

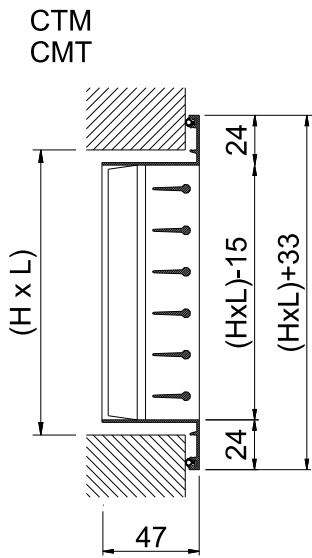
## CTM DOUBLE DEFLECTION GRILLES

MADEL®

The **CTM** series grilles are designed to be used in air-conditioning, ventilation and heating.

They are mounted on walls or in false ceilings.

The direction of the blades can be altered, making it possible to graduate the extent, the height and the width of the air stream.



## CLASSIFICATION

**CTM** Double deflection grilles with moveable blades parallel to the longer side in front and parallel to the shorter side rear.

**CMT** Double deflection grilles with moveable blades parallel to the shorter side in front and parallel to the longer side rear.

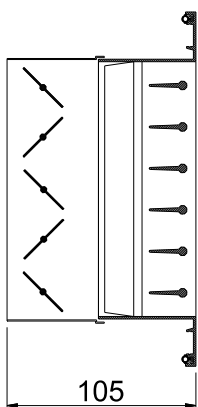
## MATERIAL

**CTM-AN** Extruded aluminium grilles.

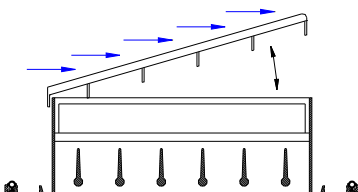
**CTM-N** Galvanised steel grilles.

All grilles are provided with seal on the back of the frame in order that the perimeter in contact with walls, ceiling, ducts, etc... is airtight.

CMT+SP



CMT-FD



## ADDITIONAL ACCESSORIES

**SP** Opposed blades damper to regulate the air flow.

The damper is operated by an easily accessible key inside the grille.

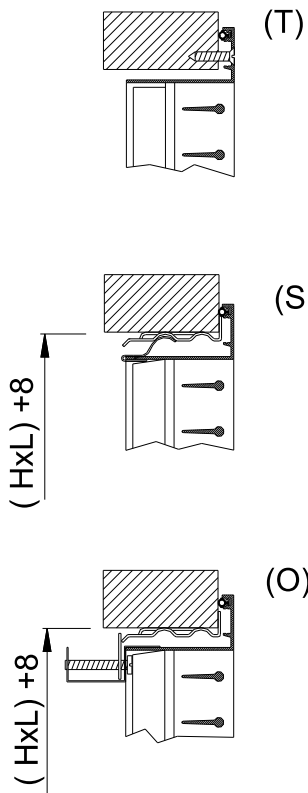
Constructed from electro-zinc steel, painted in black colour.

The damper is held in place by "S" springs.

**SPM-C** Operated by means of an external key.

**FD** Flap damper with inclined moveable control.

Constructed in galvanised steel with black enamel.



## FIXING SYSTEMS

(T) The grille is fixed in place with screws.

(S) The grille is fixed in place with screws. It requires the **CM** mounting frame. When assembling with metallic frame, measures H and L increase 8 mm.

(O) The grille is fixed in place by a hidden screw. It requires the **CM** mounting frame. When assembling with metallic frame, measures H and L increase 8 mm.

## FINISHES

Aluminium Grilles:

**AA** Anodised in matt silver..

**M9016** Lacquer in white colour similar to RAL 9016.

**RAL...** Lacquer in other colours (RAL specifications).

Steel Grilles:

**M9006** Lacquer in metallic grey colour, similar to RAL 9006.

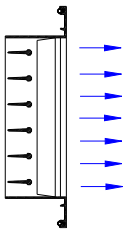
**R9010** Lacquer in white colour RAL 9010.

**RAL...** Lacquer in other colours (RAL specifications).

## CTM SERIES

FREE FACE AREA m<sup>2</sup>.

H \ L	150	200	250	300	350	400	450	500	600	700	800	900	1000
100	0,008	0,012	0,015	0,018	0,022	0,025	0,028	0,031	0,037	0,044	0,051	0,057	0,063
150	0,013	0,019	0,024	0,029	0,034	0,037	0,044	0,049	0,060	0,070	0,080	0,090	0,101
200	0,018	0,026	0,033	0,040	0,047	0,054	0,061	0,068	0,082	0,096	0,110	0,124	0,138
250	0,024	0,033	0,042	0,051	0,059	0,056	0,077	0,086	0,104	0,122	0,140	0,159	0,175
300	0,029	0,040	0,050	0,062	0,072	0,083	0,094	0,105	0,126	0,148	0,169	0,191	0,213
350	0,034	0,047	0,059	0,072	0,085	0,098	0,110	0,123	0,148	0,174	0,199	0,225	0,250
400	0,039	0,054	0,058	0,083	0,098	0,112	0,127	0,142	0,171	0,200	0,229	0,258	0,287
450	0,044	0,061	0,077	0,094	0,110	0,127	0,143	0,160	0,193	0,226	0,259	0,292	0,325
500	0,049	0,068	0,086	0,105	0,123	0,142	0,160	0,178	0,215	0,252	0,289	0,325	0,362
600	0,059	0,082	0,104	0,126	0,149	0,171	0,193	0,215	0,259	0,304	0,348	0,393	0,438



RECOMMENDED VELOCITY.

Vmin m/s	Vmax m/s
2	3.5

Determination of air flow.

Measuring the Vf in different points of the grille, we find the Vfmed.

$$Q \text{ (l/s)} = V_{\text{fmed}} \text{ (m/s)} * A_{\text{free}} \text{ (m}^2\text{)} * 1000$$

$$Q \text{ (m}^3\text{/h)} = V_{\text{fmed}} \text{ (m/s)} * A_{\text{free}} \text{ (m}^2\text{)} * 3600$$

CORRECTION FACTOR FOR Lwa1.

Afree m <sup>2</sup>	0,01	0,02	0,05	0,1	0,2	0,4
Lwa1(kf)	-9	-6	-3	-	+4	+7

Weighted noise level related to

$$A_{\text{free}} = 0,1\text{m}^2.$$

$$L_{\text{wa}} = L_{\text{wa1}} + K_{\text{f}}$$

CORRECTION FACTOR OF PRESSURE LOSS FOR

	0°	22°	45°
Kp	1	1,28	1,5

$$D_{\text{Pt}}' = D_{\text{pt}} * K_{\text{p}}$$

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL.

