

VENTILATION MOTOR BOX “CEB” (Certified Exhaust Box)
Caisson de Ventilation “CEB”
CAJAS DE VENTILACION “CEB”
Unidades de Ventilação “CEB”

**VENTILATION BOXES 400°C/2h
“CEB” (Certified Exhaust Box)**



**Certified According to Regulation
UNE EN-12101-3:2002**



diffusion

acoustic

fire dampers

GENERAL INFORMATION

The Ventilation Boxes "CEB" (Certified Exhaust Box), designed to work both as exhaust conventional air and exhaust emergency air in case of fire at 400°C during 2 hours, are made of galvanized steel, quality Z-275. **Approved by a Certified Laboratory for Fire Resistance according to the Regulation EN-12101-3-2002. CE Certification.**

The CEB boxes are equipped with a double inlet forward centrifugal fan, statically and dynamically balanced by electronic equipment of high sensibility according to Regulation VDI-2060 with a balanced degree Q of 6,3. The fan is operated by transmission with a driving belt and pulleys through a motor located inside the box.

The shaft, made of steel F-114 and rectified with tolerance h8, is mounted on two aligned ball bearings with a casting support and placed outside the air flow.



The motor is integrated inside the box on a sliding motor support in order to facilitate the tightening of the transmission by belts and pulleys. The motor remains located outside the air flow.

The standard assembly of the box is manufactured with horizontal discharge (H), and with the motor placed on the right side view from the supply outlet. Under request, the boxes can be mounted with the motor located on the left side of the supply outlet and with horizontal (H) or vertical (V) discharge.

MOTORS

According to Directive 2005/32/CE: " From 1st January 2017: motors with nominal power 0.75-375 kW can't have a performance level lower to IE3 performance level, defined in annex 1, point 1, or level IE2, defined in annex 1, point 1, and have to be equipped with a speed regulator".

Motors comply with the IE-2 efficiency (IP-55 Protection) according to the European Regulation IEC, with insulation Class F, B3 installation, ball bearings and thermal protection.

The motors are three-phase, 230/400V – 50 Hz (up to 4, 0 kW) and 400/690V – 50 Hz (for power higher than 4, 0 kW).

The installed motors can work with powers from 0, 25 kW to 15, 0 kW depending on the different size range

ASSEMBLY

Each box is supplied with 4 brackets with their corresponding screws in case they need to be mounted either supported or hanged.

APPLICATIONS

The "CEB" ventilation boxes are compliant with the Regulation for smoke evacuation in case of fire (desenfumage), for example in garages, kitchen extractors, etc.

RANGE

The "CEB" range includes 19 boxes and covers from fan size 9/9 (2.000 m³/h) to fan size 30/28 (45.000 m³/h), with a static pressures drop that can reach up to 700 Pa.

ACCESSORIES (Under request).

- Weatherproof roof (H construction).
- Outlet wing for outdoor mounting with bird screen.
- 2 speed motors.
- Three-phase speed regulator (frequency converter).
- Safety switch (start/stop).
- Special flexible connections (inlet and outlet).
- Anti-vibration mounting.

RECOMMENDATIONS

According to sound level, depending on the box application, we recommend to select the boxes with the following inlet velocity:

- **Silence:** Inlet air velocity from 9 to 10 m/s. (C_2 value from the curve) (Ventilation installation with a low sound level required, for example, conference halls, cinemas, hospitals, homes, etc.).

- **Standard:** Inlet air velocity from 10 to 14 m/s. (C_2 value from the curve) (Ventilation installation with no special sound requirements, for example, offices, malls, restaurants, etc.).

- **Industrial:** Inlet air velocity from 14 to 16 m/s (C_2 value from the curve) (Ventilation installation where the sound level doesn't need to be low or it's higher than the one originated by the boxes, for example, parking lots, industrial kitchens, etc.).

The selection of the ventilation box is determined by the size of the box, motor power and fan speed for an air flow and pressure required, considering the following:

- **Economic Criteria:** Try to select the ventilation box with the highest possible performance level, less electric consumption and less cost on a long term basis.
- **Space Available:** see curves for general dimensions of the ventilation boxes.
- **Sound Level:** In case it's needed according to the application of the box (silence, standard, industrial).

CEB VENTILATION BOX 400°C/2h SELECTION EXAMPLE

Working conditions required:

- Flow: 9.500 m³/h
- Static Pressure Loss: 353 Pa (36 mm H₂O)

For the conditions given, we can select two different boxes (see graph on page 4):

CEB-18/40 (18/18) with 2,2 kW motor - higher performance (62,5%), less electric consumption, bigger size and higher cost.

CEB-15/15 (15/15) with 3,0 kW motor - less performance (57%), higher electric consumption, smaller and less cost. Depending on the installation, application of the ventilation box, and monetary issues, you'll decide which of the two boxes is more suitable.

CONVERSION TABLE

PRESSURE								AIR FLOW							
	Pa	mbar	bar	kg/cm ²	mm H ₂ O	mm Hg	psi		m ³ /h	m ³ /s	l/h	l/s	SCFM	SCFH	SCIM
1 Pa	1	0,01	1x10 ⁻⁵	102x10 ⁻⁷	0,102	0,0075	145x10 ⁻⁶	1 m ³ /h	1	2,67x10 ⁻⁴	1.000	0,267	0,59	35,34	1022,5
1 mbar	100	1	0,001	102x10 ⁻⁵	10,2	0,750	0,0145	1 m ³ /seg	3600	2,67x10 ⁻⁴	3,6x10 ⁶	1000	2,120	1,27x10 ⁵	3,68x10 ⁶
1 bar	100.000	1.000	1	1,02	10.200	750	14,5038	1 l/h	0,001	2,67x10 ⁻⁷	1	2,67x10 ⁻⁴	5,9x10 ⁻⁴	35,34x10 ⁻³	1,02
1 Kg/cm ²	98.100	981	0,981	1	10.000	736	14,2233	1 l/seg	3,6	0,001	3600	1	2,12	127,2	3.670,2
1 mm c.d.a.	9,81	0,098	9,81x10 ⁻⁶	0,0001	1	0,0736	0,001422	1 SCFM	1,695	4,72x10 ⁻⁴	1,695	0,472	1	60	1.728
1 mm Hg	133,3	1,33	0,00133	0,001359	13,59	1	0,01934	1 SCIM	0,98x10 ⁻³	2,72x10 ⁻⁷	0,98	2,72x10 ⁻⁴	0,00058	0,0347	1
1 psi	6.895,06	68,95	0,06895	0,07031	703,1	51,717	1	1 SCFH	0,0283	7,87x10 ⁻⁶	28,30	7,87x10 ⁻³	0,0167	1	28,8

POWER								
	W	kW	kgm/s	ch	Hp	kcal/h	BTU/min	BTU/hr
1 W	1	0,001	0,102	1,359x10 ⁻³	1,341x10 ⁻³	0,860	0,0568	3,41
1 kW	1.000	1	101,97	1,359	1,341	860	56,85	3.413
1 kgm/s	9,81	9,81x10 ⁻³	1	0,0133	0,0131	8,424	0,5568	3,34
1 ch	736	0,736	75	1	0,98632	633,6	41,881	2.513
1 Hp	746	0,746	76	1,01387	1	642,4	42,462	2.544
1 kcal/h	1,163	1,163x10 ⁻³	0,119	0,00158	0,00156	1	0,0661	3,97
1 BTU/min	17,606	0,0176	1,796	0,0239	0,02355	15,3	1	62,5
1 BTU/hr	0,293	0,293x10 ⁻³	0,299	0,398x10 ⁻³	0,393x10 ⁻³	0,252	0,016	1

Calculations for Working Point, Fan Speed and Motor Selection

CEB-18/49 (18/18) 2,2 kW motor

- Air Flow (Q) = 9.500 m³/h
- Static Pressure (Pe) = 36 mm.c.d.a. (353 Pa)
- Dynamic Pressure (Pd) = 6 mm.c.d.a. (59 Pa)
- Total Pressure (Pt) = 42 mm.c.d.a. (412 Pa)
- Performance (η) = 62,5%
- Fan Speed (n) = 710 min⁻¹
- Motor Power (Pe) = 2,2 kW
- Supply Air Speed (C) = 9,9 m/s

CEB-15/15 (15/15) 3,0 kW motor

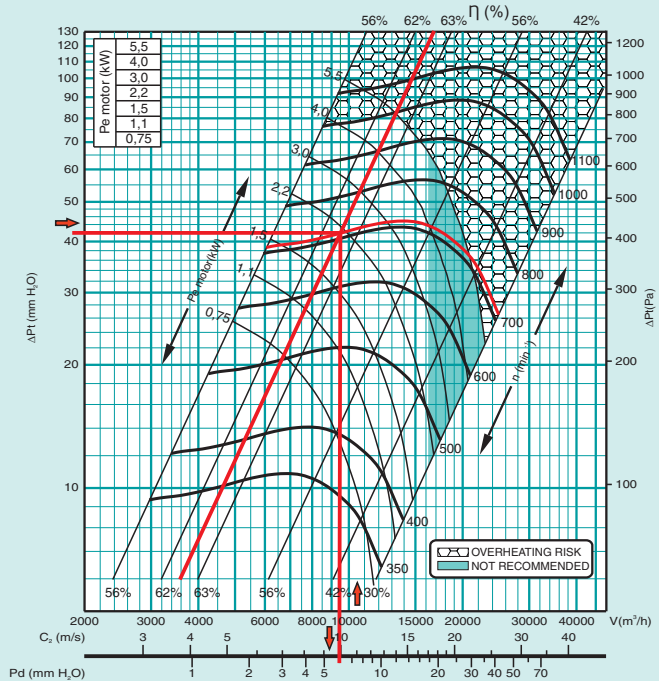
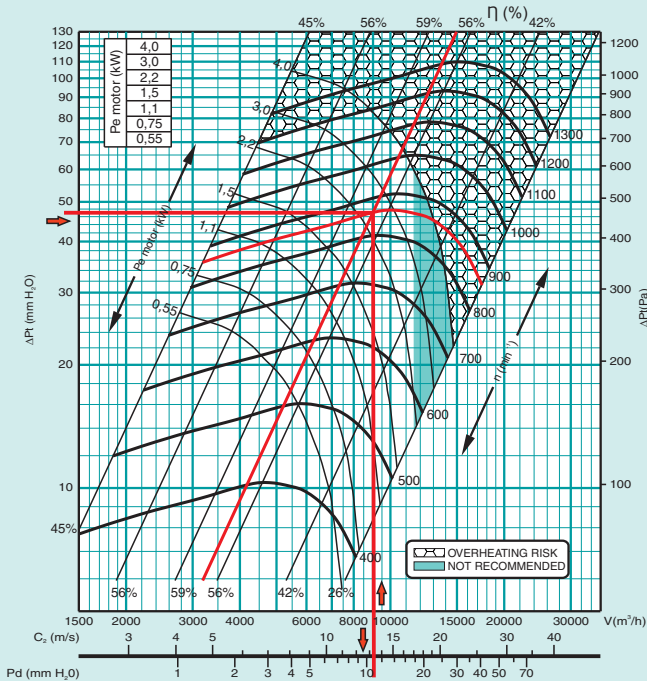
- Air Flow (Q) = 9.500 m³/h
- Static Pressure (Pe) = 36 mm.c.d.a. (353 Pa)
- Dynamic Pressure (Pd) = 11 mm.c.d.a. (108 Pa)
- Total Pressure (Pt) = 47 mm.c.d.a. (461 Pa)
- Performance (η) = 57%
- Fan Speed (n) = 860 min⁻¹
- Motor Power (Pe) = 3,0 kW
- Supply Air Speed (C) = 13,3 m/s

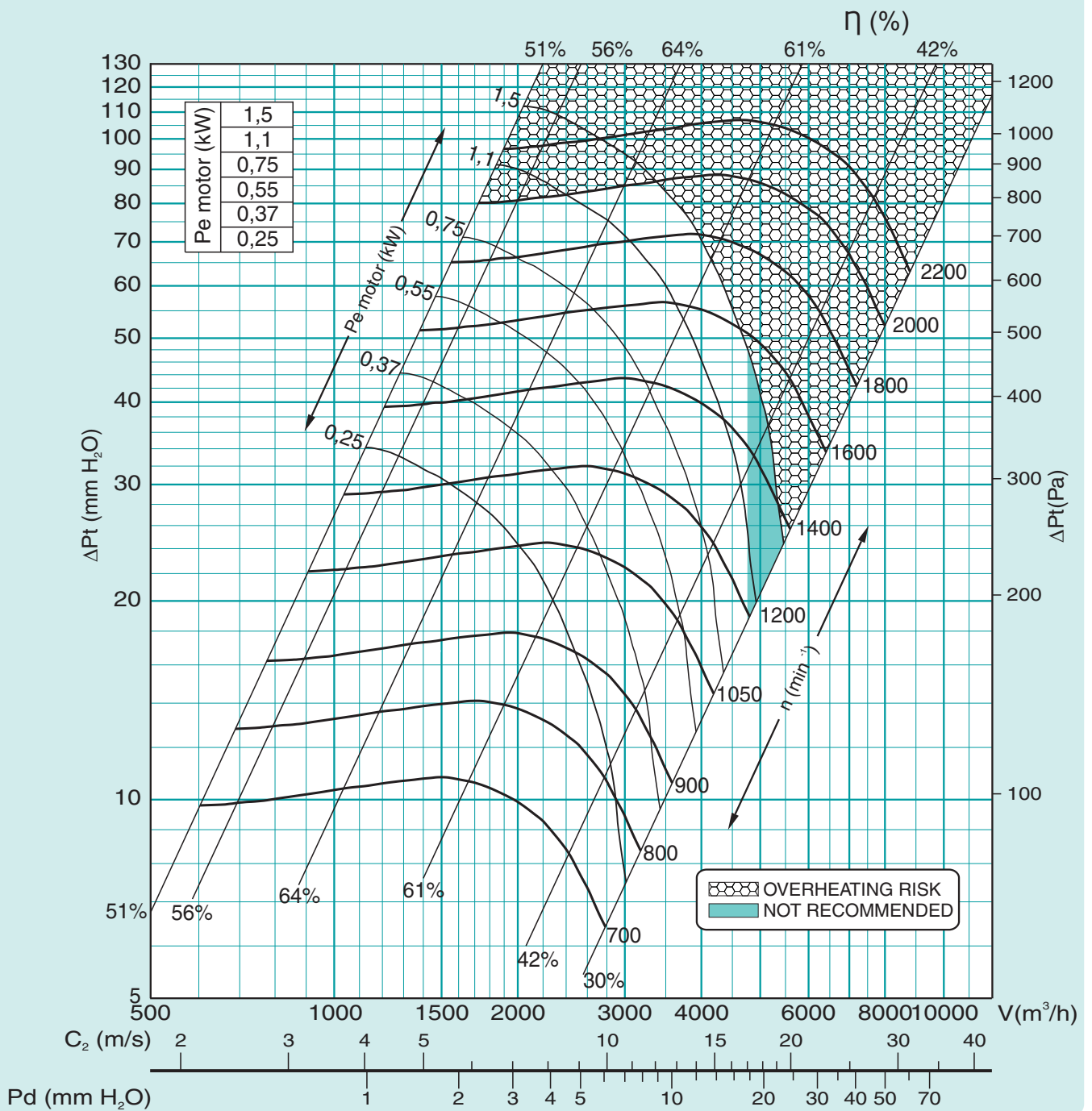
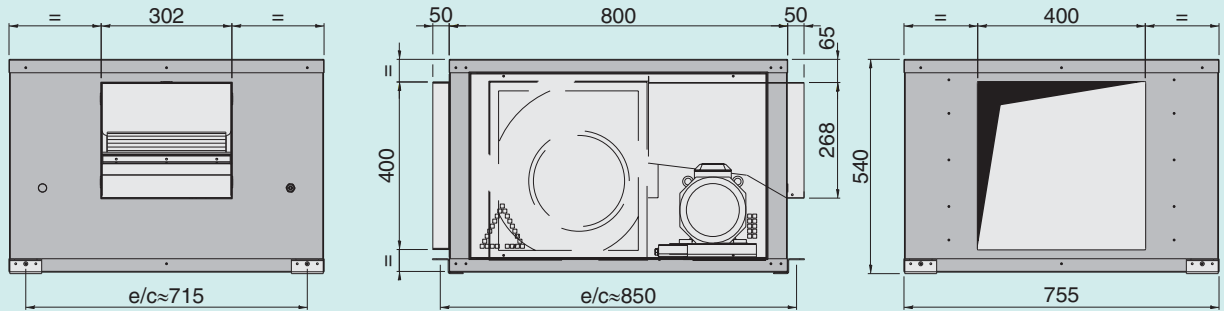
ORDER NOMENCLATURE

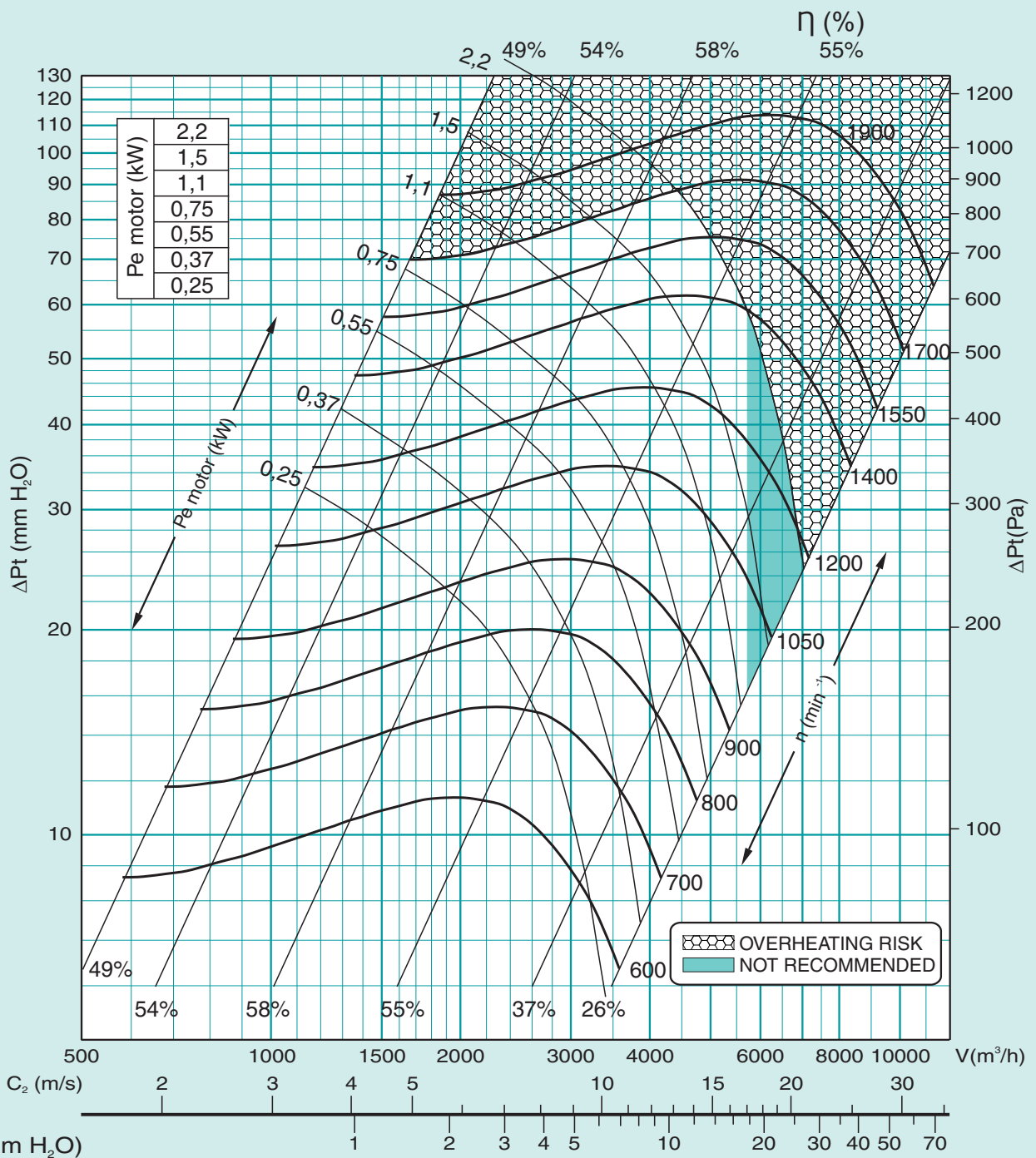
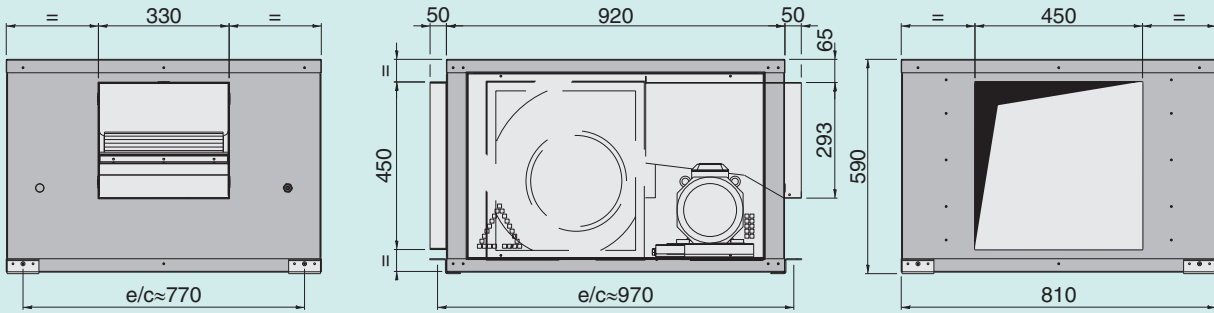
Selected Box: CEB-15/15 (15/15)-h-3-D

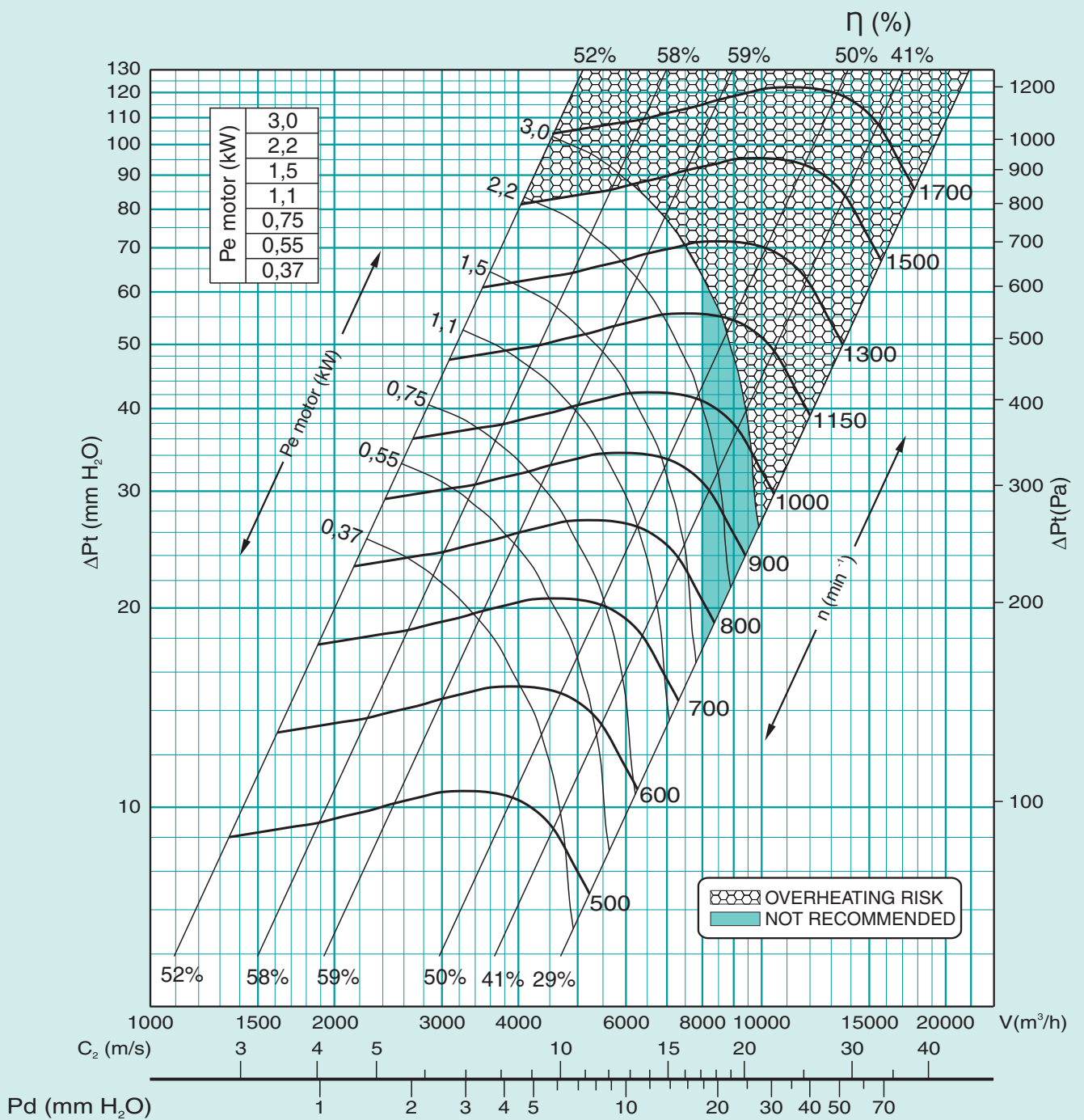
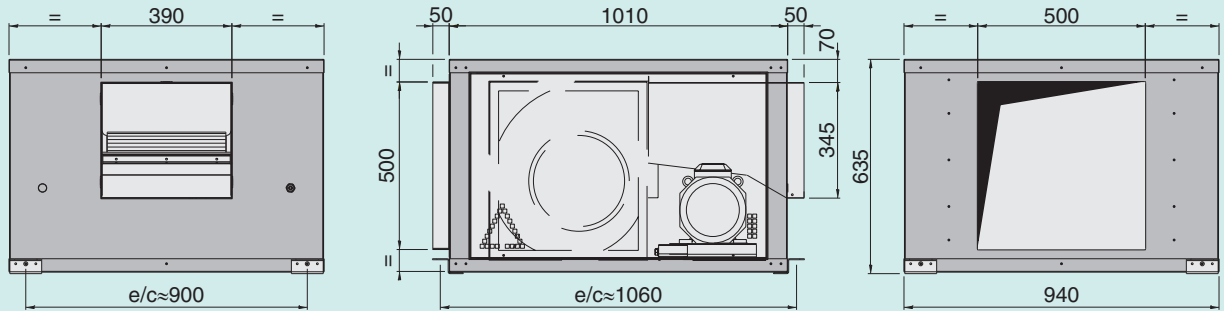
Type	Size	Discharge	Motor kW	Motor Assembly	Accessories	Air Flow m ³ /h	Static Pressure Pa or mm H ₂ O.
CEB	15/15 (15/15)	H	3,0	Right	---	9.500	36 mm H ₂ O

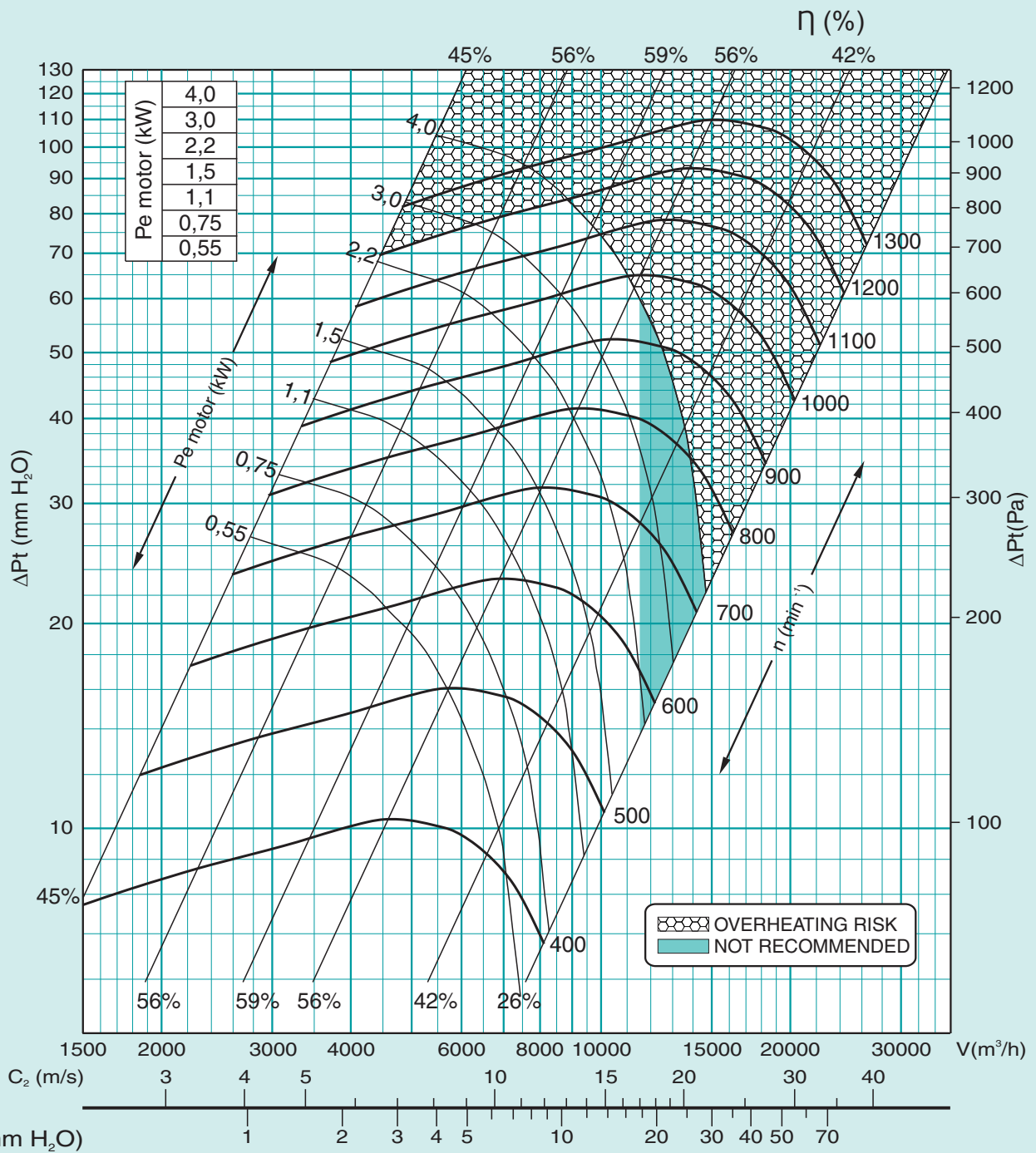
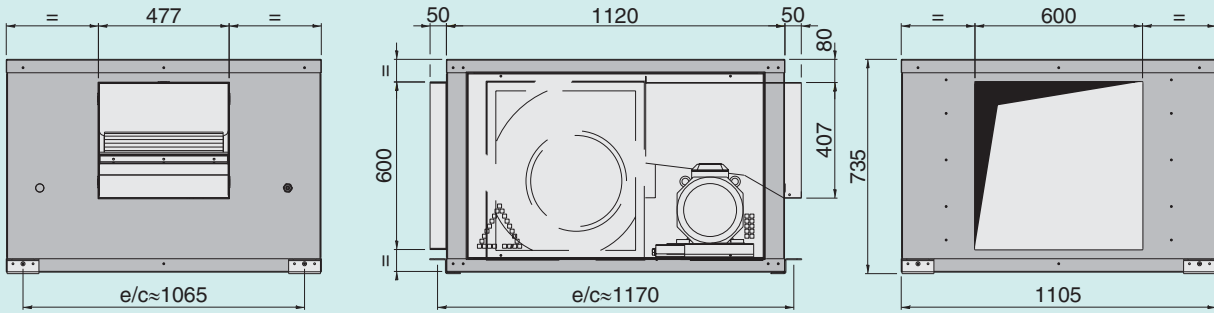
Ventilation Box "CEB" 400°C/2h 15/15 (15/15)-H-3-D, Certified according to Regulation UNE-EN-12101-3:2002 size 15/15- Horizontal Discharge – 3kW motor, 4 Poles 50Hz. IE2 (right mounted). For an air flow of 9.500 m³/h and 36 mm of H₂O.

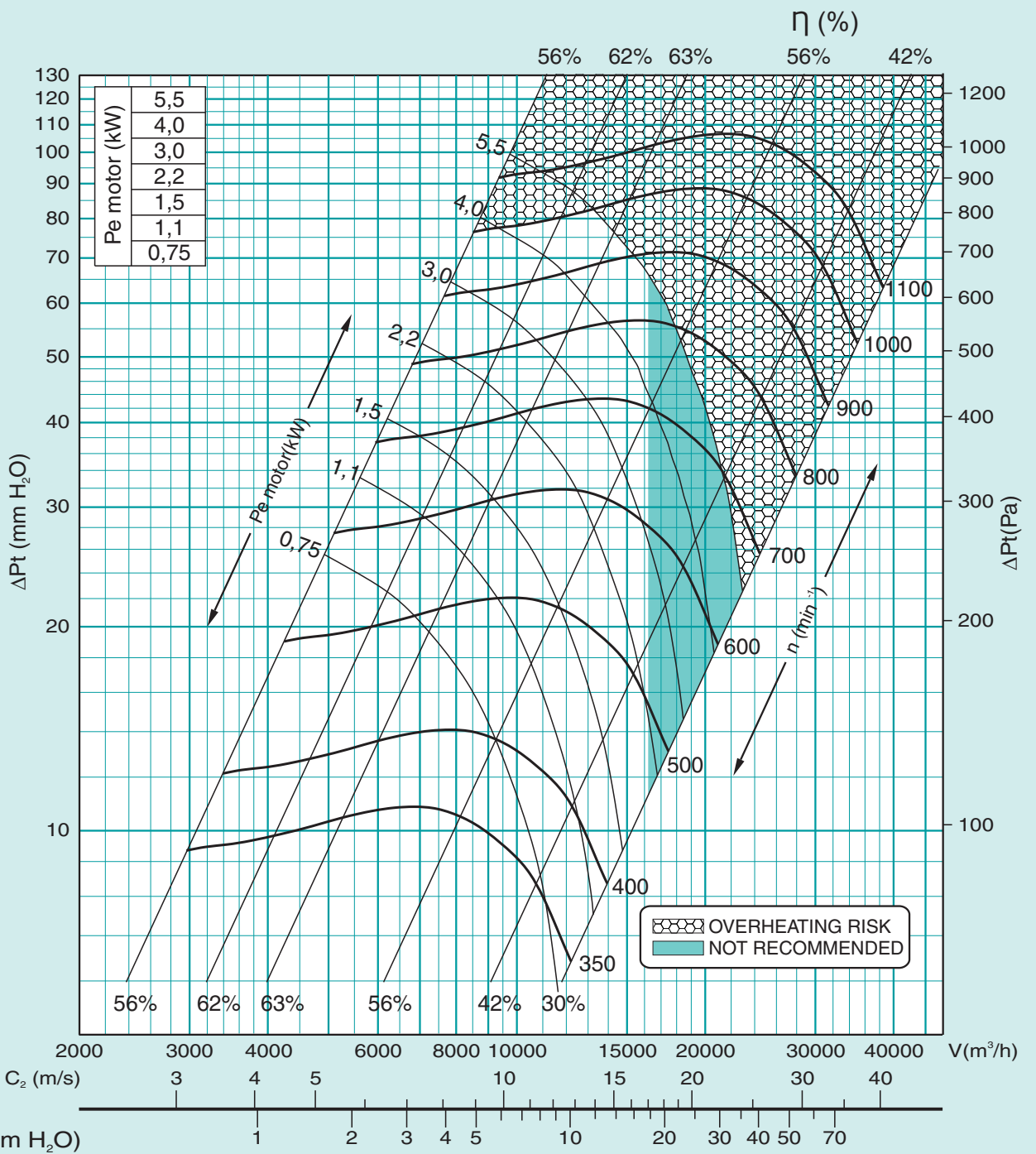
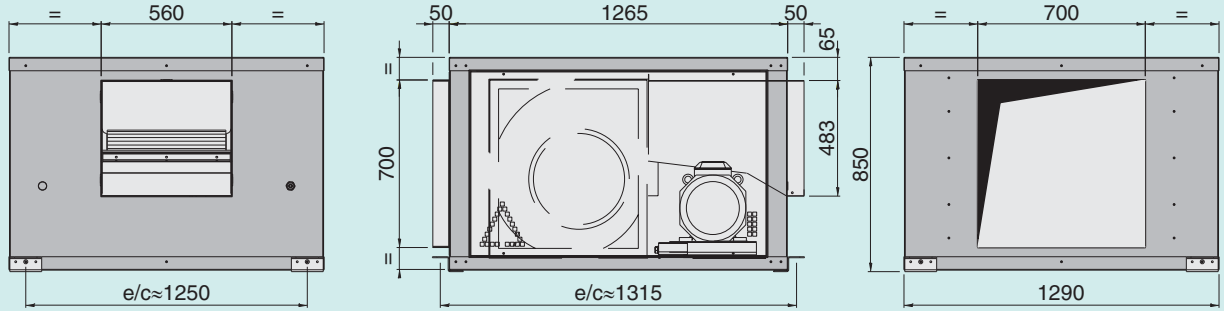


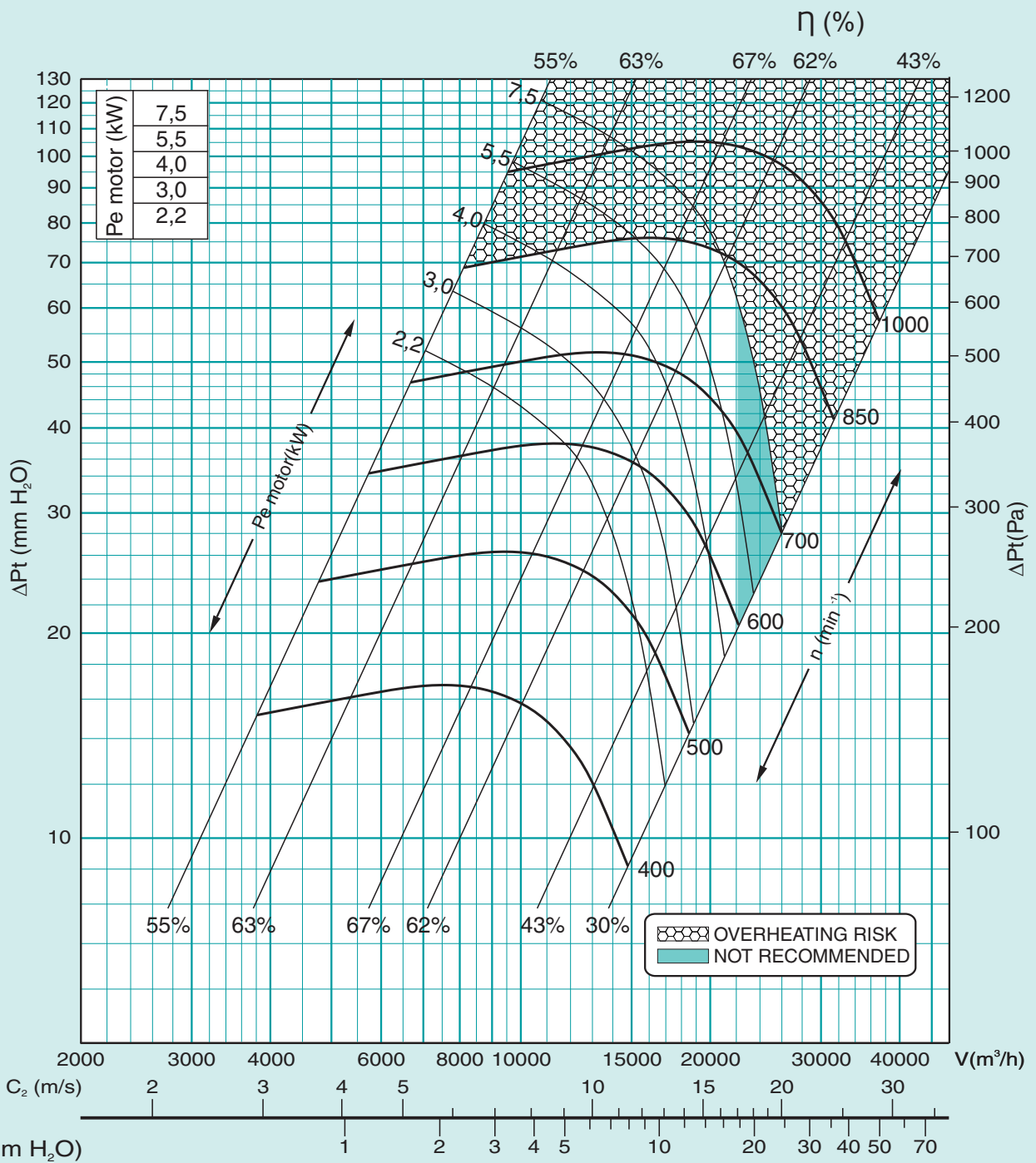
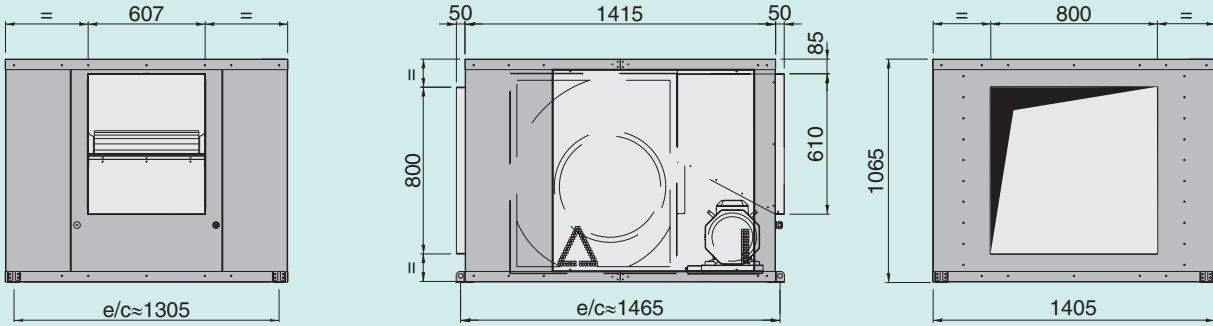


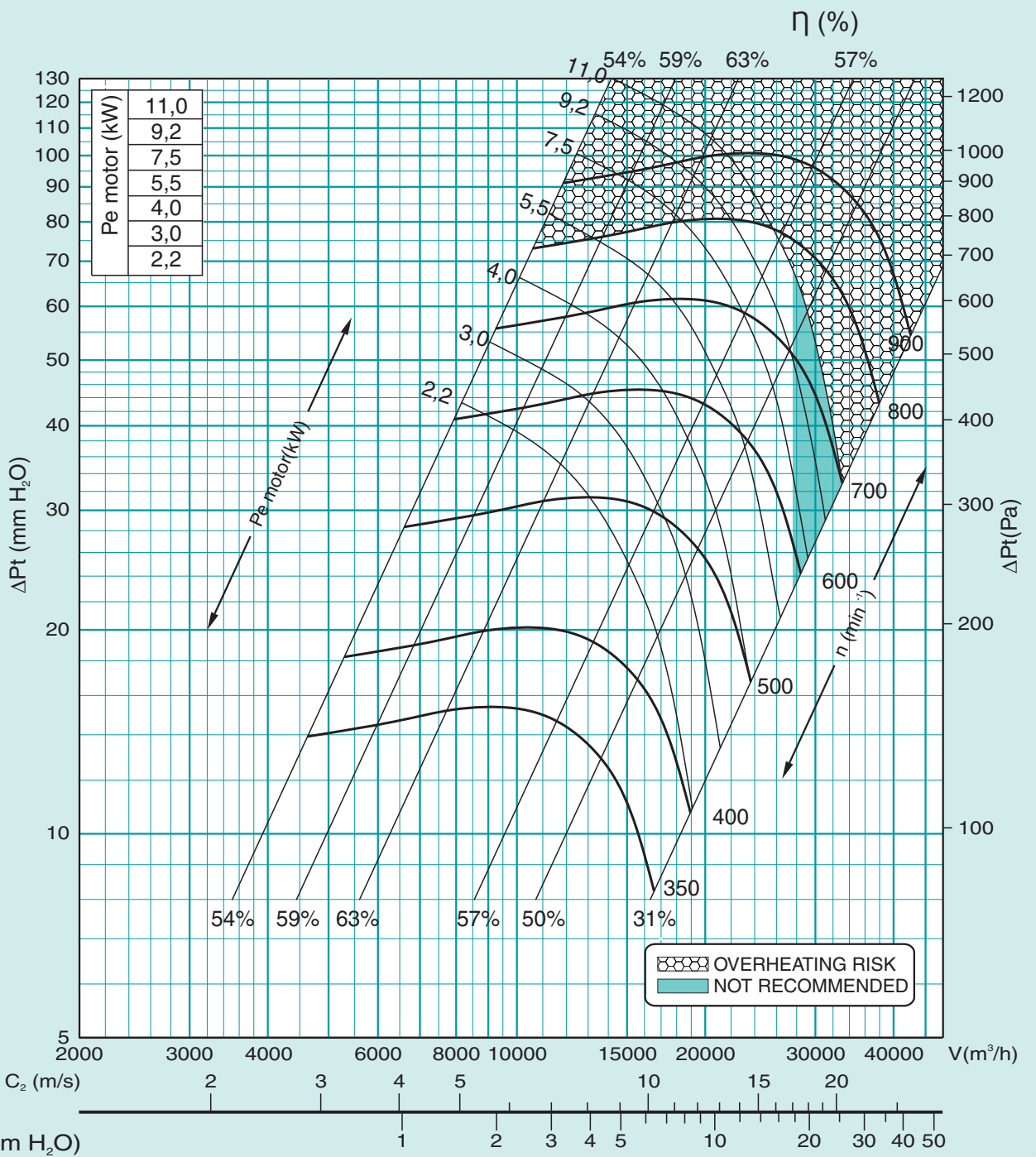
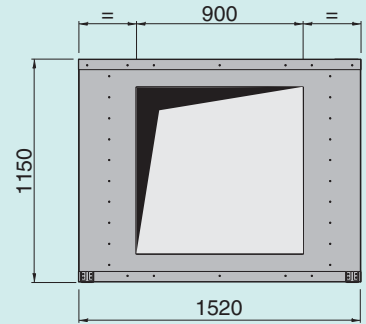
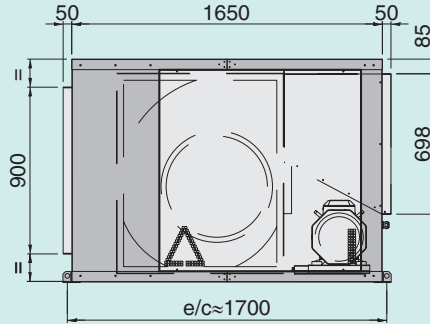
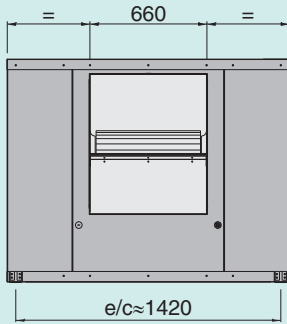


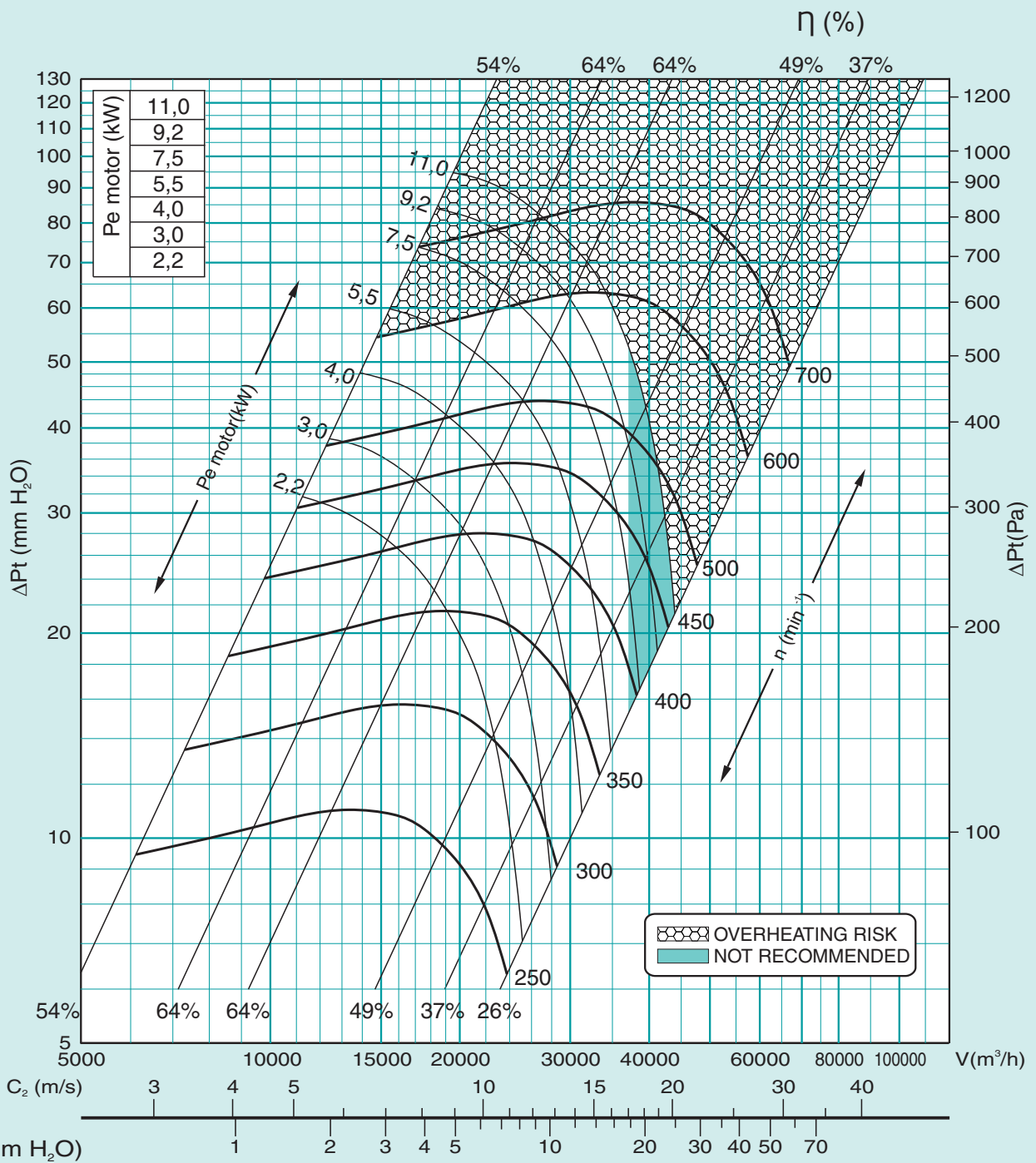
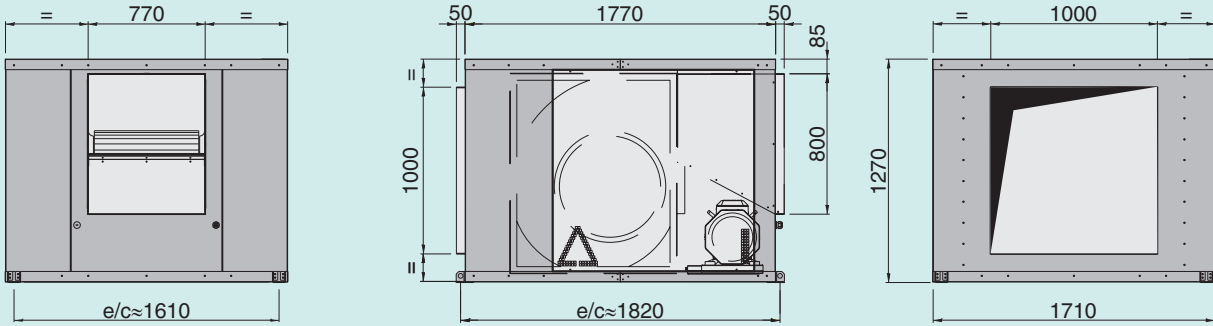


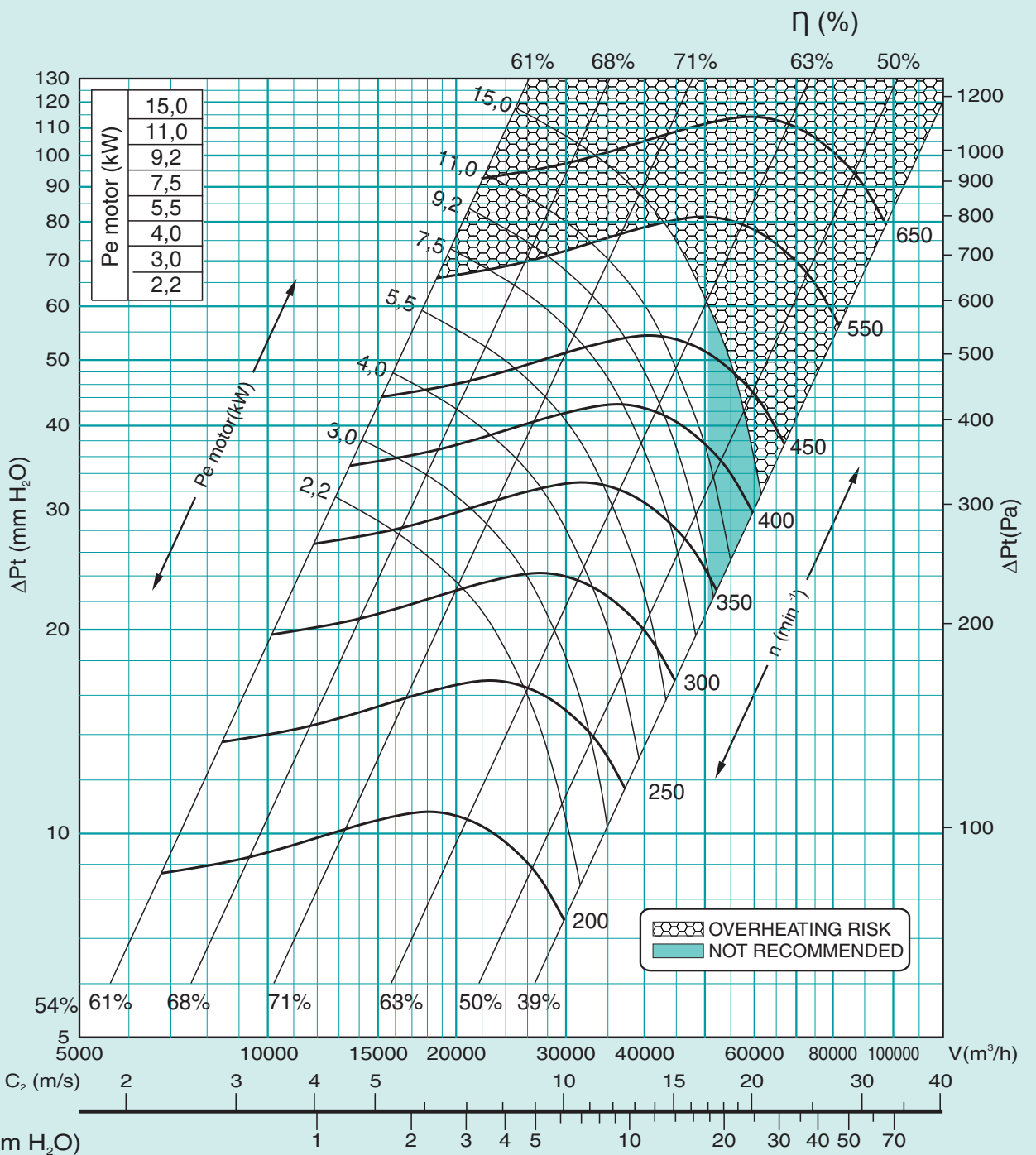
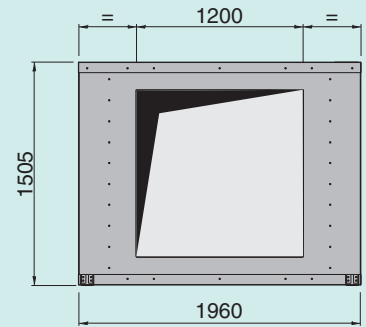
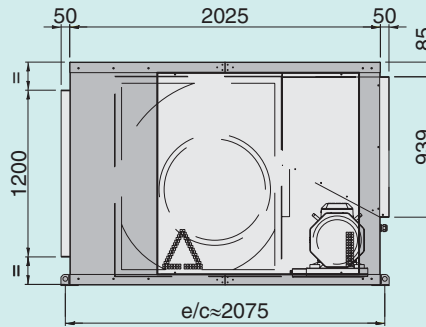
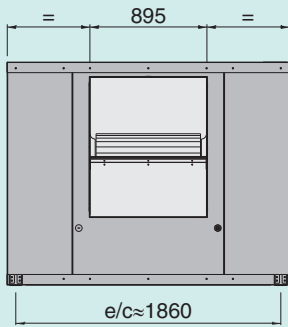


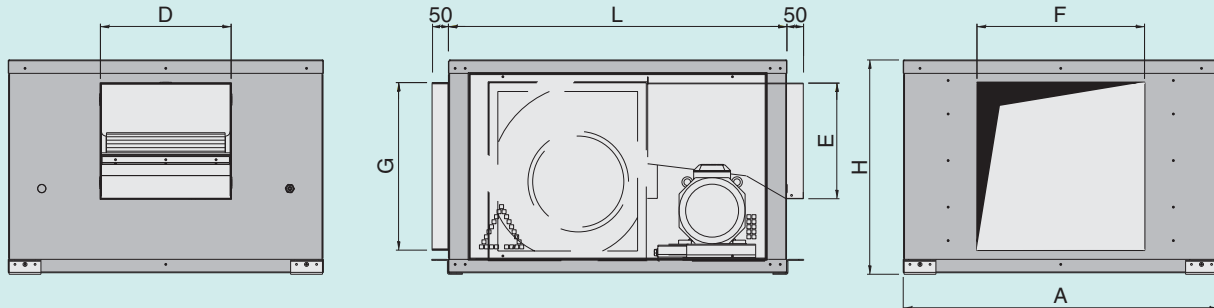












Type and Size	General Dimensions and Weight							
	Dimensions (mm)			Outlet (mm)		Inlet (mm)		Approx Weigth ⁽¹⁾ (Kg)
	A	H	L	D	E	F	G	
CEB-9/22	755	540	800	302	268	400	400	74
CEB-10/10	810	590	920	330	293	450	450	86
CEB-12/28	940	635	1010	390	345	500	500	111
CEB-15/15	1105	735	1120	477	407	600	600	149
CEB-18/40	1290	850	1265	560	483	700	700	192
CEB-20/20	1405	1065	1415	607	610	800	800	305
CEB-22/22	1520	1150	1650	660	698	900	900	355
CEB-25/25	1710	1270	1770	770	800	1000	1000	424
CEB-30/71	1960	1505	2025	895	939	1200	1200	543

(1) Approximate weight without motor (see motor weight on motors characteristics tables).

Type and Size	Fan (Inches)	Approximate Weight (Kg) Motor Power Range kW												
		0,25	0,37	0,55	0,75	1,1	1,5	2,2	3,0	4,0	5,5	7,5	11,0	15,0
CEB-9/22	9/9	(83)	(84)	(86)	(91)	(95)	(100)							
CEB-10/10	10/10	(95)	(96)	(98)	(103)	(107)	(112)	(120)						
CEB-12/28	12/12		(121)	(123)	(128)	(132)	(137)	(145)	(149)					
CEB-15/15	15/15			(161)	(166)	(170)	(175)	(183)	(187)	(197)				
CEB-18/40	18/18				(208)	(212)	(217)	(225)	(229)	(239)	(256)			
CEB-20/20	20/20							(339)	(343)	(353)	(370)	(386)		
CEB-22/22	22/22							(389)	(393)	(403)	(420)	(436)	(495)	
CEB-25/25	25/25							(458)	(462)	(472)	(489)	(505)	(564)	
CEB-30/71	30/28							(577)	(581)	(591)	(608)	(624)	(683)	(706)

() CEB boxes with IE3 motor, approximate weight in Kg.

4 POLE 50 Hz IE3 MOTOR RANGE									
Power (kW)	Frame	Nominal Speed (min ⁻¹)	Voltage						Weight (Kg)
			Nominal Current (A)			Start Current (A)			
			230 V	400 V	690 V	230 V	400 V	690 V	
0,25	71M	1350	1,5	0,8	---	8,7	5,0	---	5
0,37	71M	1370	1,9	1,1	---	11,6	6,7	---	6
0,55	80M	1410	2,7	1,6	---	11,6	6,7	---	8
0,75	80M	1430	3,3	1,9	---	20,5	11,8	---	12
1,1	90S	1440	4,6	2,6	---	32,4	18,7	---	15
1,5	90L	1440	6,2	3,6	---	44,2	25,6	---	18
2,2	100L	1450	7,8	4,5	---	61,5	35,6	---	24
3,0	100L	1450	11,0	6,4	---	89,3	51,6	---	28
4,0	112M	1450	---	8,0	4,6	---	68,8	39,7	34
5,5	132S	1460	---	10,6	6,1	---	95,4	55,2	47
7,5	132M	1460	---	14,1	8,2	---	125,5	72,5	58
11,0	160M	1440	---	19,1	11,0	---	190,9	110,3	126
15,0	160L	1445	---	25,6	14,8	---	217,2	125,5	149

Note: Depending on the manufacturer, this values can slightly change.

6 POLE 50 Hz IE3 MOTOR RANGE									
Power (kW)	Frame	Nominal Speed (min ⁻¹)	Voltage						Weight (Kg)
			Nominal Current (A)			Start Current (A)			
			230 V	400 V	690 V	230 V	400 V	690 V	
4,0	132M	970	---	9,0	5,2	---	61,2	35,4	48
5,5	132M	970	---	12,1	7,0	---	89,5	51,7	55
7,5	160M	955	---	25,2	14,6	---	188,9	109,1	110
11,0	160L	960	---	20,7	12,0	---	176,0	101,7	142
15,0	180L	960	---	28,6	16,5	---	228,8	132,2	179

Note: Depending on the manufacturer, this values can slightly change.

2 SPEED 4/8 POLES 50 Hz MOTOR RANGE							
Power 4P/8P (kW)	Frame	Nominal Speed (min ⁻¹)	Voltage 400V 50Hz				Weight (Kg)
			Nominal(A)		Start (A)		
			4P	8P	4P	8P	
0,25/0,03	71M	1370/710	1,2	0,5	4,20	1,40	6
0,33/0,04	71M	1360/710	1,5	0,5	6,00	1,50	6,5
0,55/0,09	80M	1410/710	2,0	1,0	9,00	3,50	9,3
0,75/0,12	80M	1430/710	1,8	0,8	12,60	3,20	10
1,1/0,18	90S	1400/710	3,0	1,5	17,40	5,40	14,3
1,5/0,25	90L	1380/700	4,0	1,5	23,20	5,40	17,2
2,2/0,37	100L	1430/720	4,0	2,0	28,00	9,00	23
3,0/0,55	100L	1420/710	6,6	2,5	45,54	10,00	25
4,0/1,0	112M	1440/720	8,5	3,0	63,75	13,50	33
5,5/1,1	132S	1450/720	11,0	4,0	93,50	20,00	40,4
7,5/1,1	132M	1450/720	15,0	5,8	138,00	29,00	48,8
11,0/2,3	160M	1460/720	22,0	8,5	176,00	34,00	85
15,0/3,0	160M	1460/720	28,5	11,5	213,75	46,00	88

2 SPEED 4/6 POLES 50 Hz MOTOR RANGE									
Power 4P/6P (kW)	Frame	Nominal Speed (min ⁻¹)	Voltage 400V 50Hz				Weight (Kg)		
			Nominal(A)		Start (A)				
			4P	6P	4P	6P			
0,25/0,09	71M	1380/950	1,3	0,5	3,90	1,25	6,4		
0,37/0,12	80M	1420/960	1,5	0,7	6,75	2,80	9,3		
0,55/0,16	80M	1420/960	1,8	0,8	8,10	3,36	10		
0,75/0,25	90S	1410/950	2,5	0,9	11,25	3,78	14,3		
1,1/0,37	90L	1410/950	3,2	1,5	14,40	6,30	16,5		
1,5/0,5	90L	1420/950	4,0	1,6	22,00	8,00	17,2		
2,2/0,75	100L	1430/950	5,0	2,4	32,50	10,32	25		
3,0/0,9	100L	1430/950	7,5	3,0	45,00	13,80	26		
4,0/1,3	132S	1440/960	9,0	4,0	70,20	22,00	40,4		
5,5/1,6	132M	1450/970	12,0	4,5	93,60	27,00	47		
7,5/2,2	132M	1450/970	15,0	6,2	120,00	34,10	49		
11,0/3,3	160M	1460/970	22,0	8,5	176,00	40,80	90		
15,0/5,0	160L	1450/970	29,0	12,5	261,00	75,00	120		

Note: Depending on the manufacturer, this values can slightly change.

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)												
	V(m³/h)	V(m³/s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-9/22 (9/9)	2.560	0,71	9,0	4,96	Pe motor(kW)	0,25	0,37	0,37	0,55	0,55	0,55	0,75	0,75	0,75	1,1	1,1	1,1	1,1
					n (min ⁻¹)	860	970	1070	1170	1260	1340	1420	1500	1570	1650	1720	1790	1850
	2.840	0,79	10,0	6,10	Pe motor(kW)	0,37	0,37	0,55	0,55	0,55	0,75	0,75	0,75	1,1	1,1	1,1	1,1	1,5
					n (min ⁻¹)	910	1010	1110	1200	1280	1360	1440	1520	1590	1660	1730	1790	1860
	3.130	0,87	11,0	7,41	Pe motor(kW)	0,37	0,55	0,55	0,75	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	
					n (min ⁻¹)	960	1060	1150	1230	1310	1390	1460	1540	1610	1670	1740	1800	1870
	3.410	0,95	12,0	8,80	Pe motor(kW)	0,55	0,55	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	1,5	
					n (min ⁻¹)	1010	1100	1190	1270	1350	1420	1490	1560	1630	1700	1760	1820	1880
	3.700	1,03	13,0	10,36	Pe motor(kW)	0,55	0,75	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	1,5	
					n (min ⁻¹)	1070	1150	1230	1310	1380	1460	1520	1590	1660	1720	1780	1840	1900
	3.980	1,11	14,0	11,99	Pe motor(kW)	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	1,5	---	---	
					n (min ⁻¹)	1130	1200	1280	1350	1420	1490	1560	1620	1690	1750	1810	---	---
	4.260	1,18	15,0	13,73	Pe motor(kW)	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	1,5	---	---	---	
					n (min ⁻¹)	1180	1260	1330	1400	1470	1530	1600	1660	1720	---	---	---	---
	4.550	1,26	16,0	15,67	Pe motor(kW)	1,1	1,1	1,5	1,5	1,5	1,5	---	---	---	---	---	---	
					n (min ⁻¹)	1250	1310	1380	1450	1510	1580	---	---	---	---	---	---	---

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)												
	V(m³/h)	V(m³/s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-10/10 (10/10)	3.060	0,85	9,0	4,94	Pe motor(kW)	0,37	0,55	0,55	0,55	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5
					n (min ⁻¹)	710	800	890	970	1050	1120	1190	1260	1330	1390	1460	1520	1580
	3.400	0,94	10,0	6,10	Pe motor(kW)	0,55	0,55	0,55	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	1,5
					n (min ⁻¹)	750	840	920	990	1060	1130	1200	1270	1330	1390	1450	1510	1570
	3.740	1,04	11,0	7,39	Pe motor(kW)	0,55	0,55	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	2,2	
					n (min ⁻¹)	790	870	950	1020	1090	1150	1220	1280	1340	1400	1460	1510	1570
	4.080	1,13	12,0	8,79	Pe motor(kW)	0,75	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2	
					n (min ⁻¹)	840	910	980	1050	1110	1180	1240	1300	1360	1410	1470	1520	1580
	4.420	1,23	13,0	10,32	Pe motor(kW)	0,75	1,1	1,1	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2	2,2	
					n (min ⁻¹)	880	950	1020	1080	1140	1200	1260	1320	1380	1430	1480	1540	1590
	4.760	1,32	14,0	11,96	Pe motor(kW)	1,1	1,1	1,1	1,5	1,5	1,5	1,5	2,2	2,2	2,2	2,2	2,2	
					n (min ⁻¹)	930	1000	1060	1120	1180	1230	1290	1350	1400	1450	1500	1550	1600
	5.110	1,42	15,0	13,79	Pe motor(kW)	1,1	1,5	1,5	1,5	1,5	2,2	2,2	2,2	2,2	2,2	---	---	
					n (min ⁻¹)	980	1040	1100	1160	1210	1270	1320	1370	1430	1480	1520	---	---
	5.450	1,51	16,0	15,68	Pe motor(kW)	1,5	1,5	1,5	2,2	2,2	2,2	2,2	2,2	2,2	---	---	---	
					n (min ⁻¹)	1030	1090	1140	1200	1250	1300	1350	1410	1450	---	---	---	---

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)												
	V(m³/h)	V(m³/s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-12/28 (12/12)	4.280	1,19	9,0	4,96	Pe motor(kW)	0,55	0,55	0,75	0,75	1,1	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2
					n (min ⁻¹)	590	680	770	850	920	990	1060	1130	1190	1250	1300	1360	1410
	4.750	1,32	10,0	6,11	Pe motor(kW)	0,55	0,75	0,75	1,1	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2	
					n (min ⁻¹)	620	700	780	860	930	1000	1060	1130	1190	1250	1300	1360	1410
	5.230	1,45	11,0	7,41	Pe motor(kW)	0,75	0,75	1,1	1,1	1,1	1,5	1,5	2,2	2,2	2,2	2,2	2,2	3,0
					n (min ⁻¹)	650	720	800	870	940	1010	1070	1130	1190	1250	1300	1350	1420
	5.700	1,58	12,0	8,80	Pe motor(kW)	0,75	1,1	1,1	1,1	1,5	1,5	2,2	2,2	2,2	2,2	2,2	3,0	3,0
					n (min ⁻¹)	680	750	820	890	950	1020	1080	1140	1190	1250	1300	1370	1420
	6.180	1,72	13,0	10,34	Pe motor(kW)	1,1	1,1	1,5	1,5	1,5	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0
					n (min ⁻¹)	710	780	840	910	970	1030	1090	1150	1200	1270	1320	1370	1420
	6.650	1,85	14,0	11,98	Pe motor(kW)	1,1	1,5	1,5	1,5	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0	---
					n (min ⁻¹)	750	810	870	930	990	1050	1100	1160	1230	1280	1320	1380	---
	7.130	1,98	15,0	13,77	Pe motor(kW)	1,5	1,5	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0	---	---	
					n (min ⁻¹)	780	840	900	960	1010	1070	1140	1190	1240	1290	1340	---	---
	7.600	2,11	16,0	15,64	Pe motor(kW)	2,2	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0	---	---	---	
					n (min ⁻¹)	820	870	930	980	1040	1110	1160	1210	1260	---	---	---	---

Silence Selection Standard Selection Industrial Selection

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)													
	V(m ³ /h)	V(m ³ /s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70	
CEB-15/15 (15/15)	6.190	1,72	9,0	4,95	Pe motor(kW)	0,75	0,75	1,1	1,1	1,5	1,5	2,2	2,2	2,2	2,2	3,0	3,0	3,0	
					n (min ⁻¹)	480	550	620	690	750	810	870	920	980	1030	1080	1130	1180	
	6.880	1,91	10,0	6,12	Pe motor(kW)	0,75	1,1	1,1	1,5	1,5	2,2	2,2	2,2	2,2	3,0	3,0	3,0	3,0	
					n (min ⁻¹)	500	570	630	700	760	810	870	920	970	1020	1070	1120	1160	
	7.570	2,10	11,0	7,41	Pe motor(kW)	1,1	1,1	1,5	1,5	2,2	2,2	2,2	3,0	3,0	3,0	3,0	4,0	4,0	
					n (min ⁻¹)	520	590	650	710	760	820	870	920	970	1020	1060	1110	1150	
	8.260	2,29	12,0	8,82	Pe motor(kW)	1,1	1,5	1,5	2,2	2,2	2,2	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0
					n (min ⁻¹)	550	610	670	720	770	830	880	920	970	1020	1060	1110	1150	
8.940	2,48	13,0	10,33	Pe motor(kW)	1,5	1,5	2,2	2,2	2,2	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0		
				n (min ⁻¹)	570	630	680	740	790	840	880	930	980	1020	1060	1110	1150		
9.630	2,68	14,0	11,99	Pe motor(kW)	2,2	2,2	2,2	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0	4,0	---		
				n (min ⁻¹)	600	650	710	760	800	850	900	940	980	1030	1070	1110	---		
10.320	2,87	15,0	13,76	Pe motor(kW)	2,2	2,2	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0	---	---	---		
				n (min ⁻¹)	630	680	730	780	820	870	910	950	990	1030	1070	---	---		
11.010	3,06	16,0	15,67	Pe motor(kW)	3,0	3,0	3,0	4,0	4,0	4,0	4,0	4,0	4,0	---	---	---	---		
				n (min ⁻¹)	660	710	750	800	840	880	930	970	1010	---	---	---	---		

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)												
	V(m ³ /h)	V(m ³ /s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-18/40 (18/18)	8.650	2,40	9,0	4,96	Pe motor(kW)	0,75	1,1	1,5	1,5	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0
					n (min ⁻¹)	410	470	530	580	640	680	730	780	820	860	910	950	990
	9.610	2,67	10,0	6,12	Pe motor(kW)	1,1	1,1	1,5	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	4,0
					n (min ⁻¹)	430	490	540	590	640	690	730	780	820	860	900	940	980
	10.570	2,94	11,0	7,40	Pe motor(kW)	1,1	1,5	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	4,0	4,0
					n (min ⁻¹)	450	500	550	600	650	690	740	780	820	860	900	930	970
	11.530	3,20	12,0	8,81	Pe motor(kW)	1,5	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,5	5,5
					n (min ⁻¹)	470	520	570	610	660	700	740	780	820	860	900	930	970
12.490	3,47	13,0	10,34	Pe motor(kW)	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	
				n (min ⁻¹)	490	540	580	630	670	710	750	790	830	860	900	930	970	
13.450	3,74	14,0	11,99	Pe motor(kW)	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	5,5	
				n (min ⁻¹)	510	560	600	640	680	720	760	800	830	870	900	940	970	
14.410	4,00	15,0	13,76	Pe motor(kW)	2,2	3,0	3,0	4,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	---	---	
				n (min ⁻¹)	540	580	620	660	700	740	770	810	840	880	910	---	---	
15.370	4,27	16,0	15,65	Pe motor(kW)	3,0	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	5,5	---	---	---	
				n (min ⁻¹)	560	600	640	680	720	750	790	820	860	890	---	---	---	

Size	Air Flow		S. Speed	Din. Press.	Power	Static Pressure Pst (mm H ₂ O)												
	V(m ³ /h)	V(m ³ /s)	C ₂ (m/s)	(mm H ₂ O)	rpm	10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-20/20 (20/20)	11.780	3,27	9,0	4,95	Pe motor(kW)	2,2	2,2	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	5,5	---
					n (min ⁻¹)	410	460	500	540	580	620	650	690	720	760	790	820	---
	13.090	3,64	10,0	6,12	Pe motor(kW)	2,2	2,2	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	5,5	5,5	---
					n (min ⁻¹)	440	480	520	560	590	630	660	700	730	760	790	820	---
	14.400	4,00	11,0	7,40	Pe motor(kW)	2,2	2,2	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,5	5,5	5,5	---
					n (min ⁻¹)	460	500	540	580	610	650	680	710	740	770	800	830	---
	15.710	4,36	12,0	8,81	Pe motor(kW)	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	5,5	---
					n (min ⁻¹)	490	530	560	600	630	660	690	720	750	780	810	840	---
17.020	4,73	13,0	10,34	Pe motor(kW)	3,0	3,0	4,0	4,0	4,0	4,0	4,0	5,5	5,5	5,5	7,5	7,5	---	
				n (min ⁻¹)	520	560	590	620	650	680	710	740	770	800	820	850	---	
18.330	5,09	14,0	11,99	Pe motor(kW)	4,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	5,5	7,5	7,5	---	---	
				n (min ⁻¹)	550	580	620	650	680	700	730	760	790	810	840	---	---	
19.640	5,46	15,0	13,77	Pe motor(kW)	4,0	4,0	5,5	5,5	5,5	5,5	5,5	7,5	7,5	7,5	7,5	---	---	
				n (min ⁻¹)	580	610	640	670	700	730	750	780	810	830	860	---	---	
20.940	5,82	16,0	15,65	Pe motor(kW)	5,5	5,5	5,5	5,5	5,5	7,5	7,5	7,5	7,5	7,5	---	---	---	
				n (min ⁻¹)	610	640	670	700	720	750	780	800	830	850	---	---	---	

 Silence Selection
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Size	Air Flow		S. Speed C ₂ (m/s)	Din. Press. (mm H ₂ O)	Power rpm	Static Pressure Pst (mm H ₂ O)												
	V(m ³ /h)	V(m ³ /s)				10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-22/22 (22/22)	14.750	4,10	9,0	4,95	Pe motor(kW)	2,2	2,2	2,2	3,0	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	7,5
					n (min ⁻¹)	380	420	460	490	530	560	600	630	660	690	720	750	780
	16.390	4,55	10,0	6,12	Pe motor(kW)	2,2	2,2	3,0	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5
					n (min ⁻¹)	400	440	480	510	540	580	610	640	670	700	720	750	780
	18.030	5,01	11,0	7,40	Pe motor(kW)	3,0	3,0	3,0	4,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5	7,5	7,5
					n (min ⁻¹)	430	460	500	530	560	590	620	650	680	700	730	760	780
	19.670	5,46	12,0	8,81	Pe motor(kW)	3,0	4,0	4,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5	7,5	7,5	7,5
					n (min ⁻¹)	460	490	520	550	580	610	630	660	690	710	740	770	790
	21.310	5,92	13,0	10,34	Pe motor(kW)	4,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5	7,5	7,5	7,5	9,2	9,2
					n (min ⁻¹)	490	510	540	570	600	620	650	680	700	730	750	780	800
	22.940	6,37	14,0	11,98	Pe motor(kW)	4,0	5,5	5,5	5,5	7,5	7,5	7,5	7,5	7,5	9,2	9,2	9,2	---
					n (min ⁻¹)	520	540	570	590	620	640	670	690	720	740	770	790	---
	24.580	6,83	15,0	13,76	Pe motor(kW)	5,5	5,5	7,5	7,5	7,5	9,2	9,2	9,2	9,2	11,0	11,0	---	---
					n (min ⁻¹)	550	570	590	620	640	670	690	710	740	760	780	800	---
	26.220	7,28	16,0	15,66	Pe motor(kW)	7,5	7,5	7,5	7,5	9,2	9,2	9,2	11,0	11,0	11,0	---	---	
					n (min ⁻¹)	580	600	620	640	670	690	710	730	760	780	800	---	

Size	Air Flow		S. Speed C ₂ (m/s)	Din. Press. (mm H ₂ O)	Power rpm	Static Pressure Pst (mm H ₂ O)											
	V(m ³ /h)	V(m ³ /s)				10	15	20	25	30	35	40	45	50	55	60	65
CEB-25/25 (25/25)	19.680	5,47	9,0	4,95	Pe motor(kW)	2,2	2,2	3,0	3,0	4,0	4,0	5,5	5,5	7,5	---	---	---
					n (min ⁻¹)	300	340	380	420	450	480	520	550	580	---	---	---
	21.870	6,08	10,0	6,12	Pe motor(kW)	2,2	3,0	3,0	4,0	4,0	5,5	5,5	7,5	7,5	---	---	---
					n (min ⁻¹)	310	350	390	420	460	490	520	550	580	---	---	
	24.050	6,68	11,0	7,40	Pe motor(kW)	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	---	---	---	
					n (min ⁻¹)	330	370	400	430	460	490	520	550	580	---	---	
	26.240	7,29	12,0	8,81	Pe motor(kW)	4,0	4,0	5,5	5,5	5,5	7,5	7,5	7,5	9,2	---	---	---
					n (min ⁻¹)	350	380	410	440	470	500	530	560	580	---	---	
	28.430	7,90	13,0	10,34	Pe motor(kW)	4,0	5,5	5,5	5,5	7,5	7,5	7,5	9,2	9,2	---	---	---
					n (min ⁻¹)	370	400	430	460	480	510	540	560	590	---	---	
	30.610	8,50	14,0	11,99	Pe motor(kW)	5,5	5,5	7,5	7,5	7,5	7,5	9,2	9,2	9,2	---	---	---
					n (min ⁻¹)	390	410	440	470	500	520	550	570	600	---	---	
	32.800	9,11	15,0	13,76	Pe motor(kW)	5,5	7,5	7,5	7,5	9,2	9,2	9,2	11,0	---	---	---	---
					n (min ⁻¹)	410	430	460	490	510	540	560	580	---	---		
	34.990	9,72	16,0	15,66	Pe motor(kW)	7,5	7,5	9,2	9,2	9,2	11,0	11,0	11,0	---	---	---	
					n (min ⁻¹)	430	450	480	500	520	550	570	590	---	---		

Size	Air Flow		S. Speed C ₂ (m/s)	Din. Press. (mm H ₂ O)	Power rpm	Static Pressure Pst (mm H ₂ O)												
	V(m ³ /h)	V(m ³ /s)				10	15	20	25	30	35	40	45	50	55	60	65	70
CEB-30/71 (30/28)	26.900	7,47	9,0	4,95	Pe motor(kW)	2,2	3,0	4,0	4,0	5,5	5,5	4,5	7,5	7,5	7,5	9,2	9,2	---
					n (min ⁻¹)	240	270	310	340	360	390	420	440	470	490	520	540	---
	29.890	8,30	10,0	6,11	Pe motor(kW)	3,0	4,0	4,0	5,5	5,5	5,5	7,5	7,5	7,5	9,2	9,2	11,0	---
					n (min ⁻¹)	250	280	310	340	370	400	420	440	470	490	510	530	---
	32.880	9,13	11,0	7,40	Pe motor(kW)	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2	9,2	9,2	11,0	11,0	---
					n (min ⁻¹)	270	300	320	350	370	400	420	450	470	490	510	530	---
	35.870	9,96	12,0	8,81	Pe motor(kW)	4,0	5,5	5,5	7,5	7,5	7,5	9,2	9,2	11,0	11,0	11,0	15,0	---
					n (min ⁻¹)	280	310	330	360	380	410	430	450	470	490	510	530	---
	38.860	10,79	13,0	10,34	Pe motor(kW)	5,5	5,5	7,5	7,5	7,5	9,2	9,2	11,0	11,0	15,0	15,0	15,0	---
					n (min ⁻¹)	300	320	340	370	390	410	430	460	480	500	520	540	---
	41.850	11,63	14,0	11,99	Pe motor(kW)	7,5	7,5	7,5	9,2	9,2	11,0	11,0	11,0	15,0	15,0	15,0	15,0	---
					n (min ⁻¹)	310	330	360	380	400	420	440	460	480	500	520	540	---
	44.840	12,46	15,0	13,76	Pe motor(kW)	7,5	9,2	9,2	9,2	11,0	11,0	15,0	15,0	15,0	15,0	15,0	---	---
					n (min ⁻¹)	330	350	370	390	410	430	450	470	490	510	530	---	
	47.830	13,29	16,0	15,66	Pe motor(kW)	9,2	9,2	11,0	11,0	15,0	15,0	15,0	15,0	15,0	15,0	---	---	
					n (min ⁻¹)	340	360	380	400	420	440	460	480	500	520	---		

Silence Selection
 Standard Selection
 Industrial Selection

Characteristics Curves

Characteristic curves have been determined for an air temperature of 20°C and a barometric pressure of 760 mmHg, which is equivalent to a density of 1,2 Kg/m³.

Any change of these values implies the application of the correction coefficients of table N°1.

Example:

According to air density variation:

- a) Flow volume remains the same: $V_1 = V_2$
- b) Pressure and absorbed power, with the same flow, are proportional to density:

$$\Delta pt_2 = \Delta pt_1 \frac{\gamma_2}{\gamma_1} \qquad P_{A2} = P_{A1} \frac{\gamma_2}{\gamma_1}$$

TABLE N° 1

AIR TEMPERATURE °C	ALTITUDE OVER SEA LEVEL (m)									
	Sea Level	300	450	600	750	900	1200	1500	1800	2100
	BAROMETRIC PRESSURE mm Hg									
	760	735	720	705	695	680	655	630	610	585
-40	1,234	1,191	1,170	1,150	1,128	1,105	1,066	1,028	0,987	0,956
-18	1,152	1,110	1,092	1,072	1,052	1,033	0,950	0,957	0,922	0,894
0	1,082	1,043	1,024	1,005	0,990	0,970	0,934	0,900	0,865	0,838
20	1,000	0,964	0,947	0,930	0,913	0,896	0,864	0,832	0,799	0,774
38	0,946	0,912	0,895	0,878	0,863	0,847	0,816	0,785	0,755	0,732
66	0,869	0,838	0,824	0,807	0,793	0,779	0,750	0,722	0,695	0,672
93	0,803	0,775	0,760	0,747	0,733	0,720	0,693	0,667	0,642	0,622
121	0,747	0,720	0,707	0,695	0,682	0,670	0,645	0,622	0,592	0,578
149	0,679	0,672	0,660	0,647	0,626	0,625	0,602	0,579	0,577	0,540
177	0,654	0,630	0,620	0,608	0,597	0,586	0,564	0,543	0,522	0,507
205	0,616	0,594	0,583	0,572	0,562	0,552	0,532	0,512	0,482	0,477



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