

FDE Centrifugal Fan Series

Model Nos.: FDE





The Seacon centrifugal fan are the result of long experience in the development and manufacturing of ventilation systems. The partnership between highly motivated Seacon employees and world known component suppliers guarantees quality products on the highest technical level and precise reliability.

The Seacon advantage:

- Easy electrical connection
- Easy installation
- Impellers and casings made of galvanized steel or coated steel
- High efficiency & economic
- Can also be operated in polluted air without problems
- Low noise & quiet running
- Application flexibility

The Seacon quality:

The Seacon belt driven centrifugal fans are driven by high efficiency IEC motor class IP 55, insulation class be F or H Motor and impeller are statically & dynamically balanced in two levels according to VDI 2060.

Ball or Roller bearing can be easily replaced. Lti uses the bearing lift of L10 type. The casing and impeller can be make of stainless steel or be coated with epoxy paint upon request.

The Seacon ranges:

Standard execution complete with outlet lange and mounting feet, baseframe, belt and belt guard.

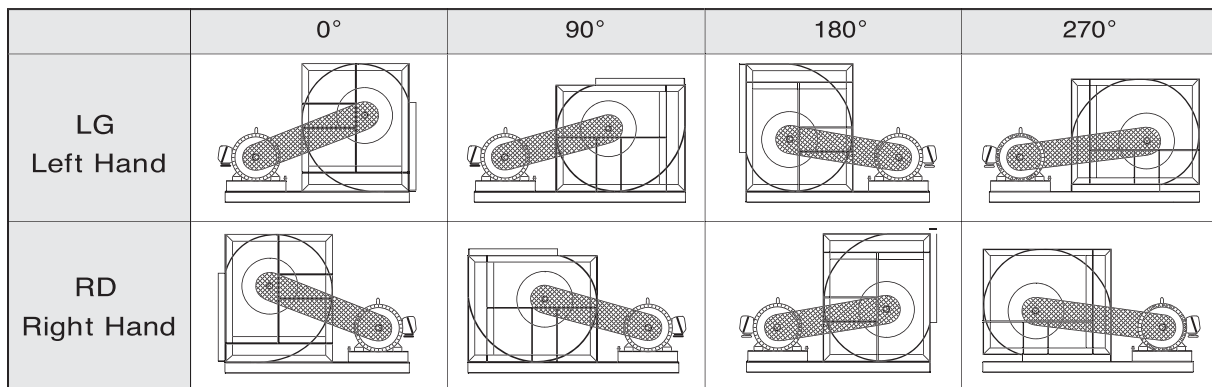
Type of Product

1. Direction of Rotation

Ventilator can be divided into two direction of rotations, left-hand rotation(LG) and right hand rotation (RD); Viewing from end of motor outlet line, if the impeller rotates clockwise, it is called right hand ventilator; If the impeller rotates anti-clockwise, it is called left hand ventilator.

2. Direction of Air Outlet

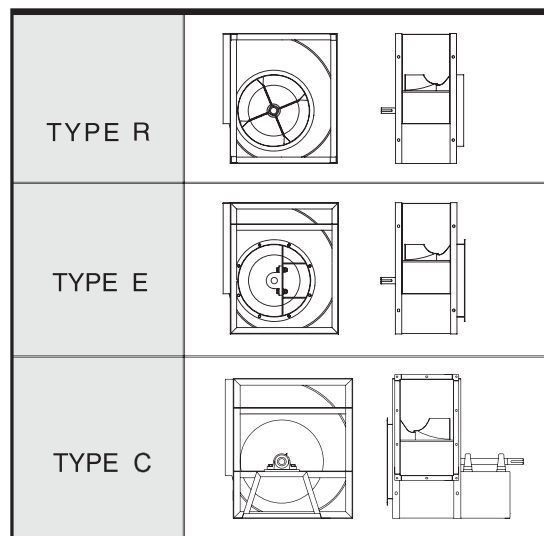
According to Fig 1 , Ventilator can be made in four air-outlet directions: 0°, 90°, 180°, and 270°.



(Fig1)

3. Type of structure

According to Fig 2, Ventilators can be divided into Category R, Category E and Category C.



(Fig2)

Construction of Product

Ventilators are mainly consisted of scroll, impeller, frame bearing, Shaft, outlet flange.

1). Scroll

The scroll is made of hot galvanizing steel sheet. Its side plate has an outline complying with aerodynamics. The scroll plat fixed to the side plates by means of "electric spot welding".

2). Impeller

For wards curved radial impellers the impeller is made of high grade hot galvanizing steel sheet and is designed to a special configuration according to aerodynamics to make the efficiency highest and the noise lowest. The impeller is fixed on the middle disk plate and on the end ring with riveting grippers. The impeller has enough rigidity during continuous rotation with maximum power. Backwards curved radial impellers are made of high grade cold-rolled sheet The veneer blades which are designed in three-dimensional theory are welded between middle tray and endmost Before leaving factory, all impellers have passed all-round dynamic balance test according to the Company Standard which is higher level than National Standard.

3). Frame

The frames for type R ventilators are made of galvanized steel angle iron bars. The cutting and bending of the frame parts, as well as the TOX connections, are formed with the use of molds to assure their high accuracy and the rigidity of the frames; The frames for type E, type C ventilators are welded by angle steel and flat, steel and they are finished with polyesters coatings in order to assure sufficient rigidity and intensity.

4). Bearings

Ball bearings are used in all of the Lti centrifugal ventilators. They are high quality bearings and they are selected to minimize the ventilator noise levels. The bearings are pre-lubricated, sealed, and selfcentering. For type R ventilators, the bearings are mounted using vibration resistant washers. For type E, type C ventilators, self-aligning pillow block ball bearings are used, Type k ventilators bearings are supplied with lubrication fittings.

5. Shaft

The shafts are made of 40 Cr or C45 carbon steel bars. The shafts are rough machined and then stress relieved before final machining. The shaft diameters are machined to very accurate tolerance levels and they are fully checked to assure precision fits They are coated after assembly in order to provide corrosion resistance. Stainless steel shaft will br use in spark protection application.

6. Inlet and Outlet Flange

The inlet flange are made of high grade cold-rolled sheet and painted with polyester coatings The outlet flange is made of galvanized steel The connections of the flange components to each other and to the scroll are made using a TOX non-welding process This maintains a good flange appearance while also providing sufficient strength and rigidity.

Performance of Ventilator

1. The ventilator performance in this catalogue denotes the performance in standard conditions. It denotes air inlet conditions of ventilator as follows:

Air inlet pressure $P_a = 101.325\text{KPa}$

Air temperature $t = 20\text{ }^\circ\text{C}$

Inlet gas density $\rho = 1.2\text{Kg/m}^3$

If the practical air inlet conditions of customer or the speed of the operating ventilator changes, the conversion can be carried out according to the following expression:

$$\frac{Q_0^*}{Q_0} = \frac{n^*}{n}$$

$$\frac{P_0^*}{P_0} = \frac{n^{*2}}{n^2} \cdot \frac{\rho^*}{\rho} \quad \frac{P_0^*}{P_0} = \frac{n^{*2}}{n^2} \cdot \frac{P_a^*}{P_a} \cdot \frac{273+t}{273+t^*}$$

$$\frac{N_{in_0}^*}{N_{in_0}} = \frac{n^{*3}}{n^3} \cdot \frac{\rho^*}{\rho} \quad \frac{N_{in_0}^*}{N_{in_0}} = \frac{n^{*3}}{n^3} \cdot \frac{P_a^*}{P_a} \cdot \frac{273+t}{273+t^*}$$

where:

Volume Q (m^3/h), total pressure P_0 (Pa), speed n (r/min) can be obtained from Performance chart.

Asterisk (*) on the upper right corner denotes the performance parameter needed by the customers in practical gas inlet conditions.

The difference in relative humidity is omitted from the above-mentioned formulas.

2. The power (N_{in_0}) on the performance chart the internal power of the ventilator.

Shaft power of ventilator: $N_s = N_{in_0} / \eta_m$

where: N_s -Shaft power of ventilator

η_m -Mechanical efficiency of ventilator

The value of mechanical efficiency of ventilator can be obtained from Table 1.

Way of ventilator driving	η_m
electric motor directly driven	1
Coupling directly driven	0.98
V-belt driven	0.95

(Table1)

(2) The rated power of the drive motor equals the total required shaft input power multiplied by the safety factor:

$$N = N_s \cdot K$$

where: N = rated power of drive motor

K = required safety factor

The required safety factor is provided in Table 2.

Power of electric motor(Kw)	K值Value k
$\leq 2.2\text{Kw}$	1.2
$\leq 11\text{Kw}$	1.15
$> 11\text{Kw}$	1.1

(Table2)

3. Noise: The noise levels shown on each performance chart, L_{wIA} , refer to the overall sound power “A Weighted” levels. The computed sound power levels were converted into A-Weighted levels using adjustments to the octave band spectrum as follows:

Center Frequency Hz	63	125	250	500	1000	2000	4000	8000
Weighted Adjustment dB (A)	-25.5	-12.5	-8.5	-3	0	+1	+1	-1

Table. 3

The overall sound pressure levels, L_{pIA} , can be computed from the overall sound power levels as follows:

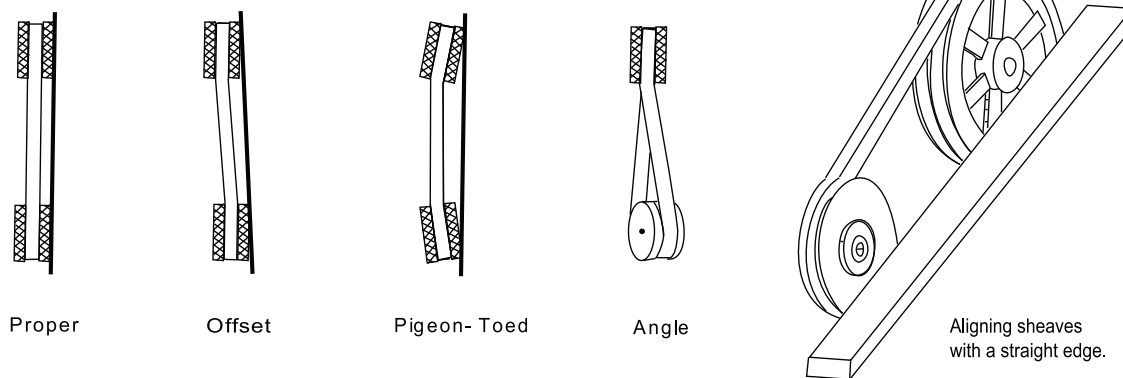
Free Field Conditions: $L_{pIA} = L_{wIA} - (20 \log_{10} d) - 11$

Room Conditions: $L_{pIA} = L_{wIA} - (20 \log_{10} d) - 7$

Where: d = distance from fan in meters.

V-BELT DRIVE INSTALLATION

1. Remove the protective coating from the ends of the fan shaft and assure that the shaft ends are free of nicks and burrs.
2. Check fan and motor shafts for parallel and angular alignment.
3. The center distance must be controlled as $0.7(d_1 + d_2) < 2(d_1 + d_2)$; the belt speed of the fan should be more than 25 m/s, but less than 35m/s, ($25 < v < 35$ m/s)
4. Slide sheaves on to the shafts - do not drive the sheaves on to the shafts as this may result in bearing damage.
5. Align fan and motor sheaves with a straight-edge or string, and tighten. as shown in Fig3.
6. Place belts over the sheaves. Do not pry or force the belts as this could result in damage to the cords within the belts.
7. Adjust the belt tension until the belts appear snug. Run the unit for a few minutes and allow the belts to set properly.
8. Switch off the fan, adjust the belt tension by moving the motor base. When in operation, the tight side of the belts should be in a straight line from sheave to sheave and there should be a slight bow on the slack side.



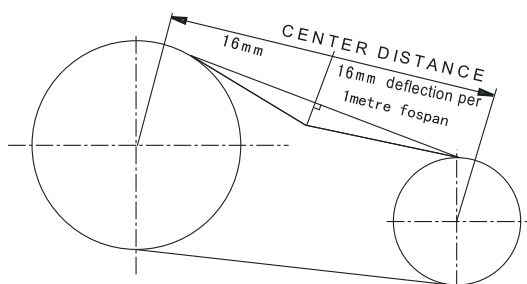
(Fig3)

Belt tension

A proper level of belt tension is required in order to obtain a satisfactory belt life. If the belt tension level is too high, then excessive loads will be imposed on the belts and the bearings, and this will reduce the lives of both of these components. If the belt tension level is too low, then the belt will slip. Belt slippage generates a large amount of heat, and this heat will drastically reduce the life of a belt. Belt-tensioning gauges can be used to determine whether the belts are tensioned properly. A chart is normally supplied with the gauge which indicates the ranges of forces required to deflect the belts by a given amount to obtain the proper belt tension level. The required forces are based upon the center distance of the sheaves and the belt cross-section. The belts are properly tensioned when the forces required to deflect the belt are within the specified range, see Fig 4 and Table 3.

If a belt-tensioning gauge is not available, then the belt should be tightened just enough so that the belt does not squeal when the ventilator is started. A very short period of noise during the starting of a ventilator is allowable, but a squeal lasting several seconds or longer is not acceptable. After tensioning the belts and before starting the ventilator, check to make sure that the sheaves are properly aligned. Realign the sheaves if necessary. Note that new belts may stretch a little during initial use, so the belt tension level should be checked after a few days of operation.

Belt tension indicator applied to mid centre distance.



(Fig4)

Belt Section	Force required to deflect belt 16mm per metre of span		
	Smial Pulle/Diamter (mm)	牛顿	Kilogram force (Kgf)
SPZ	56-95	13-20	1.3-2.0
	100-140	20-25	2.0-2.5
SPA	80-132	25-35	2.5-3.6
	140-200	35-45	3.6-4.6
SPB	112-224	45-65	4.6-6.6
	236-315	65-85	6.6-8.7
SPC	224-335	85-115	8.7-11.7
	375-560	115-150	11.7-15.3
A	80-140	10-15	1.1-1.5
B	125-200	20-30	2.0-3.1

(Table3)

Bearing Lubrication

The ventilator bearings are filled with lubricant when they come from the factory, so the bearings do not require any additional grease to be supplied before starting the ventilator.

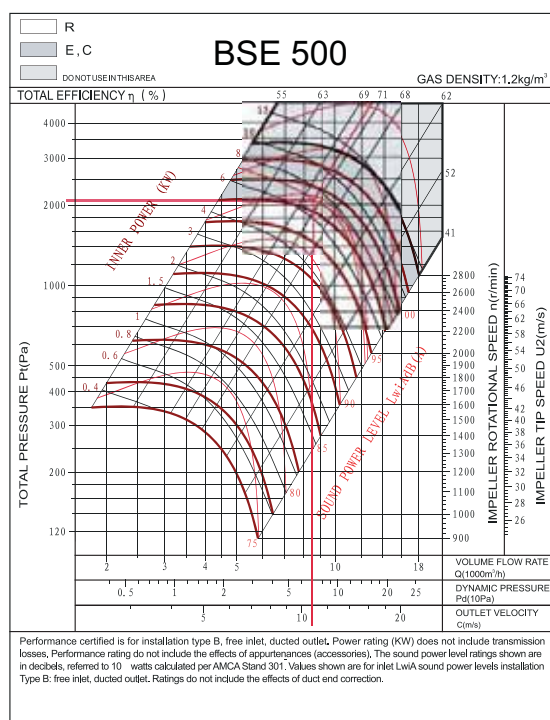
The ventilator that are equipped with pillow block bearings are provided with lubrication fittings, and these fittings allow for additional lubrication to be supplied to the bearings at regular intervals. The allowable period of time between lubrication of these bearings depends upon the operating speeds and temperatures of the bearing as well as on the type of grease used. The best way to determine the required frequency of lubrication is to inspect the condition of the grease that is discharged from the seals when new grease is added. If the discharged grease looks similar to the new grease, then a longer period of time between lubrications is possible. If the discharged grease is much darker than the new grease, then this indicates that the grease is being oxidized and more frequent lubrications of the bearings are required.

Instructions

1. During ordering it is necessary to state the type of ventilator, speed, air volume, air pressure, direction of air outlet, rotating direction, type of electric motor and its specifications.

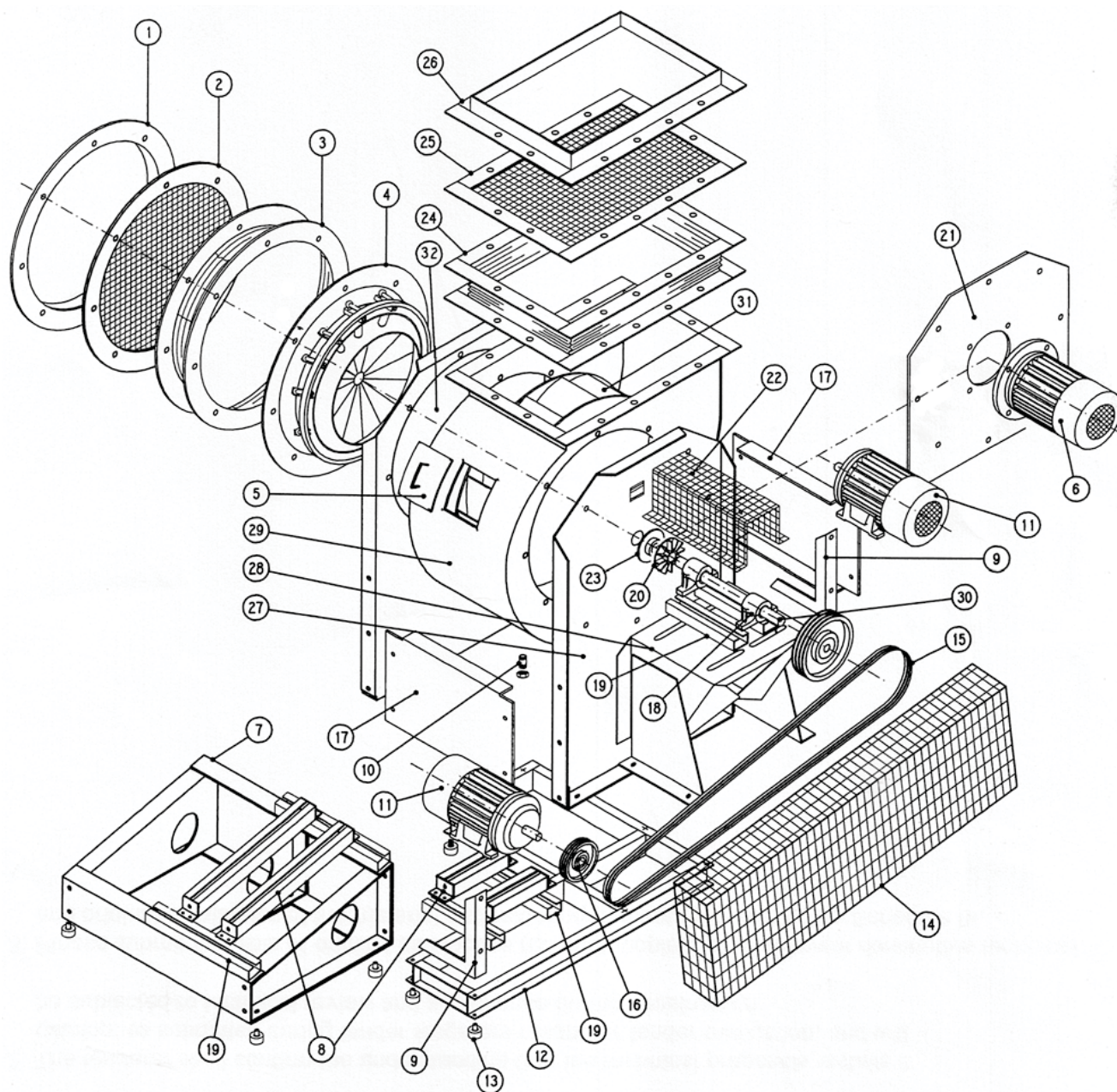
2. Prior to installation, the ventilator should be carefully inspected. Special care should be taken in checking the shaft, impeller and bearings. If there is an indication of any damage, then the damaged parts should be repaired or replaced before the ventilator is installed or operated.
3. The inside of the scroll and casing need to be checked to make sure that there are no foreign objects contained there in, such as tools or loose parts.
4. The rotational directions of the motor and impeller should be checked to assure that they are consistent with each other.
5. A flexible connector should be used between the ventilator outlet flange and its mating pipe. The bolts used to fasten the outlet flange to the pipe should not be over tightened.
6. Following the installation, the impeller should be turned by hand or with the use of a wrench to make sure that it turns freely. Once this is verified, the ventilator can be operated normally.
7. The rated motor power as calculated here in is not sufficient to drive the ventilator with an unrestricted discharge flow path. Operating the ventilator with an unrestricted discharge flow path will result in flow rates that exceed the ventilator flow rate capabilities, and such operation will quickly burn out the motor. So care must be taken in operating the ventilators to make sure that the maximum rated flows, as provided on the performance chart in this brochure, are not exceeded.
8. This fan is restricted for use in areas where air substances are non-corrosive and non-toxics, non-alkaline or where dust particles $< 150\text{mg/m}^3$, $-20^\circ\text{C} < \text{temperature} < 85^\circ\text{C}$. If special conditions during transportation, load and unload, It is strictly prohibited to Shock the ventilators.

Example Of Cruve Reading



Volume	V=8500 m ³ /h
Total Pressure	Pt=2060 Pa
Dynamic Pressure	Pd=70Pa
Outlet Velocity	C=10.8 m/s
Speed	n=2265 r/min
Impeller Tip Speed	U ₂ =61 m/s
Inner Power	N _{ino} =7.1 kW
Sound Power Level	LwA=94.4dB(A)
Total Pressure Efficiency	$\eta = 70.5 \%$

LABELLING OF FAN COMPONENTS



- | | |
|---|-------------------------------|
| 1 Inlet flange | 17 Sideplate |
| 2 Inlet guard | 18 Bearing |
| 3 Inlet flexible connection | 19 Bearing support rail |
| 4 Inlet vane control | 20 Cooling wheel |
| 5 Inspection door | 21 Flange for B5 motor |
| 6 Motor - B5 execution | 22 Shaft guard |
| 7 Motor support | 23 Shaft seal |
| 8 Motor rails | 24 Outlet flexible connection |
| 9 Support | 25 Outlet guard |
| 10 Drain plug | 26 Outlet flange |
| 11 Motor - B3 execution | 27 Frame |
| 12 Common base frame | 28 Motor or Bearing support |
| 13 Anti-vibration mounts (spring or rubber) | 29 Fan housing |
| 14 Belt guard | 30 Shaft |
| 15 Belt | 31 Impeller |
| 16 Pulley | 32 Inlet cone |

DOUBLE INLET CENTRIFUGAL VENTILATORS WITH BACKWARD WHEELS

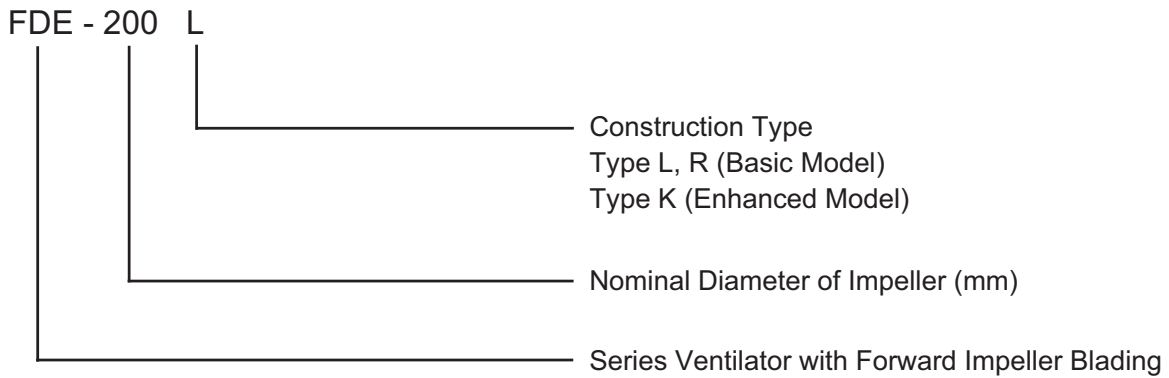
Outline

The FDE series of centrifugal fans with backward blade was developed by using international advanced technologies. They are licensed to bear the AMCA Seal. The FDE Series includes 15 models as described in this brochure. The volume flow ranges of the FDE Series varies from 1,000 cubic meters per hour to 120,000 cubic meters per hour. and pressure range from 200 Pa to 3,000 Pa. Some of the features and characteristics of these ventilators are: backward impeller blading, a wide range of applications, high efficiency, low noise, and low power consumption. These ventilators are ideal for use in central air conditioning systems, heating and ventilating air conditioning systems, and in purifiers. They are also suitable for use in a number of other ventilator applications.

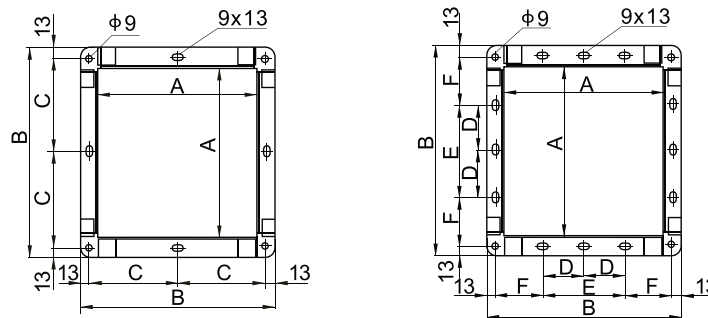


Designation of Products

The model designations signify the nominal impeller outside diameters :

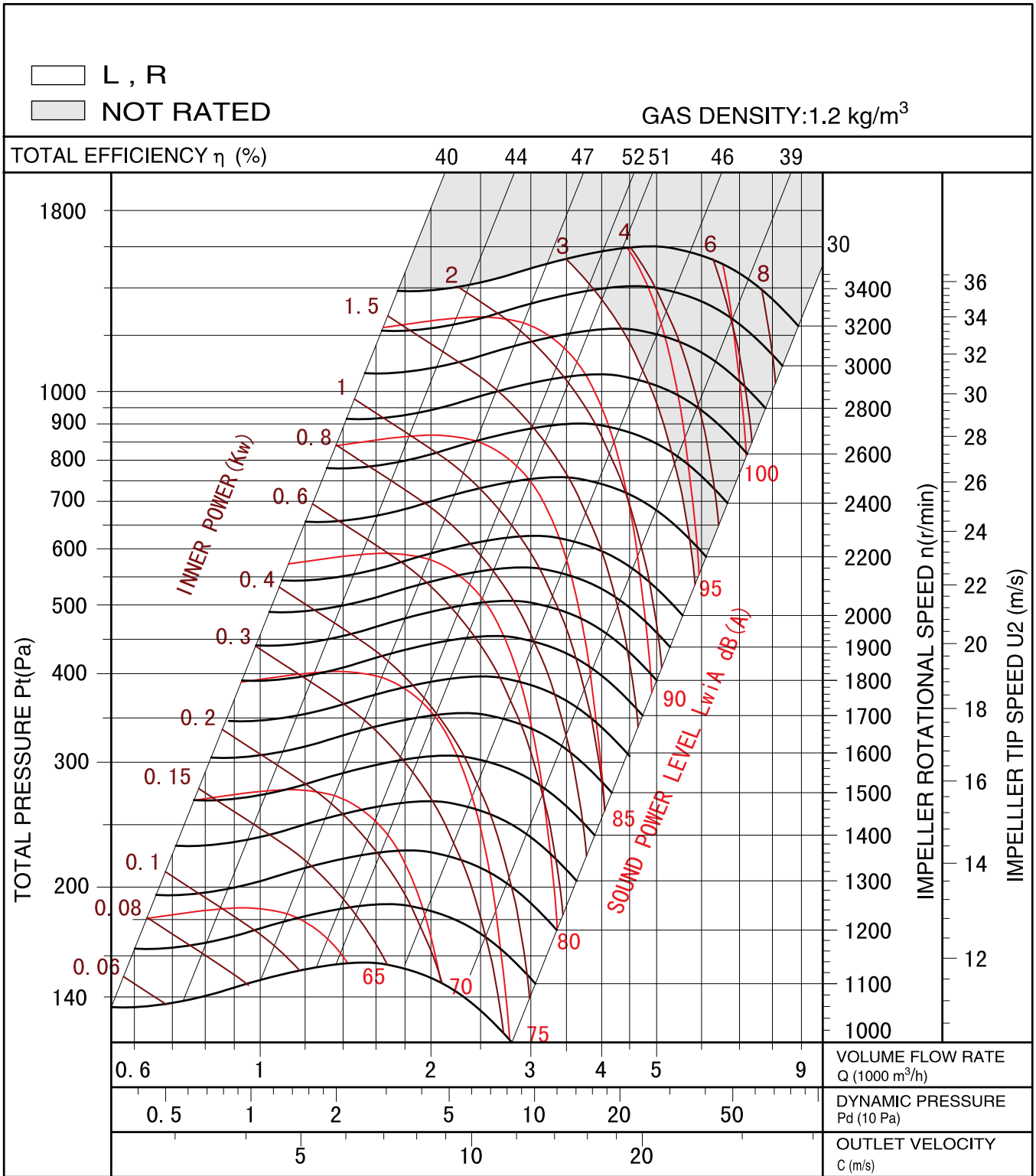


(Outlet Flange)

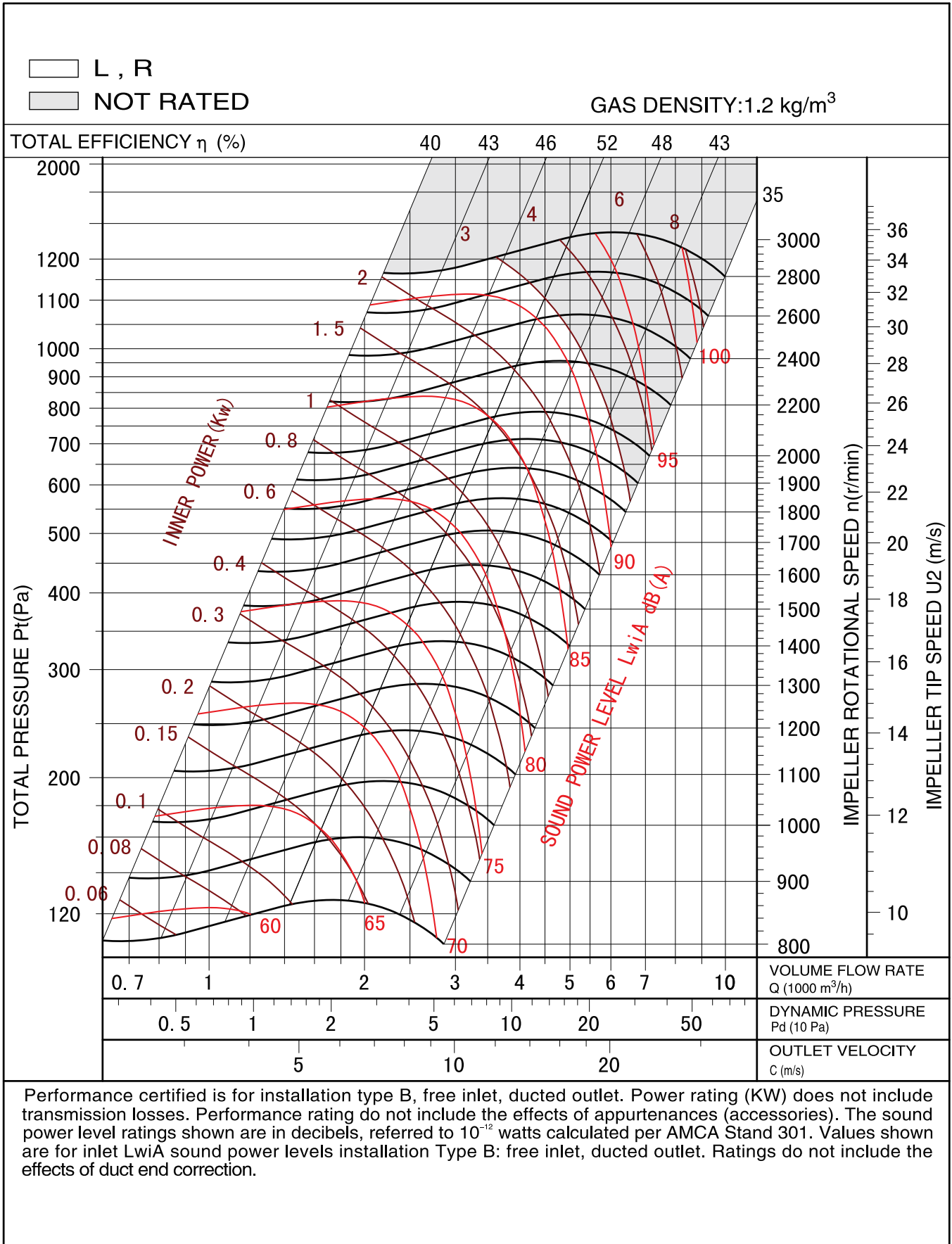


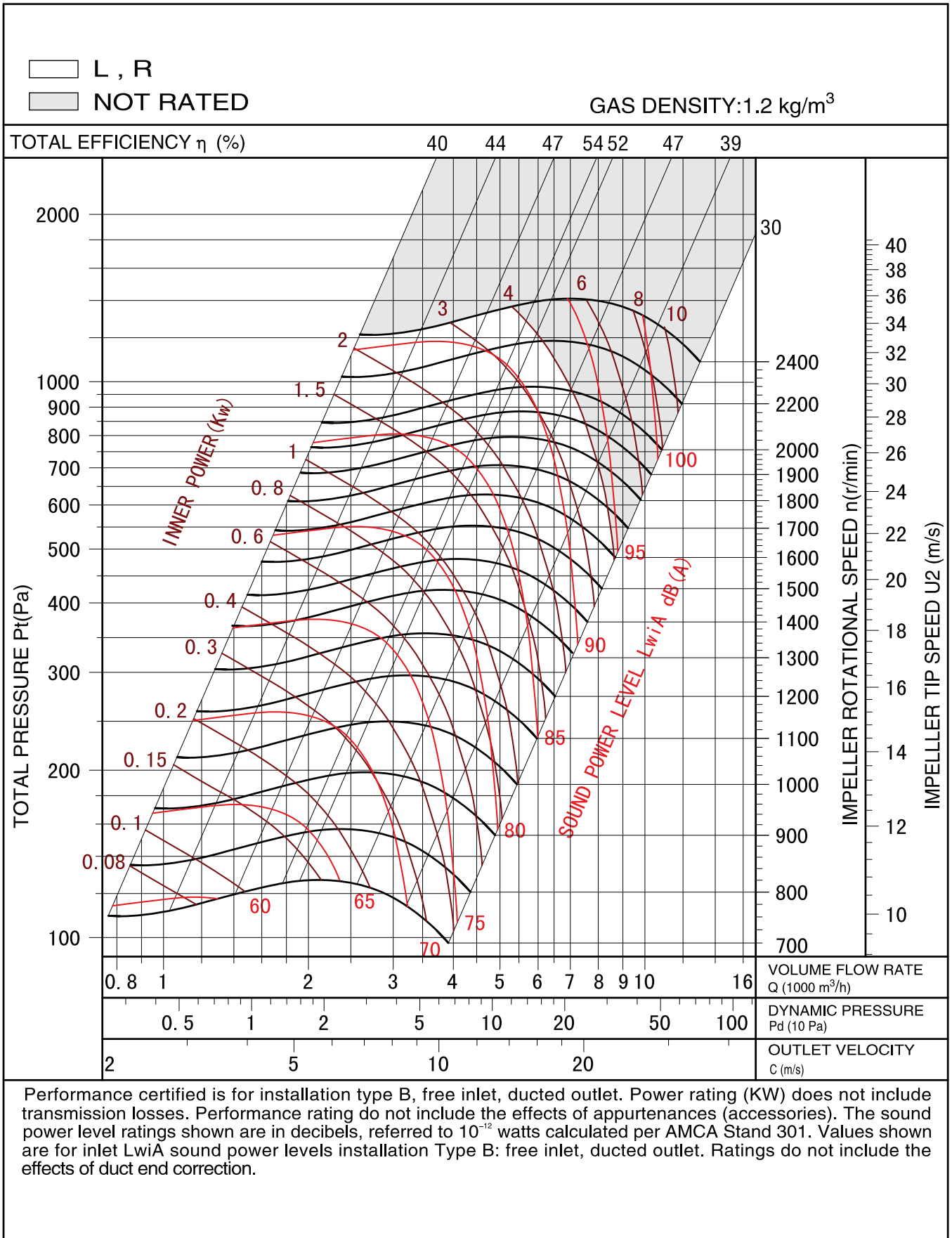
Typ	200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000
A	256	288	322	361	404	453	507	569	638	715	801	898	1007	1130	1267
B	296	328	362	417	460	509	563	625	694	771	857	954	1063	1186	1323
C	138	154	171	195.5	217	241.5	-	-	-	-	-	-	-	-	-
D				-	-	-	-	-	-	-	-	200	250	300	350
E		-	-	-	-	-	200	200	250	250	300	400	500	600	700
F				-	-	-	168.5	199.5	209	247.5	265.5	264	268.5	280	298.5

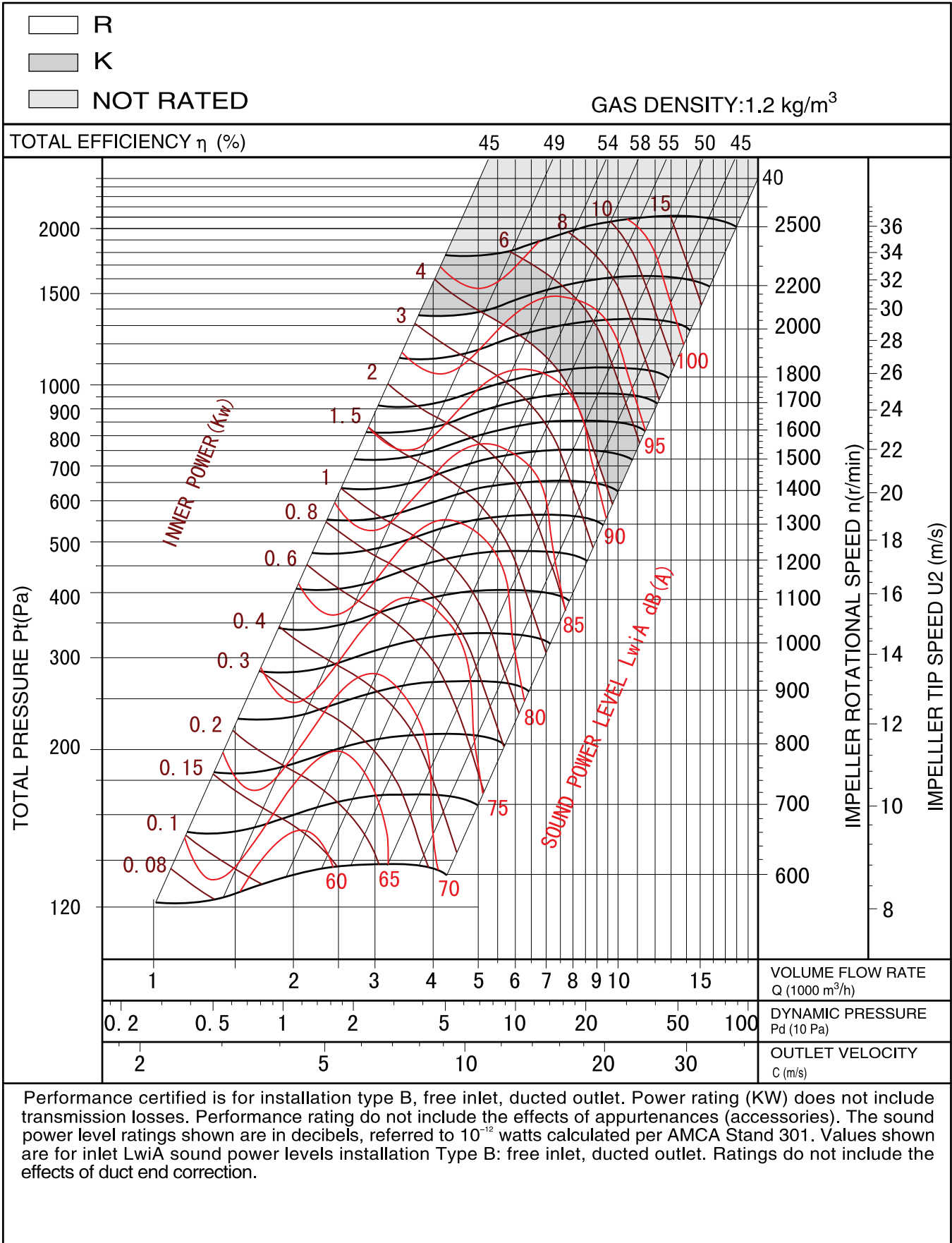
(Fig 3)

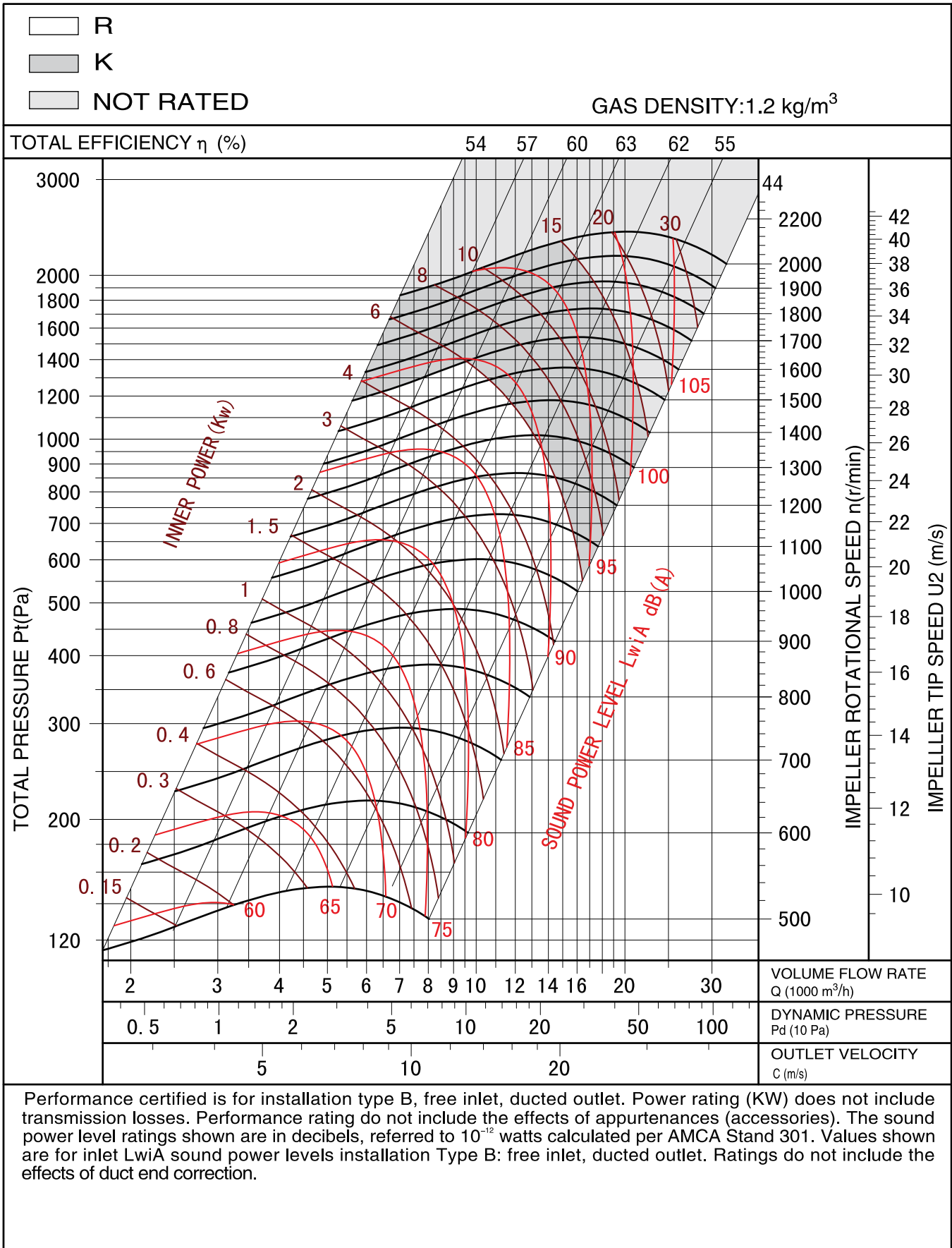


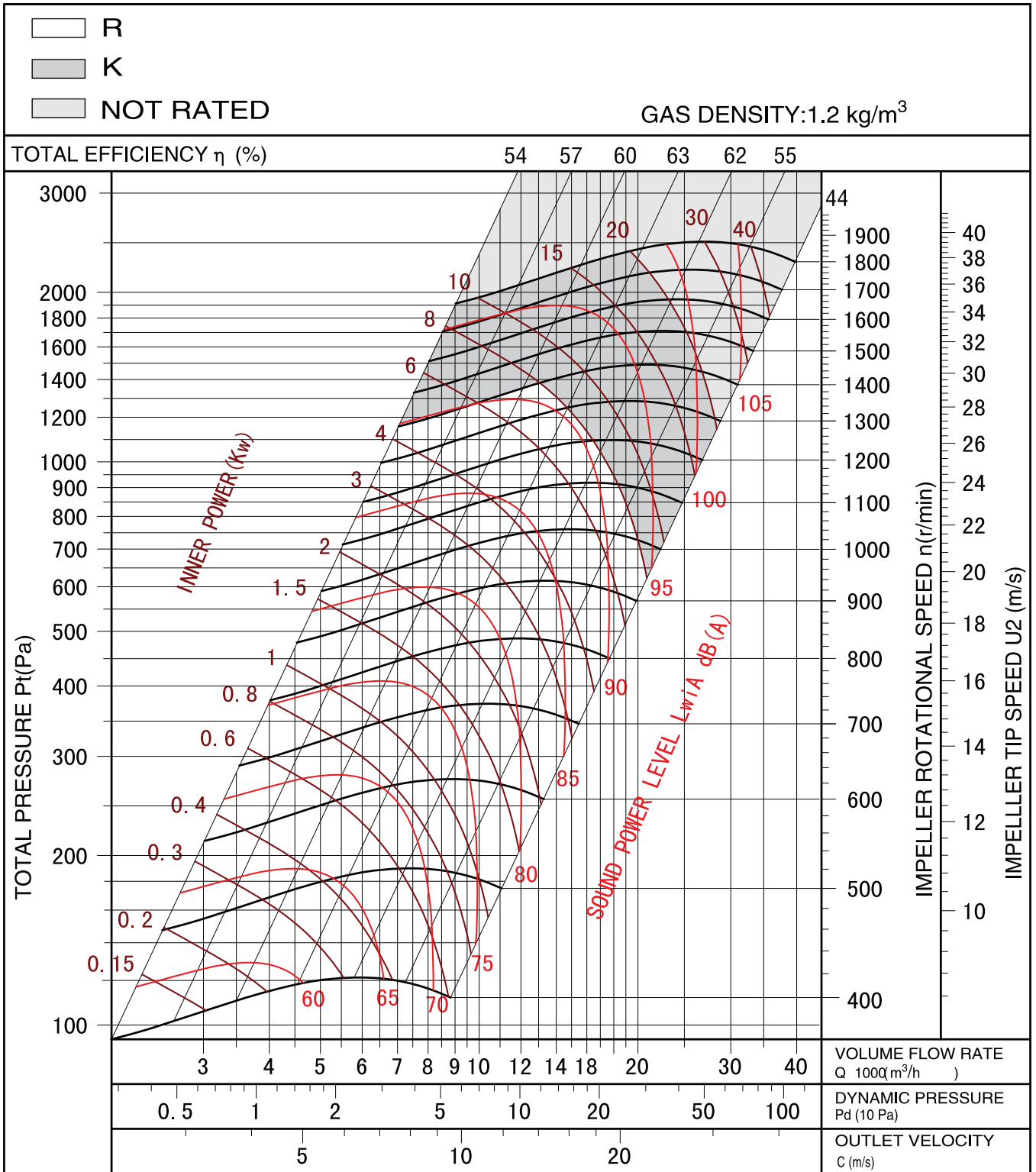
Performance certified is for installation type B, free inlet, ducted outlet. Power rating (KW) does not include transmission losses. Performance rating does not include the effects of appurtenances (accessories). The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Stand 301. Values shown are for inlet Lw1A sound power levels installation Type B: free inlet, ducted outlet. Ratings do not include the effects of duct end correction.



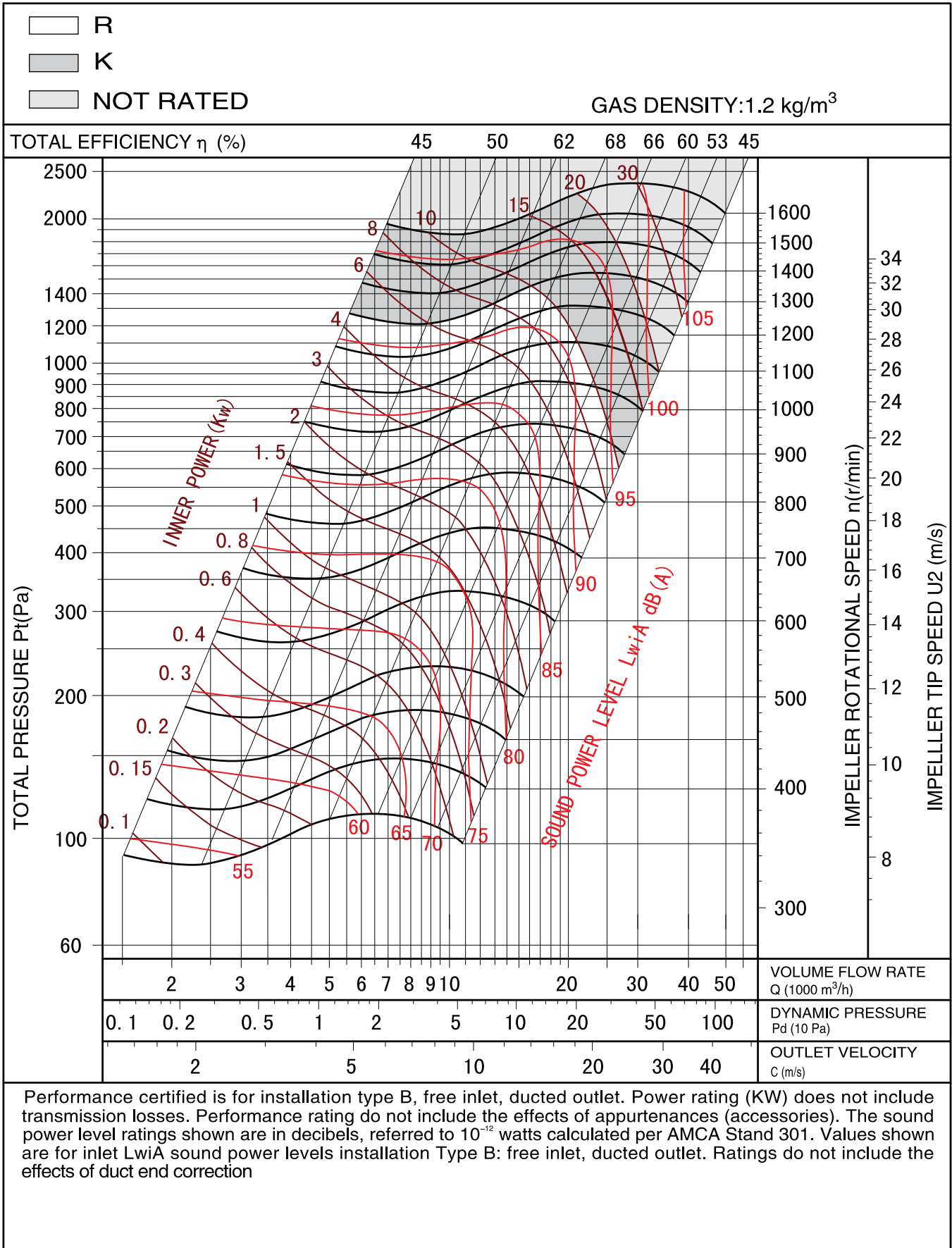


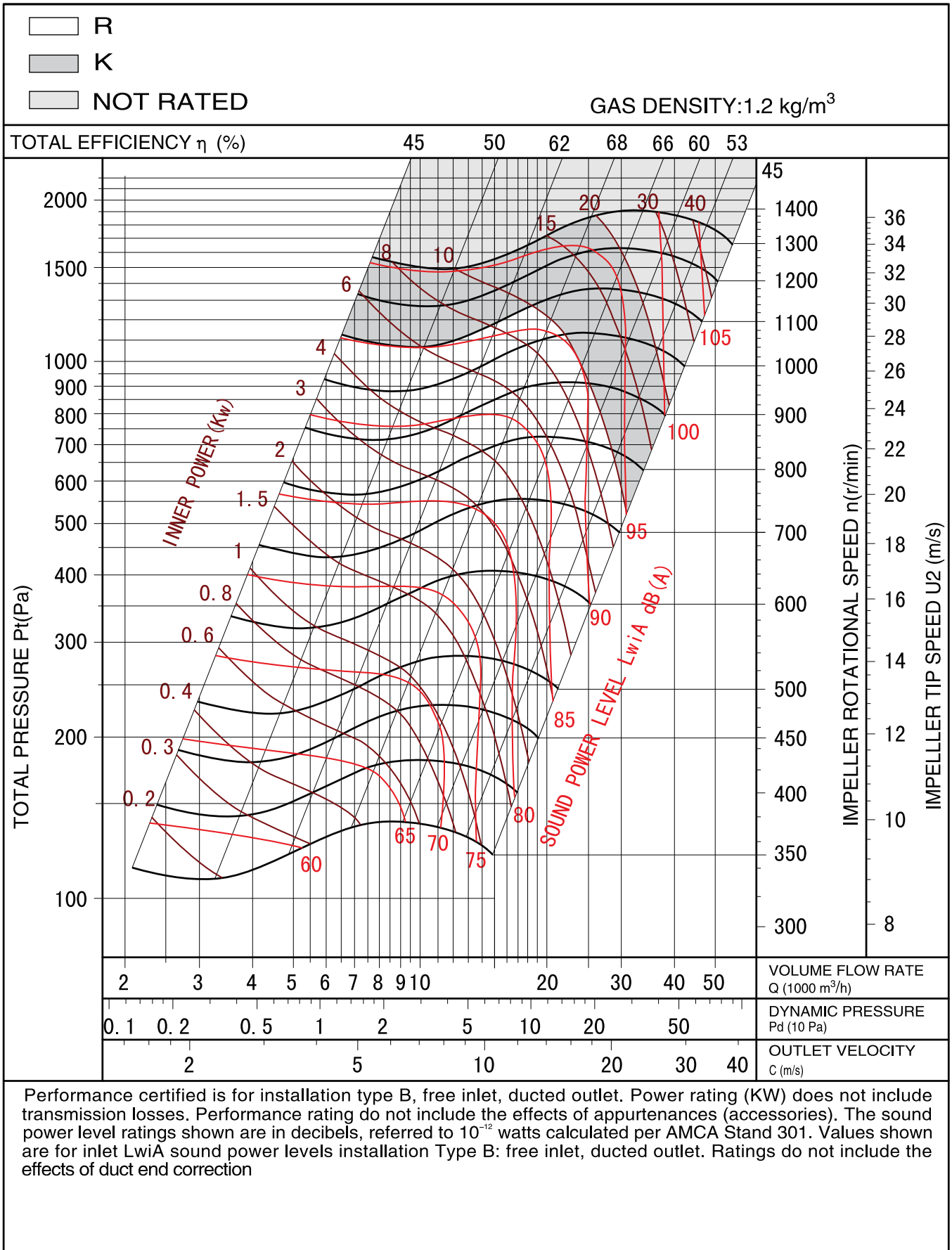


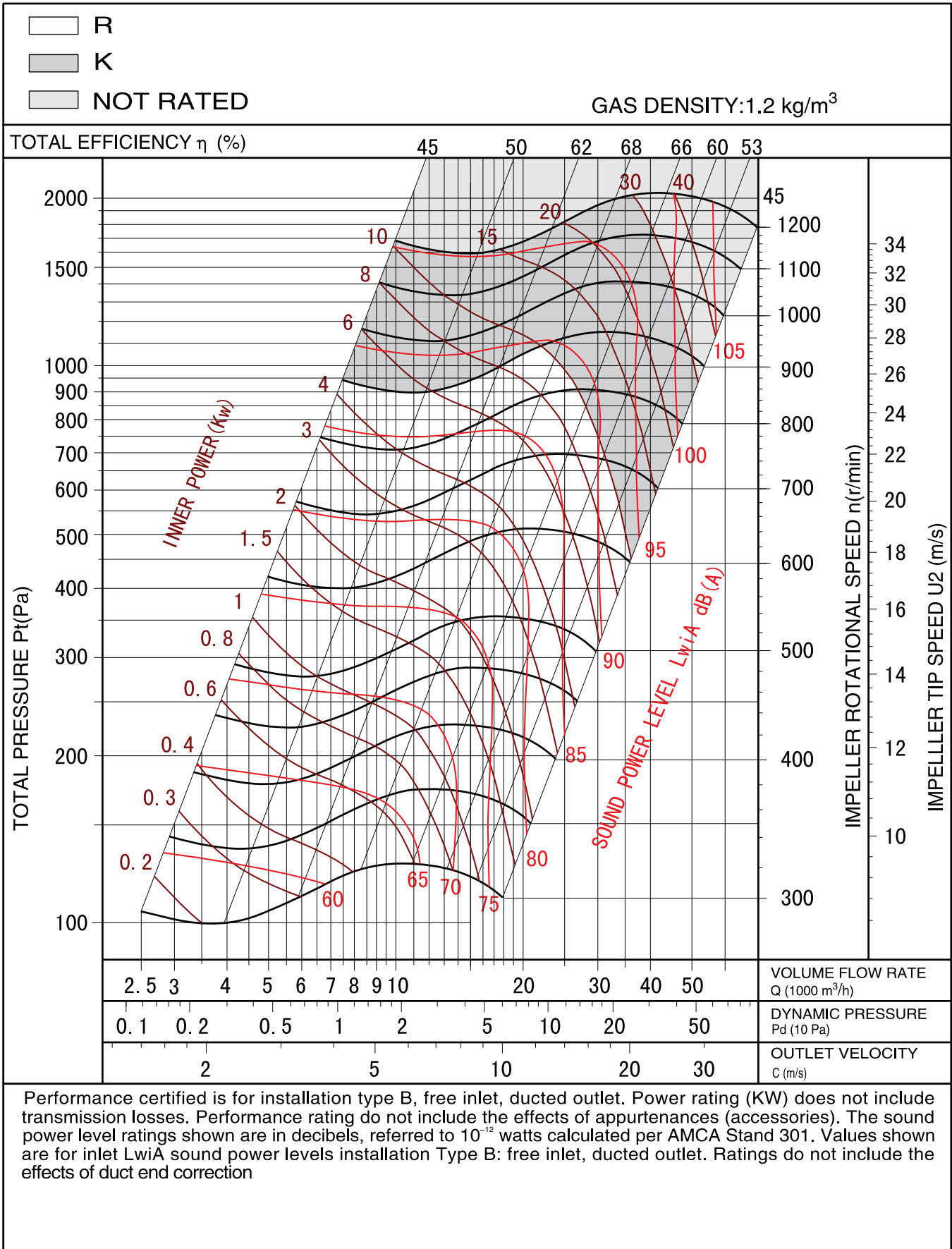


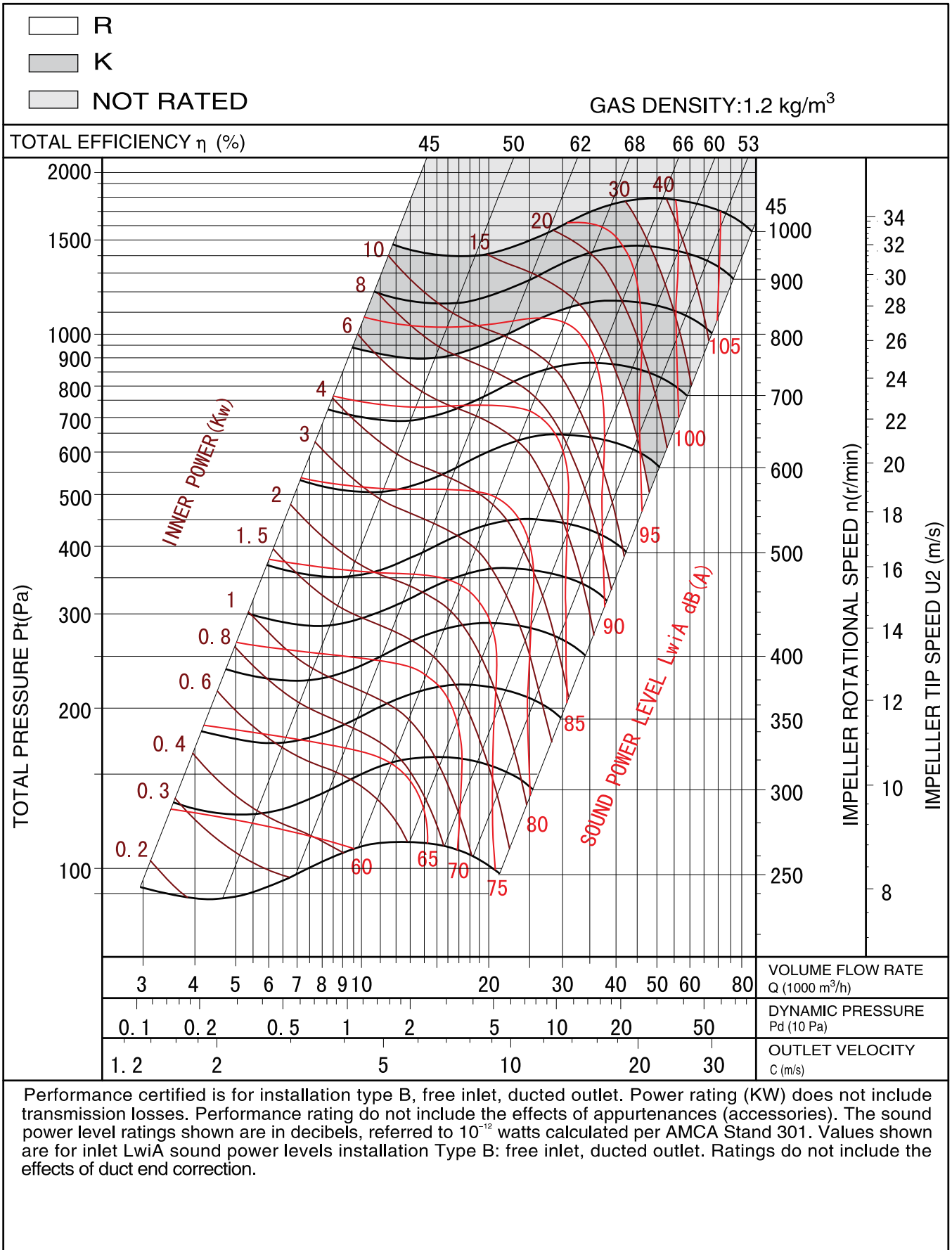


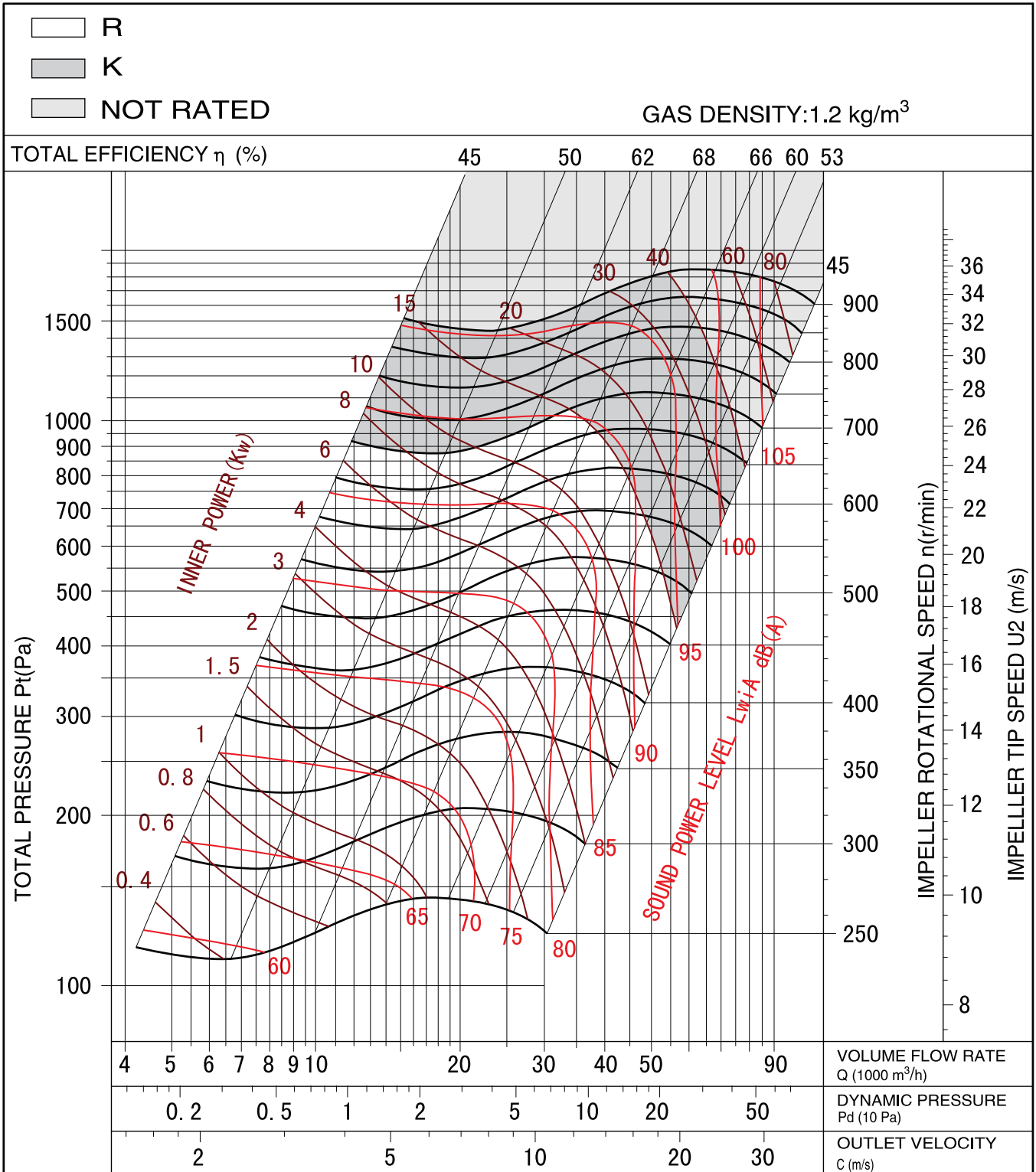
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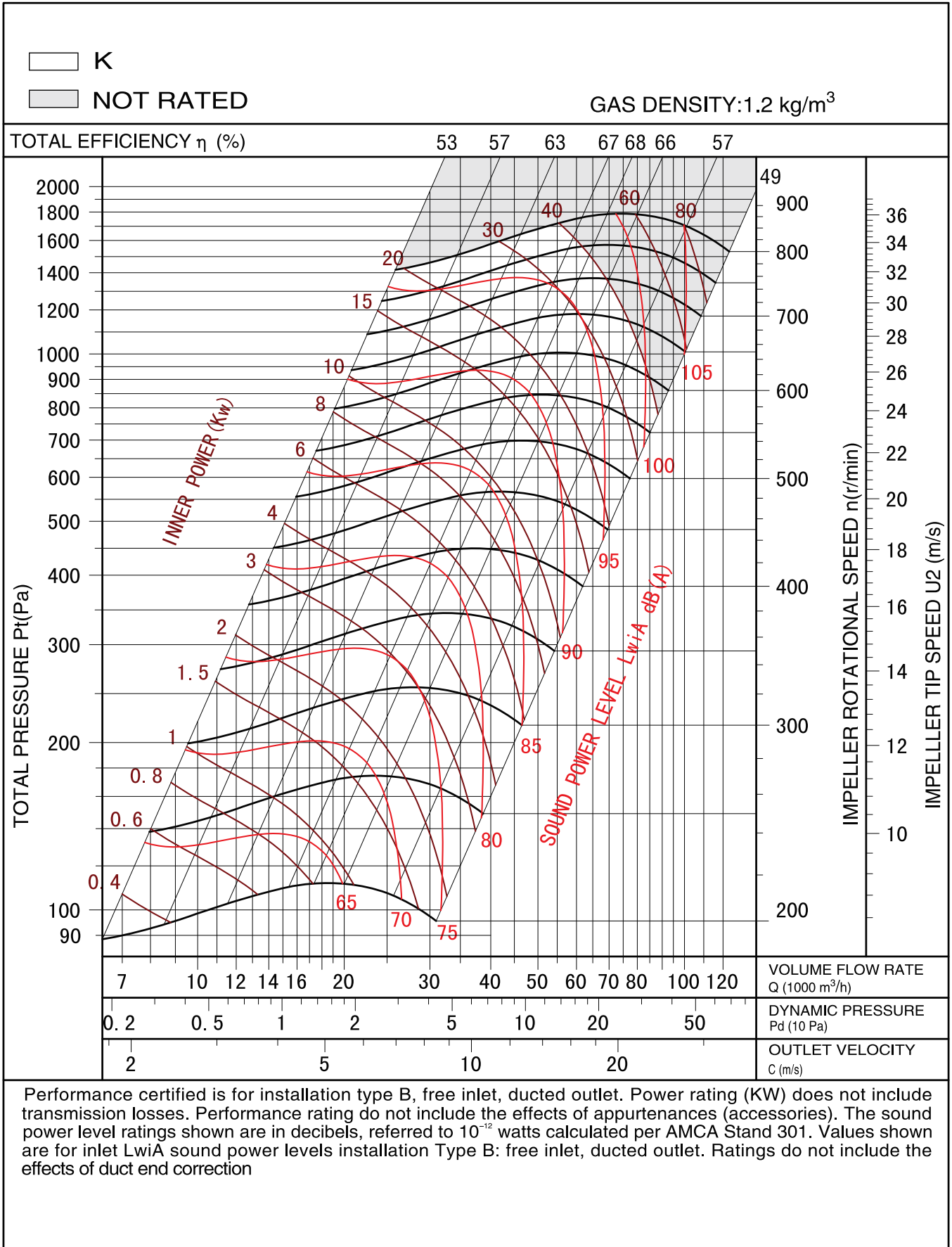


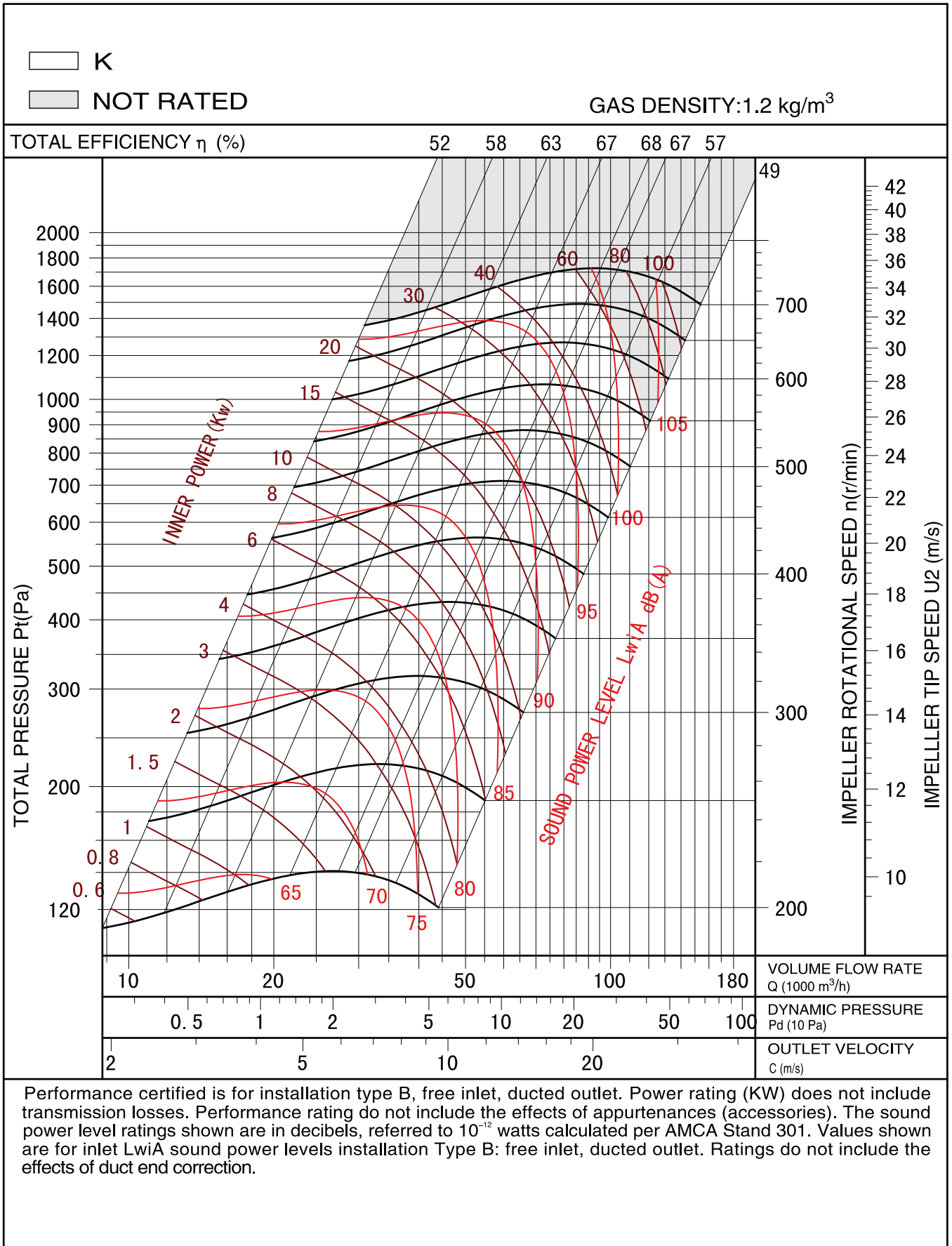


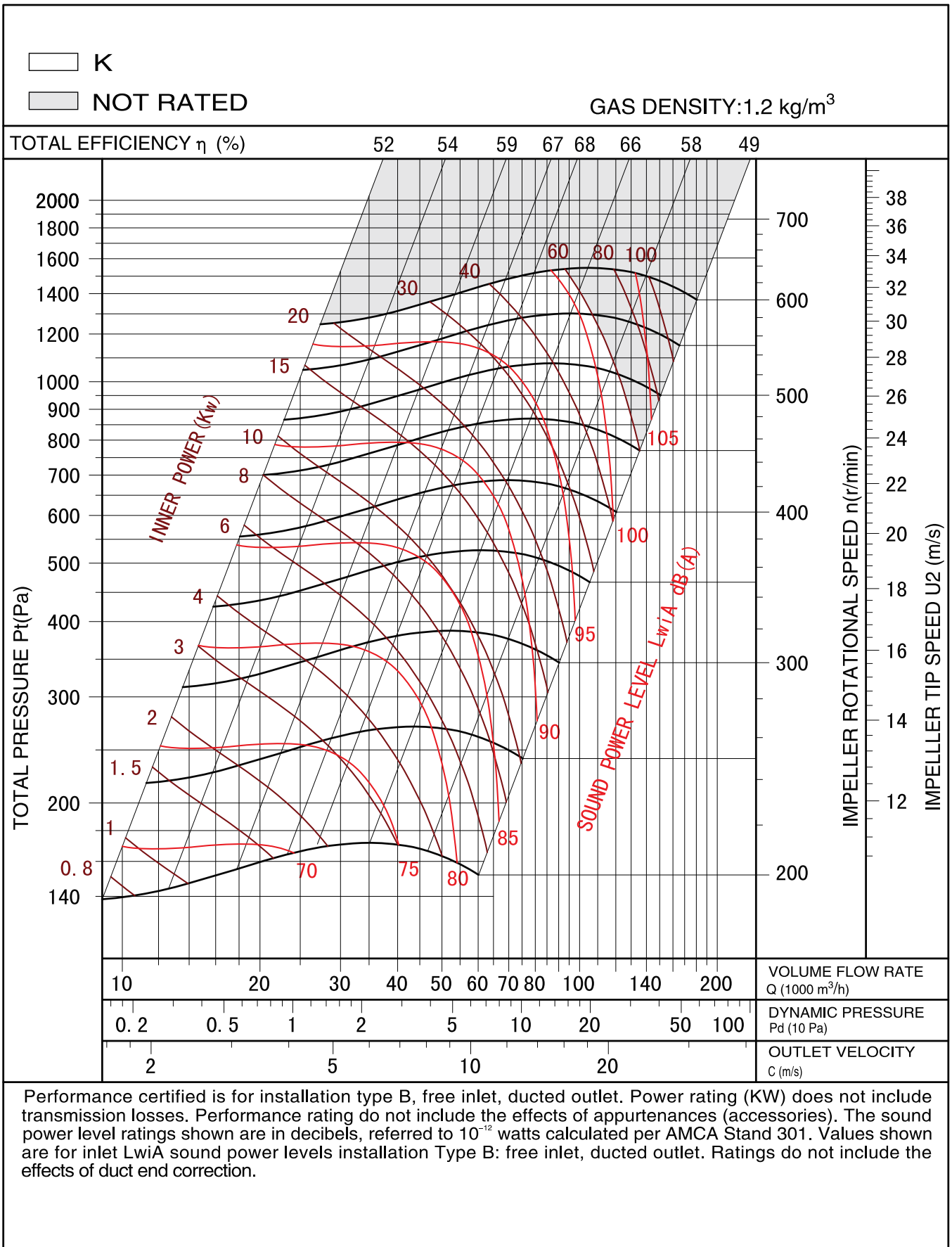




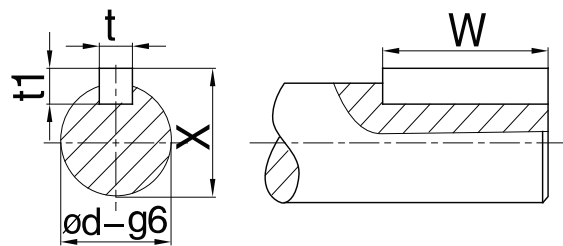
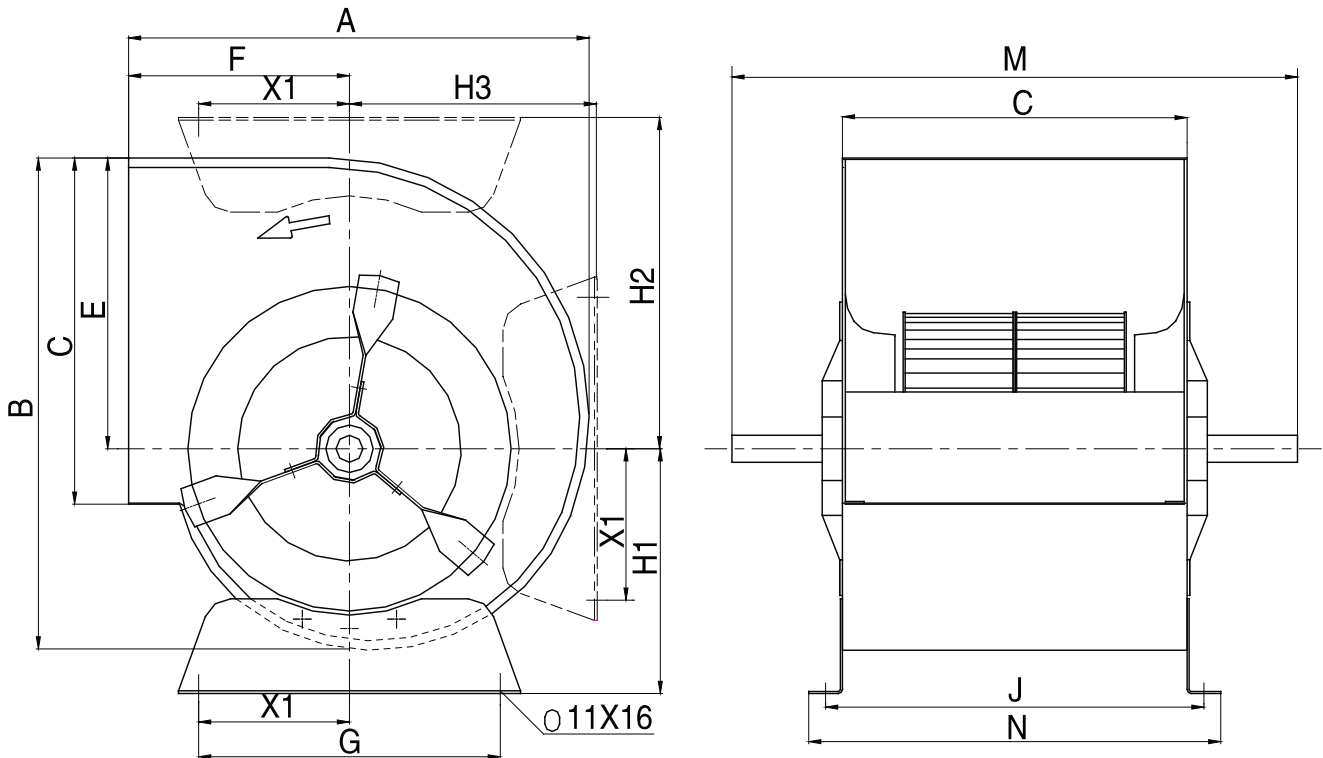
Performance certified is for installation type B, free inlet, ducted outlet. Power rating (KW) does not include transmission losses. Performance rating do not include the effects of appurtenances (accessories). The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Stand 301. Values shown are for inlet Lw+A sound power levels installation Type B: free inlet, ducted outlet. Ratings do not include the effects of duct end correction.





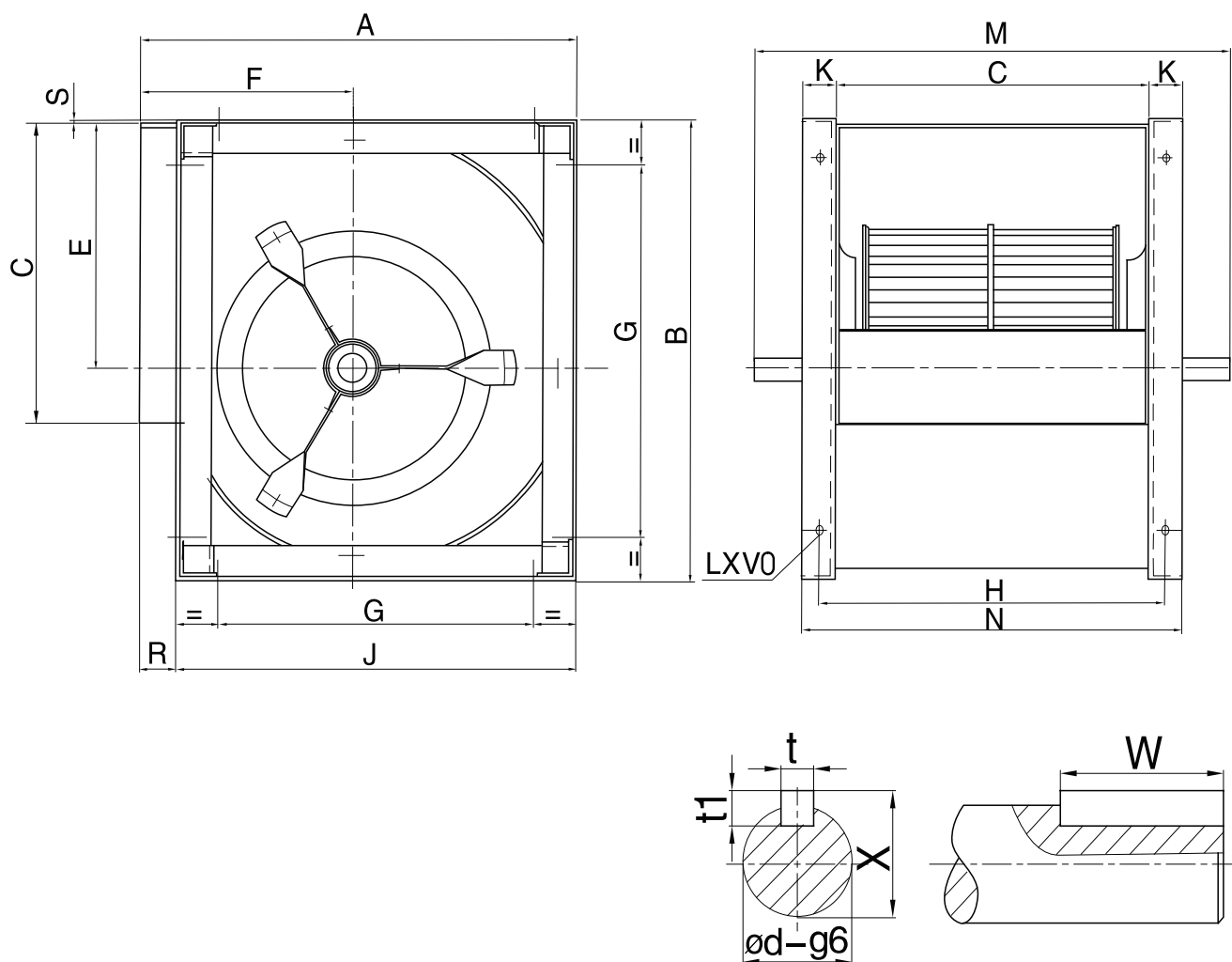


FDE-L



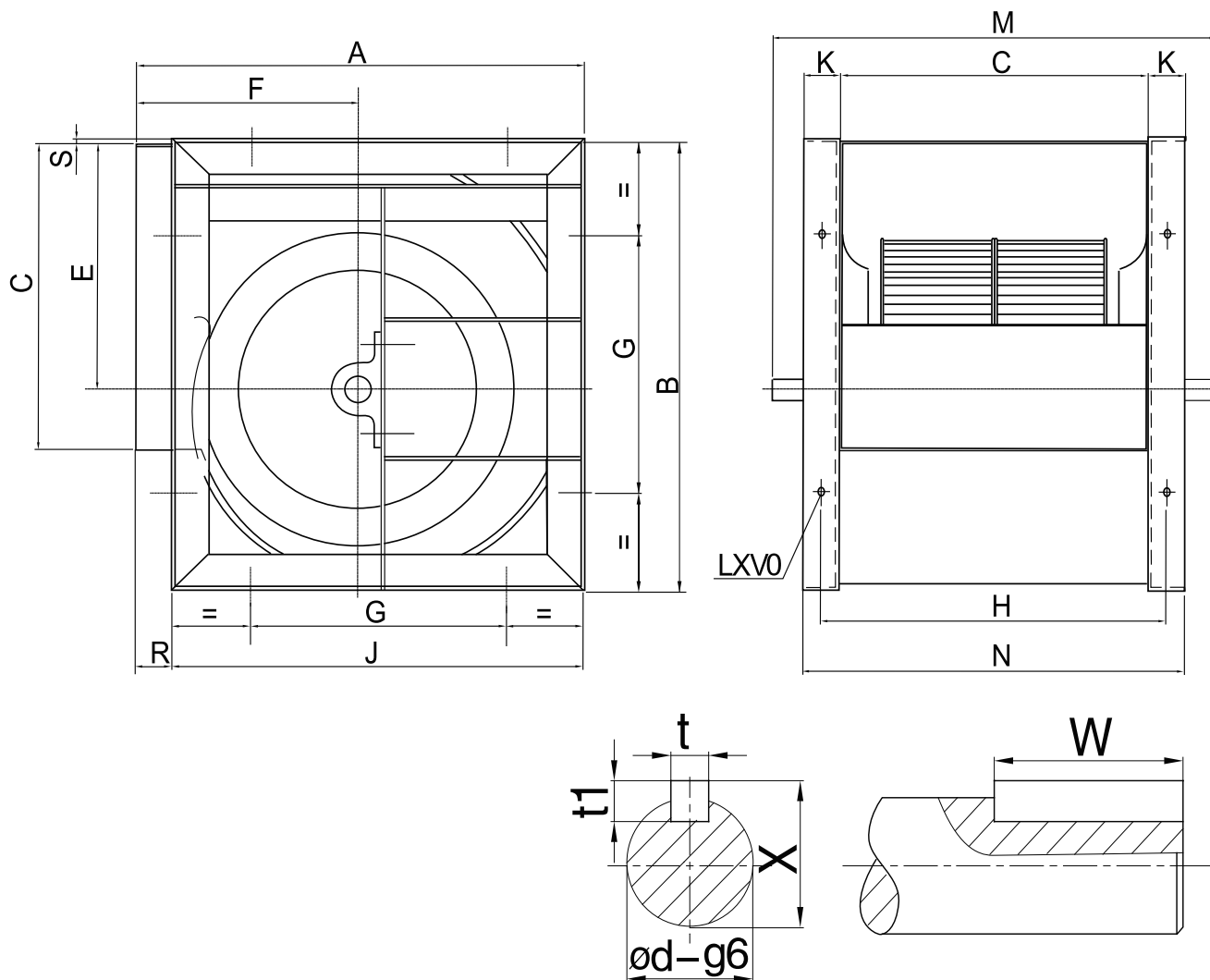
Model	A	B	C	E	F	G	J	M	N	X1	H1	H2	H3	t	t1	X	W	ϕd
200	342	364	256	215	164	224	281	420	306	112	181	245	184	6	6	22.5	40	20
225	380	407.8	288	243	180	224	313	460	338	112	197	274	204	6	6	22.5	50	20
250	417	454	322	270	195	224	347	490	372	112	210	299	227	6	6	22.5	50	20

FDE-R



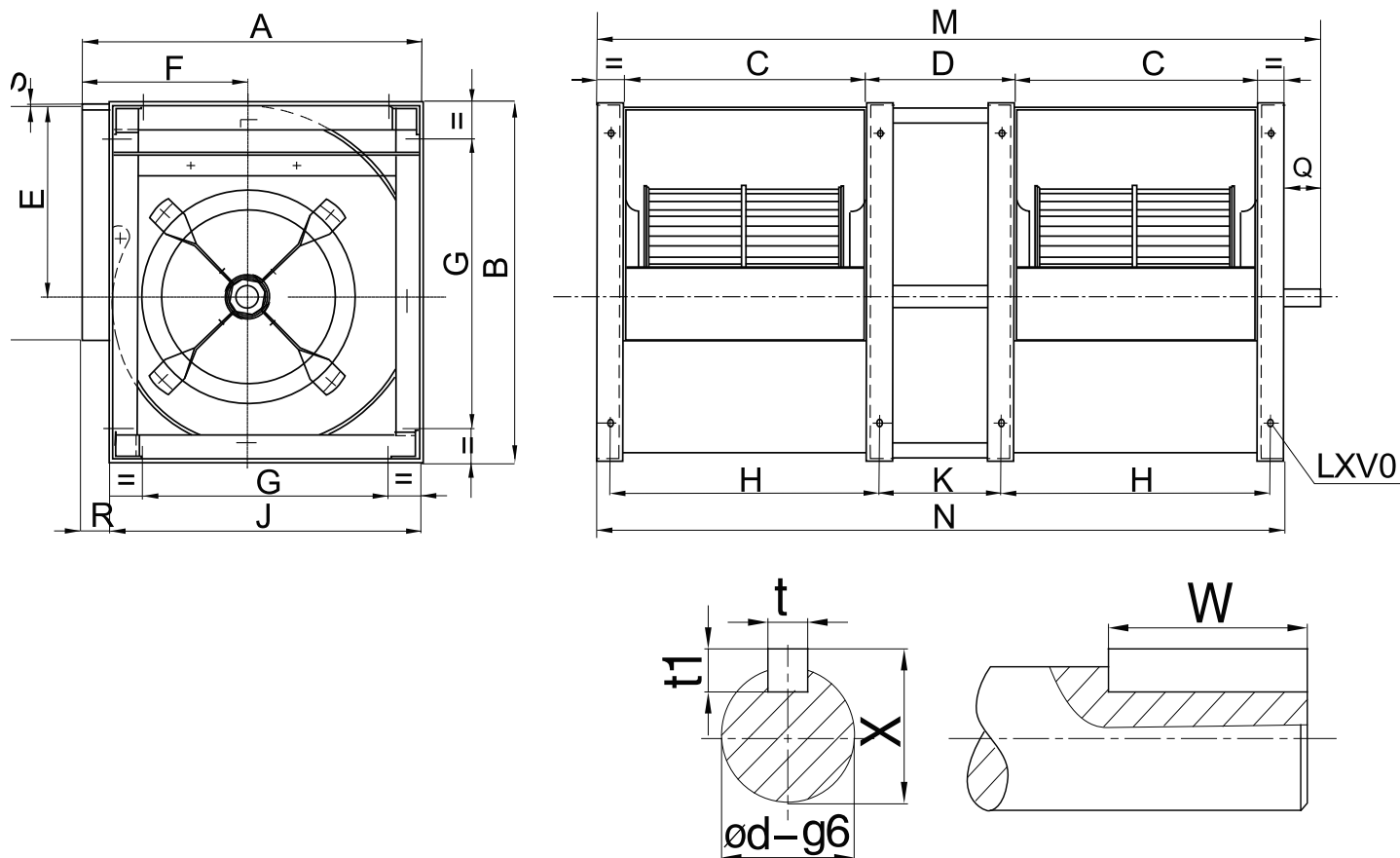
Model	A	B	C	E	F	G	H	J	K	M	N	R	S	t	t1	W	X	ϕd	LxV
200	343	370	256	215	164	224	281	306	25	420	306	37	4	6	6	40	22.5	20	11x16
225	383	415	288	243	180	224	313	348	25	460	338	35	3	6	6	50	22.5	20	11x16
250	419	461	322	270	195	224	347	384	25	490	372	35	4	6	6	50	22.5	20	11x16
280	466	518	361	302	215	280	391	432	30	555	421	34	5	8	7	40	28	25	13x18
315	518	578	404	340	236	280	434	480	30	600	464	38	3	8	7	40	28	25	13x18
355	578	655	453	383	261	355	493	548	40	675	533	30	6	8	7	65	33	30	13x18
400	651	736	507	431.5	290	355	547	613	40	725	587	38	4.5	8	7	65	33	30	13x18
450	726	827	569	486	322	530	609	681	40	815	649	45	5	10	8	70	38	35	13x18
500	800	914	638	538	352	530	678	750	40	885	718	50	5	10	8	50	38	35	13x18
560	893	1030	715	602	390	530	765	845	50	1000	815	48	8	12	8	70	43	40	13x18
630	999	1157	801	678.5	434	530	851	946	50	1090	901	53	7	14	9	70	48.5	45	13x18
710	1121	1303	898	765	485	630	948	1058	50	1255	998	63	7	14	9	90	53.5	50	17x22

FDE-K



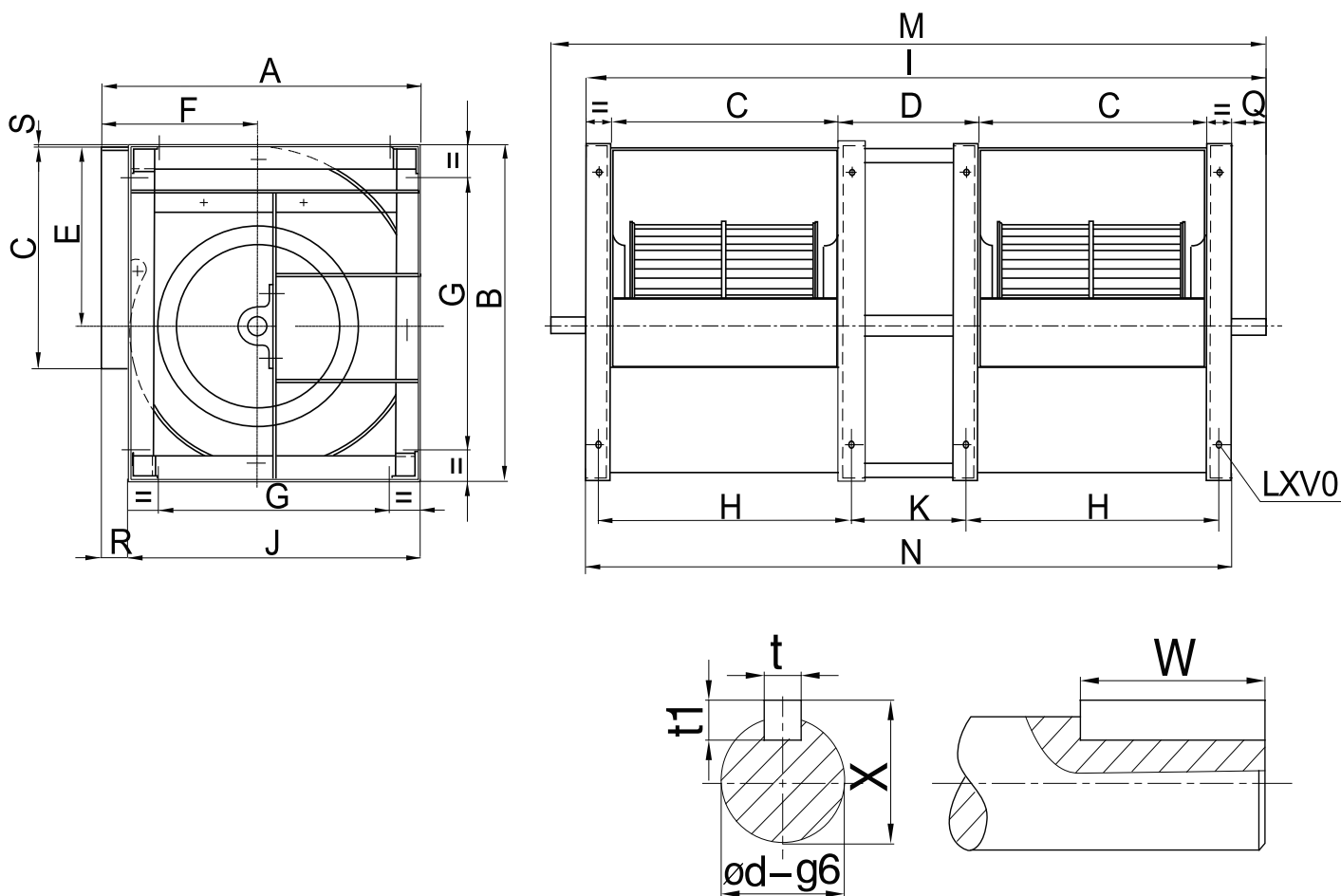
Model	A	B	C	E	F	G	H	J	K	M	N	R	S	t	t1	W	X	φd	LxV
280	466	518	361	302	215	280	391	432	30	580	421	34	5	8	7	40	33	30	13x18
315	518	578	404	340	236	280	434	480	30	625	464	38	3	8	7	40	33	30	13x18
355	578	655	453	383	261	355	493	548	40	685	533	30	6	10	8	50	38	35	13x18
400	651	736	507	431.5	290	355	547	613	40	790	587	38	4.5	10	8	70	38	35	13x18
450	726	827	569	486	322	530	609	681	40	850	649	45	5	12	8	70	43	40	13x18
500	800	918	638	538	352	530	678	750	40	920	718	50	5	12	8	70	43	40	13x18
560	893	1030	715	602	390	530	765	845	50	1070	815	48	8	14	9	90	53.5	50	13x18
630	999	1157	801	678.5	434	530	851	946	50	1155	901	53	7	14	9	90	53.5	50	13x18
710	1121	1303	898	765	485	630	948	1058	50	1290	998	63	7	18	11	90	64	60	17x22
800	1250	1468	1007	862	535	710	1057	1181	50	1450	1107	69	7	18	11	90	64	60	17x22
900	1408	1648	1130	971	604	800	1180	1319	60	1570	1250	89	9	18	11	100	64	60	17x22
1000	1541	1810	1267	1066	657	900	1317	1462	60	1700	1387	79	9	18	11	100	64	60	17x22

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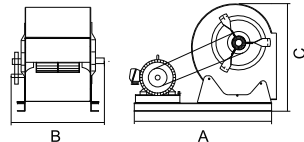
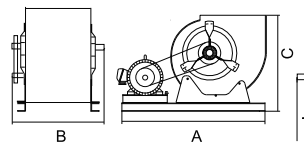
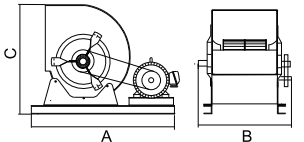
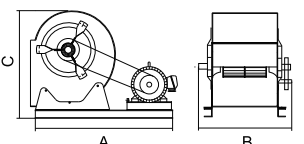
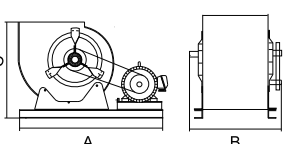
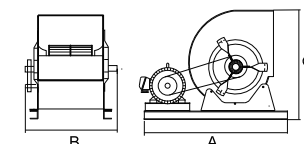
Model	A	B	C	D	E	F	G	H	J	K	M	N	Q	R	S	t	t1	W	X	φd	LxV
280	466	518	361	280	302	215	280	391	432	250	1140	1062	78	34	5	8	7	60	33	30	13x18
315	518	578	404	315	340	236	280	434	480	285	1263	1183	80	38	3	8	7	60	33	30	13x18
355	578	655	453	355	383	261	355	493	548	315	1431	1341	90	30	6	10	8	50	38	35	13x18
400	650	736	507	400	432	290	355	547	612	360	1582	1494	98	38	4	10	8	50	38	35	13x18
450	726	827	569	450	486	322	530	609	681	410	1768	1668	100	45	5	12	8	70	43	40	13x18
500	800	918	638	500	538	352	530	678	750	460	1956	1856	100	50	5	12	8	70	43	40	13x18

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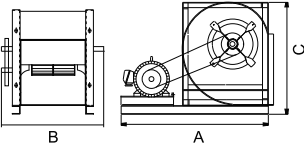
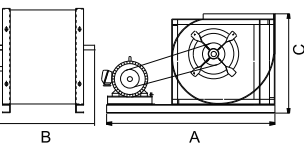
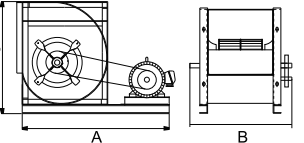
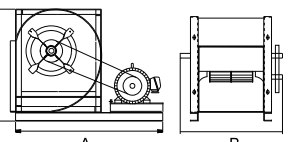
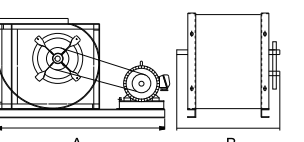
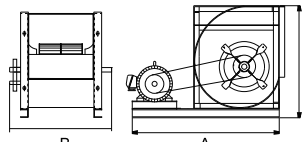


Model	A	B	C	D	E	F	G	H	I	J	K	M	N	Q	R	S	t	t1	φd	W	X	LxV
355	578	655	453	355	383	261	355	493	1451	548	315	—	1341	110	30	6	12	8	40	70	43	13x18
400	651	736	507	400	431.5	290	355	547	1604	613	360	—	1494	110	38	4.5	12	8	40	70	43	13x18
450	726	827	569	450	486	322	530	609	1803	681	410	—	1668	135	45	5	14	9	45	90	48.5	13x18
500	800	918	638	500	538	352	530	678	1991	750	460	—	1856	135	50	5	14	9	50	90	53.5	13x18
560	893	1030	712	560	603	390	530	765	2217.5	845	510	2345	2090	127.5	48	8	14	9	50	90	53.5	13x18
630	999	1157	801	630	678.5	434	530	851	2459	946	580	2586	2332	127	53	7	14	9	50	90	53.5	13x18
710	1121	1303	898	710	765	485	630	948	2752	1058	660	2898	2606	146	63	7	18	11	60	90	64	17x22
800	1250	1468	1007	800	862	535	710	1057	3085.5	1181	750	3257	2914	171.5	69	7	18	11	60	90	64	17x22
900	1408	1648	1130	900	971	604	800	1180	3420	1319	850	3580	3260	160	89	9	18	11	60	100	64	17x22
1000	1541	1810	1267	1000	1066	657	900	1317	3790.5	1462	950	3947	3634	156.5	79	9	18	11	60	100	64	17x22

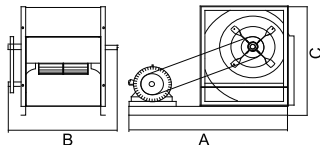
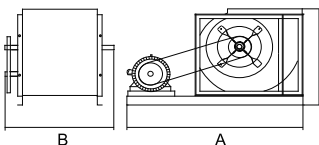
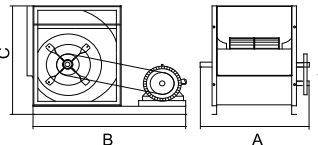
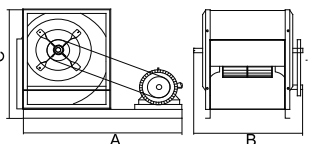
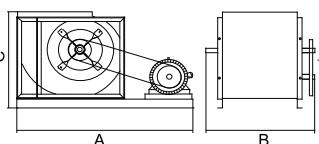
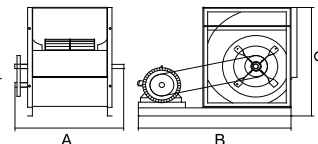
FDE-L

		0°			90°			180°		
L G										
R D										
Model	Motor FrameSize	A	B	C	A	B	C	A	B	C
200	56	560	420	394	580	420	348	560	420	396
	63	600	420	394	620	420	348	600	420	396
	71	640	420	394	660	420	348	640	420	396
	80	680	420	394	700	420	348	680	420	396
225	63	630	460	439	660	460	384	630	460	440
	71	670	460	439	700	460	384	670	460	440
	80	710	460	439	740	460	384	710	460	440
	90	450	460	439	780	460	384	750	460	440
250	63	660	490	484	680	490	422	660	490	482
	71	700	490	484	720	490	422	700	490	482
	80	740	490	484	760	490	422	740	490	482
	90	780	490	484	800	490	422	780	490	482

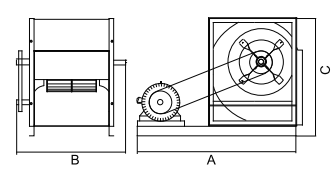
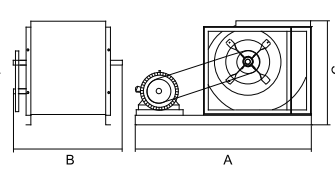
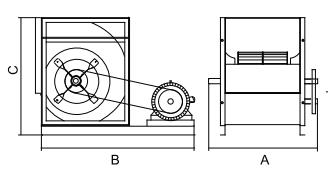
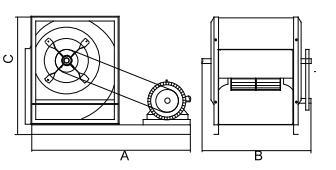
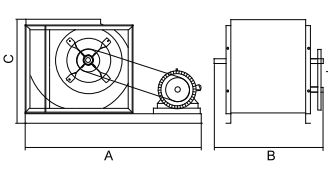
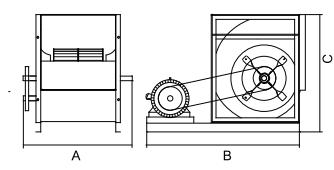
FDE-R

		0°			90°			180°		
L G										
R D										
Model	Motor FrameSize	A	B	C	A	B	C	A	B	C
200	56	560	420	394	580	420	348	560	420	396
	63	600	420	394	620	420	348	600	420	396
	71	640	420	394	660	420	348	640	420	396
	80	680	420	394	700	420	348	680	420	396
225	63	630	460	439	660	460	384	630	460	440
	71	670	460	439	700	460	384	670	460	440
	80	710	460	439	740	460	384	710	460	440
	90	450	460	439	780	460	384	750	460	440
250	63	660	490	484	680	490	422	660	490	482
	71	700	490	484	720	490	422	700	490	482
	80	740	490	484	760	490	422	740	490	482
	90	780	490	484	800	490	422	780	490	482

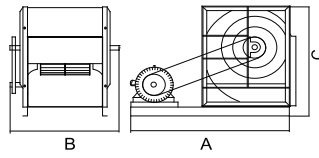
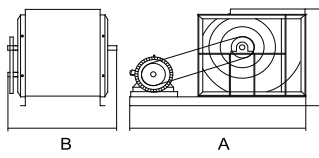
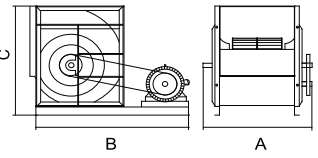
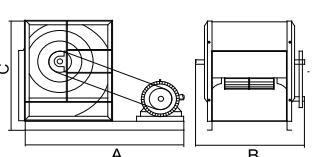
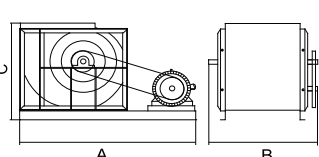
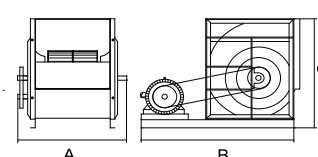
FDE-R

		0°			90°			180°		
										
										
Model	Motor Frame Size	A	B	C	A	B	C	A	B	C
280	71	740	575	568	830	575	516	740	575	568
	80	750	575	568	840	575	516	750	575	568
	90	760	575	568	850	575	516	760	575	568
	100	810	575	568	890	575	516	810	575	568
	112	850	575	568	930	575	516	850	575	568
	132	850	575	568	930	575	516	850	575	568
315	71	800	630	628	900	640	568	800	640	628
	80	810	640	628	910	640	568	810	640	628
	90	830	640	628	930	640	568	830	640	628
	100	870	640	628	980	640	568	870	640	628
	112	925	640	628	1000	640	568	925	640	628
	132	930	640	628	1030	640	568	930	640	628
355	71	860	700	705	960	700	628	860	700	705
	80	870	700	705	970	700	628	870	700	705
	90	890	700	705	990	700	628	890	700	705
	100	930	700	705	1030	700	628	930	700	705
	112	990	700	705	1090	700	628	990	700	705
	132	1020	700	705	1110	700	628	1020	700	705
400	71	950	760	786	1070	760	701	950	760	786
	80	960	760	786	1080	760	701	960	760	786
	90	980	760	786	1100	760	701	980	760	786
	100	1020	760	786	1140	760	701	1020	760	786
	112	1060	760	786	1190	760	701	1060	760	786
	132	1080	760	786	1210	760	701	1080	760	786
450	71	1020	845	877	1170	845	776	1020	845	877
	80	1030	845	877	1180	845	776	1030	845	877
	90	1050	845	877	1200	845	776	1050	845	877
	100	1100	845	877	1250	845	776	1100	845	877
	112	1150	845	877	1300	845	776	1150	845	877
	132	1220	845	877	1330	845	776	1220	845	877
	160	1270	845	877	1370	845	776	1270	845	877

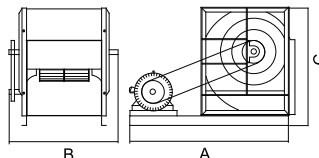
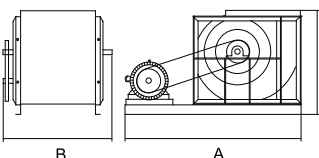
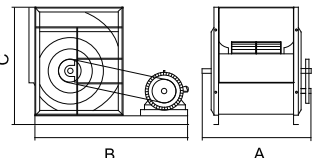
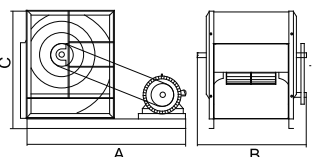
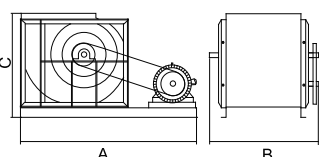
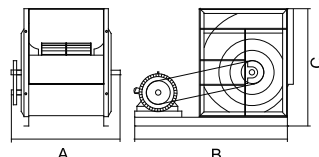
FDE-R

		0°			90°			180°		
Model										
										
Motor FrameSize		A	B	C	A	B	C	A	B	C
500	80	1080	915	981	1260	915	863	1080	915	981
	90	1100	915	981	1280	915	863	1100	915	981
	100	1120	915	981	1120	915	863	1120	915	981
	112	1170	915	981	1340	915	863	1170	915	981
	132	1210	915	981	1385	915	863	1210	915	981
	160	1260	915	981	1430	915	863	1260	915	981
560	80	1200	1000	1093	1390	1000	956	1200	1000	1093
	90	1220	1000	1093	1410	1000	956	1220	1000	1093
	100	1260	1000	1093	1450	1000	956	1260	1000	1093
	112	1300	1000	1093	1490	1000	956	1300	1000	1093
	132	1310	1000	1093	1500	1000	956	1310	1000	1093
	160	1380	1000	1093	1580	1000	956	1380	1000	1093
630	90	1360	1090	1220	1570	1090	1062	1360	1090	1220
	100	1400	1090	1220	1610	1090	1062	1400	1090	1220
	112	1430	1090	1220	1640	1090	1062	1430	1090	1220
	132	1450	1090	1220	1660	1090	1062	1450	1090	1220
	160	1500	1090	1220	1710	1090	1062	1500	1090	1220
	180	1520	1090	1220	1730	1090	1062	1520	1090	1220
710	100	1550	1255	1383	1800	1255	1201	1550	1255	1383
	112	1600	1255	1383	1850	1255	1201	1600	1255	1383
	132	1650	1255	1383	1900	1255	1201	1650	1255	1383
	160	1700	1255	1383	1950	1255	1201	1700	1255	1383
	180	1750	1255	1383	2000	1255	1201	1750	1255	1383

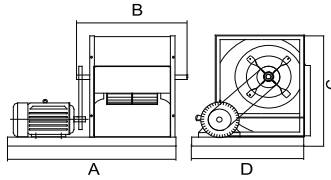
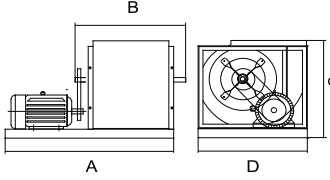
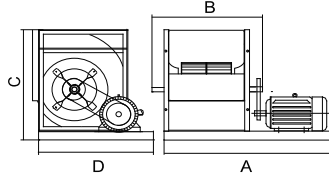
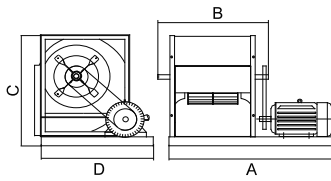
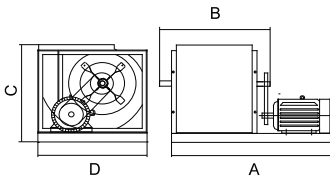
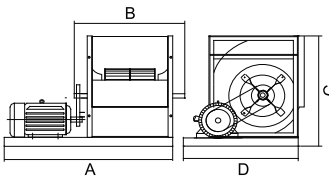
FDE-K

		0°			90°			180°		
										
										
Model	Motor FrameSize	A	B	C	A	B	C	A	B	C
280	90	760	600	568	850	600	516	760	600	568
	100	810	600	568	890	600	516	810	600	568
	112	850	600	568	930	600	516	850	600	568
	132	850	600	568	930	600	516	850	600	568
	160	900	600	568	980	600	516	900	600	568
315	100	870	665	628	980	665	568	870	665	628
	112	925	665	628	1000	665	568	925	665	628
	132	930	665	628	1030	665	568	930	665	628
	160	980	665	628	1080	665	568	980	665	628
	180	1030	665	628	1130	665	568	1030	665	628
355	100	930	725	705	1030	725	628	930	725	705
	112	990	725	705	1090	725	628	990	725	705
	132	1020	725	705	1110	725	628	1020	725	705
	160	1070	725	705	1160	725	628	1070	725	705
	180	1120	725	705	1200	725	628	1120	725	705
400	100	1020	790	786	1140	790	701	1020	790	786
	112	1060	790	786	1190	790	701	1060	790	786
	132	1080	790	786	1210	790	701	1080	790	786
	160	1120	790	786	1240	790	701	1120	790	786
	180	1160	790	786	1300	790	701	1160	790	786
450	100	1100	845	877	1250	845	776	1100	845	877
	112	1150	890	877	1300	890	776	1150	890	877
	132	1220	890	877	1330	890	776	1220	890	877
	160	1270	890	877	1370	890	776	1270	890	877
	180	1310	890	877	1410	890	776	1310	890	877
	200	1350	890	877	1450	890	776	1350	890	877
500	100	1120	915	981	1120	915	863	1120	915	981
	112	1170	960	981	1340	960	863	1170	960	981
	132	1210	960	981	1385	960	863	1210	960	981
	160	1260	960	981	1430	960	863	1260	960	981
	180	1300	960	981	1470	960	863	1300	960	981
	200	1350	960	981	1520	960	863	1350	960	981

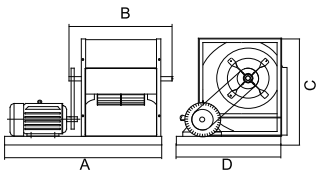
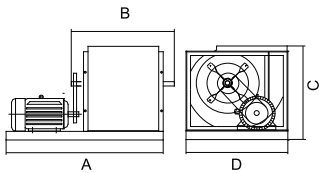
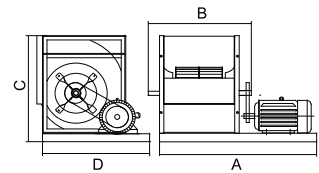
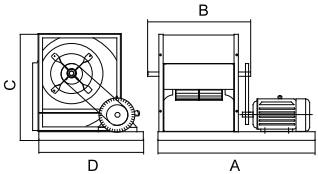
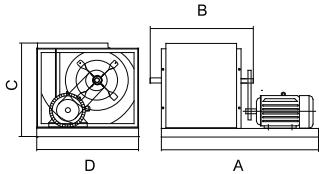
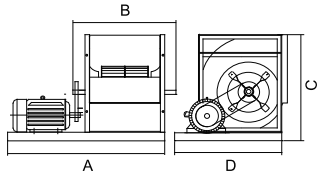
FDE-K

		0°			90°			180°		
										
										
Model	Motor Frame Size	A	B	C	A	B	C	A	B	C
560	132	1310	1070	1093	1500	1070	956	1310	1070	1093
	160	1380	1070	1093	1580	1070	956	1380	1070	1093
	180	1390	1070	1093	1580	1070	956	1390	1070	1093
	200	1440	1070	1093	1630	1070	956	1440	1070	1093
630	132	1450	1155	1220	1660	1155	1062	1450	1155	1220
	160	1500	1155	1220	1710	1155	1062	1500	1155	1220
	180	1520	1155	1220	1730	1155	1062	1520	1155	1220
	200	1570	1155	1220	1780	1155	1062	1570	1155	1220
710	132	1650	1290	1383	1900	1290	1201	1650	1290	1383
	160	1700	1290	1383	1950	1290	1201	1700	1290	1383
	180	1750	1290	1383	2000	1290	1201	1750	1290	1383
	200	1770	1290	1383	2020	1290	1201	1770	1290	1383
	225	1800	1290	1383	2050	1290	1201	1800	1290	1383
800	100	1660	1450	1548	1900	1450	1330	1660	1450	1548
	112	1680	1450	1548	1920	1450	1330	1680	1450	1548
	132	1710	1450	1548	1950	1450	1330	1710	1450	1548
	160	1750	1450	1548	2040	1450	1330	1750	1450	1548
	180	1770	1450	1548	2060	1450	1330	1770	1450	1548
	200	1820	1450	1548	2110	1450	1330	1820	1450	1548
	225	1850	1450	1548	2140	1450	1330	1850	1450	1548
900	112	1830	1570	1748	2180	1570	1508	1830	1570	1748
	132	1850	1570	1748	2200	1570	1508	1850	1570	1748
	160	1900	1570	1748	2250	1570	1508	1900	1570	1748
	180	1950	1570	1748	2300	1570	1508	1950	1570	1748
	200	2000	1570	1748	2350	1570	1508	2000	1570	1748
	225	2030	1570	1748	2380	1570	1508	2030	1570	1748
1000	112	2130	1700	1910	2380	1700	1641	2080	1700	1910
	132	2100	1700	1910	2400	1700	1641	2100	1700	1910
	160	2150	1700	1910	2450	1700	1641	2150	1700	1910
	180	2200	1700	1910	2500	1700	1641	2200	1700	1910
	200	2200	1700	1910	2500	1700	1641	2200	1700	1910
	225	2250	1700	1910	2650	1700	1641	2250	1700	1910
	250	2330	1700	1910	2630	1700	1641	2330	1700	1910

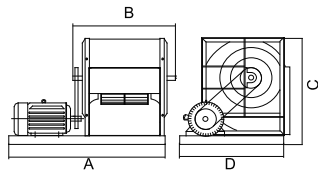
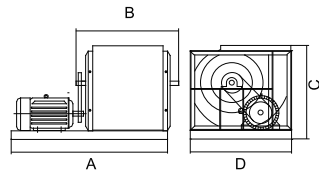
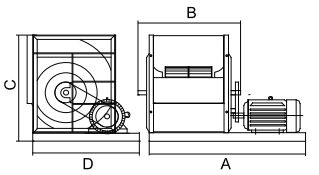
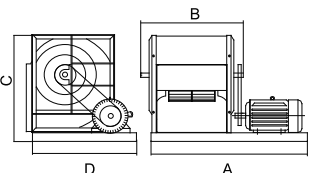
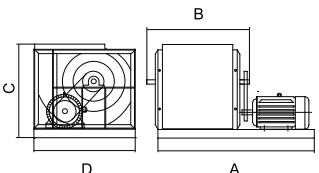
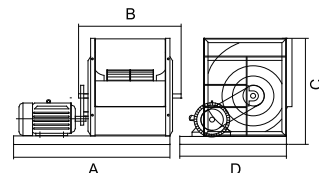
FDE-R

		0°				90°				180°			
													
													
Model	Motor FrameSize	A	B	C	D	A	B	C	D	A	B	C	D
280	71	750	575	568	612	750	575	516	612	750	575	568	612
	80	770	575	568	612	770	575	516	612	770	575	568	612
	90	810	575	568	612	810	575	516	612	810	575	568	612
	100	870	575	568	612	870	575	516	612	870	575	568	612
	112	890	575	568	612	890	575	516	612	890	575	568	612
315	71	790	640	628	617	790	640	568	617	790	640	628	617
	80	810	640	628	617	810	640	568	617	810	640	628	617
	90	860	640	628	617	860	640	568	617	860	640	628	617
	100	910	640	628	617	910	640	568	617	910	640	628	617
	112	930	640	628	617	930	640	568	617	930	640	628	617
355	71	850	700	705	655	850	700	628	655	850	700	705	655
	80	870	700	705	655	870	700	628	655	870	700	705	655
	90	920	700	705	655	920	700	628	655	920	700	705	655
	100	970	700	705	655	970	700	628	655	970	700	705	655
	112	990	700	705	655	990	700	628	655	990	700	705	655
400	80	960	760	786	736	960	760	613	736	960	760	786	736
	90	1000	760	786	736	1000	760	613	736	1000	760	786	736
	100	1050	760	786	736	1050	760	613	736	1050	760	786	736
	112	1070	760	786	736	1070	760	613	736	1070	760	786	736
	132	1170	760	786	736	1170	760	613	736	1170	760	786	736
450	90	1050	845	877	827	1050	845	776	827	1050	845	877	827
	100	1100	845	877	827	1100	845	776	827	1100	845	877	827
	112	1120	845	877	827	1120	845	776	827	1120	845	877	827
	132	1220	845	877	827	1220	845	776	827	1220	845	877	827
500	90	1130	915	981	918	1130	915	863	918	1130	915	981	918
	100	1150	915	981	918	1150	915	863	918	1150	915	981	918
	112	1190	915	981	918	1190	915	863	918	1190	915	981	918
	132	1290	915	981	918	1290	915	863	918	1290	915	981	918
	160	1430	915	981	918	1430	915	863	918	1430	915	981	918
560	90	1250	1000	1093	1030	1250	1000	956	1030	1250	1000	1093	1030
	100	1290	1000	1093	1030	1290	1000	956	1030	1290	1000	1093	1030
	112	1300	1000	1093	1030	1300	1000	956	1030	1300	1000	1093	1030
	132	1400	1000	1093	1030	1400	1000	956	1030	1400	1000	1093	1030
	160	1550	1000	1093	1030	1550	1000	956	1030	1550	1000	1093	1030

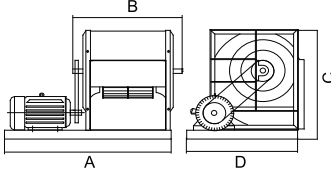
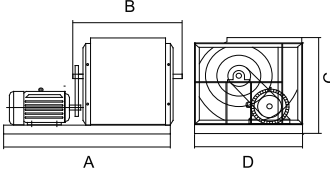
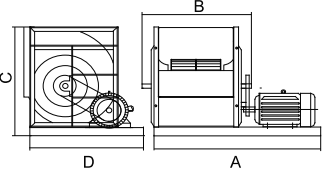
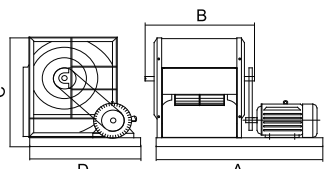
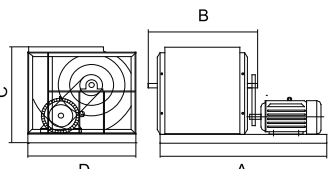
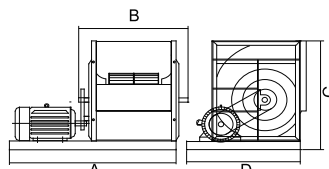
FDE-R

		0°				90°				180°			
LG													
RD													
Model	Motor Frame Size	A	B	C	D	A	B	C	D	A	B	C	D
630	90	1340	1090	1220	1157	1340	1090	1062	1157	1340	1090	1220	1157
	100	1380	1090	1220	1157	1380	1090	1062	1157	1380	1090	1220	1157
	112	1400	1090	1220	1157	1400	1090	1062	1157	1400	1090	1220	1157
	132	1480	1090	1220	1157	1480	1090	1062	1157	1480	1090	1220	1157
	160	1620	1090	1220	1157	1620	1090	1062	1157	1620	1090	1220	1157
710	100	1480	1255	1383	1303	1480	1255	1508	1303	1480	1255	1383	1303
	112	1500	1255	1383	1303	1500	1255	1508	1303	1500	1255	1383	1303
	132	1600	1255	1383	1303	1600	1255	1508	1303	1600	1255	1383	1303
	160	1730	1255	1383	1303	1730	1255	1508	1303	1730	1255	1383	1303
	180	1800	1255	1383	1303	1800	1255	1508	1303	1800	1255	1383	1303

FDE-K

		0°				90°				180°			
LG													
RD													
Model	Motor Frame Size	A	B	C	D	A	B	C	D	A	B	C	D
280	100	870	600	568	612	870	600	516	612	870	600	568	612
	112	890	600	568	612	890	600	516	612	890	600	568	612
	132	990	600	568	612	990	600	516	612	990	600	568	612
315	100	910	665	628	617	910	665	568	617	910	665	628	617
	112	930	665	628	617	930	665	568	617	930	665	628	617
	132	1030	665	628	617	1030	665	568	617	1030	665	628	617
	160	1190	665	628	617	1070	665	568	617	1070	665	628	617
355	100	970	725	705	655	970	725	628	655	970	725	705	655
	112	990	725	705	655	990	725	628	655	990	725	705	655
	132	1090	725	705	655	1090	725	628	655	1090	725	705	655
	160	1250	725	705	655	1130	725	628	655	1130	725	705	655
400	112	1070	790	786	736	1070	790	613	736	1070	790	786	736
	132	1170	790	786	736	1170	790	613	736	1170	790	786	736
	160	1300	790	786	736	1300	790	613	736	1300	790	786	736

FDE-K

		0°				90°				180°			
													
													
Model	Motor FrameSize	A	B	C	D	A	B	C	D	A	B	C	D
450	112	1120	850	877	827	1120	850	776	827	1120	850	877	827
	132	1220	850	877	827	1220	850	776	827	1220	850	877	827
	160	1300	850	877	827	1300	850	776	827	1300	850	877	827
	180	1380	850	877	827	1380	850	776	827	1380	850	877	827
500	112	1190	920	981	918	1190	920	863	918	1190	920	981	918
	132	1290	920	981	918	1290	920	863	918	1290	920	981	918
	160	1430	920	981	918	1430	920	863	918	1430	920	981	918
	180	1500	920	981	918	1500	920	863	918	1500	920	981	918
560	132	1400	1070	1093	1030	1400	1070	956	1030	1400	1070	1093	1030
	160	1550	1070	1093	1030	1550	1070	956	1030	1550	1070	1093	1030
	180	1600	1070	1093	1030	1600	1070	956	1030	1600	1070	1093	1030
	200	1660	1070	1093	1030	1660	1070	956	1030	1660	1070	1093	1030
630	132	1480	1155	1220	1157	1480	1155	1062	1157	1480	1155	1220	1157
	160	1620	1155	1220	1157	1620	1155	1062	1157	1620	1155	1220	1157
	180	1680	1155	1220	1157	1680	1155	1062	1157	1680	1155	1220	1157
	200	1740	1155	1220	1157	1740	1155	1062	1157	1740	1155	1220	1157
710	132	1600	1290	1383	1303	1600	1290	1508	1303	1600	1290	1383	1303
	160	1730	1290	1383	1303	1730	1290	1508	1303	1730	1290	1383	1303
	180	1800	1290	1383	1303	1800	1290	1508	1303	1800	1290	1383	1303
	200	1850	1290	1383	1303	1850	1290	1508	1303	1850	1290	1383	1303
	225	1920	1290	1383	1303	1920	1290	1508	1303	1920	1290	1383	1303
800	132	1720	1450	1548	1468	1720	1450	1330	1468	1720	1450	1548	1468
	160	1880	1450	1548	1468	1880	1450	1330	1468	1880	1450	1548	1468
	180	1950	1450	1548	1468	1950	1450	1330	1468	1950	1450	1548	1468
	200	2000	1450	1548	1468	2000	1450	1330	1468	2000	1450	1548	1468
	225	2050	1450	1548	1468	2050	1450	1330	1468	2050	1450	1548	1468
900	160	1980	1570	1748	1648	1980	1570	1748	1648	1980	1570	1748	1648
	180	2030	1570	1748	1648	2030	1570	1748	1648	2030	1570	1748	1648
	200	2100	1570	1748	1648	2100	1570	1748	1648	2100	1570	1748	1648
	225	2170	1570	1748	1648	2170	1570	1748	1648	2170	1570	1748	1648
1000	160	2110	1700	1910	1810	2110	1700	1641	1810	2110	1700	1910	1810
	180	2160	1700	1910	1810	2160	1700	1641	1810	2160	1700	1910	1810
	200	2230	1700	1910	1810	2230	1700	1641	1810	2230	1700	1910	1810
	225	2300	1700	1910	1810	2300	1700	1641	1810	2300	1700	1910	1810
	250	2390	1700	1910	1810	2390	1700	1641	1810	2390	1700	1910	1810

FDE Serials Ventilator Operational Limits

			200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000
Max. absorbed Power	L	Kw	3	3	4	/	/	/	/	/	/	/	/	/	/	/	/
	R	Kw	3	3	4	4	6	6	8	10	10	10	15	15	/	/	/
	K	Kw	/	/	/	6	10	15	20	20	20	30	30	40	40	60	60
	R2	Kw	/	/	/	9	13	13	18	22	22	/	/	/	/	/	/
	K2	Kw	/	/	/	/	/	33	45	45	45	65	65	90	90	110	110
Max.R P.M	L	rpm	3200	2800	2400	/	/	/	/	/	/	/	/	/	/	/	/
	R	rpm	3200	2800	2400	2200	1900	1600	1400	1300	1100	900	800	700	/	/	/
	K	rpm	/	/	/	2500	2200	2000	1800	1600	1300	1200	1000	900	800	700	600
	R2	rpm	/	/	/	1800	1600	1400	1200	1000	900	/	/	/	/	/	/
	K2	rpm	/	/	/	/	/	1600	1400	1200	1000	900	750	700	600	500	450
Air Temperature Limits (Min-2020°C)	L	Max:°C	85	85	85	/	/	/	/	/	/	/	/	/	/	/	/
	R	Max:°C	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
	K	Max:°C	/	/	/	85	85	85	85	85	85	85	85	85	85	85	85
	R2	Max:°C	/	/	/	85	85	85	85	85	85	/	/	/	/	/	/
	K2	Max:°C	/	/	/	/	/	85	85	85	85	/	/	/	/	/	/
Fan Weight	L	Kg	7.4	9.2	11	/	/	/	/	/	/	/	/	/	/	/	/
	R	Kg	9.4	10.8	13	19	25	36	44	57	71.5	131	156	192	/	/	/
	K	Kg	/	/	/	29	35	42	57	72	92	160	185	240	290	365	480
	R2	Kg	/	/	/	38	50	71	87	113	142	/	/	/	/	/	/
	K2	Kg	/	/	/	/	/	85	107	136	175	328	378	497	598	758	988



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Director

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