

AIR HANDLING UNITS

CTB2 Range

Air flows 0.15 to 1.65 m³/s

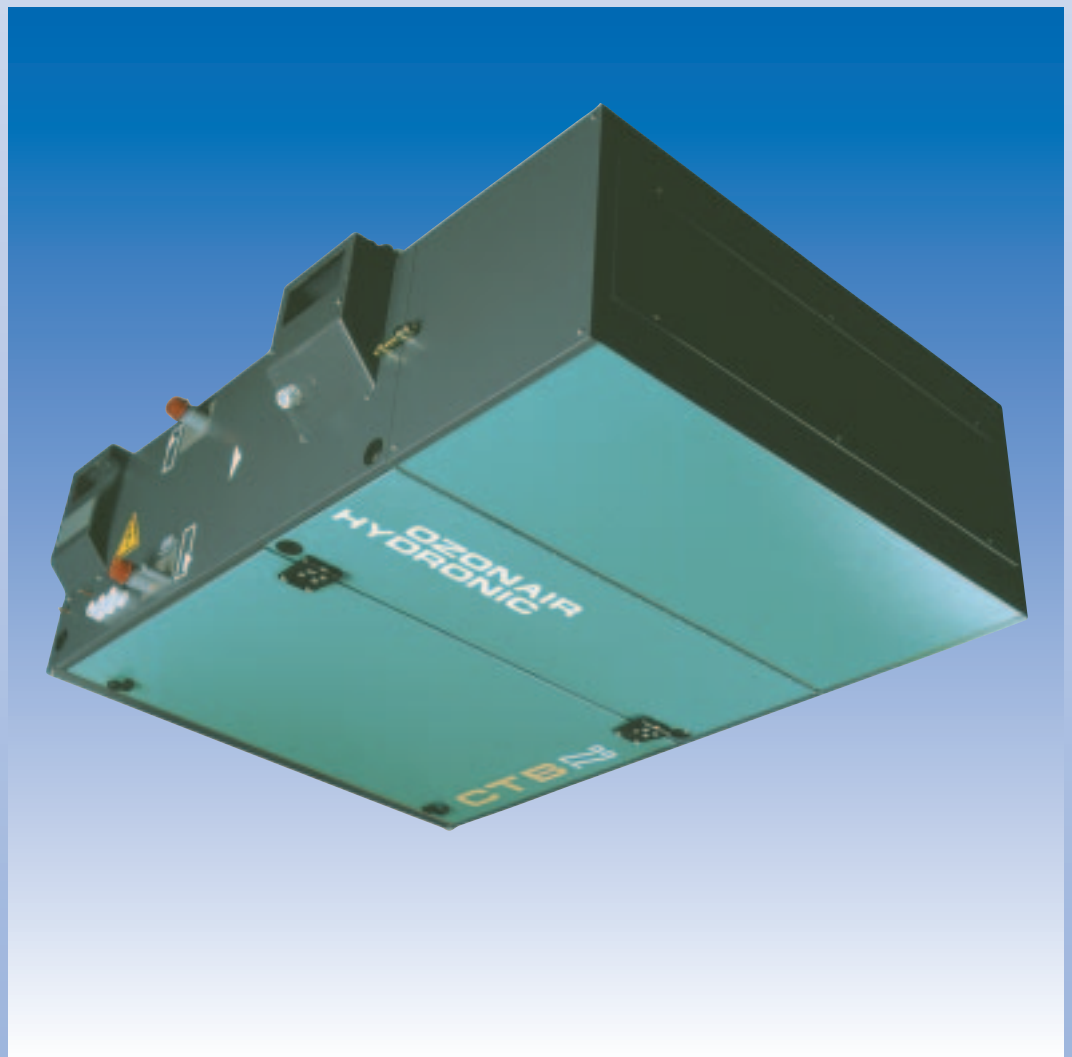
380mm high unit

Casing air tightness Class 'A' to 'EN 1886' standards

25mm double skin construction

Multispeed motor wired to external terminal box

Easy installation



Application

The Ozonair Hydronic package air handling unit type CTB2 is specially suitable for small ducted air conditioning systems and also gives high external static pressure.

Range

Available in 4 sizes 15-22-40 and 60.

General description

Low height 380mm - Double skin 25 mm.

Aesthetically attractive external panels finished in 2 colours : green RAL 5018 and grey RAL 7024.

Low sound levels.

Easy access to components by means of a quick release hinged door.

Air flow easily adjustable by use of a multispeed motor prewired on ext. terminal box.



Horizontal arrangement CTB2 - H or S

CTB2 - H: Ceiling mounted unit or CTB2 - S : Floor mounted unit

The basic section with direct driven fan, 1 phase 230 V can be fitted also with:

- Anti microbe treated pleated filter G4
- Hot water heater battery Copper/Aluminium 2 rows pipe- thread connection \varnothing 1/2" for CTB2 15 and 22, \varnothing 3/4" for CTB2 40 and 60
- Electric heater battery "Module 1" 2 prewired steps for 3- ph 400 V without neutral. Manual reset safety thermostat and anti-radiation shield M0
- Chilled water cooling coil 3 rows - Droplet eliminator standard metallic mesh M0 threaded connection \varnothing 1" for CTB2 15-22-40 and \varnothing 1 1/4" for CTB2 60
- Optional DX cooling coil

Vertical arrangement CTB2-V

Upward air discharge

Same casing as horizontal arrangement, but the cooling coil option is fitted in a separate casing.

SIZES		CTB2 15			CTB2 22			CTB2 40			CTB2 60		
Maximum air flow / High speed	m ³ /s V1			0.425			0.6			1.1			1.65
Optional air flows / High speed	m ³ /s V1	0.15	0.275		0.425	0.5		0.7	0.9		1.1	1.4	
Ext. static pressure available / High speed FG4 arrangement	Pa V1	190	110	0	220	160	0	290	200	40	280	180	70

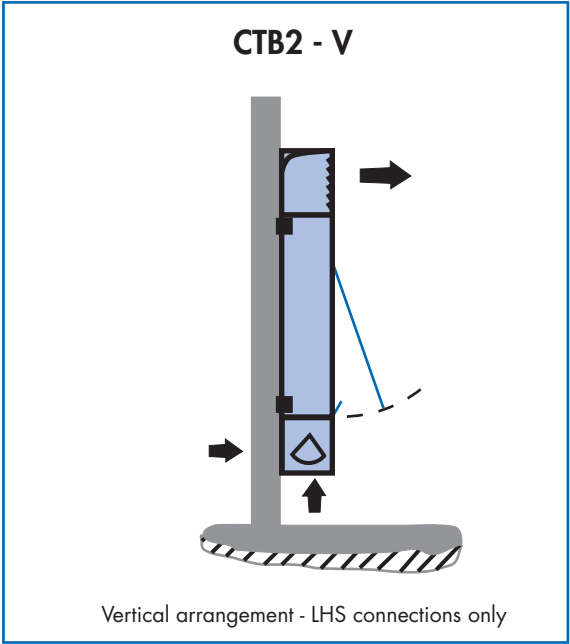
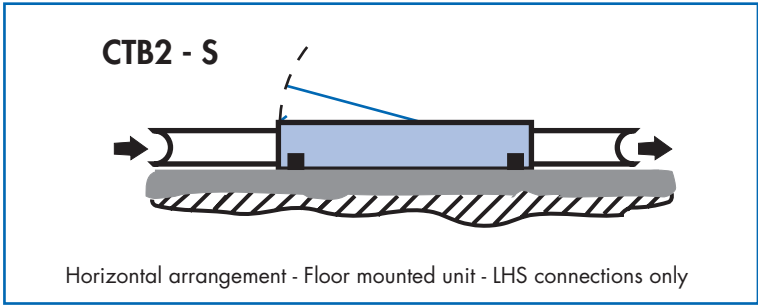
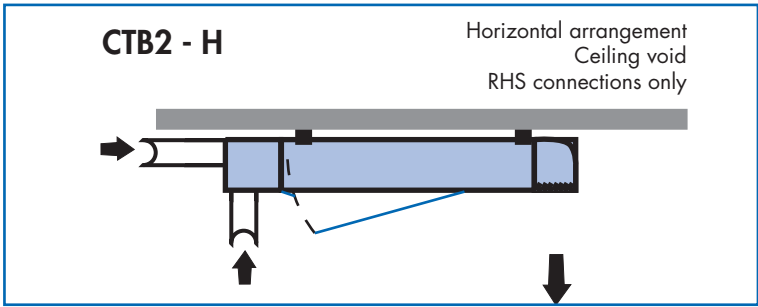
Motor capacity (230/1/50)	W	420 W			550 W			2 x 550 W			3 x 550 W		
Full load current (at high speed)	V1	3A			5.2A			10.4A			15.6A		

Sound pressure level - Ducted unit (4m)	dBa	41	42	44	44	45	47	47	47.5	49	49	50	51
Sound pressure level - Direct supply (at 3m under unit in free field)	dBa	60	62	64	62	63	65	64	65	66	66	67	68

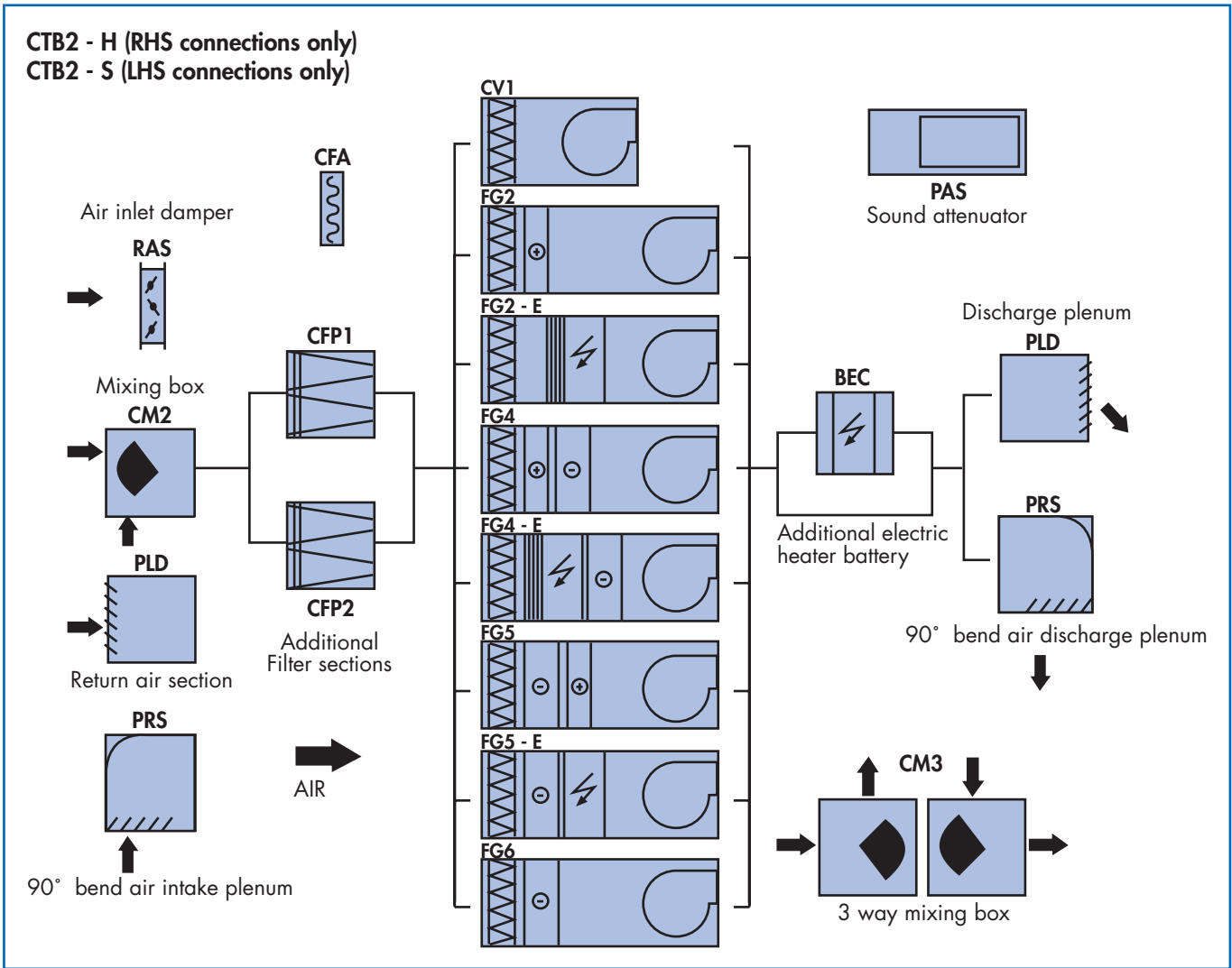
ACCESSORIES

- Manual and motorised air inlet damper
- Air intake or discharge plenum with double deflection grilles
- 90° bend air intake or discharge plenums with double deflection grilles
- Mixing box with various air intake positions - manual and motorised control
- 3 way mixing box with manual and motorised control
- Rigid bag filter section. Efficiency 65% OPA (F7) class M1, or 85% OPA (F8) with 95% Gravi prefilter (G4), CFP1 : 95% Gravi + 65% OPA (G4 + F7) CFP2 : 95% Gravi + 85% OPA (G4 + F8)
- Additional module on discharge side : Electric heater. 2 stages pre-wired and equipped with safety thermostat
- Vertical cooling coil for vertical arrangement (with droplet eliminator M0)
- Sound attenuators
- Flexible connections for inlet, discharge or mixing box sections
- PreFilter section G4 for side withdrawal

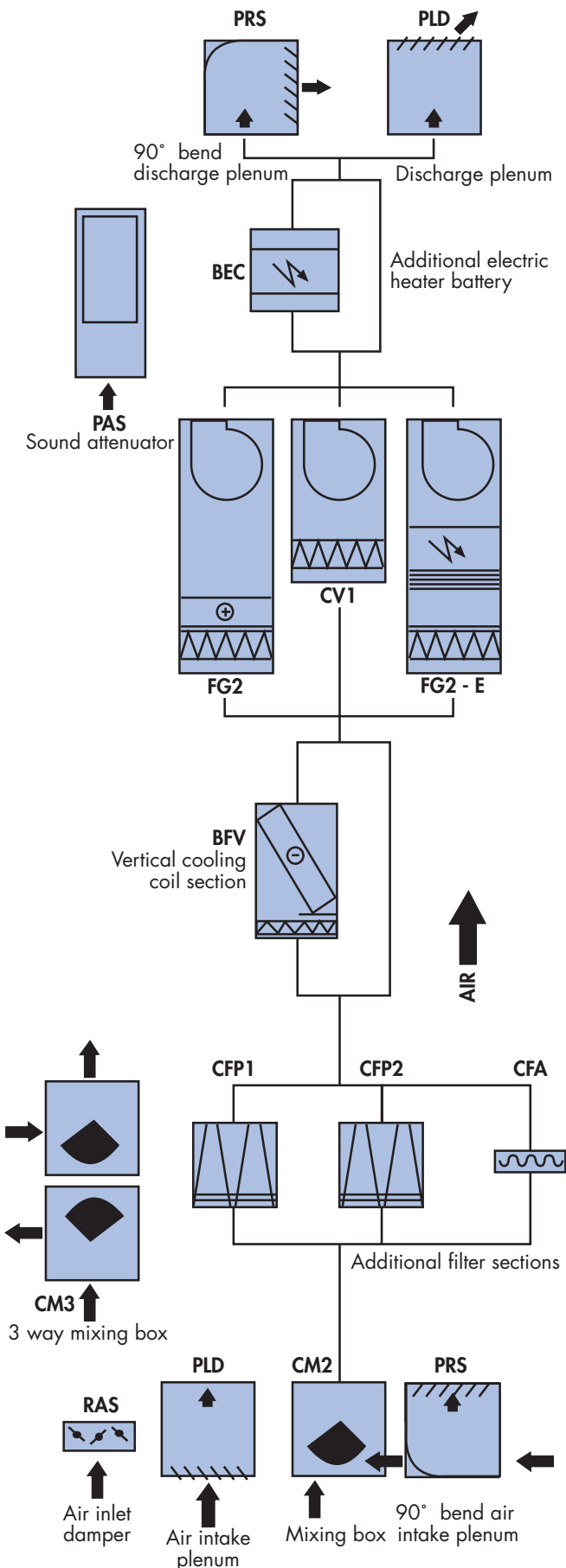
CTB2 range Arrangements



Horizontal arrangements



CTB2 - V (LHS connections only)



Ordering details

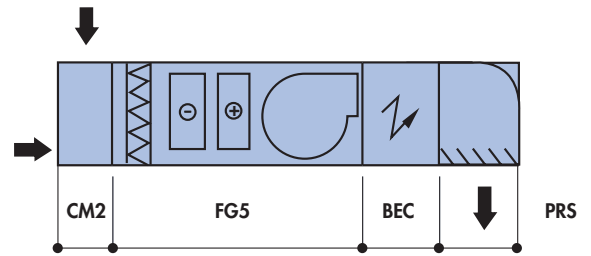
For ordering purposes, the size of the unit should be suffixed with the codes of optional extras.

Example

AHU size
Horizontal arrangement

**CTB2 15
CTB2 -H15**

Ceiling mounted unit (RHS connection)

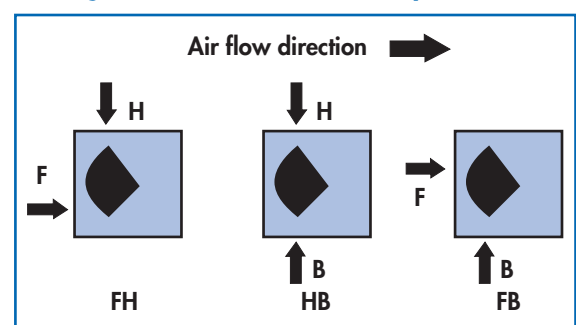


AHU composition :

- Mixing box (front and top side air intake) CM2-FH
- AHU arrangement FG5
- Additional electric heater battery BEC
- Discharge Plenum PRS



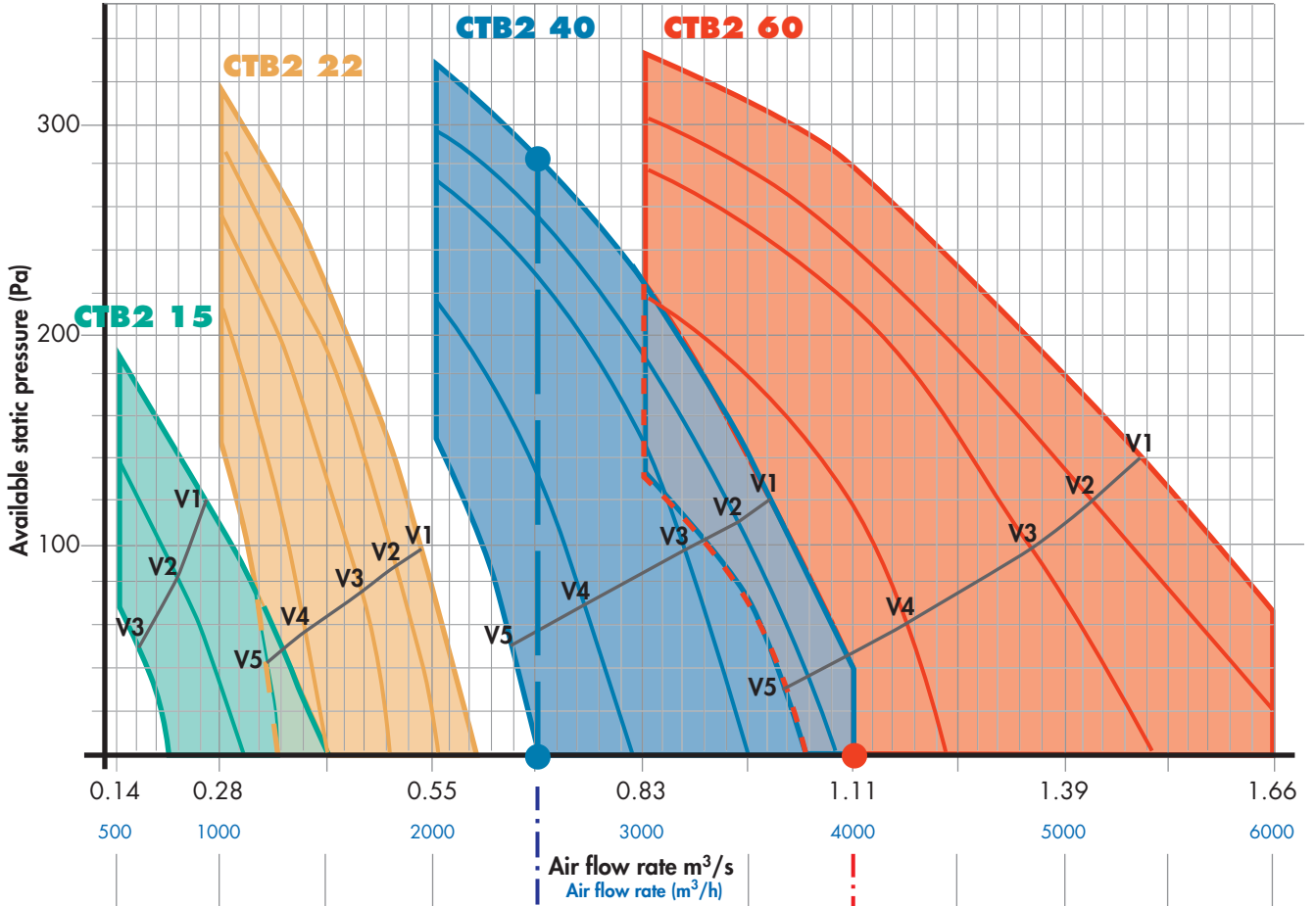
Mixing box: Various air intake positions



CTB2 range

Unit selection chart

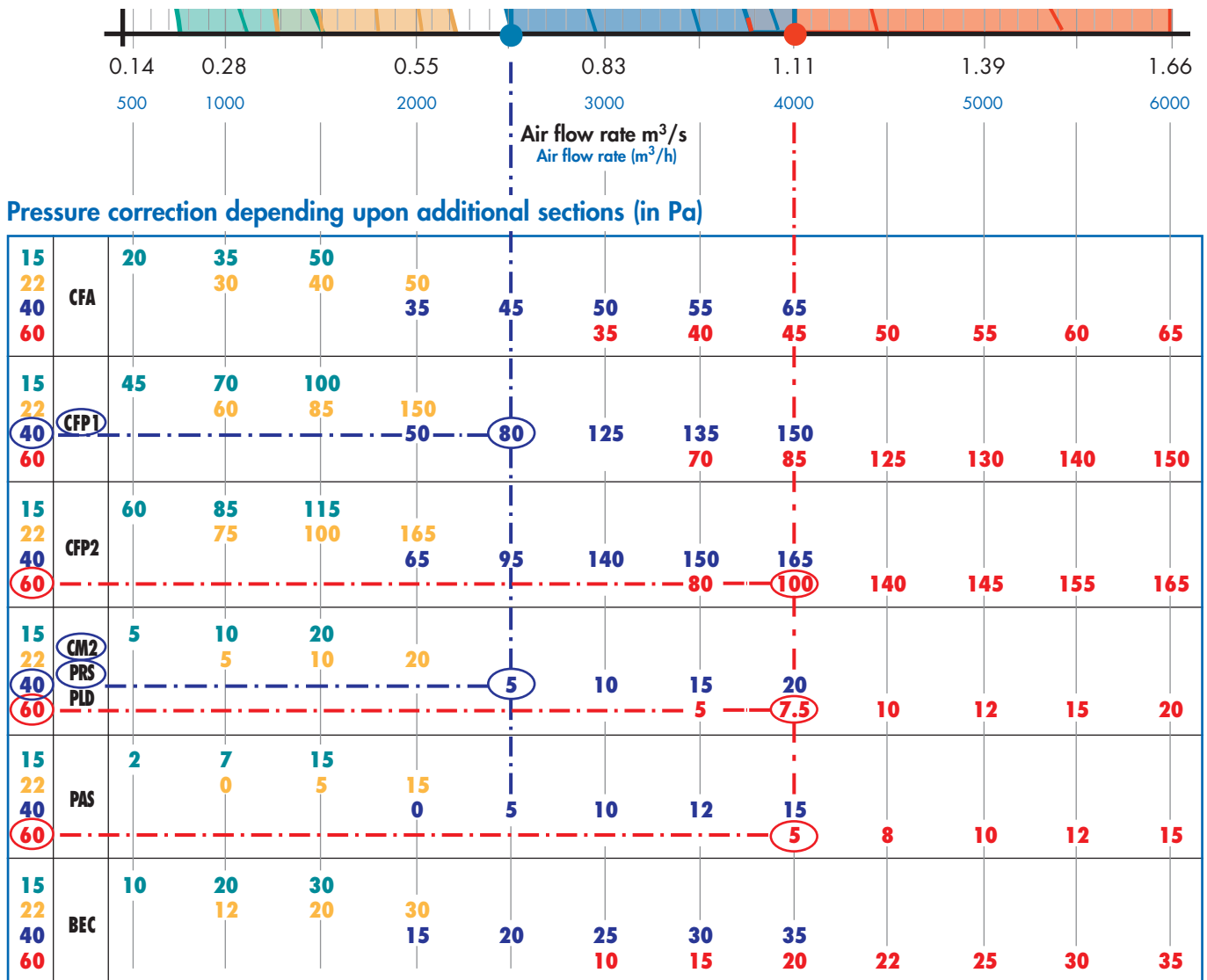
Available pressures and Air flows at different speeds for standard arrangement FG4 or FG5



Available static pressure (Pa) for different arrangements at high speed V1

15	250	195	110											
22		365	300	205										
40				385	370	335	275	200						
60						385	320	365	320	300	260	225		
15	235	175	80											
22		350	275	175										
40				370	350	310	245	165						
60						370	365	345	300	270	230	190		
15	235	170	75											
22		350	275	170										
40				365	340	295	225	140						
60						365	355	335	285	255	240	170		
15	190	115	10											
22		320	220	95										
40				335	300	245	160	65						
60						335	320	290	235	195	140	90		
15	190	110	0											
22		320	220	90										
40				330	290	230	140	40						
60						330	310	280	220	180	120	70		
15	205	135	35											
22		335	245	125										
40				350	320	270	190	100						
60						350	335	310	255	225	170	125		

Selection chart pressure correction



1st example :

Required 0.7 m³/s (2500 m³/h) - 100 Pa external static pressure
 Arrangement **FG4** with **CM2** **CFP1** and **PRS**
 On the chart page 5, available static pressure 290 Pa for a **CTB2 40 / FG4** arrangement
 Pressure drop through

CM2 5 Pa

CFP1 80 Pa

PRS 5 Pa

90 Pa

Therefore available pressure : 290 - 90 = 200 Pa

To get the 100 Pa required static pressure, unit must be connected on speed V3 or V4.

2nd example :

1.11 m³/s (4000 m³/h) - 200 Pa external static pressure
 Arrangement **FG6** with **CM2**, **CFP2**, **PAS** and **PRS**
 On page 5, available static pressure 310 Pa for a **CTB2 60 / FG6** arrangement
 Pressure drop through

CM2 7.5 Pa

CFP2 100 Pa

PAS 5 Pa

PRS 7.5 Pa

120 Pa

Therefore available pressure : 310 - 120 = 190 Pa

For 200 Pa required, unit must be connected on speed V1



CTB2 range

Standard chilled water coil

Cooling output (total heat) in kW

Water Temp. (°C)	Air Inlet Temp. (°C)	CTB2 15				CTB2 22				CTB2 40				CTB2 60											
		Air flow m ³ /s (m ³ /h)																							
		0.14 (500)		0.28 (1000)		0.42 (1500)		0.42 (1500)		0.5 (1800)		0.61 (2200)		0.7 (2500)		0.89 (3200)		1.11 (4000)		1.11 (4000)		1.39 (5000)		1.67 (6000)	
P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T		
5/11	24 (50%)	2.2	12.5	4.0	13.4	5.3	14.3	6.7	12.7	7.6	13.1	8.7	13.6	9.7	13.4	11.9	13.9	12.5	14.1	18.4	12.6	21.5	13.1	24.0	13.6
	27 (50%)	3.5	12.2	6.0	13.7	7.9	14.9	9.8	13.1	11.0	13.7	12.5	14.4	14.8	13.9	17.6	14.6	18.6	14.8	26.0	13.2	29.9	14.0	33.1	14.7
	30 (40%)	3.8	12.2	6.5	14.0	8.6	15.4	10.5	13.5	11.8	14.1	13.4	15.0	16.6	14.0	19.7	14.8	20.7	15.1	28.1	13.5	32.5	14.4	36.4	15.1
6/12	24 (50%)	2.0	13.2	3.5	14.2	4.7	15.0	6.0	13.4	6.8	13.8	7.7	14.3	8.7	14.2	10.4	14.7	11.1	14.8	16.1	13.3	18.8	13.9	21.3	14.3
	27 (50%)	3.1	13.2	5.3	14.5	7.0	15.6	8.8	13.9	10.0	14.4	11.3	15.1	13.4	14.6	16.0	15.2	16.8	15.4	23.4	14.0	27.2	14.7	30.4	15.3
	30 (40%)	3.4	13.1	6.0	14.8	7.9	16.0	9.6	14.2	10.9	14.8	12.2	15.6	15.2	14.7	17.9	15.5	18.7	15.8	26.1	14.2	30.2	15.0	33.7	15.7
7/13	24 (50%)	1.8	13.9	3.1	15.0	4.2	15.8	5.3	14.2	6.0	14.6	6.9	15.0	7.6	15.1	9.1	15.5	9.7	15.7	14.2	14.1	16.7	14.6	18.7	15.0
	27 (50%)	2.7	14.2	4.7	15.4	6.2	16.4	7.8	14.7	8.9	15.2	10.1	15.8	12.0	15.3	14.3	15.9	15.0	16.1	21.2	14.7	24.7	15.3	27.2	15.9
	30 (40%)	3.1	14.0	5.4	15.5	7.2	16.8	8.7	15.0	9.9	15.6	11.2	16.3	13.7	15.5	16.2	16.3	17.0	16.6	23.9	14.9	27.6	15.6	30.1	16.4

Column P: Cooling output in kW

Column T: Air outlet temperature in °C

Water pressure drop in kPa

Water Temp. (°C)	Air Inlet Temp. (°C)	CTB2 15				CTB2 22				CTB2 40				CTB2 60									
		Air flow m ³ /s (m ³ /h)																					
		0.14 (500)		0.28 (1000)		0.42 (1500)		0.42 (1500)		0.5 (1800)		0.61 (2200)		0.7 (2500)		0.89 (3200)		1.11 (4000)		1.11 (4000)		1.39 (5000)	
P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T
5/11	24 (50%)	0.8	2.4	4.1	8.2	10.4	13.0	2.2	3.2	3.4	7.0	9.2	11.1										
	27 (50%)	1.9	5.2	8.5	16.1	19.6	24.5	4.7	6.4	7.0	12.8	16.3	19.6										
	30 (40%)	2.3	6.1	9.9	18.1	22.4	27.7	5.8	7.8	8.5	14.7	19.0	23.0										
6/12	24 (50%)	0.6	1.9	3.3	6.6	8.3	10.4	1.7	2.4	2.7	5.5	7.2	8.9										
	27 (50%)	1.5	4.2	6.9	13.3	16.6	20.6	3.9	5.4	5.9	10.6	13.8	16.8										
	30 (40%)	1.8	5.1	8.5	15.4	19.2	23.6	4.9	6.5	7.1	12.8	16.5	20.0										
7/13	24 (50%)	0.5	1.5	2.6	5.5	6.7	8.6	1.3	1.9	2.1	4.3	5.8	7.1										
	27 (50%)	1.2	3.3	5.5	10.7	13.2	16.7	3.2	4.4	4.8	8.9	11.5	14.1										
	30 (40%)	1.5	4.3	7.1	12.9	16.1	20.2	4.1	5.5	5.9	10.9	14.1	16.9										

Standard hot water battery / Electric heater battery

Heating output in kW

Water Temp. (°C)	Air Inlet Temp. (°C)	CTB2 15				CTB2 22				CTB2 40				CTB2 60											
		Air flow m³/s (m³/h)																							
		0.14 (500)		0.28 (1000)		0.42 (1500)		0.42 (1500)		0.5 (1800)		0.61 (2200)		0.7 (2500)		0.89 (3200)		1.11 (4000)		1.11 (4000)		1.39 (5000)		1.67 (6000)	
P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T		
90/70	-10	11.4	60	19.1	47.2	23.6	37.1	28.2	46.3	30.9	41.4	34.1	36.4	46.2	45.3	50.9	40.8	58.4	33.7	73.3	44.8	84.1	40.4	93.8	36.8
	0	9.8	60	17	50.8	21	41.8	25.1	50	27.6	45.8	30.4	41.4	41.1	49	45.2	45.1	52	38.9	64.9	48.5	74.6	44.6	83.5	41.6
	+15	7.4	60	13.8	56.1	17	48.7	20.4	55.5	22.4	52	24.7	48.4	33.9	54.6	36.6	51.3	42	46.3	52.4	54	60.1	50.8	67	48.2
82/71	-10	11.4	60	9	17	9	8.1	8	6	7	1.7	8	0.9	15	8.0	17	5.9	16	2.0	50	27.5	50	20	55	4.5
	0	9.8	60	15.5	53	9	17.9	7	14.0	7	11.6	7	9.5	18	24.5	18.8	16	12	52	38.9	52	31.1	55	27.4	
	+15	7.4	60	13.4	55	15.5	50.3	7	28.8	7	26.5	7	24.4	32.4	53.6	18	35.2	17	27.5	51.2	53.1	58.8	50	52	40.6
60/40	-10	7.9	37.4	12.1	26.1	14.8	19.6	17.9	25.8	19.7	22.8	21.7	19.6	29.2	25	33.1	21	30	12.5	45.8	24.3	52.5	21.5	58.4	19.2
	0	6.5	38.9	9.9	29.6	12.1	24.2	14.8	29.5	16.2	27.0	17.9	24.3	24.0	28.7	27.2	25.4	30	22.4	37.5	28.1	43.0	25.7	47.8	23.8
	+15	4.4	40.1	6.6	34.6	8.1	31.0	10.0	34.8	10.9	33.1	12.1	31.3	16.1	34.1	15.2	31.9	30	37.2	24.8	33.9	28.4	31.9	31.5	30.6

Column P: Heating output in kW

Column T: Air outlet temperature in °C

Water pressure drops in kPa

(°C)	(°C)	CTB2 15				CTB2 22				CTB2 40				CTB2 60									
		Air flow m³/s (m³/h)																					
		0.14 (500)		0.28 (1000)		0.42 (1500)		0.42 (1500)		0.5 (1800)		0.61 (2200)		0.7 (2500)		0.89 (3200)		1.11 (4000)		1.11 (4000)		1.39 (5000)	
90/70	-10	7.1	15.8	23.2	39	43	47	23.6	28.2	36.1	19.4	25	30.6										
	0	5.7	12.8	18.4	31.6	37.5	43.6	19.1	22.7	29.6	15.4	20	24.6										
	+15	4	8.9	12.8	21.8	25.8	30.8	13	15.5	19.9	10.4	13.4	16.4										
82/71	-10	7.1	42.5	43	44	35.1	44.5	31.5	39.4	35.7	24.6	24.7	29.5										
	0	5.7	30.9	42.8	34.7	34.9	35.1	43.1	43.4	35.4	26.4	26.5	29.4										
	+15	4	24.1	31.2	34.3	34.5	34.7	29.3	42.9	39.1	16.0	20.4	26.4										
60/40	-10	3.5	7.4	10.7	18.6	22.1	26.3	9.3	11.6	40	5.1	6.5	7.8										
	0	2.5	5.2	7.5	13.2	15.6	18.5	6.6	28.2	39.7	3.6	4.6	5.5										
	+15	1.2	2.5	3.6	6.6	7.7	9.2	3.8	14.1	39.2	1.8	2.2	2.7										

Electric heater battery - Heat output - Air inlet temperature + 10°C

	CTB2	Air flow m³/s (m³/h)	Output kW	Air outlet temp. °C	Heater elements	
					kW output / element	Number
Module 1 or BEC (2 stages)	15	0.42 (1500)	9	28	1.5	6
	22	0.61 (2200)	15	30	2.5	6
	40	1.11 (4000)	24	28	4	6
	60	1.67 (6000)	35	28	6	6
Module 1 + BEC (2 + 2 stages)	15	0.42 (1500)	18	46	1.5	12
	22	0.61 (2200)	30	50	2.5	12
	40	1.11 (4000)	48	46	4	12
	60	1.67 (6000)	72	46	6	12

Module 1 = Electric heater within unit (FG2E - FG4E - FG6E)

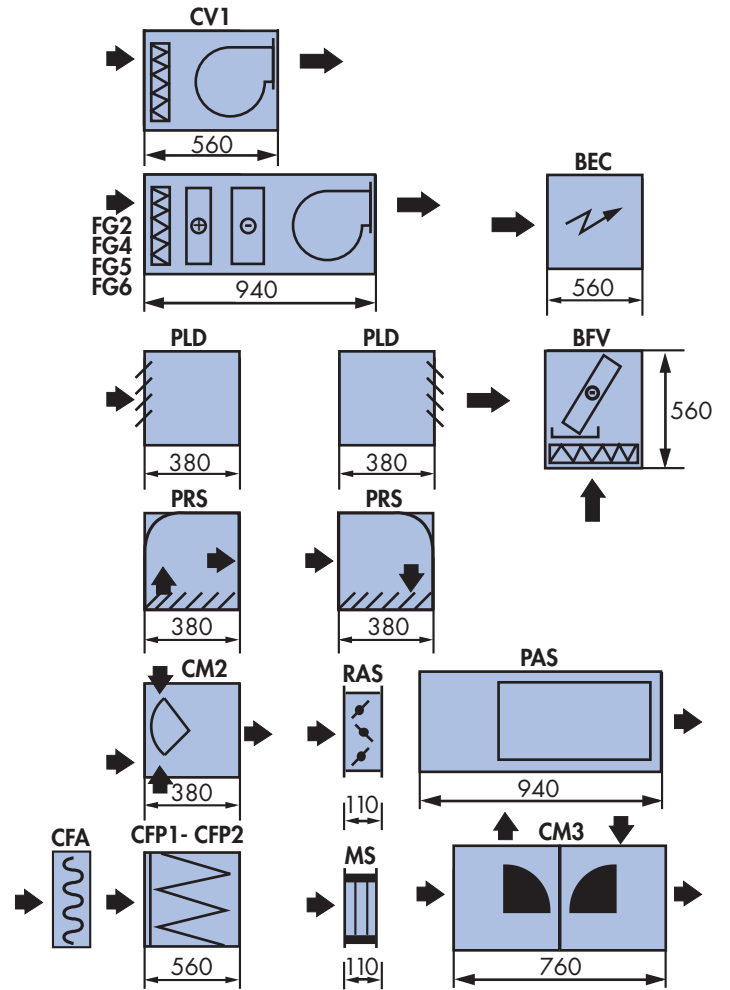
BEC = Additional electric heater section on discharge side (for models H, S or V)

Supply: 3ph. 400v without neutral

CTB2 range

Dimensions and weights

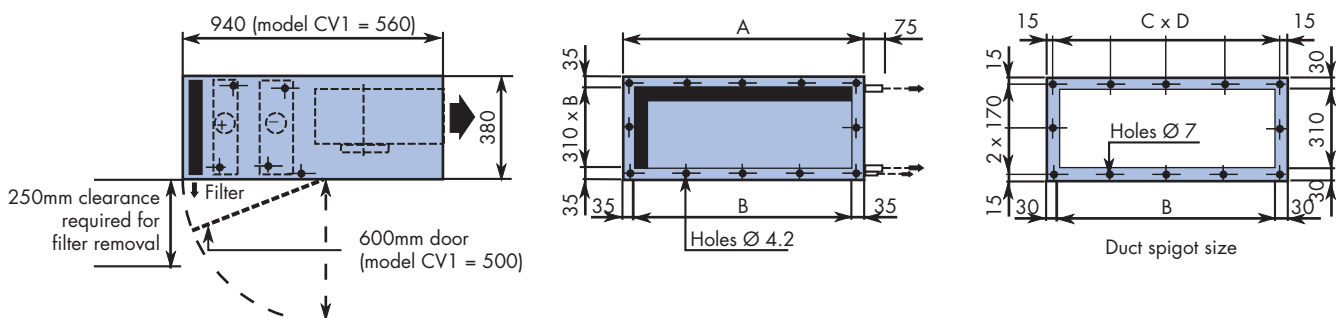
Section lengths



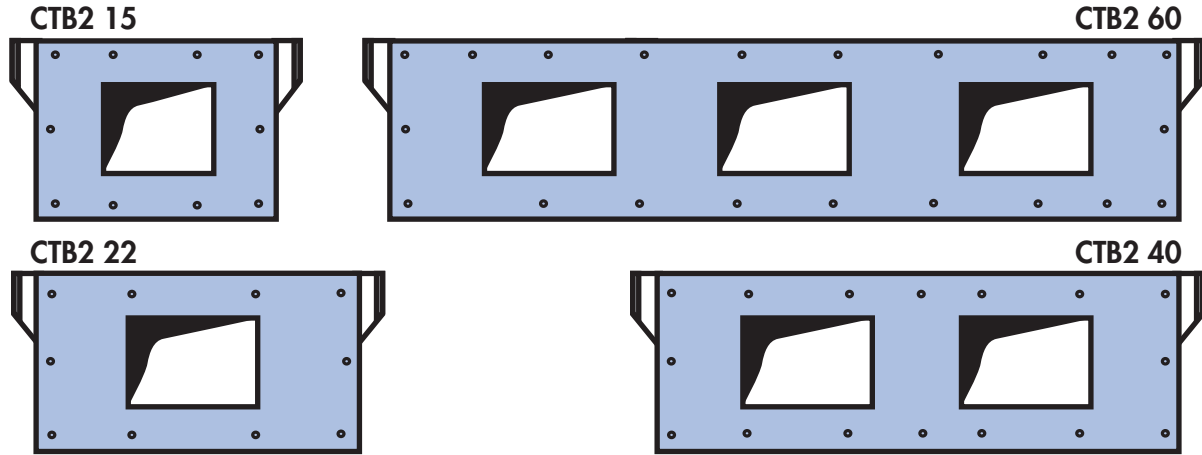
Weights in kg

Weight kg	CV1	FG2	FG4/5	FG6	BFV	CFP1/2	CM2	PLD	PRS	BEC	PAS	CM3	RAS
CTB2 15	35	63	70	65	41	28	18	13	12	27	45	36	6
CTB2 22	45	74	83	80	44	35	20	15	14	33	53	40	8
CTB2 40	65	112	135	120	49	55	28	20	18	54	82	56	10
CTB2 60	95	165	200	175	71	80	40	25	24	79	114	80	13

Air intake duct connection

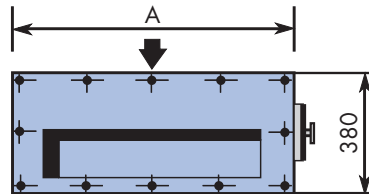
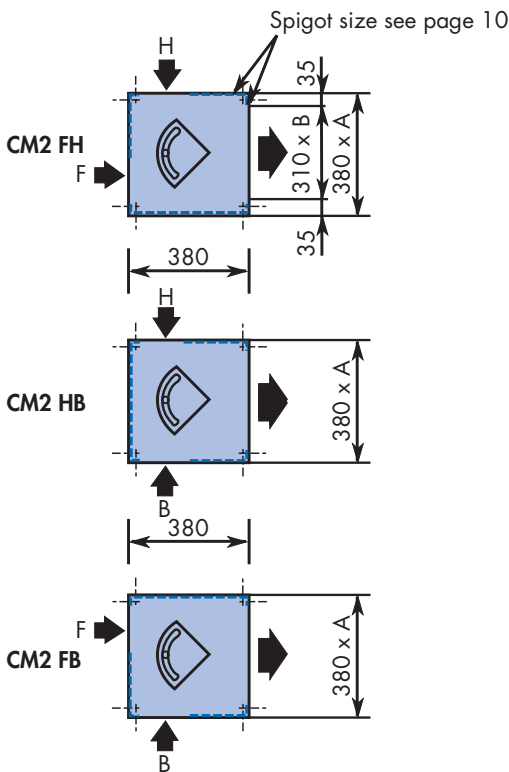


Same spigot for discharge as for air intake (see page 9)



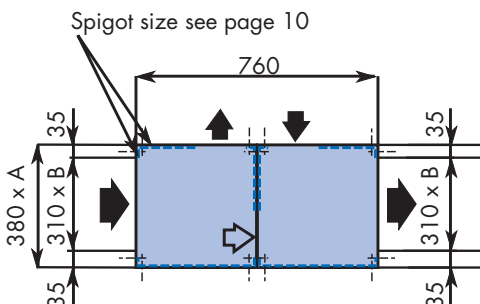
2 way and 3 way mixing box duct connection

2 way mixing box

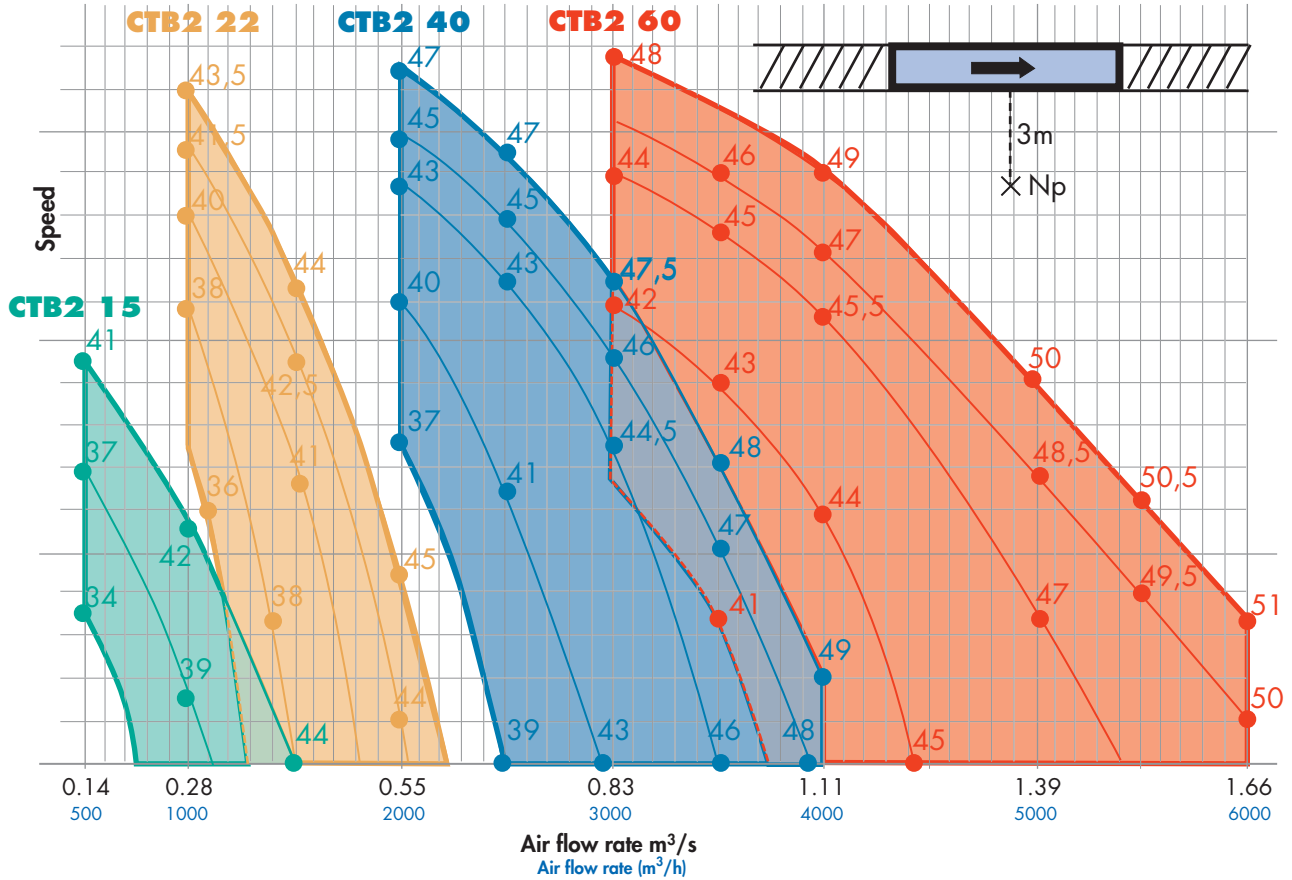


CTB2	A	B	C	D
15	690	620	3	216.6
22	885	815	4	211.2
40	1335	1265	6	215.8
60	1985	1865	9	210.5

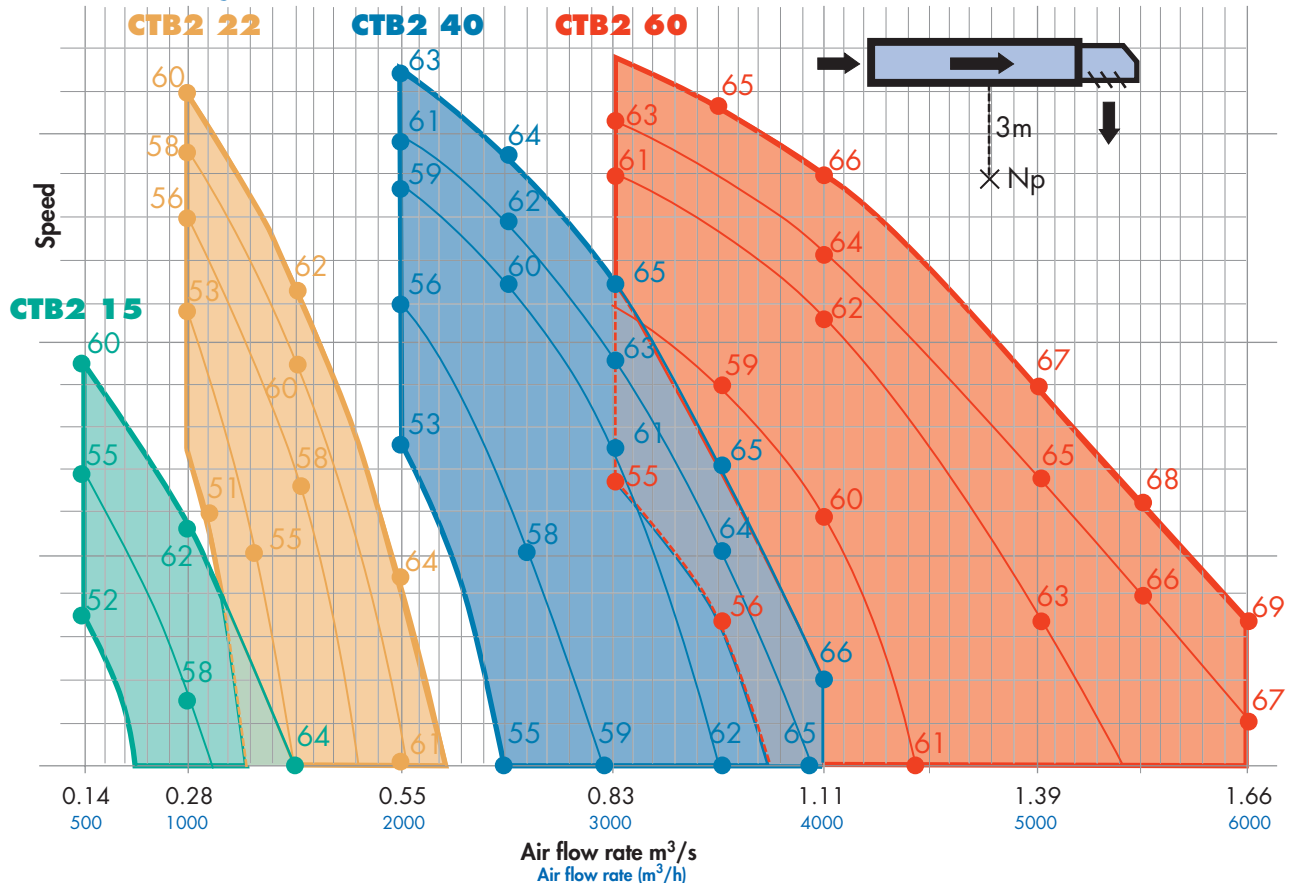
3 way mixing box



Inlet and discharge ducted (4m minimum on both sides)



Inlet and discharge no ductwork fitted



Sound levels at 3m under the unit, in free field conditions, directivity Q = 2

Incorporation statement

(Article 4, paragraph 2 of modified directive 89/392/CEE) (1)

Ozonair Hydronic
71 High Street, Nailsea,
Bristol BS48 1AW

HYDRONIC declares that the air handling units types CCM, CTB2, CTHb & CTH and ancillaries, should **not** be put into operation until the installation, in which it has been fitted, has been declared to conform to the modified (1) 'Machinery Directive' 89/392/CEE

HYDRONIC declares that the equipment is in accordance with the provisions of the directives
'EMC' N° 89/336/CEE modified (2)
'Low voltage' N° 73/23/CEE modified (3)

(1) 89/392/CEE modified 91/368/CEE, 93/44/CEE, 93/68/CEE, 98/37/CEE

(2) 89/336/CEE modified 92/31/CEE, 93/68/CEE, 98/13/CEE

(3) 73/23/CEE modified 93/68/CEE