Radial fan FML (B, P, R) -1, -3

Model

Radial fan FML

The FML radial fan is an industrial and ventilation fan that works with a high degree of efficiency.

These are fans for direct drive or belt-drive and are available with three different types of impellers depending on application. The R impeller has blades that are bent backwards, the P impeller has flat blades that are bent backwards and the R impeller has straight radial blades.

Facts

The FML radial fan with a B impeller is intended for clean air (clean gases).

Flow range:	0.1–7.5 m^3/s
Pressure range:	100–2,500 Pa
Efficiency up to:	86%

The FML radial fan with a P impeller is intended for both clean air and air (gas) with lower dust content.

Flow range:	0.1–7.5 m^3/s
Pressure range:	100–2,000 Pa
Efficiency up to:	75%

The FML radial fan with an R impeller is intended for the transport of polluted air (gas) or grain size material.

Flow range:	0.1–7.5 m^3/s
Pressure range:	100–1,500 Pa
Efficiency up to:	61%

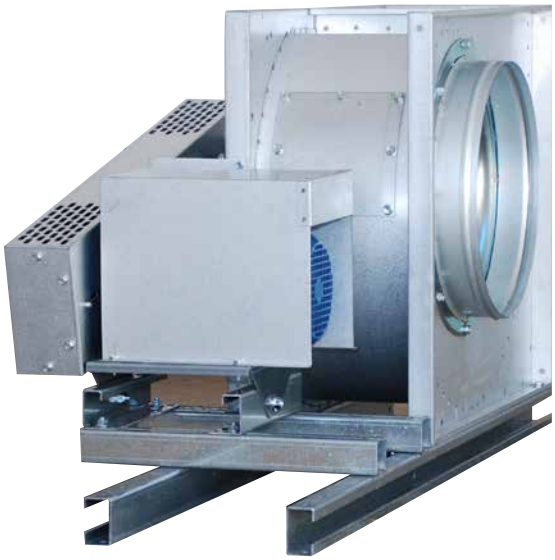
All fans can be equipped with a cooling disc that enables the fan to be used for hot air/gas up to 200°C.

Design

The fan is square-shaped and is mounted on a base making the fan easy to locate in the installation. The fan is manufactured with the required blow-off form.

The fan housing is primarily manufactured in Aluzinc sheet metal, while the impeller, which has an all-welded design, is normally delivered lacquered in environmental class C2.

FML (B, P, R) -1



FML (B, P, R) -3

We reserve the right to make changes without prior notification.

Åkerstedts Verkstads AB, Broholm 1, SE-535 91 Kvänum, Sweden. Tel: +46 (0)512 – 325 60. **www.akerstedts.com**

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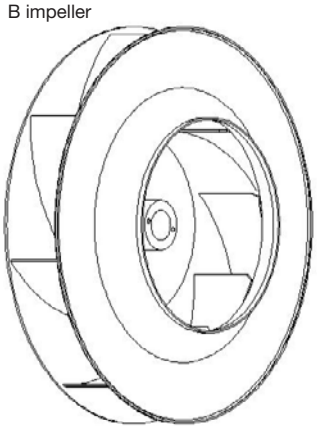
industrial fans since 1977

Radial fan FML – Specifications

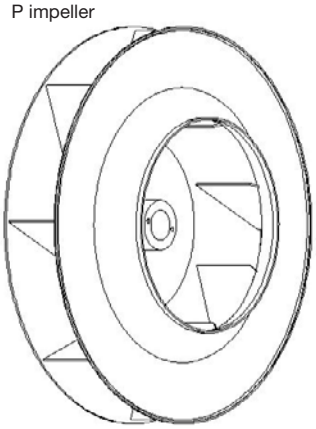
Item No. / Fan code =	FML -	X -	A -	BBB -	C -	D -	E
Impeller							
Bent backwards, B		B					
Flat bent backwards, P		P					
Straight radial, R		R					
Drive type							
Direct-driven			1				
Belt-driven			3				
Direct-driven extended hub			8				
Size							
025				025			
031				031			
039				039			
040				040			
044				044			
045				045			
050				050			
063				063			
071				071			
072				072			
080				080			
Impeller design							
Steel					1		
Aluminium					2		
Blow-off form							
H1						1	
H2						2	
H3						3	
H4						4	
V1						5	
V2						6	
V3						7	
V4						8	
Drive type direct drive							
63 = Ø11							1
71 = Ø14							2
80 = Ø19							3
90 = Ø24							4
100 = Ø28							5
112 = Ø28							6
132 = Ø38							7
160 = Ø42							8
180 = Ø48							9
Drive type belt-drive							
Motor max. M112, on base							2
Motor M112-180L, on base							3

B impeller



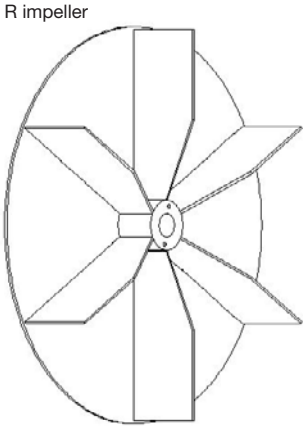
Backwards bent blades
For transport of clean gases.

P impeller



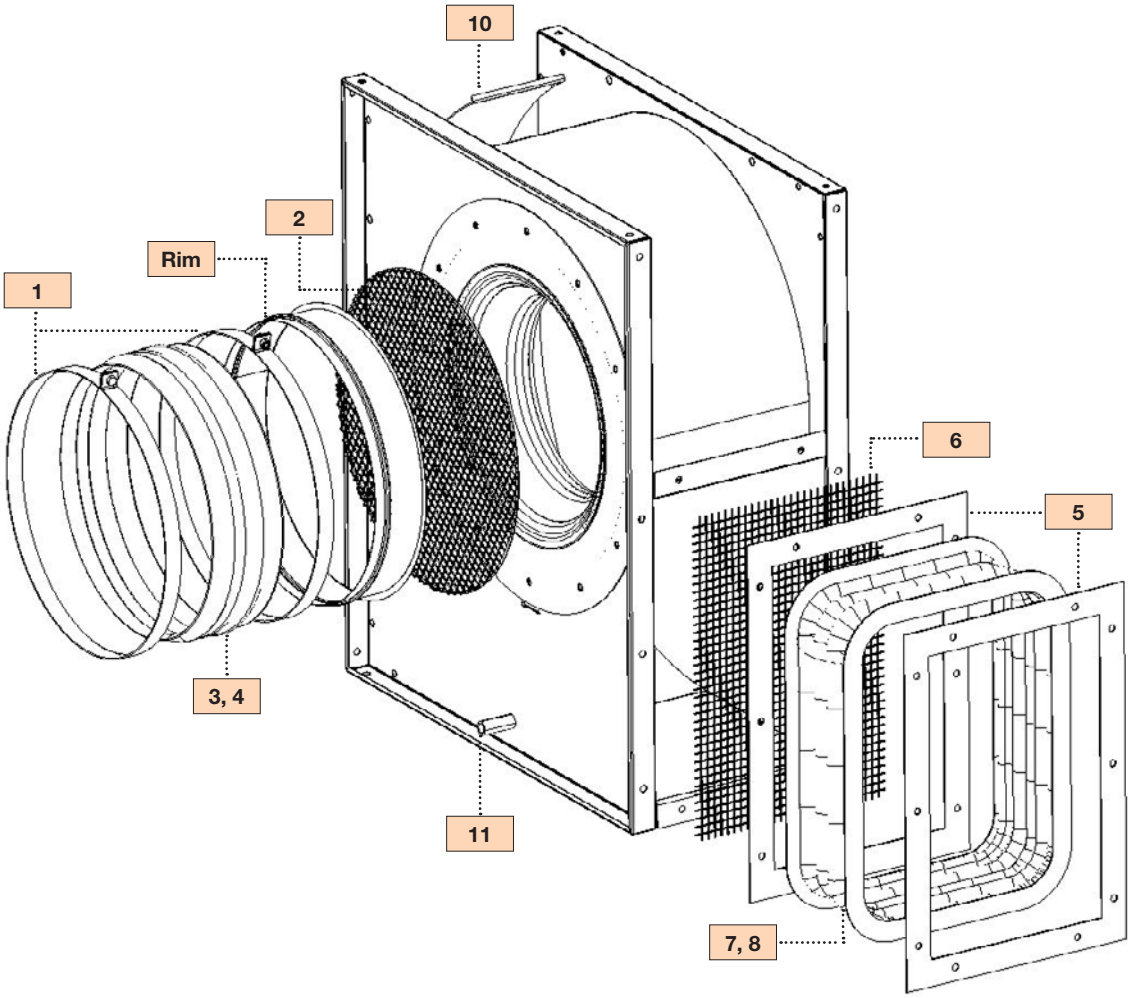
Flat, backwards bent blades
For transport of clean gases or gases with low level of dust content.

R impeller



Straight, radial blades
For transport of gases with dust content.
Also suitable for grain size material.

Exploded view FML



Optional accessories

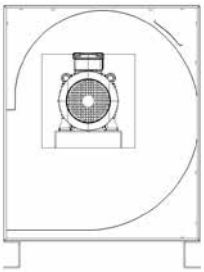
Item number for FML exploded view, Accessories

No.	Designation	Item No.	Comment
1	Clamping band	KBAA1aaa	
2	Protective guard Inlet FML	GOBA1aaa	
3	Plastic fabric sleeve coupling FML, inlet L =150	POBA1aaa	Tmax: +80°C
4	Flue gas sleeve coupling FML, inlet L=150	AOBA1aaa	Tmax: +350°C, Al clad fibreglass sleeve coupling
5	Flange outlet FML	FREA1aaa	
6	Protective guard Outlet FML	GRBA1aaa	
7	Sleeve coupling FML, outlet L = 120 flange	SREA1aaa	Tmax: +80°C
8	Sleeve coupling, Outlet FML L = 120 flange	AREA1aaa	Tmax: +350°C, Al clad fibreglass sleeve coupling
9	Transition piece, Outlet FML aaa-Øbbb nipple	TREA1aaaDbbb	aaa - fan size, bbb - diameter mm
10	Inspection cover	FXLZ1aaa11	
11	Drainage, internal thread R15 L=34	FXLZ1aaa12	
12	Motor rain cover	FXLZ1aaa13	
13	Cooling disc	FXLZ1aaa31	Tmax: +200°C
14	Copper ferrule	FXLZ1aaa15	
15	Shaft seal, Teflon	FXLZ1aaa32	Tmax: +250°C

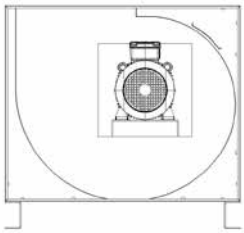
Item number for FML, Painting

No.	Designation	Item No.	Comment
1	Set-up cost painting FML M2 (C2)	FMLZ1811	Only used with Customer-specific colour
2	Set-up cost painting FML M3/Epoxy C4	FMLZ1812	
3	Set-up cost painting FML, Heat resistant (C2)	FMLZ1813	Tmax: +400°C. Colour silver-grey.
4	Radial fan painting Customer-specific Colour	FMLZ1aaa913	Specify RAL colour code when ordering.

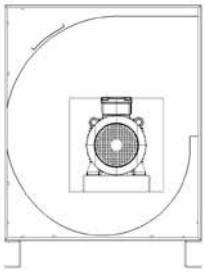
Blow-off forms



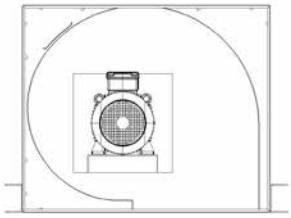
H1



H2

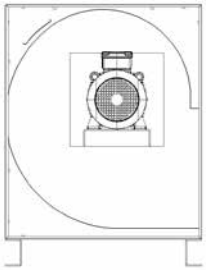


H3

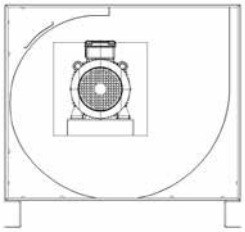


H4

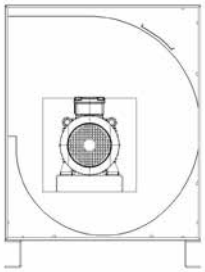
Inspection cover FXLZ-1-aaa-11 (option)



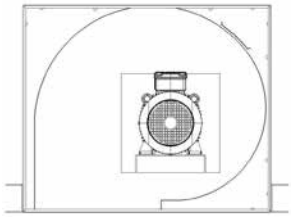
V1



V2

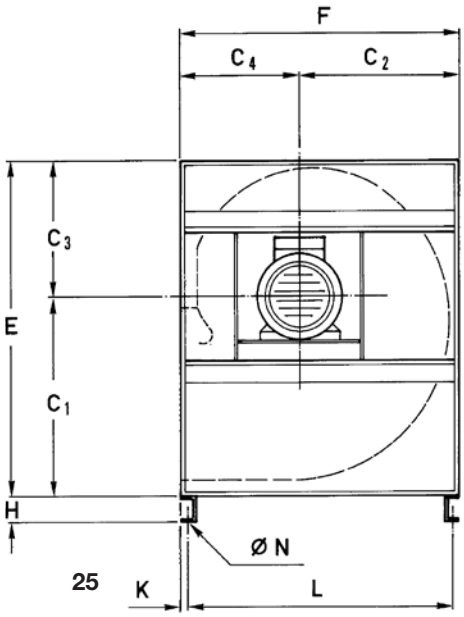


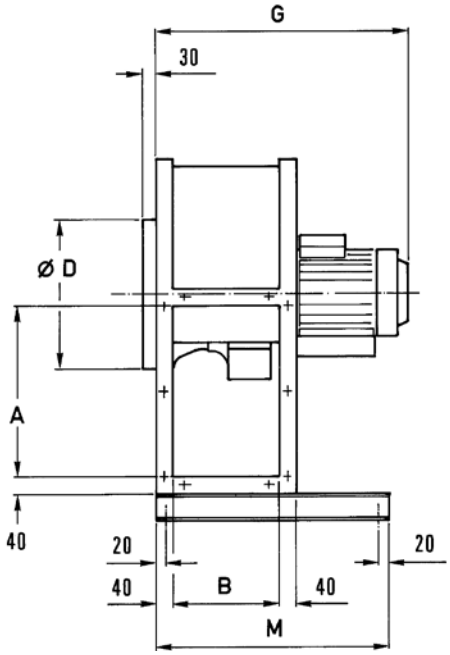
V3



V4

Fan seen from the operating side. Location of any inspection cover is shown in the figure above.

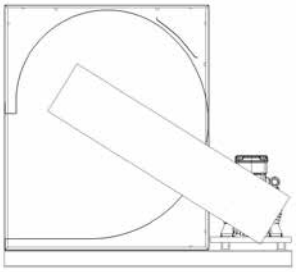




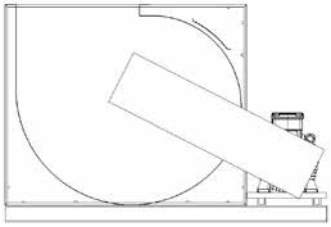
Dimensions

FML (B,P,R) -1	A	B	C_1	C_2	C_3	C_4	D	E	F	G	H	L H1	L H2	L H3	L H4	M	N	Motor max.	Weight [kg] excluding motor
025	250	160	309	240	207	192	250	516	432	520	60	382	466	382	551	550	10	90L	23
031	315	200	379	298	255	231	315	634	529	560	60	479	584	479	669	550	10	90L	31
039/040	400	250	470	373	318	283	400	788	656	690	60	606	738	606	823	550	10	112M	43
044/045	450	280	524	418	356	316	400	880	734	700	70	683	829	683	941	770	14	112M	55
050	500	315	578	461	393	344	500	971	805	760	70	755	921	755	1,031	770	14	112M	65
063	630	400	717	576	490	424	630	1,207	1,000	910	70	950	1,157	950	1,267	820	14	132M	110
071/072	710	450	803	646	550	472	630	1,353	1,118	1,080	70	1,068	1,303	1,068	1,413	820	14	160L	135
080	800	500	900	692	606	526	710	1,506	1,218	1,180	70	797	685	639	1,556	820	18	180L	178

Blow-off forms



H1



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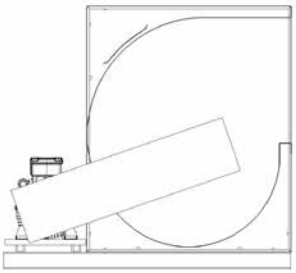
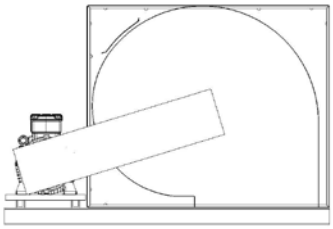
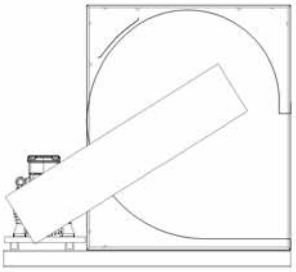


H3

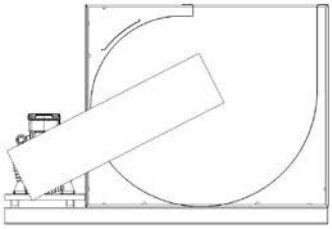


H4

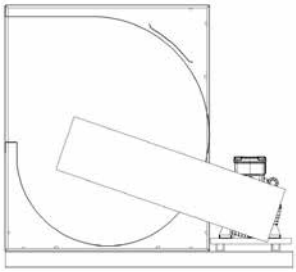
Inspection cover FXLZ-1-aaa-11 (option)



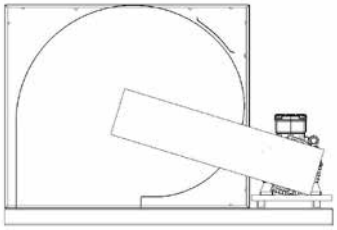
V1



V2

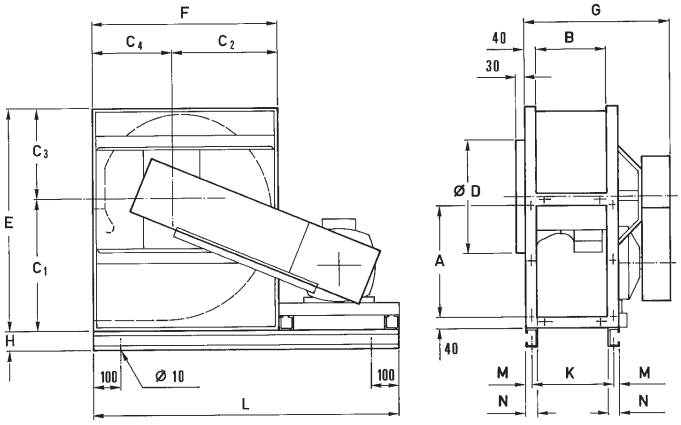


V3



V4

Fan seen from the operating side. Location of any inspection cover is shown in the figure above.



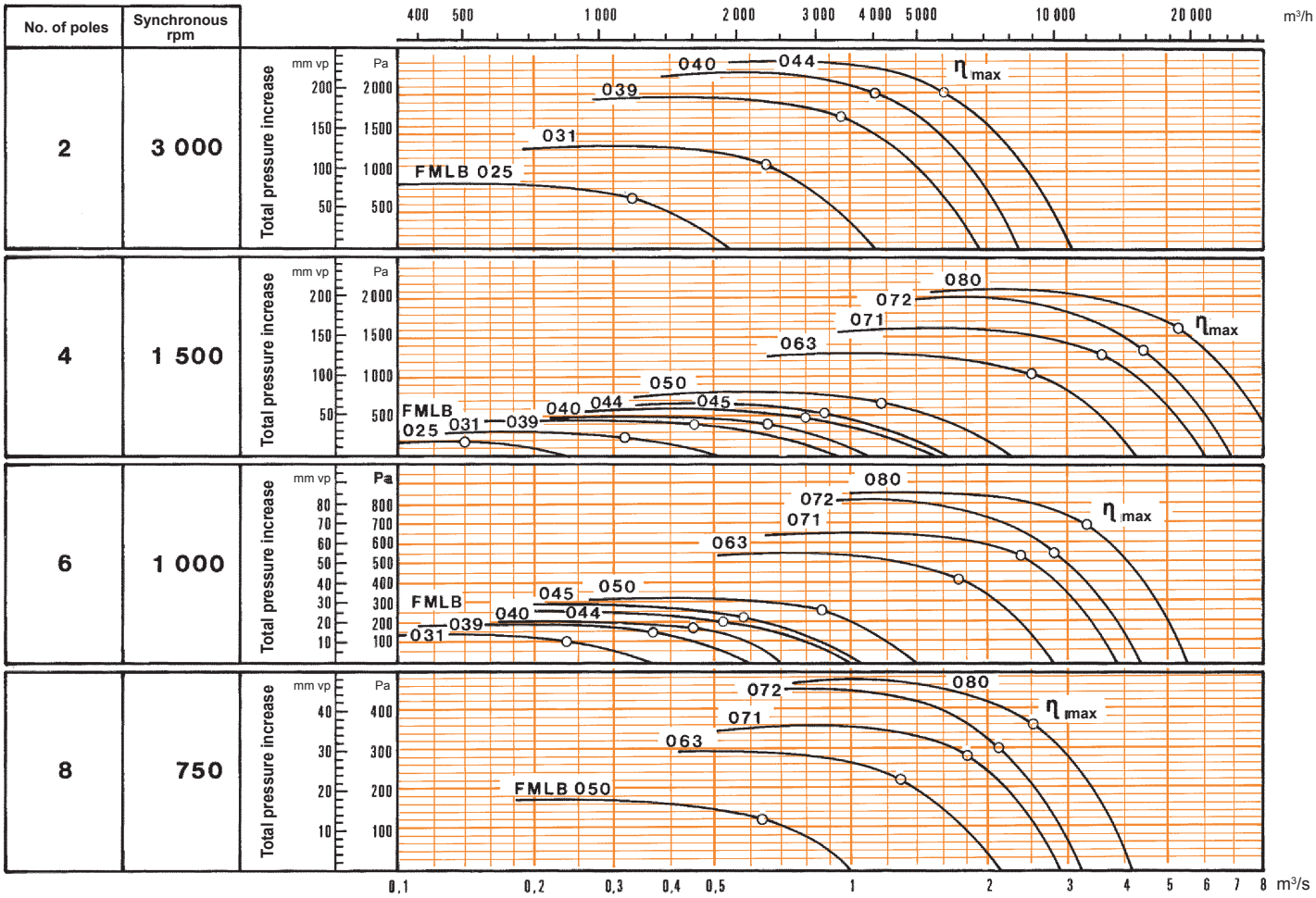
Dimensions

FML (B,P,R) 3	A	B	C_1	C_2	C_3	C_4	D	E	F	G	H	K	L H1, H3	L H2, H4	M	N	d*
025	250	160	309	240	207	192	250	516	432	520	70	200	842	926	20	40	20
031	315	200	379	298	255	231	315	634	529	560	70	240	939	1,044	20	40	20
039/040	400	250	470	373	318	283	400	788	656	690	70	290	1,266	1,398	20	40	30
044/045	450	280	524	418	356	316	400	880	734	700	70	320	1,344	1,490	20	40	40
050	500	315	578	461	393	344	500	971	805	760	70	355	1,415	1,581	20	40	40
063	630	400	717	576	490	424	630	1,207	1,000	910	100	440	1,610	1,817	25	50	42
071/072	710	450	803	646	550	472	630	1,353	1,118	1,080	100	490	1,778	2,013	25	50	42
080	800	500	900	692	606	526	710	1,506	1,218	1,180	100	540	1,878	2,166	25	50	42

d* Shaft diameter for belt-drive

Motor max.	FML (B,P,R) 3	Weight [kg] excluding motor ≤132	Weight [kg] excluding motor 160–180
90L	025	24	
90L	031	32	
112M	039/040	47	63
112M	044/045	57	74
112M	050	65	84
132M	063	112	134
160L	071/072	142	167
180L	080	175	203

Overview diagram



The diagrams apply for air with a density of 1.2 kg/m³.
The diagram applies to fans that are duct-connected both on the inlet and outlet.

Motor data

2 pole /3,000 rpm			
FMLB 1	Motor	Power [kW]	Rotational speed [rpm]
025	71	0.37	2,815
031	80	1.1	2,800
039	90L	2.2	2,840
040	100L	3	2,890
044	112M	4	2,900
045			
050			
063			
071			
072			
080			

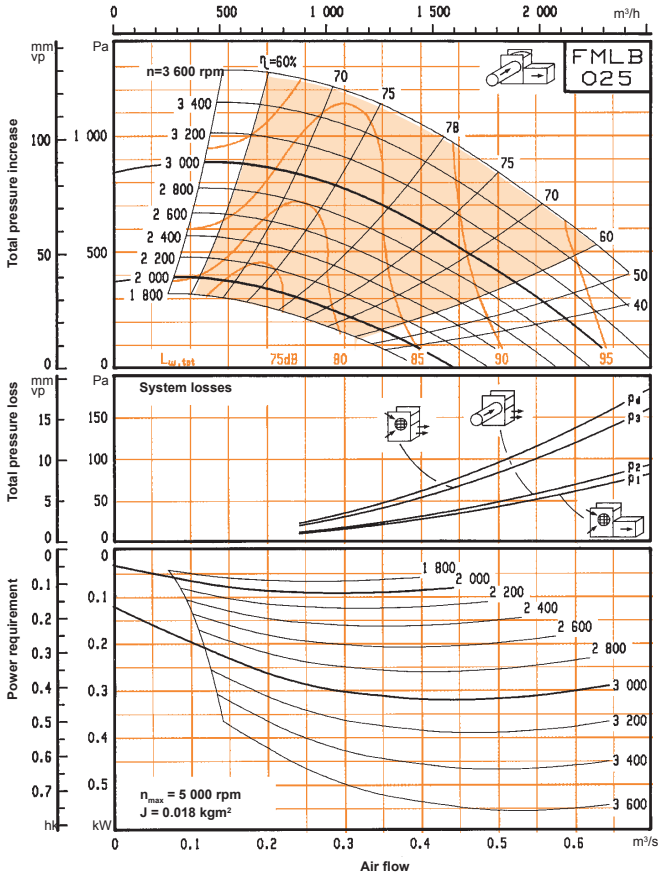
4 pole /1,500 rpm			
FMLB 1	Motor	Power [kW]	Rotational speed [rpm]
025	71	0.25	1,400
031	71	0.25	1,400
039	71	0.25	1,400
040	71	0.37	1,390
044	80	0.55	1,440
045	80	0.55	1,440
050	90S	1.1	1,440
063	100L	3	1,410
071	132S	5.5	1,470
072	132M	7.5	1,470
080	160M	11	1,465

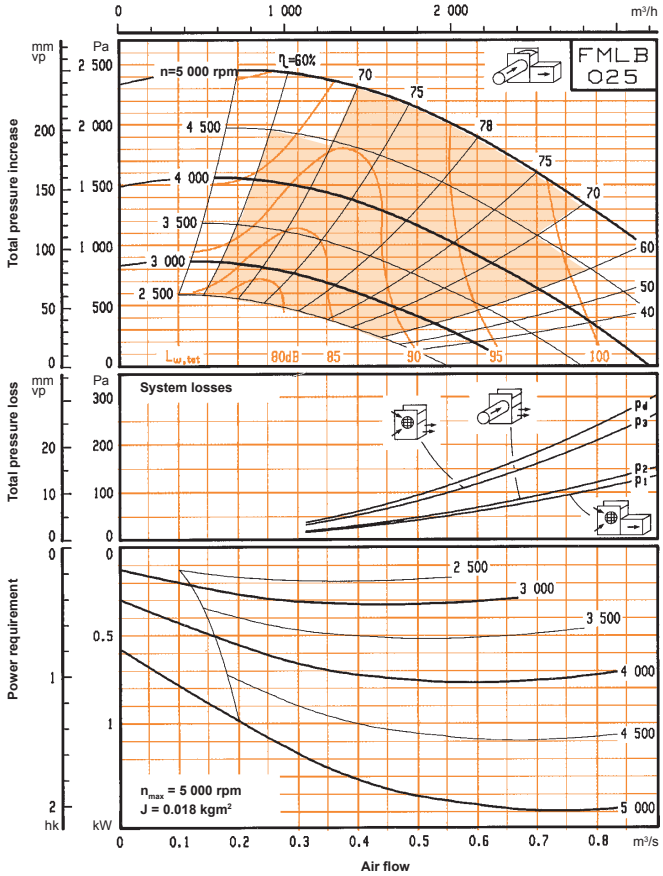
6 pole /1,000 rpm			
FMLB 1	Motor	Power [kW]	Rotational speed [rpm]
025			
031	71	0.18	890
039	71	0.18	890
040	71	0.18	890
044	71	0.18	890
045	71	0.18	890
050	80	0.37	925
063	90L	1.1	920
071	112M	2.2	930
072	112M	2.2	930
080	132S	3	935

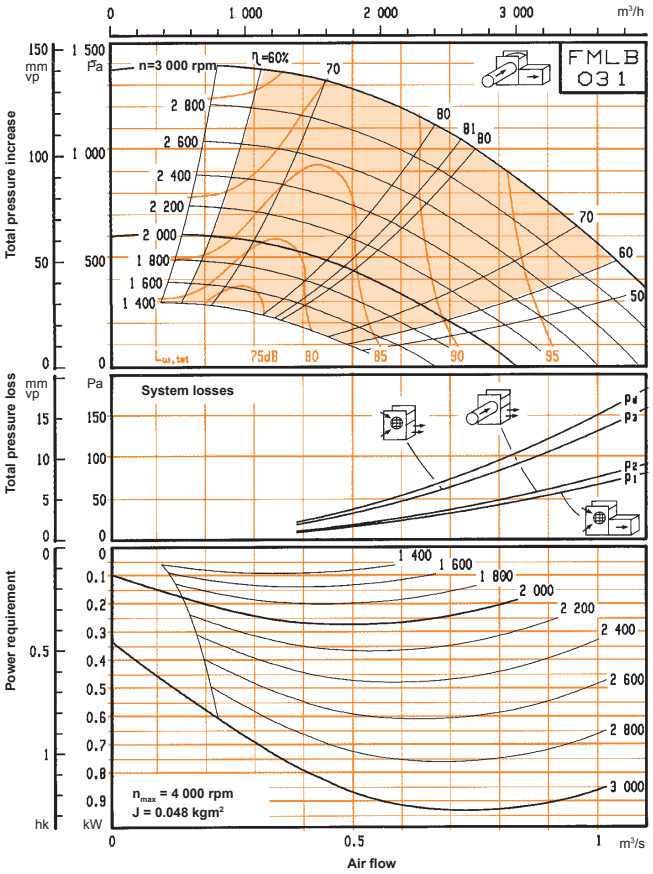
8 pole /750 rpm			
FMLB 1	Motor	Power [kW]	Rotational speed [rpm]
025			
031			
039			
040			
044			
045			
050	80	0.18	700
063	90L	0.55	690
071	100L	0.75	700
072	100L	1.1	700
080	112M	1.5	710

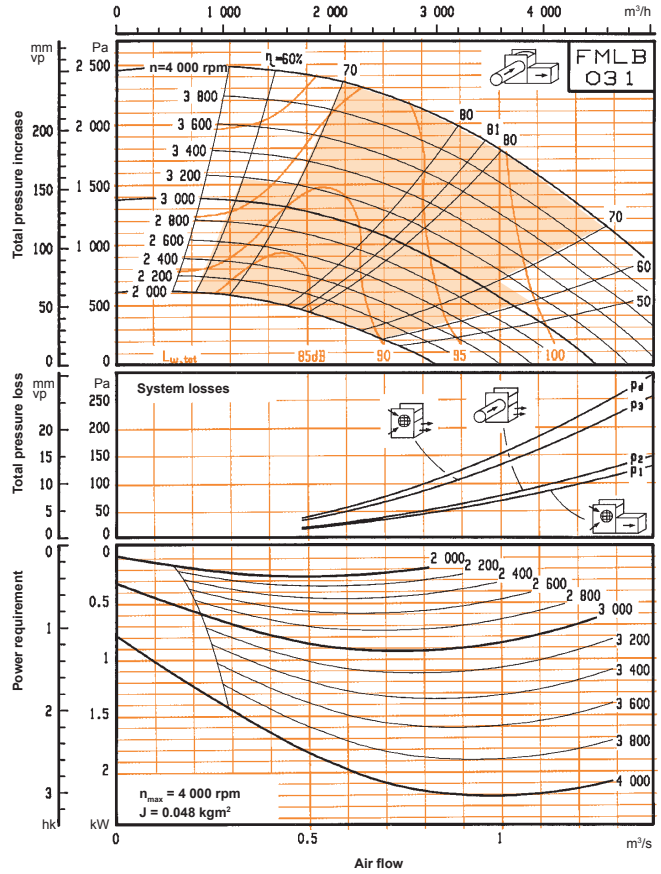
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.



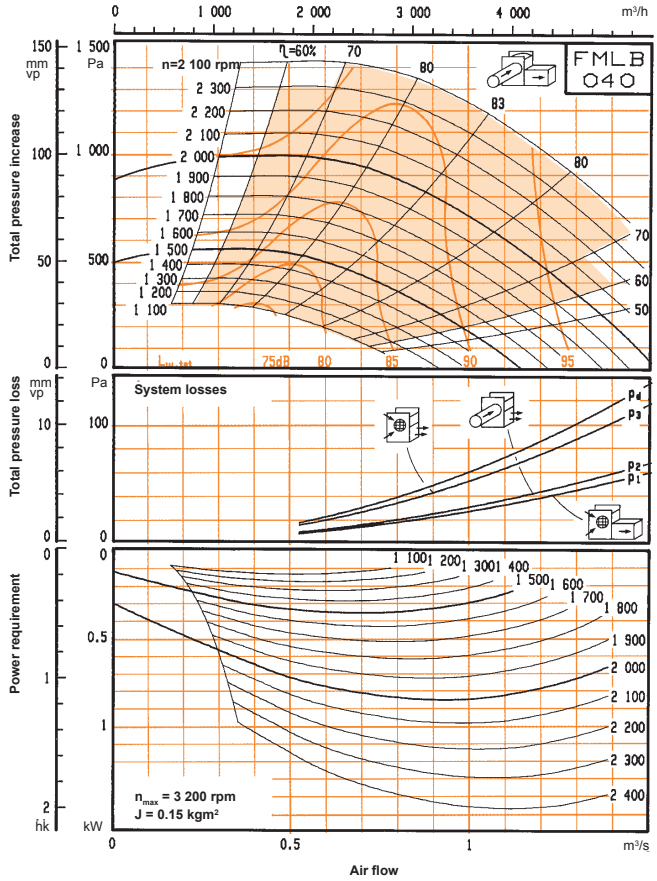


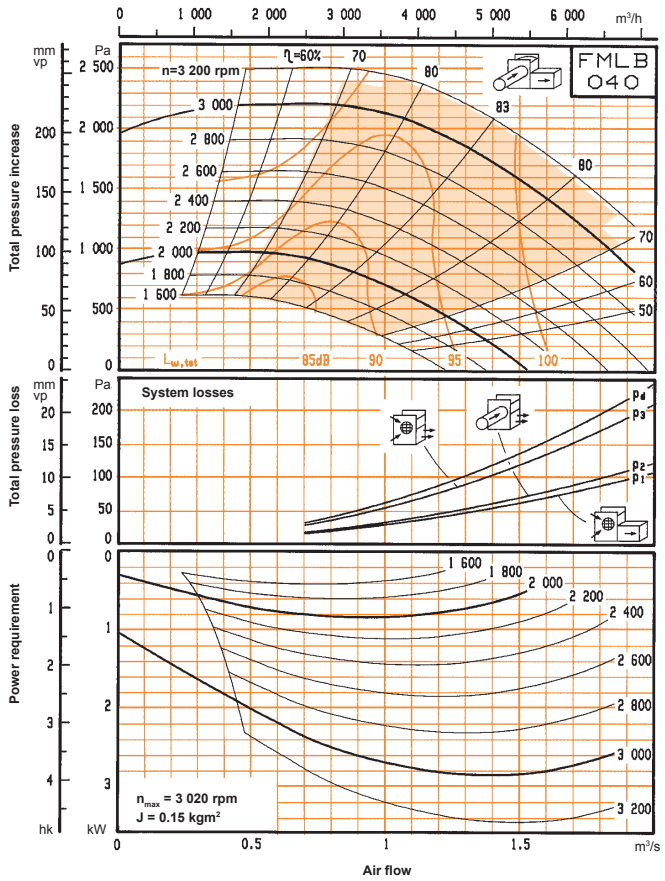


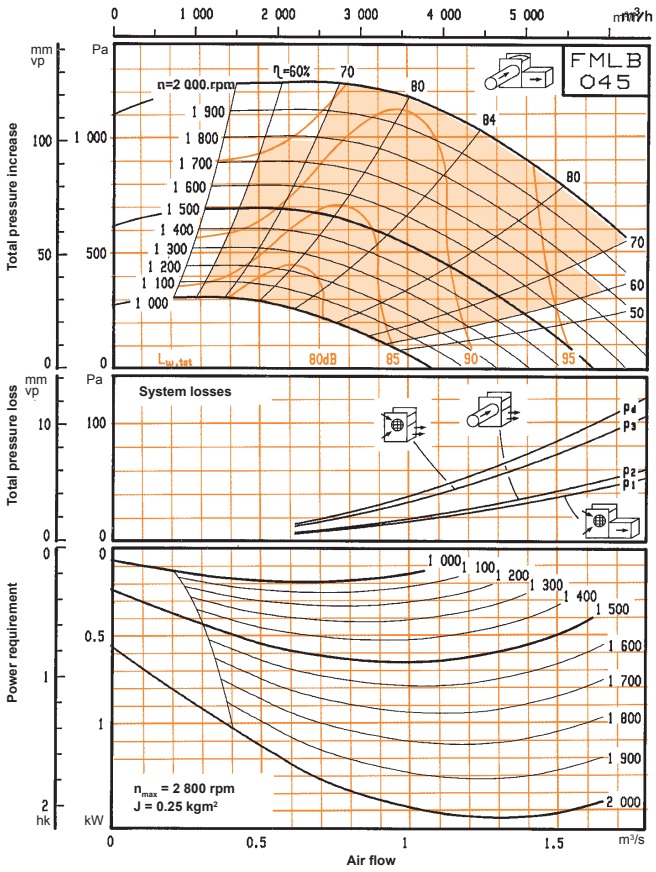


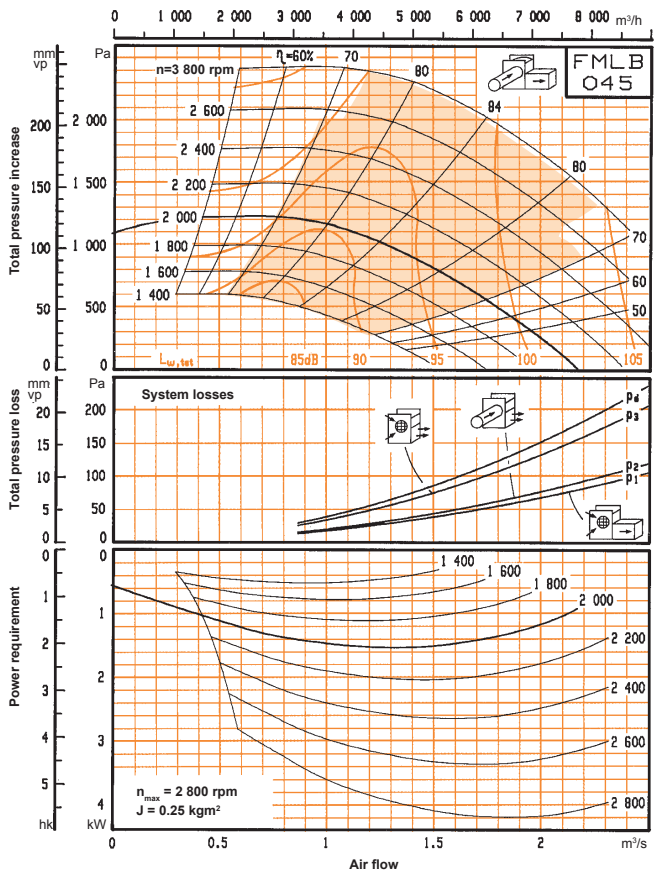
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.



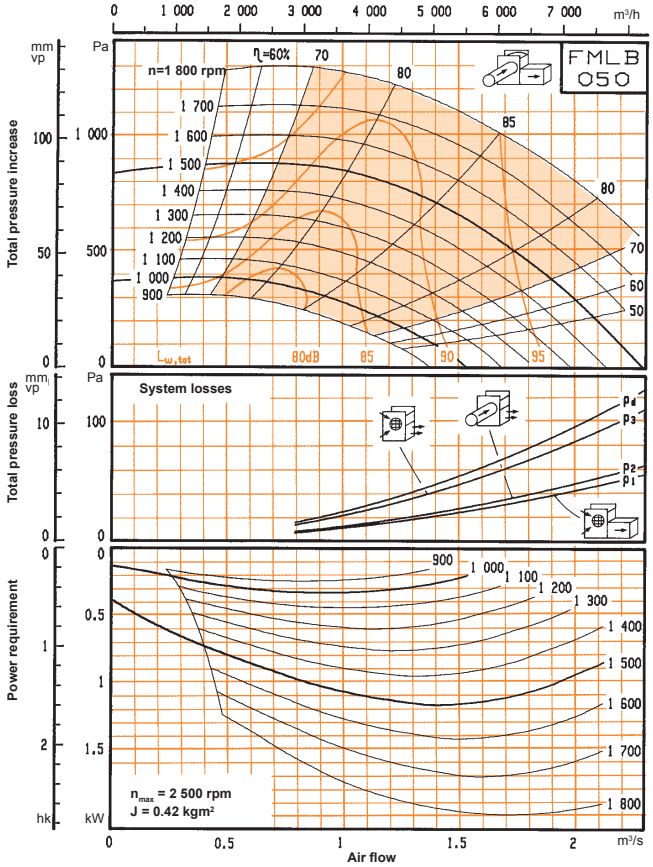


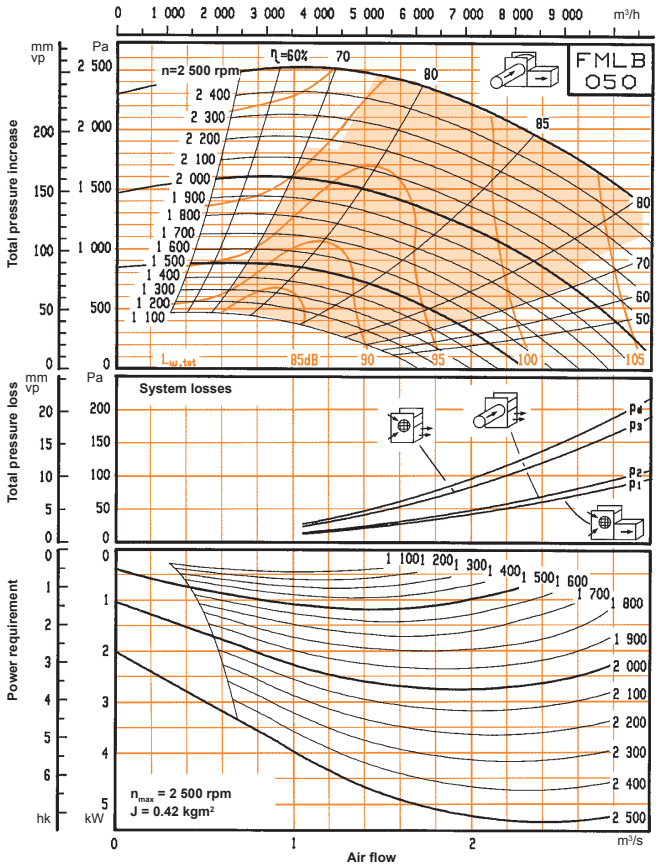


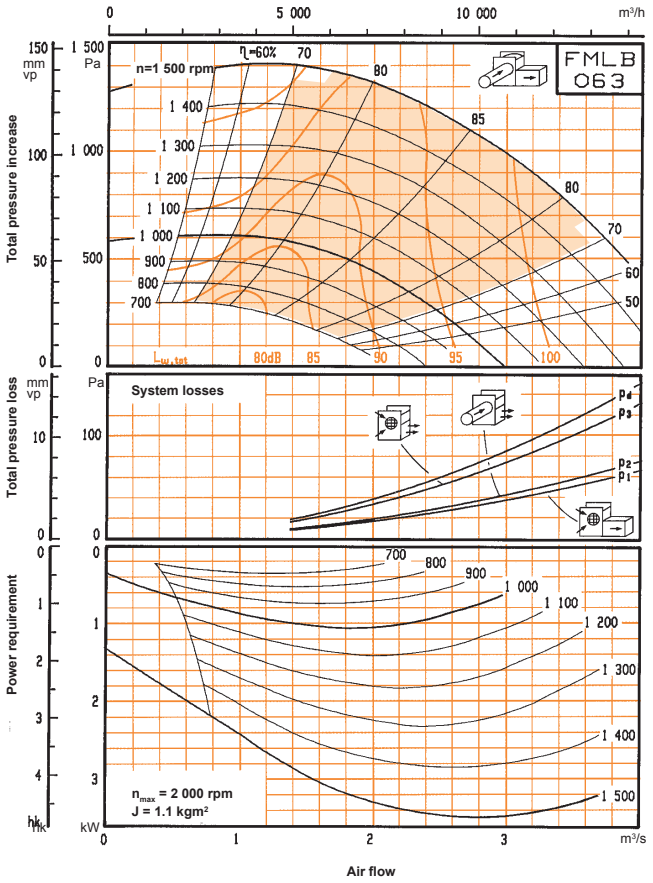


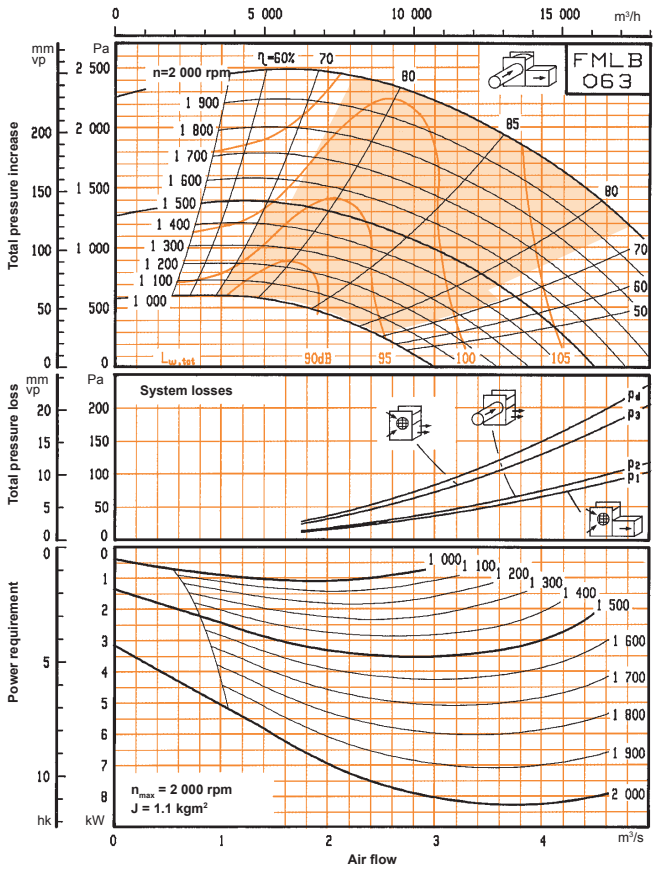
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.









Capacity

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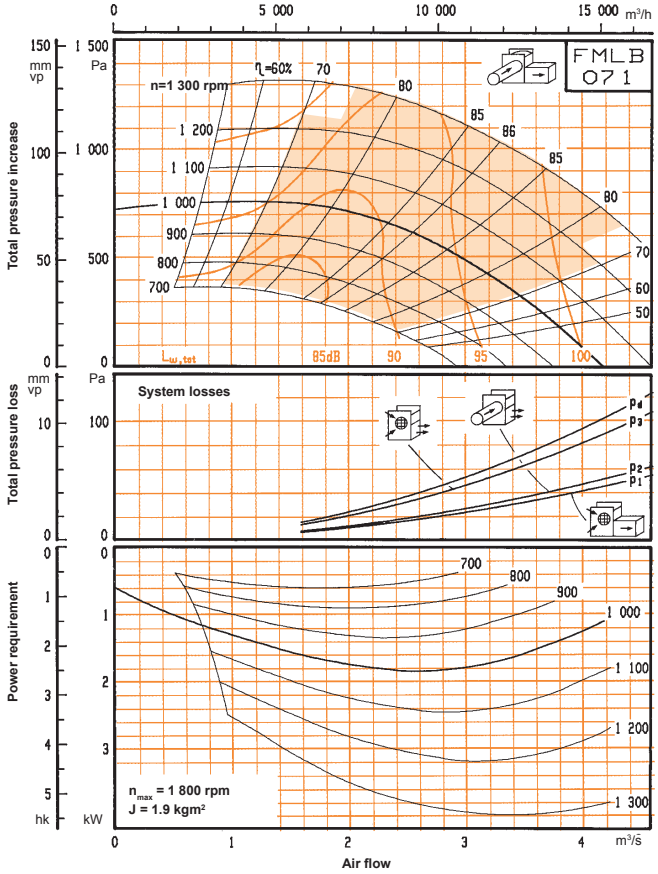
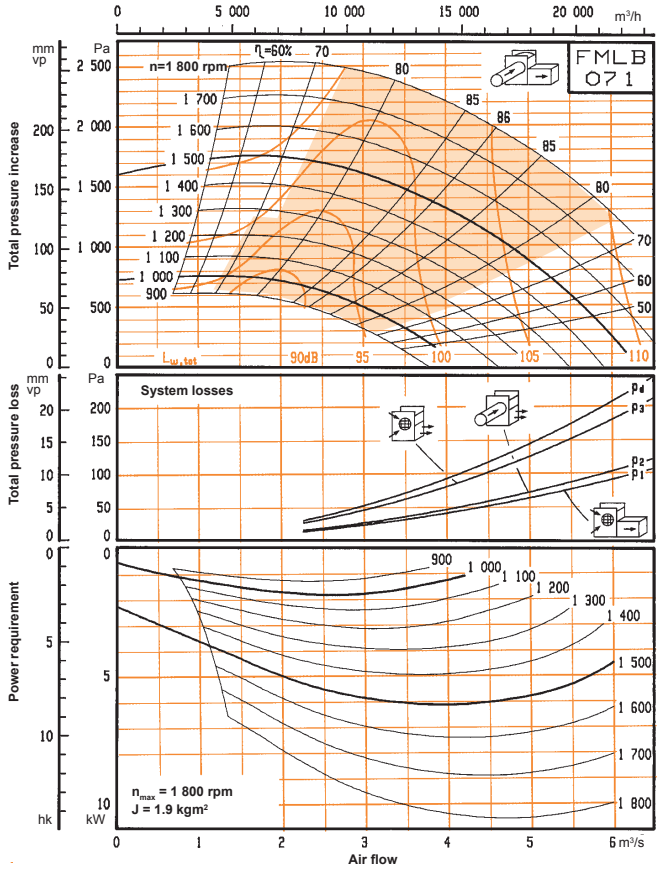
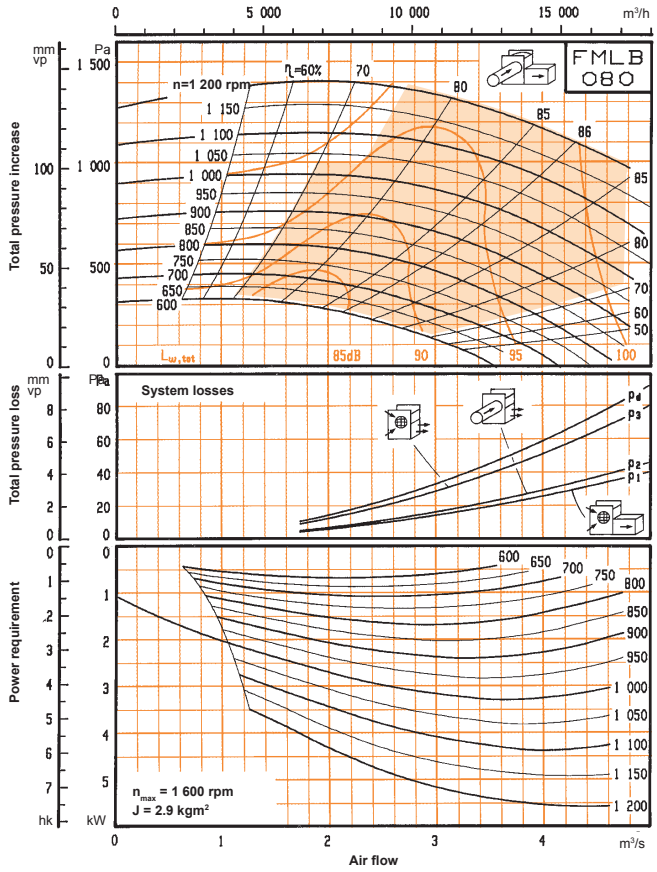
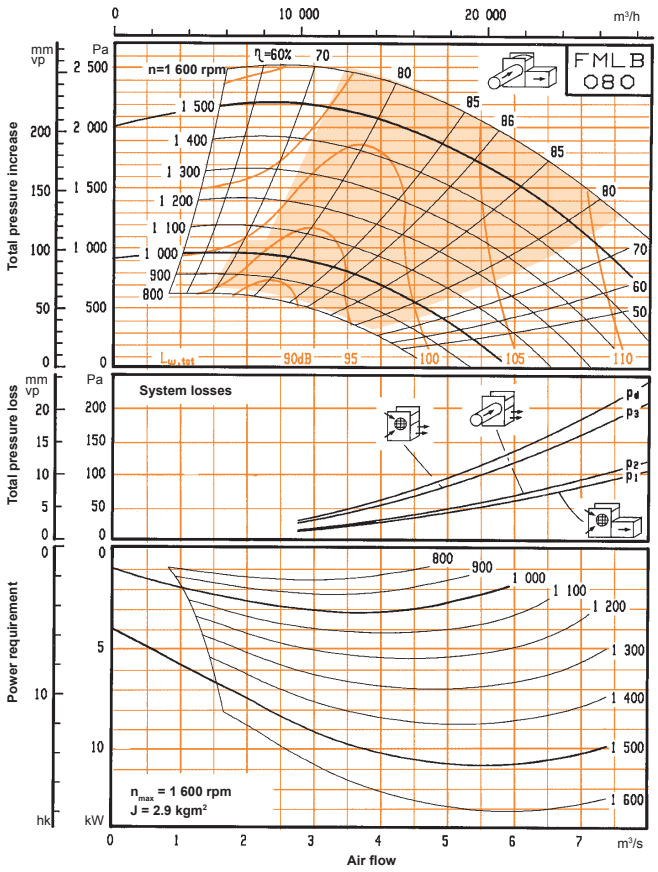








Audio data

Total acoustic power level to outlet duct $L_{W, tot}$ can be read in each fan diagram. For dividing into different audio paths and octave bands, the following formula is used:

$$L_{W, ok} = L_{W, tot} + K_{ok}$$

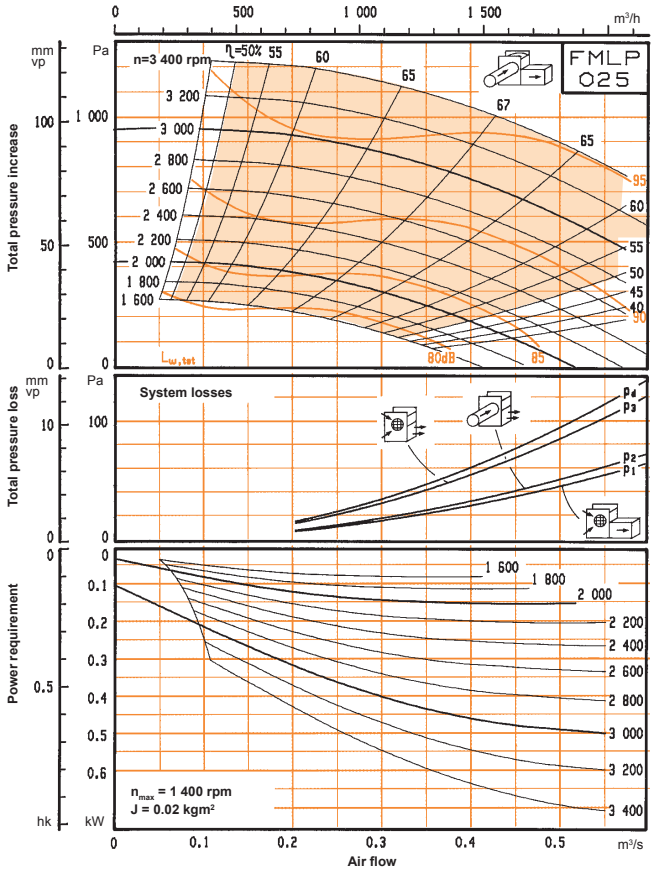
where K_{ok} is obtained from the following tables:

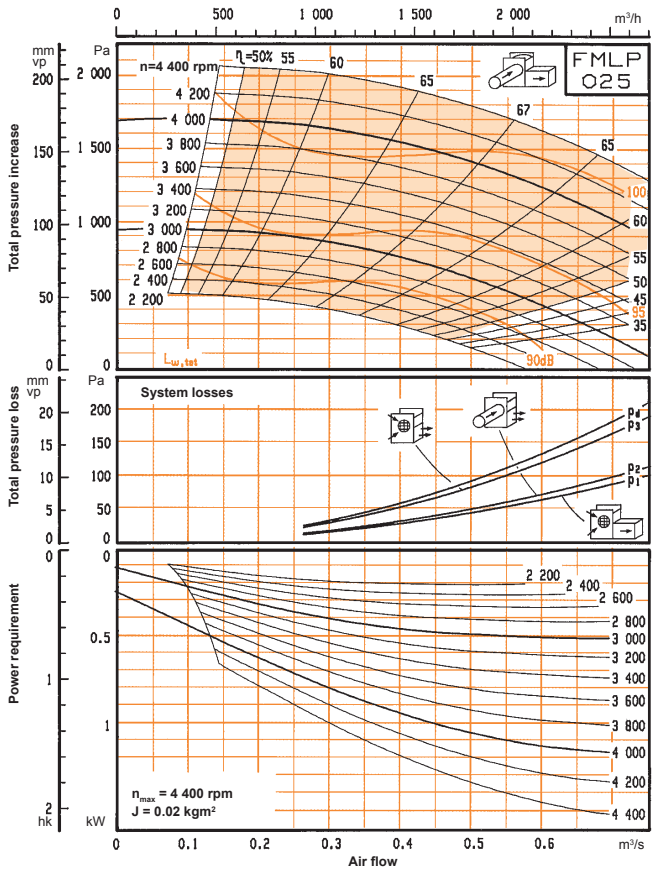
Correction factor K_{ok} for different audio paths and octave bands

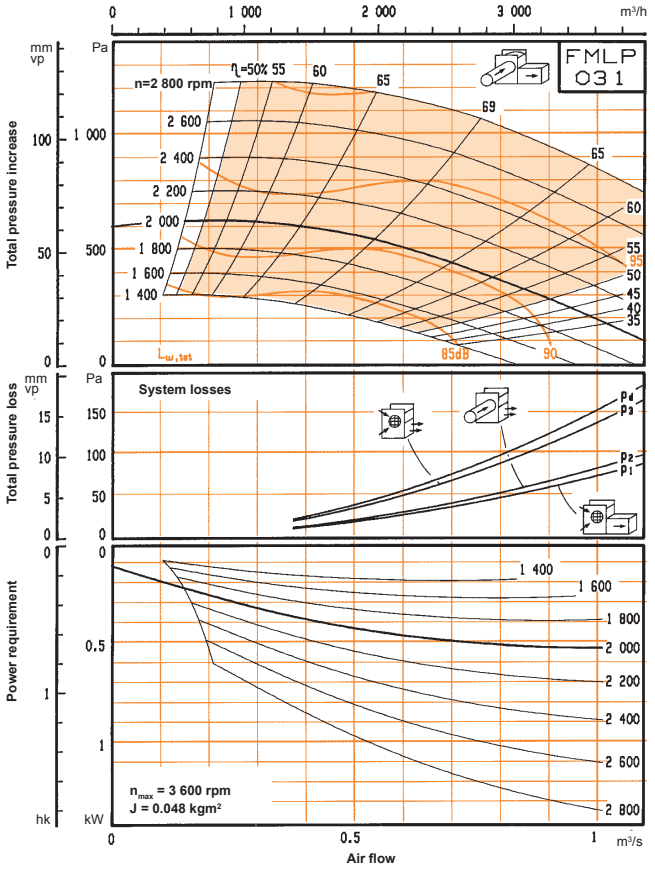
	Rotational speed range [rpm]								
Octave band No.		1	2	3	4	5	6	7	8
Mean frequency [Hz]		63	125	250	500	1,000	2,000	4,000	8,000
Audio path to outlet duct	200-1,300	-6	-3	-4	-10	-18	-29	-36	-45
	1,301-2,600	-7	-8	-4	-5	-10	-15	-26	-40
	2,601-	-7	-9	-8	-4	-7	-11	-17	-28
Audio path to inlet duct, to the right of the line for highest efficiency	200-1,300 1,301-2,600 2,601-	-2	-5	-10	-16	-22	-28	-35	-43
Audio path to inlet duct, to the left of the line for highest efficiency	200-1,300 1,301-2,600 2,601-	-7	-10	-14	-20	-26	-33	-40	-47
Audio path to surrounding at free-standing suction fan	200-1,300	-22	-10	-10	-13	-17	-22	-29	-36
	1,301-2,600	-32	-22	-15	-10	-11	-15	-22	-33
	2,601-	-37	-28	-20	-13	-10	-11	-16	-25
Audio path to surrounding at duct-connected fan	200-1,300	-24	-13	-13	-14	-17	-22	-29	-36
	1,301-2,600	-34	-25	-18	-11	-11	-15	-22	-33
	2,601-	-39	-31	-23	-14	-10	-11	-16	-25

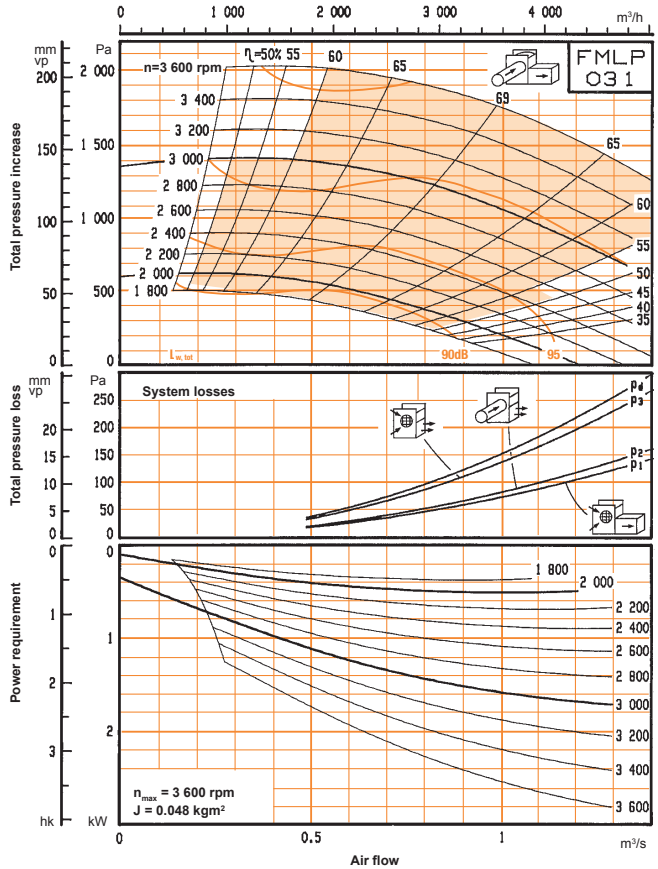
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.



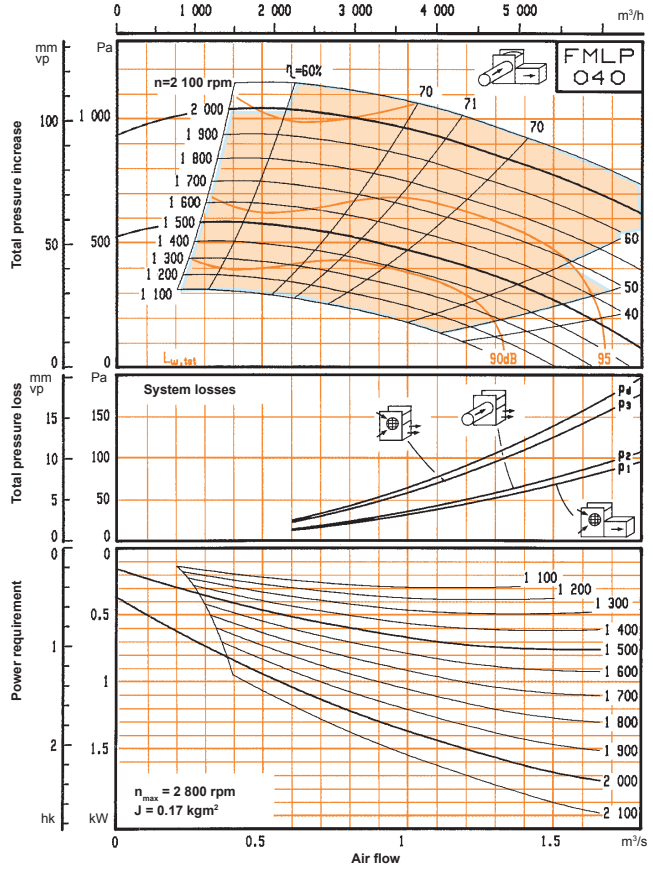


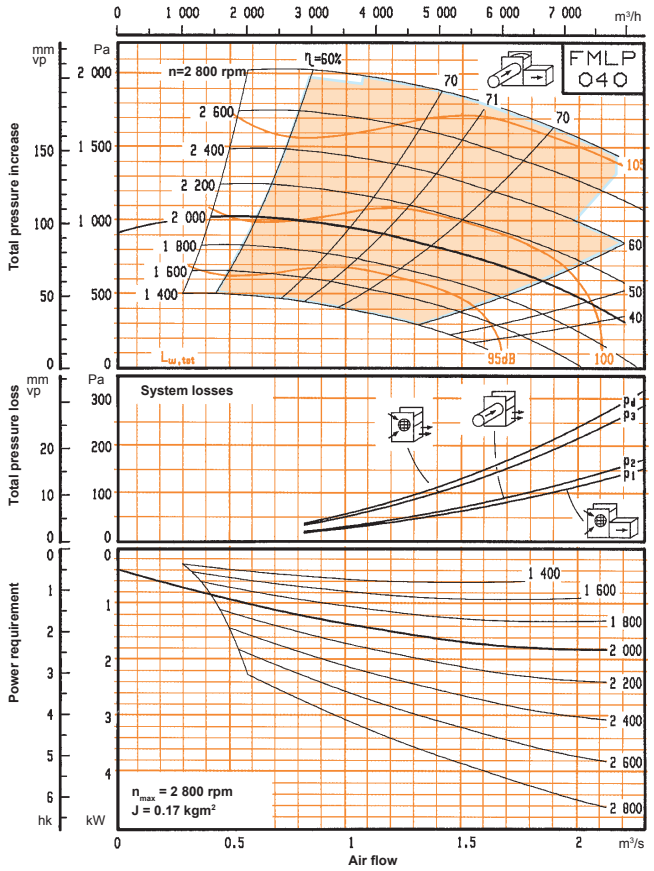


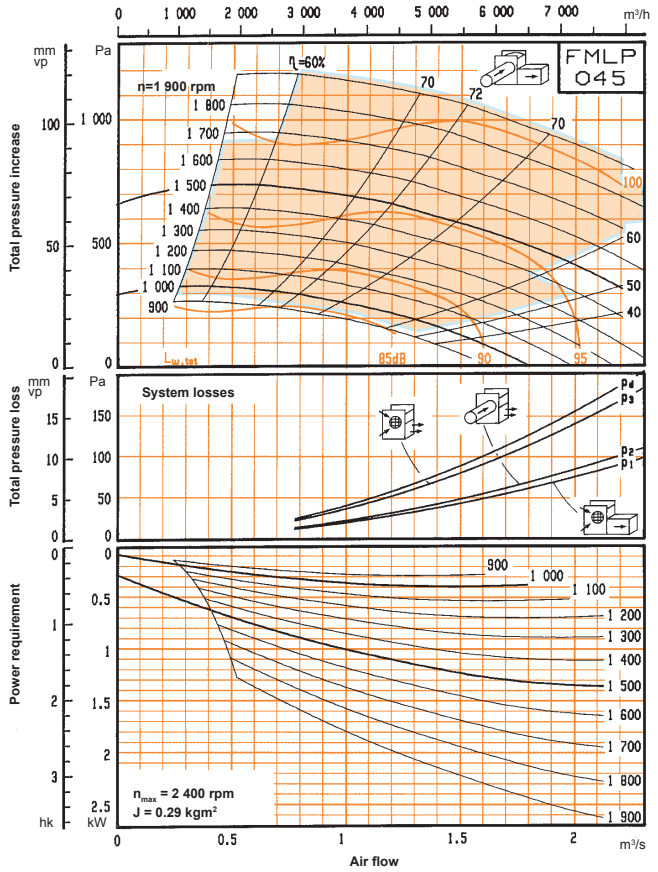


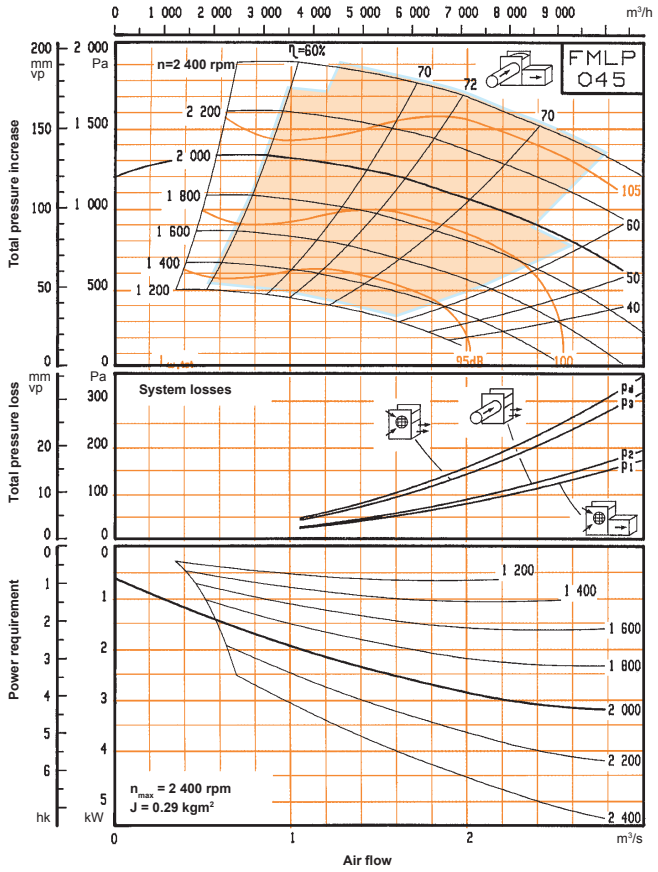
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.









Capacity

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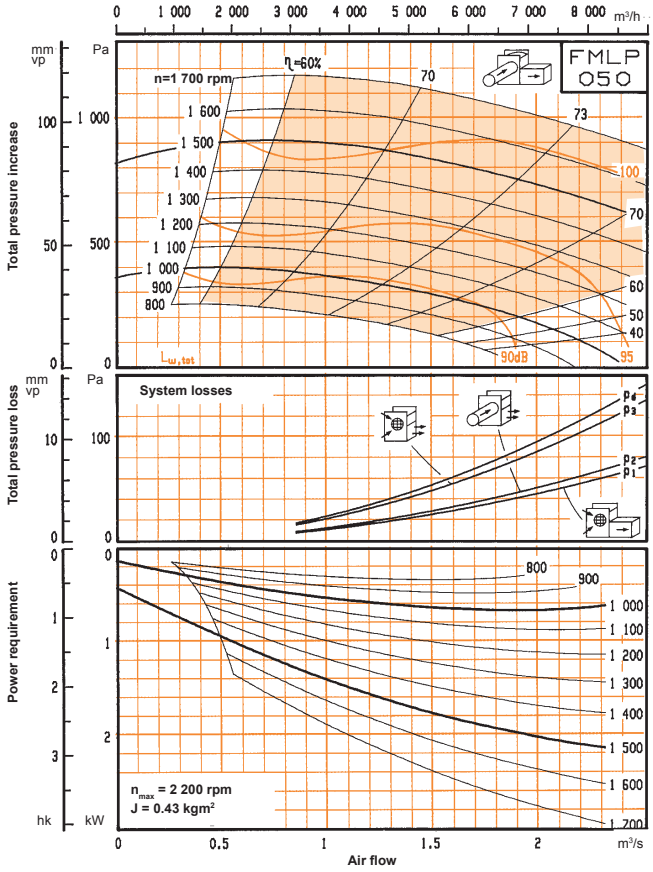

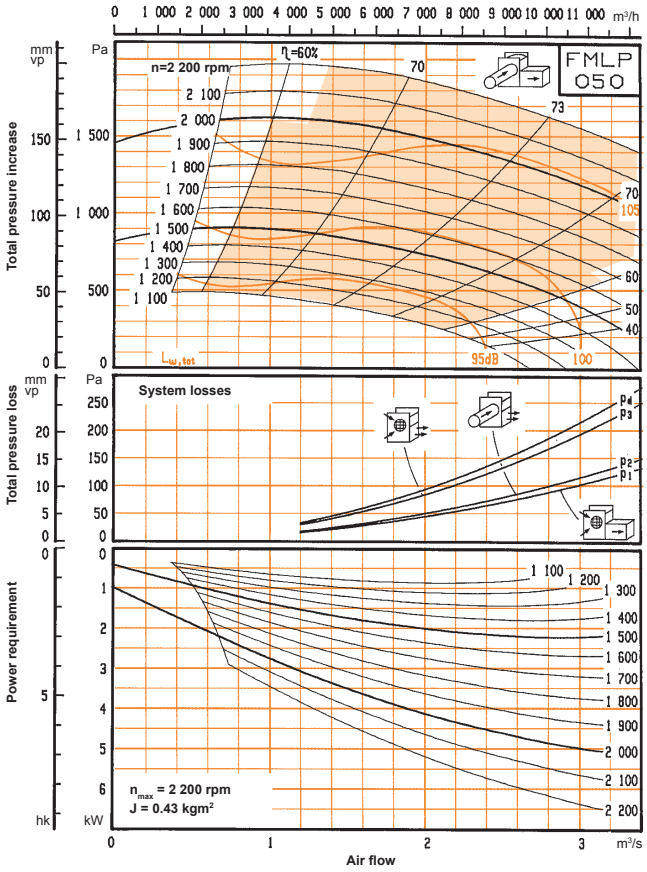

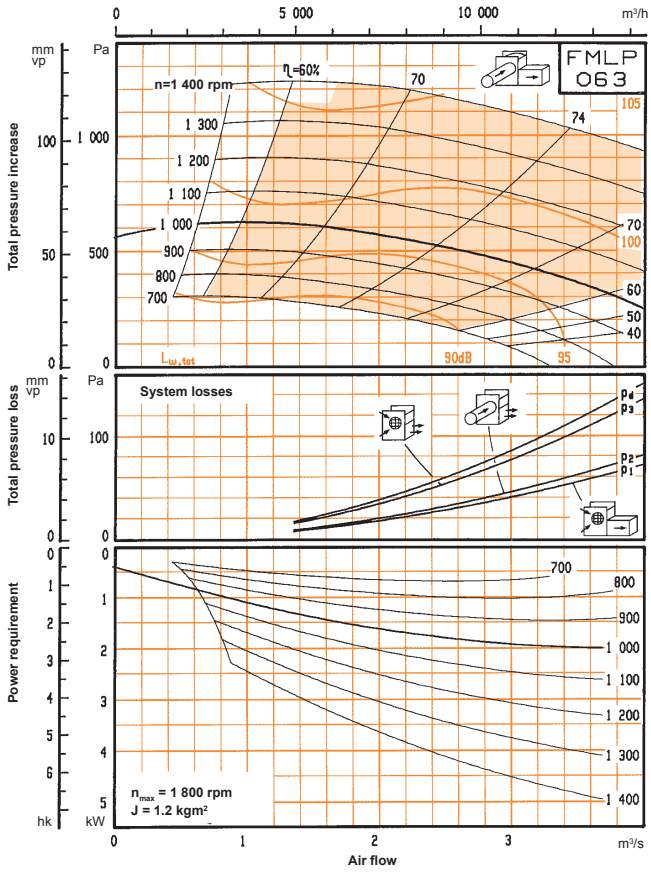

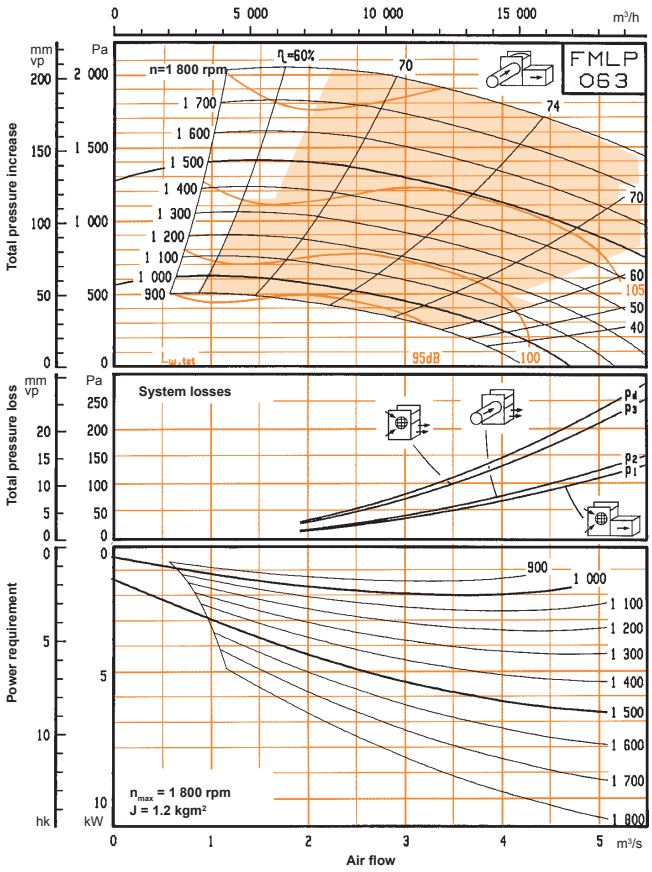

Capacity

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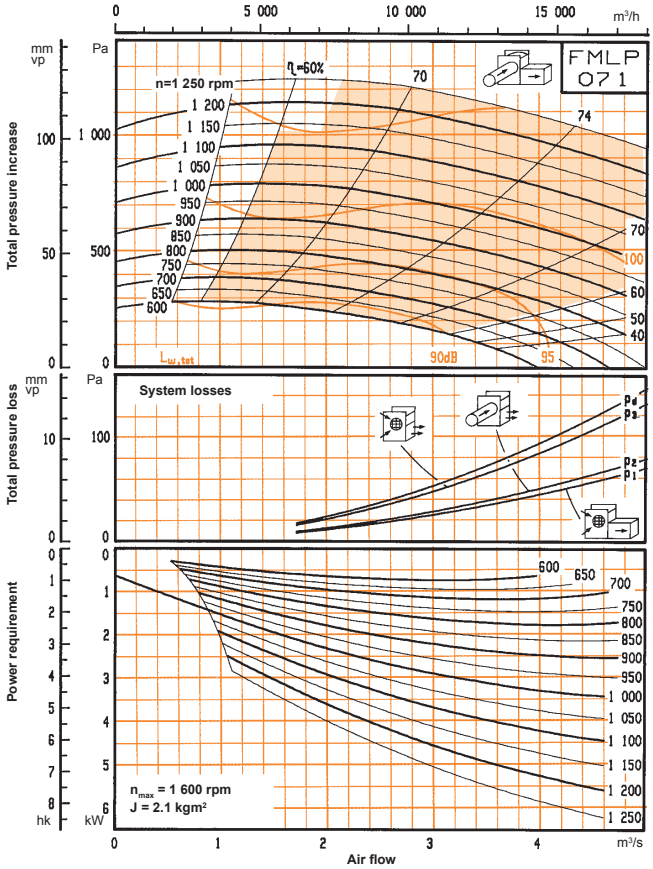

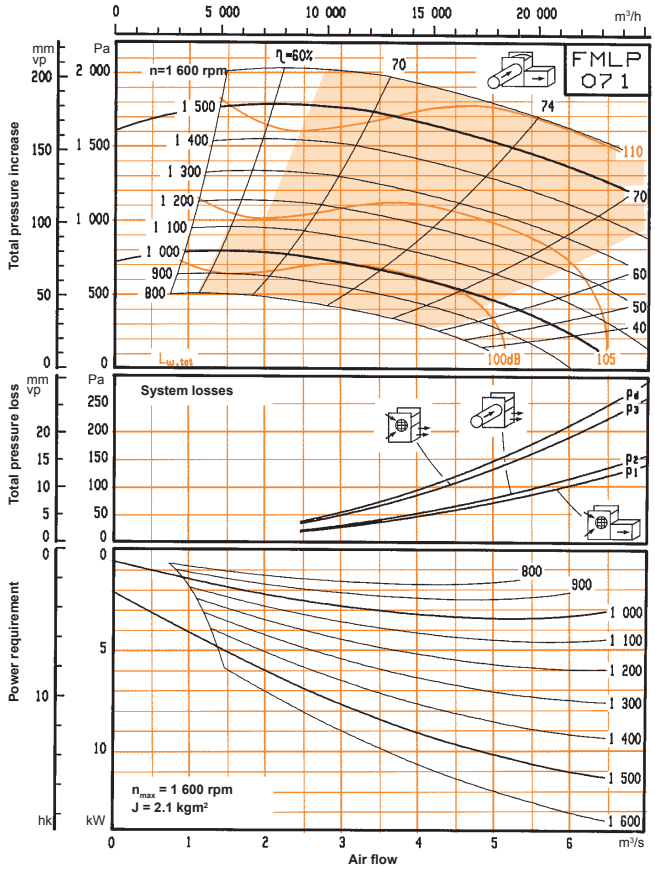

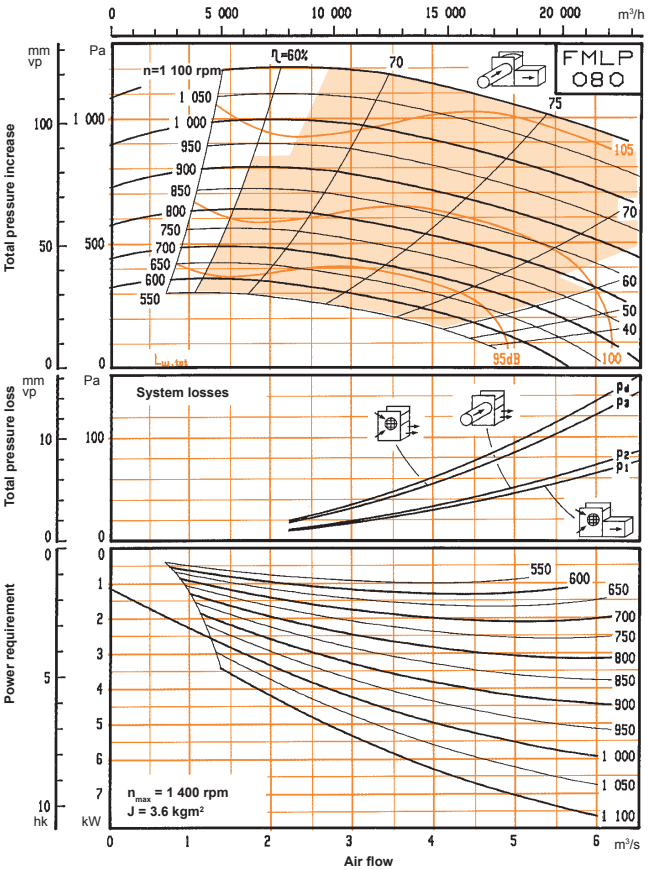

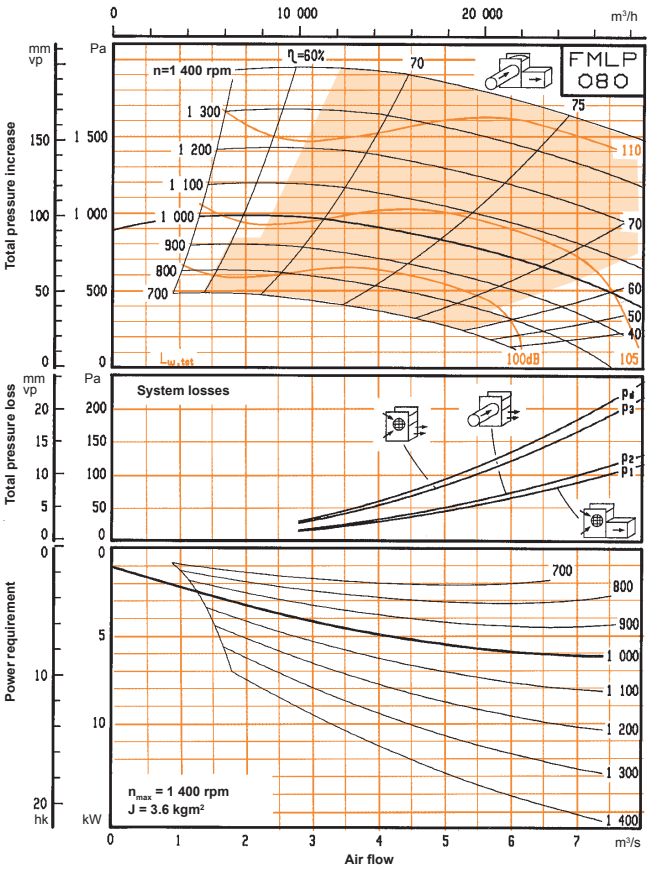

Audio data

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$$L_{W, ok} = L_{W, tot} + K_{ok}$$

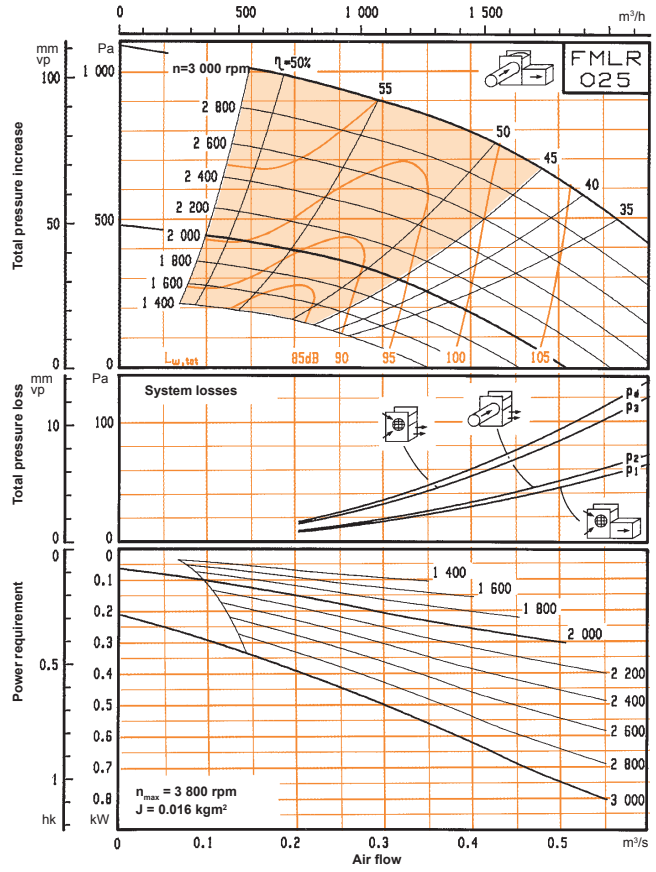
where K_{ok} is obtained from the following tables:

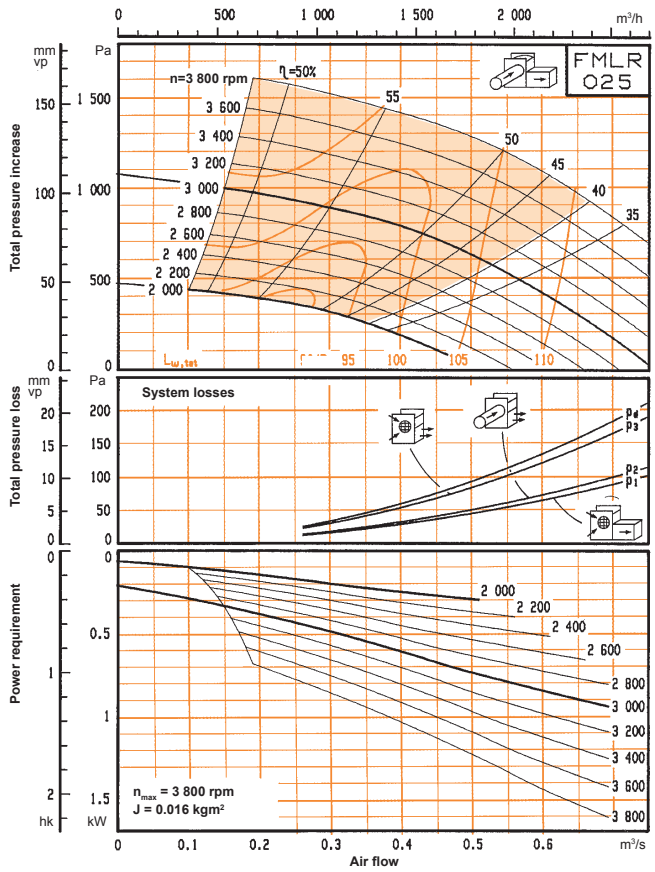
Correction factor K_{ok} for different audio paths and octave bands

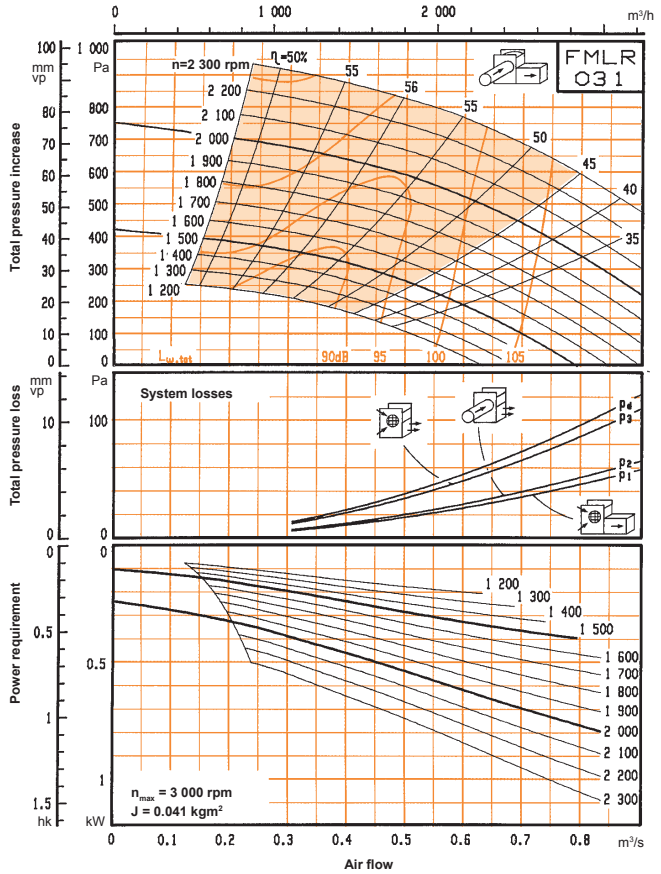
Octave band, No.	1	2	3	4	5	6	7	8
Mean frequency, [Hz]	63	125	250	500	1,000	2,000	4,000	8,000
Audio path to outlet duct	+1	-2	-8	-13	-20	-30	-36	-46
Audio path to inlet duct, to the right of the line for highest efficiency	+3	-4	-14	-19	-24	-27	-35	-43
Audio path to inlet duct, to the left of the line for highest efficiency	-2	-9	-18	-23	-28	-32	-40	-47
Audio path to surrounding at free-standing suction fan	-17	-9	-14	-16	-19	-23	-29	-37
Audio path to surrounding at duct-connected fan	-19	-12	-17	-17	-20	-23	-29	-37

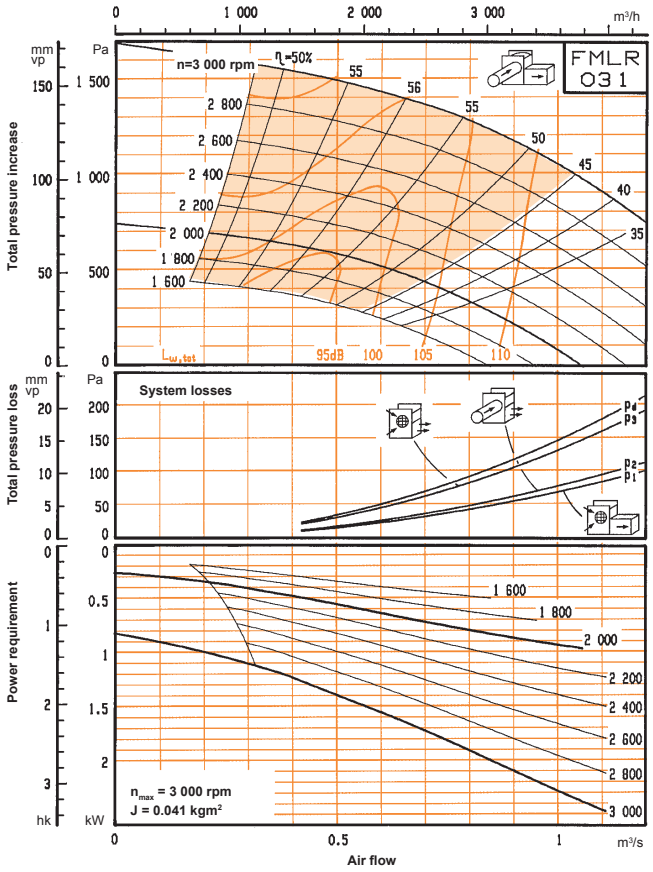
Capacity

The diagrams apply for air with a density of 1.2 kg/m³.









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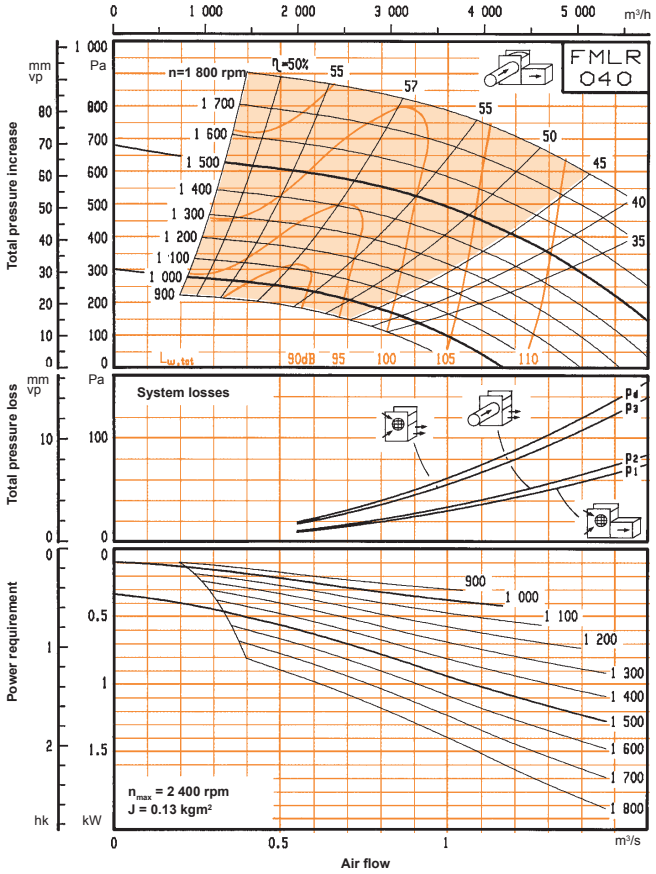

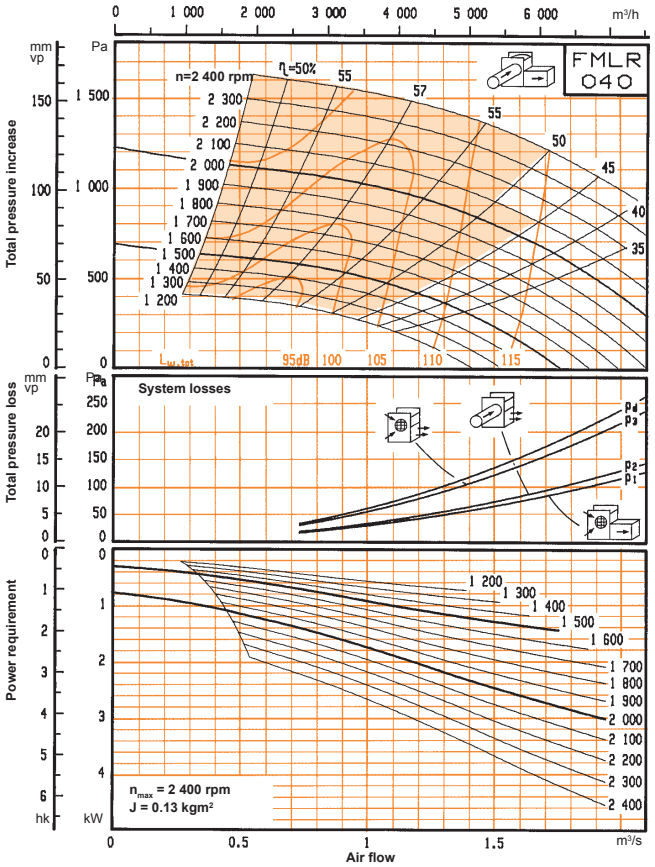

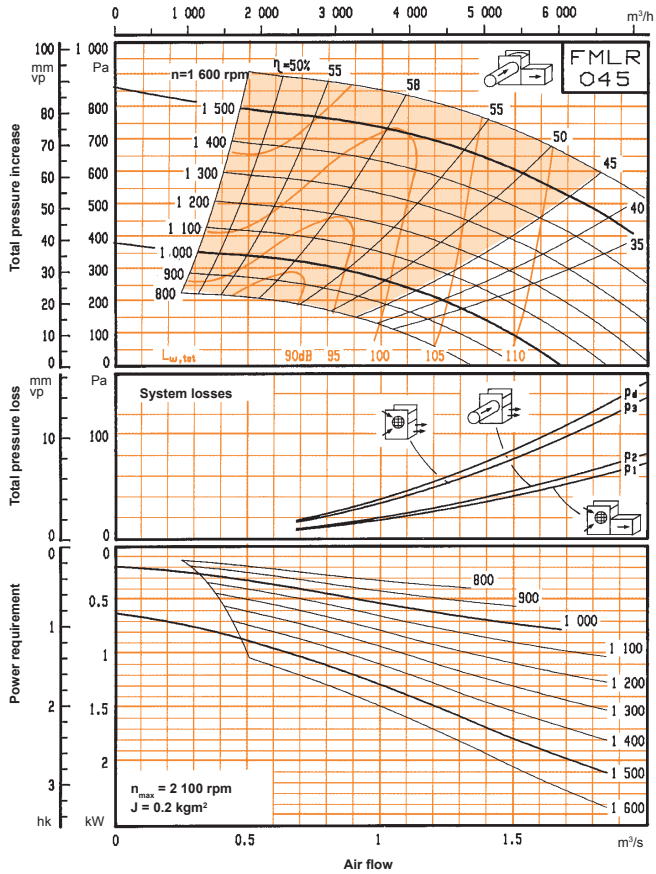

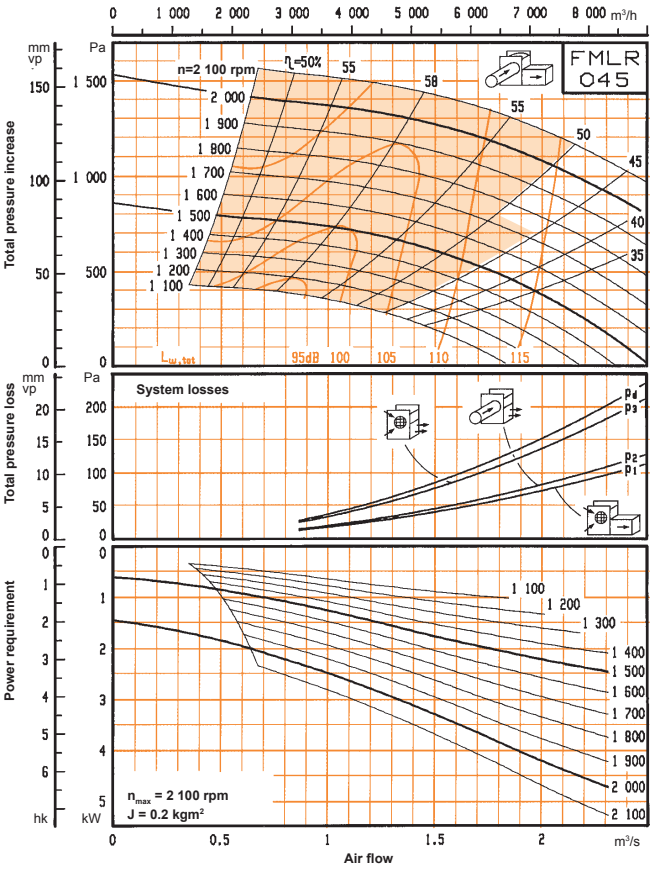

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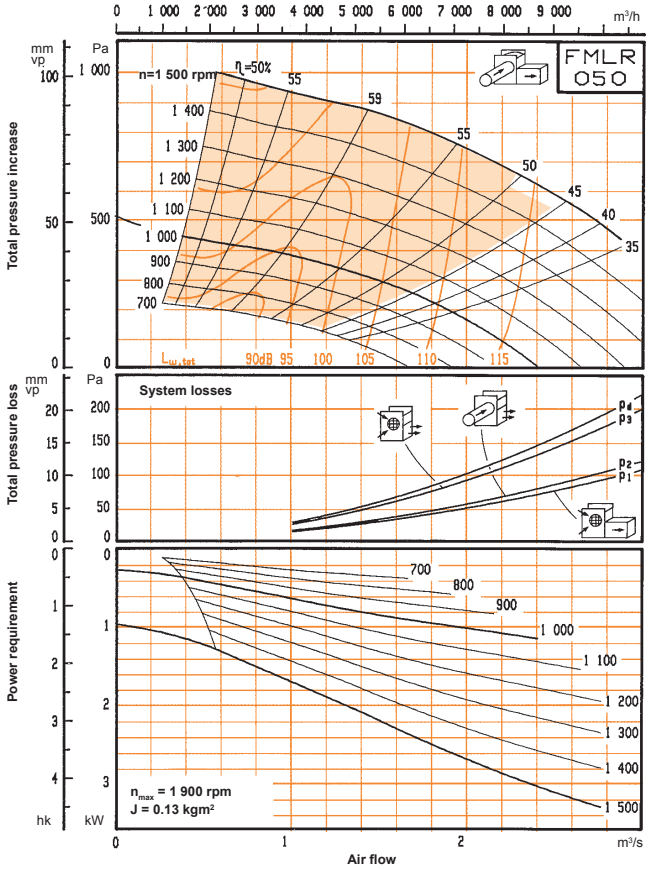

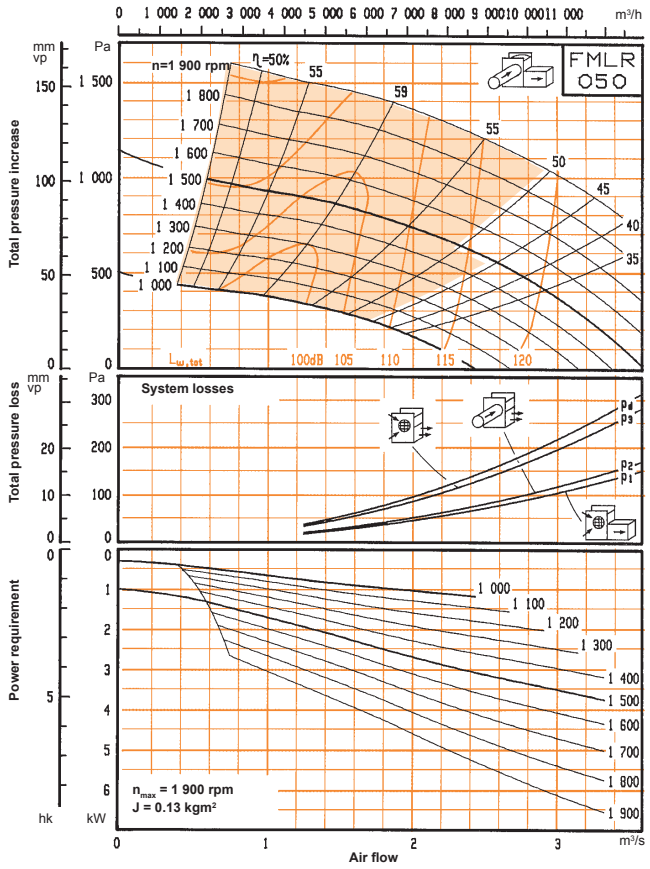

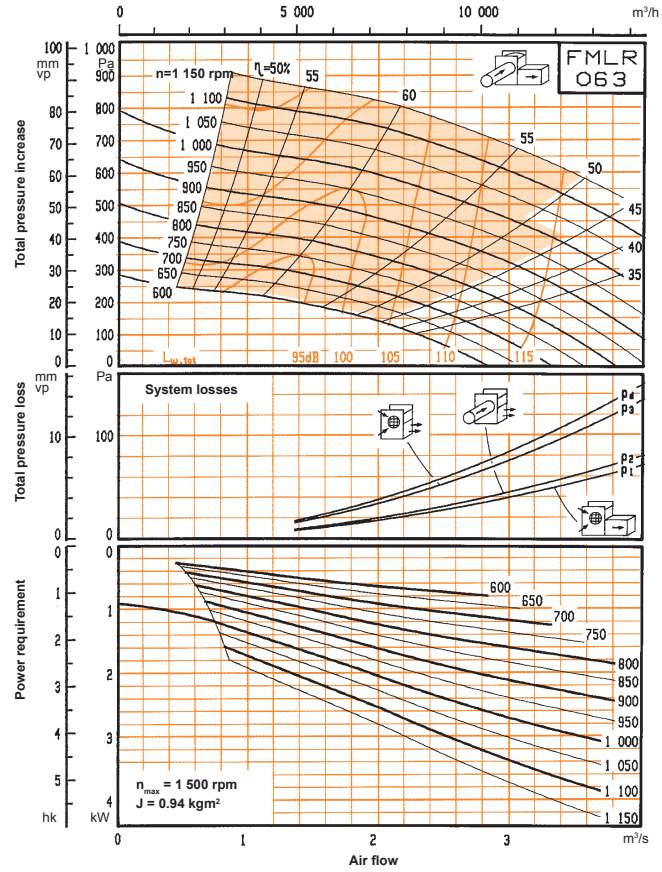

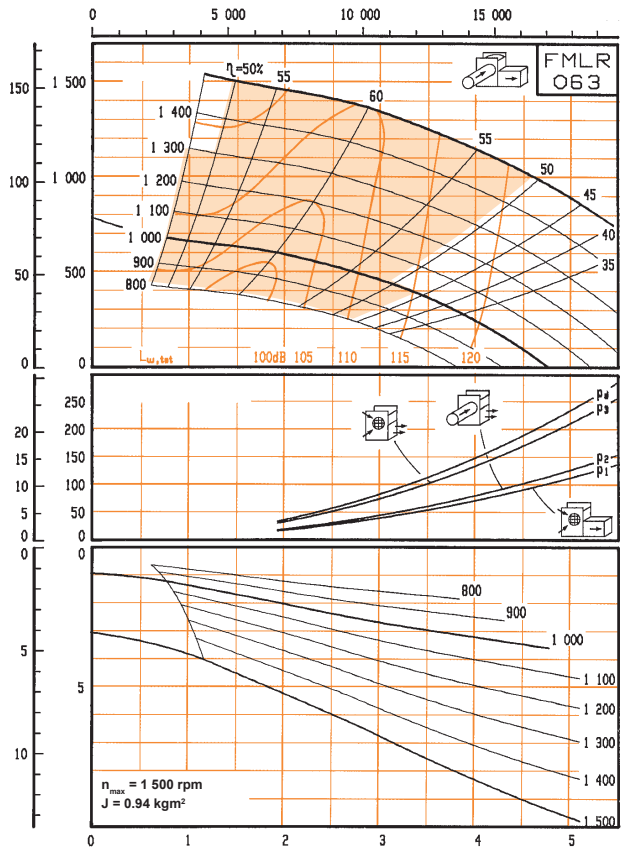

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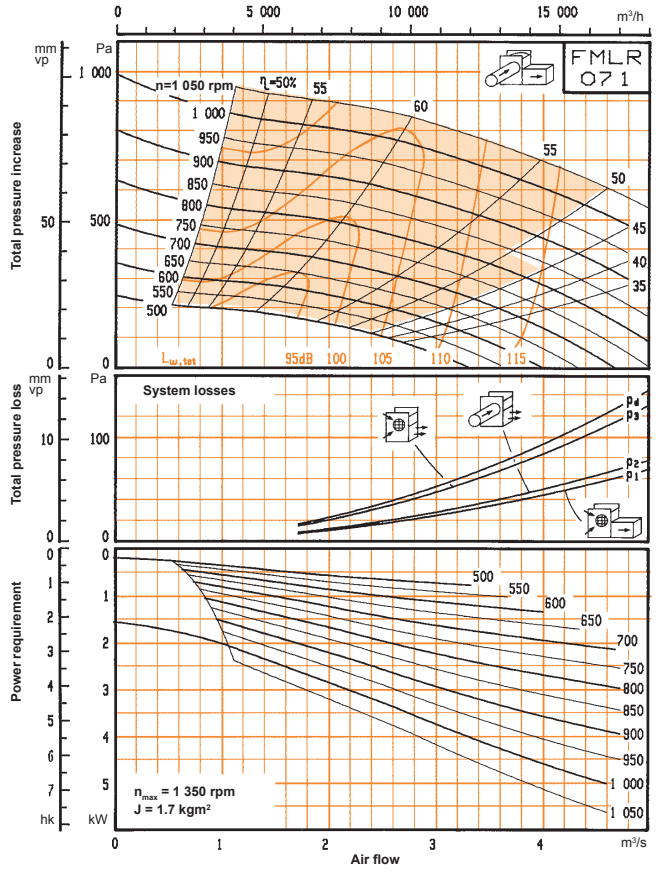

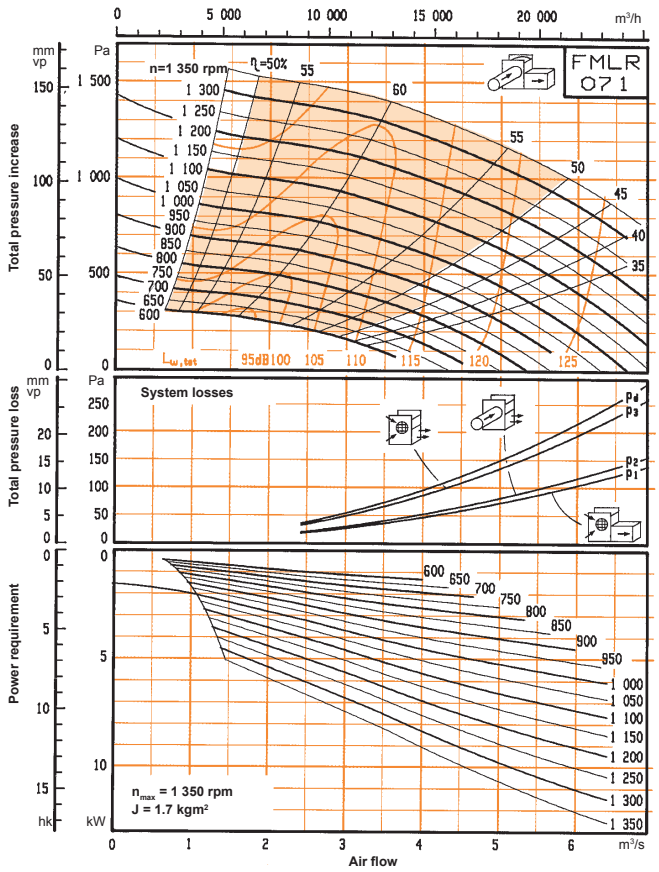

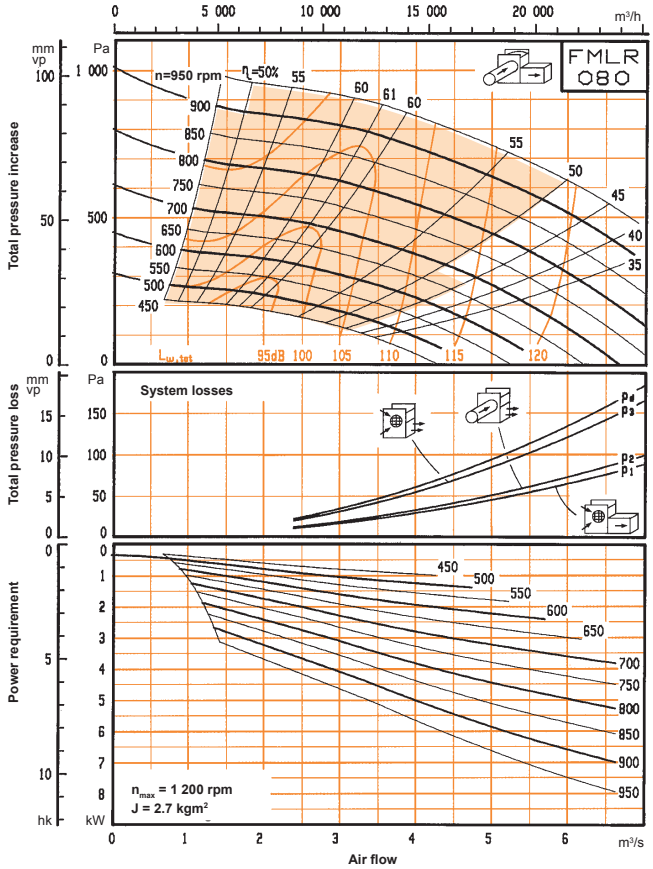

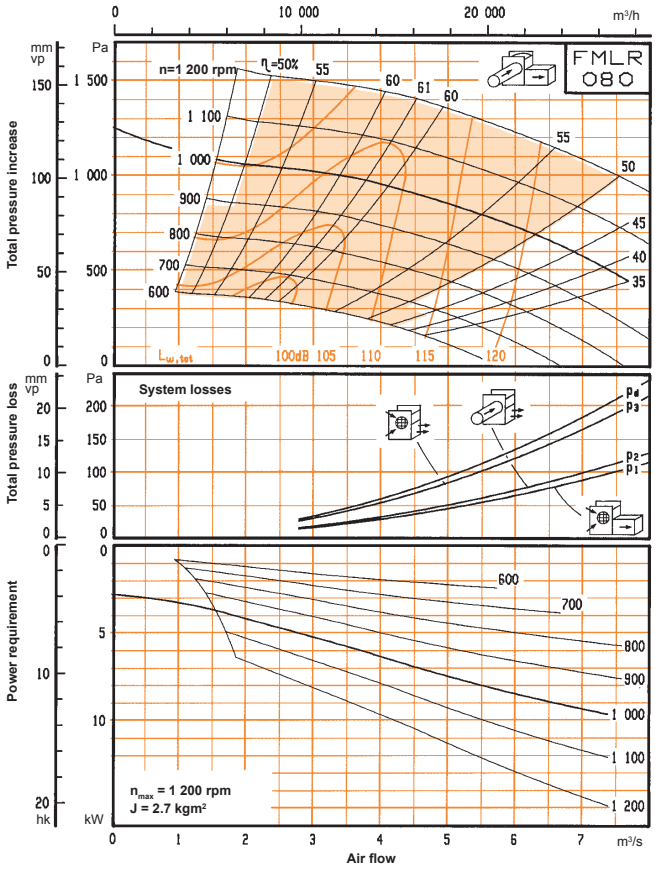

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Audio path to outlet duct	-4	0	-11	-19	-26	-34	-40	-50
Audio path to inlet duct	+1	-16	-25	-28	-32	-35	-43	-52
Audio path to surrounding at free-standing suction fan	-19	-21	-25	-25	-27	-29	-37	-45
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