

 GDYNIA	OPERATION AND SERVICE MANUAL	DTR AGB.08 v.4	STRONA
	HEATING DEVICE - AGB	2017	1/13

HEATER DEVICE

AGB



SERVICE

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GDYNIA, November 2017

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1. INTRODUCTION

The purpose of the DTR [operation and service manual] is to familiarize installers and users with the construction as well as correct servicing and operation of the AGB device. Prior to installing and operating the AGB device, you should read through this Technical and Maintenance Documentation and follow strictly the guidelines and recommendations contained herein. Non-compliance with the guidelines and recommendations contained in the Technical and Maintenance Documentation shall relieve the Manufacturer of guarantee-related liability. In case of any questions concerning transport, installation or operation, please contact KLIMOR sales or design department.



KLIMOR reserves the right to implement, without notice, the structural and material modifications resulting from product modernization and improvement.

2. TECHNICAL DATA AND APPLICATION

Heating device AGB is designed for heating and ventilation of commercial pavilions, workshops, industrial halls, warehouses and other similar objects. AGB works on the circulating air or mixed with fresh air. Heating medium of CuAl heater is hot water.

The device is not designed to work in an environment with temperature of air above 45°C and a relative humidity of over 60% or in the environment exposed to risk of explosion of inflammable gases and vapours that contain organic solvents and other aggressive substances.

The device is not designed to work in a room with dusty and polluted air. Dust in the air passing through the heater should not exceed 0,3 g/m³.

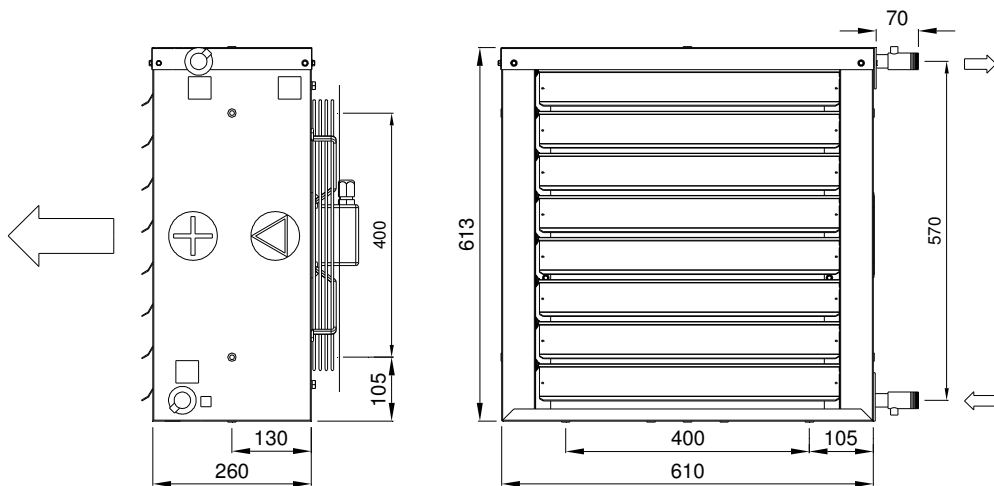


Fig No 1 AGB in horizontal version

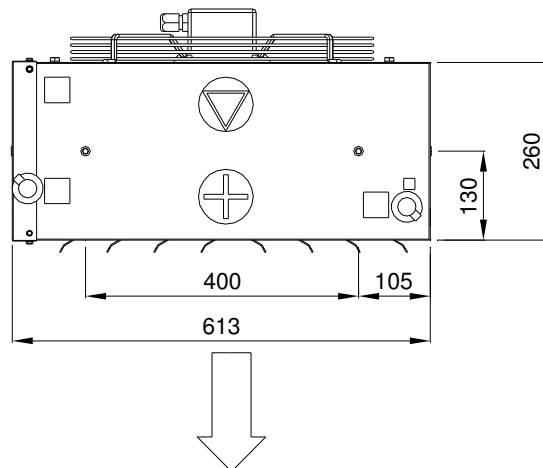


Fig No 2 AGB in vertical version

Tab No 1 Technical data

PARAMETERS	AGB1	AGB2
Air volume	4000 m ³ /h	3500 m ³ /h
Heater	1 - row	2 - rows
Max. heating power for medium 90/70°C	28 kW	47 kW
Difference temperature of air with medium 90/70°C	19K	43K
Max. medium temperature	110°C	
Max. medium pressure	1,0 MPa	
Heater connection	R ³ / ₄ "	
Heater capacity	1,2 dm ³	2,4 dm ³
Supply for fan	230V; 50Hz	
Fan motor power	240 W	
Fan engine IP	54	
Max. air stream range	20 m	
Noise level (in 5m)	53 dB(A)	
Weight (without medium)	26 kg	28 kg
Weight of mixing box	17 kg	

* Technical data AGB with mixing box ac. to pkt.9

Tab No 2 Heater parameters

One-row heater AGB 1 air volume 4000 m ³ /h					
Tw1/Tw2 [°C]	tp1 [°C]	tp2 [°C]	Q [kW]	Δp [kPa]	G [m ³ /h]
70/50	0	13,8	20,0	6,4	0,9
	5	17,6	18,4	5,3	0,8
	10	21,4	16,1	4,3	0,7
	15	25,1	14,2	3,4	0,6
	20	28,8	12,1	2,6	0,5
80/60	0	16,7	24,2	8,8	1,1
	5	20,6	22,1	7,5	1,0
	10	24,4	20,1	6,3	0,9
	15	28,2	18,1	5,2	0,8
	20	31,9	16,1	4,3	0,7
90/70	0	19,6	28,4	11,4	1,3
	5	23,5	26,3	10	1,2
	10	27,4	24,3	8,6	1,1
	15	31,2	22,3	7,4	1,0
	20	35	20,3	6,3	0,9
Two-rows heater AGB 2 air volume 3500 m ³ /h					
Tw1/Tw2 [°C]	tp1 [°C]	tp2 [°C]	Q [kW]	Δp [kPa]	G [m ³ /h]
70/50	0	28,2	33,3	8,1	1,5
	5	29,5	30,5	6,7	1,3
	10	32,1	27,1	5,4	1,2
	15	34,7	23,7	4,2	1
	20	37,2	20,4	3,2	0,9
80/60	0	32,3	40,9	11,2	1,8
	5	35,1	37,4	9,5	1,6
	10	37,8	34	8	1,5
	15	40,4	30,6	6,6	1,3
	20	43,0	27,3	5,3	1,2
90/70	0	37,8	47,8	14,7	2,1
	5	40,6	44,3	12,7	2
	10	43,4	40,9	11	1,8
	15	46,0	37,4	9,3	1,7
	20	48,7	34	7,9	1,5

Tw1 – supply water temperature
Tw2 – exhaust water temperature
tp1 – air in temperature
tp2 – air out temperature
Q – heater power
Δp – different water pressure
G – water volume flow

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3. CONSTRUCTION OF AGB DEVICE

Casing – self-supporting made from coated steel RAL 9010

Fan – axial, ensuring low noise level due to the shape of the rotor blades used. The fan has a protection grid with secured an access to the rotating parts.

Heater – water CuAl type with power of 28kW and 47kW, equipped with plugs for venting and trigger heating medium.

Directional blades – adjustable, providing air plane orientation.

Automatic system – optional equipment

Mixing box, mounting bracket – optional equipment.

4. AUTOMATION

Automatic system is an optional equipment


Complete automation system is:

- **2-way control valve with electromotor actuator** - controls heater work.
 - 2-way control valve R3/4" (kvs=6,5m³/h; temp. medium 2-95°C); electromotor actuator - supply 230V; IP20,
- **speed control for fan engine** – for enabling control and indirectly heat output of the heater - supply 230V; 50/60Hz; 5 regulation step; IP54; I_{max} = 2A,
- **room thermostat** – for setting the desired air temperature in the room at 5-30°C; supply 230V; 50/60Hz; IP30; I_{max} = 16A .

5. DELIVERY AND TRANSPORT

The Heating device AGB is supplied in fully assembled. Cardboard packaging protects ABG against mechanical damages at the time of transport and storage. The device is supplied with Operation and Service Manual and Warranty Card.

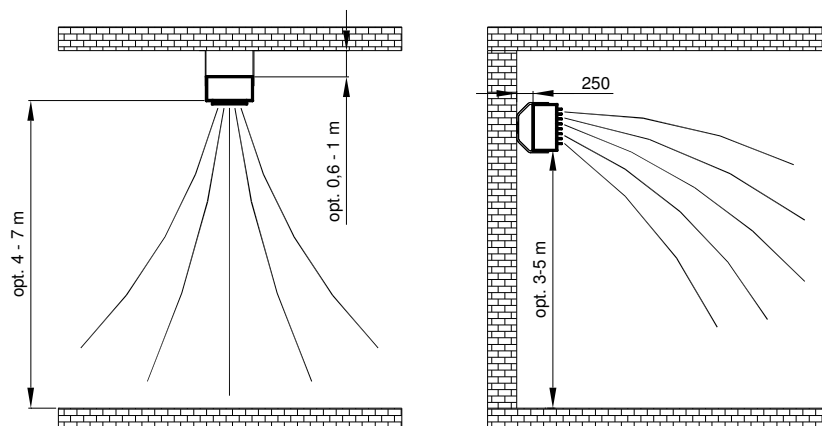
Optional equipment is delivered in a separate package.

	<p>Immediately after the delivery, be sure to check out the contents of the package. In case of any shortage, you must contact the carrier or supplier of the equipment.</p>
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6. INSTALLATION

6.1 Installing


During the installation of AGB, attention should be paid to ease of access for service operations, for the right of the water and electricity installation and the appropriate site in the room to keep the right distance from the construction wall and the proper air distribution in the room. In the case of installation under the ceiling, heater may require additional auto-vent installed at the highest point of the pipeline.



Rys. Nr 3 Installing AGB on the wall and under ceiling

	Failure to follow the above recommendations may result in not achieving the intended parameters of air flow
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To mount the AGB you need a suitable structure.
The construction equipment does not constitute the device.
On the casing of AGB is threaded sleeve 6 for mounting of the structure.

	The structure construction must be designed taking into account the requirements of strength.
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6.2 Installing several devices

On the draw is the optimal mounting distance for several devices. With a couple of AGB in one large room can be using one thermostat and control master switch the work of the whole team. But the speed control is one to one device.

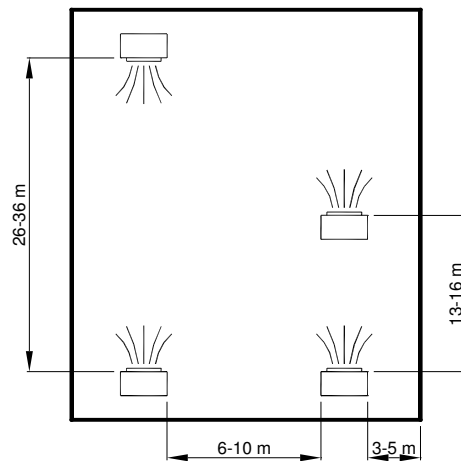


Fig. No 4 Spacing between devices

6.3 Water installation connection

Connect the water installation to the heater should be done in such a way that the possibility of servicing. On both connectors must be mounted shut off valves. The supply and return pipeline must be connected according to the indications on the housing of AGB (inlet/outlet).

2-way control valve with electromotor actuator (optional-equipment) must be install in outlet line from the heater, if the supply water temperature exceeds 95°C. Water installation shall be fixed in such a way that the heater connections not rested the burden of pipelines.

During the installation the heater to the water pipeline, you must hold the key socket the heater to prevent the twisting action that can result in leaks to the exchanger.

	Damage resulting from compliance to the above recommendations is not covered by the warranty. Cost of replacement or repair of the heater is charged to the user.
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6.4 Electrical installation

Electricity supply device must be performed in accordance with the relevant provisions and standards. Device connection must be performed according to the schematics shown. Wiring diagrams can be found on individual components or elements of the automation device.

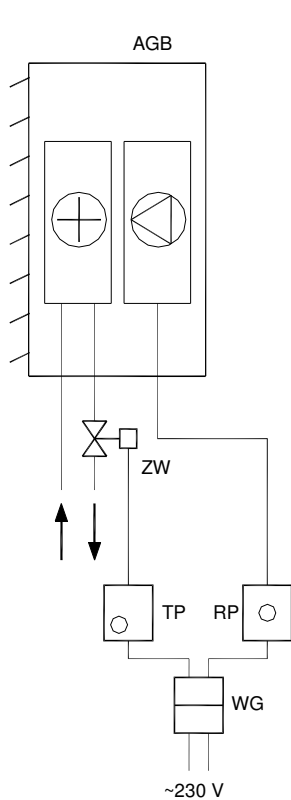
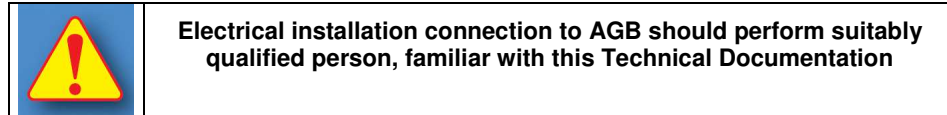


Fig. No 5 Electrical schema with automation

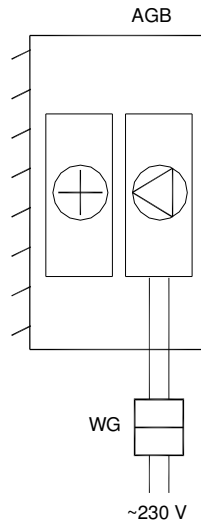


Fig. No 6 Electrical schema without automation

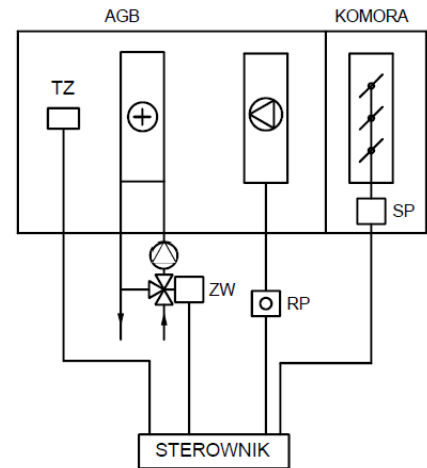


Fig. Nr 7 Electrical schema with mixing box and automation
All Automation elements beyond the delivery of KLIMOR

RP – fan speed control
TP – room thermostat
ZW – 2-way control valve with electromotor actuator
SP – damper actuator
TZ – frost thermostat
WG – main switch

7. DEVICE MOUNTING

7.1 Mounting AGB on the bracket

The bracket is optional and is delivered in a separate package with a set of screws for mounting the AGB device. To do this, fastening screw the bracket on the wall. Then insert the AGB in handle and screw the two screws M8x20 to the housing of the device. The AGB has the ability to handle the rotation of 45°. To use this feature you must execute the water heater connections using appropriate flexible hoses.

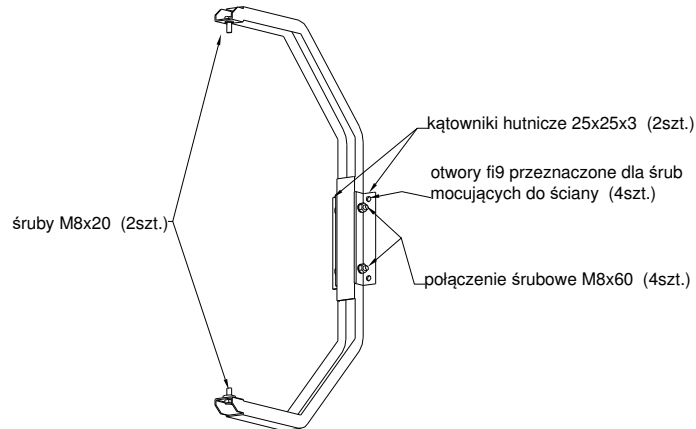


Fig. No 8 Bracket

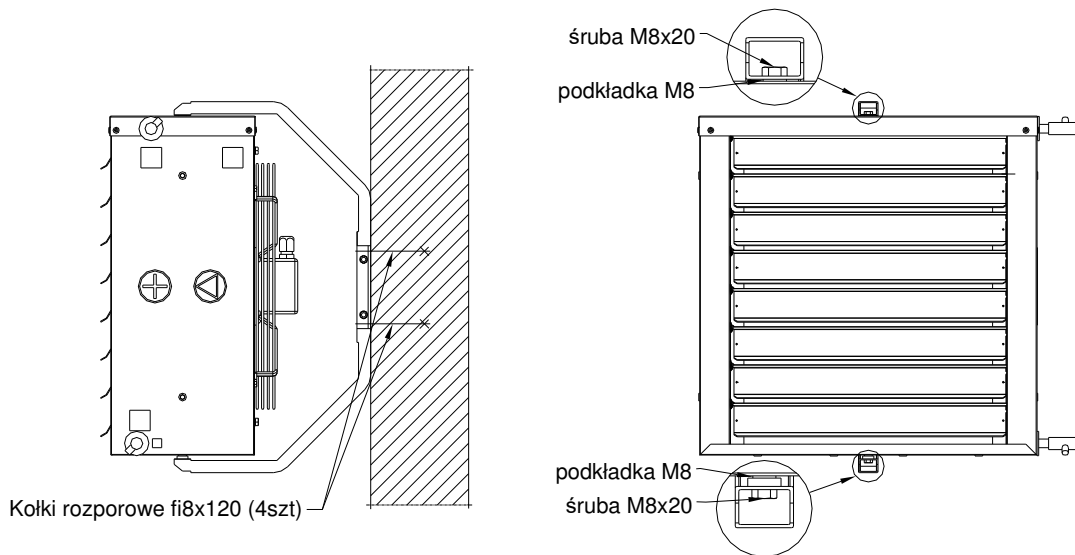


Fig. No 9 Mounting AGB using bracket

7.2 Mounting the device on the frame

The proposed design of the AGB to hang the work lying down, is made of steel sections or curved and does not fall within the scope of delivery.

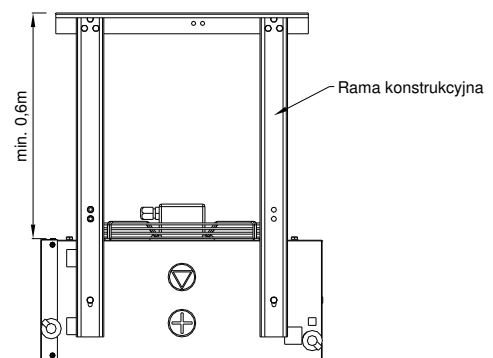


Fig. No 10 Mounting AGB in vertical version

8. TECHNICAL DATA FOR AGB WITH MIXING AND FILTERING BOX

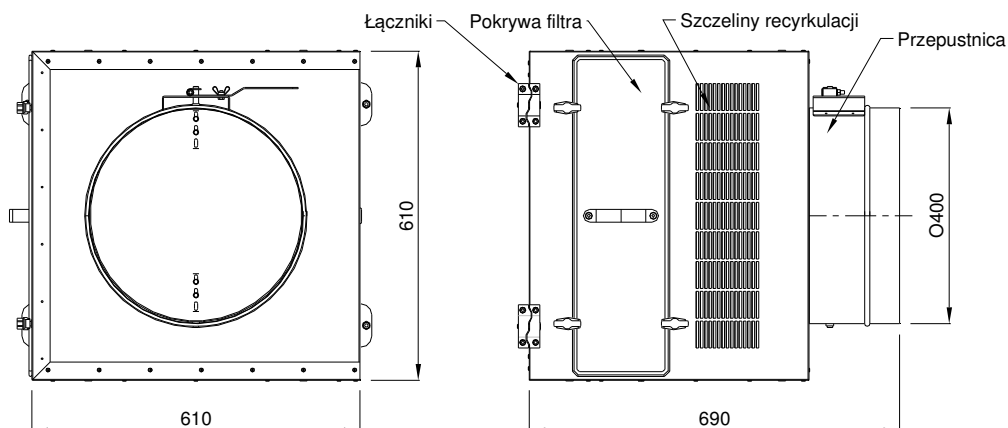


Fig. No 11 Mixing and filtration box

Tab No 3 The maximum performance of the air mixing and filtration box of the AGB devices (with a clean filter) and shares the outdoor air from circulating depending on the angle of the damper opening.

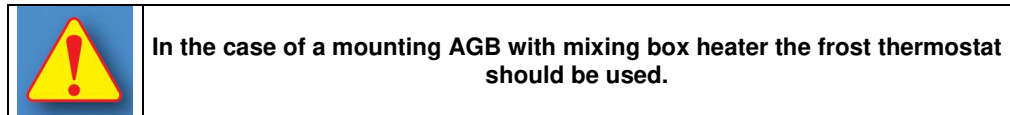
Size	Max air volume	The angle of the damper opening the outdoor air					
		0%		50%		100%	
		Outdoor air	Recirculation air	Outdoor air	Recirculation air	Outdoor air	Recirculation air
[m ³ /h]							
AGB 1	2650	-	2200	850	1550	1300	1350
AGB 2	2550	-	2100	850	1550	1250	1300

Tab No 4 Data for heater AGB with mixing box.

One-row heater AGB 1 air volume 2650 m ³ /h					
Tw1/Tw2 [°C]	tp1 [°C]	tp2 [°C]	Q [kW]	Δp [kPa]	G [m ³ /h]
70/50	0	16,7	15,9	4,3	0,7
	5	20,2	14,3	3,5	0,6
	10	23,8	12,7	2,8	0,6
	15	27,2	11,1	2,3	0,5
	20	30,6	9,5	1,7	0,4
80/60	0	20,1	19,3	5,8	0,9
	5	23,8	17,7	5,0	0,8
	10	27,4	16,1	4,2	0,7
	15	30,9	14,5	3,5	0,6
	20	34,4	12,9	2,9	0,6
90/70	0	23,6	22,6	7,6	1,0
	5	27,3	21,0	6,6	0,9
	10	30,9	19,3	5,8	0,9
	15	34,5	17,7	4,9	0,8
	20	38,0	16,1	4,2	0,7
Two-rows heater AGB 2 air volume 2550 m ³ /h					
Tw1/Tw2 [°C]	tp1 [°C]	tp2 [°C]	Q [kW]	Δp [kPa]	G [m ³ /h]
70/50	0	30,2	27,8	5,6	1,2
	5	32,6	25	4,6	1,1
	10	34,9	22,2	3,7	1,0
	15	37,2	19,5	2,9	0,9
	20	39,3	16,7	2,2	0,7
80/60	0	36,4	33,5	7,7	1,5
	5	38,9	30,7	6,6	1,4
	10	41,3	27,8	5,5	1,2
	15	43,6	25,1	4,6	1,1
	20	45,9	22,3	3,7	1,0
90/70	0	42,4	39,1	10,1	1,7
	5	45,0	36,2	8,8	1,6
	10	47,5	33,5	7,6	1,5
	15	49,9	30,6	6,5	1,4
	20	52,3	27,8	5,4	1,2

Tw1 – supply water temperature
Tw2 – exhaust water temperature
tp1 – air in temperature
tp2 – air out temperature
Q – heater power
Δp – different water pressure
G – water volume flow

The mixing box is made of coated sheets in RAL 9010. Inside there is a filter cassette class EU3 measuring 545 × 605 × 50. In Figure 7 shows the electrical schematics of the engine compartment.



8.1 Mounting AGB with mixing and filtering box

AGB connects to the mixing and filtering box with four sets of connectors. The connector halves are bolted to the casing. Their connection is screws M8×35.

8.2 Mounting on the framework structure

The framework structure is delivered for self assembly items:

- it should be folded according to Fig. 10 using the 14pcs connector's screws M8×20
- fixed to the wall using the 6 screws M8×100-Distance parts of construction-400 mm.
- put on AGB by screwing it to the two screws M8×20.

Installation of the heater supply should be mounted in such a way to exchange the filter in the mixing box (for the configuration as per fig. 12) or install the filter with the other side.

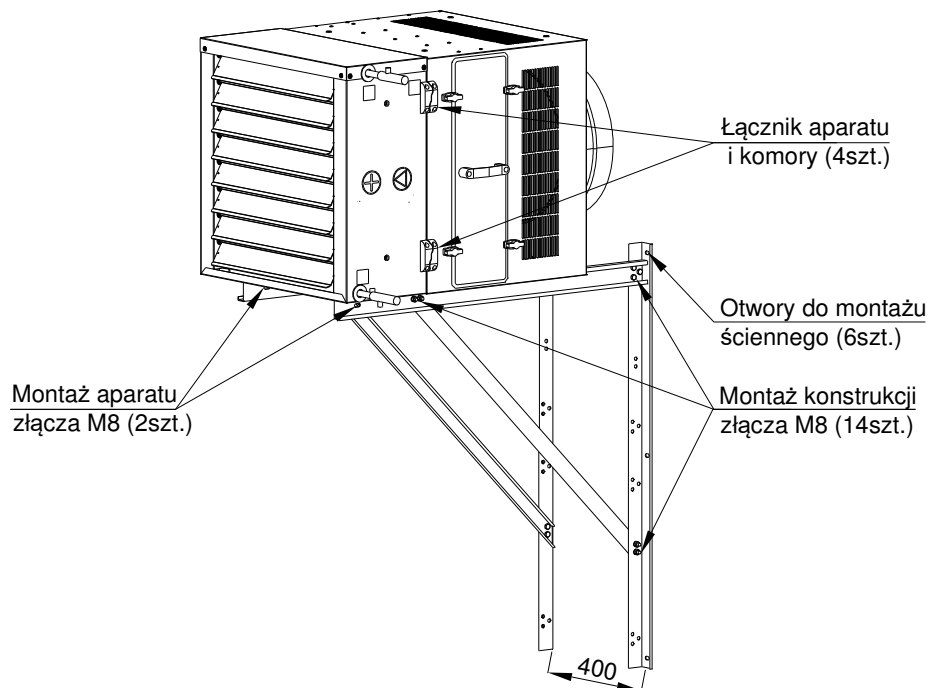


Fig. No 12 Mounting AGB with mixing box on the framework structure.

8.3 Installation using steel slings

Mounting AGB with mixing box, do as follows:

- attach the mixing box using slings, steel (according to fig. No. 11)
- attach the device to the ceiling in an identical manner as the mixing box
- mount to the device supplied connector halves each with two self-screws M4,8
- connect AGB with mixing box using the M8x35 screws,
- leveling set of.

Proposed set of camera mounting using slings steel. This parts are not included in scope of delivery

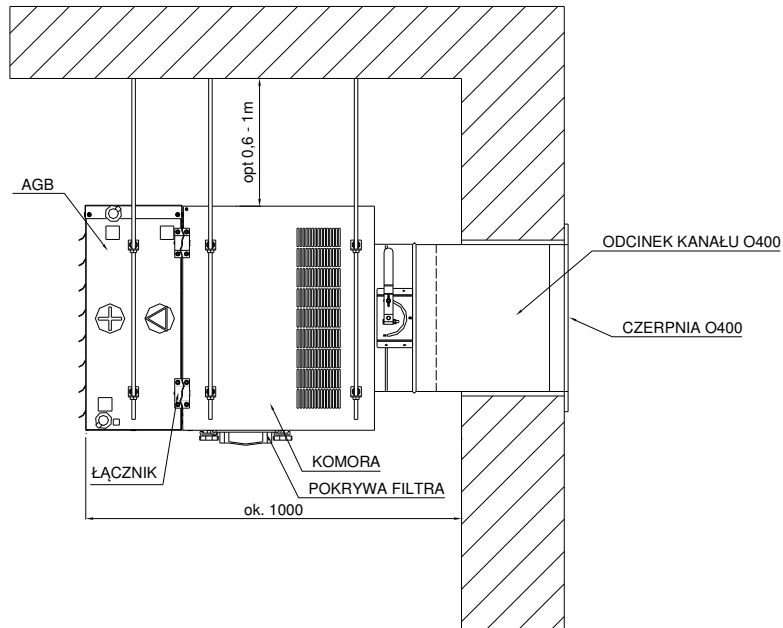


Fig. No 13 Mounting AGB with mixing box using sling steel



In the case of mounting AGB with mixing box using slings steel, mounted on a supporting structure, keep in mind the use of shock rubber (rubber feet), in order to eliminate vibration..

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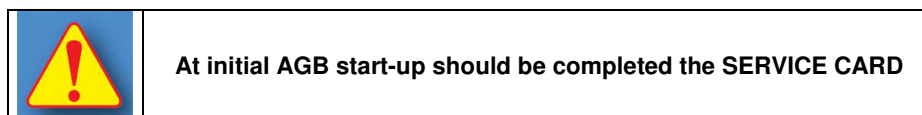
9. AGB INITIAL START-UP

After mounting and installing AGB of all connections of power supply, installation and automation, the following steps should be done:

- check the automation
- check for leaks water heater
- purge the heater.

In the case of validating all connections, you're ready to start the device as follows:

- set the fan speed control knob into position "0"
- turn the main switch on
- set the desired speed RPM on speed controller
- turn on the switch and set the thermostat to the desired air temperature.



10. AGB OPERATIONS AND USING

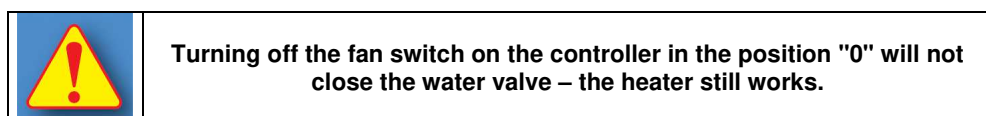
10.1 Switching on

- set the fan speed control knob into position "0"
- turn the main switch on
- set the desired speed RPM on speed controller
- turn on the switch and set the thermostat to the desired air temperature.



10.2 Switching off

- set the thermostat temperature knob in the position min. or set the thermostat switch in position "0".
The thermostat will transmit a signal to shut down the heater water valve.
- set the fan speed control in position "0"
- turn off main switch



10.3 Service operation

The operation of the device is limited only to periodically check the status of the impeller bearings (the fan impeller should rotate freely around its axis-without a fight and taps) and periodically blowing the water heater fins surface from dust and dirt

10.4 Filter replacement

The filter in the mixing box must be replaced at a frequency of no longer than in three months. The filter is removed after unscrewing the four clamps on the lid. Access to the lid from the bottom of the device.

The filter: the filter cassette EU3 dimension 545x605x50 or **P.FLR G3 545X605X50** index **99000091000512**.

11. SERVICE - INFORMATION

Information about unit operation can be obtained at the Servicing Department:

Fax: (+48 58) 783 98 88
 Phone: (+48 58) 783 99 50/51
 Mobile: (+48) 510 098 081
 E-mail: serwis@klimor.pl

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SERVICE INITIAL CARD

Date

Place

Serviceman name

Serial numer of AGB device

Service Company (stamp and signature)

Installation steps (description)

Notes

Confirmation of the performed actions by user

Signature

Date