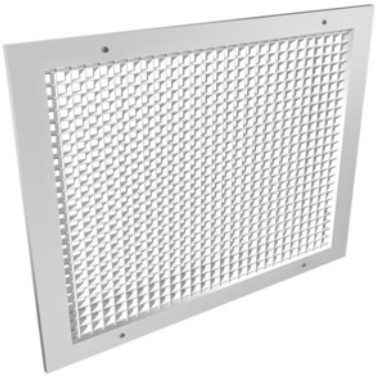
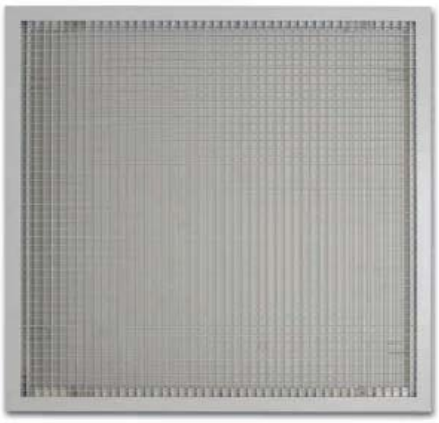




DESCRIPTION:

KPM : Return and Supply type Egg Crate Grille with 12x12mm or 20x20mm grid size.

MATERIAL:

Extruded Aluminum Frame and Grid Core

APPLICATION :

The grille type KPM is used for the exhaust and supply of large quantities of air with minor pressure loss in facilities such as offices, warehouses, shopping centers….

The grille type KPM is used for the exhaust of large quantities of air with minor pressure loss and as access door for the equipment like fan-coil etc

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.

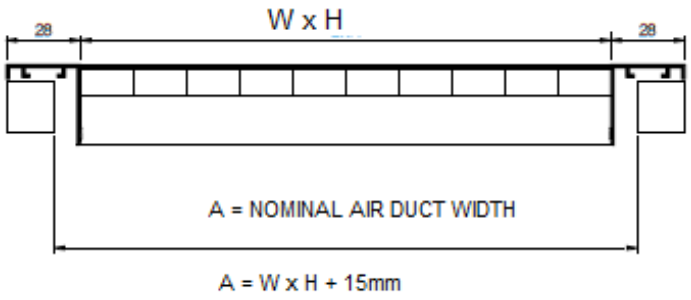
INSTALLATION :

- 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 :



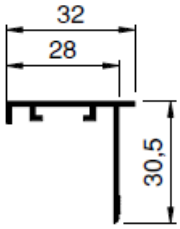
AVAILABLE SIZES (mm) - Always width x height											
	WIDHT										
HEIGHT	100	150	200	250	300	350	400	450	500	550	600
100	X	X	X	X	X	X	X	X	X	X	X
150	X	X	X	X	X	X	X	X	X	X	X
200	X	X	X	X	X	X	X	X	X	X	X
250	X	X	X	X	X	X	X	X	X	X	X
300	X	X	X	X	X	X	X	X	X	X	X
350	X	X	X	X	X	X	X	X	X	X	X
400	X	X	X	X	X	X	X	X	X	X	X
450	X	X	X	X	X	X	X	X	X	X	X
500	X	X	X	X	X	X	X	X	X	X	X
550	X	X	X	X	X	X	X	X	X	X	X
600	X	X	X	X	X	X	X	X	X	X	X

* Any combination of these sizes

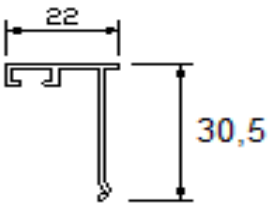
AVAILABLE SIZES (in.) - Always width x height											
	WIDHT										
HEIGHT	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
4"	X	X	X	X	X	X	X	X	X	X	X
6"	X	X	X	X	X	X	X	X	X	X	X
8"	X	X	X	X	X	X	X	X	X	X	X
10"	X	X	X	X	X	X	X	X	X	X	X
12"	X	X	X	X	X	X	X	X	X	X	X
14"	X	X	X	X	X	X	X	X	X	X	X
16"	X	X	X	X	X	X	X	X	X	X	X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



32mm Frame

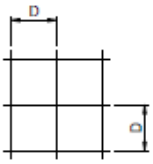


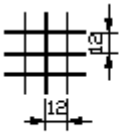
22mm Frame

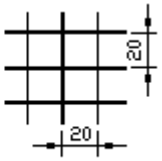
DRAWINGS :

GRID SIZES :

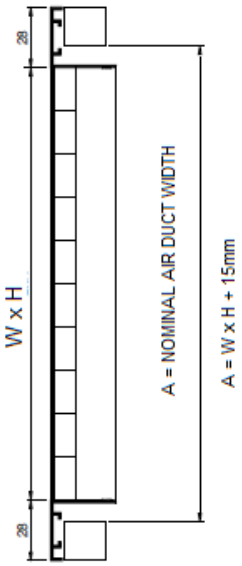
D size	D (mm)	
	12	20

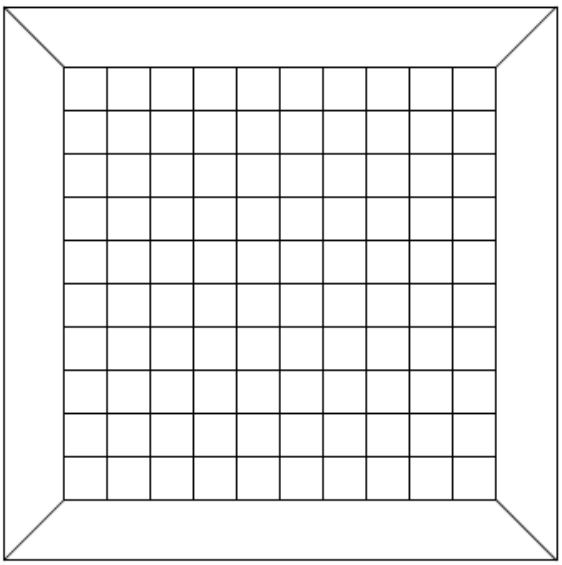






EGG CRATE GRILLES:





QUICK SELECTION TABLE :

DEBİ (m³/h)	W X H	200 x 100	300 x 150	400 x 200	300 x 300	500 x 300	600 x 300	800 x 300	600 x 600	1000 x 600
	$A_k(m^2)$	0,017	0,040	0,072	0,081	0,135	0,163	0,217	0,328	0,547
200	NR	11								
	Pt (Pa)	6,6								
	V (m/s)	3,3								
300	NR	21								
	Pt (Pa)	14,1								
	V (m/s)	4,9								
400	NR	28	11							
	Pt (Pa)	18,0	5,0							
	V (m/s)	6,5	2,8							
500	NR		16							
	Pt (Pa)		7,2							
	V (m/s)		3,5							
600	NR		21	9						
	Pt (Pa)		9,9	3,3						
	V (m/s)		4,2	2,3						
800	NR		28	16						
	Pt (Pa)		18,0	6,0						
	V (m/s)		5,6	3,1						
1000	NR			21	19					
	Pt (Pa)			8,7	6,9					
	V (m/s)			3,9	3,4					
1200	NR			26	23					
	Pt (Pa)			12,6	9,9					
	V (m/s)			4,6	4,1					
1500	NR			31	28	18				
	Pt (Pa)			17,4	15,3	5,7				
	V (m/s)			5,8	5,1	3,1				
2000	NR				35	25	21	16		
	Pt (Pa)				25,2	9,9	6,9	4,2		
	V (m/s)				6,8	4,1	3,4	2,6		
3000	NR					35	31	26	17	
	Pt (Pa)					18,6	15,3	8,1	3,6	
	V (m/s)					6,2	5,1	3,8	2,5	
4000	NR						37	32	24	
	Pt (Pa)						25,2	15,3	6,9	
	V (m/s)						6,8	5,1	3,4	
5000	NR							39	30	
	Pt (Pa)							19,8	10,5	
	V (m/s)							6,4	4,2	
6000	NR							44	34	23
	Pt (Pa)							30,0	15,3	5,4
	V (m/s)							7,7	5,1	3,0

Qk(m^3/h) = Air follow Vk(m/s) = Velocity
Ak(m^2) = Effective Area Pt(Pa) = Pressure Lost

* All measure are in mm.

SELECTION DIAGRAME:

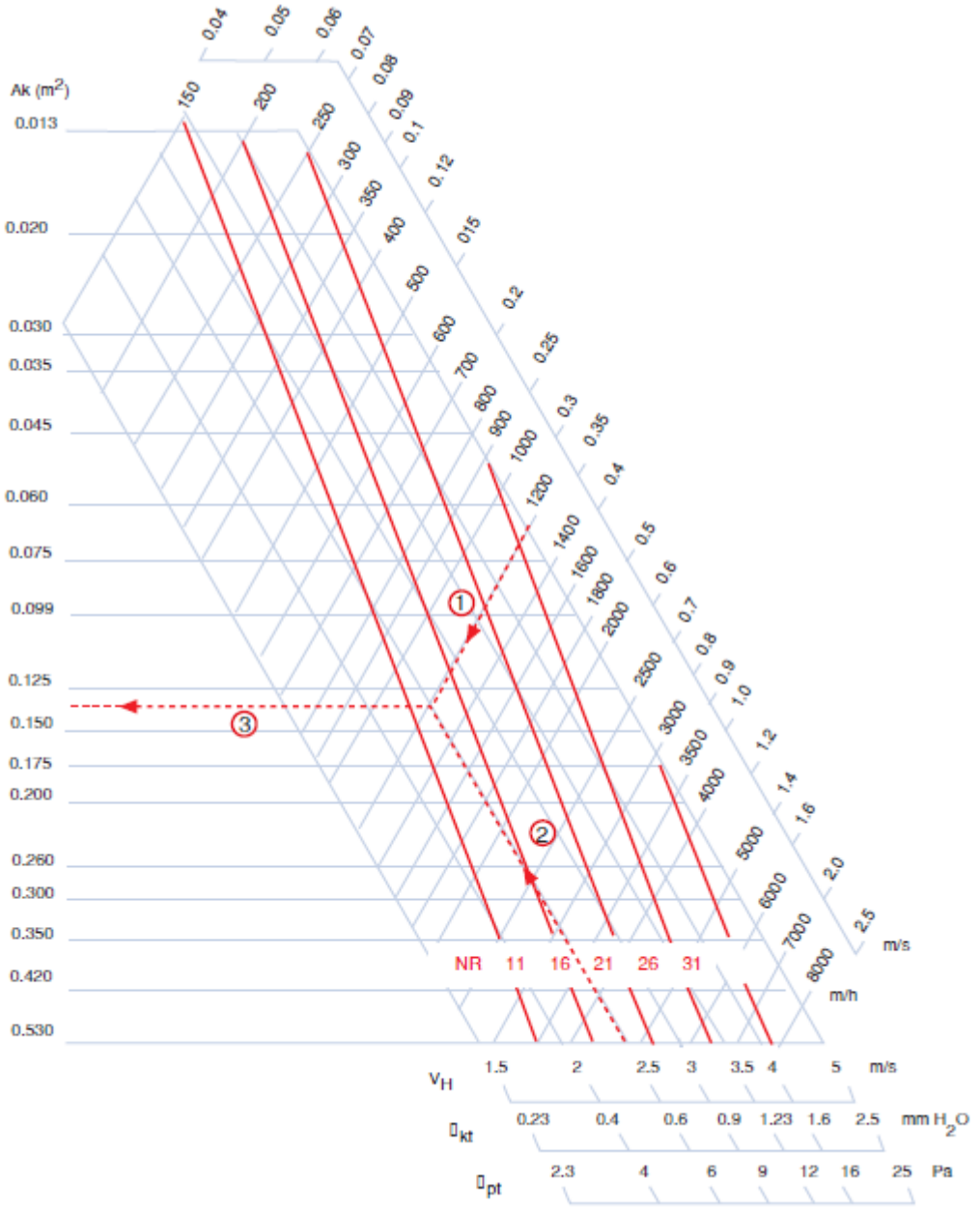


Diagram-1

Table-1

without Damper	100 % Damper Open	50 % Damper Open	25 % Damper Open
Pt X 1.00	Pt X 1.00	Pt X 2.25	Pt X5.90
LW + 0	LW + 0	LW +10	LW +20

Table-2

without filter	with filter
Pt X 1.00	Pt X 1.70
LW + 0	LW +0

EFFECTIVE AREA:

KPM 12x12mm Effective Area Ak(m^2)

Ak (m^2)											
	H (mm)										
W (mm)	200	250	300	400	450	500	600	700	800	1000	1200
100	0,016	0,020	0,024	0,033	0,037	0,041	0,049	0,057	0,065	0,081	0,098
150	0,025	0,032	0,038	0,051	0,057	0,063	0,076	0,089	0,101	0,127	0,152
200	0,034	0,043	0,051	0,068	0,077	0,085	0,102	0,119	0,136	0,170	0,204
250	0,042	0,053	0,064	0,085	0,095	0,106	0,127	0,148	0,170	0,212	0,254
300	0,050	0,063	0,076	0,101	0,113	0,126	0,151	0,176	0,201	0,252	0,302
400	0,065	0,081	0,098	0,130	0,147	0,163	0,196	0,228	0,261	0,326	0,391
450	0,072	0,090	0,108	0,144	0,162	0,180	0,216	0,252	0,288	0,360	0,432
500	0,079	0,098	0,118	0,157	0,177	0,196	0,236	0,275	0,314	0,393	0,471
600	0,090	0,113	0,136	0,181	0,203	0,226	0,271	0,316	0,361	0,452	0,542

Table-3

KPM 20x20mm Effective Area Ak(m^2)

Ak (m^2)											
	H (mm)										
W (mm)	200	250	300	400	450	500	600	700	800	1000	1200
100	0,0177	0,0220	0,0265	0,0353	0,0398	0,0442	0,0530	0,0619	0,0707	0,0884	0,1060
150	0,0271	0,0338	0,0406	0,0542	0,0610	0,0677	0,0813	0,0948	0,1084	0,1355	0,1626
200	0,0363	0,0453	0,0544	0,0726	0,0816	0,0907	0,1088	0,1270	0,1451	0,1814	0,2177
250	0,0452	0,0565	0,0678	0,0905	0,1018	0,1131	0,1357	0,1583	0,1809	0,2262	0,2714
300	0,0540	0,0674	0,0809	0,1079	0,1214	0,1349	0,1619	0,1888	0,2158	0,2698	0,3237
400	0,0707	0,0883	0,1060	0,1414	0,1591	0,1767	0,2121	0,2474	0,2828	0,3535	0,4242
450	0,0787	0,0984	0,1181	0,1574	0,1771	0,1968	0,2362	0,2755	0,3149	0,3936	0,4723
500	0,0865	0,1081	0,1298	0,1730	0,1947	0,2163	0,2595	0,3028	0,3460	0,4326	0,5191
600	0,1014	0,1267	0,1521	0,2028	0,2281	0,2535	0,3042	0,3549	0,4056	0,5070	0,6084

Table-4

Sample Grille Selection:

Qv = 1200 m^3/h (1) , Vh : 2,5m/s (2)

Result :

Diagram 1 for ; Ak : 0,135m^2 (3) , Pt : 6,0 Pa Table-3 for WxH = 600x300

Performans Data (in) 0° Core

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm) Velocity Pressure (in. w.g.) Neg. Static Pressure (in. w.g.)	300 0.006 0.013	400 0.010 0.021	500 0.016 0.034	600 0.022 0.047	700 0.031 0.066	800 0.040 0.085	1000 0.062 0.132	1200 0.090 0.192	1400 0.122 0.260	1500 0.14 0.298
0.15	7 x 4 6 x 5	Flow Rate (cfm) Sound (NC)	45 -	60 -	75 -	90 -	105 -	120 -	150 22	180 28	210 34	225 37
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm) Sound (NC)	54 -	72 -	90 -	108 -	126 -	144 -	180 22	216 29	252 35	270 38
0.22	10 x 4 7 x 6 8 x 5	Flow Rate (cfm) Sound (NC)	66 -	88 -	110 -	132 -	154 -	176 -	220 23	264 30	308 36	330 38
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm) Sound (NC)	78 -	104 -	130 -	156 -	182 -	208 15	260 24	312 31	364 36	390 39
0.30	14 x 4	Flow Rate (cfm) Sound (NC)	90 -	120 -	150 -	180 -	210 -	240 16	300 24	360 31	420 37	450 40
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm) Sound (NC)	102 -	136 -	170 -	204 -	238 -	272 16	340 25	408 32	476 37	510 40
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm) Sound (NC)	117 -	156 -	195 -	234 -	273 -	312 17	390 25	468 32	546 38	585 41
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm) Sound (NC)	138 -	184 -	230 -	276 -	322 -	368 18	460 26	552 33	644 39	690 41
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm) Sound (NC)	156 -	208 -	260 -	312 -	364 -	416 18	520 26	624 33	728 39	780 42
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm) Sound (NC)	180 -	240 -	300 -	360 -	420 -	480 19	600 27	720 34	840 40	900 42
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm) Sound (NC)	207 -	276 -	345 -	414 -	483 -	552 19	690 28	828 34	966 40	1035 43
0.81	36 x 4 22 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm) Sound (NC)	243 -	324 -	405 -	486 -	567 -	648 20	810 28	972 35	1134 41	1215 43
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm) Sound (NC)	270 -	360 -	450 -	540 -	630 15	720 20	900 29	1080 35	1260 41	1350 44
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm) Sound (NC)	321 -	428 -	535 -	642 -	749 16	856 21	1070 29	1284 36	1498 42	1605 45
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm) Sound (NC)	354 -	472 -	590 -	708 -	826 16	944 21	1180 30	1416 37	1652 42	1770 45
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm) Sound (NC)	402 -	536 -	670 -	804 -	938 17	1072 22	1340 30	1608 37	1876 43	2010 45
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm) Sound (NC)	480 -	640 -	800 -	960 -	1120 17	1280 22	1600 31	1920 38	2240 44	2400 46
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm) Sound (NC)	540 -	720 -	900 -	1080 -	1260 18	1440 23	1800 31	2160 38	2520 44	2700 47
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm) Sound (NC)	624 -	832 -	1040 -	1248 -	1456 18	1664 23	2080 32	2496 39	2912 45	3120 47
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm) Sound (NC)	735 -	980 -	1225 -	1470 -	1715 19	1960 24	2450 33	2940 39	3430 45	3675 48
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm) Sound (NC)	834 -	1112 -	1390 -	1668 -	1946 20	2224 25	2780 33	3336 40	3892 46	4170 48
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm) Sound (NC)	933 -	1244 -	1555 -	1866 -	2177 20	2488 25	3110 33	3732 40	4354 46	4665 49
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm) Sound (NC)	1083 -	1444 -	1805 -	2166 -	2527 21	2888 26	3610 34	4332 41	5054 47	5415 49
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm) Sound (NC)	1287 -	1716 -	2145 -	2574 15	3003 21	3432 26	4290 35	5148 42	6006 47	6435 50
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm) Sound (NC)	1395 -	1860 -	2325 -	2790 16	3255 22	3720 27	4650 35	5580 42	6510 48	6975 50
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm) Sound (NC)	1674 -	2232 -	2790 -	3348 16	3906 22	4464 27	5580 36	6696 43	7812 48	8370 51
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm) Sound (NC)	1875 -	2500 -	3125 -	3750 17	4375 23	5000 28	6250 36	7500 43	8750 49	9375 51

NC20 NC30 NC40 NC50

Performance Notes:

1. Tested in accordance with ASHRAE Standard 70 – 2006 Method of Testing for Rating the Performance of Air Outlets and Inlets.
2. Airflow is in cubic feet per minute [cfm].
3. NC, sound pressure levels, are based on a room absorption of 10 dB re 10^{-12} Watts, and a single diffuser/grille.
4. Blanks "-" indicate an NC level below 15.
5. All pressures are in inches of water column [in. w.g.].
6. Pressures not listed can be calculated using the following formula:

$$P_{total} = P_{static} + P_{velocity}$$

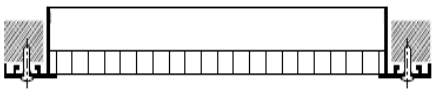
7. Grille tested without damper. Corrections for grille with damper:
   - Multiply negative static pressure by 1.3
   - Add 6 to listed NC.
8. The performance tables are based on grilles with F border. For ED border the following correction factors must be applied due to the reduced core area of this border:

Listed Core Area	Multiply Total Pressure	Add NC
.15 - .30	2.4	+15
.34 - .90	1.9	+10
1.07 - 1.80	1.4	+5
2.08 - 6.25	1.2	+2

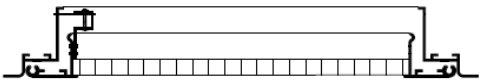
9. Does not include pressure drop through filter on FF, FH models
10. Does not include effects of ceiling radiation damper (80-FR, 80FF-FR, 81-FR, 82-FR).

MOUNTING DETAILS:

1. Screw Mounting Details

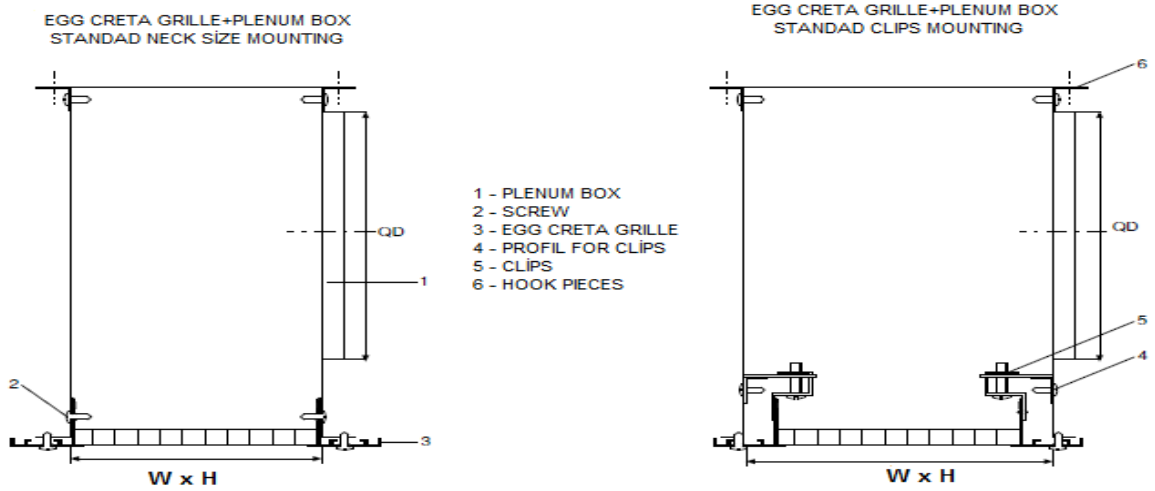


2 - Clips Mounting Details

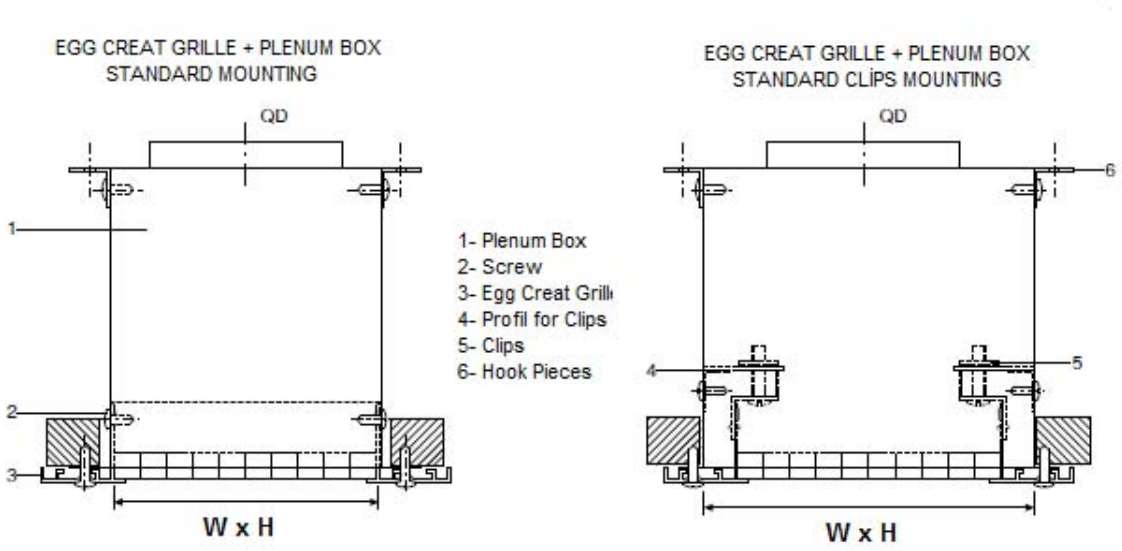


EGG CRATE GRILLES PLENUM BOX MOUNTING DETAILS :

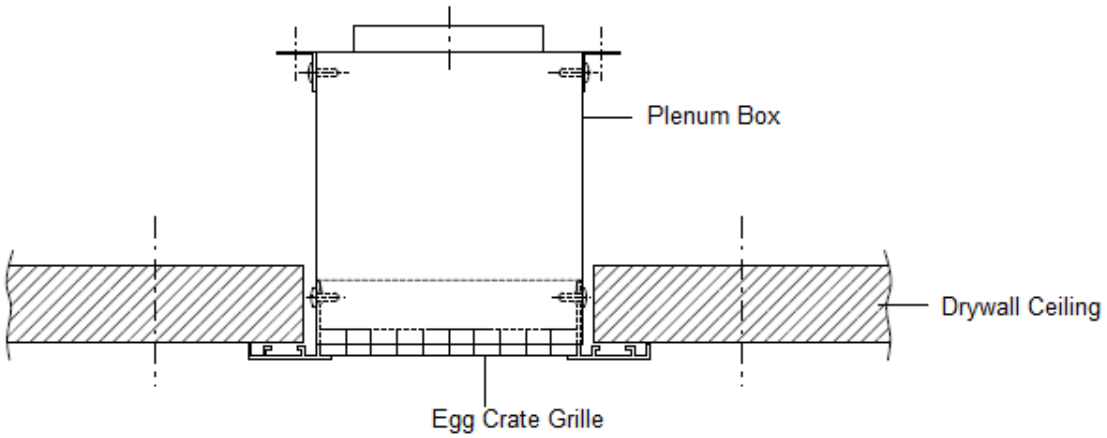
1 - SID ENTRY PLENUM BOX MOUNTING DETAILS



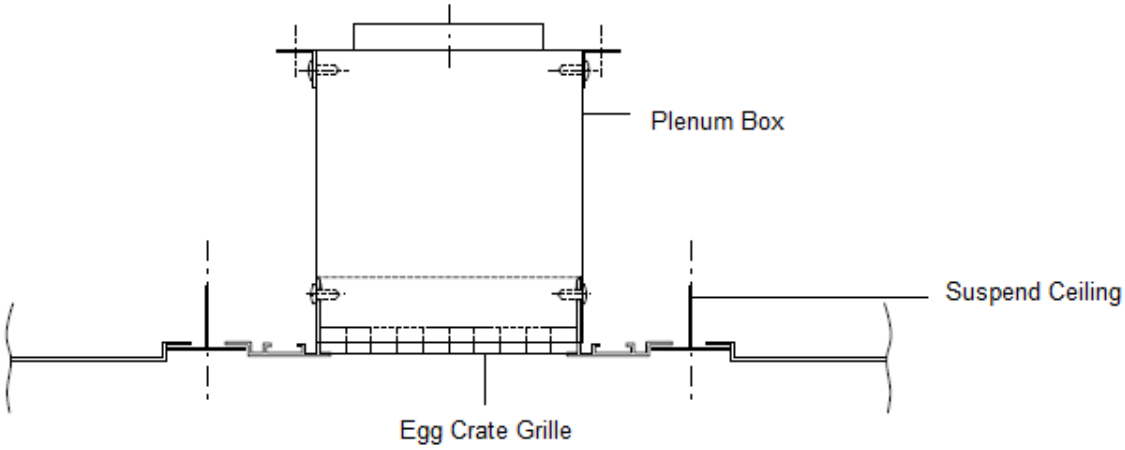
2 – TOP ENTRY PLENUM BOX MOUNTING DETAILS



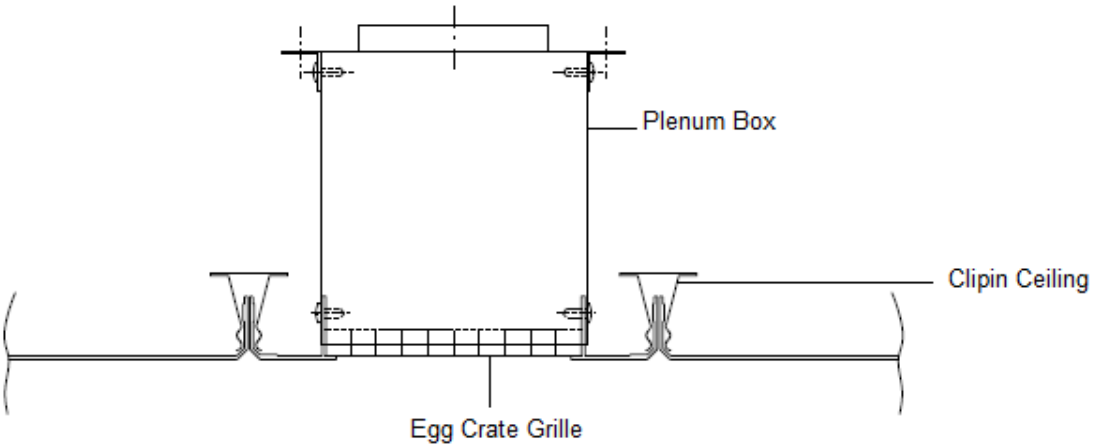
Drywal Ceiling Mounting



Suspend Ceiling Mounting



CLİP-IN CEİLİNG MOUNTING



ORDER CODE :

KPM - 12	PL	22	000	FB9010	SM	W 400X400
12mm Grid 22mm Grid	00: Without accessories FL: Filter PL: Plenum Box	22mm Frame = 22mm 32mm Frame = 32mm	000: without Damper ZKD: Opposite Blade Damper PKD: ParalleL Blade Damper	00: without coating EL: Anodic Aluminium FB----: Powder Coated RAL	00: without Mounting VD: Screw Mounting KL: Clips Mounting ST: Spring Mounting	W: Neck Size C: Frame Size