DOĞU®
İKLİMLENDİRME | HVAC SYSTEMS

VKG

RECTANGULAR BACKDRAFT DAMPER

FOUR SEASONS®

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 4 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 standarts. 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 2 factories, in total area of 45.000 sqm in which 25.000 sqm indoor space that enables DOGU HVAC manufactures 180 various type of products. Additionally, DOGU HVAC has a powerful sales network with 4 sales offices located in İstanbul, Ankara, Antalya and Adana 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 55 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 standarts], 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 TSEK, CE and GOST-R quality certifications.

- VKG - Rectangular Backdraft Damper opens with the air flow and pressure created by the operation of the fan motor in ventilation systems. It turns off when the fan motor stops.
- In the system, it prevents air flow in the opposite direction of the air flow direction to which the damper is applied.
- When the fan motor is off, it prevents rain, dust or small creatures such as insects and birds from entering the system.
- In parallel working fan systems (multiple fan system), it prevents the air from leaving the non-operating fan group.
- In case of positive pressure in pressurized ventilation systems, it opens its wings and reduces the internal pressure. In this way, it can respond quickly to pressure differences caused by suddenly closing dampers such as fire dampers and sealed dampers.

PRODUCT TYPE AND MATERIAL

- The case is produced from aluminum as standard, optionally from galvanized sheet.
- The blades are made of aluminum. There is a silicone gasket resistant to 80C temperature on the blades.

SURFACE COATING

- Unpainted as standard.
- Optional (VKG.ALM)
  -Electrostatic powder paint in RAL color codes

INSTALLATION OPTIONS

- Duct Installation
- Supply Air Side
- Return Air Side
- Air Transfer

STANDARD SIZES

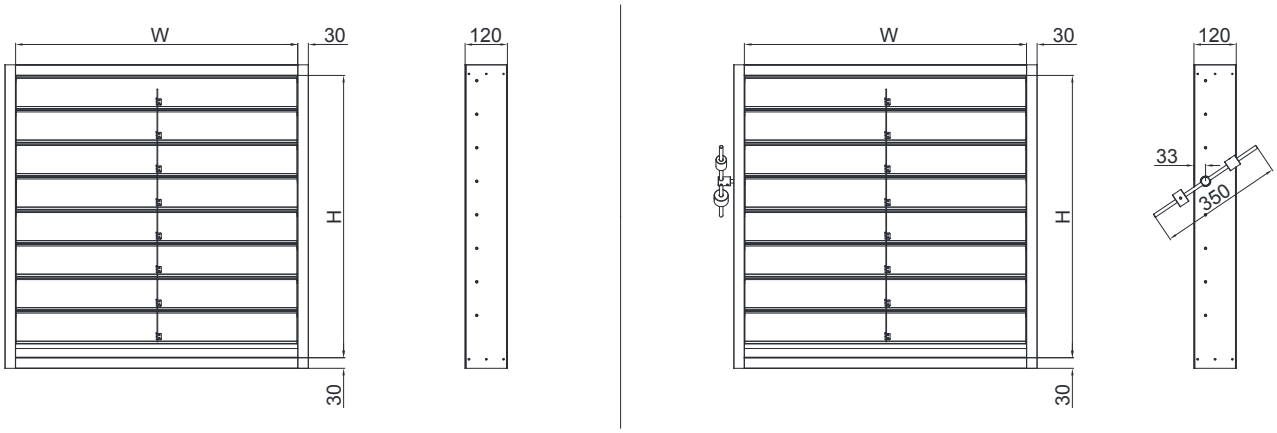

Table 1. Standard Sizes

Standard Sizes		H (Height) (mm)								
		100	200	300	400	500	700	800	900	1000
W (Width) (mm)	100	✓	✓	✓	✓	✓	✓	✓	✓	✓
	200	✓	✓	✓	✓	✓	✓	✓	✓	✓
	300	✓	✓	✓	✓	✓	✓	✓	✓	✓
	400	✓	✓	✓	✓	✓	✓	✓	✓	✓
	500	✓	✓	✓	✓	✓	✓	✓	✓	✓
	600	✓	✓	✓	✓	✓	✓	✓	✓	✓
	700	✓	✓	✓	✓	✓	✓	✓	✓	✓
	800	✓	✓	✓	✓	✓	✓	✓	✓	✓
	900	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1000	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1100	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1200	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1300	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1400	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1500	✓	✓	✓	✓	✓	✓	✓	✓	✓

QUICK SELECTION

In the quick selection table below, air flow and throat measurements are given when the air velocity is 1.5m/s.

Table 2. Quick Selection

Flow Rate [m³/h]		H (Height) [mm]								
		100	200	300	400	500	700	800	900	1000
W (Width) [mm]	100	54	108	162	216	270	378	432	486	540
	200	108	216	324	432	540	756	864	972	1080
	300	162	324	486	648	810	1134	1296	1458	1620
	400	216	432	648	864	1080	1512	1728	1944	2160
	500	270	540	810	1080	1350	1890	2160	2430	2700
	600	324	648	972	1296	1620	2268	2592	2916	3240
	700	378	756	1134	1512	1890	2646	3024	3402	3780
	800	432	864	1296	1728	2160	3024	3456	3888	4320
	900	486	972	1458	1944	2430	3402	3888	4374	4860
	1000	540	1080	1620	2160	2700	3780	4320	4860	5400
	1100	594	1188	1782	2376	2970	4158	4752	5346	5940
	1200	648	1296	1944	2592	3240	4536	5184	5832	6480
	1300	702	1404	2106	2808	3510	4914	5616	6318	7020
	1400	756	1512	2268	3024	3780	5292	6048	6804	7560
	1500	810	1620	2430	3240	4050	5670	6480	7290	8100

FLOW FIELD

Flow fields used in product selection by using performance data are given in the table below.

Table 3. Flow Field

Flow Field [m²]		H (Height) [mm]												
		100	200	300	400	500	700	800	900	1000	1100	1200	1300	1400	1500
W (Width) [mm]	100	0.01	0.02	0.03	0.04	0.05	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
	200	0.02	0.04	0.06	0.08	0.10	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.30
	300	0.03	0.06	0.09	0.12	0.15	0.21	0.24	0.27	0.30	0.33	0.36	0.39	0.42	0.45
	400	0.04	0.08	0.12	0.16	0.20	0.28	0.32	0.36	0.40	0.44	0.48	0.52	0.56	0.60
	500	0.05	0.10	0.15	0.20	0.25	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75
	600	0.06	0.12	0.18	0.24	0.30	0.42	0.48	0.54	0.60	0.66	0.72	0.78	0.84	0.90
	700	0.07	0.14	0.21	0.28	0.35	0.49	0.56	0.63	0.70	0.77	0.84	0.91	0.98	1.05
	800	0.08	0.16	0.24	0.32	0.40	0.56	0.64	0.72	0.80	0.88	0.96	1.04	1.12	1.20
	900	0.09	0.18	0.27	0.36	0.45	0.63	0.72	0.81	0.90	0.99	1.08	1.17	1.26	1.35
	1000	0.10	0.20	0.30	0.40	0.50	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50

PERFORMANCE DATA

Table 4. Performance Data

Flow Rate [m³/h]		Flow Field [m²]														
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5
500	Air Flow Speed [m/s]	1.4														
	Pressure Drop [Pa]	23														
	Sound Level [dB(A)]	27														
750	Air Flow Speed [m/s]	2.1	1.0													
	Pressure Drop [Pa]	29	20													
	Sound Level [dB(A)]	34	24													
1000	Air Flow Speed [m/s]	2.8	1.4													
	Pressure Drop [Pa]	33	23													
	Sound Level [dB(A)]	39	30													
1250	Air Flow Speed [m/s]	3.5	1.7	1.2												
	Pressure Drop [Pa]	38	26	21												
	Sound Level [dB(A)]	43	34	28												
1500	Air Flow Speed [m/s]	4.2	2.1	1.4	1.0											
	Pressure Drop [Pa]	42	29	23	20											
	Sound Level [dB(A)]	47	37	31	27											
1750	Air Flow Speed [m/s]	4.9	2.4	1.6	1.2											
	Pressure Drop [Pa]	45	31	25	21											
	Sound Level [dB(A)]	50	40	34	30											
2000	Air Flow Speed [m/s]	5.6	2.8	1.9	1.4	1.1										
	Pressure Drop [Pa]	49	33	27	23	20										
	Sound Level [dB(A)]	52	42	37	33	29										
2500	Air Flow Speed [m/s]	6.9	3.5	2.3	1.7	1.4	1.2									
	Pressure Drop [Pa]	55	38	30	26	23	21									
	Sound Level [dB(A)]	56	47	41	37	34	31									
3000	Air Flow Speed [m/s]	8.3	4.2	2.8	2.1	1.7	1.4	1.2	1.0							
	Pressure Drop [Pa]	60	42	33	29	25	23	21	20							
	Sound Level [dB(A)]	60	50	44	40	37	34	32	30							
3500	Air Flow Speed [m/s]	9.7	4.9	3.2	2.4	1.9	1.6	1.4	1.2	1.1						
	Pressure Drop [Pa]	66	45	36	31	28	25	23	21	20						
	Sound Level [dB(A)]	63	53	47	43	40	37	35	33	31						
4000	Air Flow Speed [m/s]		5.6	3.7	2.8	2.2	1.9	1.6	1.4	1.2	1.1	1.0				
	Pressure Drop [Pa]		49	39	33	30	27	25	23	22	20	19				
	Sound Level [dB(A)]		55	49	45	42	40	37	36	34	32	31				
5000	Air Flow Speed [m/s]		6.9	4.6	3.5	2.8	2.3	2.0	1.7	1.5	1.4	1.3	1.2	1.1		
	Pressure Drop [Pa]		55	44	38	33	30	28	26	24	23	22	21	20		
	Sound Level [dB(A)]		59	54	50	46	44	42	40	38	37	35	34	33		
6000	Air Flow Speed [m/s]		8.3	5.6	4.2	3.3	2.8	2.4	2.1	1.9	1.7	1.5	1.4	1.3	1.2	1.1
	Pressure Drop [Pa]		60	49	42	37	33	31	29	27	25	24	23	22	21	20
	Sound Level [dB(A)]		63	57	53	50	47	45	43	41	40	39	37	36	35	34
7000	Air Flow Speed [m/s]		9.7	6.5	4.9	3.9	3.2	2.8	2.4	2.2	1.9	1.8	1.6	1.5	1.4	1.3
	Pressure Drop [Pa]		66	53	45	40	36	33	31	29	28	26	25	24	23	22
	Sound Level [dB(A)]		66	60	56	53	50	48	46	44	43	41	40	39	38	37
8000	Air Flow Speed [m/s]		11.1	7.4	5.6	4.4	3.7	3.2	2.8	2.5	2.2	2.0	1.9	1.7	1.6	1.5
	Pressure Drop [Pa]		71	57	49	43	39	36	33	31	30	28	27	26	25	24
	Sound Level [dB(A)]		68	62	58	55	52	50	48	47	45	44	43	42	40	40
9000	Air Flow Speed [m/s]			8.3	6.3	5.0	4.2	3.6	3.1	2.8	2.5	2.3	2.1	1.9	1.8	1.7
	Pressure Drop [Pa]			60	52	46	42	38	36	33	32	30	29	27	26	25
	Sound Level [dB(A)]			64	60	57	55	52	51	49	47	46	45	44	43	42
10000	Air Flow Speed [m/s]			9.3	6.9	5.6	4.6	4.0	3.5	3.1	2.8	2.5	2.3	2.1	2.0	1.9
	Pressure Drop [Pa]			64	55	49	44	40	38	35	33	32	30	29	28	27
	Sound Level [dB(A)]			66	62	59	57	54	53	51	49	48	47	46	45	44
12500	Air Flow Speed [m/s]			11.6	8.7	6.9	5.8	5.0	4.3	3.9	3.5	3.2	2.9	2.7	2.5	2.3
	Pressure Drop [Pa]			72	62	55	50	46	42	40	38	36	34	33	31	30
	Sound Level [dB(A)]			71	66	63	61	59	57	55	53	52	51	50	49	48
15000	Air Flow Speed [m/s]				10.4	8.3	6.9	6.0	5.2	4.6	4.2	3.8	3.5	3.2	3.0	2.8
	Pressure Drop [Pa]				68	60	55	50	47	44	42	39	38	36	35	33
	Sound Level [dB(A)]				70	67	64	62	60	58	57	56	54	53	52	51
17500	Air Flow Speed [m/s]					9.7	8.1	6.9	6.1	5.4	4.9	4.4	4.1	3.7	3.5	3.2
	Pressure Drop [Pa]					66	59	55	51	48	45	43	41	39	38	36
	Sound Level [dB(A)]					70	67	65	63	61	60	58	57	56	55	54
20000	Air Flow Speed [m/s]					11.1	9.3	7.9	6.9	6.2	5.6	5.1	4.6	4.3	4.0	3.7
	Pressure Drop [Pa]					71	64	59	55	51	49	46	44	42	40	39
	Sound Level [dB(A)]					72	69	67	65	64	62	61	60	58	57	56

PRODUCT SELECTION

Sample Selection 1:

Example: In a system, 2500 m3/h air flow will be exhausted. Pressure loss should be less than 50Pa and sound power level should be less than 40DB. Make the product selection.
Solution: From the performance data table, the performance data is evaluated according to the area at an air flow rate of 2500m3/h. Accordingly, the velocity corresponding to 0.4m2 is 1.7m/s, the pressure loss is 26Pa, and the sound power level is 37dB. Flow areas table is used within the dimensions that can be selected in the size of 0.4m2. The product is chosen as 800x500mm.

Sample Selection 2:

Example: In a system, an air flow of 2500m3/h will be exhausted. Make the product selection.
Solution: The quick selection table is used to select a standard non-return damper. Accordingly, 900x500, 800x600 or 1200x400 selections can be made from the quick selection table. For the performance data of the 800x600 sized product, the flow area is first found 0.48m2 by using the flow areas table. From the performance data table, values between 0.4m2 and 0.5m2 are interpolated for an air flow rate of 2500m3/h and the result is obtained. Accordingly, the speed is 1.5m/s, the pressure loss is 25Pa, and the sound power level is 36dB[A].

PRODUCT ORDER CODE

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

VKG . < A >. MEK .< B >.< C >. < D >. < E >

A	**Material**	
	ALM	Aluminum
	GAL	Galvanized
B	**Type**	
	ST	Without Balance Weight
	01	With Balance Weight
C	**Width (W) [mm]**	
	0000	Standard Sizes
D	**Height (H) [mm]**	
	0000	Standard Sizes
E	**Paint**	
	00	Unpainted
	S1	Standard Painted - RAL 9010
	S2	Standard Painted - RAL 9016
	XX	Special Painted

Sample Codding: VKG.ALM.MEK.ST.1000.0800.S1

NOTES


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180 different types of products.
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