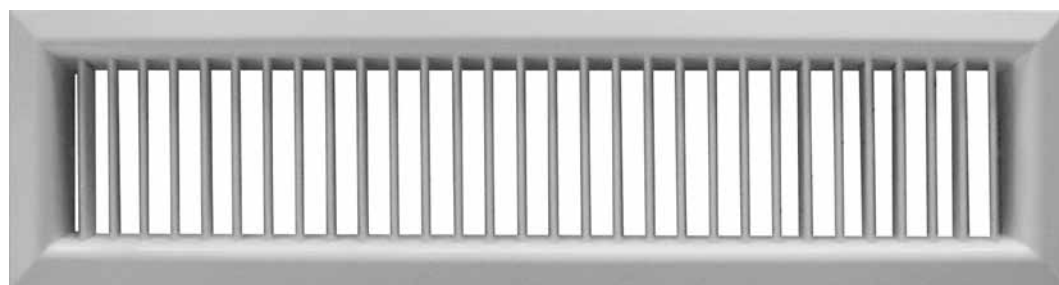
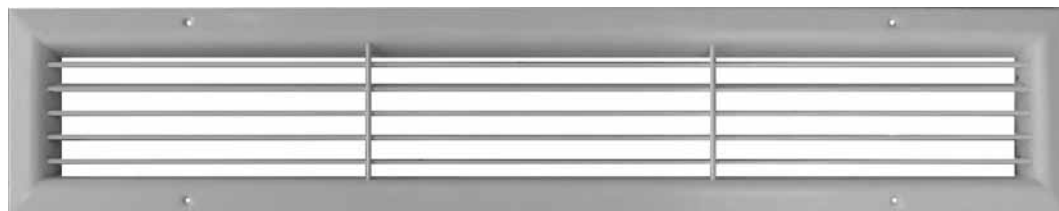


## CBP – WALL VENTILATION GRILLES



### Description

- Designed for ventilation and air-conditioning installations, where control of air flow and direction of the air is required.

### Construction

- Constructed of extruded aluminium profiles with powder coating.
- Consist of decorative part – frame with incorporated horizontal (-X), vertical (-B) or double directed lamellas (-II). The lamellas can be movable, thus allowing air distribution in one or two directions, or immovable (-H).
- Easy air flow regulation is provided by a multi blade damper (+M).
- Grilles are constructed of two types of profiles: L-profile (+L) or rounded type profile.
- Powder coating in RAL 9010 as a standard, upon customer's request painting in all RAL colours is possible.

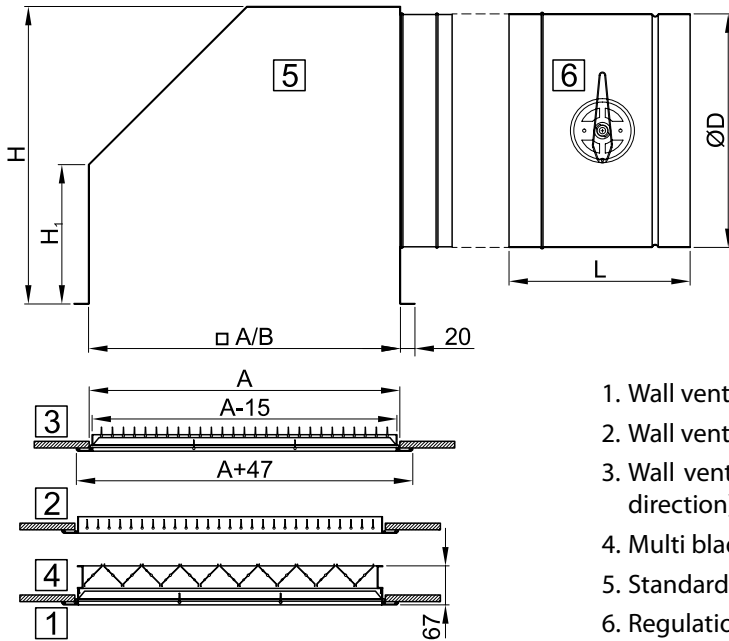
### Installation

- To the air duct system with:
- Plenum box and flexible ducts.
  - Directly joined to the air duct.
  - Directly joined to building elements.

### Accessories

- Multi blade damper (+M)
- Standard plenum box with side connector (+K)
- Regulation damper (+D)
- Internal insulation (+li) or external insulation (+le) of the plenum box.

## Overall and joined dimensions

**Note:**

Without regulation damper, L = 70 mm

Plenum boxes with top connector and different dimensions can be produced on request.

1. Wall ventilation grille with horizontal lamellas
2. Wall ventilation grille with vertical lamellas
3. Wall ventilation grille with horizontal and vertical lamellas (double direction)
4. Multi blade damper
5. Standard plenum box
6. Regulation damper

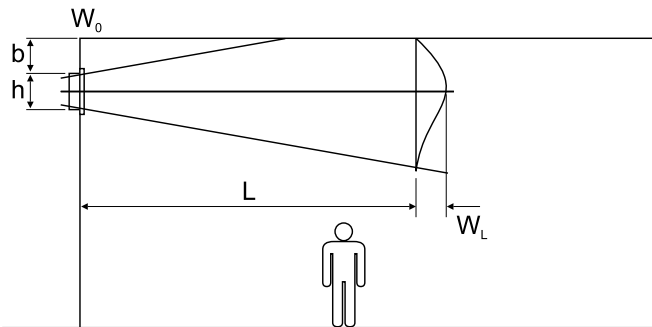
Free cross section  $F_0$  [m<sup>2</sup>]

A [mm] \ B [mm]	B [mm]			
	125	225	325	425
125	0.010			
225	0.020	0.040		
325	0.030	0.060	0.090	
425	0.040	0.080	0.120	0.160
525	0.050	0.100	0.150	0.200
625	0.060	0.120	0.180	0.240
825	0.080	0.160	0.240	0.320
1025	0.100	0.200	0.300	0.400
1225	0.120	0.240	0.360	0.480

## Selection of plenum box

Free cross section $F_0$ [m <sup>2</sup> ]	Air flow [m <sup>3</sup> /h]	H [mm]	H <sub>1</sub> [mm]	ØD [mm]	L [mm]
to 0.025	100 ÷ 200	230	120	120	140
to 0.039	200 ÷ 400	230	120	145	140
to 0.069	400 ÷ 600	280	120	195	190
to 0.099	600 ÷ 1000	330	150	245	240
over 0.100	over 1000	330	150	245	240

Air supply – Air velocity at distance L –  $W_L$  [m/s]



$W_L = f(W_0, L, b)$ , where:

$W_0$  – velocity in the free cross section

$W_0 = V/3600 \cdot F_0$  [m/s]

L – distance from the grille

b – distance to the ceiling

h – height of the grille

$W_L$  [m/s] without ceiling effect ( $b > 300$  mm),  $h = 0.125$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.50	0.35	0.29	0.25	0.22
2	1.00	0.71	0.58	0.50	0.45
3	1.50	1.06	0.87	0.75	0.67
4	2.00	1.41	1.15	1.00	0.89
5	2.50	1.77	1.44	1.25	1.12

$W_L$  [m/s] with ceiling effect ( $b < 300$  mm),  $h = 0.125$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.77	0.59	0.51	0.46	0.42
2	1.54	1.19	1.02	0.92	0.84
3	2.31	1.78	1.53	1.38	1.27
4	3.08	2.38	2.04	1.83	1.69
5	3.86	2.97	2.55	2.29	2.11

$W_L$  [m/s] without ceiling effect ( $b > 300$  mm),  $h = 0.225$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.67	0.47	0.39	0.34	0.30
2	1.34	0.95	0.77	0.67	0.60
3	2.01	1.42	1.16	1.01	0.90
4	2.68	1.90	1.55	1.34	1.20
5	3.35	2.37	1.94	1.68	1.50

$W_L$  [m/s] with ceiling effect ( $b < 300$  mm),  $h = 0.225$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.96	0.74	0.64	0.57	0.53
2	1.92	1.48	1.27	1.14	1.05
3	2.88	2.22	1.91	1.71	1.58
4	3.85	2.96	2.55	2.29	2.10
5	4.81	3.71	3.18	2.86	2.63

$W_L$  [m/s] without ceiling effect ( $b > 300$  mm),  $h = 0.325$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.81	0.57	0.47	0.40	0.36
2	1.61	1.14	0.93	0.81	0.72
3	2.42	1.71	1.40	1.21	1.08
4	3.22	2.28	1.86	1.61	1.44
5	4.03	2.85	2.33	2.02	1.80

$W_L$  [m/s] with ceiling effect ( $b < 300$  mm),  $h = 0.325$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	1.00	0.85	0.73	0.66	0.60
2	2.00	1.70	1.46	1.31	1.21
3	3.00	2.55	2.19	1.97	1.81
4	4.00	3.40	2.92	2.62	2.41
5	5.00	4.25	3.65	3.28	3.02

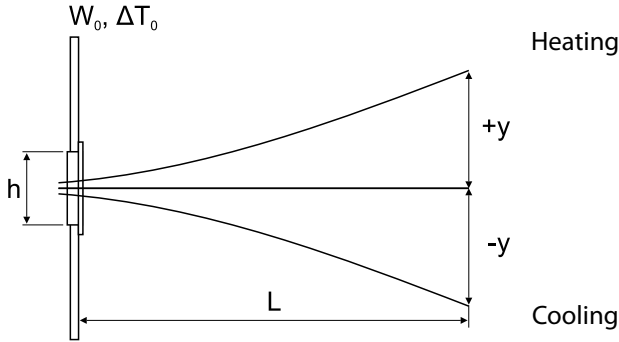
$W_L$  [m/s] without ceiling effect ( $b > 300$  mm),  $h = 0.425$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	0.92	0.65	0.53	0.46	0.41
2	1.84	1.30	1.06	0.92	0.82
3	2.77	1.96	1.60	1.38	1.24
4	3.69	2.61	2.13	1.84	1.65
5	4.61	3.26	2.66	2.30	2.06

$W_L$  [m/s] with ceiling effect ( $b < 300$  mm),  $h = 0.425$  m

$W_0$ [m/s] \ L [m]	2	4	6	8	10
1	1.00	0.94	0.81	0.73	0.67
2	2.00	1.88	1.62	1.45	1.33
3	3.00	2.82	2.42	2.18	2.00
4	4.00	3.76	3.23	2.90	2.67
5	5.00	4.70	4.04	3.63	3.34

NON-ISOTHERMAL HORIZONTAL JET Without ceiling effect Jet path at distance L, ±y, m



$y = f(\Delta T_0, W_0, L)$ , where:

$\Delta T_0$  – temperature difference

$\Delta T_0 = T_{\text{floor}} - T_{\text{amb}}$

$W_0$  – velocity in the free cross section

$L$  – distance from the grille

$h$  – height of the grille

y [m] without ceiling effect, h=0.125 m

W <sub>0</sub> [m/s]	ΔT <sub>0</sub> [°C]	L [m]				
		2	4	6	8	10
1	5	0.64	5.12	-	-	-
	10	1.28	-	-	-	-
	15	1.92	-	-	-	-
2	5	0.16	1.28	4.32	-	-
	10	0.32	2.56	-	-	-
	15	0.48	3.84	-	-	-
3	5	0.07	0.57	1.92	4.55	-
	10	0.14	1.14	3.84	-	-
	15	0.21	1.71	-	-	-
4	5	0.04	0.32	1.08	2.56	5.00
	10	0.08	0.64	2.16	5.12	-
	15	0.12	0.96	3.24	-	-
5	5	0.03	0.20	0.69	1.64	3.20
	10	0.05	0.41	1.38	3.28	-
	15	0.08	0.61	2.07	4.92	-

y [m] without ceiling effect, h=0.225 m

W <sub>0</sub> [m/s]	ΔT <sub>0</sub> [°C]	L [m]				
		2	4	6	8	10
1	5	0.36	2.84	-	-	-
	10	0.71	-	-	-	-
	15	1.07	-	-	-	-
2	5	0.09	0.71	2.40	5.69	-
	10	0.18	1.42	4.80	-	-
	15	0.27	2.13	-	-	-
3	5	0.04	0.32	1.07	2.53	4.94
	10	0.08	0.63	2.13	5.06	-
	15	0.12	0.95	3.20	-	-
4	5	0.02	0.18	0.60	1.42	2.78
	10	0.04	0.36	1.20	2.84	5.56
	15	0.07	0.53	1.80	4.27	-
5	5	0,01	0,11	0,38	0,91	1,78
	10	0.36	2.84	-	-	-
	15	0.71	-	-	-	-

y [m] without ceiling effect, h=0.325 m

W <sub>0</sub> [m/s]	ΔT <sub>0</sub> [°C]	L [m]				
		2	4	6	8	10
1	5	0.25	1.97	6.65	-	-
	10	0.49	3.94	-	-	-
	15	0.74	-	-	-	-
2	5	0.06	0.49	1.66	3.94	-
	10	0.12	0.98	3.32	-	-
	15	0.18	1.48	4.98	-	-
3	5	0.03	0.22	0.74	1.75	3.42
	10	0.05	0.44	1.48	3.50	-
	15	0.08	0.66	2.22	5.25	-
4	5	0.02	0.12	0.42	0.98	1.92
	10	0.03	0.25	0.83	1.97	3.85
	15	0.05	0.37	1.25	2.95	5.77
5	5	0.01	0.08	0.27	0.63	1.23
	10	0.02	0.16	0.53	1.26	2.46
	15	0.03	0.24	0.80	1.89	3.69

y [m] without ceiling effect, h=0.425 m

W <sub>0</sub> [m/s]	ΔT <sub>0</sub> [°C]	L [m]				
		2	4	6	8	10
1	5	0.19	1.51	5.08	-	-
	10	0.38	3.01	-	-	-
	15	0.56	-	-	-	-
2	5	0.05	0.38	1.27	3.01	5.88
	10	0.09	0.75	2.54	6.02	-
	15	0.14	1.13	3.81	-	-
3	5	0.02	0.17	0.56	1.34	2.61
	10	0.04	0.33	1.13	2.68	5.23
	15	0.06	0.50	1.69	4.02	-
4	5	0.01	0.09	0.32	0.75	1.47
	10	0.02	0.19	0.64	1.51	2.94
	15	0.04	0.28	0.95	2.26	4.41
5	5	0.01	0.06	0.20	0.48	0.94
	10	0.02	0.12	0.41	0.96	1.88
	15	0.02	0.18	0.61	1.45	2.82

Note: In cases where no value is specified, the deviation is more than 6m.

NON-ISOTHERMAL HORIZONTAL JET Temperature ratio at distance L –  $\Delta T_L$  [°C] $\Delta T_L$  [°C], h=0.125 m

$\Delta T_0$ [°C] \ L [m]	4	6	8	10	15	20
2	1.7	2.6	3.5	4.3	6.5	8.7
4	1.2	1.8	2.4	3.1	4.6	6.1
6	1.0	1.5	2.0	2.5	3.7	5.0
8	0.9	1.3	1.7	2.2	3.2	4.3
10	0.8	1.2	1.5	1.9	2.9	3.9

 $\Delta T_L$  [°C], h=0.225 m

$\Delta T_0$ [°C] \ L [m]	4	6	8	10	15	20
2	2.3	3.5	4.6	5.8	8.7	11.6
4	1.6	2.5	3.3	4.1	6.2	8.2
6	1.3	2.0	2.7	3.4	5.0	6.7
8	1.2	1.7	2.3	2.9	4.4	5.8
10	1.0	1.6	2.1	2.6	3.9	5.2

 $\Delta T_L$  [°C], h=0.325 m

$\Delta T_0$ [°C] \ L [m]	4	6	8	10	15	20
2	2.8	4.2	5.6	7.0	10.5	13.9
4	2.0	3.0	3.9	4.9	7.4	9.9
6	1.6	2.4	3.2	4.0	6.0	8.1
8	1.4	2.1	2.8	3.5	5.2	7.0
10	1.2	1.9	2.5	3.1	4.7	6.2

 $\Delta T_L$  [°C], h=0.425 m

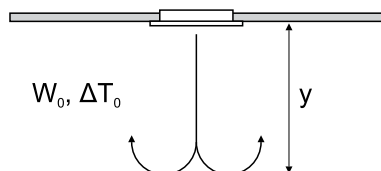
$\Delta T_0$ [°C] \ L [m]	4	6	8	10	15	20
2	3.2	4.8	6.4	8.0	12.0	15.9
4	2.3	3.4	4.5	5.6	8.5	11.3
6	1.8	2.8	3.7	4.6	6.9	9.2
8	1.6	2.4	3.2	4.0	6.0	8.0
10	1.4	2.1	2.9	3.6	5.3	7.1

## NON-ISOTHERMAL VERTICAL JET – maximal vertical penetration depth – y [m]

$y = f(W_0, \Delta T_0)$ , where:

$\Delta T_0$  – temperature difference

$W_0$  – velocity in free cross section

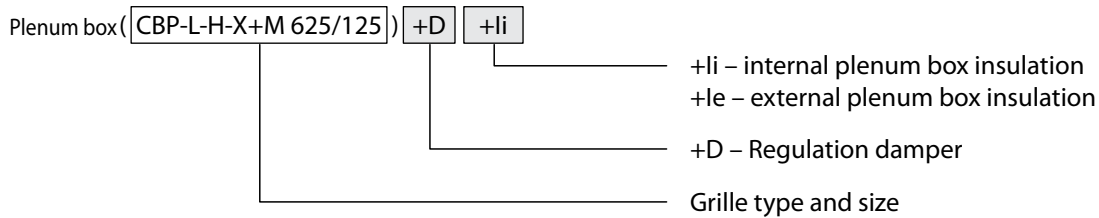
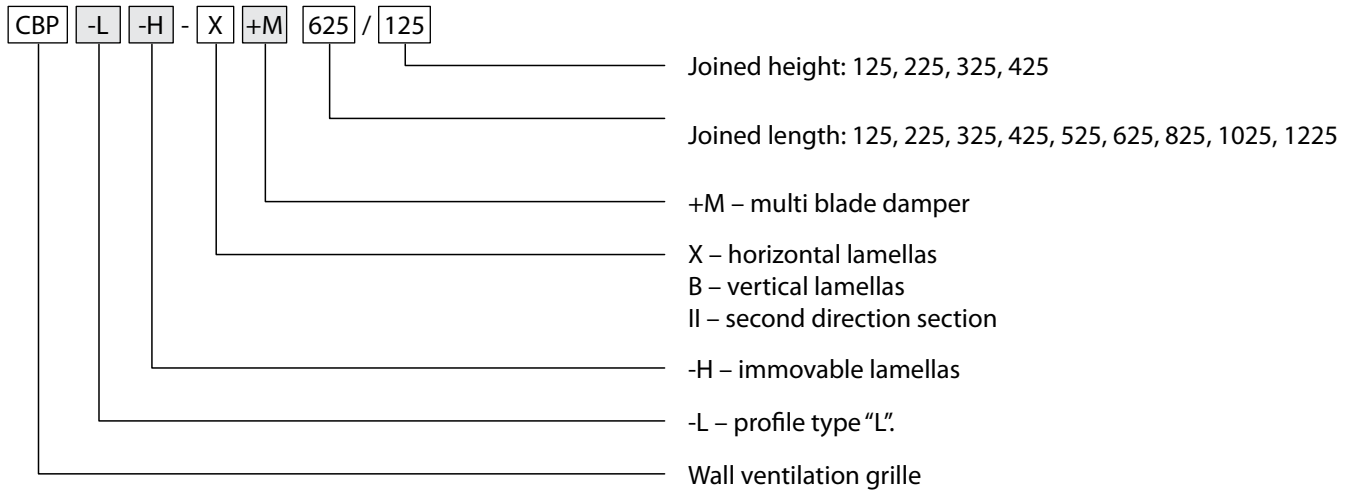


$\Delta T_0$ [°C] \ $W_0$ [m/s]	1.0	1.5	2.0	2.5	3.0	3.5	4.0
5.0	3.1	4.5	6.0	7.5	9.0	10.6	12.0
10.0	2.3	3.4	4.3	5.3	6.2	7.5	8.6
15.0	1.7	2.6	3.5	4.4	5.1	6.2	7.0
20.0	1.4	3.8	3.0	3.8	4.4	5.3	6.0

## PRESSURE DROP AND NOISE LEVEL [dB(A)]

	$W_0$ [m/s]	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Without blade damper	$\Delta P$ [Pa]	-	-	-	6	9	12	16	20	25
	L [dB(A)]	-	-	-	26	32	35	37	40	43
With blade damper, open 100%	$\Delta P$ [Pa]	-	-	-	3	5	6	10	15	20
	L [dB(A)]	-	-	-	20	25	27	35	39	42
With blade damper, open 50%	$\Delta P$ [Pa]	-	-	4	8	8	14	20	30	-
	L [dB(A)]	-	-	24	28	30	35	40	45	-
With blade damper, open 25%	$\Delta P$ [Pa]	-	8	12	18	30	35	50	-	-
	L [dB(A)]	-	25	28	35	40	42	48	-	-

## Order designation



- Main parameters

- Optional parameters