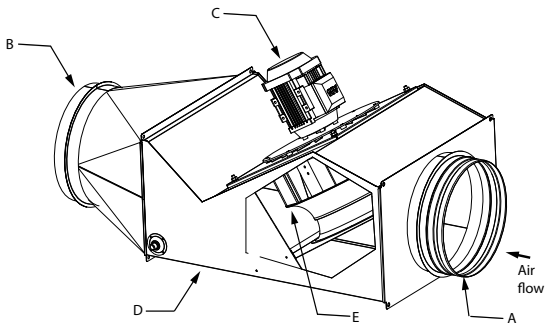
Inline fan CFI

Inline fan CFI

The **exodraft** CFI type fans are specially designed for heat resistant fans built into ducts.
The **exodraft** CFI fans work at temperatures up to 300 °C on a continous basis. The fans that are fitted in a durable, low vibration and extremely corrosion resistant stainless steel (316) housing are equipped with a centrifugal impeller made of cast aluminium.
The motor is high temperature resistant, totally enclosed, asynchronous motor fitted with totally enclosed, maintenance free roller bearings. Its speed is variable by means of a frequency converter or a Triac controller, depending on the model.
It is mounted outside the exhaust gas flow. This construction ensures the fans have a high degree of operational safety and a long working life.
The motor assembly can easily be removed from the apparatus for maintenance and inspection tasks.

Technical data



A. Inlet
B. Outlet
C. Motor
D. Housing
E. Impeller

		Motor data				Dimensions					
Type	Hz	RPM	V	Amps	kW*	Weight kg	D1 mm	D2 mm	H mm	L mm	W mm
CFI300	50	1350	1 x 230	1,8	0,27	34	303	301	553	1316	539
CFI350	50	1300	1 x 230	2,3	0,45	42,5	353	351	630	1418	619
CFI400	60	1680	3 x 208-230 /3x440-480**	5,5/2,9	1,4	58	403	401	674	1558	719
CFI500	60	1730	3 x 208-230/3x440-480**	7,8/4,1	2,56	82,5	503	501	766	1813	799

* Max consumption
Ambient temperature: 20 °C
RPM is infinitely adjustable. Motor protection class IP 54. Insulation class F
** Frequency converter is required
D1 = Inner diameter
D2 = Outer diameter

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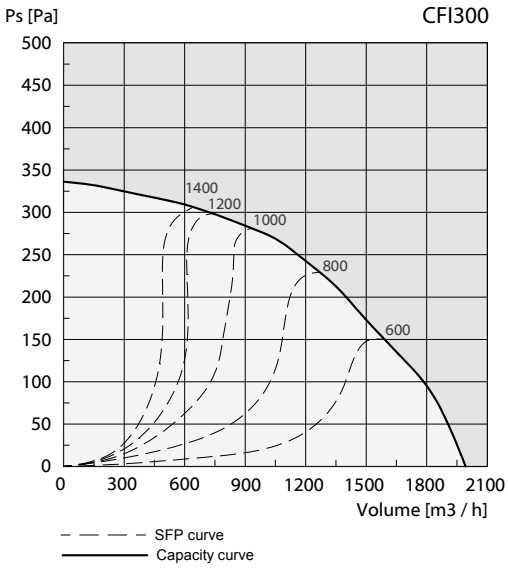
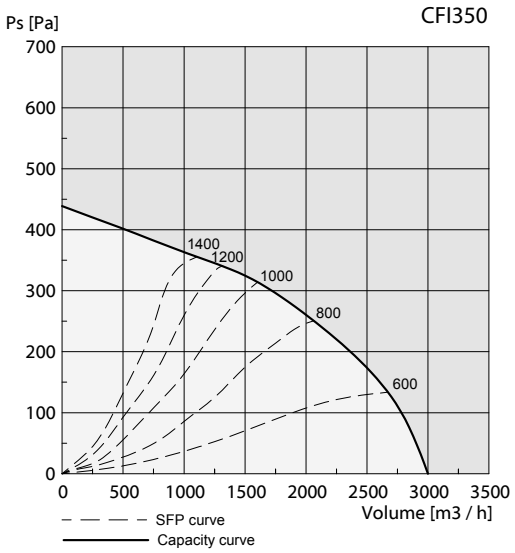
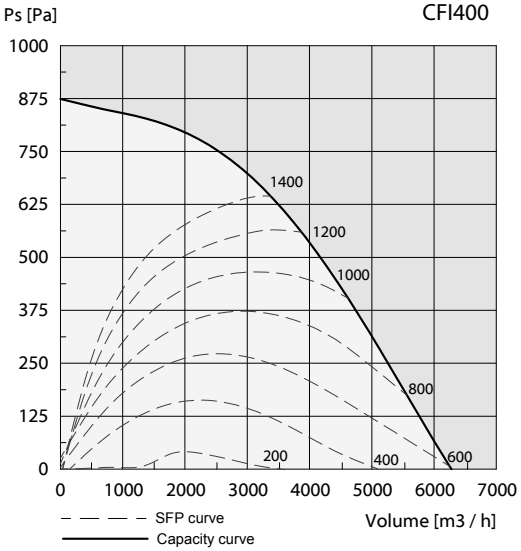
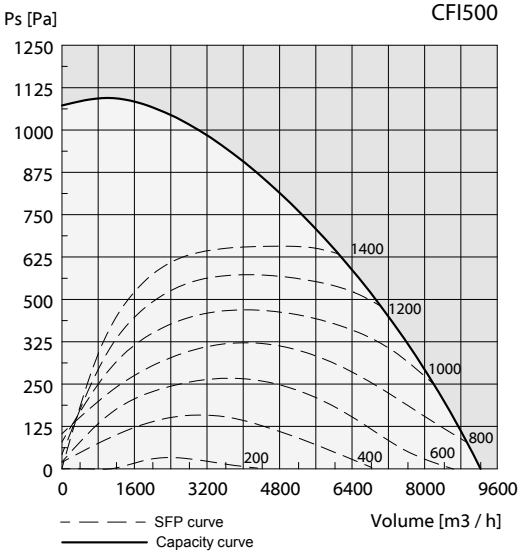
Capacity diagrams









= **Specific Fan Power (SFP) curve** = **Capacity curve**
SFP SFP = [joule/m³] P1 = consumption [watt] V = volume [m³/h] $P1 = \frac{SFP \times V}{3600}$
Capacity curve The capacity diagrams are measured with a flue gas temperature of 20 °C. The fan's capacity changes with the temperature of the flue gases. The correction of the capacity can be calculated using the following equation: Ps_t = static pressure at a certain temperature (t) t = temperature measured in °C Ps_{20} = static pressure at 20 °C $Ps_{20} = Ps_t \times \frac{(273 + t)}{293}$
Example: System demand: 1.800 m³/h and 32 Pa at 180 °C $Ps_{20} = 32 \times \frac{(273 + 180)}{293}$ Fan selection: CFI300 1.800 m³/h and 49 Pa at 20 °C

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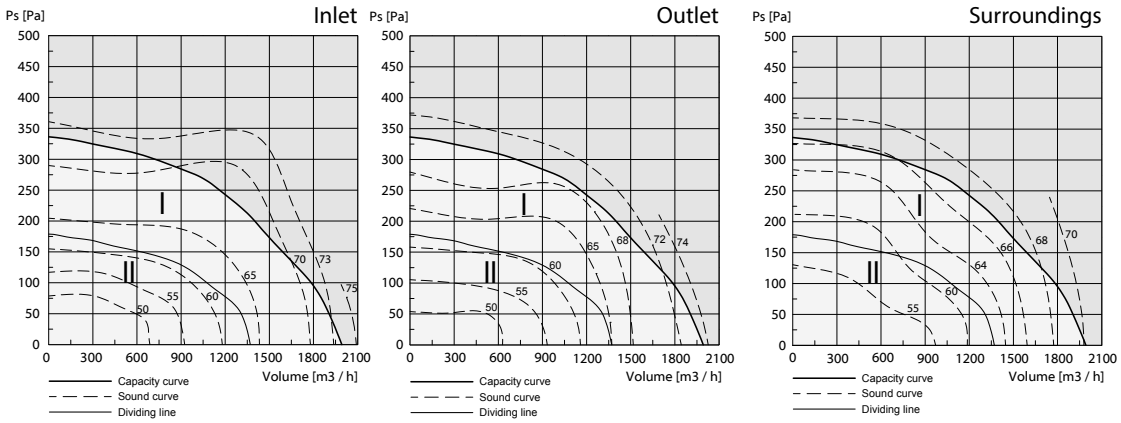


Table 1

Correction factors for calculating sound output in the **first octave band** to channels and surroundings. [dB]

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Inlet channel (K_W)	I	12	8	4	-5	-9	-11	-11	-17
	II	15	12	3	-6	-9	-12	-21	-28
Outlet channel (K_W)	I	10	6	3	-5	-6	-9	-11	-16
	II	12	12	3	-7	-7	-11	-21	-27
Surroundings (K_W)	I	0	2	4	-5	-4	-10	-15	-24
	II	5	7	5	-3	-5	-12	-20	-24

Table 2

Correction factors for calculating **A-weighed** sound pressure to surroundings [dB(A)]

	Area	5m							
Pressure (K_{pA})	I	-22							
	II	-22							

Table 3

Example: Sound power output level for inlet channel [dB] = (Readings in Diagram A) + (Correction factor in Table 1)

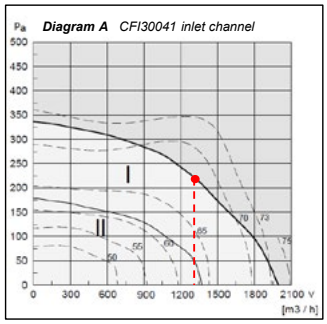
	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Sound power output to inlet channel in the **first octave band** (L_{W1})	I	80	76	72	63	59	57	57	51
	II	-	-	-	-	-	-	-	-

Table 4

Example: Sound power output level for outlet channel [dB] = (Readings in Diagram B) + (Correction factor in Table 1)

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Sound power output to outlet channel in the **first octave band** (L_{W2})	I	79	75	72	64	63	60	58	53
	II	-	-	-	-	-	-	-	-

For the values in ***Table 3*** is read the factor (L_{WA1}) in ***Diagram A*** at 2/3 of max. flow. 2/3 of 1975 m^3/h = 1317 m^3/h
Reading =68



For the values in ***Table 4*** is read the factor (L_{WA1}) in ***Diagram B*** at 2/3 of max. flow. 2/3 of 1975 m^3/h = 1317 m^3/h
Reading =69

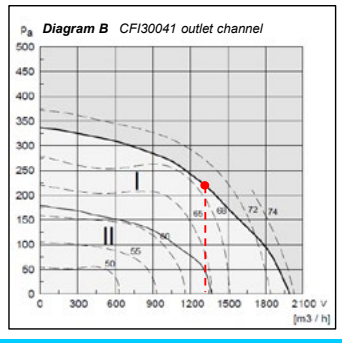


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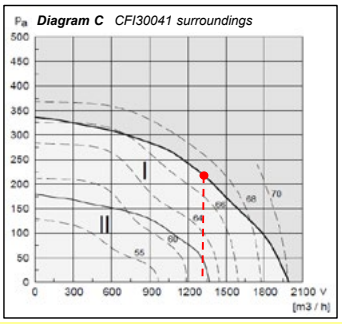
Table 5									
Example: Sound power output level for surroundings [dB] = (Readings in Diagram C) + (Correction factor in Table 1)									
Sound power output to surroundings in the **first octave band** (L_{W3})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	67	69	71	62	63	57	52	43
	II	-	-	-	-	-	-	-	-

Table 6									
Example: Sound pressure to surroundings [dB(A)] = (Readings in Diagram C) + (Correction factor in Table 2) Every time that distance doubles another 6dB is withdrawn. Example: 10m = 67 -22 -6 = 39									
A-weighed sound pressure in ( ) meters distance (L_{pA3})	Area	5m	10m	20m	40m				
	I	45	39	33	27				
	II	-	-	-	-				

For the values in ***Table 5*** and ***Table 6*** is read the factor (L_{WA1}) in ***Diagram C*** at 2/3 of max. flow. 2/3 of 1975 m^3/h = 1317 m^3/h
Reading = 67



K_W: Correction factor for calculating sound output in the first octave band.
K_{pA}: Correction factor for calculating A-weighed sound pressure.

L_{W1}: Sound power output level for inlet channel
L_{W2}: Sound power output level for the outlet channel
L_{W3}: Sound power output level to surroundings
L_{pA3}: Sound pressure level dB(A) at a distance of 10 metres from hemi-spherical sound dissipation in free field and with

I: Upper operating area.
II: Lower operating area.
L_{WA1} can be read from the curve diagram.

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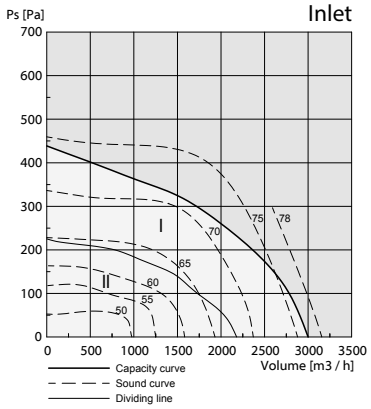
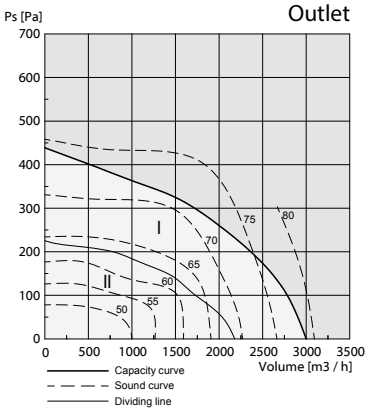




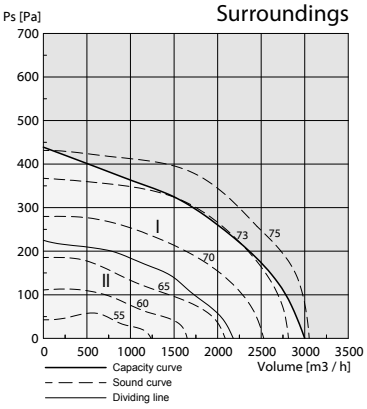


Table 1

Correction factors for calculating sound output in the **first octave band** to channels and surroundings. [dB]

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Inlet channel (K_W)	I	12	9	5	-4	-9	-13	-15	-19
	II	15	12	3	-4	-10	-16	-21	-25
Outlet channel (K_W)	I	10	7	4	-6	-6	-12	-16	-19
	II	15	12	1	-5	-7	-14	-21	-24
Surroundings (K_W)	I	1	0	-2	-6	-2	-9	-14	-24
	II	4	5	0	-3	-4	-12	-18	-25

Table 2

Correction factors for calculating **A-weighed** sound pressure to surroundings [dB(A)]

	Area	5m
Pressure (K_{pA})	I	-22
	II	-22

Table 3

Example: Sound power output level for inlet channel [dB] = (Readings in Diagram A) + (Correction factor in Table 1)

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Sound power output to inlet channel in the **first octave band** (L_{W1})	I	84	81	77	68	63	59	57	53
	II	-	-	-	-	-	-	-	-

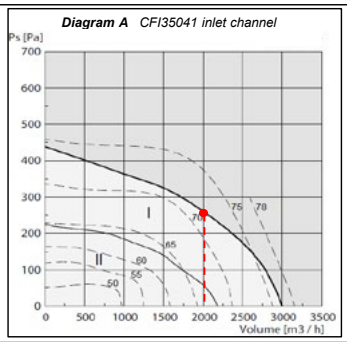
Table 4

Example: Sound power output level for outlet channel [dB] = (Readings in Diagram B) + (Correction factor in Table 1)

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Sound power output to outlet channel in the **first octave band** (L_{W2})	I	83	80	77	67	67	61	57	54
	II	-	-	-	-	-	-	-	-

For the values in ***Table 3*** is read the factor (L_{WA1}) in ***Diagram A*** at 2/3 of max. flow. 2/3 of 3000 m^3/h = 2000 m^3/h
Reading =72

Diagram A *CFI35041 inlet channel*



For the values in ***Table 4*** is read the factor (L_{WA1}) in ***Diagram B*** at 2/3 of max. flow. 2/3 of 3000 m^3/h = 2000 m^3/h
Reading =73

Diagram B *CFI35041 outlet channel*

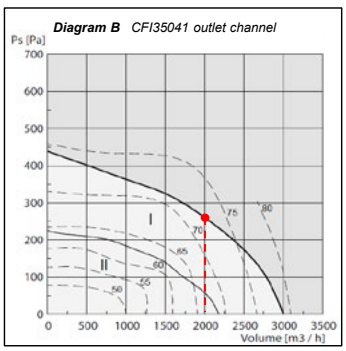


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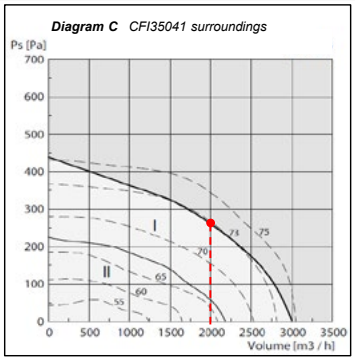
Table 5									
Example: Sound power output level for surroundings [dB] = (Readings in Diagram C) + (Correction factor in Table 1)									
Sound power output to surroundings in the **first octave band** (L_{W3})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	78	77	75	71	75	68	63	53
	II	-	-	-	-	-	-	-	-

Table 6									
Example: Sound pressure to surroundings [dB(A)] = (Readings in Diagram C) + (Correction factor in Table 2) Every time that distance doubles another 6dB is withdrawn. Example: 10m = 73 -22 -6 = 45									
A-weighed sound pressure in ( ) meters distance (L_{pA3})	Area	5m	10m	20m	40m				
	I	51	45	39	33				
	II	-	-	-	-				

For the values in ***Table 5*** and ***Table 6*** is read the factor (L_{WA1}) in ***Diagram C*** at 2/3 of max. flow. 2/3 of 3000 m^3/h = 2000 m^3/h
Reading = 73

Diagram C *CFI35041 surroundings*



K_W: Correction factor for calculating sound output in the first octave band.
K_{pA}: Correction factor for calculating A-weighed sound pressure.

L_{W1}: Sound power output level for inlet channel
L_{W2}: Sound power output level for the outlet channel
L_{W3}: Sound power output level to surroundings
L_{pA3}: Sound pressure level dB(A) at a distance of 10 metres from hemi-spherical sound dissipation in free field and with

I: Upper operating area.
II: Lower operating area.
L_{WA1} can be read from the curve diagram.

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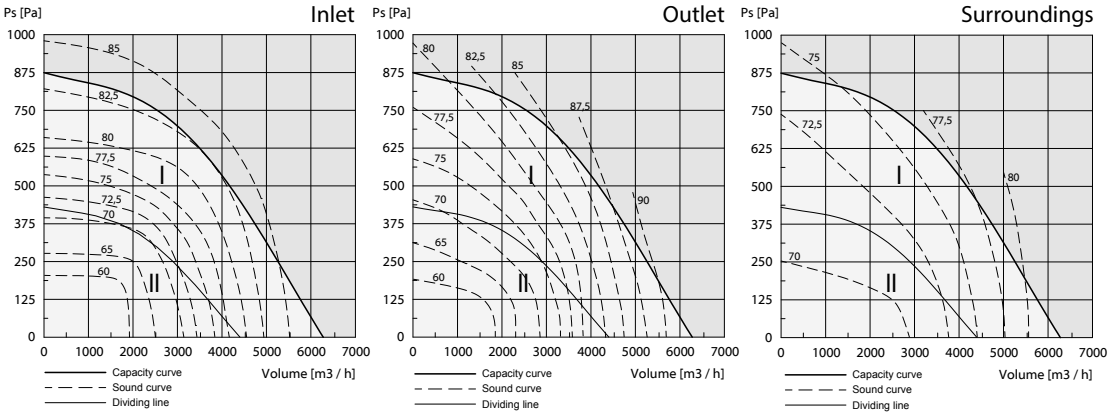


Table 1

Correction factors for calculating sound output in the **first octave band** to channels and surroundings. [dB]

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Inlet channel (K_W)	I	9	4	3	-4	-6	-8	-16	-23
	II	11	9	2	-3	-6	-12	-19	-27
Outlet channel (K_W)	I	3	0	3	-6	-4	-10	-20	-29
	II	7	7	1	-4	-4	-12	-21	-29
Surroundings (K_W)	I	5	-3	0	-5	-4	-10	-9	-14
	II	-1	-7	-9	-11	-12	-18	-2	-11

Table 2

Correction factors for calculating **A-weighed** sound pressure to surroundings [dB(A)]

	Area	5 m
Pressure (K_{pA})	I	-22
	II	-22

Table 3

Example: Sound power output level for inlet channel [dB] = (Readings in Diagram A) + (Correction factor in Table 1)

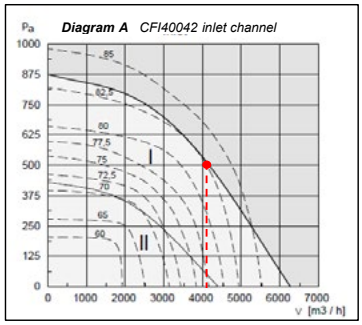
Sound power output to inlet channel in the **first octave band** (L_{W1})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	91	86	85	78	76	74	66	59
	II	-	-	-	-	-	-	-	-

Table 4

Example: Sound power output level for outlet channel [dB] = (Readings in Diagram B) + (Correction factor in Table 1)

Sound power output to outlet channel in the **first octave band** (L_{W2})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	89	86	89	80	82	76	66	57
	II	-	-	-	-	-	-	-	-

For the values in ***Table 3*** is read the factor (L_{WA1}) in ***Diagram A*** at 2/3 of max. flow. 2/3 of 6250 m^3/h = 4167 m^3/h
Reading =82



For the values in ***Table 4*** is read the factor (L_{WA1}) in ***Diagram B*** at 2/3 of max. flow. 2/3 of 6250 m^3/h = 4167 m^3/h
Reading =86

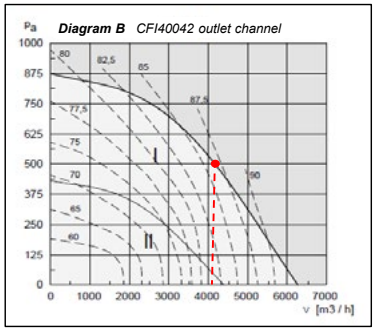


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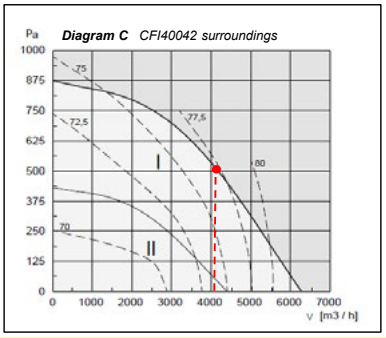
Table 5									
Example: Sound power output level for surroundings [dB] = (Readings in Diagram C) + (Correction factor in Table 1)									
Sound power output to surroundings in the **first octave band** (L_{W3})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	82	74	77	72	73	67	68	63
	II	-	-	-	-	-	-	-	-

Table 6									
Example: Sound pressure to surroundings [dB(A)] = (Readings in Diagram C) + (Correction factor in Table 2) Every time that distance doubles another 6dB is withdrawn. Example: 10m = 77 -22 -6 = 55									
A-weighed sound pressure in ( ) meters distance (L_{pA3})	Area	5m	10m	20m	40m				
	I	55	49	43	37				
	II	-	-	-	-				

For the values in ***Table 5*** and ***Table 6*** is read the factor (L_{WA1}) in ***Diagram C*** at 2/3 of max. flow. 2/3 of 6250 m^3/h = 4167 m^3/h
Reading = 77



K_W: Correction factor for calculating sound output in the first octave band.
K_{pA}: Correction factor for calculating A-weighed sound pressure.

L_{W1}: Sound power output level for inlet channel
L_{W2}: Sound power output level for the outlet channel
L_{W3}: Sound power output level to surroundings
L_{pA3}: Sound pressure level dB(A) at a distance of 10 metres from hemi-spherical sound dissipation in free field and with

I: Upper operating area.
II: Lower operating area.
L_{WA1} can be read from the curve diagram.

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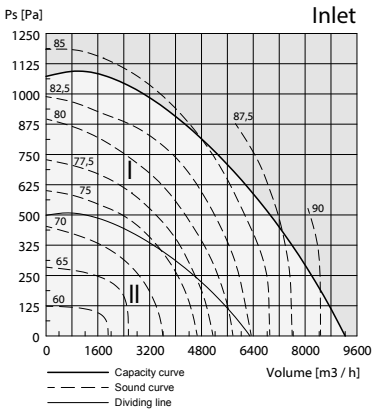
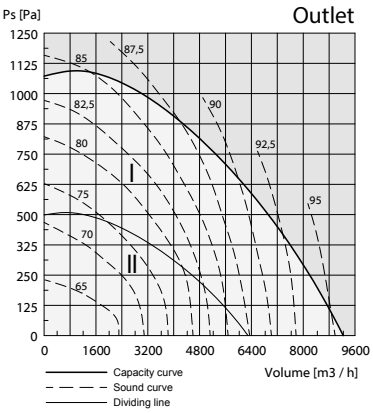




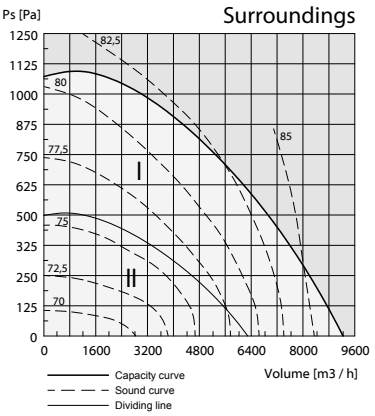


Table 1

Correction factors for calculating sound output in the **first octave band** to channels and surroundings. [dB]

	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Inlet channel (K_W)	I	9	2	5	-5	-9	-11	-15	-22
	II	9	10	4	-4	-10	-13	-17	-24
Outlet channel (K_W)	I	3	-3	3	-7	-3	-13	-19	-26
	II	4	8	0	-6	-3	-14	-18	-26
Surroundings (K_W)	I	4	-1	-1	-3	-5	-11	-10	-13
	II	-2	-5	-7	-7	-11	-16	-2	-11

Table 2

Correction factors for calculating **A-weighed** sound pressure to surroundings [dB(A)]

	Area	5m							
Pressure (K_{pA})	I	-22							
	II	-22							

Table 3

Example: Sound power output level for inlet channel [dB] = (Readings in Diagram A) + (Correction factor in Table 1)

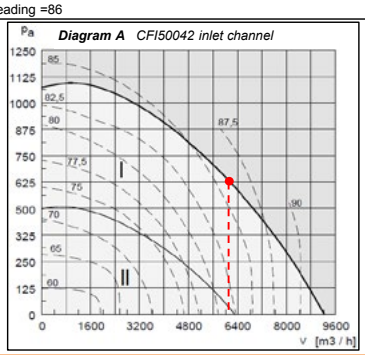
Sound power output to inlet channel in the **first octave band** (L_{W1})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	95	88	91	81	77	75	71	64
	II	-	-	-	-	-	-	-	-

Table 4

Example: Sound power output level for outlet channel [dB] = (Readings in Diagram B) + (Correction factor in Table 1)

Sound power output to outlet channel in the **first octave band** (L_{W2})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	94	88	94	84	88	78	72	65
	II	-	-	-	-	-	-	-	-

For the values in ***Table 3*** is read the factor (L_{WA1}) in ***Diagram A*** at 2/3 of max. flow. 2/3 of 9200 m^3/h = 6133 m^3/h
Reading =86



For the values in ***Table 4*** is read the factor (L_{WA1}) in ***Diagram B*** at 2/3 of max. flow. 2/3 of 9200 m^3/h = 6133 m^3/h
Reading =91

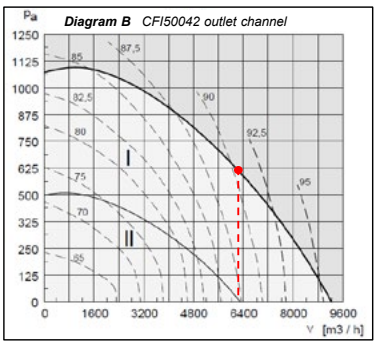


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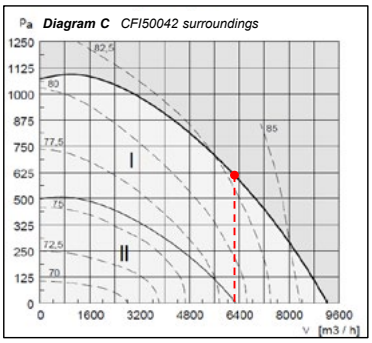
Table 5									
Example: Sound power output level for surroundings [dB] = (Readings in Diagram C) + (Correction factor in Table 1)									
Sound power output to surroundings in the **first octave band** (L_{W3})	Area	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
	I	87	82	82	80	78	72	73	70
	II	-	-	-	-	-	-	-	-

Table 6									
Example: Sound pressure to surroundings [dB(A)] = (Readings in Diagram C) + (Correction factor in Table 2) Every time that distance doubles another 6dB is withdrawn. Example: 10m = 83 -22 -6 = 55									
A-weighed sound pressure in ( ) meters distance (L_{pA3})	Area	5m	10m	20m	40m				
	I	61	55	49	43				
	II	-	-	-	-				

For the values in ***Table 5*** and ***Table 6*** is read the factor (L_{WA1}) in ***Diagram C*** at 2/3 of max. flow. 2/3 of 9200 m^3/h = 6133 m^3/h
Reading = 83



K_W: Correction factor for calculating sound output in the first octave band.
K_{pA}: Correction factor for calculating A-weighed sound pressure.

L_{W1}: Sound power output level for inlet channel
L_{W2}: Sound power output level for the outlet channel
L_{W3}: Sound power output level to surroundings
L_{pA3}: Sound pressure level dB(A) at a distance of 10 metres from hemi-spherical sound dissipation in free field and with

I: Upper operating area.
II: Lower operating area.
L_{WA1} can be read from the curve diagram.

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