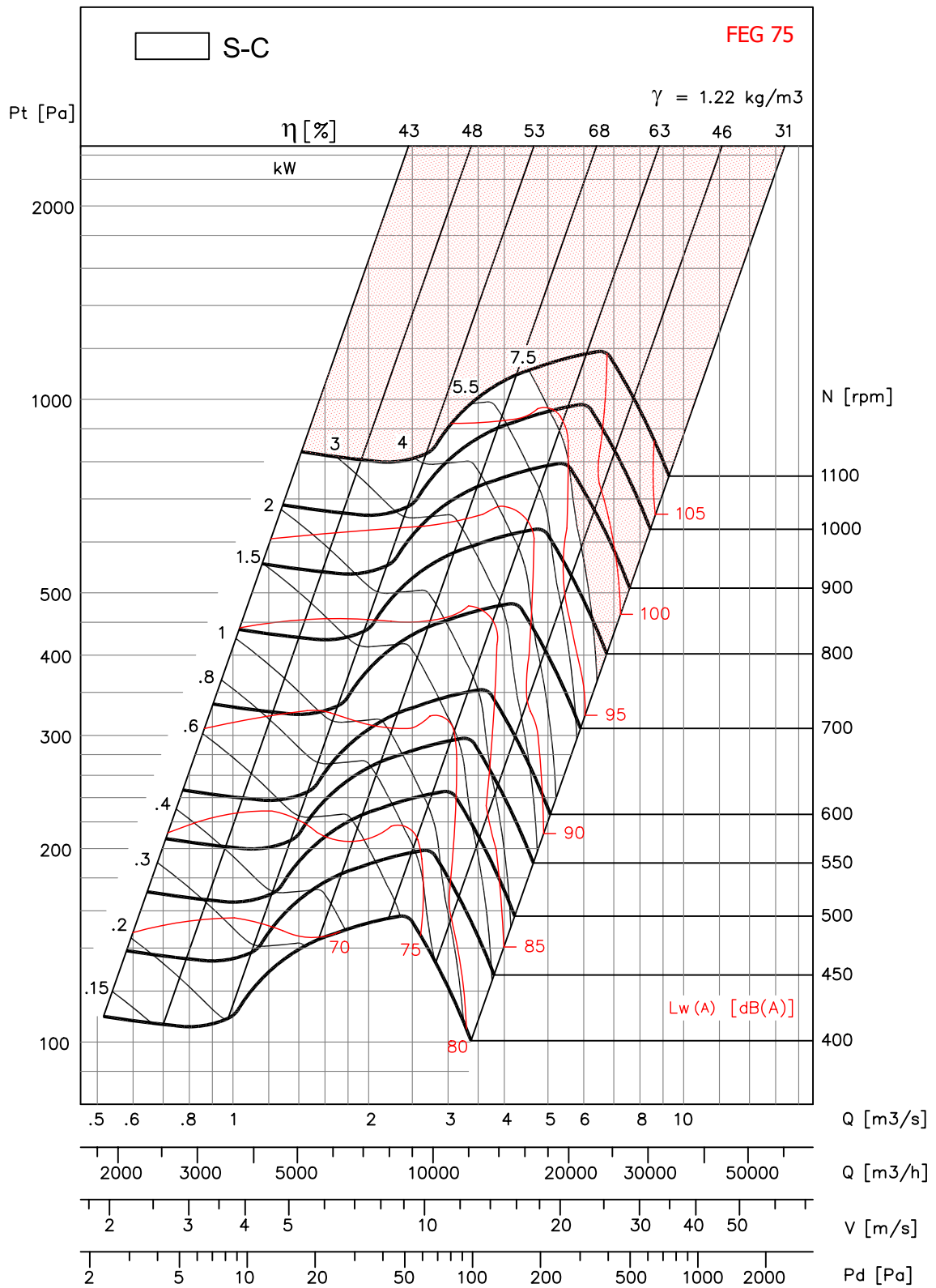
## KAT 18-13



- Performance certified is for Installation type B – free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.  
 - The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet  $L_{wi}$ (A) sound power levels for installation type B – free inlet, ducted outlet.

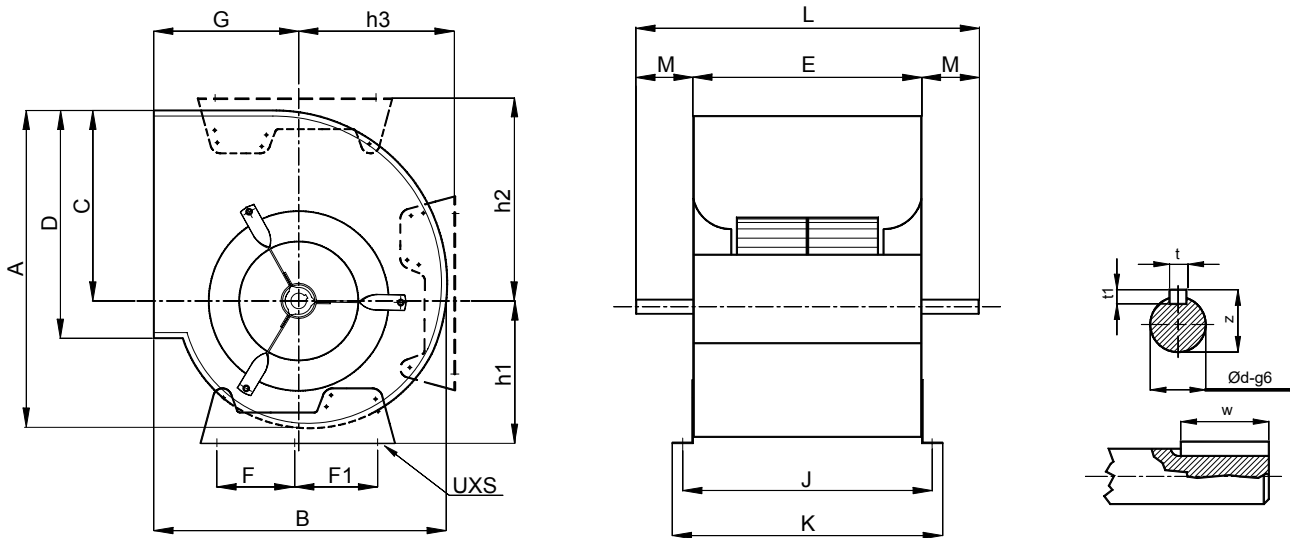


## KAT 18-18



- Performance certified is for Installation type B - free inlet, ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating kW does not include transmission losses.

- The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi (A) sound power levels for installation type B - free inlet, ducted outlet.

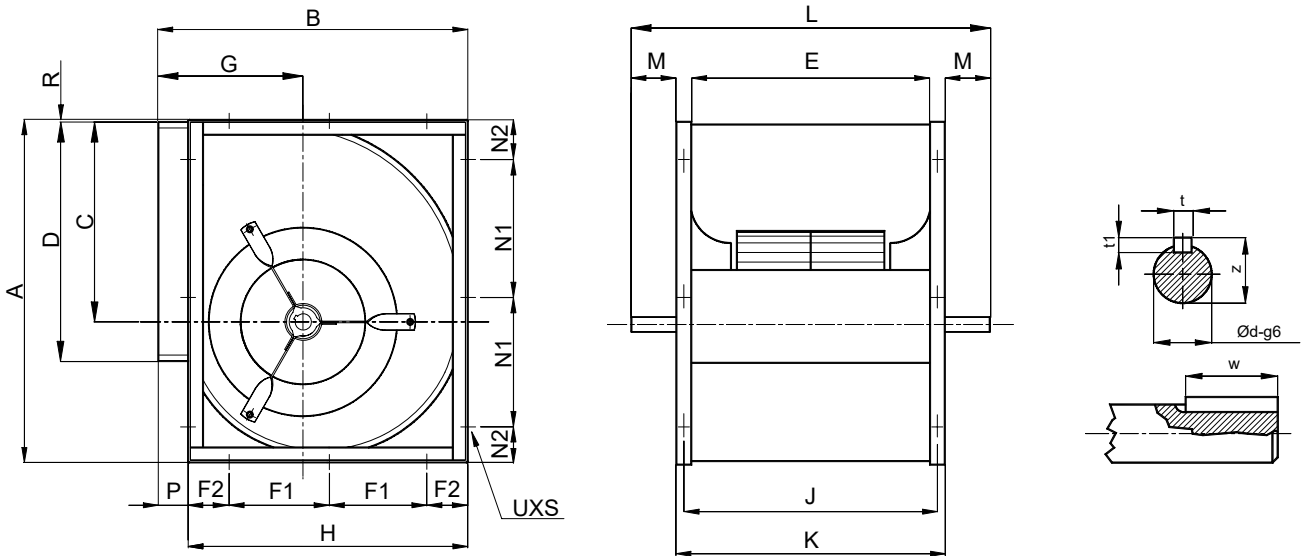


Model	A	B	C	D	E	F	F1	G	J	K	L	M	h1	h2	h3	t	t1	w	z	Ød	UxS
7-7	328	312	192	228	259	90	90	152	279	299	355	48	164	224	164	6	6	30	22.5	20	11x16
8-8	364	345	216	256	287	112	112	164	312	337	388	50.5	181	245	184	6	6	30	22.5	20	11x16
9-7	387	380	216	262	232	135	165	185	257	282	321	44.5	178	233	199	6	6	30	22.5	20	11x16
9-9	387	380	216	262	298	135	165	185	323	348	388	45	178	233	199	6	6	30	22.5	20	11x16
10-8	443	425	249	289	265	170	170	203	290	315	355	45	198	287	227	6	6	30	22.5	20	11x16
10-10	443	425	249	289	331	170	170	203	356	381	420	44.5	198	287	227	6	6	30	22.5	20	11x16
12-9	521	491	294	341	309	189	219	230	334	359	420	55.5	232	332	266	8	7	40	28	25	11x16
12-12	521	491	294	341	395	189	219	230	420	445	510	57.5	232	332	266	8	7	40	28	25	11x16
15-11	609	569	342	404	373	232.5	262.5	264	398	423	510	68.5	272	380	309	8	7	40	28	25	11x16
15-15	609	569	342	404	471	232.5	262.5	264	496	521	608	68.5	272	380	309	8	7	40	28	25	11x16
18-13	739	684	415	478	430	288	318	314	455	480	567	68.5	340	457	376	8	7	40	28	25	11x16
18-18	739	684	415	478	557	288	318	314	582	607	694	68.5	340	457	376	8	7	40	28	25	11x16

**\* Optional**

Model	A	B	C	D	E	F	F1	G	J	K	L	M	h1	h2	h3	t	t1	w	z	Ød	UxS
15-15	609	569	342	404	471	232.5	262.5	264	496	521	608	68.5	272	380	309	8	7	40	33	30	11x16
18-13	739	684	415	478	430	288	318	314	455	480	567	68.5	340	457	376	8	7	40	33	30	11x16
18-18	739	684	415	478	557	288	318	314	582	607	694	68.5	340	457	376	8	7	40	33	30	11x16

All Dimensions in mm.

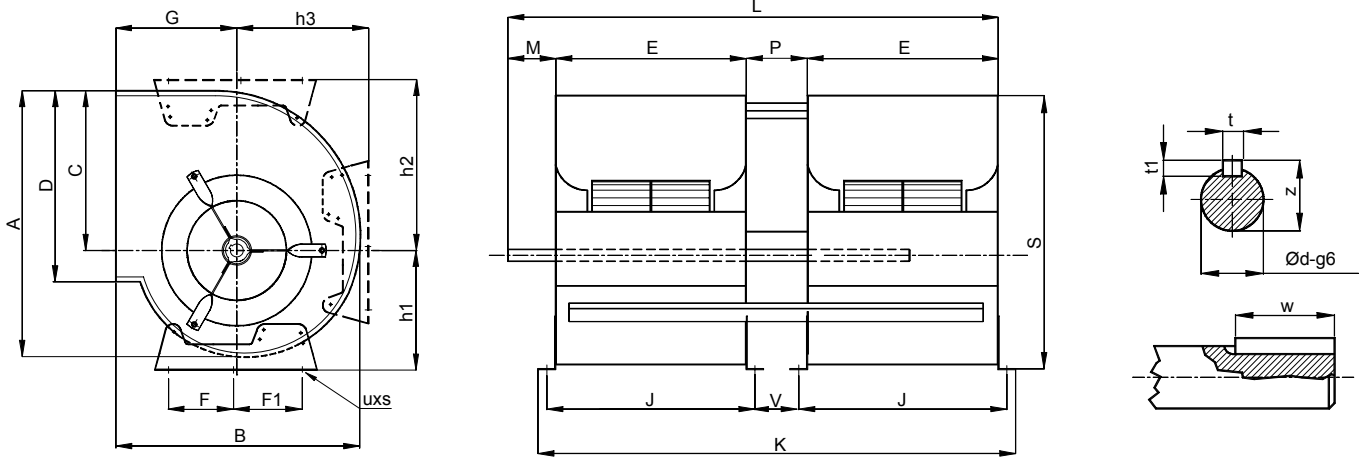


Model	A	B	C	D	E	F1	F2	G	H	J	K	L	M	N1	N2	P	R	t	t1	w	z	Ød	UxS
7-7	336	323	192	228	259	90	57	152	294	279	299	425	63	90	78	29	6	6	6	30	22.5	20	9x12
8-8	370	343	216	256	287	112	41	164	306	312	337	460	61.5	112	73	37	6	6	6	30	22.5	20	9x12
9-7	399	385	216	262	232	137	37.5	185	349	254	272	388	58	162	37.5	36	6	6	6	30	22.5	20	9x12
9-9	399	385	216	262	298	137	37.5	185	349	320	338	460	61	162	37.5	36	6	6	6	30	22.5	20	9x12
10-8	455	431	249	289	265	165	32.5	203	395	287	305	425	60	195	32.5	36	6	6	6	30	22.5	20	9x12
10-10	455	431	249	289	331	165	32.5	203	395	353	371	490	59.5	195	32.5	36	6	6	6	30	22.5	20	9x12
12-9	533	497	294	341	309	185.5	45	230	461	339	365	495	65	221.5	45	36	6	8	7	40	28	25	11x16
12-12	533	497	294	341	395	185.5	45	230	461	425	451	585	67	221.5	45	36	6	8	7	40	28	25	11x16
15-11	621	575	342	404	373	224.5	45	264	539	403	429	585	78	265.5	45	36	6	8	7	40	28	25	11x16
15-15	621	575	342	404	471	224.5	45	264	539	501	527	685	79	265.5	45	36	6	8	7	40	28	25	11x16
18-13	751	690	415	478	430	272	55	314	654	470	506	666	80	320.5	55	36	6	8	7	40	28	25	11x16
18-18	751	690	415	478	557	272	55	314	654	597	633	790	78.5	320.5	55	36	6	8	7	40	28	25	11x16

**\* Optional**

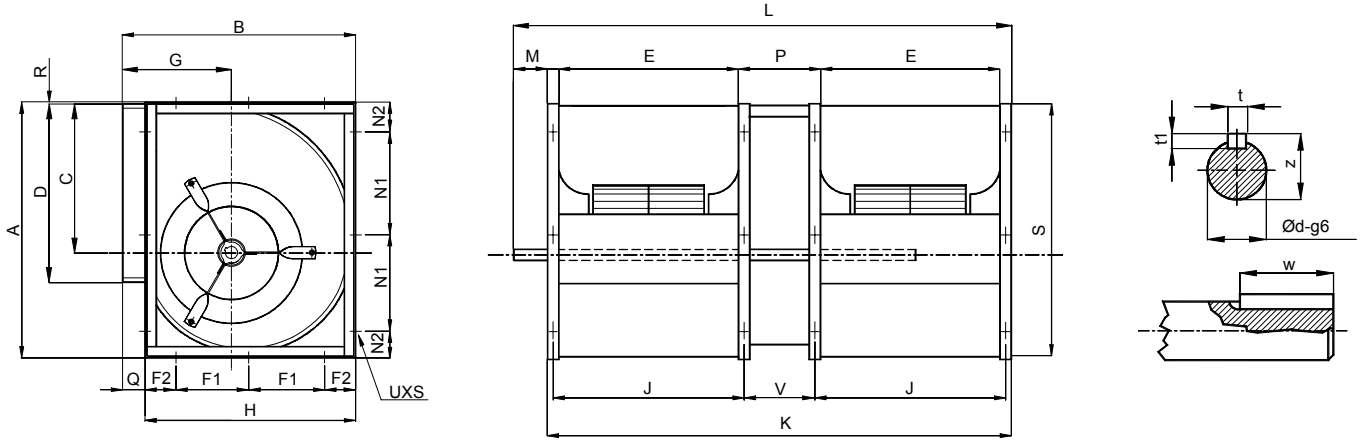
Model	A	B	C	D	E	F1	F2	G	H	J	K	L	M	N1	N2	P	R	t	t1	w	z	Ød	UxS
15-15	621	575	342	404	471	224.5	45	264	539	501	527	685	79	265.5	45	36	6	8	7	40	33	30	11x16
18-13	751	690	415	478	430	272	55	314	654	470	506	666	80	320.5	55	36	6	8	7	40	33	30	11x16
18-18	751	690	415	478	557	272	55	314	654	597	633	790	78.5	320.5	55	36	6	8	7	40	33	30	11x16

All Dimensions in mm.



Model	A	B	C	D	E	F	F1	G	J	K	L	P	M	V	h1	h2	h3	t	t1	w	z	Ød	UxS	Max. kW	Max. rpm
7-7	328	312	192	228	259	90	90	152	279	742	782	184	80	164	164	224	164	6	6	60	22.5	20	11x16	2	2600
8-8	364	345	216	256	287	112	112	164	312	838	868	214	80	189	181	245	184	6	6	60	22.5	20	11x16	4	2600
9-7	387	380	216	262	232	135	165	185	257	698	728	184	80	159	178	233	199	6	6	60	22.5	20	11x16	4	2500
	387	380	216	262	232	135	165	185	257	698	745	184	97	159	178	233	199	8	7	60	28	25	11x16	6	2500
9-9	387	380	216	262	298	135	165	185	323	890	920	244	80	219	178	233	199	6	6	60	22.5	20	11x16	4	2100
	387	380	216	262	298	135	165	185	323	890	937	244	97	219	178	233	199	8	7	60	28	25	11x16	6	2100
10-8	443	425	249	289	265	170	170	203	290	794	841	214	97	189	198	287	227	8	7	60	28	25	11x16	6	2500
10-10	443	425	249	289	331	170	170	203	356	976	1006	264	80	239	198	287	227	8	7	60	28	25	11x16	6	2000
	443	425	249	289	331	170	170	203	356	976	1023	264	97	239	198	287	227	8	7	90	33	30	11x16	8.5	2000
12-9	521	491	294	341	309	189	219	230	334	912	942	244	80	219	232	332	266	8	7	60	28	25	11x16	6	2000
	521	491	294	341	309	189	219	230	334	912	959	244	97	219	232	332	266	8	7	90	33	30	11x16	8.5	2000
12-12	521	491	294	341	395	189	219	230	420	1164	1224	324	110	299	232	332	266	8	7	90	33	30	11x16	8.5	1500
15-11	609	569	342	404	373	232.5	262.5	264	398	1090	1170	294	130	269	272	380	309	8	7	90	33	30	11x16	11	2000
15-15	609	569	342	404	471	232.5	262.5	264	496	1376	1456	384	130	359	272	380	309	8	7	90	33	30	11x16	7	1200
	609	569	342	404	471	232.5	262.5	264	496	1376	1461	384	135	359	272	380	309	10	8	90	38	35	11x16	11	1200
18-13	739	684	415	478	430	288	318	314	455	1253	1333	343	130	318	340	457	376	10	8	90	38	35	11x16	10	1200
	739	684	415	478	430	288	318	314	455	1253	1338	343	135	318	340	457	376	12	8	90	43	40	11x16	15	1200
18-18	739	684	415	478	557	288	318	314	582	1622	1702	458	130	433	340	457	376	10	8	90	38	35	11x16	10	1100
	739	684	415	478	557	288	318	314	582	1622	1707	458	135	433	340	457	376	12	8	90	43	40	11x16	15	1100

All Dimensions in mm.



Model	A	B	C	D	E	F1	F2	G	H	J	K	L	M	N1	N2	P	Q	R	V	t	t1	w	z	Ød	UxS	Max. kW	Max. rpm
7-7	336	323	192	228	259	90	57	152	294	279	742	812	70	90	78	184	29	6	164	6	6	60	22.5	20	9x12	2	2600
8-8	370	343	215	256	287	112	41	164	306	312	838	908	70	112	73	214	37	6	189	6	6	60	22.5	20	9x12	4	2600
9-7	399	385	216	262	232	137	37.5	185	349	254	688	758	70	162	37.5	184	36	6	162	6	6	60	22.5	20	9x12	4	2500
	399	385	216	262	232	137	37.5	185	349	254	688	765	77	162	37.5	184	36	6	162	8	7	60	28	25	9x12	6	2500
9-9	399	385	216	262	298	137	37.5	185	349	320	880	950	70	162	37.5	244	36	6	222	6	6	60	22.5	20	9x12	4	2100
	399	385	216	262	298	137	37.5	185	349	320	880	957	77	162	37.5	244	36	6	222	8	7	60	28	25	9x12	6	2100
10-8	455	431	249	289	265	165	32.5	203	395	287	784	861	77	195	32.5	214	36	6	192	8	7	60	28	25	9x12	6	2500
10-10	455	431	249	289	331	165	32.5	203	395	353	966	1036	70	195	32.5	264	36	6	242	8	7	60	28	25	9x12	6	2000
	455	431	249	289	331	165	32.5	203	395	353	966	1048	82	195	32.5	264	36	6	242	8	7	90	33	30	9x12	8.5	2000
12-9	533	497	294	341	309	185.5	45	230	461	339	918	988	70	221.5	45	244	36	6	214	8	7	60	28	25	11x16	6	2000
	533	497	294	341	309	185.5	45	230	461	339	918	1000	82	221.5	45	244	36	6	214	8	7	90	33	30	11x16	8.5	2000
12-12	533	497	294	341	395	185.5	45	230	461	425	1170	1270	100	221.5	45	324	36	6	294	8	7	90	33	30	11x16	8.5	1500
15-11	621	575	342	404	373	224.5	45	264	539	403	1096	1196	100	265.5	45	294	36	6	264	8	7	90	33	30	11x16	11	2000
15-15	621	575	342	404	471	224.5	45	264	539	501	1382	1482	100	265.5	45	384	36	6	354	8	7	90	33	30	11x16	7	1200
	621	575	342	404	471	224.5	45	264	539	501	1382	1497	115	265.5	45	384	36	6	354	10	8	90	38	35	11x16	11	1200
18-13	751	690	415	478	430	272	55	314	654	470	1279	1379	100	320.5	55	343	36	6	303	10	8	90	38	35	11x16	10	1200
	751	690	415	478	430	272	55	314	654	470	1279	1394	115	320.5	55	343	36	6	303	12	8	90	43	40	11x16	15	1200
18-18	751	690	415	478	557	272	55	314	654	597	1648	1748	100	320.5	55	458	36	6	418	10	8	90	38	35	11x16	10	1100
	751	690	415	478	557	272	55	314	654	597	1648	1763	115	320.5	55	458	36	6	418	12	8	90	43	40	11x16	15	1100

All Dimensions in mm.