

ACV  
RECTANGULAR CONSTANT  
AIR VOLUME DEVICE

**FOUR  
SEASONS**<sup>®</sup>

is a registered trademark of  
Doğu İklimlendirme A.Ş.

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 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 2 factories, in total area of 45.000 sqm in which 25.000 sqm indoor space that enables DOGU HVAC manufactures 130 various type of products. Additionally, DOGU HVAC has a powerful sales network with 3 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 40 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.



- ACV - Rectangular Constant Air Volume Device is used in Rectangular ducts for air flow control in projects with special requirements such as operating rooms, clean rooms, special processes and similar comfort and hygiene.
- Air flow control is used in ventilation applications and in fixing air flow rate in every room.
- The desired air flow rate can be easily calibrated on the device with the help of an allen key.
- Used to adjust the pressure in the air duct between 20 Pa and 1000 Pa.
- All CAV devices produced are calibrated in the HVAC calibration laboratory according to the flow rates specified in the order. In this laboratory, calibration is completed by testing one-to-one field conditions with 7 measuring stations, each with different diameter and nominal flow.
- ACV does not require any power input as it is a completely mechanical system. Constant air flow rate is based on compensating the pressure changes in the system. Depending on the pressure in the duct, when the air flowrate decreases, the torque acting on the wing of the ACV decreases and the wing opens. With the opening of the wing, the air flow through the duct increases and returns to the calibration value. Conversely, when the air flowrate increases, the torque acting on the blade increases and the wing closes. With the closing of the wing, the air flowrate through the duct decreases and returns to the calibration value. The mechanism, which is precisely designed with a calibration spring according to the position of the wing, ensures successful operation of the ACV with a 10% deviation rate at the calibrated flowrate.
- ACV has a specially designed air viscous piston to minimize the blade oscillations caused by increased turbulence at high pressures.

## MATERIAL

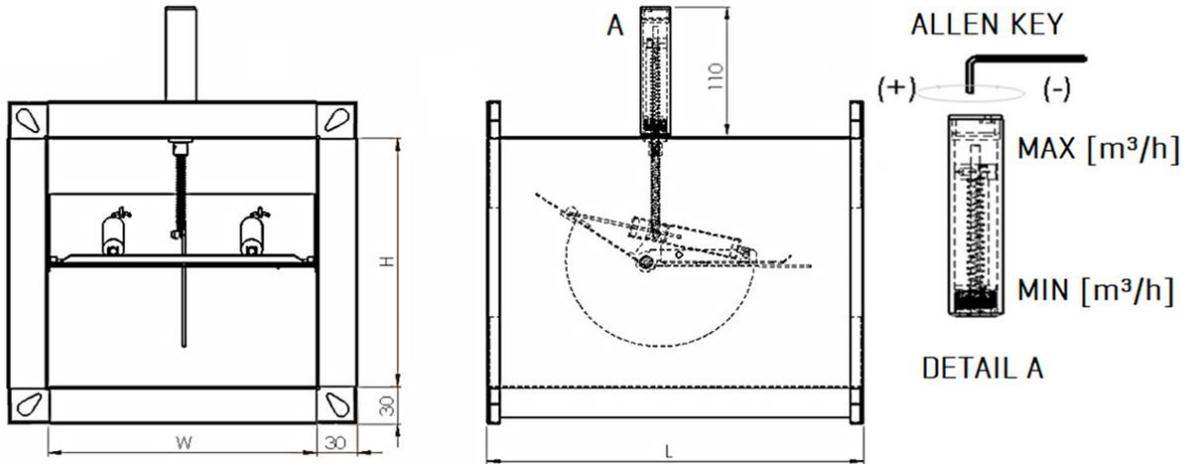
- The casing is manufactured from galvanized steel sheet as standard. AISI 304 quality stainless case option is available.
- Blades and air-viscous piston made of aluminium.
- Plastic tube for airflow calibration
- Stainless steel calibration spring.
- Standard duct sealing
- Blade shaft is AISI 304 stainless, shaft bush is PTFE plastic.

## ACCESSORY

- **Acoustic Insulation:** In order to fulfill the acoustic comfort conditions in the selected product, it is insulated with an optional 19 mm thick foamed rubber. Rubber is surrounded by galvanized sheet metal.

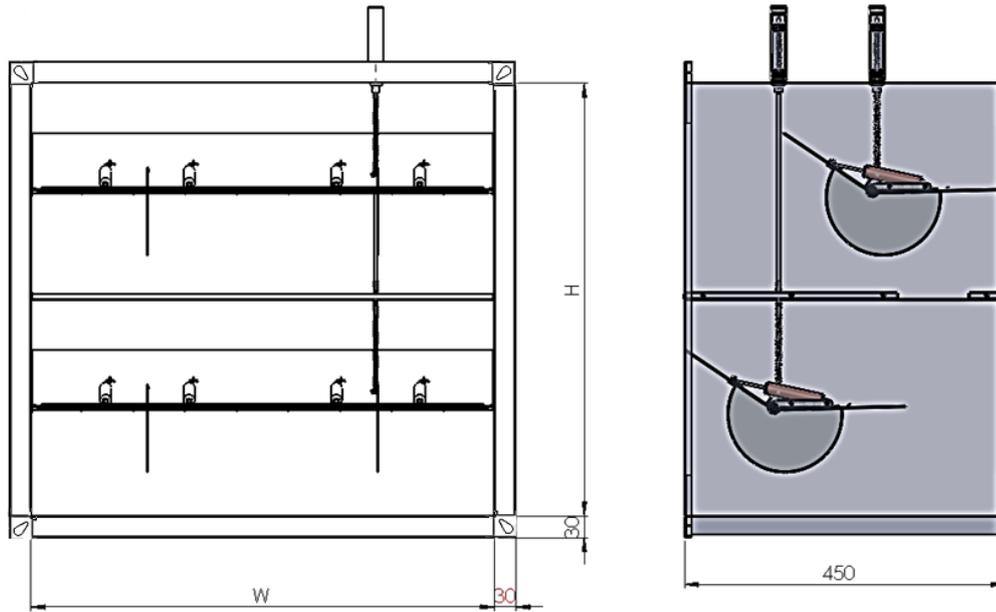
## STANDARD DIMENSIONS

W<700 and H<550

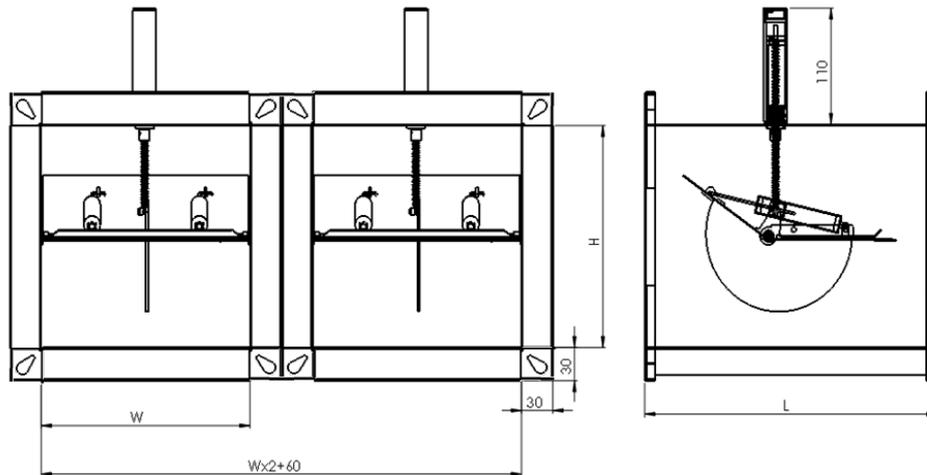


Order Dimension [mm]	W [mm]	H [mm]	L [mm]	Vmin [m <sup>3</sup> /h]	Vmax [m <sup>3</sup> /h]
ACV-100x100	100	100	200	110	360
ACV-150x100	150	100	200	160	540
ACV-200x100	200	100	200	210	720
ACV-150x150	150	150	200	240	810
ACV-200x150	200	150	200	320	1080
ACV-300x150	300	150	200	480	1620
ACV-200x200	200	200	250	430	1440
ACV-300x200	300	200	250	650	2160
ACV-400x200	400	200	250	860	2880
ACV-300x300	300	300	350	970	3240
ACV-450x300	450	300	350	1460	4860
ACV-600x300	600	300	350	1950	6480
ACV-600x450	600	450	500	2920	9720

W<700 and H≥550



W≥700 and H<550



## PERFORMANCE DATA

### VELOCITY & MINIMUM PRESSURE DROP DATA

Air Velocity [m/s]	Pressure Drop [Pa]
3	70
4	75
5	80
6	100
7	120
8	140
9	175
10	210

In the table on the right, data of the minimum pressure drop to be made by ACV according to the air velocity in the duct is given.

**Example:** For minimum pressure drop for 200x200 ACV 600 m<sup>3</sup>/h flow rate:

Duct cross section = 0.04 m<sup>2</sup>

Duct speed = 4.16 m / s

Minimum pressure loss at the desired flow = 75.8 Pa

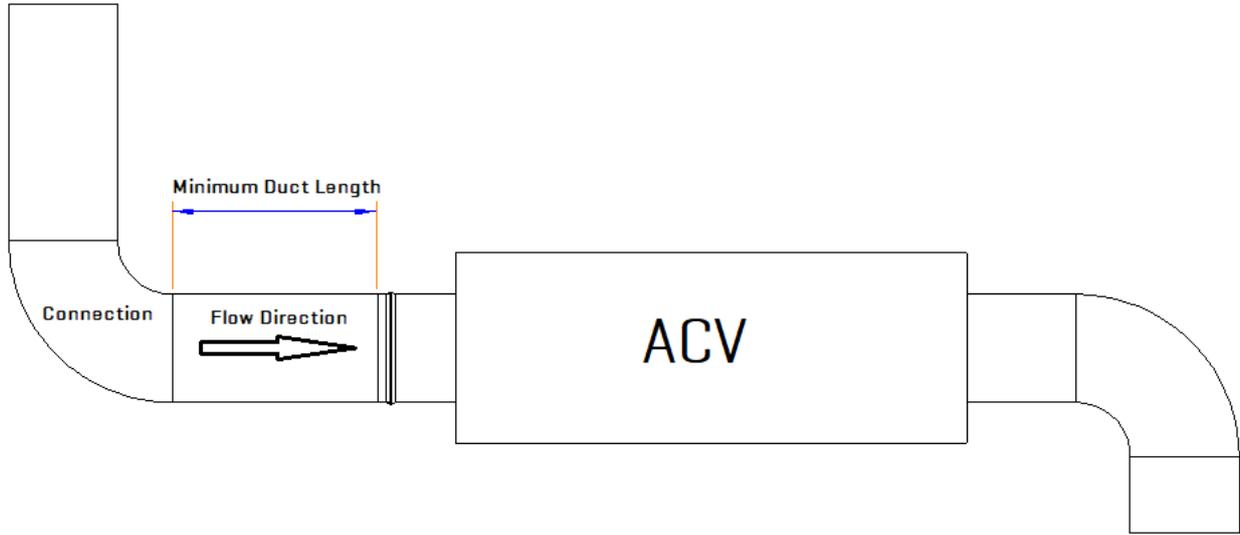
## NOISE DATA

Dimension [mm]	Air Velocity [m/s]	Flow Rate [m <sup>3</sup> /h]	Sound Pressure Level[dB(A)]			Noise Generation From Casing [dB(A)]	
			Pressure Difference [Pa]			Without Insulation	With Insulation
			100	200	500		
200x100	3	220	36	43	48	29	21
	6	440	42	49	54	36	29
	9	650	43	50	55	40	31
250x100	3	275	40	46	51	40	37
	6	550	43	50	55	32	24
	9	810	44	51	56	39	30
150x150	3	250	36	43	48	29	21
	6	490	42	49	54	36	27
	9	730	43	50	55	40	33
300x150	3	490	41	48	53	44	37
	6	980	43	50	55	32	25
	9	1460	44	51	56	39	32
200x200	3	440	41	48	53	44	37
	6	870	43	50	55	32	24
	9	1300	44	51	56	39	30
300x200	3	650	42	49	54	37	30
	6	1300	44	51	56	41	32
	9	1950	45	52	57	44	37
400x200	3	870	39	46	51	28	20
	6	1730	41	48	53	33	26
	9	2600	42	49	54	36	28
300x300	3	980	41	48	53	36	28
	6	1950	41	48	53	41	32
	9	2920	42	49	54	43	36
450x300	3	1460	41	48	53	36	29
	6	2920	41	48	53	41	33
	9	4380	42	49	54	43	35
600x300	3	1950	38	45	50	38	29
	6	3890	38	45	50	41	34
	9	5840	39	46	51	45	38
600x450	3	2920	39	46	51	40	32
	6	5840	42	49	54	42	34
	9	8750	42	49	54	46	37

**Note:** The data were calculated and obtained according to the VDI 2081 standard.

## INSTALLATION

Considering the air flow direction arrow on the ACV, it is mounted to the rectangular duct. For duct connections such as elbows, branches and reductions must comply with EN 1505 design.



Connection	Minimum Duct Length
Bend	1 x D
Other duct equipment [ Tshaped connection, reduction etc.]	2 x D
Fire Damper	2 x D
Silencer	2 x D

**Note:** D = Biggest ACV order dimension length [Width[mm] or H[Height[mm]]]

## ORDER CODE

ACV.< A >.KG.< B >.< C >.< D >

A	Material Type	
	GAL	Galvanized
	PAS	AISI 304 Stainless Steel
B	Insulation	
	00	Without Insulation
	04	Acoustic Insulation
C	Width [W] [mm]	
	0000	Standard Dimensions
D	Height [W] [mm]	
	0000	Standard Dimensions

**Example:** ACV.GAL.KG.00.0200.0200



We make the difference with  
130 different types of products.



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