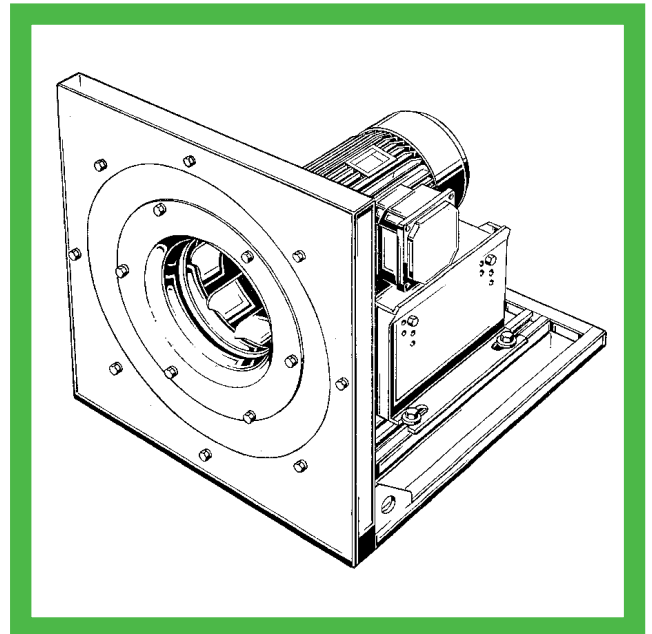
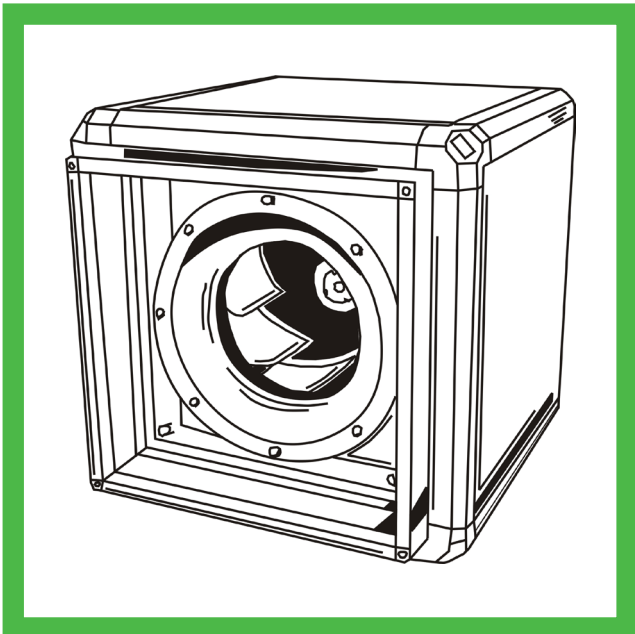
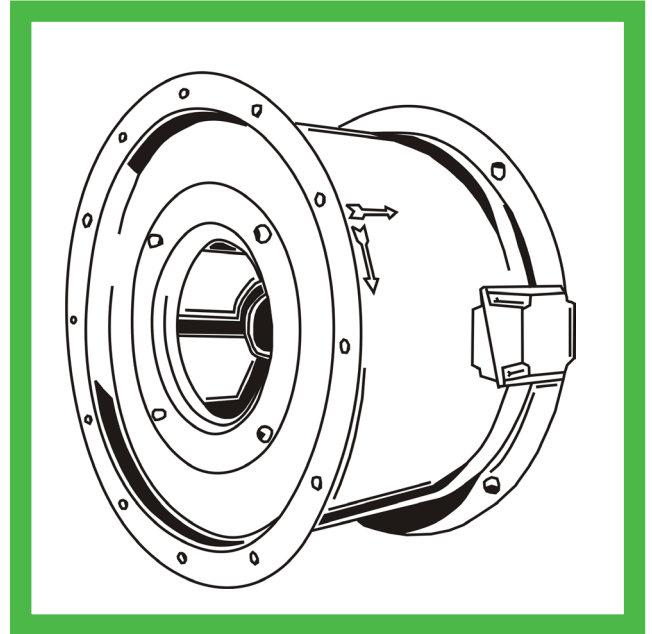


# In Line Centrifugal Plug Fan



## R13.2

Taizhou Wolter Ventilator co., Ltd. certifies that the series PF 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.



# Symbols and technical formula symbols



Symbol	Meaning	Symbol	Meaning	Symbol	Meaning
	5-step transformer control		Speed control switch		Wiring diagram
	Continuously adjustable transformer control		Off-Switch		flame proof
	Continuously adjustable electronic control		Weight		Dimensions
	Motor protection switch		Protection class		Accessories

Symbol	Designation	Unit
A	Cross-section	m <sup>2</sup>
C <sub>2</sub>	Flow speed	m/s
C <sub>400V</sub>	Capacitor	μF
D <sub>2</sub>	Impeller diameter	m
d	Pipe diameter	m
d <sub>g</sub>	Equivalent diameter	m
g	Gravitational speed acceleration	m/s <sup>2</sup>
I <sub>N</sub>	Rated current	A
I <sub>A</sub> / I <sub>N</sub>	Ratio of starting current to rated current	
Δ I	Current increase in component voltage area	%
l	Pipe or channel length	m
L <sub>PA</sub>	Sound pressure level A-weighted	dB(A)
L <sub>WA</sub>	Sound power level A-weighted	dB(A)
L <sub>WA2</sub>	Sound power level to surrounding	dB(A)
L <sub>WA3</sub>	Inlet sound power level induct	dB(A)
L <sub>WA4</sub>	Outlet sound power level induct	dB(A)
L <sub>WA5</sub>	Inlet sound power level unducted	dB(A)
L <sub>WA6</sub>	Outlet sound power level unducted	dB(A)
n	Speed	1/min (bzw. 1/s)
P <sub>1</sub>	motor power consumption	kW (bzw. W)
p <sub>st</sub> (p <sub>fa</sub> )	Static pressure	Pa
Δ p <sub>st</sub>	Differential static pressure	Pa
Δ p <sub>fa min</sub>	min. required conter pressure	Pa
p <sub>d</sub>	Dynamic pressure	Pa
p <sub>d2</sub>	Dynamic pressure at fan outlet	Pa
Δ p <sub>d</sub>	Differential dynamic pressure	Pa
p <sub>t</sub>	Total pressure	Pa
Δ p <sub>t</sub>	Difference of total pressures	Pa
T	Temperature in Kelvin	K
t	Temperature in Celsius	°C
t <sub>R</sub>	max. permissable medium temperature	°C
u <sub>2</sub>	Circumferential speed of the impeller (outside)	m/s
Ṁ	Volume flow	m <sup>3</sup> /h (bzw. m <sup>3</sup> /s)
ρ	Density of medium	kg/m <sup>3</sup>
η	Efficiency	-
φ	Volume number	-
ψ	Pressure number	-
ζ	Coefficient of drag	-
λR	Coefficient of friction of channel or pipe	-

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<b>Inlet Cone</b>	<b>Page 2</b>
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<b>Assembly</b>	<b>Page 2</b>
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<b>Dimensions</b>	<b>Page 3</b>
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Subject to change without prior notice.

## Impeller

The centrifugal plug fan impellers are made of aluminum material with backward curve blades. The impeller is aerodynamically designed for high efficiency and low power consumption. The maximum tip speed of the impeller is 70m/s. The impellers are optimized for stable performance and low noise and balanced according to G2.5 to DIN ISO 1940/1. The impeller has a GG-hub with taper-lock bush. The blades are made of powder coated steel or GI sheet steel.

## Inlet Cone

The inlet cone is made of powder coated or GI sheet steel. The inlet cone allows a uniform and stable airflow into the impeller assuring cataloged performance.

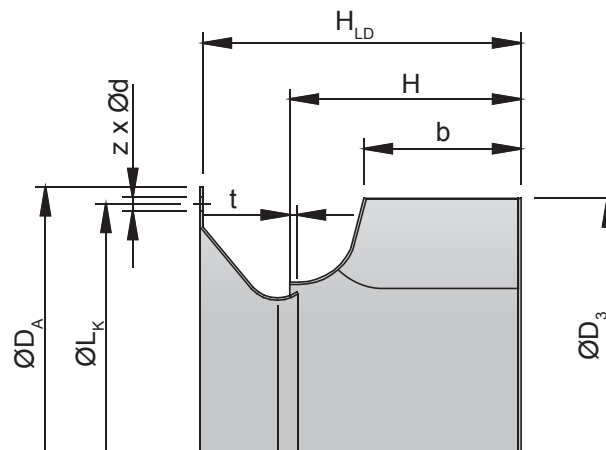
## Overlap

The inlet cone is made of powder coated or GI sheet steel. The inlet cone allows a uniform and stable airflow into the impeller assuring cataloged performance.

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

## Assembly

The complete assembly consists of the motor, impeller and inlet cone. The mounting base is manufactured from galvanized steel sheet.



Size	b [mm]	H [mm]	ØD <sub>A</sub> [mm]	ØD <sub>3</sub> [mm]	ØL <sub>k</sub> [mm]	t [mm]	z x Ød [mm]	H <sub>LD</sub> [mm]	n <sub>max</sub> [1/min]
250	80	118	280	257	259	5	6 x 7	158	4500
280	89	133	307	289	286	5,5	6 x 7	179,5	4300
315	100	146	348	324	320	5	6 x 7	200,5	4000
355	112	162	382	365	356	6	6 x 9	223,5	3500
400	126	185	422	410	395	7	8 x 9	253	2900
450	142	210	464	460	438	8	8 x 12	282	2900
500	159	235	515	517	487	8	8 x 12	317	2500
560	178	262	564	578	541	9	8 x 12	357	2200
630	199	293	638	648	605	10	8 x 12	401,5	1900
710	224	328	710	728	674	12	8 x 14	450	1600
800	252	368	785	818	751	14	8 x 14	506,5	1400
900	282	413	875	917	837	16	8 x 14	563,5	1250
1000	316	462	970	1012	934	18	8 x 14	629	960

## Delivery Options

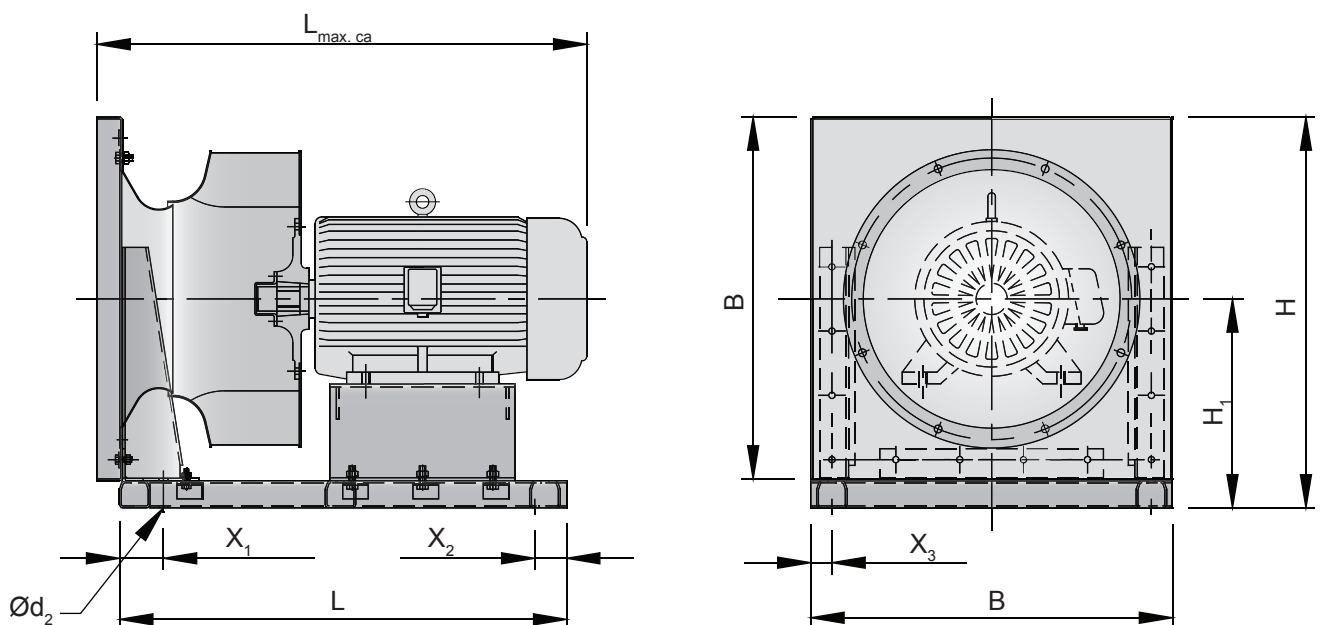
There are 3 different options:

- a) Impeller with inlet cone
- b) Impeller with inlet cone + Mounting assembly
- c) Impeller with inlet cone + Mounting assembly + Motor

## Accessories

The following accessories are available:

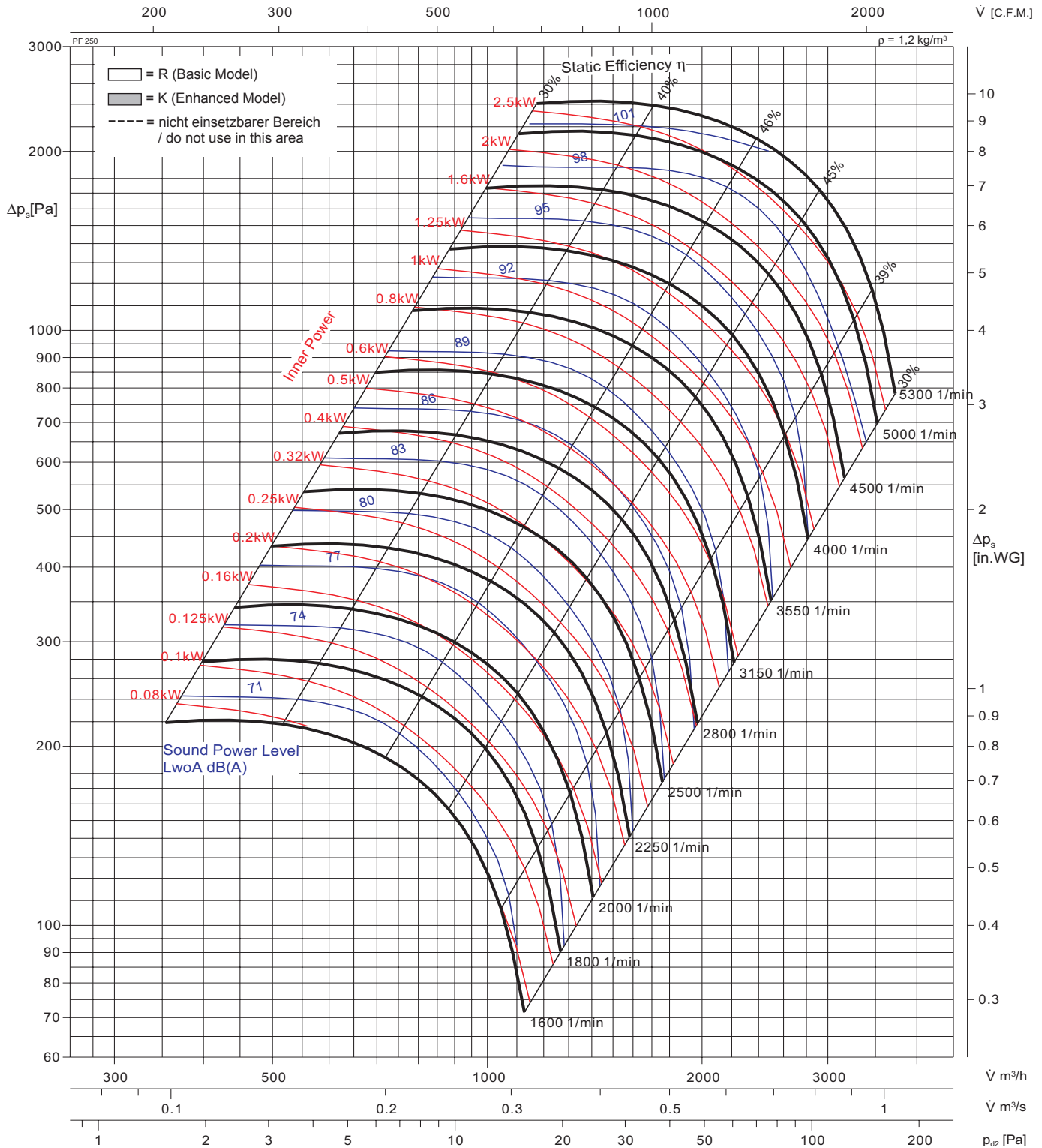
- 1) Elastic Flexible connectors
- 2) Damper
- 3) Adjustable sliding (mechanical type) for air volume regulation and control



Size	B	H	H1	L	L <sub>max. ca</sub>	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	Ød <sub>2</sub>
PF	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
250	376	414	226	475	610	60	40	24,5	14
280	400	438	238	475	610	60	40	24,5	14
315	430	468	253	520	660	60	40	24,5	14
355	462	500	269	533	680	60	40	25	14
400	502	540	289	586	740	60	40	25	14
450	566	608	325	700	780	69	50	33	14
500	612	654	348	760	800	80	50	31	14
560	688	744	400	870	950	100	50	38	18
630	768	824	440	920	990	100	50	39	18
710	850	935	510	1000	1090	100	50	50	18
800	940	1020	550	1100	1220	100	100	50	20
900	1044	1154	632	1200	1291	100	100	60	20
1000	1140	1250	680	1320	1486	100	100	60	20

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.

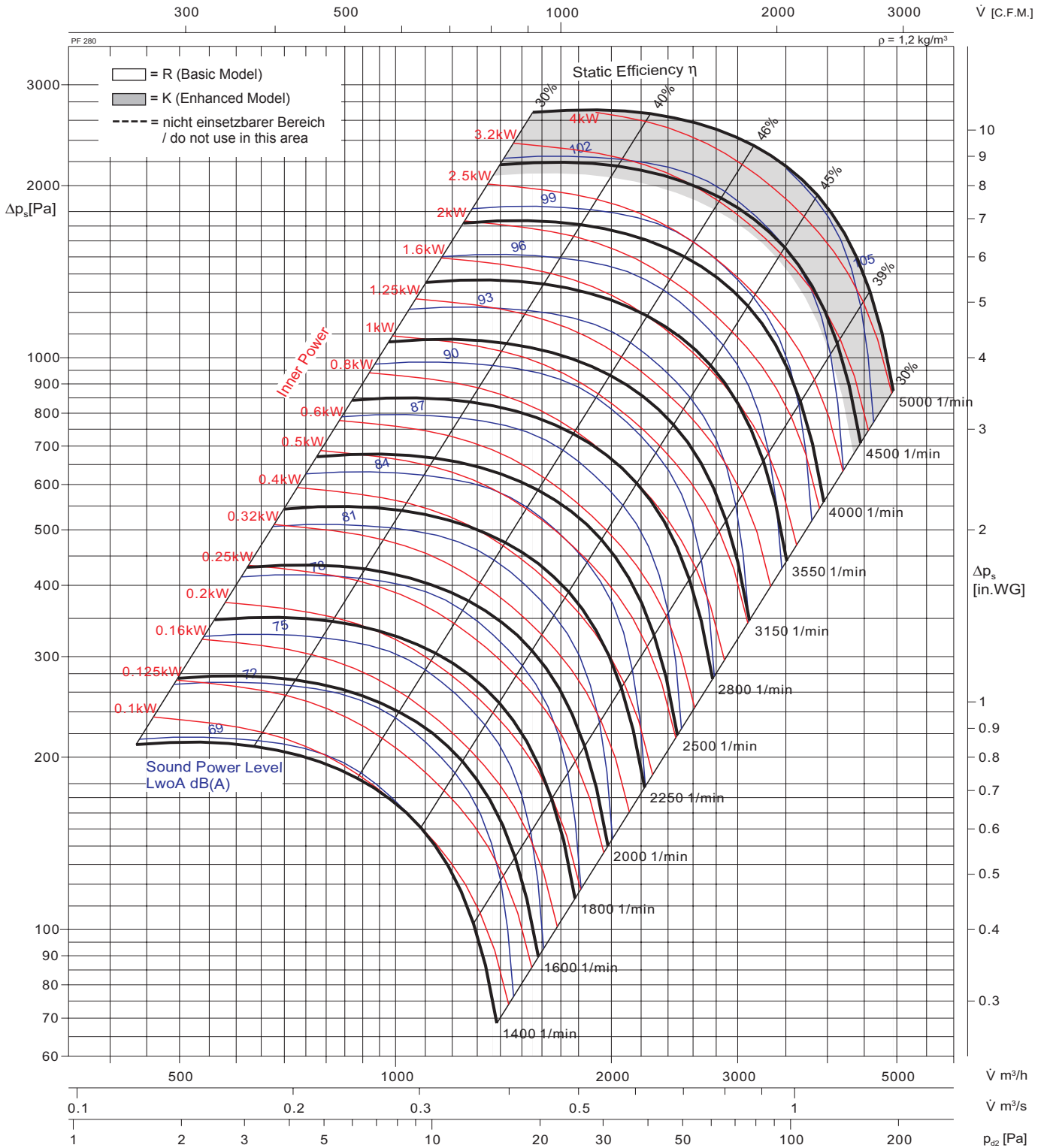


Typ	Art.Nr.	█ [kg]	Typ	Art.Nr.	█ [kg]	Wheel diameter	D =	250	mm
PF 250	132250	-				Number of blades	z =	8	
						Outlet Area	A =	0,0613	m²
						Impeller Weight	G =	-	kg
						Speed limit	n <sub>max</sub> =	4500	1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
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for outlet LwoA sound power levels for installation Type A: free inlet, free outlet.



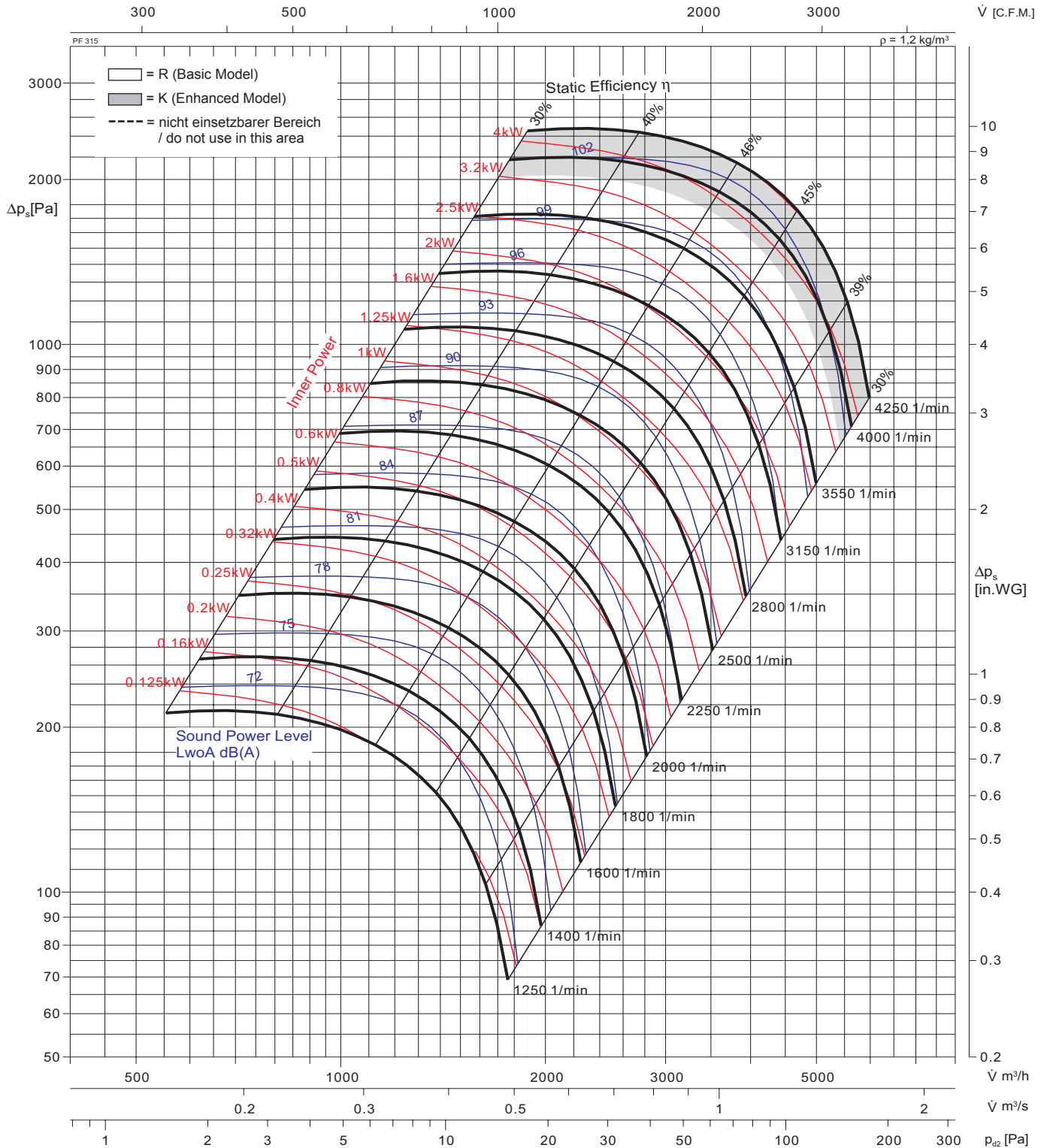
Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D =	mm
PF 280	132280	-				Number of blades	z =	8
						Outlet Area	A =	0,0765 m²
						Impeller Weight	G =	- kg
						Speed limit	n <sub>max</sub> =	4300 1/min

Explanation of symbols see page II



Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
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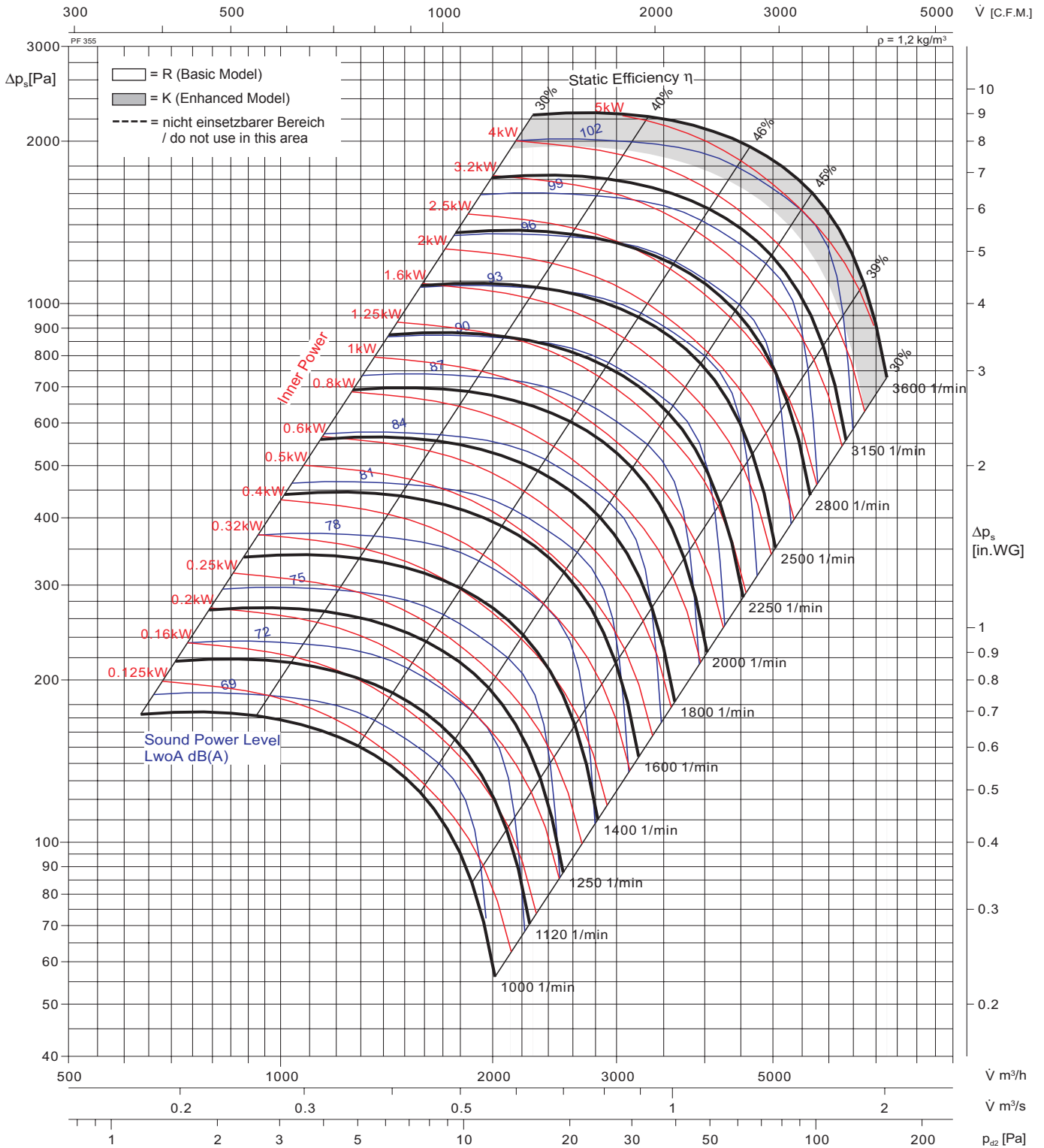
Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D = 315 mm
PF 315	132315	-				Number of blades	z = 8
						Outlet Area	A = 0,0970 m²
						Impeller Weight	G = - kg
						Speed limit	n <sub>max</sub> = 4000 1/min

Explanation of symbols see page II



Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.

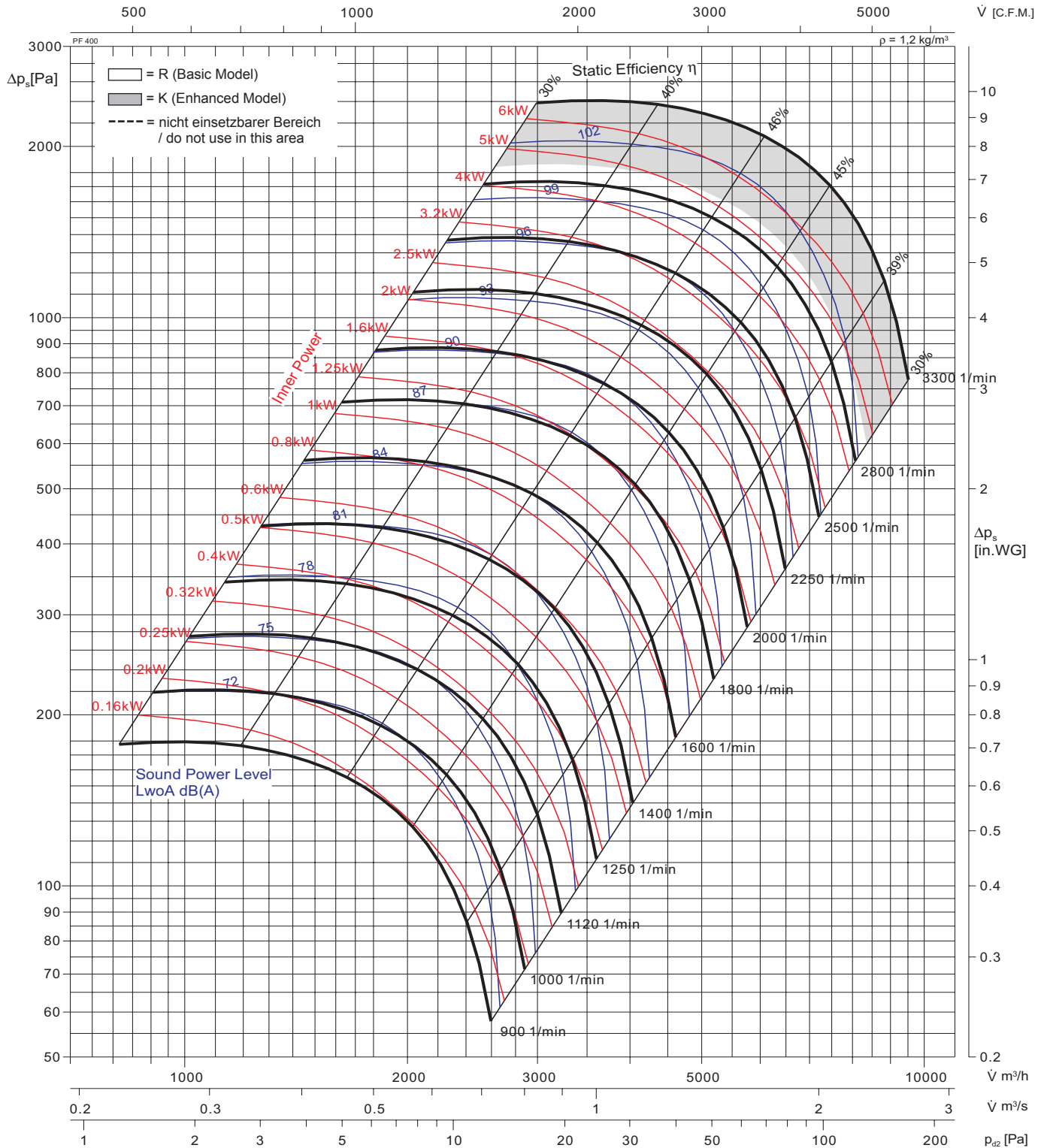


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter <b>D</b> = 355 mm	
PF 355	132355	-				Number of blades <b>z</b> = 8	
						Outlet Area <b>A</b> = 0,1238 m <sup>2</sup>	
						Impeller Weight <b>G</b> = - kg	
						Speed limit <b>n<sub>max</sub></b> = 3500 1/min	

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.



Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D = 400 mm
PF 400	132400	-				Number of blades	z = 8
						Outlet Area	A = 0,1571 m²
						Impeller Weight	G = - kg
						Speed limit	n <sub>max</sub> = 2900 1/min

Explanation of symbols see page II



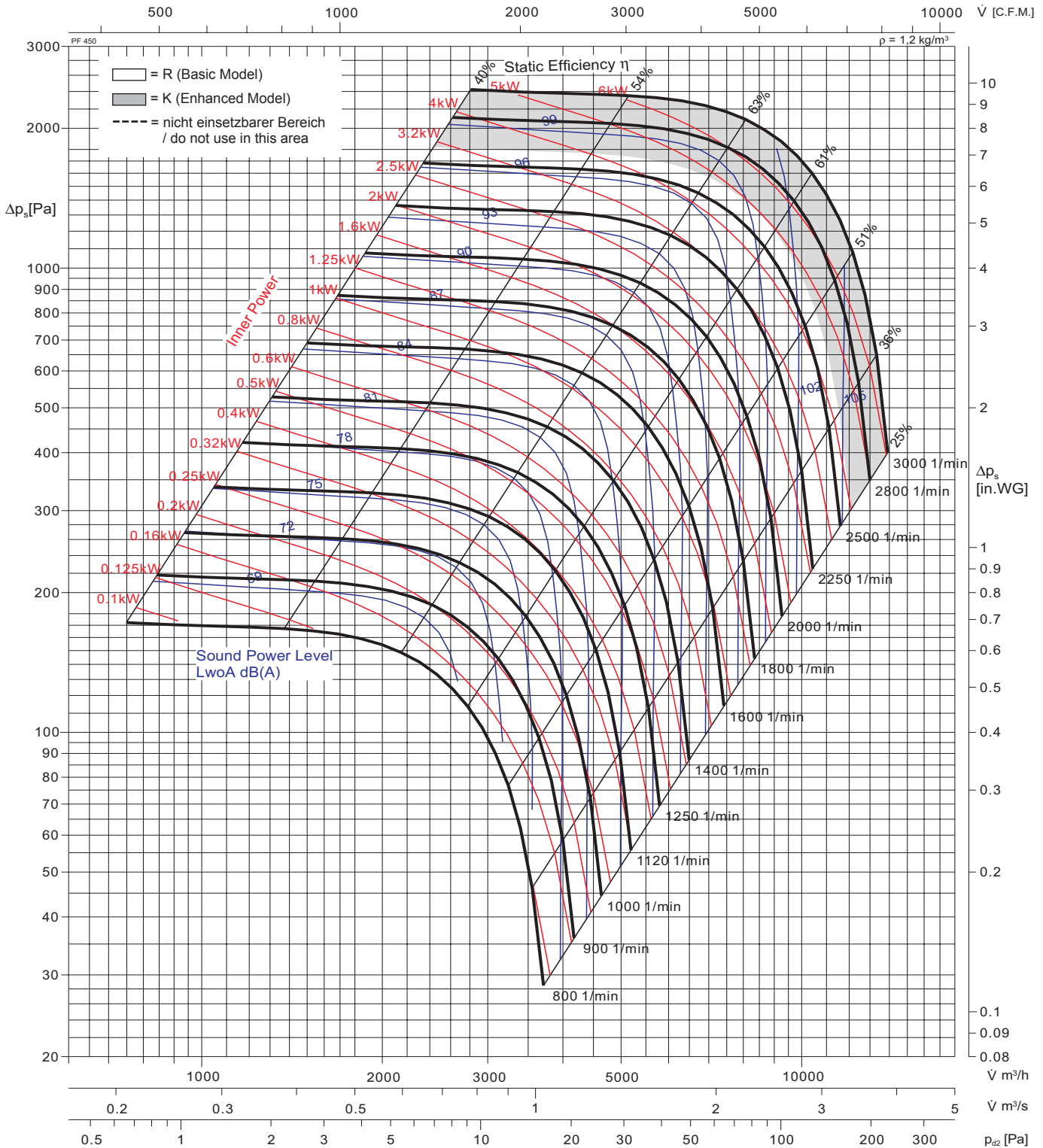
# Performance Curve

## PF 450



Fan test laboratory AMCA 210/99  
 Fig.12, 120000 cmh Test Chamber.  
 Performance certified is for installation  
 type A-Free inlet, Free outlet.

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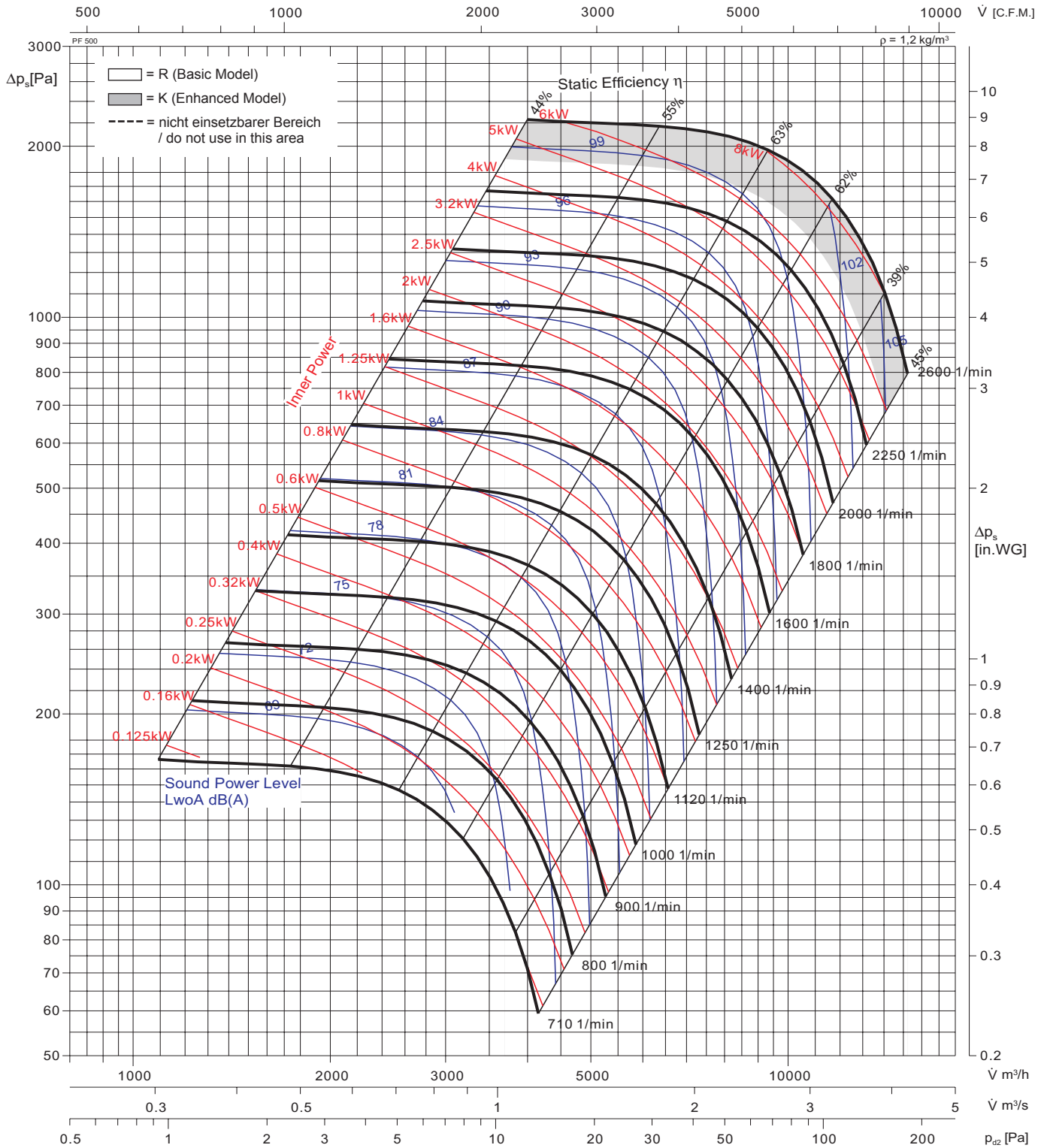


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D = 450 mm
PF 450	132450	-				Number of blades	z = 8
						Outlet Area	A = 0,1986 m <sup>2</sup>
						Impeller Weight	G = - kg
						Speed limit	n <sub>max</sub> = 2900 1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwA sound power levels for installation Type A: free inlet, free outlet.

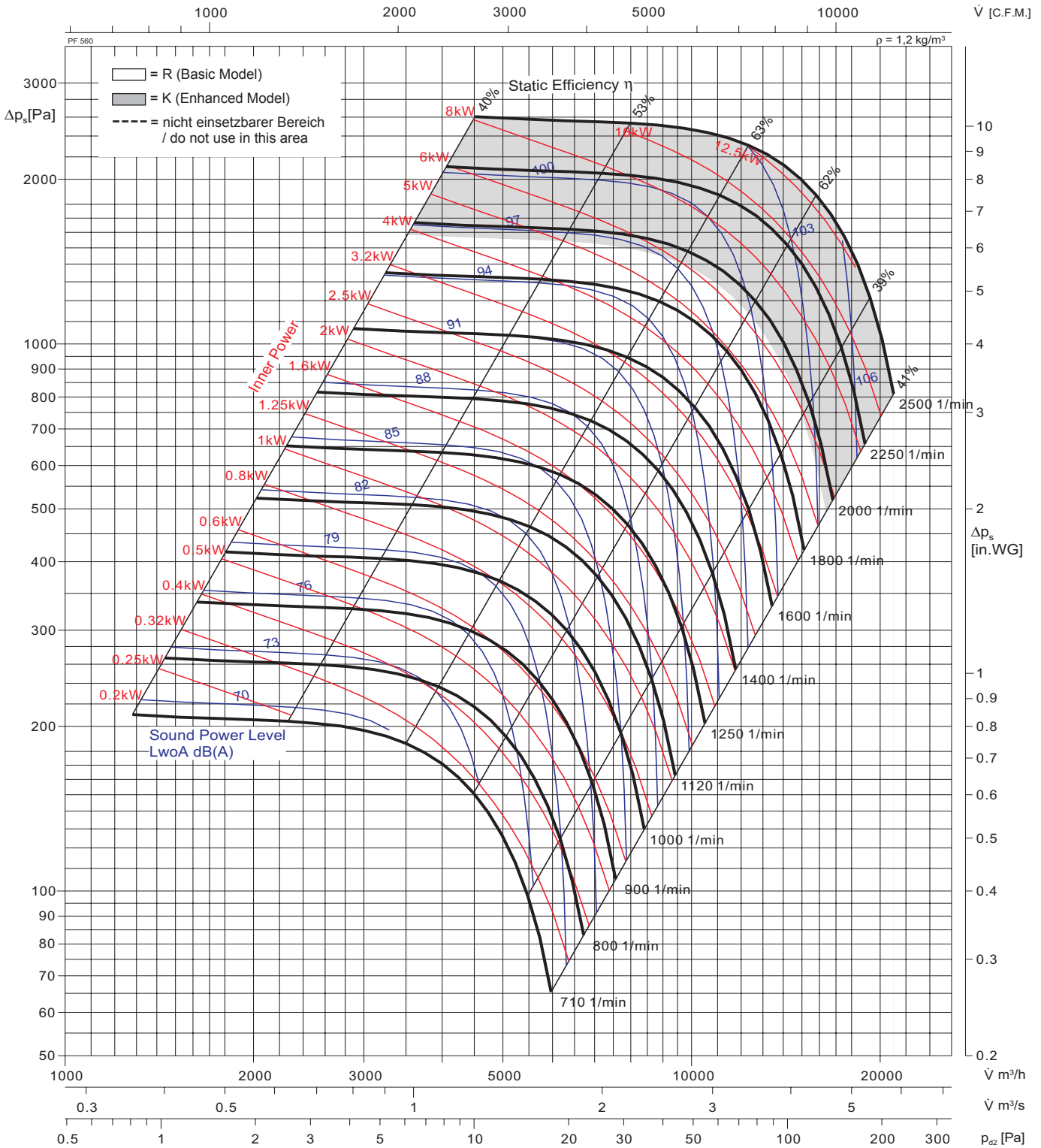


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D = 500 mm
PF 500	162605	-				Number of blades	z = 8
						Outlet Area	A = 0,2435 m <sup>2</sup>
						Impeller Weight	G = - kg
						Speed limit	n <sub>max</sub> = 2500 1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

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shown have been calculated per AMCA International Standard 301. Values shown are  
for outlet LwoA sound power levels for installation Type A: free inlet, free outlet.



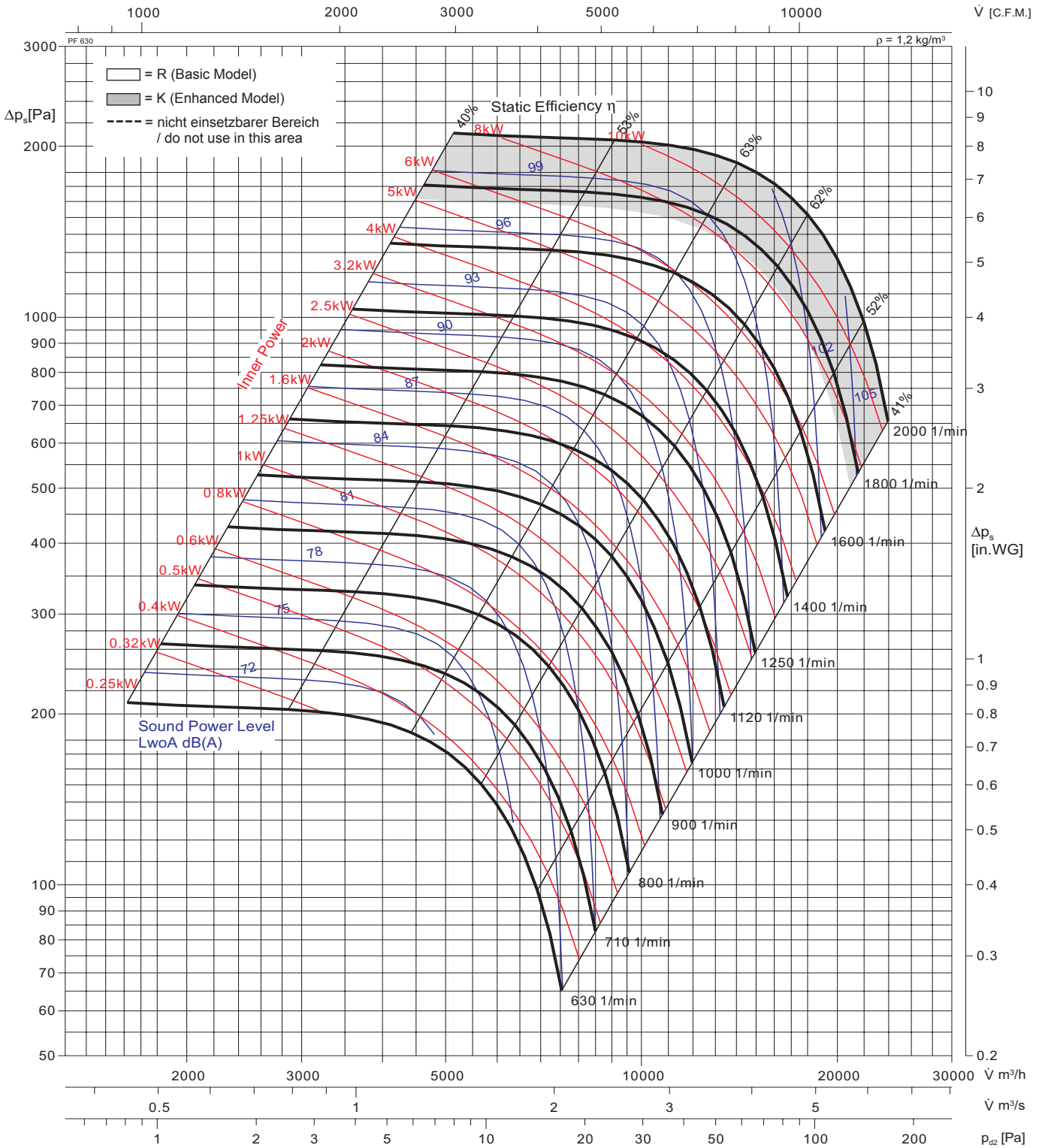
Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter <b>D</b> = 560 mm	
PF 560	132560	-				Number of blades <b>z</b> = 8	
						Outlet Area <b>A</b> = 0,3061 m <sup>2</sup>	
						Impeller Weight <b>G</b> = - kg	
						Speed limit <b>n<sub>max</sub></b> = 2200 1/min	

Explanation of symbols see page II



Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.

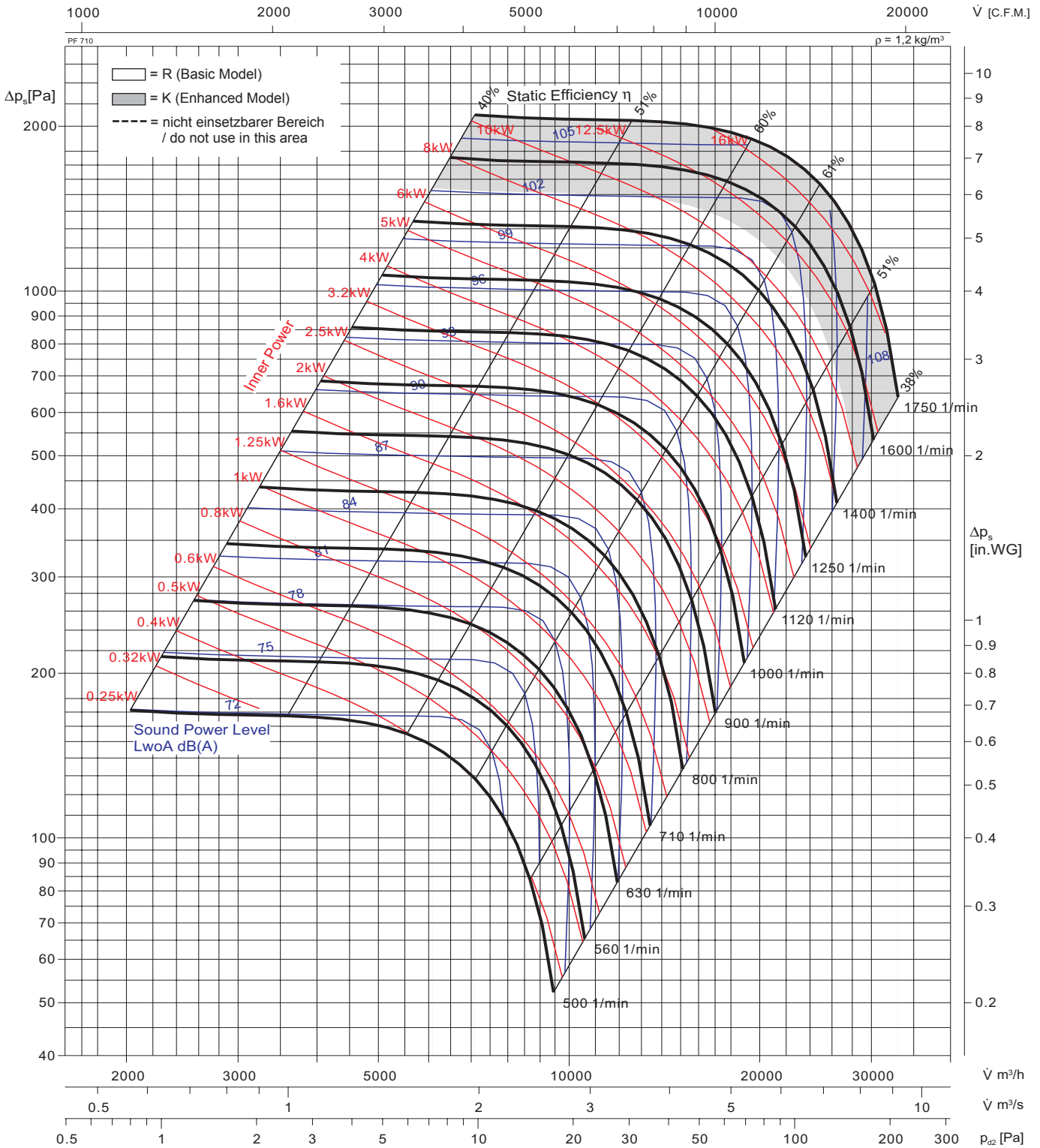


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D = 630 mm
PF 630	132630	-				Number of blades	z = 8
						Outlet Area	A = 0,3859 m <sup>2</sup>
						Impeller Weight	G = - kg
						Speed limit	n <sub>max</sub> = 1900 1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, Performance ratings do not  
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shown have been calculated per AMCA International Standard 301. Values shown are  
for outlet LwoA sound power levels for installation Type A: free inlet, free outlet.

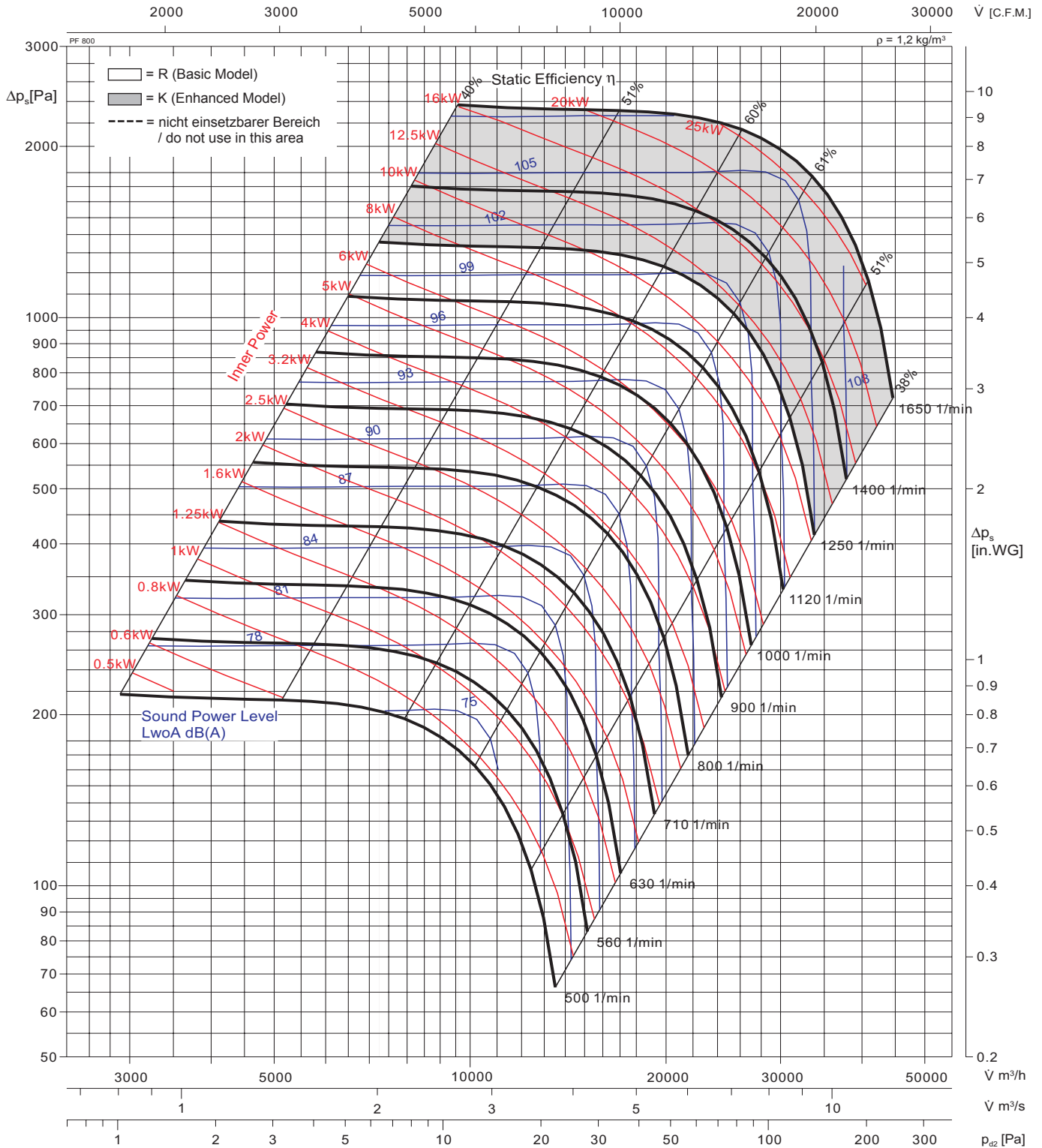


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter D = 710 mm	
PF 710	132710	-				Number of blades z = 8	
						Outlet Area A = 0,4885 m²	
						Impeller Weight G = - kg	
						Speed limit n <sub>max</sub> = 1600 1/min	
						Explanation of symbols see page II	



Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.



Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]
PF 800	132800	-			

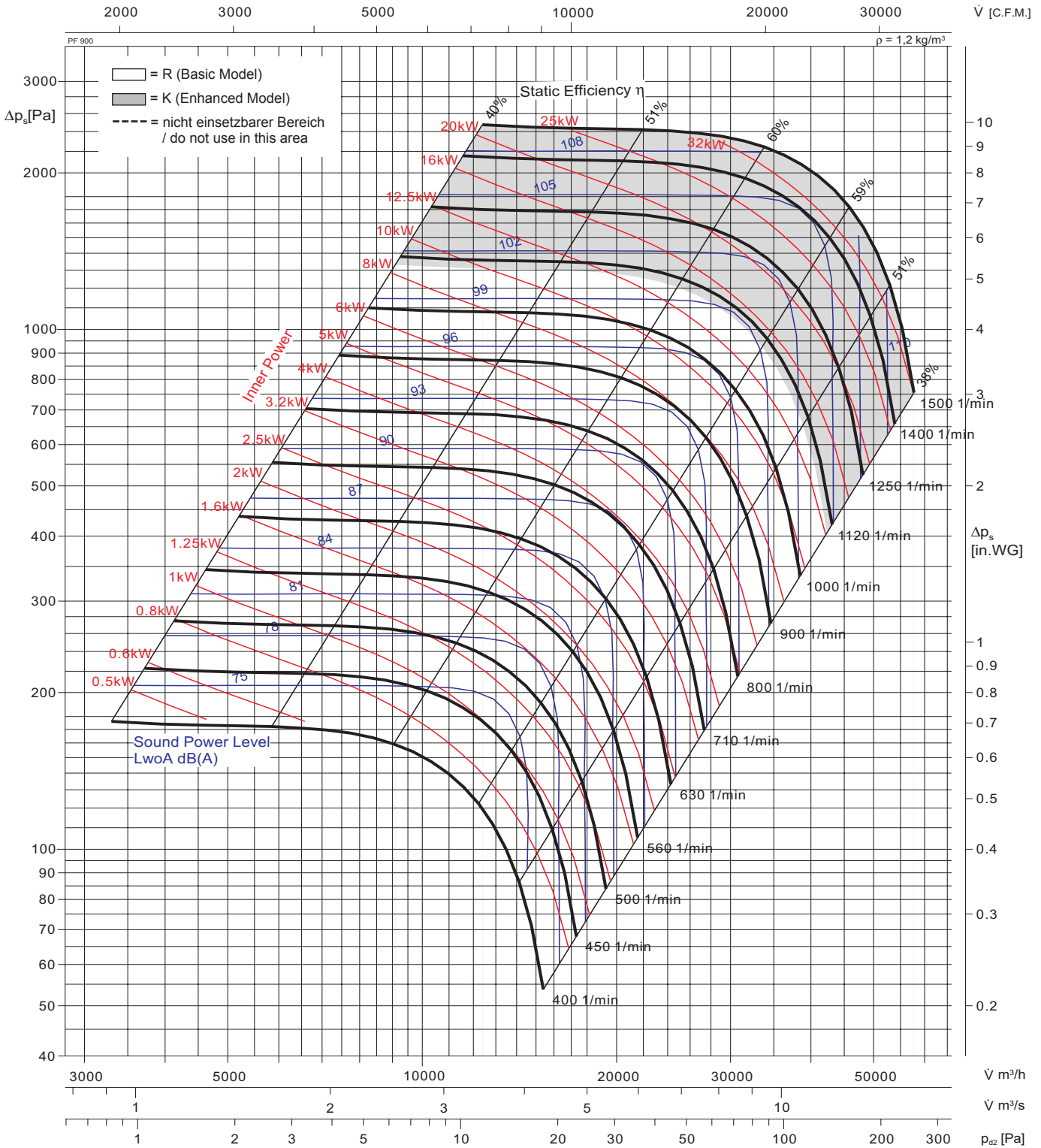
  

Wheel diameter	<b>D =</b> 800 mm
Number of blades	<b>z =</b> 8
Outlet Area	<b>A =</b> 0,6183 m <sup>2</sup>
Impeller Weight	<b>G =</b> - kg
Speed limit	<b>n<sub>max</sub> =</b> 1400 1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

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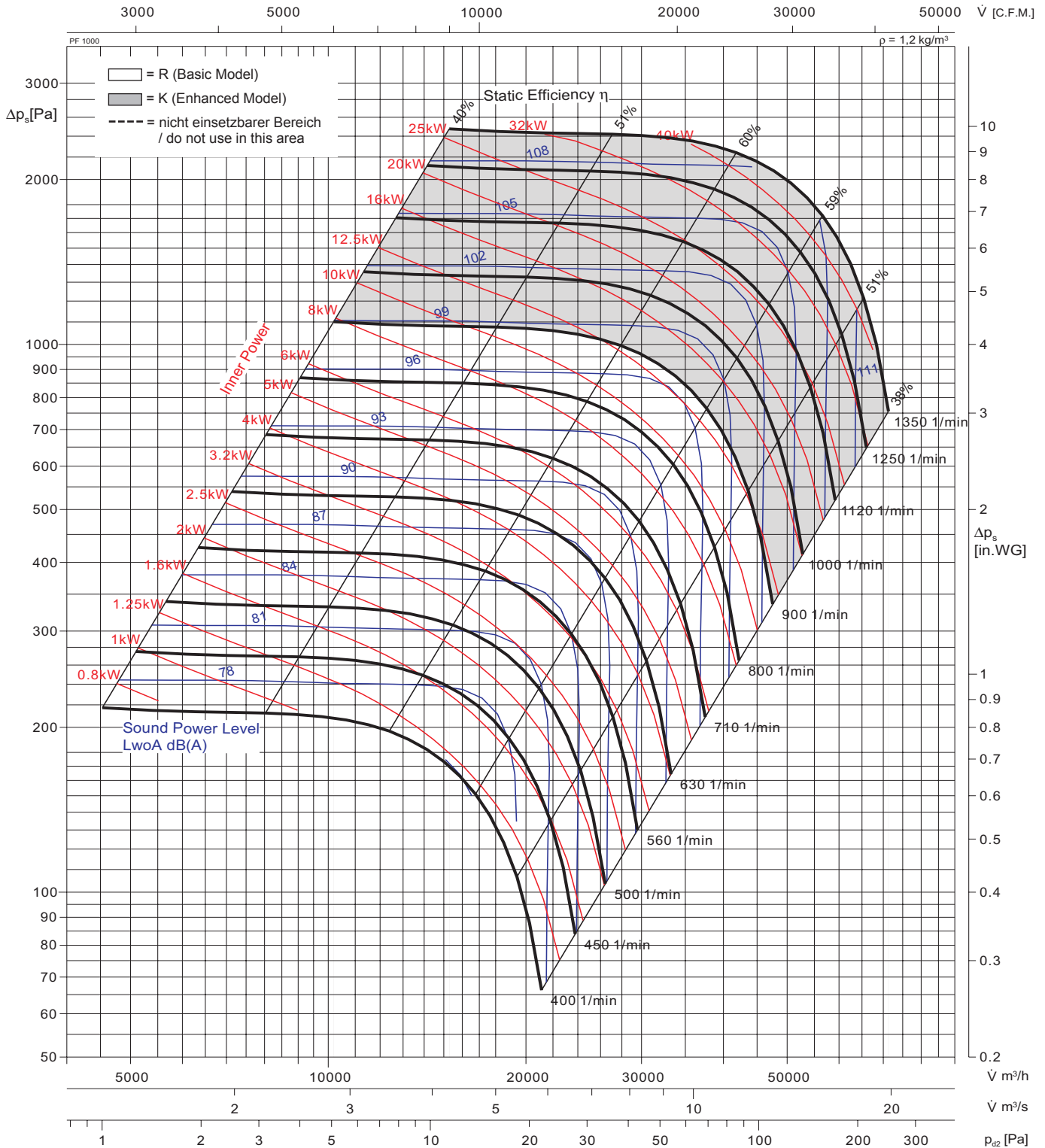


Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]	Wheel diameter	D =	900	mm
PF 900	132900	-				Number of blades	z =	8	
						Outlet Area	A =	0,7804	m²
						Impeller Weight	G =	-	kg
						Speed limit	$n_{max}$ =	1250	1/min

Explanation of symbols see page II

Fan test laboratory AMCA 210/99  
Fig.12, 120000 cmh Test Chamber.  
Performance certified is for installation  
type A-Free inlet, Free outlet.

Power rating (kW) does not include transmission losses, 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 outlet LwoA sound power levels for installation Type A: free inlet, free outlet.



Typ	Art.Nr.	■ [kg]	Typ	Art.Nr.	■ [kg]
PF 1000	132100	-			

Wheel diameter	<b>D =</b> 1000 mm
Number of blades	<b>z =</b> 8
Outlet Area	<b>A =</b> 0,9739 m <sup>2</sup>
Impeller Weight	<b>G =</b> - kg
Speed limit	<b>n<sub>max</sub> =</b> 960 1/min

Explanation of symbols see page II

Reference: R13.2, V.2011/November, Printed on 24 November, 2011



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