

DML, DMA
Linear Grille



Venues Breathe with DOGU HVAC Systems!

DOGU HVAC founded in 1999, and ever since has been manufacturing Energy-and Cost-Efficient products as Air Handling Units, Air Distribution & Management & Movement Systems [HVAC Components] and constantly enhancing to provide an integrated solution for well-being. DOGU HVAC's core business products which are subsumed under four major groups as Air Handling Units, Heat/Energy Recovery Units, Air Distribution & Management Products and Kitchen Ventilation Equipment are all produced under the compliance with EU standards. Particularly AHU and HRU-ER units are entitled under the "FOUR SEASONS" brand name for domestic and foreign markets. DOGU HVAC's, headquarter in Izmir/Turkey, operates in a large-sized plant spread over two factories, in total area of 45.000 sqm in which 25.000 sqm indoor space that enables DOGU HVAC manufactures 140 various type of products. Additionally, DOGU HVAC has a powerful sales network with three sales offices located in Istanbul, Ankara and Antalya in Turkey as well as authorized dealers in many other countries for sales and after sales operations. DOGU HVAC has been exporting to more than 50 countries.

Thanks to our "Customer Satisfaction", "Zero-Defect Policy" motto and reinforced by complete certified products, more than 250 employees. DOGU HVAC R&D center developed exclusive products, such as Double Skin Make-Up Kitchen Hood, Recirculated Laminar Airflow Unit, Single Piece Square Ceiling Diffuser and Ecology Units, for the first time have brought to the sector. DOGU HVAC R&D has the ability to make customized production which can meet the requirement of the customers by means of special software such as "ANSYS FLUENT". DOGU HVAC guaranteed its quality of management by having advantages of ISO 9001, ISO 14001, ISO 18001 certifications. Air Handling Units have EUROVENT, TUV Hygiene [in accordance with DIN1946-4, VDI 6022-1, DIN EN 13053 standards], CE, TSEK, GOST-R certifications; Fire Dampers have EN 1366-2 and EN 13501-3 CE certifications; Smoke Control Dampers have EN 1366-10 and 12101-8 CE certifications; Kitchen Ventilation Products have TSE, CE and GOST-R quality certifications.



- ☞ DML, DMA – Linear Grilles with horizontal and linear, aerodynamic blades are used for supply and return air.
- ☞ It is the most preferred product in the supply and return air due to its stylish design and decorative appearance that will adapt to the architecture in places such as fan-coil, convector, radiator.
- ☞ It is suitable for ceiling and wall applications in ventilation and air conditioning systems.
- ☞ Suitable for wall to wall applications. It can be produced modularly.



MATERIAL

- ☞ Aluminum 6063 extrusion profile production
- ☞ Optional AISI 304 quality stainless production

SURFACE COATING

- ☞ RAL 9010 or RAL 9016 electrostatic powder paint as standard
- ☞ Optional
 - Made of stainless steel
 - Different RAL color codes
 - Matt aluminum eloxal finish for a matte and metallic look
 - Unpainted manufacturing

INSTALLATION OPTIONS

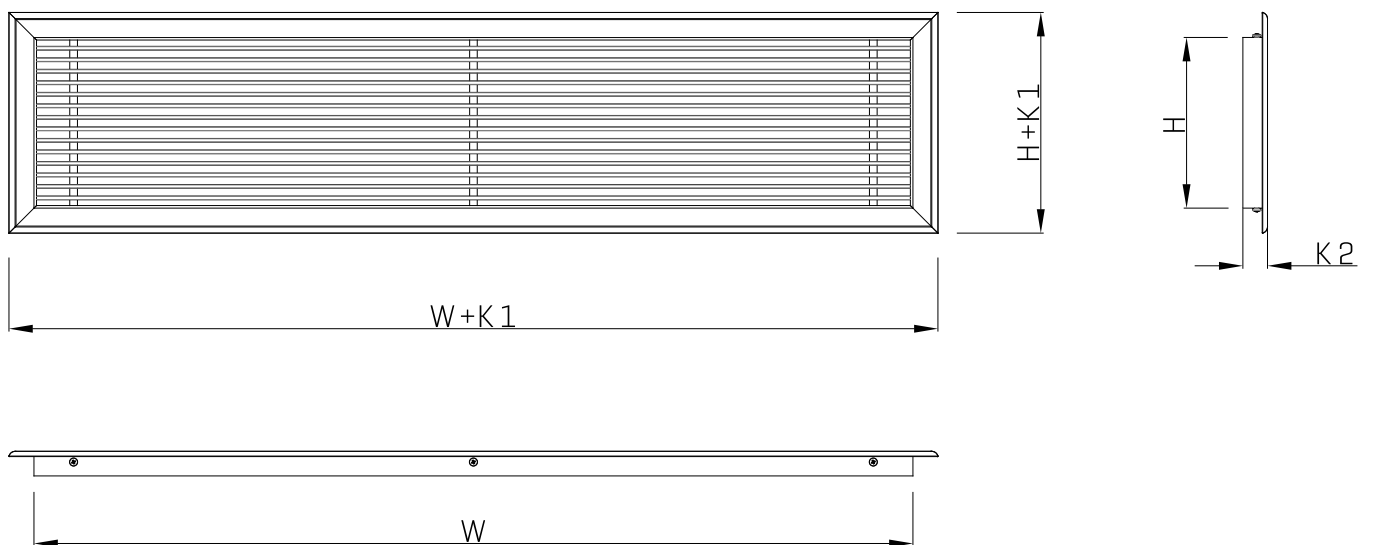
- ☞ Screw System
- ☞ Suspended Ceiling
- ☞ Mounting Bracket
- ☞ Clip-In Ceiling
- ☞ With Latch
- ☞ Long Clip
- ☞ Short Clip

ACCESSORIES

Optional

- ZKD - Opposite Blade Air Adjustment Damper [Production from aluminum 6063 extrusion profile]
- Aluminum Wire
- 10x10 Galvanized Wire
- Fiber Filter
- Polyurethane Filter
- Neck Reducer
- Subframe
- Subframe + Fiber Filter

STANDARD DIMENSIONS



	K1 (mm)	K2 (mm)
22 mm Frame	42	31.8
31 mm Frame	53.4	30
Clip-In Frame	59.2	30
Stainless Frame	58.4	30

Table 1. Standard Sizes

Standard Dimensions		H Height (mm)																
		75	100	150	200	250	300	350	400	450	500	550	600	750	1000	1500	2000	2300
W Width (mm)	150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	250	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	350	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	400	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	450	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	550	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	600	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	700	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	800	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	900	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	1000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	1200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	1400	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	1600	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	1800	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	2000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	2150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
2300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						

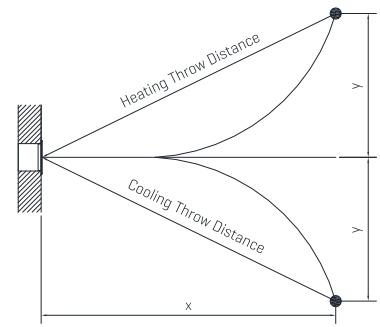
PERFORMANCE DATA

Table 2. Effective Area

Effective Area [m²]		H Height (mm)																
		75	100	150	200	250	300	350	400	450	500	550	600	750	1000	1500	2000	2500
W Width (mm)	150	0.009	0.012	0.017	0.023	0.029	0.035	0.041	0.047	0.052	0.058	0.064	0.070	0.087	0.116	0.174	0.232	0.290
	200	0.012	0.016	0.023	0.031	0.039	0.047	0.054	0.062	0.070	0.077	0.085	0.093	0.116	0.155	0.232	0.310	0.387
	250	0.015	0.019	0.029	0.039	0.048	0.058	0.068	0.077	0.087	0.097	0.107	0.116	0.145	0.194	0.290	0.387	0.484
	300	0.017	0.023	0.035	0.047	0.058	0.070	0.081	0.093	0.105	0.116	0.128	0.139	0.174	0.232	0.349	0.465	0.581
	350	0.020	0.027	0.041	0.054	0.068	0.081	0.095	0.108	0.122	0.136	0.149	0.163	0.203	0.271	0.407	0.542	0.678
	400	0.023	0.031	0.047	0.062	0.077	0.093	0.108	0.124	0.139	0.155	0.170	0.186	0.232	0.310	0.465	0.620	0.774
	450	0.026	0.035	0.052	0.070	0.087	0.105	0.122	0.139	0.157	0.174	0.192	0.209	0.261	0.349	0.523	0.697	0.871
	500	0.029	0.039	0.058	0.077	0.097	0.116	0.136	0.155	0.174	0.194	0.213	0.232	0.290	0.387	0.581	0.774	0.968
	550	0.032	0.043	0.064	0.085	0.107	0.128	0.149	0.170	0.192	0.213	0.234	0.256	0.319	0.426	0.639	0.852	1.065
	600	0.035	0.047	0.070	0.093	0.116	0.139	0.163	0.186	0.209	0.232	0.256	0.279	0.349	0.465	0.697	0.929	1.162
	700	0.041	0.054	0.081	0.108	0.136	0.163	0.190	0.217	0.244	0.271	0.298	0.325	0.407	0.542			
	800	0.047	0.062	0.093	0.124	0.155	0.186	0.217	0.248	0.279	0.310	0.341	0.372	0.465	0.620			
	900	0.052	0.070	0.105	0.139	0.174	0.209	0.244	0.279	0.314	0.349	0.383	0.418	0.523	0.697			
	1000	0.058	0.077	0.116	0.155	0.194	0.232	0.271	0.310	0.349	0.387	0.426	0.465	0.581	0.774			
	1200	0.070	0.093	0.139	0.186	0.232	0.279	0.325	0.372	0.418	0.465	0.511	0.558					
	1400	0.081	0.108	0.163	0.217	0.271	0.325	0.379	0.434	0.488	0.542	0.596	0.650					
	1600	0.093	0.124	0.186	0.248	0.310	0.372	0.434	0.496	0.558	0.620	0.681	0.743					
	1800	0.105	0.139	0.209	0.279	0.349	0.418	0.488	0.558	0.627	0.697	0.767	0.836					
	2000	0.116	0.155	0.232	0.310	0.387	0.465	0.542	0.620	0.697	0.774	0.852	0.929					
	2250	0.131	0.174	0.261	0.349	0.436	0.523	0.610	0.697	0.784	0.871	0.958	1.045					
2500	0.145	0.194	0.290	0.387	0.484	0.581	0.678	0.774	0.871	0.968	1.065	1.162						

Table 3. Supply Data

Flow Rate (m³ / h)		Effective Velocity (m / s)												
		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0
50	Effective Area [m²]	0.0278	0.0139	0.009										
	Pressure Drop [Pa]	1	2	4										
	Throw Distance [m]	1	2	2										
	Sound Power Level [dB(A)]	<15	<15	<15										
100	Effective Area [m²]	0.0556	0.0278	0.019	0.014	0.011	0.009							
	Pressure Drop [Pa]	1	2	4	7	11	15							
	Throw Distance [m]	1	2	2	3	3	3							
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	16							
200	Effective Area [m²]	0.111	0.056	0.037	0.028	0.022	0.019	0.016	0.014	0.012	0.011	0.009		
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58		
	Throw Distance [m]	1	2	2	3	3	3	4	4	4	4	5		
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	19	23	26	29	32	36		
300	Effective Area [m²]	0.167	0.083	0.056	0.042	0.033	0.028	0.024	0.021	0.019	0.017	0.014	0.012	0.010
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	1	2	3	3	3	4	4	4	4	5	5	6	6
	Sound Power Level [dB(A)]	<15	<15	<15	<15	16	20	24	28	31	33	38	42	45
400	Effective Area [m²]	0.222	0.111	0.074	0.056	0.044	0.037	0.032	0.028	0.025	0.022	0.019	0.016	0.014
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	1	2	3	3	3	4	4	4	4	5	5	6	6
	Sound Power Level [dB(A)]	<15	<15	<15	<15	17	22	26	29	32	35	39	43	47
500	Effective Area [m²]	0.278	0.139	0.093	0.069	0.056	0.046	0.040	0.035	0.031	0.028	0.023	0.020	0.017
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	6
	Sound Power Level [dB(A)]	<15	<15	<15	<15	18	23	27	30	33	36	40	44	48
600	Effective Area [m²]	0.333	0.167	0.111	0.083	0.067	0.056	0.048	0.042	0.037	0.03333	0.028	0.024	0.021
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	<15	19	23	27	31	34	36	41	45	48
700	Effective Area [m²]	0.389	0.194	0.130	0.097	0.078	0.065	0.056	0.049	0.043	0.0389	0.032	0.028	0.024
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	<15	19	24	28	31	34	37	42	46	49
800	Effective Area [m²]	0.444	0.222	0.148	0.111	0.089	0.074	0.064	0.056	0.049	0.0444	0.037	0.032	0.028
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	<15	20	25	29	32	35	38	42	46	50
900	Effective Area [m²]	0.500	0.250	0.167	0.125	0.100	0.083	0.071	0.063	0.056	0.0500	0.042	0.036	0.031
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	<15	21	25	29	32	35	38	43	47	50
1000	Effective Area [m²]	0.556	0.278	0.185	0.139	0.111	0.093	0.079	0.069	0.062	0.0556	0.046	0.040	0.035
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	3	4	4	4	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	15	21	26	30	33	36	39	43	47	51
1250	Effective Area [m²]	0.694	0.347	0.232	0.174	0.139	0.116	0.099	0.087	0.077	0.0694	0.058	0.050	0.043
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	2	3	4	4	4	5	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	16	22	27	31	34	37	40	44	48	52
1500	Effective Area [m²]	0.833	0.417	0.278	0.208	0.167	0.139	0.119	0.104	0.0926	0.0833	0.069	0.060	0.052
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	3	3	4	4	4	5	5	5	5	6	6	7
	Sound Power Level [dB(A)]	<15	<15	<15	17	23	27	31	35	38	40	45	49	52
1750	Effective Area [m²]	0.972	0.486	0.324	0.243	0.194	0.162	0.139	0.122	0.1080	0.0972	0.081	0.069	0.061
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	3	3	4	4	4	5	5	5	6	6	7	7
	Sound Power Level [dB(A)]	<15	<15	<15	18	23	28	32	35	38	41	46	50	53
2000	Effective Area [m²]	1.111	0.556	0.370	0.278	0.222	0.185	0.159	0.139	0.1235	0.1111	0.093	0.079	0.069
	Pressure Drop [Pa]	1	2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]	2	3	3	4	4	4	5	5	5	6	6	7	7
	Sound Power Level [dB(A)]	<15	<15	<15	18	24	29	33	36	39	42	46	50	54
2500	Effective Area [m²]		0.694	0.463	0.347	0.278	0.232	0.198	0.174	0.1543	0.1389	0.116	0.099	0.087
	Pressure Drop [Pa]		2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]		3	3	4	4	4	5	5	5	6	6	7	8
	Sound Power Level [dB(A)]		<15	<15	19	25	30	34	37	40	43	47	51	55
3000	Effective Area [m²]		0.833	0.556	0.417	0.333	0.278	0.238	0.2083	0.1852	0.1667	0.139	0.119	0.104
	Pressure Drop [Pa]		2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]		3	3	4	4	4	5	5	5	6	6	7	8
	Sound Power Level [dB(A)]		<15	<15	20	26	30	34	38	41	43	48	52	55
4000	Effective Area [m²]		1.111	0.741	0.556	0.444	0.370	0.3175	0.2778	0.2469	0.2222	0.185	0.159	0.139
	Pressure Drop [Pa]		2	4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]		3	4	4	4	5	5	6	6	6	7	7	8
	Sound Power Level [dB(A)]		<15	<15	21	27	32	36	39	42	45	49	53	57
5000	Effective Area [m²]			0.926	0.694	0.556	0.4630	0.3968	0.3472	0.3086	0.2778	0.232	0.198	0.1736
	Pressure Drop [Pa]			4	7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]			4	4	5	5	6	6	6	7	7	8	9
	Sound Power Level [dB(A)]			<15	22	28	33	37	40	43	46	50	54	58
7500	Effective Area [m²]				1.042	0.833	0.694	0.595	0.521	0.4630	0.4167	0.347	0.298	0.260
	Pressure Drop [Pa]				7	11	15	20	26	33	41	58	78	102
	Throw Distance [m]				5	5	6	6	7	7	7	8	9	9
	Sound Power Level [dB(A)]				24	30	34	38	42	45	47	52	56	59
10000	Effective Area [m²]					1.111	0.926	0.794	0.6944	0.6173	0.5556	0.463	0.397	0.347
	Pressure Drop [Pa]					11	15	20	26	33	41	58	78	102
	Throw Distance [m]					5	6	6	7	7	8	8	9	10
	Sound Power Level [dB(A)]					31	36	40	43	46	49	53	57	61



Note: The data are obtained when the temperature difference between the air distribution equipment and the ambient air is T=8.

Throw Distance is the distance between the point where the air leaving the dispenser equipment reaches a speed of 0.25 m/s, and the air distribution equipment.

Table 4. Extract Data

Flow Rate [m³/h]		Effective Velocity [m/s]													
		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0
50	Effective Area [m²]	0.0278	0.0139												
	Pressure Drop [Pa]	0	1												
	Sound Power Level [dB(A)]	<15	<15												
100	Effective Area [m²]	0.0556	0.0278	0.019	0.014	0.011									
	Pressure Drop [Pa]	0	1	3	5	8									
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15									
200	Effective Area [m²]	0.111	0.056	0.037	0.028	0.022	0.019	0.016	0.014	0.012	0.011				
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32				
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	15	19	23	26	29				
300	Effective Area [m²]	0.167	0.083	0.056	0.042	0.033	0.028	0.024	0.021	0.019	0.017	0.014	0.012	0.010	
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	17	21	25	28	31	36	40	43	
400	Effective Area [m²]	0.222	0.111	0.074	0.056	0.044	0.037	0.032	0.028	0.025	0.022	0.019	0.016	0.014	0.012
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	18	22	26	29	32	37	41	45	48
500	Effective Area [m²]	0.278	0.139	0.093	0.069	0.056	0.046	0.040	0.035	0.031	0.028	0.023	0.020	0.017	0.015
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	<15	19	23	27	30	33	38	42	46	49
600	Effective Area [m²]	0.333	0.167	0.111	0.083	0.067	0.056	0.048	0.042	0.037	0.0333	0.028	0.024	0.021	0.019
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	15	20	24	28	31	34	39	43	47	50
700	Effective Area [m²]	0.389	0.194	0.130	0.097	0.078	0.065	0.056	0.049	0.043	0.0389	0.032	0.028	0.024	0.022
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	16	21	25	28	32	35	39	44	47	50
800	Effective Area [m²]	0.444	0.222	0.148	0.111	0.089	0.074	0.063	0.056	0.049	0.0444	0.037	0.032	0.028	0.025
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	16	21	25	29	32	35	40	44	48	51
900	Effective Area [m²]	0.500	0.250	0.167	0.125	0.100	0.083	0.071	0.063	0.056	0.0500	0.042	0.036	0.031	0.028
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	17	22	26	30	33	36	40	45	48	51
1000	Effective Area [m²]	0.556	0.278	0.185	0.139	0.111	0.093	0.079	0.069	0.062	0.0556	0.046	0.040	0.035	0.031
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	17	22	26	30	33	36	41	45	49	52
1250	Effective Area [m²]	0.694	0.347	0.231	0.174	0.139	0.116	0.099	0.087	0.077	0.0694	0.058	0.050	0.043	0.039
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	18	23	27	31	34	37	42	46	50	53
1500	Effective Area [m²]	0.833	0.417	0.278	0.208	0.167	0.139	0.119	0.104	0.0926	0.0833	0.069	0.060	0.052	0.046
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	19	24	28	32	35	38	43	47	50	54
1750	Effective Area [m²]	0.972	0.486	0.324	0.243	0.194	0.162	0.139	0.122	0.1080	0.0972	0.081	0.069	0.061	0.054
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	20	25	29	32	36	38	43	48	51	54
2000	Effective Area [m²]	1.111	0.556	0.370	0.278	0.222	0.185	0.159	0.139	0.1235	0.1111	0.093	0.079	0.069	0.062
	Pressure Drop [Pa]	0	1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]	<15	<15	<15	<15	20	25	29	33	36	39	44	48	52	55
2500	Effective Area [m²]		0.694	0.463	0.347	0.278	0.231	0.198	0.174	0.1543	0.1389	0.116	0.099	0.087	0.077
	Pressure Drop [Pa]		1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]		<15	<15	15	21	26	30	34	37	40	45	49	53	56
3000	Effective Area [m²]		0.833	0.556	0.417	0.333	0.278	0.238	0.2083	0.1852	0.1667	0.139	0.119	0.104	0.0926
	Pressure Drop [Pa]		1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]		<15	<15	16	22	27	31	35	38	41	46	50	53	57
4000	Effective Area [m²]		1.111	0.741	0.556	0.444	0.370	0.3175	0.2778	0.2469	0.2222	0.185	0.159	0.1389	0.1235
	Pressure Drop [Pa]		1	3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]		<15	<15	17	23	28	32	36	39	42	47	51	55	58
5000	Effective Area [m²]			0.926	0.694	0.556	0.4630	0.3968	0.3472	0.3086	0.2778	0.231	0.1984	0.1736	0.1543
	Pressure Drop [Pa]			3	5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]			<15	18	24	29	33	37	40	43	48	52	56	59
7500	Effective Area [m²]				1.042	0.833	0.694	0.5952	0.5208	0.4630	0.4167	0.347	0.298	0.2604	0.2315
	Pressure Drop [Pa]				5	8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]				20	26	31	35	39	42	45	50	54	57	61
10000	Effective Area [m²]					1.111	0.9259	0.7937	0.6944	0.6173	0.5556	0.463	0.3968	0.3472	0.3086
	Pressure Drop [Pa]					8	11	15	20	26	32	47	65	86	110
	Sound Power Level [dB(A)]					27	32	36	40	43	46	51	55	59	62

Table 5. Throw Distance Correction

Heating Mode [ΔT]	4	6	8	10	12
Throw Distance Factor	1.07	1.02	1	0.90	0.83
Cooling Mode [ΔT]	4	6	8	10	12
Throw Distance Factor	1.31	1.36	1.42	1.48	1.54

Table 6. Damper Pressure Correction

Damper Location	Pressure Drop Factor	Sound Production [dB(A)]
Opened	1.1	+1
25% Closed	1.14	+4
50% Closed	2.48	+14
75% Closed	5.11	+29

Table 7. Filter Pressure Drop

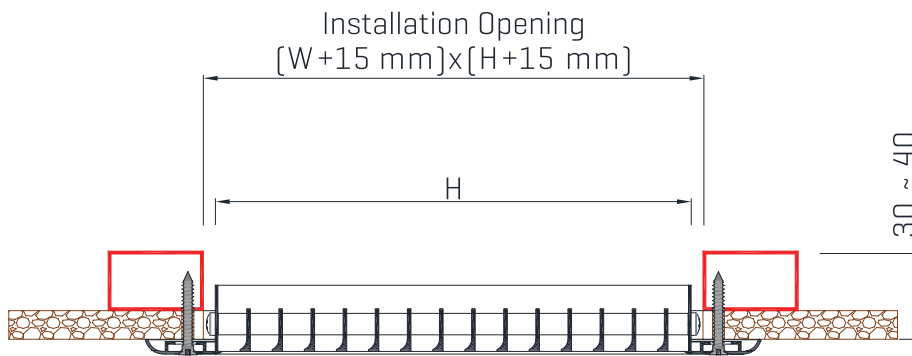
Pressure Drop [Pa]	Filter Type	Air Speed [m/s]														
		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0
	Polyurethane Filter	1	3	5	8	11	15	19	24	29	35	48	63	81	100	121
	Fiber Filter	15	28	40	51	62	73	84	94	105	115	135	155	174	193	212

Polyurethane Filter: 6 mm thick 20PPL polyester based polyurethane filter

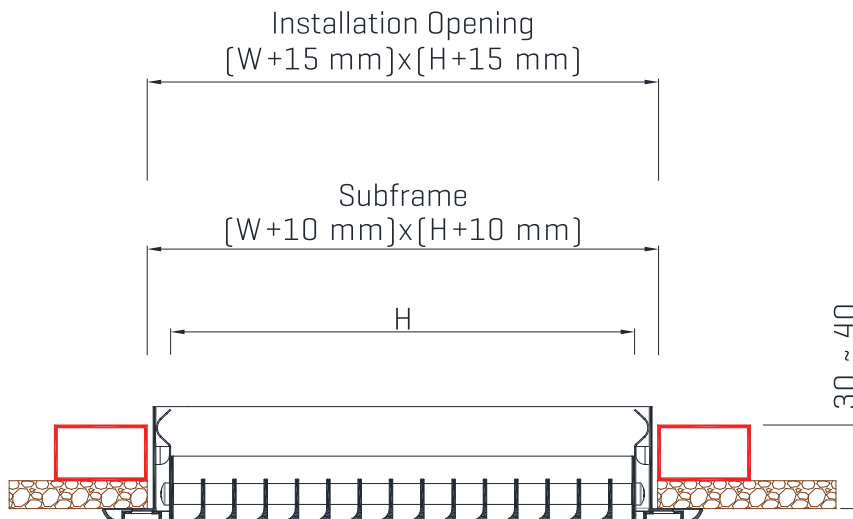
Fiber Filter: EN 16890 ISO COARSE 80% class 10 mm thickness fiber filter

INSTALLATION OPTIONS

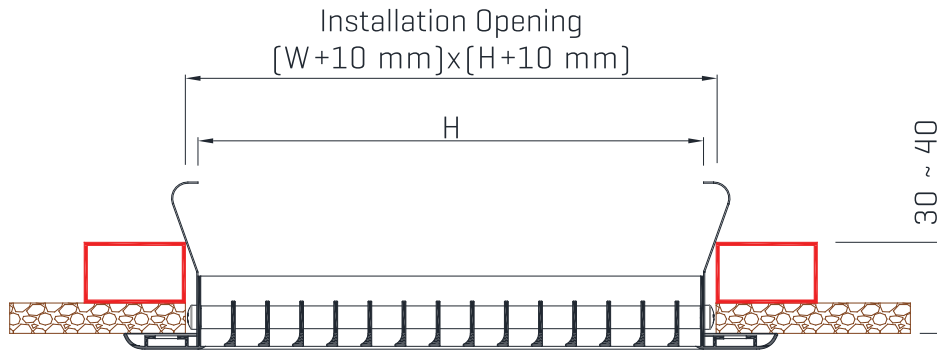
1. SCREW SYSTEM



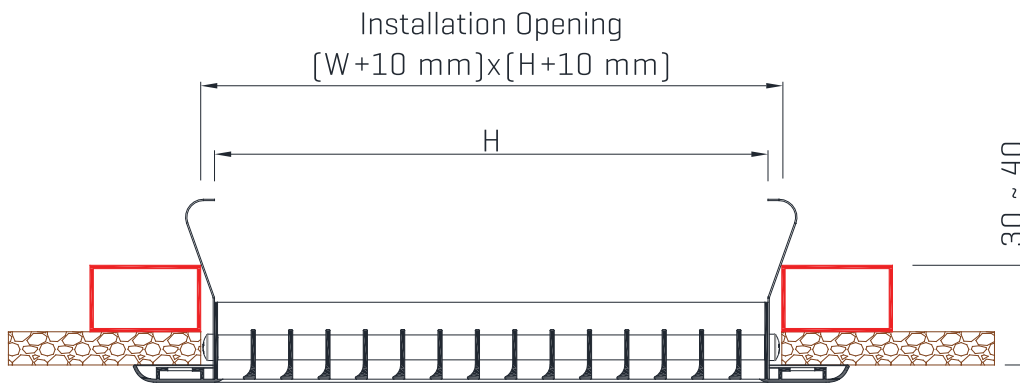
2. SUBFRAME SHORT CLIP



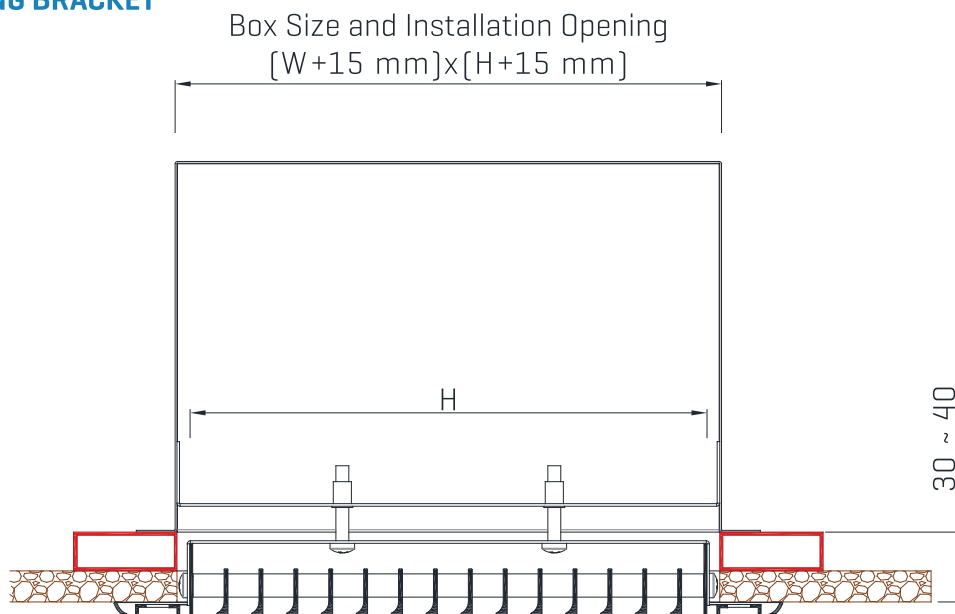
3. LONG CLIPS



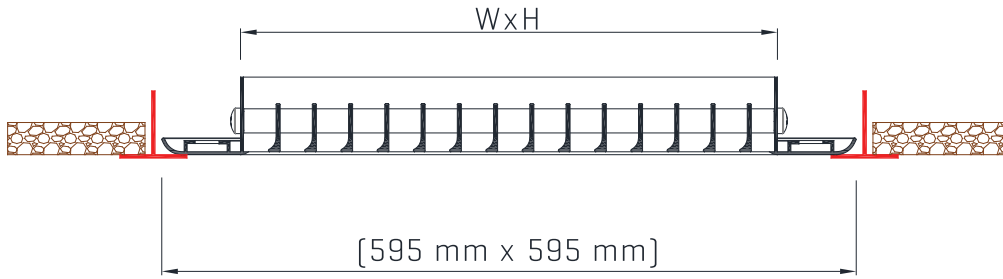
4. WITH LATCH



5. MOUNTING BRACKET



6. SUSPENDED CEILING

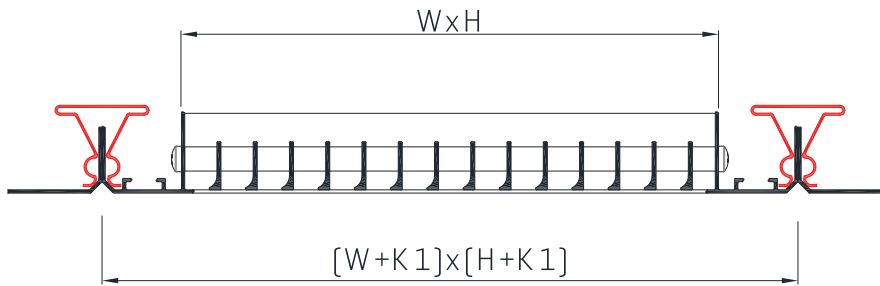


Note:

W and H sizes that can be selected according to the frame sizes specified in the product selection are shown in the table.

	W (mm)	H (mm)
22 mm Frame	553	553
32 mm Frame	541	541
Stainless Frame	536	536

7. CLIP-IN CEILING

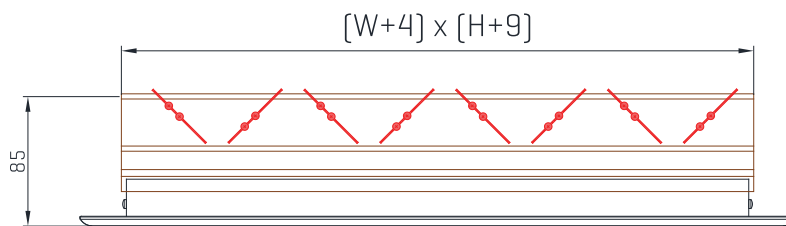


Note:

Stainless frame option is not applied in the mounting form of the clip.

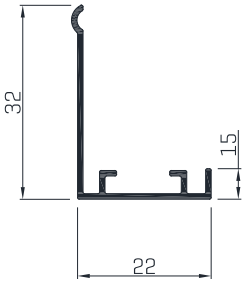
Clip-In Frame K1 = 59.2 mm	W (mm)	H (mm)
600x600	541	541
300x300	241	241

8. WITH DAMPER

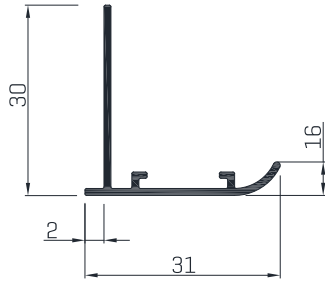


FRAME TYPES

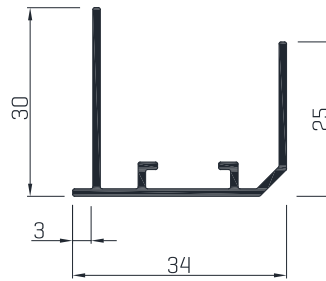
22 mm Frame



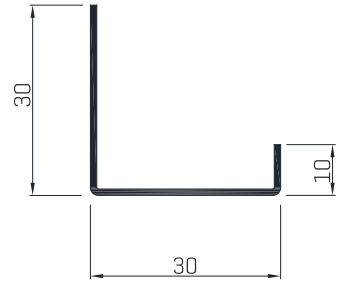
31 mm Frame



Clip-In Frame

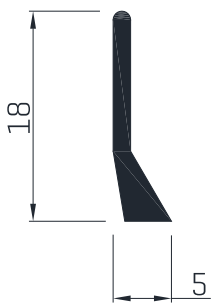


Stainless Frame

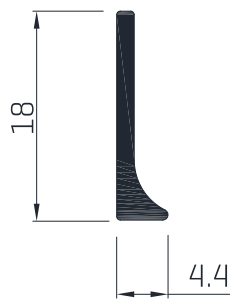


BLADE TYPES

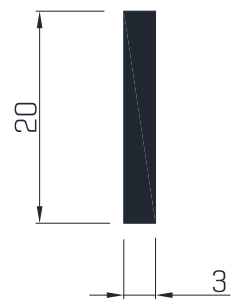
DMA Blade



DML Blade

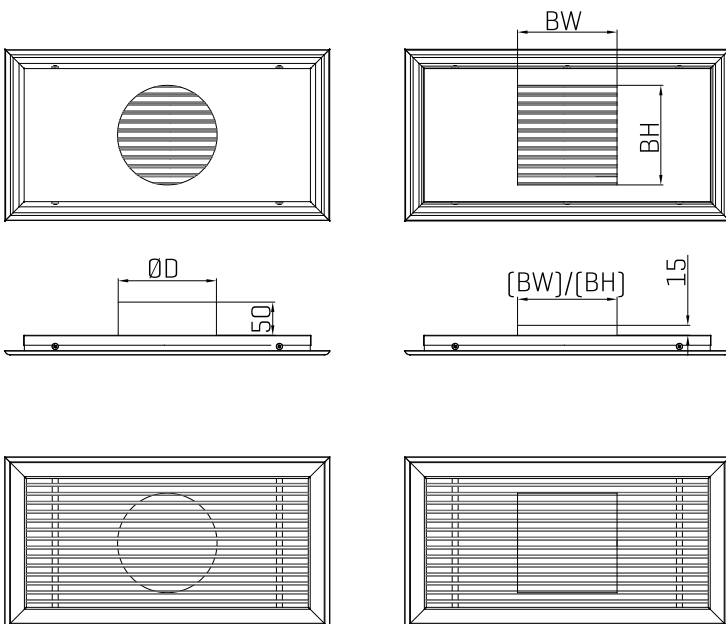


20X3 Flat Stainless



DMA.ALM: 15° angled aluminum blade
 DML.ALM: Standard flat aluminum blade
 DML.PAS: 20x3 stainless flat blade

NECK REDUCING



Neck reducer can be made in desired sizes.

ØD [mm]: Neck reducer diameter.

BW [mm]: Neck reducer width.

BH [mm]: Neck reducer height.

Neck reducer constraints:

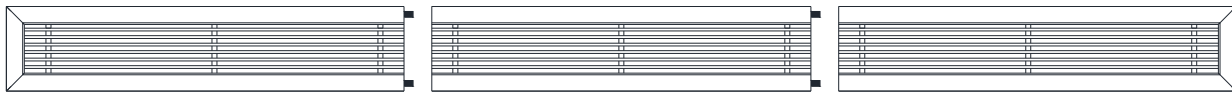
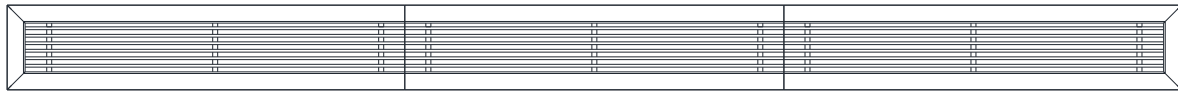
$BH + 20 \leq H$

$BW + 20 \leq W$

$\text{ØD} + 20 \leq W \text{ and } H$

SIZE PARAMETERS

MAXIMUM MODULE SIZE



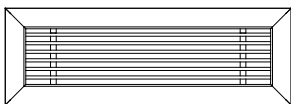
If the width of the linear grille to be ordered is over 2300 mm, the grill length is extended by means of connecting pieces.

Total Number of Pieces=Round up [Order Size/2300]

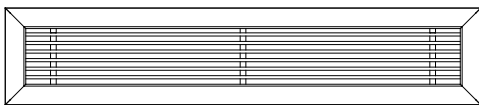
Length of One Piece=Order Size/Number of Pieces

SUPPORT NUMBER PARAMETER

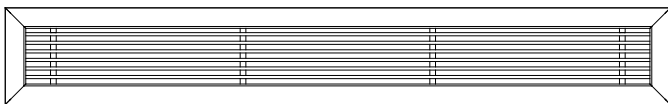
If $150 < W \leq 600$, 2 Support



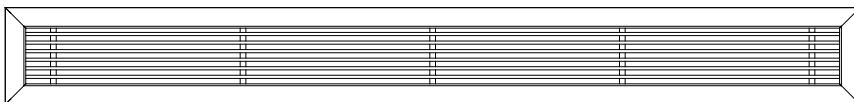
If $600 < W \leq 1200$, 3 Support



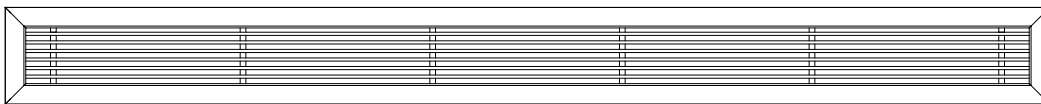
If $1200 < W \leq 1500$, 4 Support



If $1500 < W \leq 2000$, 5 Support



If $2000 < W \leq 2300$, 6 Support



PRODUCT SELECTION

Example: The air flow distributed in the space has been determined as 5000 m³/h. 10 linear grilles will be used for air supply. Temperature difference in heating mode is 8K. Select the product.

Solution: Supply flow rate for a grille, 5000/10 = 500 m³/h

From the supply data table [Table 3], the effective areas corresponding to the appropriate pressure loss and flow rate values are selected.

For example, in an effective area of 0.04 m², the effective velocity is 3.5m/s, pressure loss 20 Pa, throw distance 4 m and sound power 27 dB[A].

The appropriate grille size can be selected from the effective area table as 350 mm x 150 mm corresponding to the value of 0.04 m²

Throw Distance Correction Table

In the previous example, the radius heating mode was found to be 4 m for 8K. For heating mode 10K, Throw Distance Correction Table [Table 5] is referenced. The multiplier value is 0.9.

Corrected throw distance=4 m x 0.9=3.6 m

Filter Status

Filter Pressure Drop Table [Table 7] should be used for pressure loss calculations to be applied in the selection of Polyurethane or Fiber filters.

For example, when selecting 500 m³/h flow rate and throat size 350 mm x 150 mm, pressure drop is 20 Pa. Throat velocity is taken as basis for filter calculation. Accordingly, the throat speed is:

$$\text{Velocity} \left[\frac{\text{m}}{\text{s}} \right] = \frac{500 \text{ m}^3/\text{h}}{350 \text{ mm} \times 150 \text{ mm}} \times \left[\frac{1 \text{ h}}{3600 \text{ s}} \right] \times \left[\frac{1 \text{ mm}}{0.001 \text{ m}} \right] \times \left[\frac{1 \text{ mm}}{0.001 \text{ m}} \right] = 2.65 \text{ m/s}$$

Accordingly, it is read in the filter pressure loss table [Table 7] that a pressure drop of 2.65 m/s will be +12 for the polyurethane filter and +65 Pa for the fiber filter. Total pressure loss,

With Polyurethane Filter: 20+12=32 Pa

With Fiber Filter: 20+65=85 Pa

Opposite Blade Damper Condition

The pressure loss and sound power level changes in the damper product. Damper Correction Table [Table 6] should be used.

For example, the pressure multiplier for the damper product in the 50% closed position of the damper is 2.48 corresponding to the table and the sound generation to be added is +14 dB[A].

Total Static Pressure Loss: 20x2.48=49.6 Pa

Total Sound Production: 27+14=41 dB[A]

PRODUCT ORDER CODES

You can place your orders according to the following coding format.

<A>..<C>.<D>.<E>.<F>.<G>.<H>.<I>

A	Product Type	
	DML	Standard Flat Blade
	DMA	15° Angle Blade
B	Raw Material Type	
	ALM	Aluminum
C	Case Type	
	05	22 mm
	03	32 mm
	09	Clip-In Ceiling
D	Damper	
	ZD	Opposite Blade Damper
	DZ	Without Damper
E	Installation Type	
	VD	Screw System
	KR	Suspended Ceiling
	KL	Clip-In Ceiling
	KP	Mounting Bracket
	MD	Without Mounting Hole
	MN	With Latch
	UK	Long Clips
	KO	Subframe Short Clips
	KK	Short Clips
F	Accessories	
	AT	Aluminum Wire
	10	10x10 Galvanized Wire
	EF	Fiber Filter
	PF	Polyurethane Filter
	00	Without Accessories
	BD	Neck Reducer
G	Horizontal Dimension [W] (mm)	
	0000	You can view it from standard dimensions.
H	Vertical Dimension [H] (mm)	
	0000	You can view it from standard dimensions.
I	Color	
	00	Without Color
	S1	Standard Color - RAL 9010
	S2	Standard Color - RAL 9016
	XX	Special Color

Sample Coding; DML.ALM.04.DZ.KP.10.00450.0250.SS

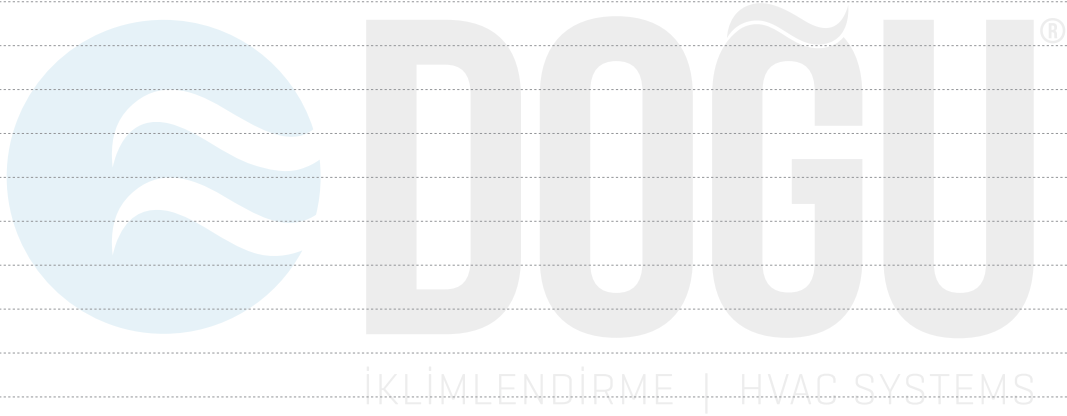
STAINLESS PRODUCT ORDER CODE

DML.PAS.32. < A > . < B > . < C > . < D > . < E > . 00

A	Damper	
	ZD	Opposite Blade Damper
	DZ	Without Damper
B	Installation Type	
	VD	Screw System
	KR	Suspended Ceiling
	KP	Mounting Bracket
	MD	Without Mounting Hole
	MN	With Latch
	UK	Long Clips
	KK	Short Clips
	KO	Subframe with Short Clips
C	Accessories	
	AT	Aluminum Wire
	10	10x10 Galvanized Wire
	EF	Fiber Filter
	PF	Polyurethane Filter
	00	Without Accessories
	BD	Neck Reducer
D	Horizontal Dimension (W) (mm)	
	0000	You can view it from standard dimensions.
E	Vertical Dimension (H) (mm)	
	0000	You can view it from standard dimensions.

Sample Coding; DML.PAS.32.DZ.VD.00.1000.0600.00

NOTES



NOTES





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