



DESCRIPTION:

Fixed single row wings, Angled wing grilles.

LM1 : Linear grille with 15° angle fixed standard blades

LM2 : Linear grille with 15° angle fixed slim type blades

LM3 : Linear grille with 35° angle fixed type blades

MATERIAL:

Extruded Aluminum Frame and Blades

APPLICATION :

The linear grille type LM is suitable for the supply of cooled and heated air with a slight temperature difference or collecting of return air

The grille can be mounted on a wall, floor or window sill. a wide range of frames or core are available.

FINISHING :

- Standard finishing is natural anodized. Electrostatic powder coating is optional.
- Standard colours are RAL 9010 and RAL 9016 . Other colours are available with enamel paint.

INSTALLATION :

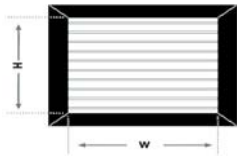
- System with screws is standard.
- System with clips and plate spring is used if no hole is requested on the frame.

ACCESSORIES:

- If desired, it is possible to add a damper to adjust the amount of air to be collected.
PKD: Parallel Blade Damper
ZKD: Opposite Blade Damper
- PK: Plenum Box
- KK: Subframe
- EU2, EU3, EU4, EU5 type synthetic filter on back of grille



STANDARD SIZES:



Metrik System:

W : 250-300-350-400-450-500-550-600-650-700-750-800-900-1000-1100-1200-1300-1400-1500mm

H : 50-75-100-125-150-175-200-225-250-300-400-500-600mm

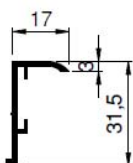
* Any combination of these sizes

inc System:

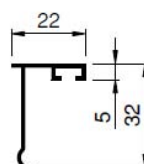
AVAILABLE SIZES (in.) - Always width x height											
	WIDHT										
HEIGHT	4	6	8	10	12	14	16	18	20	22	24
2	X	X	X	X	X	X	X	X	X	X	X
3	X	X	X	X	X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X	X
6	X	X	X	X	X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X
12	X	X	X	X	X	X	X	X	X	X	X
14	X	X	X	X	X	X	X	X	X	X	X
16	X	X	X	X	X	X	X	X	X	X	X
18	X	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X	X	X	X	X	X	X	X
22	X	X	X	X	X	X	X	X	X	X	X
24	X	X	X	X	X	X	X	X	X	X	X

* Any combination of these sizes

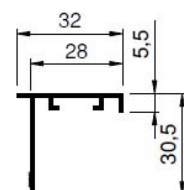
FRAME TYPES :



17mm frame



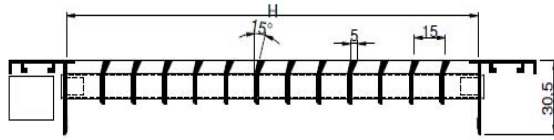
22mm frame



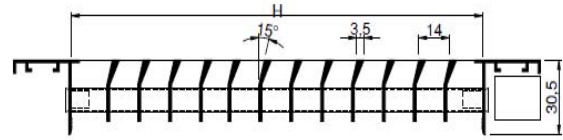
32mm frame



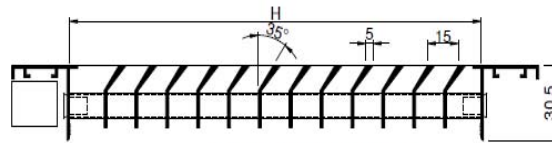
LM LINEAR GRILLE TYPES WITH FRAME:



LM1 standard blade type

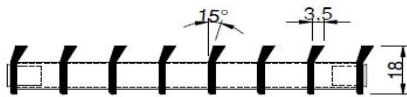


LM2 slim blade type

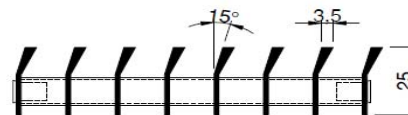


LM3 angle blade type

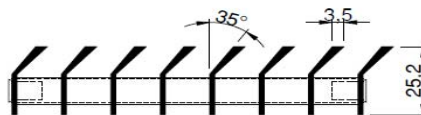
LM LINEAR GRILLE TYPES WITHOUT FRAME :



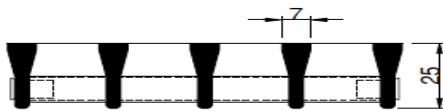
LM-1



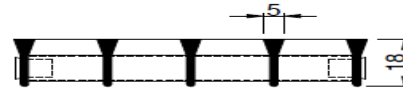
LM-2



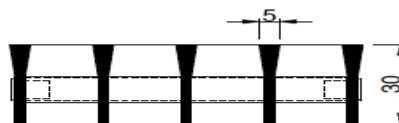
LM-3



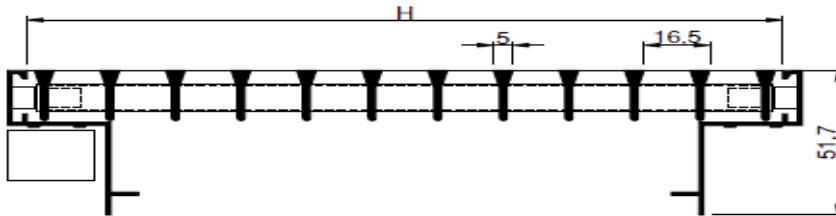
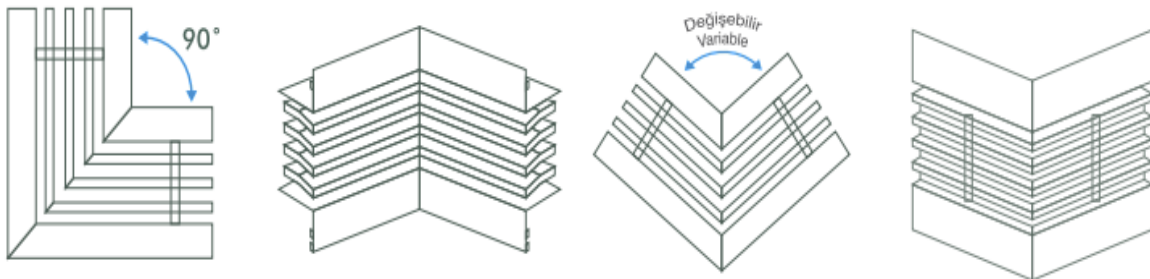
LM-Y1



LM-Y2



LM-Y3

**FLOOR LINEAR GRILLE WITH MOUNTING FRAME:****CORNER LINEAR GRILLE TYPES:**



LM1 Effective Area Ak(m2)

H / W	200	250	300	400	450	500	600	700	800	1000	1200	1500
75	0,010	0,013	0,015	0,020	0,023	0,025	0,030	0,035	0,040	0,050	0,060	0,075
100	0,013	0,017	0,020	0,027	0,030	0,033	0,040	0,047	0,053	0,067	0,080	0,100
150	0,020	0,025	0,030	0,040	0,045	0,050	0,060	0,070	0,080	0,100	0,120	0,150
200	0,027	0,033	0,040	0,053	0,060	0,067	0,080	0,093	0,107	0,133	0,160	0,200
250	0,033	0,042	0,050	0,067	0,075	0,083	0,100	0,117	0,133	0,167	0,200	0,250
300	0,040	0,050	0,060	0,080	0,090	0,100	0,120	0,140	0,160	0,200	0,240	0,300
400	0,053	0,067	0,080	0,107	0,120	0,133	0,160	0,187	0,213	0,267	0,320	0,400
450	0,060	0,075	0,090	0,120	0,135	0,150	0,180	0,210	0,240	0,300	0,360	0,450
500	0,067	0,083	0,100	0,133	0,150	0,167	0,200	0,233	0,267	0,333	0,400	0,500
600	0,080	0,100	0,120	0,160	0,180	0,200	0,240	0,280	0,320	0,400	0,480	0,600

Table-1

LM2 Effective Area Ak(m2)

H / W	200	250	300	400	450	500	600	700	800	1000	1200	1500
75	0,012	0,014	0,017	0,023	0,026	0,029	0,035	0,040	0,046	0,058	0,069	0,086
100	0,015	0,019	0,023	0,031	0,035	0,038	0,046	0,054	0,061	0,077	0,092	0,115
150	0,023	0,029	0,035	0,046	0,052	0,058	0,069	0,081	0,092	0,115	0,138	0,173
200	0,031	0,038	0,046	0,061	0,069	0,077	0,092	0,107	0,123	0,153	0,184	0,230
250	0,038	0,048	0,058	0,077	0,086	0,096	0,115	0,134	0,153	0,192	0,230	0,288
300	0,046	0,058	0,069	0,092	0,104	0,115	0,138	0,161	0,184	0,230	0,276	0,345
400	0,061	0,077	0,092	0,123	0,138	0,153	0,184	0,215	0,245	0,307	0,368	0,460
450	0,069	0,086	0,104	0,138	0,155	0,173	0,207	0,242	0,276	0,345	0,414	0,518
500	0,077	0,096	0,115	0,153	0,173	0,192	0,230	0,268	0,307	0,383	0,460	0,575
600	0,092	0,115	0,138	0,184	0,207	0,230	0,276	0,322	0,368	0,460	0,552	0,690

Table-2

LM3 Effectif Area Ak(m2)

H / W	200	250	300	400	450	500	600	700	800	1000	1200	1500
75	0,010	0,013	0,015	0,020	0,023	0,025	0,030	0,035	0,040	0,050	0,060	0,075
100	0,013	0,017	0,020	0,027	0,030	0,033	0,040	0,047	0,053	0,067	0,080	0,100
150	0,020	0,025	0,030	0,040	0,045	0,050	0,060	0,070	0,080	0,100	0,120	0,150
200	0,027	0,033	0,040	0,053	0,060	0,067	0,080	0,093	0,107	0,133	0,160	0,200
250	0,033	0,042	0,050	0,067	0,075	0,083	0,100	0,117	0,133	0,167	0,200	0,250
300	0,040	0,050	0,060	0,080	0,090	0,100	0,120	0,140	0,160	0,200	0,240	0,300
400	0,053	0,067	0,080	0,107	0,120	0,133	0,160	0,187	0,213	0,267	0,320	0,400
450	0,060	0,075	0,090	0,120	0,135	0,150	0,180	0,210	0,240	0,300	0,360	0,450
500	0,067	0,083	0,100	0,133	0,150	0,167	0,200	0,233	0,267	0,333	0,400	0,500
600	0,080	0,100	0,120	0,160	0,180	0,200	0,240	0,280	0,320	0,400	0,480	0,600

Table-3



SUPPLY LM1 SELECTION DIAGRAM

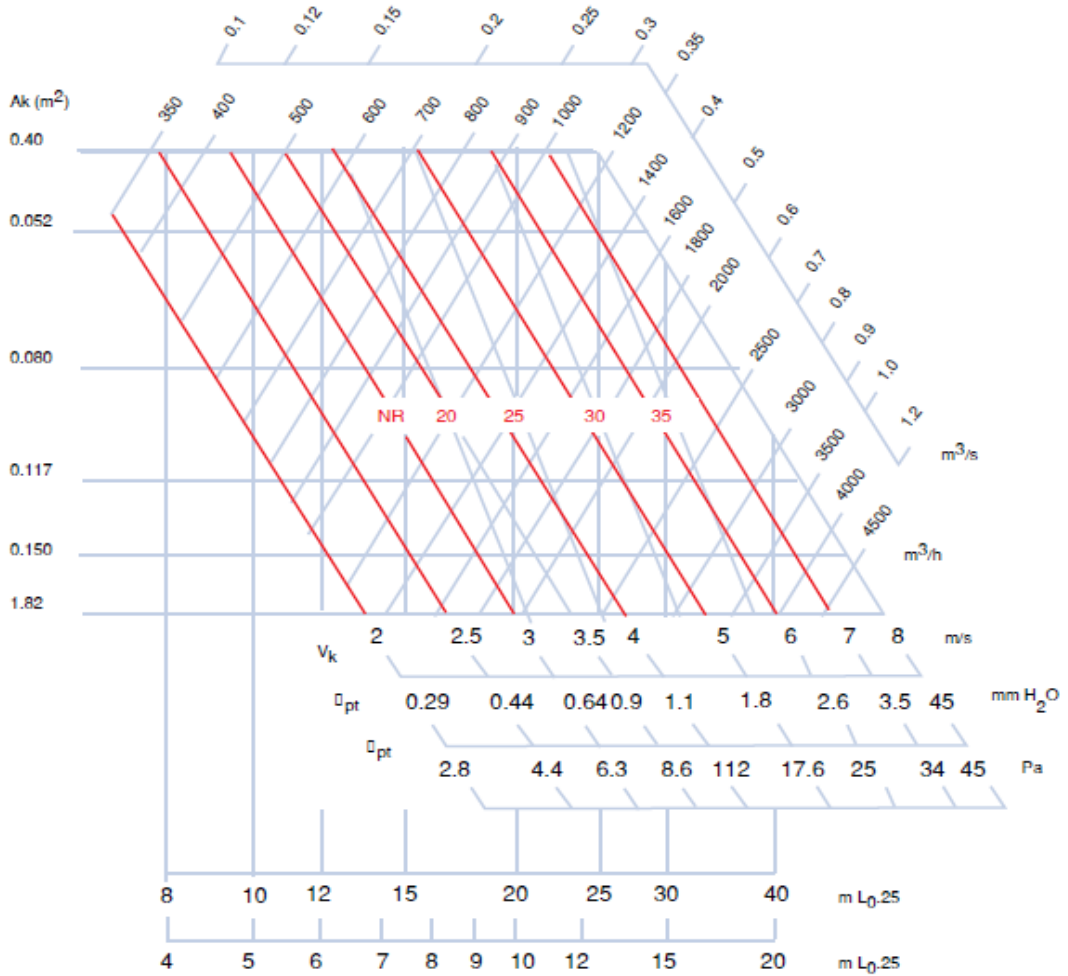
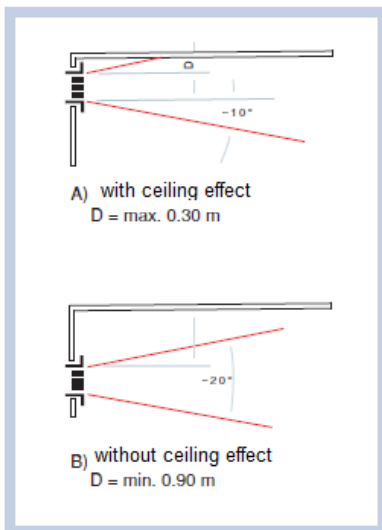


Diagram-1

CEILING EFFECT



Vt(m/s) Correction Table

		0.25	0.375	0.5	0.825	
Table-4	Lt	A	x 1	x 0.67	x 0.5	x 0.4
		B	x0.7	x0.47	x 0.35	x0.28

Volume and Pressure Loss Table

		100 % açık	50 % açık	25 % açık
Table-5	Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X5.90
	LW + 0	LW + 0	LW +10	LW +20

Grille Length for Correction Table

B (m)	1	1.5	2	2.5	3	4	5	6	8	10
Lt (m)	X 1	X 10.5	X 1.1				X 1.15			
Lw (NR)	0	+ 2	+ 3	+ 4	+ 5	+ 6	+ 7	+ 8	+ 9	+ 10



RETURN LM1 SELECTION DIAGRAM

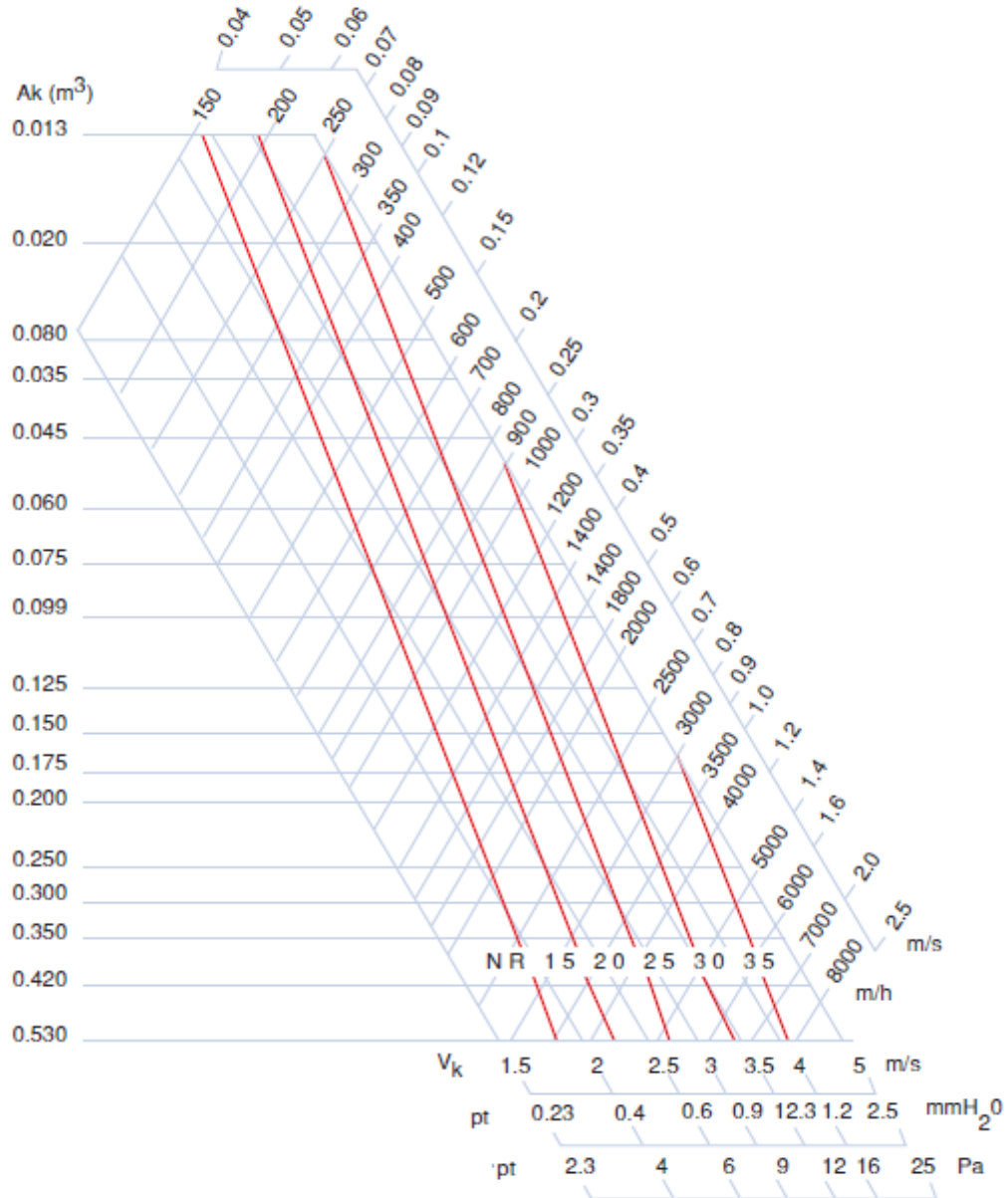


Diagram-2

Volume and Pressure Loss Table

Damper Position	100 % açık	50 % açık	25 % açık
Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X 5.90
LW + 0	LW + 0	LW +10	LW +20

Table -7



SUPPLY LM2 SELECTION DIAGRAM

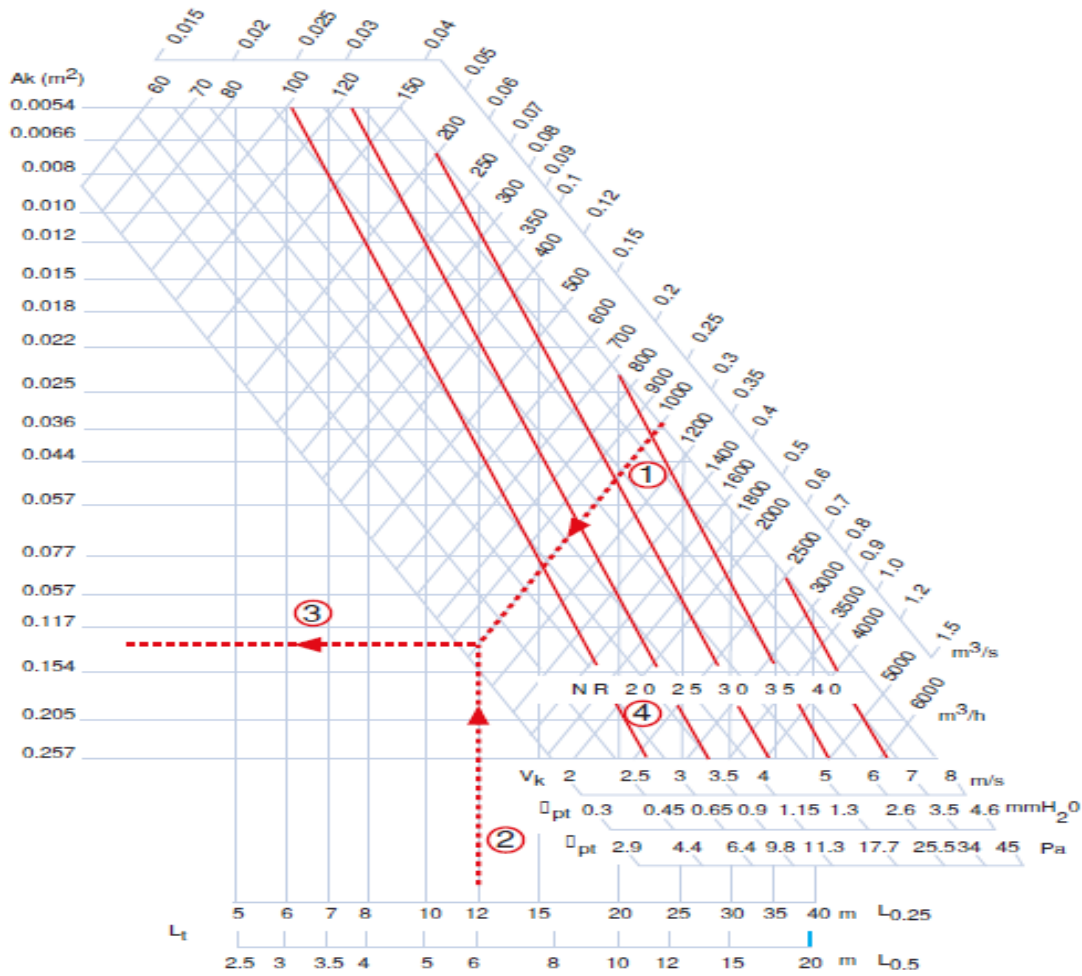
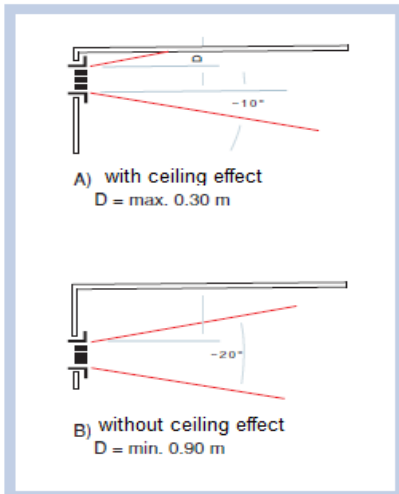


Diagram-3

CEILING EFFECT



Vt(m/s) Correction Table

Table-8	Vt (m/s)	0.25	0.375	0.5	0.825	
	Lt	A	x 1	x 0.67	x 0.5	x 0.4
		B	x0.7	x0.47	x 0.35	x0.28

Volume and Pressure Loss Table

Table-9	Damper Position	100 % açık	50 % açık	25 % açık
	Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X5.90
	LW +0	LW +0	LW +10	LW +20

Grille Length for Correction Table

Table-10	B (m)	1	1.5	2	2.5	3	4	5	6	8	10
	Lt (m)	X 1	X 10.5			X 1.1				X 1.15	
	Lw (NR)	0	+ 2	+ 3	+ 4	+ 5	+ 6	+ 7	+ 8	+ 9	+10



RETURN LM2 SELECTION DIAGRAM

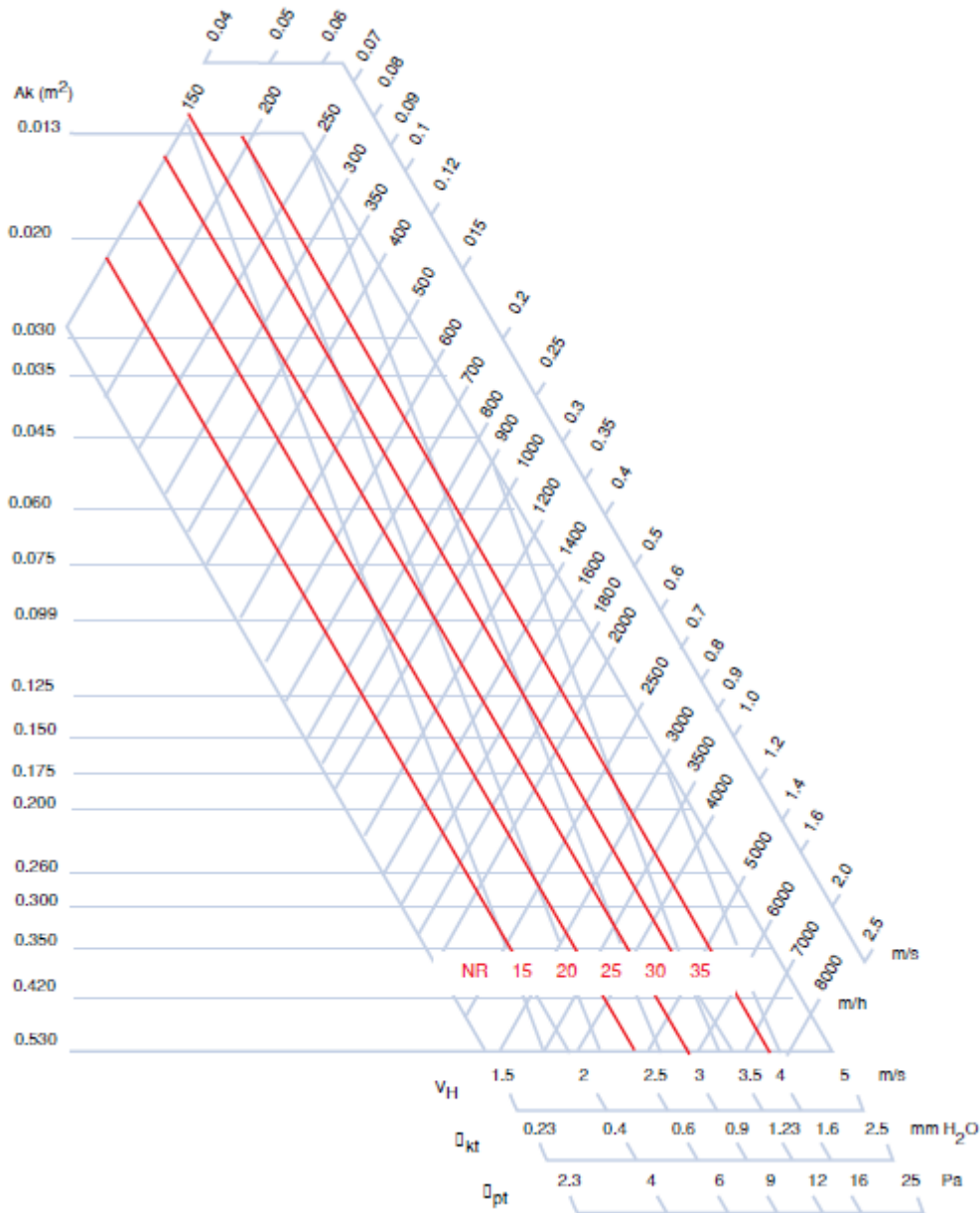


Diagram-4

Volume and Pressure Loss Table

Damper Pozition	100 % açık	50 % açık	25 % açık
Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X5.90
LW + 0	LW + 0	LW +10	LW +20

Table-11



SUPPLY LM3 SELECTION DIAGRAM

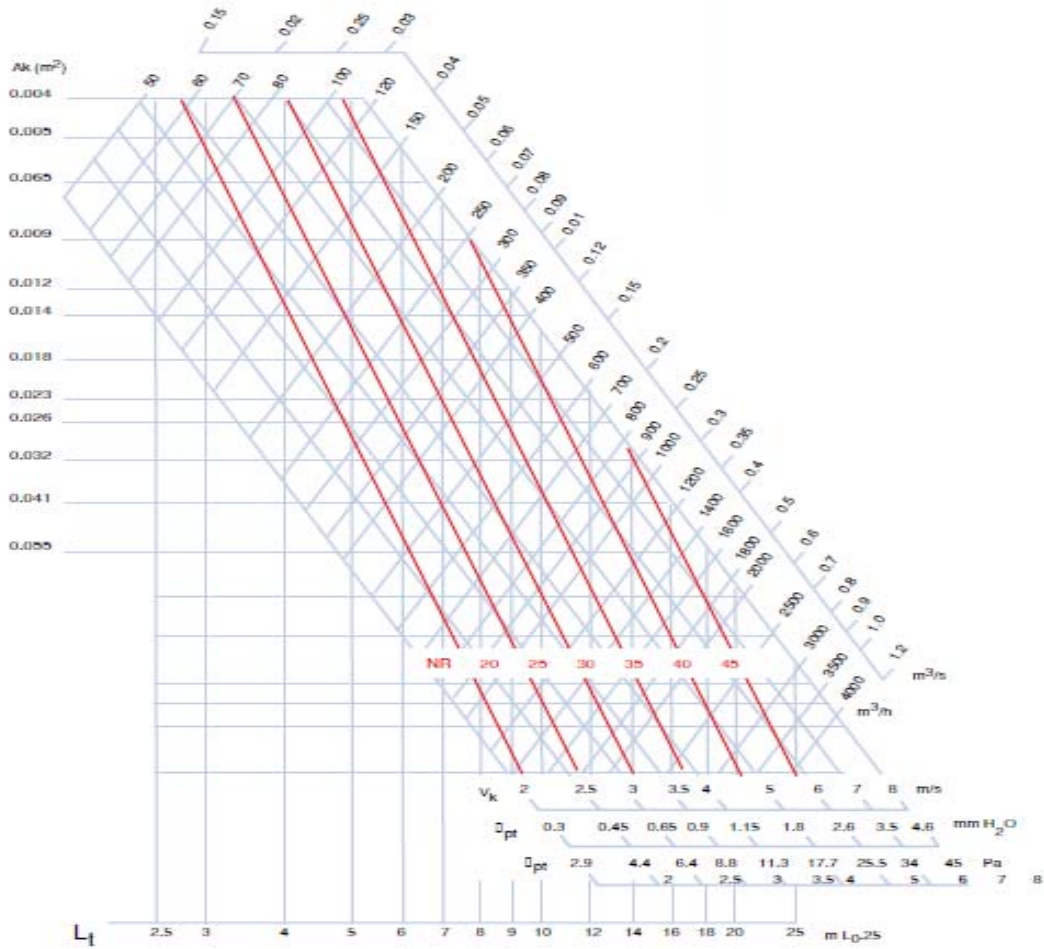
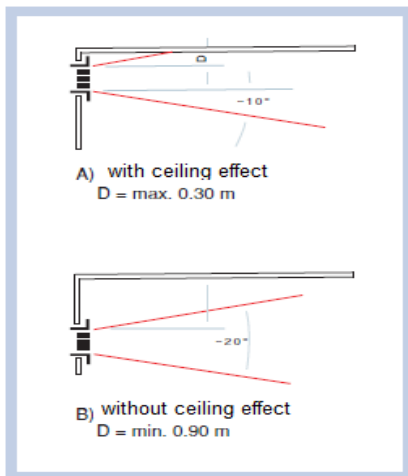


Diagram-5

CEILING EFFECT



Vt(m/s) Correction Table

Vt (m/s)	0.25	0.375	0.5	0.825
Lt	A	x 1	x 0.67	x 0.5
	B	x 0.7	x 0.47	x 0.35

Volume and Pressure Loss Table

Damper Position	100 % açık	50 % açık	25 % açık
Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X 5.90
LW + 0	LW + 0	LW + 10	LW + 20

Grille Length for Correction Table

B (m)	1	1.5	2	2.5	3	4	5	6	8	10
Lt (m)	X 1	X 10.5	X 1.1				X 1.15			
Lw (NR)	0	+ 2	+ 3	+ 4	+ 5	+ 6	+ 7	+ 8	+ 9	+ 10



RETURN LM3 SELECTION DIAGRAM

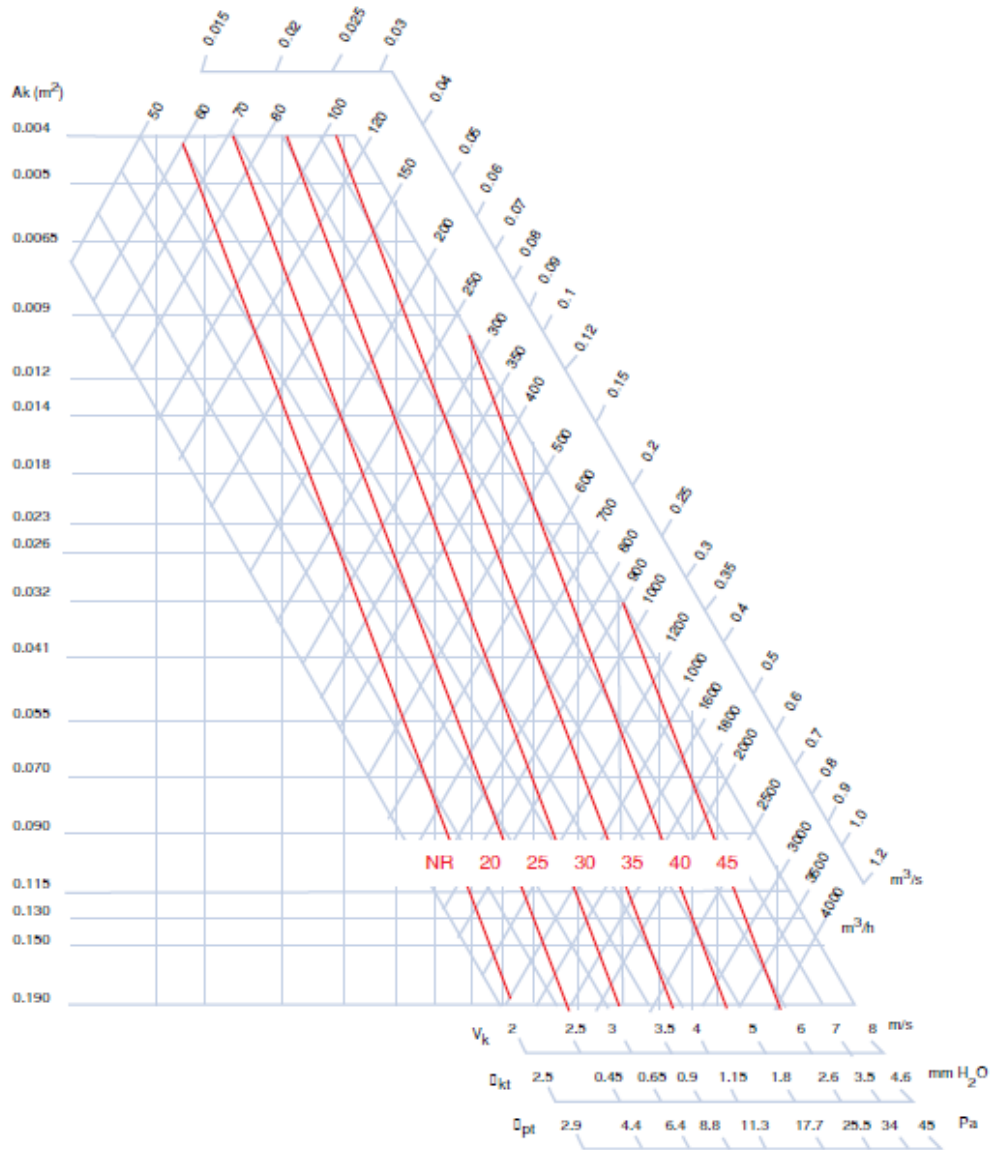


Diagram-6

Volume and Pressure Loss Table

Damper Pozition	100 % açık	50 % açık	25 % açık
Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X 5.90
LW + 0	LW + 0	LW +10	LW +20

Table-15



Sample Grille Selection:

LM2 Blade, $Q_v = 1000 \text{ m}^3/\text{h}$, Room Length: 6 m, $V_t : 0,5\text{m/s}$

Result :

Table 9 for $L_t 0,5= 12\text{m}$, Diagram 3 for ; $A_k : 0,123\text{m}^2$ (3) , $V_k: 2,4 \text{ m/s}$ (4) Selection

LM1 , LM2, LM3 AIR FALL SELECTION DIAGRAM

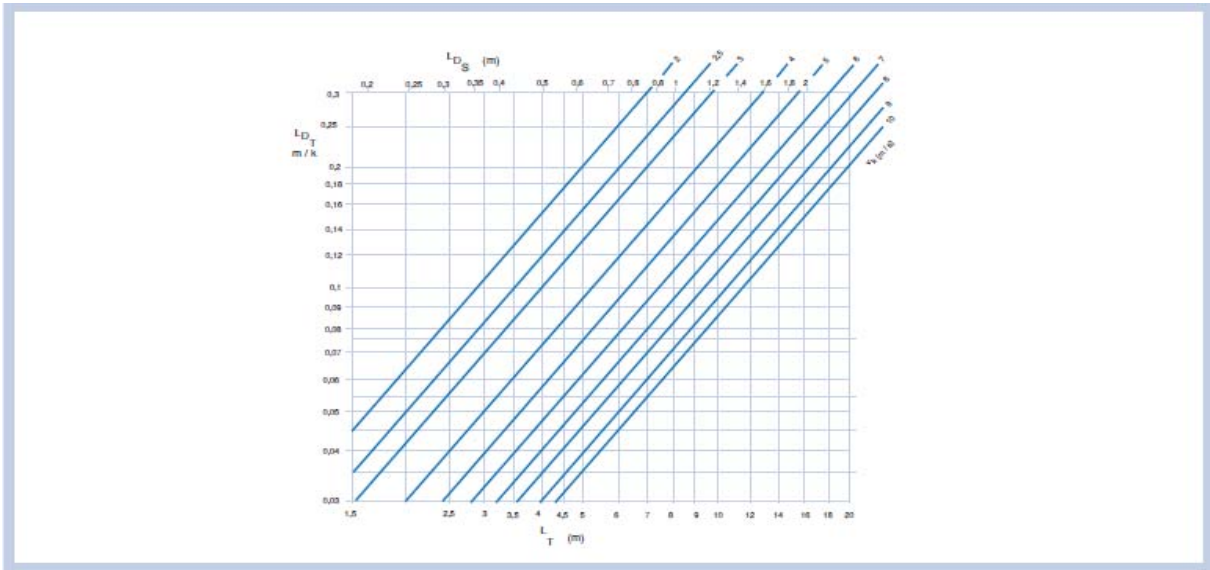
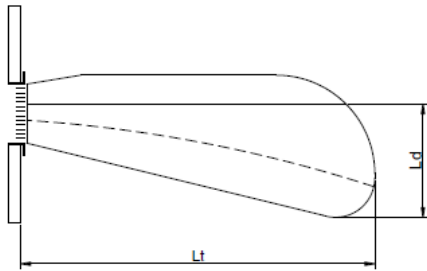


Diagram-7



AIR FALL



Description :

The total air drop is the vertical distance between the air drop center and the lowest point to the air drop Vt (m / s). Total air loss consists of two components.

$$Ld = Lds + Ldt$$

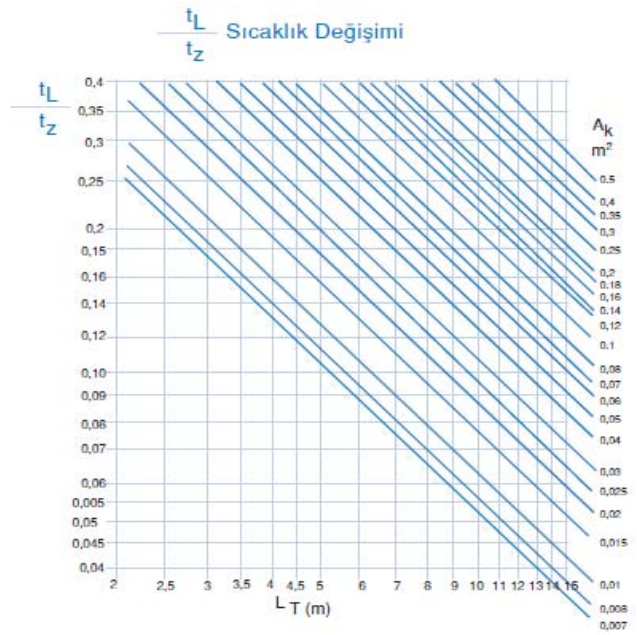
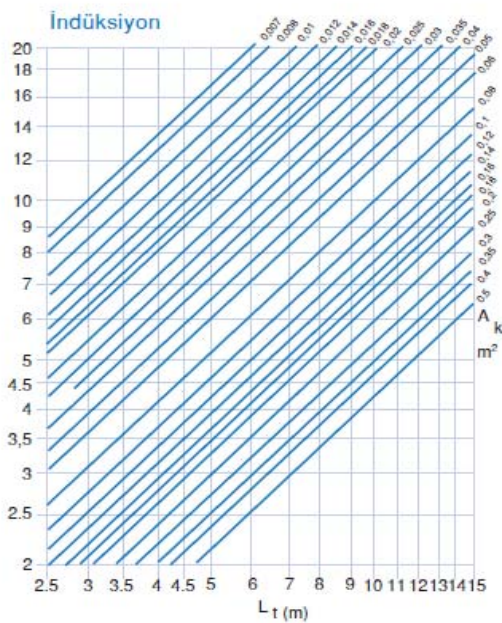


Diagram-8

T_L / T_Z : Temperature Change

T_L (K) : Maximum temperature difference between room temperature and air temperature

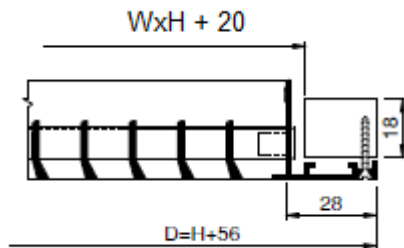
T_Z (K) : Maximum temperature difference between room temperature and distributor air temperature

l : induction

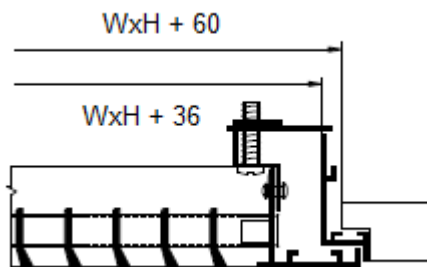


LM1, LM2, LM3 MOUNTING DETAILS

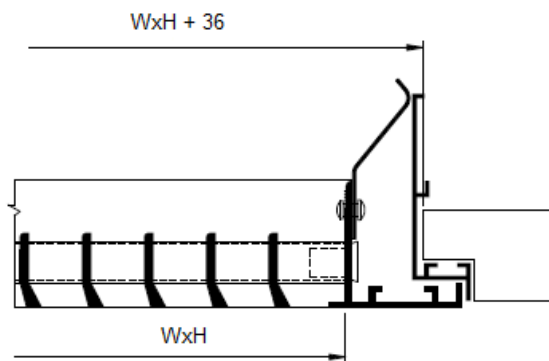
1. Screw Mounting Details



2. Clips Mounting Details

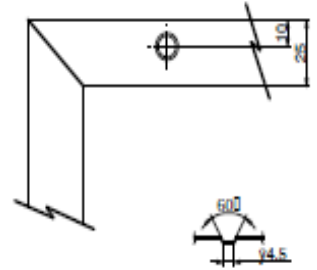
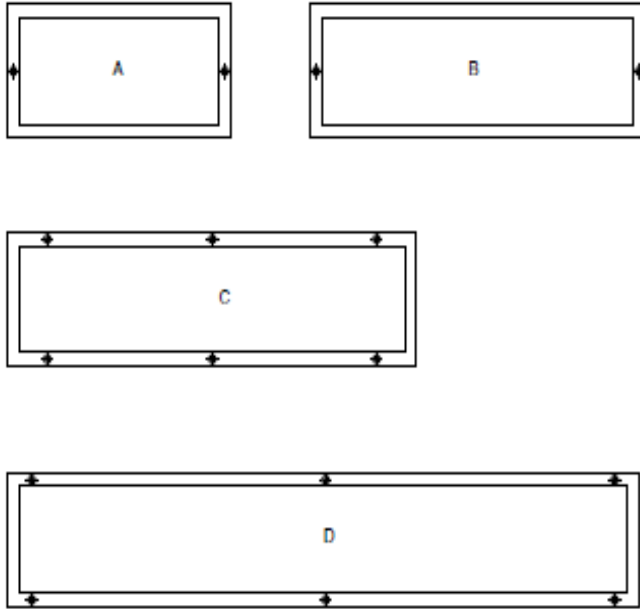


3. Spring Mounting Details





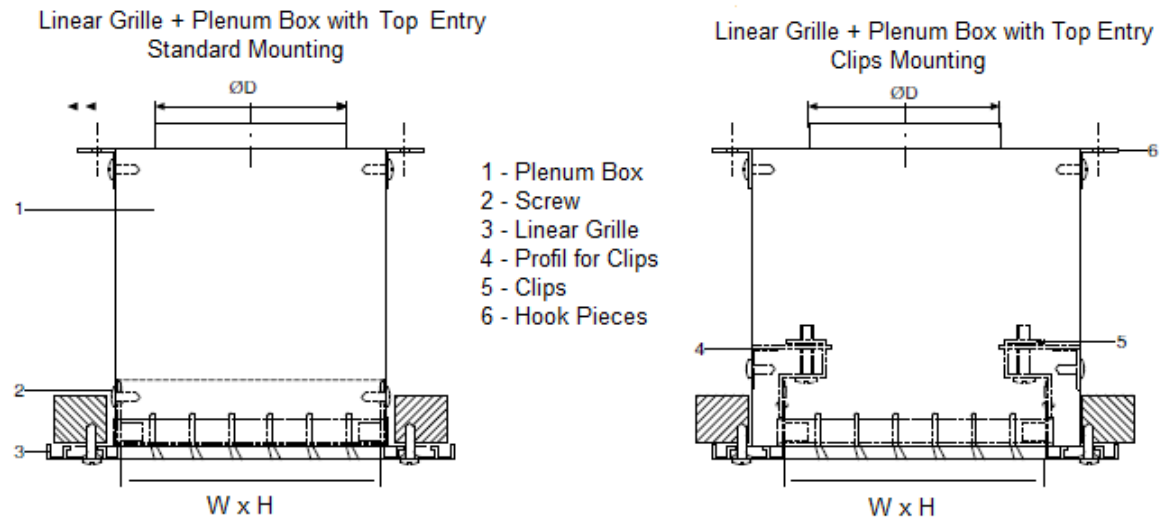
CREW MOUNTING HOLE PALACEMENT



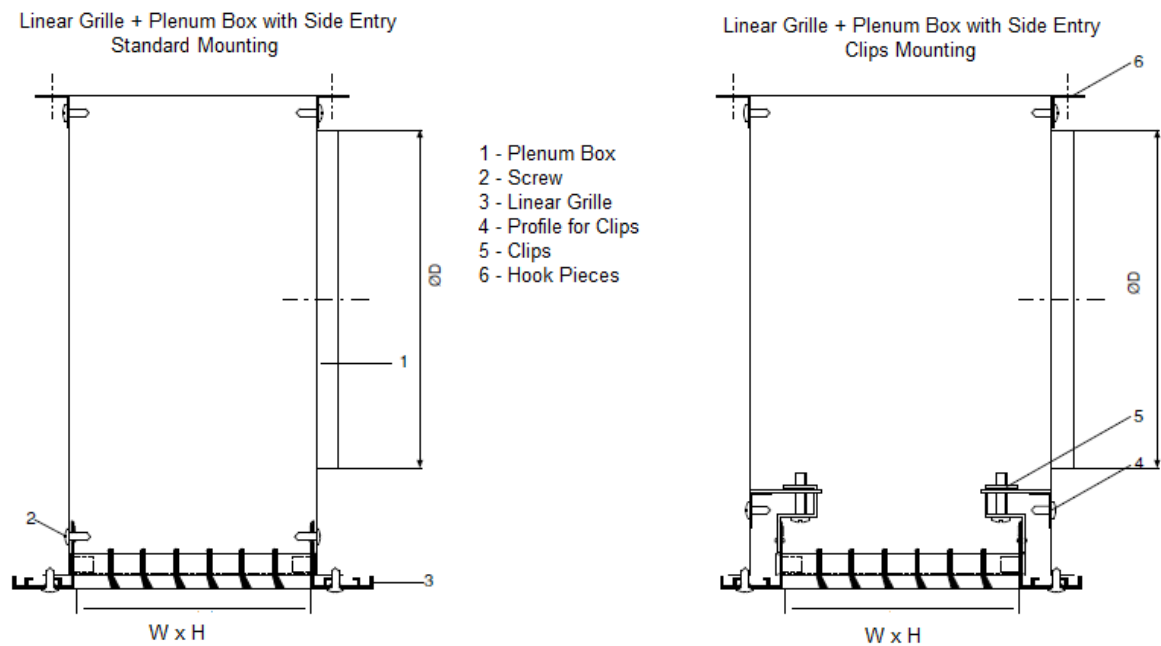
W /L	200	250	300	400	500	600	800	1000	1200	1500
100	A	A	A	A	A	C	C	C	D	D
150		A	A	A	A	C	C	C	D	D
200				B	B	C	C	C	D	D
300					B	C	C	C	D	D

LM1, LM2, LM3 LINEAR GRILLES PLENUM BOX MOUNTING DETAILS

1 - TOP ENTRY PLENUM BOX MOUNTING DETAILS



2 - SID ENTRY PLENUM BOX MOUNTING DETAILS





ORDER CODE

LM	1	28	PKD	RAL9010	VD	W 300X200
LM1 Blade: 1 LM2 Blade: 2 LM3 Blade: 3						W: Neck Size C: Frame Size
17mm Frame : 17mm 22mm Frame : 22mm 28mm Frame : 28mm 32mm Frame : 32mm						00: without Mounting VD: Screw Mounting KL: Clips Mounting ST: Spring Mounting
000: without Damper ZKD: Opposite Blade Damper PKD: Parallel Blade Damper FL : With Filter						00: without coating EL: Anodic Aluminium RAL----: Powder Coated RAL