

# JAWAR



## JAWAR **ATMO**

discover ventilation again!

### MECHANICAL VENTILATION



# Discover ventilation again!

## About ventilation

Each of us needs fresh air to live. Every day, people inhale and exhale about 10,000 liters of air. For this purpose, the oxygen contained in the air is used, and the carbon dioxide is exhaled. Moreover, the exhaled air contains water vapor. Moisture is also excreted by our bodies through the skin - in the process of sweating. In addition to the human body, there are other sources of moisture in the house: water evaporates during bathing and cooking. To ensure adequate comfort and health in the apartment, efficient ventilation should work, which will provide us with fresh air, and remove used air and excess moisture.

- In accordance with the logic of the building's operation, as well as with the regulations, fresh air should be blown into the rooms where people spend most of their time, and it should be vented from the rooms with the highest amounts of moisture and unpleasant odors.

Rooms to which we supply fresh air:	Rooms from which we remove used air:
Living room	Kitchen / pantry
Bedrooms	Bathroom / toilet
Corridors and staircases	Dressing room

Thanks to this arrangement, fresh air flows into the living rooms first, then, through e.g. door cuts, it moves to rooms such as kitchens and bathrooms, and then it is removed by ventilation.

- Malfunctioning ventilation causes many problems. Those visible include: mold and fungus formation, moisture condensation on windows and other surfaces.
- Lack of sufficient oxygen in the air also results in a deterioration of comfort and well-being, the symptoms of which are: fatigue, frequent headaches, allergies, and respiratory diseases.
- On the other hand, the excess of exchanged air results in heat loss and cooling of the apartment. Therefore, we should provide an adequate amount of ventilated air that is neither too much nor too little.

Two basic types of ventilation are commonly known:

### natural ventilation

Natural ventilation is based on the installation of vertical exhaust ducts which, by gravity, remove used (warmer) air from the apartment. Fresh air, on the other hand, is supplied through leaks in windows and doors. This is how ventilation has worked for ages. Unfortunately, nowadays, looking for better thermal insulation of buildings, we install very tight windows and doors, so that gravity ventilation does not work. This problem can be solved by using e.g. window air inlets, but then we are dealing with considerable heat losses in the apartment.

### mechanical ventilation

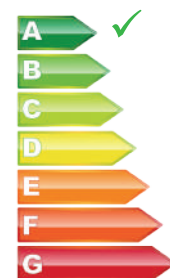
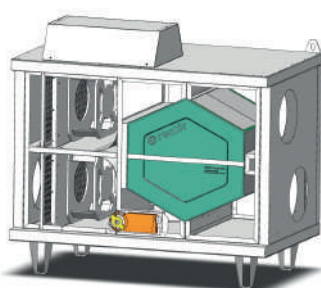
Mechanical ventilation works by means of an air handling unit which mechanically blows fresh air through the inlet ducts, and draws out used air through the exhaust ducts. Air handling units are usually equipped with heat exchangers, which collect heat from the used air and heat the supplied air from the outside. This helps to reduce heat loss caused by ventilation. Air handling units also allow fresh air to be filtered, which prevents particles from entering the apartment. Unfortunately, the mechanical ventilation solutions available on the market are very complicated and therefore expensive to install and maintain.

JAWAR, based on its many years of experience, has created a system that allows you to combine the best features of both systems - a simple structure based on vertical ducts, as in natural ventilation, and efficiency and economy as in mechanical ventilation. This is how the JAWAR ATMO system was created.

# JAWAR ATMO

## air handling units – technical data

Feature		Unit	Performance			
1.	<b>Unit type</b>	R	200	250	350	450
2.	Maximum flow rate	m <sup>3</sup> /h	256	410	510	795
3.	Pressure at nominal flow	Pa	120	235	250	300
4.	Energy consumption	W	88-120	32-175	11-175	44-320
5.	Power supply	V	230	230	230	230
6.	Outlet diameter	mm	125	125	160	160
7.	Length/Width/Height	mm	760/280/650	800/380/650	800/480/650	800/580/650
8.	Weight	kg	32	36	43	54
9.	Filter class	-	G4	G4	G4	G4
10.	Outlet arrangement	-	horizontal	horizontal	horizontal	horizontal
11.	SEC in average climate conditions	kWh/m <sup>2</sup> /yr	-31,44	-34,05	-38,58	-39,46
12.	SEC in cold climate conditions	kWh/m <sup>2</sup> /yr	-69,04	-71,66	-76,19	-77,07
13.	SEC in warm climate conditions	kWh/m <sup>2</sup> /yr	-7,27	-9,88	-14,41	-15,29
14.	SEC class (average climate conditions)	-	B	A	A	A
15.	Declared type	-	two-way			
16.	Motor & drive	-	3-speed fan	Variable speed fan		
17.	Heat recovery type	-	membrane			
18.	Efficiency acc. to UE 1254/2014, dT=13°C, SWM	%	85	85,1	85,3	85,3
19.	Power input at max air flow	W	119,7	173,2	174,1	318,9
20.	Sound power level	dB (A)	43-55	36-57	36-58	36-60
21.	Reference flow rate	m <sup>3</sup> /s	0,08	0,09	0,09	0,09
22.	Reference pressure difference	Pa	50	50	50	50
23.	Specific Power Input	W/(m <sup>3</sup> /h)	0,49	0,39	0,22	0,19
24.	Ventilation control	-	0,85; central demand control			
25.	Maximum internal leak	%	2	2	2	2
26.	Maximum external leak	%	3	3	3	3
27.	Clogged filter warning	-	Yes	Yes	Yes	Yes
28.	Annual heating saved in average climate conditions	kWh/m <sup>2</sup>	44	44	45	45
29.	Annual heating saved in cold climate conditions	kWh/m <sup>2</sup>	88	88	88	88
30.	Annual heating saved in warm climate conditions	kWh/m <sup>2</sup>	20	20	20	20
31.	Annual energy consumption (RZE)	kWh/m <sup>2</sup>	5,67	4,63	2,81	2,46

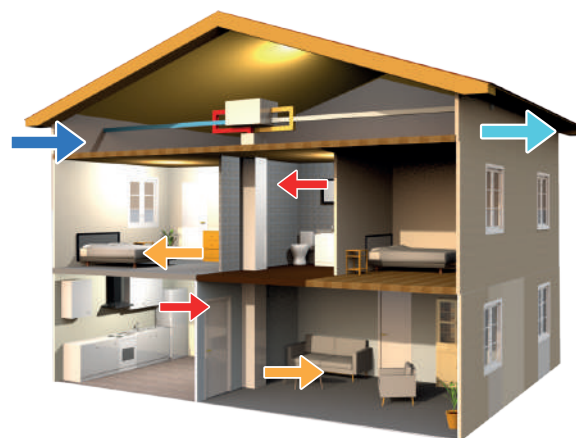
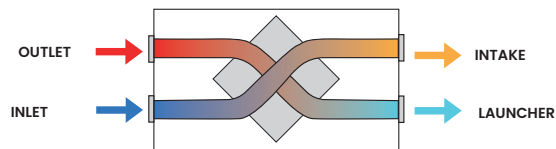


# Jawar ATMO

Jawar ATMO is a new system of ventilation with heat exchange. Its way of operation is based on supplying fresh air and exhausting used air through vertical channels made of lightweight perlite-concrete, which lead to the central ventilation unit placed in the attic or basement.

## WHAT IS ATMO?

- ▶ Jawar ATMO ventilation system is energy efficient apartment ventilation. It removes used air from the house and supplies fresh filtered air mechanically. Jawar ATMO is equipped with a recuperator, which is exchanging heat between the used and fresh air. As a result, a preheated and filtered fresh air is supplied to the apartment through vertical perlite-concrete channels.
- ▶ Ventilation blocks made from lightweight perlite-concrete are distinguished by excellent thermal insulation, which results in little heat loss in the system. Special properties of perlite allow quiet work of the system. Easy installation of the blocks results in low costs of the investment.
- ▶ ATMO is an optimal solution in terms of costs and functionality. For a lower price, the user receives a system with comparable energy efficiency and capacity and a simple installation.



Properties	Natural ventilation	Mechanical ventilation	Jawar ATMO
Operation in a modern sealed house	×	✓	✓
System air inlet	×	✓	✓
Ventilation control	×	✓	✓
Heat recovery	×	✓	✓
Air filtering	×	✓	✓
Comfort of use	×	✓	✓
Installation without additional ceiling	✓	×	✓
Easy and fast installation	✓	×	✓
Low cost of installation	✓	×	✓
Easy cleaning of ducts	✓	×	✓
Silent operation	✓	×	✓
Quick return on investment	×	×	✓



# ATMO – how it works?

Jawar ATMO is a mechanical ventilation system with heat exchange. It exhausts used air from the apartment and supplies fresh air, which is preheated and filtered. Jawar ATMO consists of 3 basic modules:

## Module 1 – central unit and steering

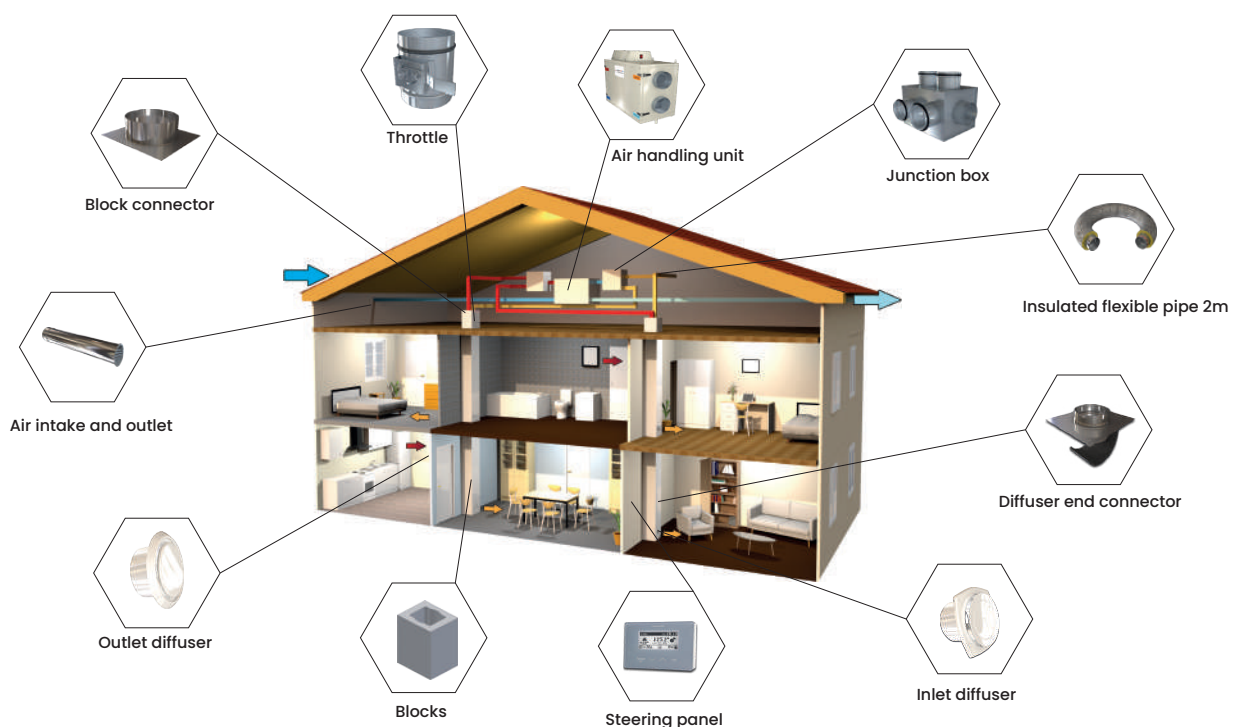
- ▶ Jawar central air handling unit is an electrical device equipped with a highly efficient heat exchanger, fans ensuring air outflow/inflow and a system of exchangeable filters. The central ventilation unit should be placed in the attic or in the basement;
- ▶ Steering panel can be placed in anywhere in the apartment, like in the living room or bedroom; with the panel you can adjust the power of the fans to get the desired comfort in the house;

## Module 2 – vertical channels

- ▶ Channels made from lightweight perlite-concrete ensure quiet operation and good thermal insulation of the system; they are placed within the inner walls of the house and are responsible for transport of fresh and used air between the rooms and the central ventilation unit; an advantage of using this kind of channels is that you don't need to hang ventilation pipes under the ceiling or in the floor; the number of channels is dependent on the number of rooms that you need to ventilate;
- ▶ Inlet/outlet diffusers – they are placed in the inlet/outlet of the vertical channels in the rooms and allow adjustment of the amount of air that we want supplied/exhausted in the room;

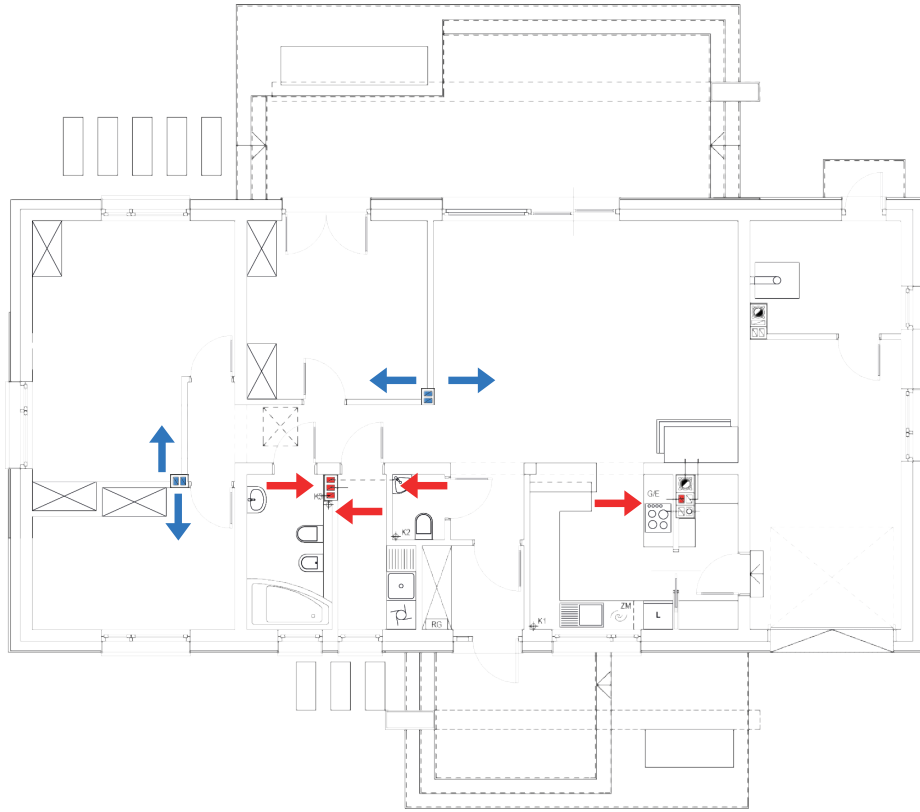
## Module 3 – horizontal installation

- ▶ Intake and launcher – intake allows supplying the air from outside to the central ventilation unit, and the launcher allows exhausting used air from the central unit to the outside; the intake and launcher can be placed in the upper parts of the outside walls or in the roof; the ATMO system is standard equipped with wall intake and launcher; in case of the need to go through the roof we recommend to use standard parts of the roofing system; the intake and launcher are connected to the central ventilation unit through flexible insulated ducts;
- ▶ Junction boxes – allow to separate the air going from the central ventilation unit to individual vertical channels, as well as connecting air coming from different vertical channels towards the central ventilation unit;
- ▶ Throttles – allow to adjust the air stream depending on the function of each room;
- ▶ Ducts connecting vertical channels with the central ventilation unit – the vertical channels are connected in the attic or basement with the central ventilation unit (through the junction boxes) with flexible insulated ducts; ducts are ended with system connectors; Jawar ducts make the system installation fast and easy.

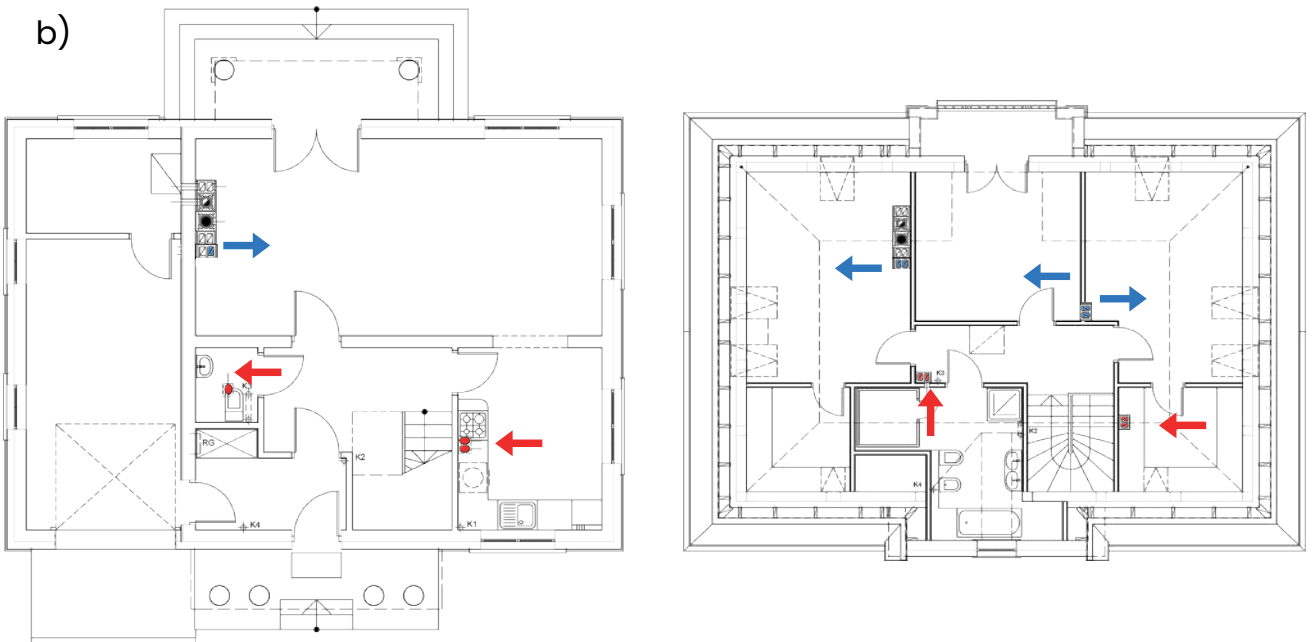


# Examples of project adaptation

a)



b)



■ Outlet ducts

■ Inlet ducts

# JAWAR ATMO price list

Main package		RR200	RR250	RR350	RR450
Set	EUR	1287	1906	2331	2706

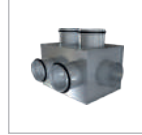
Set consists of:



Air handling unit



Steering panel



Junction box



Siphon



Silicone



Air intake and outlet



Insulated flexible pipe 2m 6pcs

Total height						
Inlet ducts	3m	4m	5m	6m	7m	8m
	EUR	EUR	EUR	EUR	EUR	EUR
1	81	90	98	106	114	123
2	163	180	196	213	229	246
3	245	270	294	319	344	369
4	327	360	393	426	459	492
5	408	450	491	532	573	615
6	490	540	589	639	688	738

Set consists of:



Inlet diffuser



Diffuser end connector



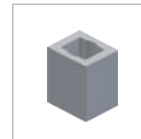
Insulated flexible pipe 2m



Throttle



Block connector



Blocks

Total height						
Outlet ducts	3m	4m	5m	6m	7m	8m
	EUR	EUR	EUR	EUR	EUR	EUR
1	81	90	98	106	114	123
2	163	180	196	213	229	246
3	245	270	294	319	344	369
4	327	360	393	426	459	492
5	408	450	491	532	573	615
6	490	540	589	639	688	738

Set consists of:



Outlet diffuser



Diffuser end connector



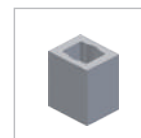
Insulated flexible pipe 2m



Throttle



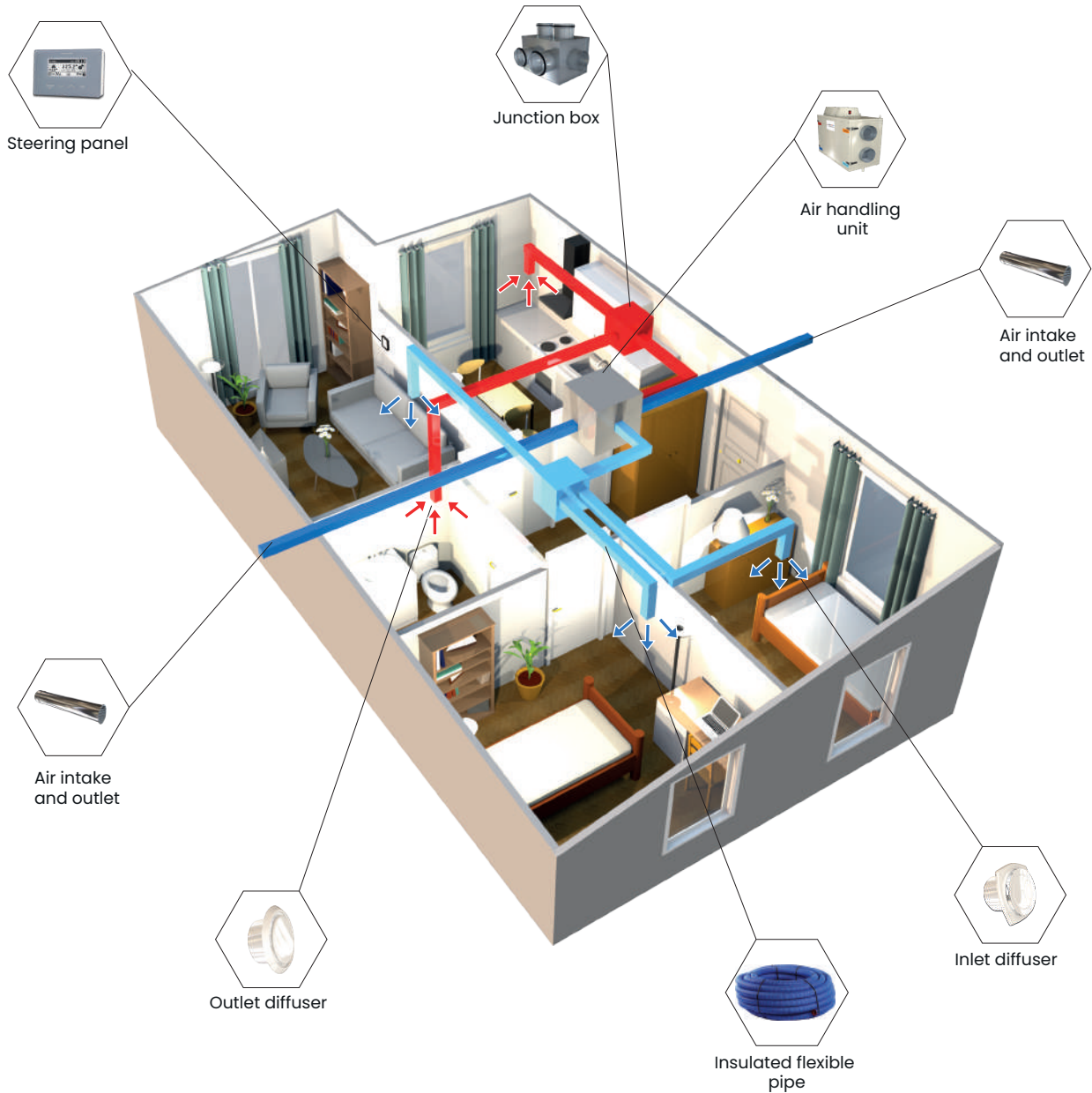
Block connector



Blocks

# JAWAR classical mechanical ventilation

Sometimes the construction of a building does not allow the installation of vertical ducts and the JAWAR ATMO system. JAWAR also offers solutions for classic mechanical ventilation. The classical JAWAR mechanical ventilation system is based on JAWAR recuperators and Vent-Flex pipes. It ensures easy and quick installation, high tightness of the system, very good heat recovery parameters and high comfort of use.



Example price list for ventilation system including JAWAR air handling unit and Vent-Flex pipes.

Recuperator power	Inlet ducts/Outlet ducts											
	2in+2out	3in+2out	3in+3out	4in+3out	4in+4out	5in+4out	5in+5out	6in+5out	6in+6out	7in+6out	7in+7out	8in+7out
R200	1486	1587	1691	1796	1930	2051	2142	-	-	-	-	-
R250	1820	1893	2027	2131	2265	2389	2482	2663	2844	-	-	-
R350	-	-	2191	2297	2431	2565	2651	2854	3055	3236	3419	-
R450	-	-	-	-	2734	2860	2953	3157	3358	3557	3754	3873

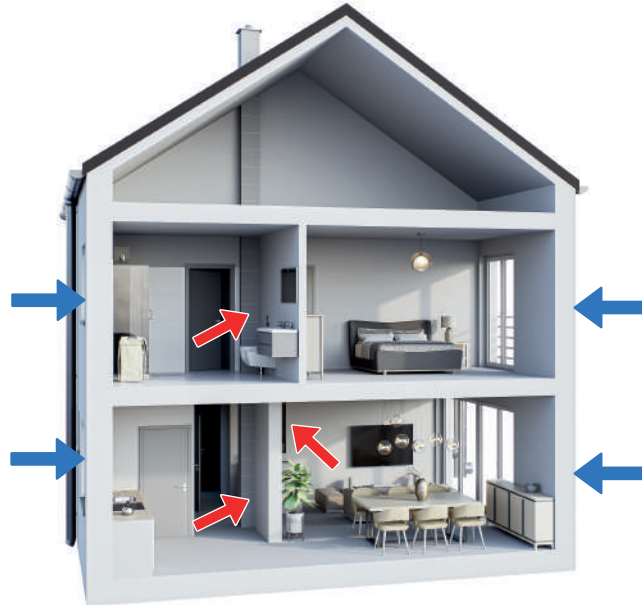
\*The price list should be treated as an average value for a given solution. The final valuation is based on the technical documentation of the mechanical ventilation system, taking into account all points of the project. The price list does not include the cost of assembly work.



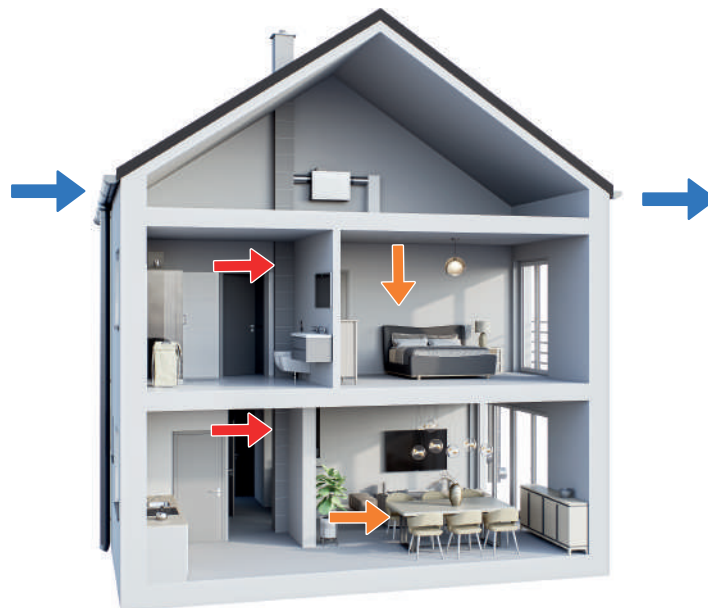
# Mechanical ventilation restoration system – product description

Stuffy at home? Moisture problems? Gravity ventilation is not working? Mechanical ventilation can also be installed in the existing building. It does not always require a major restoration and house reconstruction. Thanks to JAWAR products, it is possible to renovate ventilation in an existing building and install mechanical ventilation with heat recovery.

before



after



Ventilation restoration should begin with a thorough feasibility study and design. First, the location of the central air handling unit should be set. In the case of restoration, the best solution is to place it in an unused part of the attic. Thanks to this location, it will be possible to supply air from the air intake and to the launcher, which can be located in the roof or in the gable walls of the building. Using an unused attic, we can also easily distribute air to / from rooms located directly below it.

Ventilation of the rooms on the lower storey is a bigger challenge, if it is a two-storey house. In this case, it is necessary to use the existing gravity ventilation ducts that lead from the kitchen, toilet or other rooms.

These canals can be connected to the recuperator in the attic. On the ground floor, they can be branched to ventilate as many rooms as possible.

When designing mechanical ventilation, we try to ensure that every room has an air supply or exhaust air valve. This will not always be possible in the case of restoration. This does not mean that such a project does not make sense. Any improvement in the operation of ventilation will be felt by increasing the comfort of living in the apartment and savings in heating.

# Price list JAWAR ATMO accessories

L.p.	Name	Index	Price
1.	Main package Atmo 180 (incl. air handling unit)	RPG180	1286,75
2.	Main package Atmo 250 (incl. air handling unit)	RPG250	1906,00
3.	Main package Atmo 350 (incl. air handling unit)	RPG350	2331,00
4.	Main package Atmo 450 (incl. air handling unit)	RPG450	2706,00
5.	Air handling unit JAWAR R200 – 3 gear control	RR200	853,50
6.	Air handling unit Jawar R250	RR250	1219,25
7.	Air handling unit Jawar R350	RR350	1321,00
8.	Air handling unit Jawar R450	RR450	1585,00
9.	Junction box ATMO 2 connections	RSR	75,00
10.	Junction box ATMO 4 connections	RSR4	90,50
11.	Junction box ATMO 6 connections	RSR6	95,00
12.	Insulated flexible pipe ATMO 125mm 2m	RR1125/2	20,00
13.	Insulated flexible pipe ATMO 160mm 2m	RR1160/2	24,00
14.	Insulated flexible pipe ATMO 125mm 4m	RR1125/4	40,00
15.	Insulated flexible pipe ATMO 160mm 4m	RR1160/4	48,00
16.	Insulated flexible pipe 125-10mb	RR1125/10	78,75
17.	Insulated flexible pipe 160-10mb	RR1160/10	88,75
18.	Vent-flex duct DN	SK01/75	3,00
19.	Diffuser end connector	RPA	12,50
20.	Diffuser middle connector	RPAS	9,37
21.	Diffuser connector 1/75/125	SK 1x75/125	22,00
22.	Diffuser connector 2/75/125	SK 2x75/125	24,75
23.	Diffuser connector 3/75/125	SK 3x75/125	34,50
24.	Diffuser connector 1/75/125 with passage	SK 1x75/125P	27,00
25.	Diffuser connector 2/75/125 with passage	SK 2x75/125P	27,00
26.	Diffuser connector 3/75/125 with passage	SK 3x75/125P	34,00
27.	Block connector	RPP	9,50
28.	Silicone	JSK	6,50
29.	Siphon	RS	3,00
30.	Throttle Atmo	RP	8,75
31.	Perlite block 1-duct 20x24x33	PP1W	2,75
32.	Perlite block 2-duct 36x24x33	PP2W	5,50
33.	Perlite block 3-duct 52x24x33	PP3W	8,25
34.	Perlite block 1-duct 68x24x33	PP4W	11,00
35.	Muff 125mm	RM125	3,75
36.	Muff 160mm	RM160	4,50
37.	Y-pipe 125mm	RTY125	12,50
38.	Y-pipe 160mm	RTY160	16,25
39.	K-flex blanket	RMAT	7,50
40.	Elbow 90/125mm	RKO125	10,00
41.	Elbow 90/160mm	RKO160	12,50
42.	Duct packet inlet/outlet R200/R250	RPNW125	110,00
43.	Duct packet inlet/outlet R350/R450	RPNW160	140,00

44.	Flat junction box 8x75/160	SK 8x75/160	112,50
45.	Flat junction box 10x75/160	SK 10x75/160	115,00
46.	Flat junction box 12x75/160	SK 12x75/160	135,00
47.	Flat junction box 14x75/160	SK 14x75/160	151,00
48.	Flat junction box 16x75/160	SK 16x75/160	164,25
49.	Flat junction box 18x75/160	SK 18x75/160	170,00
50.	Offset 2x75	SK 2x75 typ A	71,75
51.	Plug	SK05/75	1,25
52.	Pipe connector	SK03/75	1,75
53.	Intake/launcher set 125	RCWK125	26,25
54.	Intake/launcher set 160	RCWK160	131,25
55.	Inlet diffuser 125	RAN	6,25
56.	Outlet diffuser 125	RAW	6,25
57.	Adapter 160/125, 125/160	DPO17/160	7,50

## FAQ – Frequently asked questions

### How much air do I need in my house?

To ensure the comfort of use of the apartment, both an exhaust of used air and a supply of fresh air should be provided. These values should be balanced. According to the regulations, we are obliged to extract air from the following rooms:

- ▶ kitchen (50–70 m<sup>3</sup> / h, depending on the type of kitchen)
- ▶ bathroom (50 m<sup>3</sup> / h)
- ▶ toilet (30 m<sup>3</sup> / h)
- ▶ closed rooms, such as a wardrobe or pantry (15 m<sup>3</sup> / h).

The sum of air flowing from the above rooms gives us the sum of the exhaust air. The amount of supplied air should be equal to it, but not lower than 20 m<sup>3</sup> / h per person permanently living in the house. The amount of air should be properly calculated. If its values are too low, the comfort of using the apartment will decrease. On the other hand, too high amount of exchanged air can lead to excess heat losses, even in the case of heat recovery.

### On what stage should the ventilation be designed?

The sooner the better. Designing ventilation at the building design stage will save us additional work in the future. However, if we have designed, for example, gravity ventilation and we have already received a construction permit, we can still adapt the project to the needs of JAWAR ATMO. It is not a significant change and we do not require changes in the building permit. All you need is an executive design and agreeing this change with the construction site manager.

### What documents should I prepare to have the project designed?

The following should be sent for adaptation of the project:

- ▶ floor plans of all floors
- ▶ side views of the building
- ▶ sections
- ▶ plot development plan

### How should the air handling unit room be prepared?

The air handling unit should be located in an insulated room where the temperature will be higher than 5 °C and the humidity will be lower than 60%. Access to the recuperator for servicing should be provided. The investor should also not forget to install an electric socket (230V) and to drain the condensate to the sewage system.

### Where should the mechanical ventilation not be installed?

According to the regulations, mechanical ventilation is not used in rooms such as garage and boiler room. Natural ventilation should be designed there. If you have a fireplace in the living room, mechanical ventilation may be designed there, but you should remember to provide independent air supply for combustion.

### How to maintain JAWAR ATMO?

- ▶ Periodic replacement of filters – filters can be replaced by yourself; the frequency of replacement depends on the intensity of use of the system and the cleanliness of the air in the area. Usually it is needed 1–2 times a year. The Jawar ATMO system controller informs about filter clogging;
- ▶ First filter replacement – 7 days from the installation of the recuperator. If renovation and construction works are still in progress after installing and starting the recuperator, the filters should be replaced every 7 days;
- ▶ Cleaning the exchanger – this activity can also be performed by yourself; it is enough to remove the plastic exchanger from the air handling unit, wash it under running water in a bowl or tub, then dry it and reinstall it; it is best to do this twice a year;
- ▶ Inspection of the installation every 3 years; in order to ensure adequate patency and cleanliness of the ventilation ducts, we recommend that the installation be inspected every three years by a specialized installer.

**JAWAR**



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