



Axial and centrifugal condensation hanging hot air generators with pre-mixed modulating gas burner

MEC MIX C modulating condensation

MEC MIX F fixed power



mod. MEC MIX C 20/35 - 20/45
mod. MEC MIX F 50
Axial



mod. MEC MIX C 20/70 - 20/90
mod. MEC MIX F 100
Axial



mod. MEC MIX C 20/35 - 20/45
mod. MEC MIX F 50
Ductable



mod. MEC MIX C 20/70 - 20/90
mod. MEC MIX F 100
Ductable

HOT AIR GENERATORS PRE-MIXED WALL UNITS MEC MIX C CONDENSING SERIES AXIALS AND DUCTABLE MODELS 20/35 - 20/45 - 20/70 - 20/90 SERIES MEC MIX F AXIAL AND DUCTABLE MODELS 50 - 100

Technical information

This manual is separated into five sections:

- **SECTION A - GENERAL INFORMATION**

It contains all the news related to the description of the generators and their technical characteristics

- **SECTION B - TECHNICAL NEWS FOR THE INSTALLER**

It collects all the indications and the instructions that the installation technician must observe for the realization of an optimal system

- **SECTION C - HYDRAULIC INSTALLER**

- **SECTION D - ELECTRIC INSTALLER**

- **SECTION E - ASSISTANCE AND MAINTENANCE**

Important notes for consultation:

- 1 - For the purpose of the correct and safe use of the appliance, the designer, the installer, the user and the maintenance technician, for their respective competences, must scrupulously observe what is indicated in this manual. It must be kept for possible consultation and must accompany the appliance throughout its life, including the case of transfer to third parties.
- 2 - With the wording **ATTENTION!** they follow information that, due to their importance, must be scrupulously observed and whose non-compliance can cause damage to the appliance and / or jeopardize its safe use. The paragraphs highlighted in bold contain information, warnings or important advice that is recommended to evaluate carefully.
- 3 - The A2B Accorroni E.G. Srl declines any responsibility for any damage caused by improper use of the appliance, from a different use to the intended use and from an incomplete or approximate application of the instructions contained in this manual.
- 4 - The technical data, the aesthetic characteristics, the components and the accessories shown in this manual are not binding.
The A2B Accorroni E.G. Srl reserves the right to make changes at any time deemed necessary for the improvement of its product.
- 5 - References to laws, regulations or technical rules cited in this manual are intended for information purposes only and referred to the date of printing of the same, shown on the last page. The entry into force of new provisions or changes to those in force will not constitute a reason for any obligation of A2B Accorroni E.G. S.r.l. towards third parties.
- 6 - The A2B Accorroni E.G. Srl is responsible for the conformity of its product with the laws, directives and construction standards in force at the time of marketing. The knowledge and observance of the laws and regulations concerning the design of the systems, installation, operation and maintenance are the sole responsibility, for the respective skills, of the designer, installer and user

INDEX

1.	GENERAL WARNINGS.....	4
2.	SAFETY WARNINGS.....	4
2.1	Qualification of the installer.....	4
2.2	Alimentazione elettrica.....	4
2.3	Power supply.....	4
2.4	Gas leaks.....	4
2.5	Use.....	4
2.6	Transportation and handling.....	4
3.	MAIN CHARACTERISTICS	5
3.1	Functional description.....	5
3.2	Constructive Characteristics.....	5
3.3	Technical data table of axial MEC MIX C condensing heaters.....	6
3.4	Technical data table of axial MEC MIX F suspended generators.....	6
3.5	Technical data table of MEC MIX C ductable condensing generators.....	7
3.6	Technical data table of MEC MIX F ductable suspended generators.....	7

3.7	Axial and ductable MEC MIX C dimensions and overall dimensions.....	8
3.8	Axial and ductable MEC MIX F dimensions and overall dimensions	9
3.9	ELECTRICAL DIAGRAM - MEC MIX C / F Series.....	10
4.	<i>CONTROL AND SECURITY BODIES</i>	11
4.1	Description.....	11
4.2	General characteristics.....	11
4.3	Technical data logic card.....	11
4.4	Checks starting up.....	12
5.	<i>KRONOS GA11 CHRONOTHERMOSTAT</i>	13
5.1	Weekly-programming digital chronothermostat for the remote control of hot air generators through....	13
5.2	General technical data.....	13
5.3	Technical data of the chronothermostat.....	13
5.4	Instructions for use.....	14
5.5	Base function first menu.....	14
5.6	Correspondence between icons and operation modes.....	15
5.7	Management chronothermostat setting menu.....	17
5.8	Management system parameters menu.....	19
6.0	<i>SPECIFIC FUNCTIONS KRONOS GA11</i>	21
6.1	Internal energy store and use of batteries.....	21
6.2	Warnings about the back light.....	21
6.3	Installations instruction.....	21
6.4	Installing the chrothermostat on the wall.....	21
6.5	Dimensions fixings.....	22
6.6	Wiring diagram for brahma equipment type tc340p.....	23
6.7	Connection diagram for cascade connections more devices through Open Therm.....	24
6.8	Types of connection.....	25
7.	<i>INSTALLATION</i>	26
7.1	General rules for installing the appliance.....	26
7.2	Installation sequence.....	27
7.3	Dimensioning of air tubes comburente / fumes discharge.....	28
7.4	Calculation example.....	29
7.5	Conduct evacuation.....	33
8.	<i>INSTALLATION</i>	34
8.1	How to connect the generator to the electric line.....	34
8.2	Digital chronothermostat installation.....	34
9.	<i>ASSISTANCE AND MAINTENANCE</i>	35
9.1	First switching on of the appliance.....	35
9.2	How to adjust the gas valve.....	35
9.3	How to change gas.....	37
9.4	Diagnostics MEC MIX C - MEC MIX F.....	37
9.5	Maintenance.....	37
10.	<i>TECHNICAL DATA TABLES ERP</i>	38
10.1	Technical data table ERP - MEC MIX C 20/35 - 20/70 axial.....	38
10.2	Table of ERP technical data - MEC MIX C 20/35 - 20/70 ductable.....	39
10.3	Technical data table ERP - MEC MIX C 20/45 - 20/90 axial.....	40
10.4	Table of technical data ERP - MEC MIX C 20/45 - 20/90 ductable.....	41
10.5	Technical data table ERP - MEC MIX F 50 - 100 axial.....	42
10.6	Technical data table ERP - MEC MIX F 50 - 100 ductable.....	42
11.	<i>MAIN REQUIREMENTS OF HOT AIR GENERATORS</i>	44
11.1	Table of main requirements - MEC MIX C 20/35 - 20/70 axial.....	44
11.2	Table of main requirements - MEC MIX C 20/35 - 20/70 ductable.....	44
11.3	Table of main requirements - MEC MIX C 20/45 - 20/90 axial.....	45
11.4	Table of main requirements - MEC MIX C 20/45 - 20/90 ductable.....	45
11.5	Table of main requirements - MEC MIX F 50 - 100 axial.....	46
11.6	Table of main requirements - MEC MIX F 50 - 100 ductable.....	46

SECTION A - GENERAL INFORMATION

1. GENERAL WARNINGS

This manual is an integral part of the product, it should not be separated from it and must be kept carefully for any future use or consultation.

Failure to comply with the indications in this manual will result in the forfeiture of the warranty conditions.

Should the appliance be sold or transferred to another owner, make sure that the manual always accompanies the appliance. This appliance must only be used for the purpose for which it was built.

All uses not expressly indicated in this manual are considered improper and therefore dangerous.

2. SAFETY WARNINGS

2.1 QUALIFICATION OF THE INSTALLER

Installation and maintenance must only be carried out by specialized and specially qualified personnel.

2.2 POWER SUPPLY

The MEC MIX series hot air generator must be correctly connected to an efficient grounding system.

The connection to the power supply must be performed according to the current national plant standards.

2.3 COMBUSTIBLE

Before starting the MEC MIX verify that:

- the data of the gas supply networks are compatible with those shown on the plate;
- the combustion air intake grill is not obstructed (even partially);
- the generator is powered by the same type of fuel for which it is prepared;
- the system is sized for this capacity and is equipped with all safety and control devices caught by applicable rules
- internal cleaning of the gas pipes and channels air distribution for ductable generators has been performed correctly
- the fuel flow rate setting is adequate to the power required by the generator
- the fuel supply pressure is included in the values shown on the plate.

2.4 GAS LEAKS

If you feel a gas smell:

- do not operate electric switches, the telephone or any other item or device that can cause sparks;
- open doors and windows immediately;
- request the immediate intervention of qualified and specialized personnel.
- richiedere l'intervento immediato di personale qualificato e specializzato.

2.5 USE

The use of the appliance should not be allowed to children, inexperienced persons and unassisted disabled persons.

The following indications must be observed:

- do not touch the appliance with parts of the body wet or humid and / or barefoot;
- do not insert tools, paper or anything else penetrate through the protection grids of the fans;
- do not open the access panels to the internal parts unit. These operations have been re-established exclusively to specialized personnel;
- do not clean the external parts without having first removed it the power supply from the main switch;
- do not touch the hot parts of the generator such as example the smoke exhaust duct;
- do not wet the generator with water or other liquids;
- do not use gas pipes as grounding electrical devices;
- do not leave the appliance exposed to agents weather;
- do not place objects on top of the appliance;
- do not touch the moving parts of the generator.

2.6 TRANSPORTATION AND HANDLING

The appliance is shipped on wooden pallets, covered with a suitably secured cardboard box.

The appliance can only be moved by suitably equipped personnel and with equipment suitable for the weight of the product, such as a forklift truck or transpallet, taking care to distribute the weight on the supports.

WARNING! During transport and handling the appliance must only be kept in a vertical position.

Upon delivery, check that no visible damage has occurred during transport on the packaging and / or on the appliance.

In case of damage assessment, immediately expose a formal complaint to the forwarder.

Do not install damaged devices during transport.

It is forbidden to dispose parts of the packaging in the environment, or leave it within reach of children as a potential source of danger.

Any storage of the generator must take place in a suitable place, protected from atmospheric agents and from excessive humidity, for the shortest possible time.

3. MAIN FEATURES

3.1 FUNCTIONAL DESCRIPTION

The MEC MIX series hot air generator is an independent heating device of type atin circuit.

The appliance belonging to the II2H3P category according to the EN 1020 standard, can be adapted to operation with natural gas (G20) and G.P.L. (G31). It was designed to be installed inside the room to be heated.

The combustion circuit is watertight compared to the heated environment and meets the requirements of the EN 1020 and EN 1196 standards for type C appliances: the combustion air extraction and the fumes discharge take place outside and are insured from the operation of a blower inserted in the circuit of combustion.

The operation of the generator is controlled by the room thermostat integrated in the chronothermostat.

When the hot card is hot, after a pre-wash time of about 40 seconds, provides for the ignition of the burner.

The detection electrode checks that the ignition has occurred.

In the event of a flame failure, the control board blocks the device.

The combustion products internally cross the heat exchangers that are invested externally from the air flow produced by the fan giving rise to the circulation of hot air in the environment.

The airflow direction is adjustable by means of the horizontal fins of the mobile grate.

The fan is automatically activated only by hot heat exchangers (when the temperature of 40 °C is reached on the exchangers probe), in order to avoid the introduction of cold air into the environment, and it will switch off with cold exchangers.

In case of overheating of the heat exchangers, due to anomalous functioning, the probe of temperature removes voltage from the gas valve by supplying the blower and the fan at maximum speed; if the temperature should increase further, the limit thermostat intervenes which causes the generator to switch off.

The reset of the generator in block due to intervention of the limit thermostat is manual and takes place via the remote control.

WARNING!

The reset of the generator in block due to intervention of the limit thermostat is the responsibility of the personnel professionally qualified, after having identified the cause of overheating.

Upstream of the burner a blower provides for the air-gas mixing and for the forced expulsion of the fumes derived from combustion.

In the case of obstruction of the intake or exhaust duct, or in the event of malfunction of the blower, the electronics respond automatically, causing

generator modulation.

In the event of obstructions or malfunctions beyond the permitted temperature, a flue gas thermostat will then cause the gas valve to stop and the generator to shut down.

Winter operation of the generator can be automatic or manual: for further information see paragraph WINTER OPERATION (HEATING).

During the summer it is possible to operate the fan only, in automatic or manual mode, to order to have a pleasant movement of the ambient air.

3.2 CONSTRUCTION CHARACTERISTICS

The MEC MIX series hot air generator is supplied complete with:

- premixed stainless steel burner
- high prevalence blower, with modulation of the rotation speed
- stainless steel combustion chamber
- heat exchangers, made of stainless steel, with a very high heat exchange capacity.
- external paneling made of painted steel with epoxy powders.
- high air flow axial fans, with variation of the rotation speed.

The generator is also supplied with the following components control and security:

- **electronic management board**, with microprocessor and anti-noise filter: provides for burner ignition functions, surveillance and flame modulation; command and control of the burner fan speed, command fan speed; temperature control of the exchanger by means of a probe;
- Supply voltage: 230 V - 50 Hz
- Security time: 5 seconds
- Prewash time: 40 seconds
- Model: BRAHMA TC3 40 with transformer ignition BRAHMA AR1
- 90 °C limit thermostat against overheating of heat exchangers.
- **flue gas thermostat**: in case the duct of aspiration / exhaust fumes or the duct internal condensate evacuation were blocked, the appliance is stopped.
- **gas solenoid valve**: if a device intervenes of safety (limit thermostat, thermostat of safety, etc.) the gas valve is de-energized electrically with the consequent interruption of inflow of gas to the burner.
- Supply voltage: 230 V - 50 Hz
- Operating temperature: 0 °C up to + 60 °C.
- Model: SIT 848 SIGMA

3.3 Technical data table of axial MEC MIX C axial condensing heaters

DESCRIPTION	U.M.	MEC MIX C 20/35	MEC MIX C 20/45	MEC MIX C 20/70	MEC MIX C 20/90	
Equipment category		II2H3P				
Type of device		B23 - C13 - C33 - C63 - C53				
Gas supplies		Natural Gas - G.P.L.				
Rated heating capacity	kW	34,93	42,64	70,06	85,28	
Heat capacity min	kW	20,62	19,54	20,62	19,54	
Nominal heat output	kW	33,77	40,80	67,54	81,60	
Thermal power min	kW	20,20	19,16	20,20	19,16	
Condensation produced maximum	l/h	3,9	4,3	7,8	8,6	
Gas flow rate maximum power	<i>Methane 20 mbar</i>	m ³ /h	3,69	4,50	7,40	9,00
15 °C - 1.013 mbar	<i>Propane 37 mbar</i>	kg/h	2,71	3,49	5,40	7,00
Gas flow rate minimum power	<i>Methane 20 mbar</i>	m ³ /h	2,17	2,06	2,17	2,06
15 °C - 1.013 mbar	<i>Propane 37 mbar</i>	kg/h	1,55	1,55	1,55	1,55
Nominal yield at maximum flow	%	96,5	95,7	96,5	95,7	
Class of NOx emission		A	A	A	A	
Diameter gas supply		G 1/2"		2 x G 1/2"		
Diameter air supply pipe	mm	60		1 x 130		
Diameter exhaust fumes pipe	mm	60		2 x 60		
Electrical Supply		230V/1/50Hz				
Air flow max	m ³ /h	3600	3600	7200	7200	
Air flow min	m ³ /h	2100	2100	4200	4200	
Rpm air fans	n.	1210	1210	1210	1210	
Launching	m	27	27	27	27	
Jump thermal power max	°C	28,4	36,1	28,4	36,1	
Jump thermal power min	°C	29,6	29,8	29,6	29,8	
Sound level (5 meters)	dB(A)	48	48	51	51	
Electrical power	W	365	365	730	730	
Fuse	A	6,3	6,3	2 x 6,3	2 x 6,3	
Net weight	Kg	84	84	160	160	

3.4 Technical data table of axial MEC MIX F axial suspended generators

DESCRIPTION	U.M.	MEC MIX F 50 axial	MEC MIX F 100 axial	
equipment category		II2H3P		
Type of device		B23 - C13 - C33 - C63 - C53		
Gas supplies		Natural Gas - G.P.L.		
Rated heating capacity	kW	48,16	96,32	
Heat capacity min	kW	44,74	89,48	
Gas flow	<i>Methane</i>	m ³ /h	5,08	10,160
15°C-1.013 mbar	<i>Propane</i>	kg/h	3,89	7,78
Nominal yield at maximum flow	%	92,9	92,9	
Nominal yield at minimum flow	mbar	20		
pressure feeding LPG 31	mbar	37		
Class of NOx emission		A	A	
Diameter gas supply		G 1/2"	2 x G 1/2"	
Diameter air supply pipe	mm	60	1 x 130	
Diameter exhaust fumes pipe	mm	60	2 x 60	
Air flow max		230V/1/50Hz		
Air flow min	m ³ /h	3600	7200	
Rpm air fans	m ³ /h	2100	4200	
Launching	n.	1120	1210	
Jump thermal power max	m	27	27	
Jump thermal power min	°C	39,8	39,8	
Sound level (5 meters)	dB(A)	48	51	
Electrical power	W	365	730	
Fuse	A	6,3	2 x 6,3	
net Weight	Kg	84	160	

3.5 Technical data table of MEC MIX C ductable condensing condensing generators

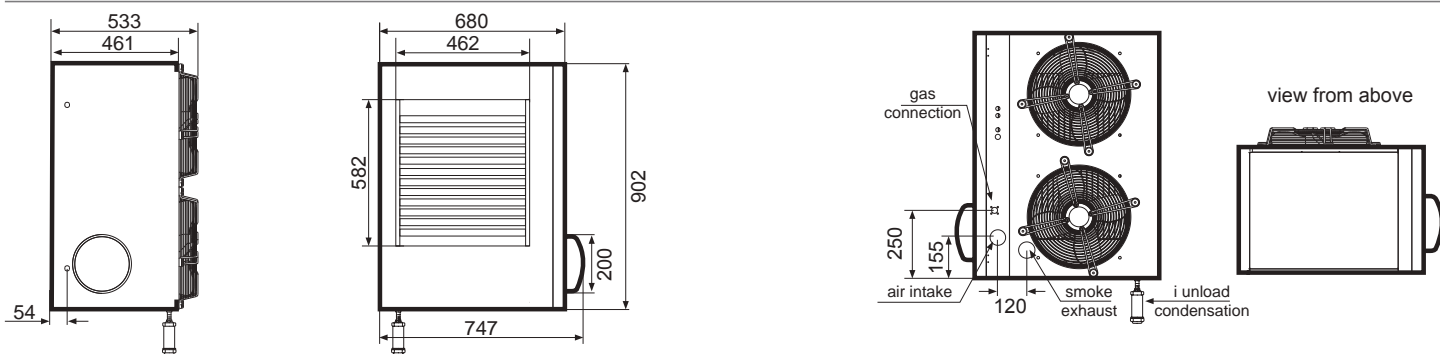
DESCRIPTION	U.M.	MEC MIX C 20/35 C	MEC MIX C 20/45 C	MEC MIX C 20/70 C	MEC MIX C 20/90 C	
equipment category		II2H3P				
Type of device		B23 - C13 - C33 - C63 - C53				
Gas supplies		Natural Gas - G.P.L.				
Rated heating capacity	kW	34,95	43,22	70,56	86,44	
Heat capacity min	kW	20,09	20,13	20,09	20,13	
Nominal heat output	kW	34,22	41,49	68,44	82,98	
Thermal power min	kW	19,59	19,64	19,59	19,64	
Condensation produced maximum	l/h	3,9	4,3	7,8	8,6	
Gas flow rate maximum power	<i>Methane 20 mbar</i>	m ³ /h	3,69	4,56	7,40	9,11
15 °C - 1.013 mbar	<i>Propane 37 mbar</i>	kg/h	2,71	3,49	5,42	6,99
Gas flow rate minimum power	<i>Methane 20 mbar</i>	m ³ /h	2,12	2,12	4,22	4,24
15 °C - 1.013 mbar	<i>Propane 37 mbar</i>	kg/h	1,55	1,55	3,10	3,11
Nominal yield at maximum flow	%	97,0	96,0	97,0	96,0	
Class of NOx emission		A	A	A	A	
Diameter gas supply		G 1/2"		2 x G 1/2"		
Diameter air supply pipe	mm	60		1 x 130		
Diameter exhaust fumes pipe	mm	60		2 x 60		
Electrical Supply		230V/1/50Hz				
Pressure ventilation	Pa	100				
Air flow max	m ³ /h	3700	3750	7400	7500	
Air flow min	m ³ /h	2200	2200	4400	4400	
Jump thermal power max	°C	27,7	34,7	27,7	34,7	
Jump thermal power min	°C	28,3	28,4	28,3	28,4	
Sound level (5 meters)	dB(A)	52	52	54	54	
Electrical power	W	1050	1050	2100	2100	
Fuse	A	10	10	2 x 10	2 x 10	
Net Weight	kg	93	94	185	188	

3.6 Technical data table of MEC MIX F ductable suspended generators

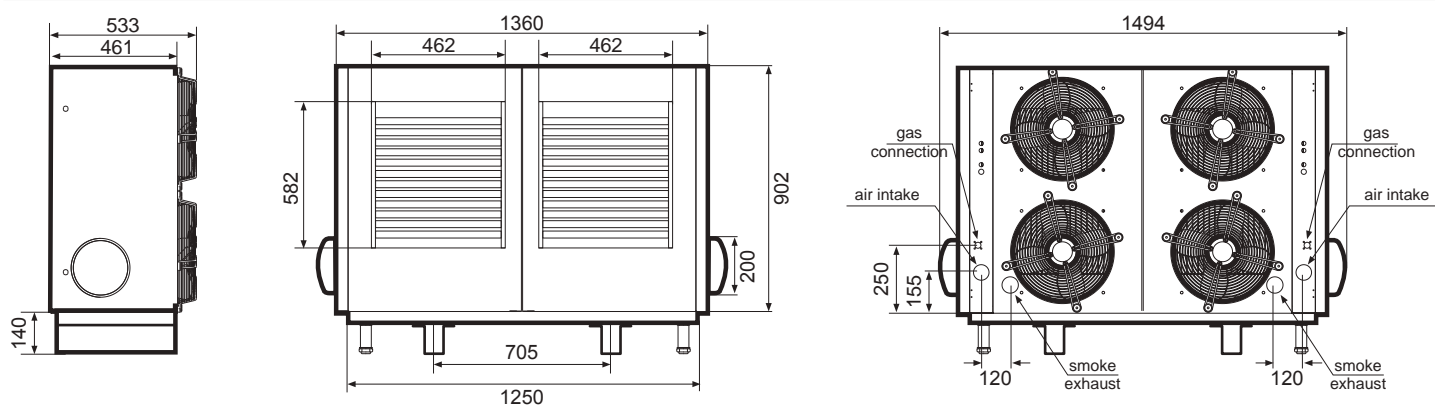
DESCRIPTION	U.M.	MEC MIX F 50 ductable	MEC MIX F 100 ductable	
equipment category		II2H3P		
Type of device		B23 - C13 - C33 - C63 - C53		
Gas supplies		Natural Gas - G.P.L.		
Rated heating capacity	kW	46,02	92,04	
Heat capacity min	kW	43,21	86,42	
Gas flow	<i>Methane</i>	m ³ /h	4,85	9,70
15jC-1.013 mbar	<i>Propane</i>	kg/h	3,55	7,10
Nominal yield at maximum flow	%	93,9	93,9	
Nominal yield at minimum flow	mbar	20		
pressure feeding LPG 31	mbar	37		
Class of NOx emission		B	B	
Diameter gas supply		G 1/2"	2 x G 1/2"	
Diameter air supply pipe	mm	60	1 x 130	
Diameter exhaust fumes pipe	mm	60	2 x 60	
Electrical power		230V/1/50Hz		
Pressure ventilation	Pa	100		
Air flow max	m ³ /h	3750	7500	
Air flow min	m ³ /h	2200	4400	
Jump thermal power max	°C	38,2	38,2	
electrical power	dB(A)	52	54	
fuse	W	1050	2100	
net Weight	A	10	2 x 10	
	Kg	94	188	

3.7 DIMENSIONS AND OVERALL DIMENSIONS MEC MIX C AXIAL AND DUCTABLE

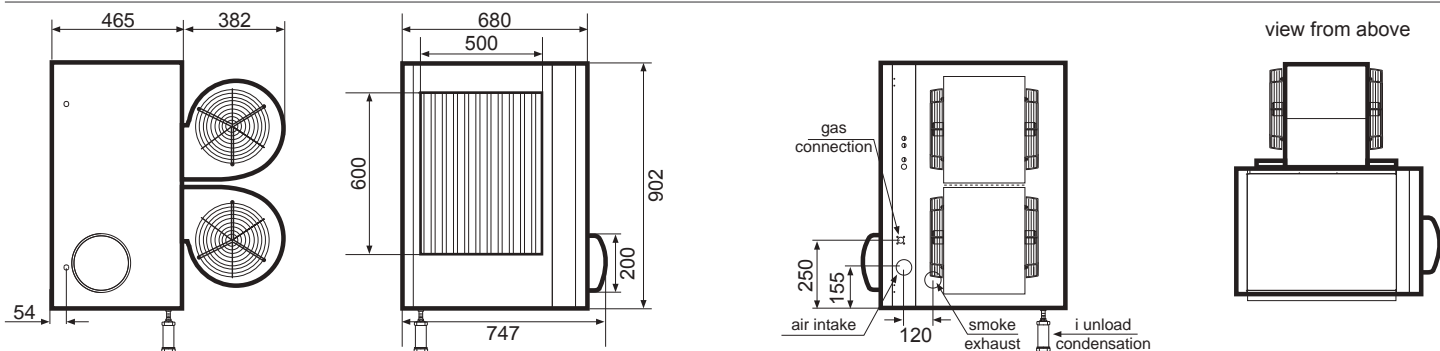
Dimensions MEC MIX C 20/35 - 20/45 axial condensing with axial fans



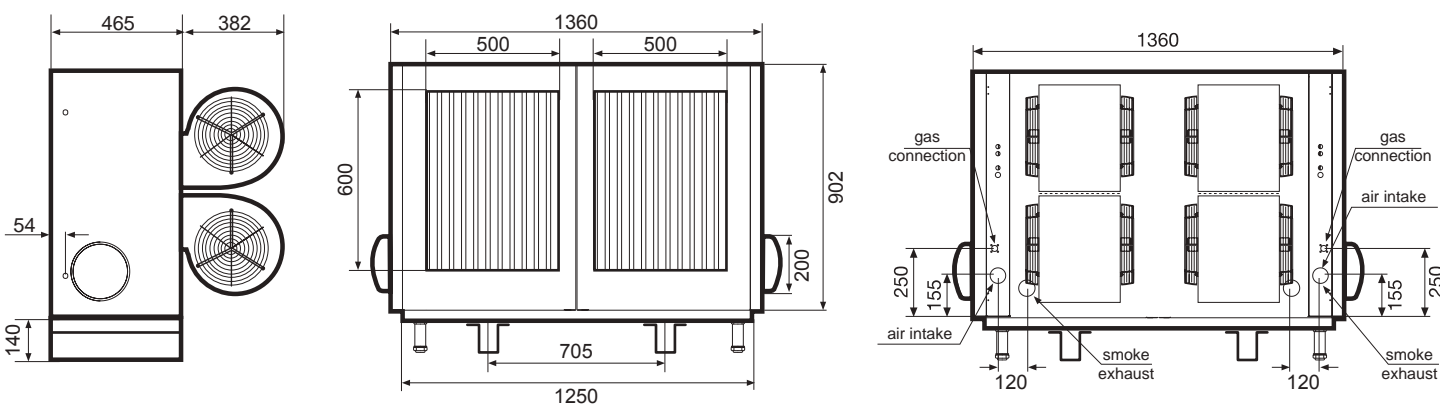
Dimensions MEC MIX C 20/35 - 20/45 condensing with axial fans



Dimensions MEC MIX C 20/35 - 20/45 ductable condensing with ductable fans



Dimensions MEC MIX C 20/70 - 20/90 ductable condensing dimensions with ductable fans

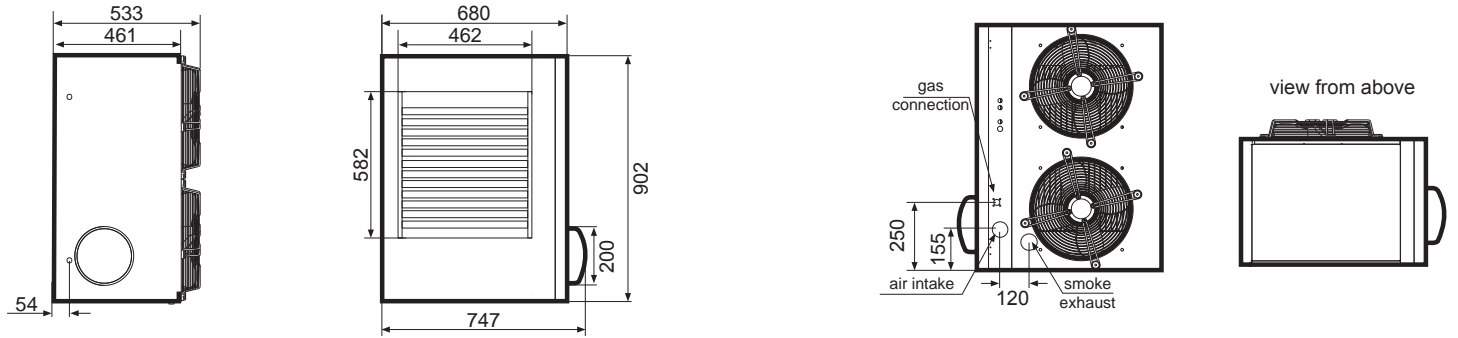


Values expressed in mm

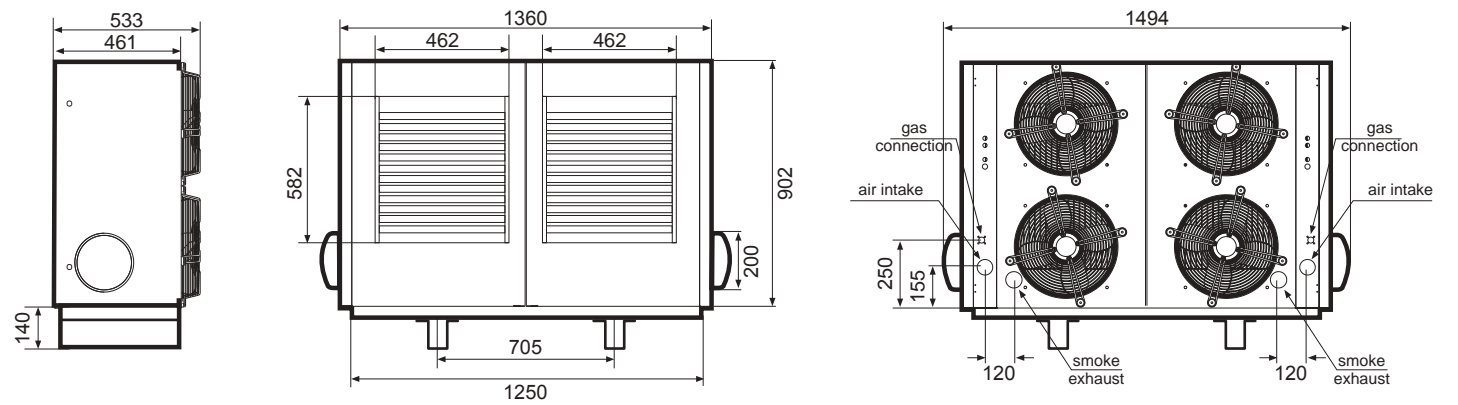
* The drain siphon is only available in the condensing MEC MIX C series

3.8 DIMENSIONS AND OVERALL DIMENSIONS MEC MIX F AXIAL AND CANALIZED

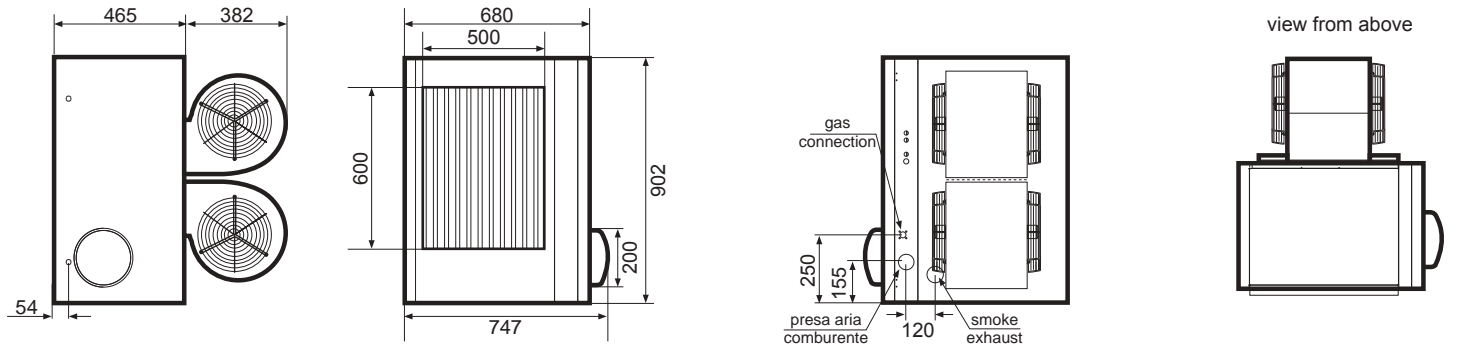
Dimensions MEC MIX F 50 axial condensing with ductable fans



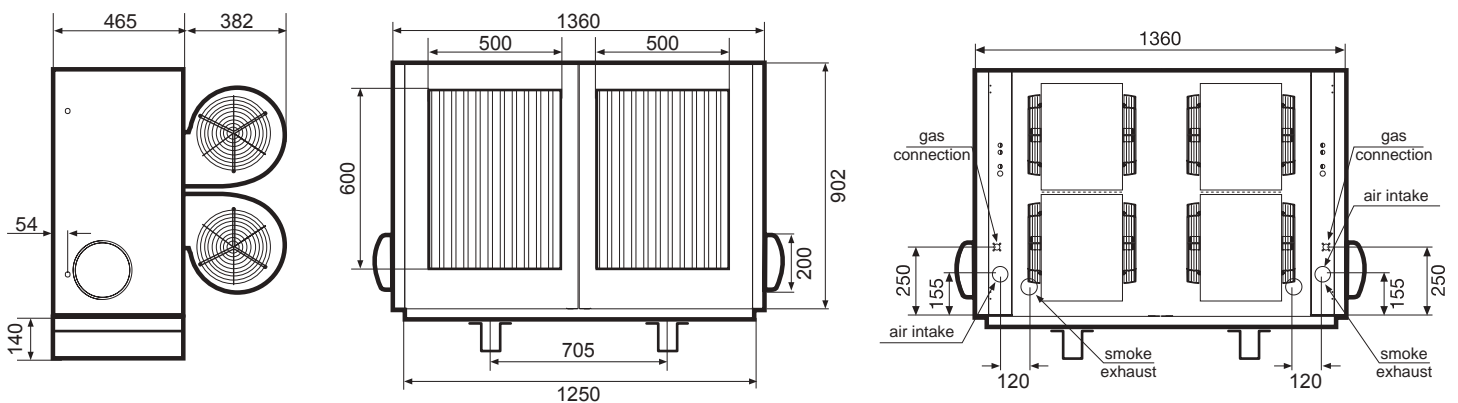
Dimensions MEC MIX F 100 condensing with ductable fans



Dimensions MEC MIX F 50 ductable condensing with ductable fans



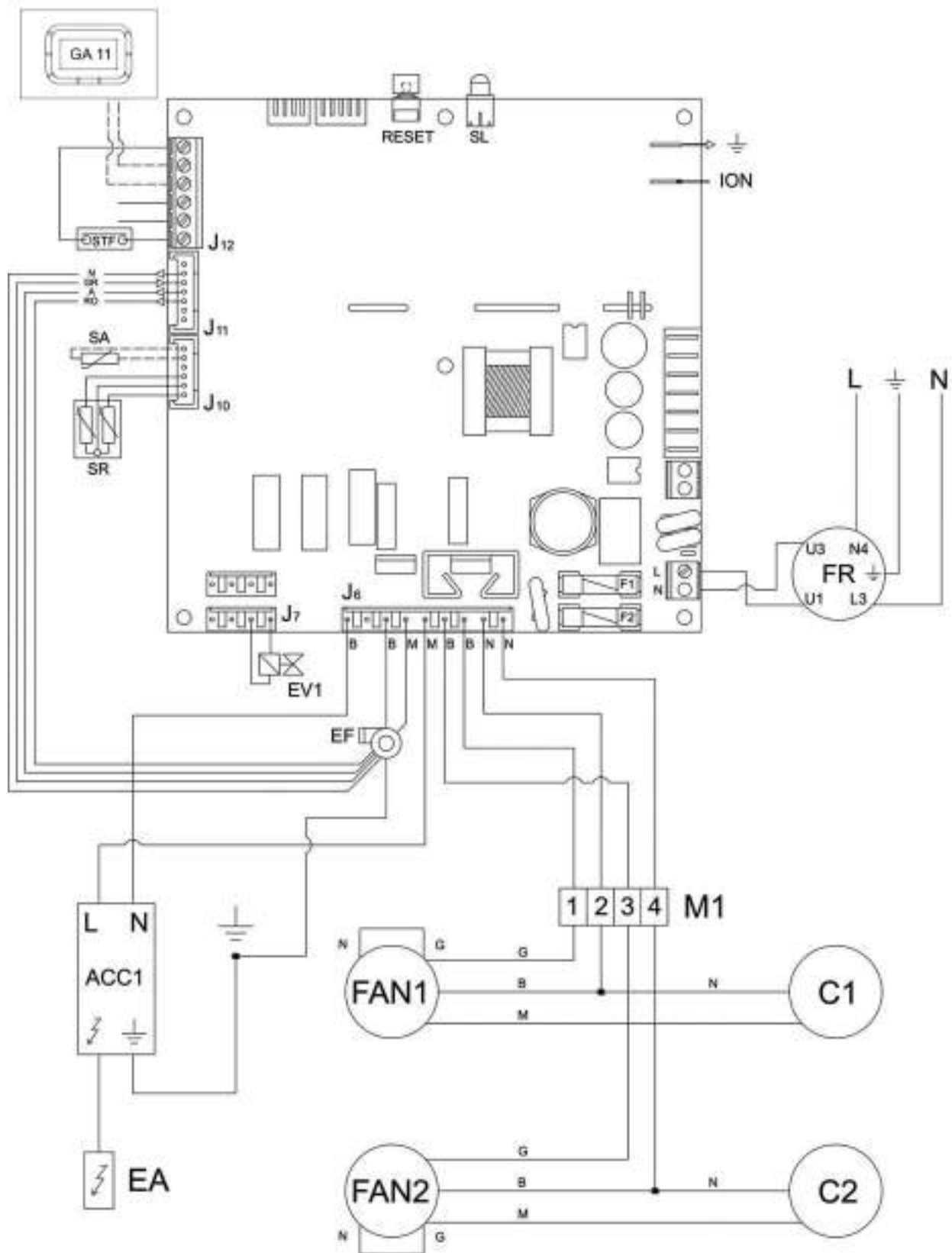
MEC MIX F 100 ductable condensing dimensions with ductable fans



Values expressed in mm

* The drain siphon is only available in the condensing MEC MIX C series

3.11 ELECTRICAL DIAGRAM - MEC MIX C / F Series



LEGEND

ACC1 Remote ignition transformer
 C1 Capacitor 1 (5 μ F)
 C2 Capacitor 2 (5 μ F)
 EA Ignition electrode
 EF Burner fan motor
 EV1 First valve stage
 EX Connection for equipment
 in cascade
 F1 Fuse 1 (6.3A)
 F2 Fuse 2 (6.3A)

FAN1 Fan motor 1 treated air
 FAN2 Fan motor 2 treated air
 GA1 Programmable thermostat
 ION Detection electrode
 M1 Terminal block 1
 RESET Release button
 SA Room sensor (optional)
 SL LED light signaling
 SR FAN and LIMIT regulation sensor
 STF Fire damper (optional)

SECTION B - USER

4. CONTROL AND SECURITY BODIES

In this section you will find all the necessary information to make it work properly MEC MIX series generators.

The functioning of the MEC MIX series generator is controlled by the BRAHMA digital thermoregulation system mod. TC340.

The digital thermoregulation system performs the dual function of room thermostat and clock programmer as well as to diagnose any operating errors.

The following are all the necessary instructions for the correct use of the thermoregulation system digital.

4.1 DESCRIPTION

This device is expressly designed for the control of the safety cycle and for the thermoregulation in the hot air generators using gas burners sealed chamber with automatic ignition and pre-mixed modulating burners.

4.2 GENERAL CHARACTERISTICS

Important device requirements are:

- compliance with EN 298: 2003-09 (European standard for automatic programming systems and verification of the presence of flame for burners gas);
- CE certification in accordance with the Directive Gas 90/396 / EEC and subsequent amendments (Directive 93/68 / EEC);
- piloting and regulation by phase cutting of the treated air convector fan (FAN);
- piloting and regulation of the fan burner by phase cutting (applications with burners forced draft gas) or via PWM signal (applications with type gas burners premixed using type fans brushless with integrated management electronics);
- two independent safety contacts for the piloting of the main gas solenoid valve EV1;
- exit for driving a transformer auxiliary electronic ignition;
- regulation of the burner power via PWM signal (for type applications premix);
- interfacing with a digital chronothermostat GA1 type via communication protocol OpenTherm™;
- summer ventilation function (requires connection to BRAHMA chronothermostat type GA1);
- management of a double NTC probe type ST16 for the control of the delivery temperature air for regulation and safety functions;

- possibility of managing a thermostat of safety;
- predisposizione per la gestione di una sonda ad NTC tipo ST07 con funzione di sonda ambiente o di sonda esterna (fig. 3);
- provision for the management of a probe ad NTC type ST07 with room probe function or external probe (fig 3);
- possibility of connecting a damper contact fire barrier (optional);
- possibility of use in applications with regulation by analogue 0÷10V signal (ex. PLC);
- manual reset button on the board;
- reporting of the operating status and of any anomalies by means of two-colored LEDs;
- RS-232 communication interface for diagnostic and setup functions;
- integrated EMI noise filter;
- two fuses with a suitable extractor for the power line protection on both potentials;
- connections for integrated security lands on card.

4.3 TECHNICAL DATA LOGIC CARD

Fusibili interni:	6.3 A tipo ritardato
per TC340P:	3.15 A tipo ritardato
Fusibili esterni (consigliati):	6.3 A tipo rapido
1	
per TC340P:	3.15 A tipo rapido 1
Certificato di esame CE di tipo:	
CE0051-PIN0051BU3887	

Times:

Pre-purge time (TP):	0 ... 60 s
Safety time (TS):	3 ... 120 s
Intervention time in case of shutdown flame:	< 1 s
Post-ventilation times	
- on the burner fan	
EF (tPOST):	0 ... 1200 s
- on the treated air fan	
FAN (tFS):	20 ... 1200 s
Power on delay time of the fan	
FAN (tFA):	2 0 ... 1200 s14
Inter-waiting time or ventilation:	1 ... 240 s
Waiting time for entry in modulation (tRP1):	1 ... 240 s
Tempo di attesa per entrata in modulazione (tRP1):	0 ... 60 s
Block due to lack of air (opz. Qnn)3:	3 ... 120 s
Pre-ignition time (opz. Jnn):	1 ... 60 s
Attempts to repeat the cycle (opz. Ynn):	1 ... 10
Maximum cable length of external components: OpenTherm interfaces™:	50 m

Flame control

The flame detection device uses the righting property of the flame.

As an important safety aspect, it should be noted that the control device is more sensitive to flame at start-up or during waiting / pre-purge time (negative differential switching).

Minimum ionization current: 0.5 μ A

System temperature probes

- Regulation probe (SR)

The control probe is designed to detect the temperature of the heat exchanger and is mainly used by the NTC dual-sensor FAN heating function

(version standard):

in this case the probe has a double function as it avoids the use of the safety thermostat.

It will therefore be used both for temperature control functions and for safety functions (safety shutdown due to excessive system temperature).

For this purpose it is necessary to use the BRAHMA probe type ST16 (fig.3).

Ambiance sensor (SA)

The room probe (optional) can be used if the remote temperature control (BRAHMA chrono thermostat type ENCRONO GA1) is not in the area where you want to implement thermoregulation or in cases where it is necessary to relate the latter to the temperature of the environment external.

For more details about the functions in which this probe is used, refer to the section

“OPERATION”

For this purpose it is necessary to use the BRAHMA probe type ST07 (for the detection of the local ambient temperature) or the BRAHMA probe type SSE (for the detection of the external ambient temperature).

Fire damper (STF)

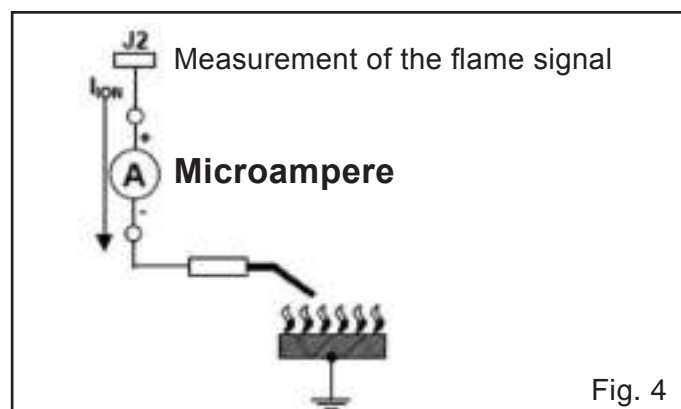
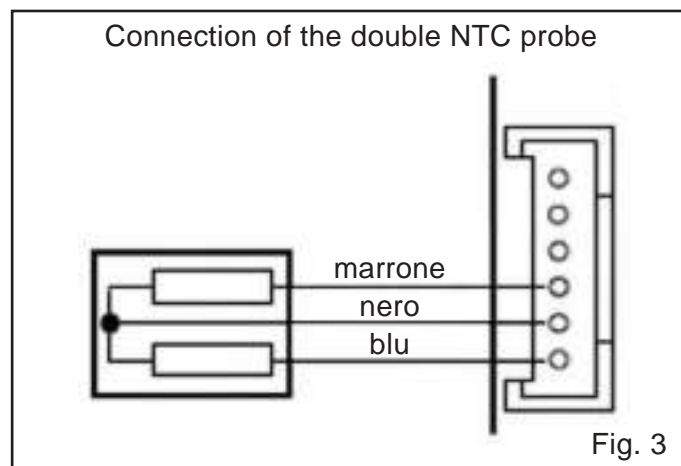
Through this input (option S) it is possible to check the contact status of the fire damper: in case this consent was open (fault condition) the ignition cycle it is interrupted by bringing the device into the waiting position, signaling the error by means of LEDs.

On request, the behavior of the equipment in case of opening of the contact can be modified according to customer specifications.

4.4 CHECKS STARTING UP

Carry out a check of the device when it is put into operation for the first time, after each revision and after the system has been inactive for a long time. Before any ignition operation, check that the combustion chamber is free from gas, therefore check that:

- if the start-up attempt is implemented without gas injection occurs a blocking stop at the end of the security time;
- interrupting the flow of gas with the appliance in the operating position, voltage is removed within 1s to the gas solenoid valves and, after a repetition of cycle (or more cycle repetitions up to a maximum of 10, depending on the settings), the device make a block stop;
- the times and the cycle comply with those declared for the type of device used;
- the flame signal level is sufficient high (see Fig.4);
- the ignition electrodes are adjusted stably for a discharge distance in air between 2 and 4 mm;
- the intervention of limiters or safety devices cause the safety lock or shutdown of the appliance according to the type of application and the procedures laid down.



5. KRONOS GA11

5.1 WEEKLY-PROGRAMMING DIGITAL CHRONOTHERMOSTAT FOR THE REMOTE CONTROL OF HOT AIR GENERATORS THROUGH INTERFACE BOARD



The digital chronothermostat Brahma Kronos series integrates the functions of room temperature control and remote control of hot air generators in a single interface, specially designed to make available all its functionalities in intuitive mode.

Control of the heating system is complete, allowing to manage the parameters of more air generators, with the related control boards connected in cascade, and the eventual unlock.

It is possible to choose between different modes of thermoregulation, even using an external probe (connected to the hot air generator) for climatic compensation.

Weekly programming is particularly versatile because it provides 4 temperature levels settable and no restriction number of time slots per day, consisting of individual intervals equal to a quarter of an hour and can be viewed on the appropriate graph of the daily program.

The communication between the chronothermostat (master) and the control board (slave) of hot air generators takes place by means of a two-wire cable. Particularly, the data, between the chronothermostat and the control board of the first generator, are exchanged with the communication protocol compatible OpenTherm™ v3.0 Smart Power Mode Medium Power.

5.2 GENERAL TECHNICAL DATA

- Brahma design
- graphic LCD 128x64 pixel
- backlight timer 20 seconds
- LED for diagnostics/signaling
- 7 variable function keys
- weekly programming
- 4 temperature levels (T0, T1, T2, T3)
- resolution (0,5°C temperature set)
- resolution (0,1°C temperature read)
- minimum interval programming: 15 minutes
- SELV insulation (Safety Extra Low Voltage)
- bipolar connection, non-polarized
- protocol v3.0 Smart Power Mode – Medium Power

5.3 TECHNICAL DATA OF THE CHRONOTHERMOSTAT

Operating temperature: 0 °C +50 °C

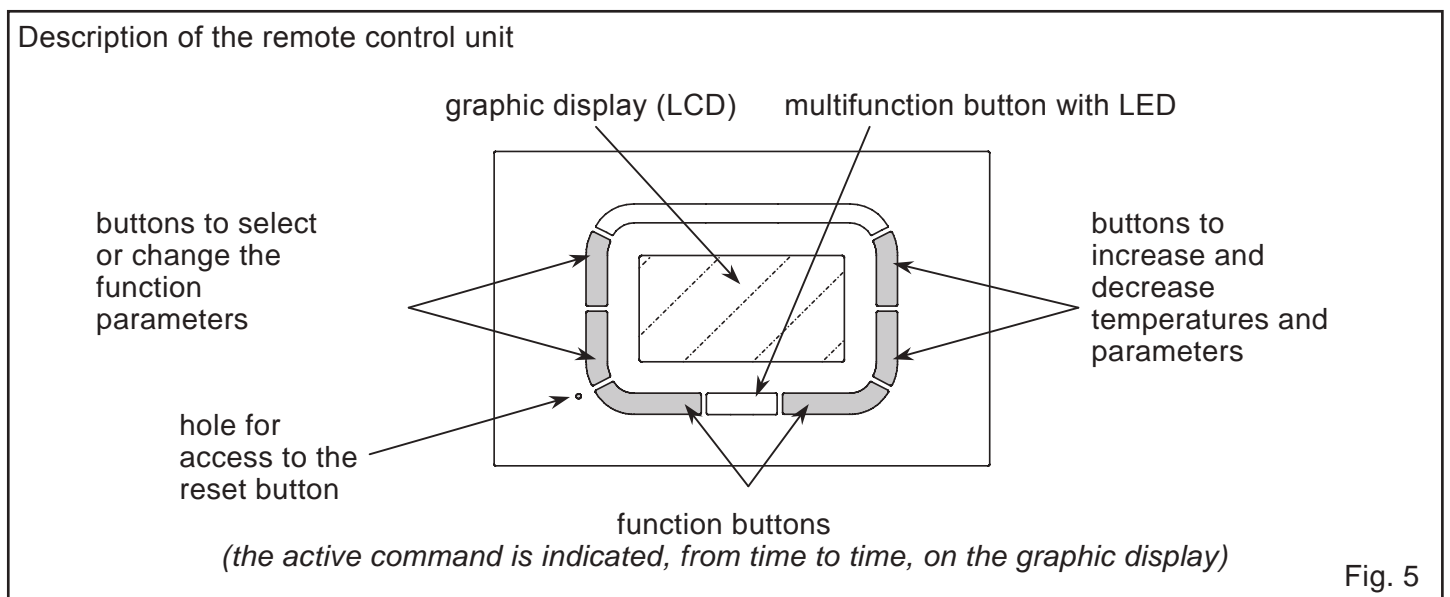
Humidity: 95% maximum at 40 °C

Power supply: low voltage (3V), obtained from communication with the hot air generator control board

Protection degree: IP30

Dimensions: 140x90x32 mm

Compliance: directive 2004/108/CE (EMC), directive 2006/95/CE (LVD).



5.4 INSTRUCTION FOR USE

The Kronos GA11 provides the user with a graphic LCD dot-matrix, a series of buttons in silicon rubber, and an LED indicator located below a button plastic transparent to display the parameters and interact with the heating system. Figure 5.

The buttons have any versatile utilization depending on the selected menu.

The use of buttons is facilitated by the indications with text, icons and other graphics that appear on the display. The vertical buttons on the left of the display are typically used to navigate the setup menu or to select the parameters.

The vertical buttons on the right of the display are used to vary temperature and the classical function increase / decrease (+ / -).

To facilitate the change of set values, the long press of these buttons accelerates the increase or decrease.

The horizontal buttons at the bottom serve to confirm or cancel the settings, or to enter and exit the submenus.

The center button to used for special functions as the unlock of the boiler.

Under the center button there is an LED:

- LED with color red continuous: error or no communication with the hot air generators;
- LED with color red intermittent: hot air generators lockout;
- LED with color yellow intermittent: anomaly;
- LED with color green continuous: the chronothermostat is resuming work after a power failure.

The most frequently used functions by the user are available in the main menu.

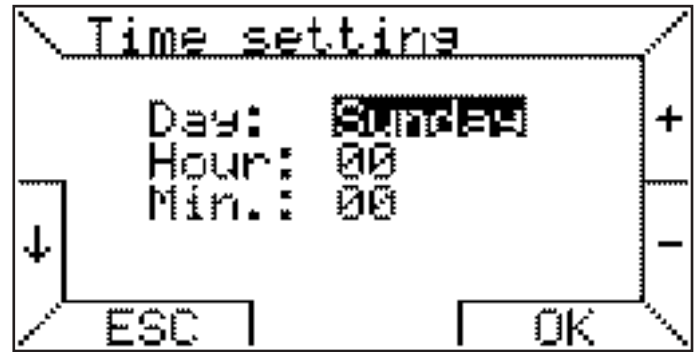
It is possible to quickly browse through the pages to set, for example, room temperature or the maximum power of the hot air generators.

The first time or after a reset of the Kronos, appears the language menu, as shown in the figure below.

Pushing button OK, you confirm the selection.



Then the current time can be entered.



Also in this case the buttons to the left allow you to select the various menu items, while the right buttons are used to change the values, the OK button stores the settings while the ESC button allows you to continue without changing the data time.

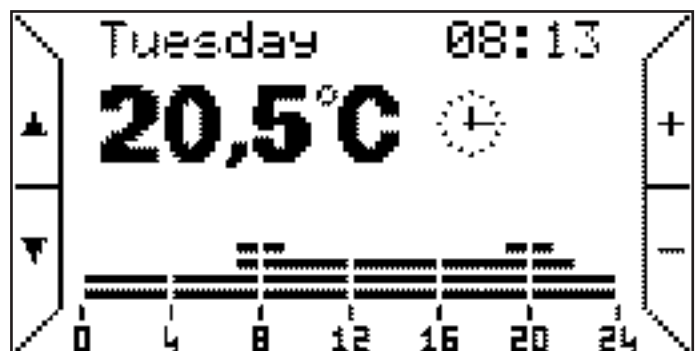
If you press ESC, the subsequent reconnection of the chronothermostat (for example power down) you will again be prompted to select the language and set the current time.

5.5 BASE FUNCTION

FIRST LEVEL MENU

When the chronothermostat is connected to a hermoregulation board, the following screen appears on the display.

If the thermoregulation board is not compatible, you will receive an error message.







In the figure the main screen.

Above are shown the day of the week and the current time, these indications are intermittent if they are not updated.

Below there is an indication of the temperature measured (measurement every 10 seconds);

Beside, an icon indicates the function of thermoregulation currently active: in this case the image of a clock indicating the automatic mode.

5.6 CORRISPONDENCE BETWEEN ICONS AND OPERATION MODES:




 Automatic	Temperature control environment according to the weekly program set by the user. Program seen as a graph of the current day.
 Manual	Temperature control environment in accordance with a user-selected temperature (thermostat function).
 Summer	Temperature control environment disable. Summer ventilation can be activated manually.
 Sandby	Temperature control environment disable.

In “automatic mode”, the cronothermostat performs the temperature control program was set for the current day, the graph is visible at the bottom of the display.

The graph is divided into time intervals of 15 minutes, corresponding to a pixel horizontally, and in the four programmable temperature levels.

Near the icon of the operation mode other icons may appear.

If the hot air generators is turned on appears flame symbol, different sizes depending on the modulation level of the flame (◊ ◊ ◊ ◊).



If it present a lockout or a fault appear symbols ( , ) respectively and if it is not present the connection icon appears symbol ().

No icon appears in the visualization if the hot air generators is in stand-by and has no problem.

Under the indication of the room temperature may be present, in addition, a line of text that provides information to the user in special cases, such as the presence of error or the status of additional Here there are the messages that may appear, alongside with their meanings:


Starting...	Kronos is in the process of connection to the hot air generators.
Ambient probe error	Room temperature sensor on Kronos damaged.
Fault code xxx	There is an anomaly or a lockout on the hot air generators. Code xxx .
Comm. error	Communication error between Kronos and hot air generators.
Error ID xx	The Kronos fails to correctly interpret of information sent from the hot air generators.

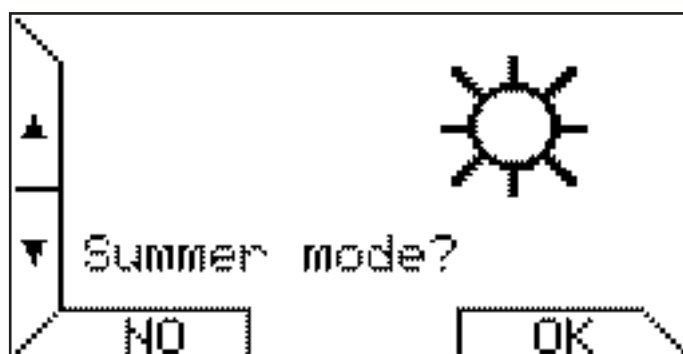
Note: Please refer to the thermoregulation board’s documentation for detailed description of the fault codes and error codes.

The buttons on the right, marked with + and -, allow to vary the temperatures required for the automatic program (T0, T1, T2, T3). Instead, in “manual mode” (icon ) allow to vary the set point room temperature. Pushing the buttons on the left, marked with arrows, you can browse the pages of first level menu. Pushing the button  , the following display appears.



Pushing the buttons +/- you can vary the temperature and pushing the button OK you activate the “manual mode”.

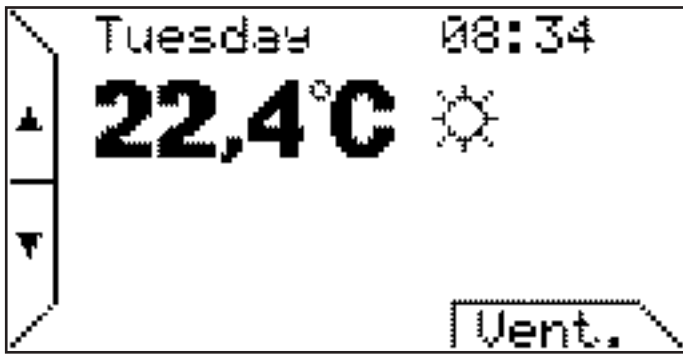
Pushing again button  , you can activate the “summer mode”, which is not active environment thermoregulation.



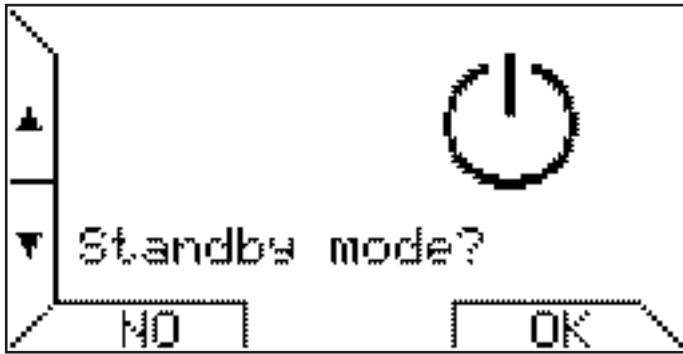
The management of the cronothermostat by the user is much simplified. The functions are not distinct between the functions relating to hot air generators and functions relating to thermoregulation.

If you select the “summer mode”, you can turn summer ventilation through the function key [Vent.].

Once activated ventilation, a key mark becomes [V.OFF], and it is possible to stop the fan using the same key.

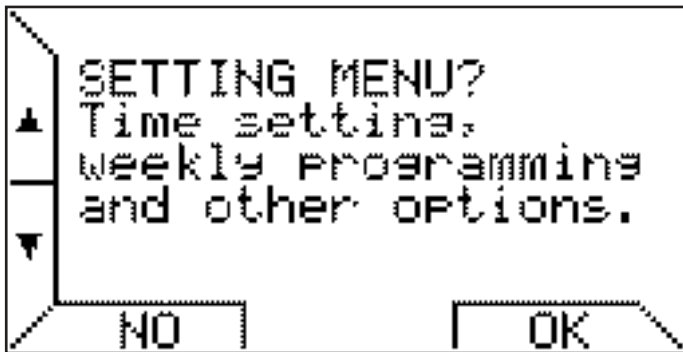


Pushing again button ▼ you switch to another option:

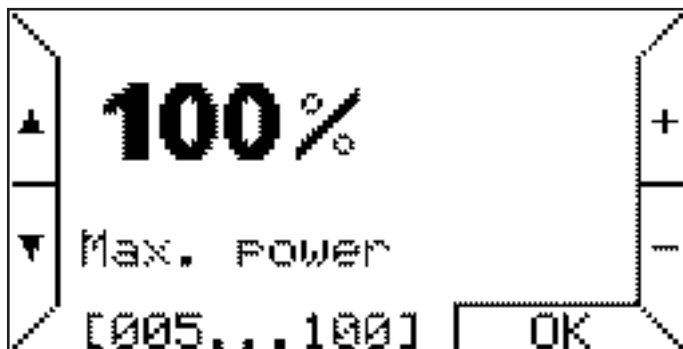


This option allows you to turn off the system (temperature control environment and ventilation are disabled). The first level menu is circular, all the screens described above are accessible by pushing the reverse button ▲.

Pushing again button ▼ is proposed the sub-menu "SETTING MENU"



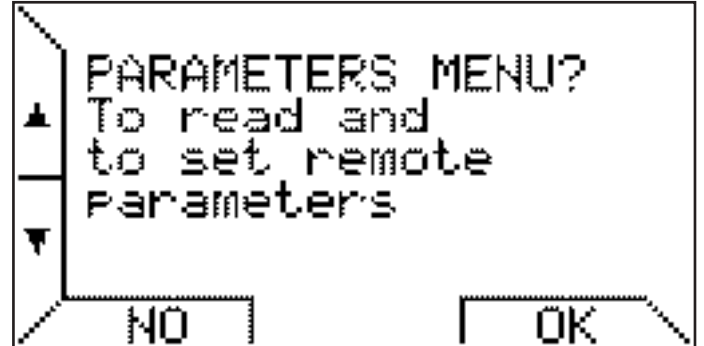
In "SETTING MENU" are set the calendar, the mode of thermoregulation and a weekly schedule. The "SETTING MENU" is described in a separate paragraph below. Pushing again button ▼ you enter the menu for setting maximum power.



In this screen, it is possible to limit the power level required by the chronothermostat to generators, for heating the environment.

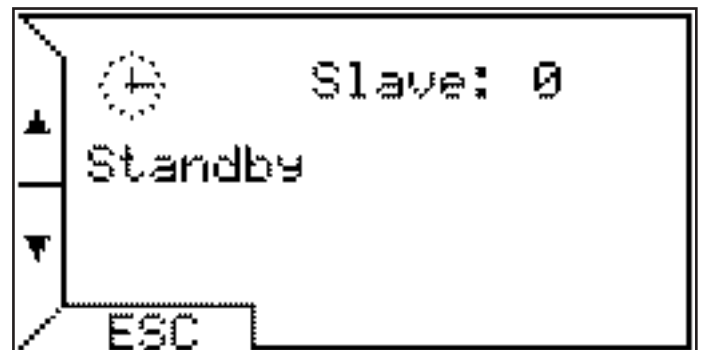
For more details see the next section, in particular the description of the submenu "Thermoregulation".

Pushing again button ▼ is proposed the submenu "PARAMETERS MENU"



The submenu "PARAMETERS MENU" (described in the relevant section) allows you to see the parameters of the hot air generators and allows you to manage advanced functions, such as transparent parameters (TSP) and unlock.

If you press ▼, you will see the control panel of the heating system.



In the first row are displays the icons that illustrate the status of thermoregulation and generators with at the side, the number of generators (or control boards "slave") connected.

In the central row are displays additional information about the status of generators or anomalies.

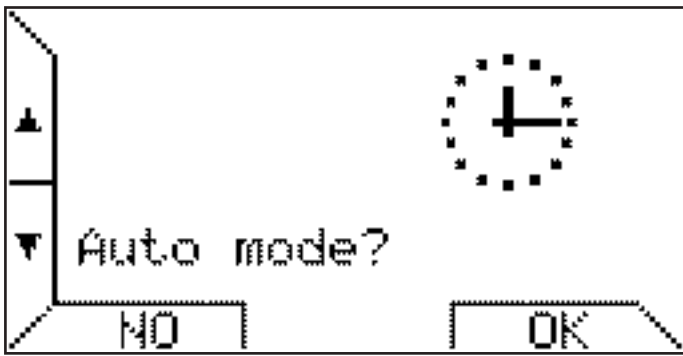
In the third line, if available, is shown the value of outdoor temperature or errors related to thermoregulation environment.

This menu has a frame fixed.

The options previously seen remain displayed for 20 seconds, then the display returns to the main screen, which depends on the chosen operation mode. (manual, automatic, summer, off).

In this option, however, if the user does not push ESC or not push ▼ or ▲, the chronothermostat continues to show the control panel with the relevant information.

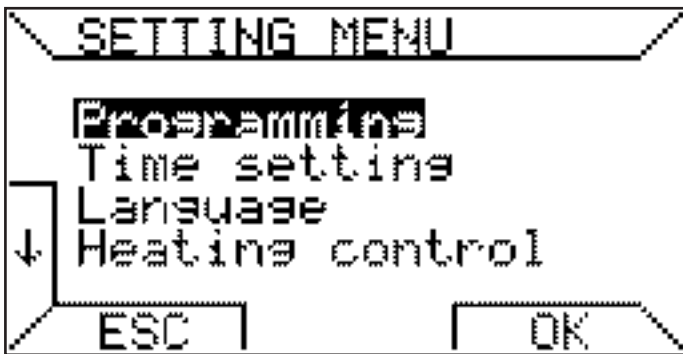
Pushing again the button ▼ you return to the first option.



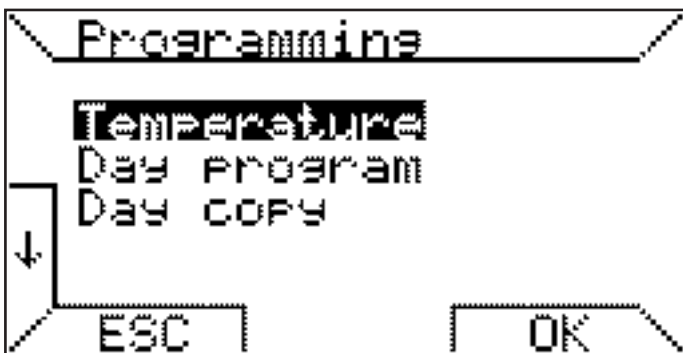
In case it is already active the automatic mode, it is indifferent push NO or OK.

5.7 MANAGEMENT CHRONOTHERMOSTAT SETTING MENU

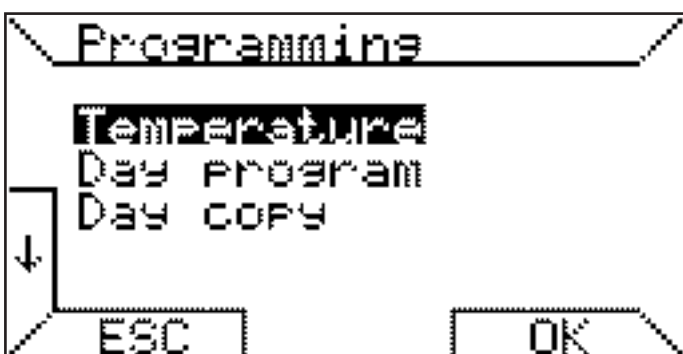
This section describes the submenu "SETTING MENU". This submenu allows you to manage temperature control environment, the weekly program, the time setting and the language choosing.



Selecting the option "Programming" you enter in weekly program dedicated submenu.



Choosing the option "Temperature" you enter in the screen setting of the four temperature levels T0, T1, T2 and T3.

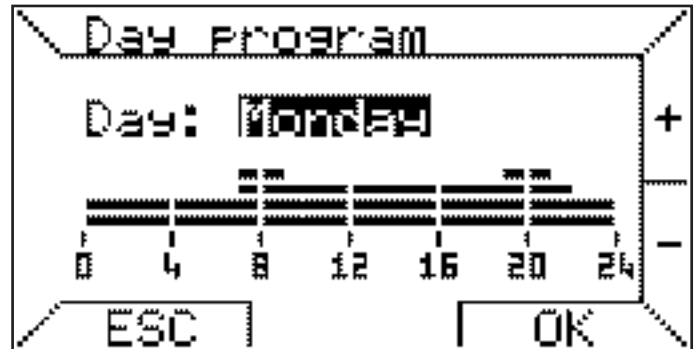


To select the temperature level is necessary to push the buttons ↓ e ↑, instead to vary the temperature value it is necessary to push + e -.

On the right side of the screen is shown the relative position of the current setpoint temperature value with respect to minimum values (5 °C) and maximum value (30 °C).

The higher temperature is associated with T3 and the lowest temperature with T0, the chronothermostat meets the following constraint: $T0 \leq T1 \leq T2 \leq T3$ and automatically resizes the temperatures.

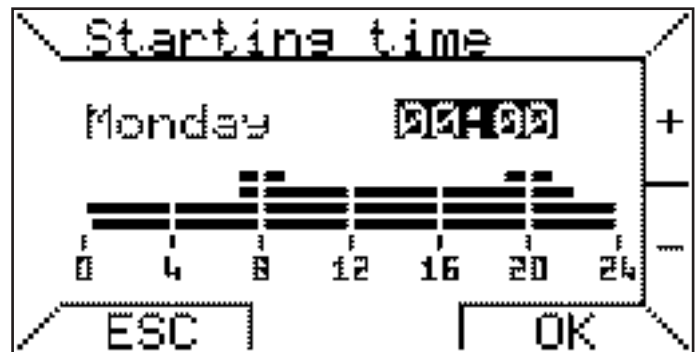
Choosing the option "Day program" you enter in the following screen.



At the top of the screen you select the day, and at the bottom of the screen displays the day program.

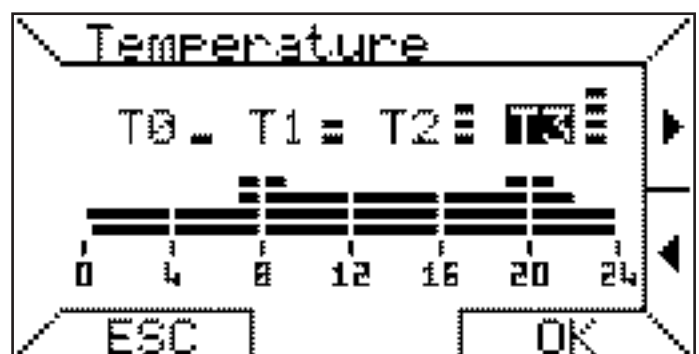
Pressing the + and - buttons you can select the day. For example, suppose you want to program the day "Monday", pressing OK button you enter the scheduling of time slots.

The time slots are programmed in three steps: initial time, temperature and final time.



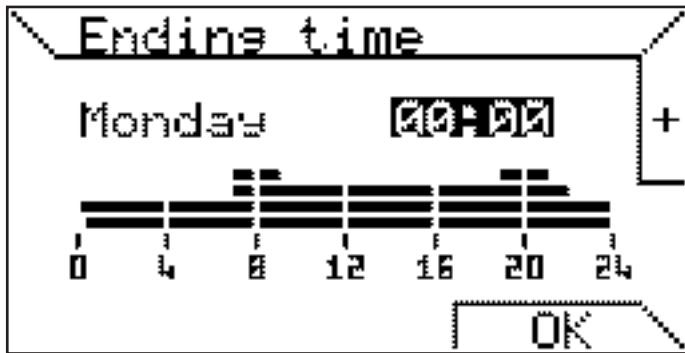
In the first step is set the starting time by pushing the + and - buttons at intervals of at least 15 minutes and you confirm pushing OK.

However, if you want to quit the programming of the selected day, push ESC.



In the second step, pushing the ◀ and ▶ you select which of the four programmed temperatures will be associated to the time slot.

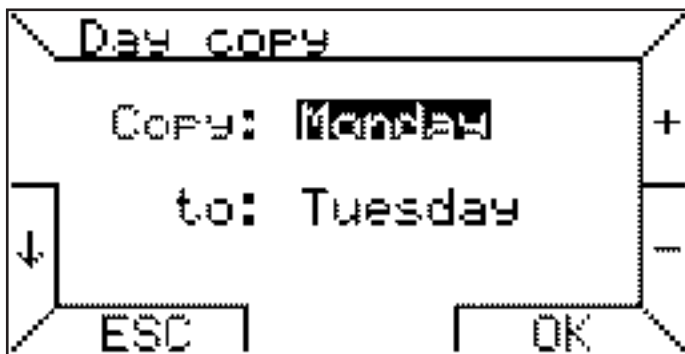
Pushing OK you confirm the level of temperature and pushing ESC you return in the first step.



In the third step you select the ending time.

The final time can not be less than initial time, selecting two coincident values for initial time and final time, the daily schedule is not changed.

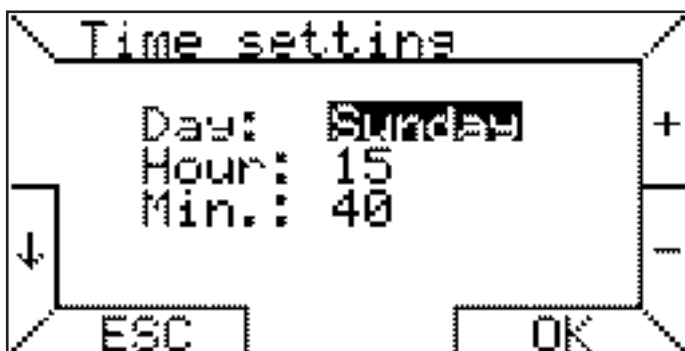
The last item on the "Programming" menu allows you to copy the program day to another day.



At the top you select the source day in the lower you select the destination day, You can also copy a program of the day all week and have the same program every day, to do this select as target the "ALL".

When you press OK, a message confirms your copy of the program.

Completed the description of the "Programming menu", we return to describe the sub menu "SETTING MENU". The "Time setting" submenu on the "SETTING MENU" allows adjustment of the current time and day of the week.



Pushing the ↓ and ↑ buttons you select the item you want to change, while pushing the + and - buttons you change the value.

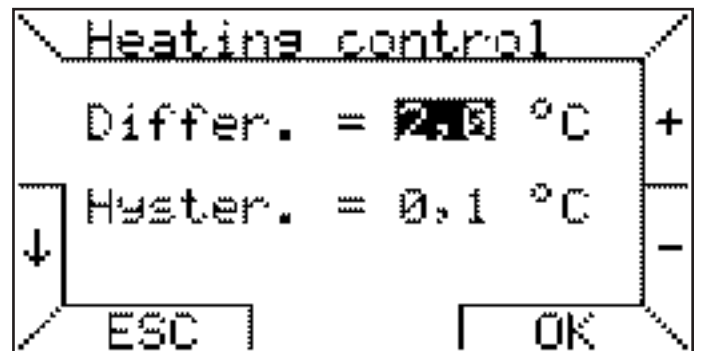
Pushing the OK button, you confirm the changes.

The "Language" submenu on the "SETTING MENU" allows set the language of texts on the chronothermostat.



As seen above, this setting is required when you first start or after a reset of the chronothermostat, then it can be changed at will.

The last item, "Heating Control" of the "SETTING MENU", concerns the method used by the chrothermostat for controlling room temperature.



In this screen you can set the differential, which can vary between 0.2 °C and 5.0 °C (default value: 2.0 °C). **d** is the thermal differential, **Max** is the maximum rate, **Ti** and **Ta** are the room temperature set and the room temperature measured.

The required percentage P is calculated as follows:

if $Ta \leq Ti - d$ then $P = Max$

if $Ti - d < Ta < Ti$ then $P = (Max / d) \times (Ti - Ta)$

if $Ta \geq Ti$ then $P = 0$

Example 1:

$Ti = 20,0 \text{ °C}$

$Max = 100\%$

$d = 0,5 \text{ °C}$

If $Ta \leq 19,5 \text{ °C}$ then $P = 100\%$;

If $19,5 \text{ °C} < Ta < 20,0 \text{ °C}$ then $P = (100 / 0,5) \times (20 - Ta) \%$;

if $Ta \geq 20 \text{ °C}$ then $P = 0$.

On the same page you can enter the hysteresis value (asymmetric) in order to avoid frequent restart of generators.

Hysteresis may vary in steps of 0.1 °C between 0.1 °C and 50% of the set differential value.

After reaching the set temperature **Ti**, the chrothermostat controls the switching off of the generators, the following restart will take place only if the temperature falls under the set temperature decreased hysteresis (**Ti-hvsteresis**). **The default hvsteresis is 0.1 °C.**

Example 2:

$T_i = 20,0\text{ }^\circ\text{C}$

$Max = 100\%$

$d = 0,9\text{ }^\circ\text{C}$

$hysteresis = 0,4\text{ }^\circ\text{C}$

($hysteresis$ can vary between $0,1\text{ }^\circ\text{C}$ e $diff / 2 = 0,4\text{ }^\circ\text{C}$)

When $T_a \geq 20\text{ }^\circ\text{C}$ then $P = 0$, and the generators are turned off.

A restart occurs if $T_a \leq (T_i - hysteresis) = 19,6\text{ }^\circ\text{C}$;

in particular if $19,1\text{ }^\circ\text{C} < T_a \leq 19,6\text{ }^\circ\text{C}$ then $P = (100 / 0,9) \times (20 - T_a)\%$, while if $T_a \leq 19,1\text{ }^\circ\text{C}$ then $P = 100\%$.

5.8 MANAGEMENT SYSTEM

PARAMETERS MENU

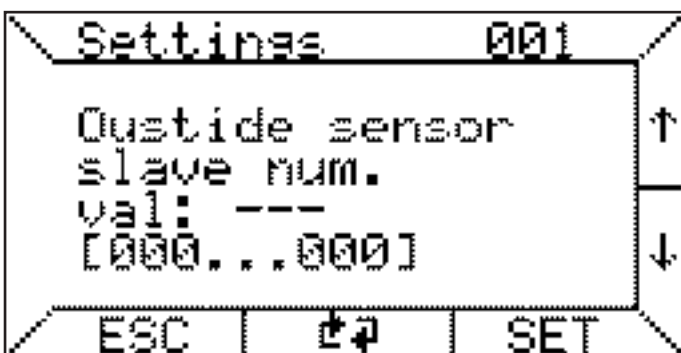
The submenu "PARAMETERS MENU" allows you to remotely manage the hot air generators.

Pushing the \downarrow and \uparrow buttons, you scroll through the various items.



The first item, very important, allows you to view and set the parameters on the remote system.

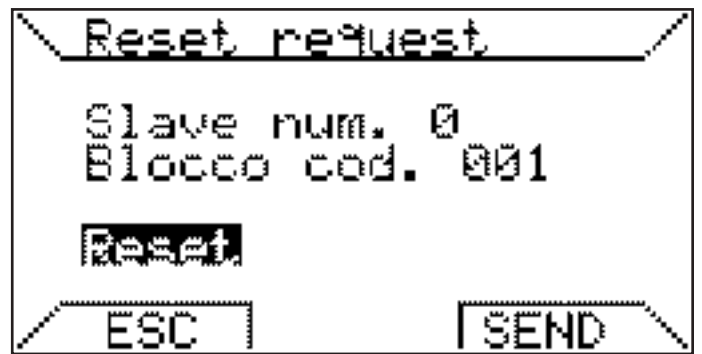
Pushing OK, you activate the first page of reading parameters.



To change a parameter, you must navigate to the settings page with keys \uparrow and \downarrow , and pushing the SET button you can enter with the + and - buttons the selected value between the minimum and maximum, shown in brackets.

For information about the meaning of the parameters, please refer to the technical documentation of the control board of the hot air generators connected to the chronothermostat.

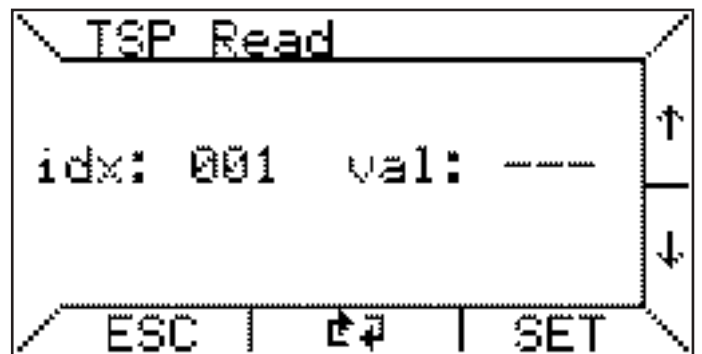
The second item on the "PARAMETER MENU" allows you to use the unlock command.



As shown in the above page, in case of lock of a generator, it is possible to send a request for remote reset.

Since this is a safety function, the unlocking of the generator can take place only with the consent of the safety logic control board.

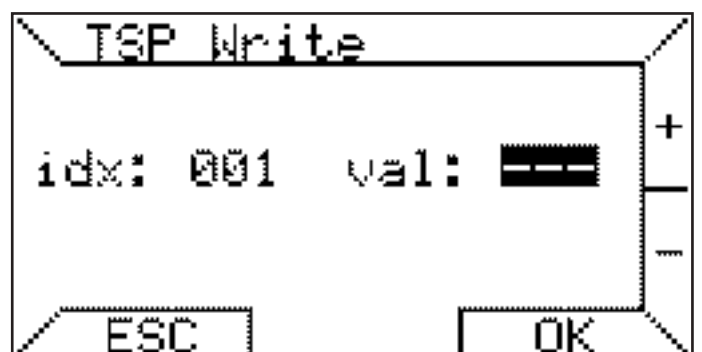
Selecting the third option you can operate on TSP (Transparent Slave Parameter).



The chronothermostat makes available the function of reading and writing of TSP.

To change a TSP, you must select the index "idx" desired, using the \uparrow and \downarrow keys, and push the SET button.

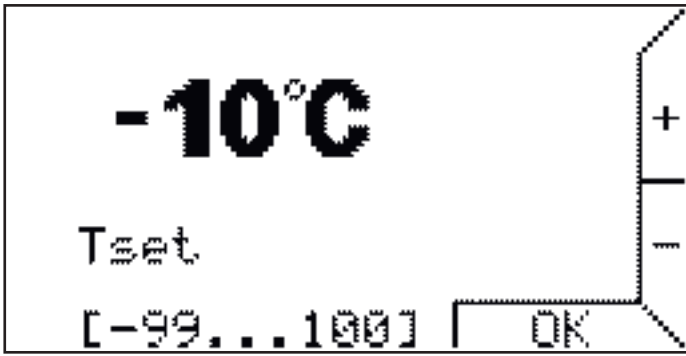
After that following screen appears, where you can enter, with the + and - buttons, the desired value.



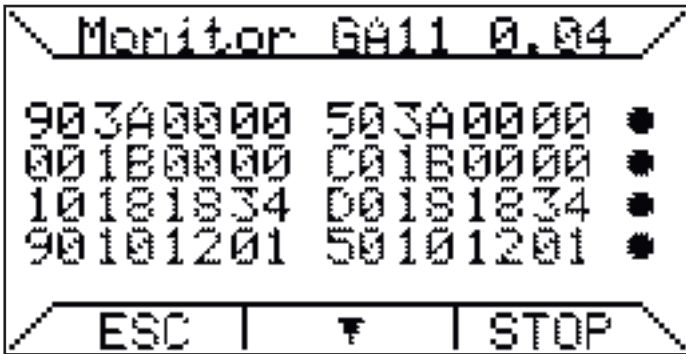
In the event, that the board does not include the writing of this TSP (read only) the changes made to it will have no effect.

The number of TSP depends on the control board of the slave (hot air generator), the chronothermostat will support a maximum of 255.

The fourth option, of the "MENU PARAMETERS", if available, allows you to enter the temperature Tset:

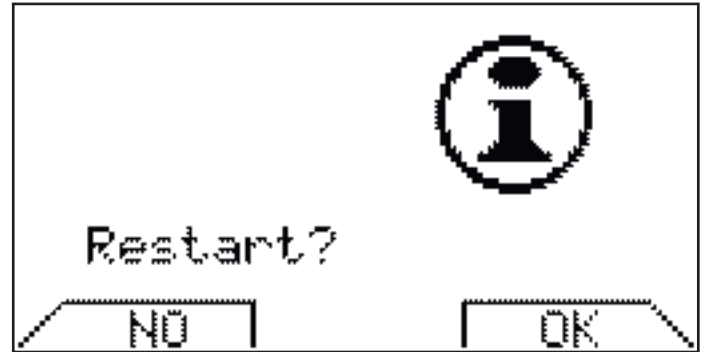


Refer to the documentation of the control board generator, to understand the meaning of Tset. The last two items of the “MENU PARAMETERS” are useful functions during installation and maintenance of the control system.



The item “OT monitor” is dedicated to advanced diagnostics OpenTherm communication, as it makes visible the data exchanged between chrothermostat and control board and shows the analysis of the communication made from the chrothermostat (master side). In particular, next to the data shows the following symbols:

- '●' correct data exchange
- 'T' RX timeout error
- 'R' RX error
- '?' generic error (unknow)
- 'P' parity error
- 'E' syntax error



The function “Reconnection”, serves to reconfigure the chrothermostat in the case has been made an intervention hardware or software in the control board of the generator.

Activate the reconnection is equivalent to physically disconnect the communications connector from the chrothermostat and then reinsert it.

6. SPECIFIC FUNCTIONS KRONOS GA11

6.1 INTERNAL ENERGY STORE AND USE OF BATTERIES

The chronothermostat is provided with an internal energy store which can compensate for a power cut-off for a few hours; in this way the user will not have to set the current time, room temperatures and week program again.

However, the internal energy store consumption time varies depending on the room temperature and humidity, as well as on the ageing of components. In order for the internal energy store to be fully effective, the chronothermostat must have been correctly energized for a couple of days at least without interruption.

If frequent and/or long cut-offs of the boiler power supply are expected, it is possible to avoid losing chronothermostat data by installing two alkaline batteries type AAA LR03 1,5V into the appropriate slot on the fixing base.

In this way, the additional internal energy store, made by new batteries, enables to preserve data for a period even longer than one year under no power supply conditions.

It is advisable not to keep batteries inside the chronothermostat for a long time during normal operation (power supply presence) to prevent any battery liquid leakage from damaging the chronothermostat itself. Finally, please note that Kronos GA11 does not provide any information about the presence of batteries or their charging status.

6.2 WARNINGS ABOUT THE BACKLIGHT

The display backlight is obtained from the reserve described in the previous paragraph.

It is possible, therefore, that in case of newly connected chronothermostat the brightness is minimal or absent because of insufficient internal charge: this must not alarm as they are just a few hours of connection, because the backlight to begin to be efficient.

You can, if desired, to remedy this temporary lack of backlighting installing alkaline batteries, making sure the polarity and following the instructions in the previous paragraph.

6.3 INSTALLATION INSTRUCTIONS

Respect National and European standards (EN 60335 1/pr EN50165) regarding electrical safety.

Before turning on, check the cables, incorrect wiring may damage the devices and compromise safety.

Connect and disconnect the control system only in the absence of voltage.

Avoid exposing the system to dripping water.



Connection to board hot air generator

6.4 INSTALLING THE CHROTHERMOSTAT ON THE WALL

First step, remove the cover containing the electronic board by pushing the appropriate button trapezoid, that says "PUSH", located on the lower unit and rotating the cover itself up, until it is fully removed, as shown in figure 3.

For the fixing on the wall is possible to use many holes provided on the bottom of the base, in this case, see figure 4.

Then is possible to wire the circuit board unit using the appropriate terminal, regardless of the polarity (the two conductors can be exchanged).

It is recommended to use a twisted pair cable (example H03RR-F o H03VV-F) size between 0,5 mm 2 and 2,5 mm 2, the length should not exceed 50 m.

The resistance of each conductor, in any case, should not exceed 5 Ω .

In environments with electromagnetic interference it is recommended to use a shielded twisted pair cable.

Instructions for unhooking the front panel

- 1) Press PUSH button
- 2) Rotate upwards

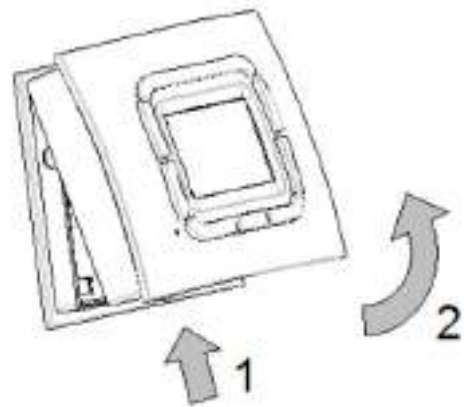


Fig. 5

6.5 DIMENSIONS FIXINGS

Base fixing holes, rear view (dimensions in mm)

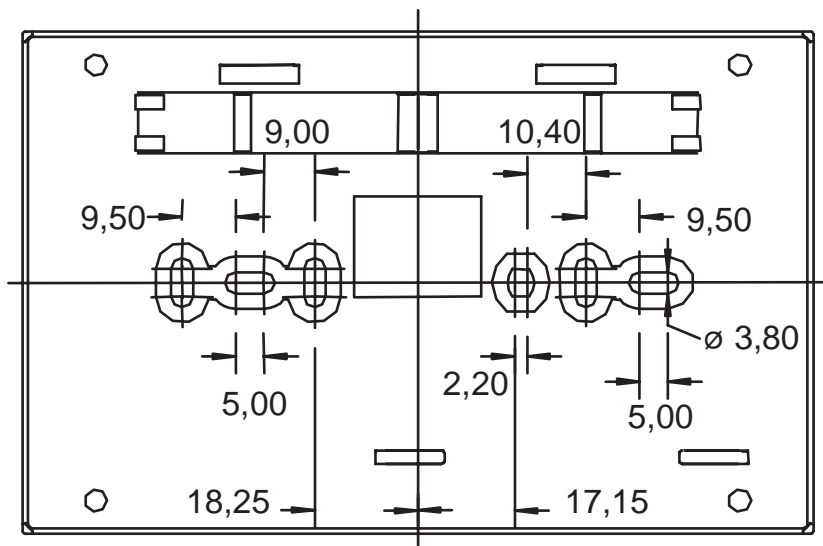
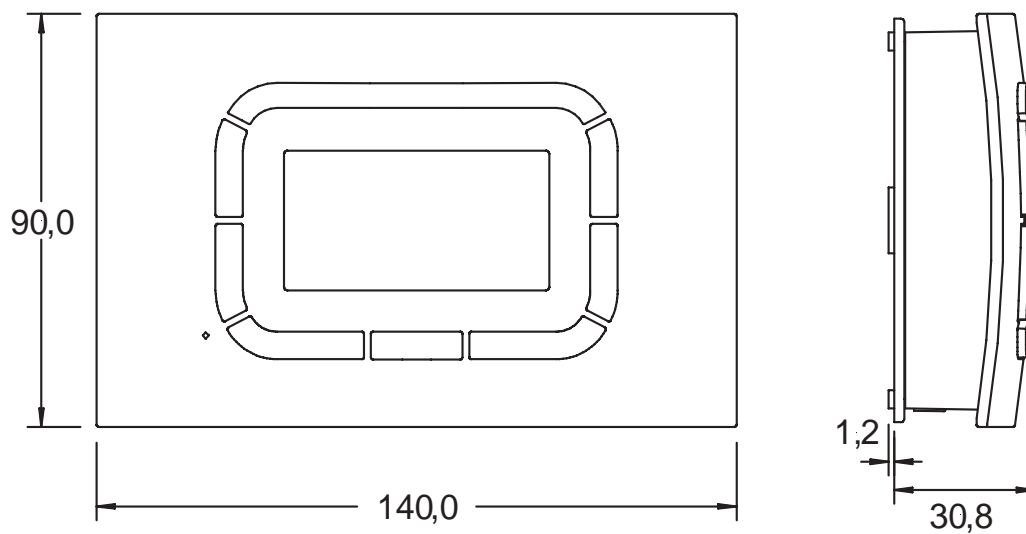


Fig. 6

External dimensions (dimensions in mm)



6.6 WIRING DIAGRAM FOR BRAHMA EQUIPMENT TYPE TC340P

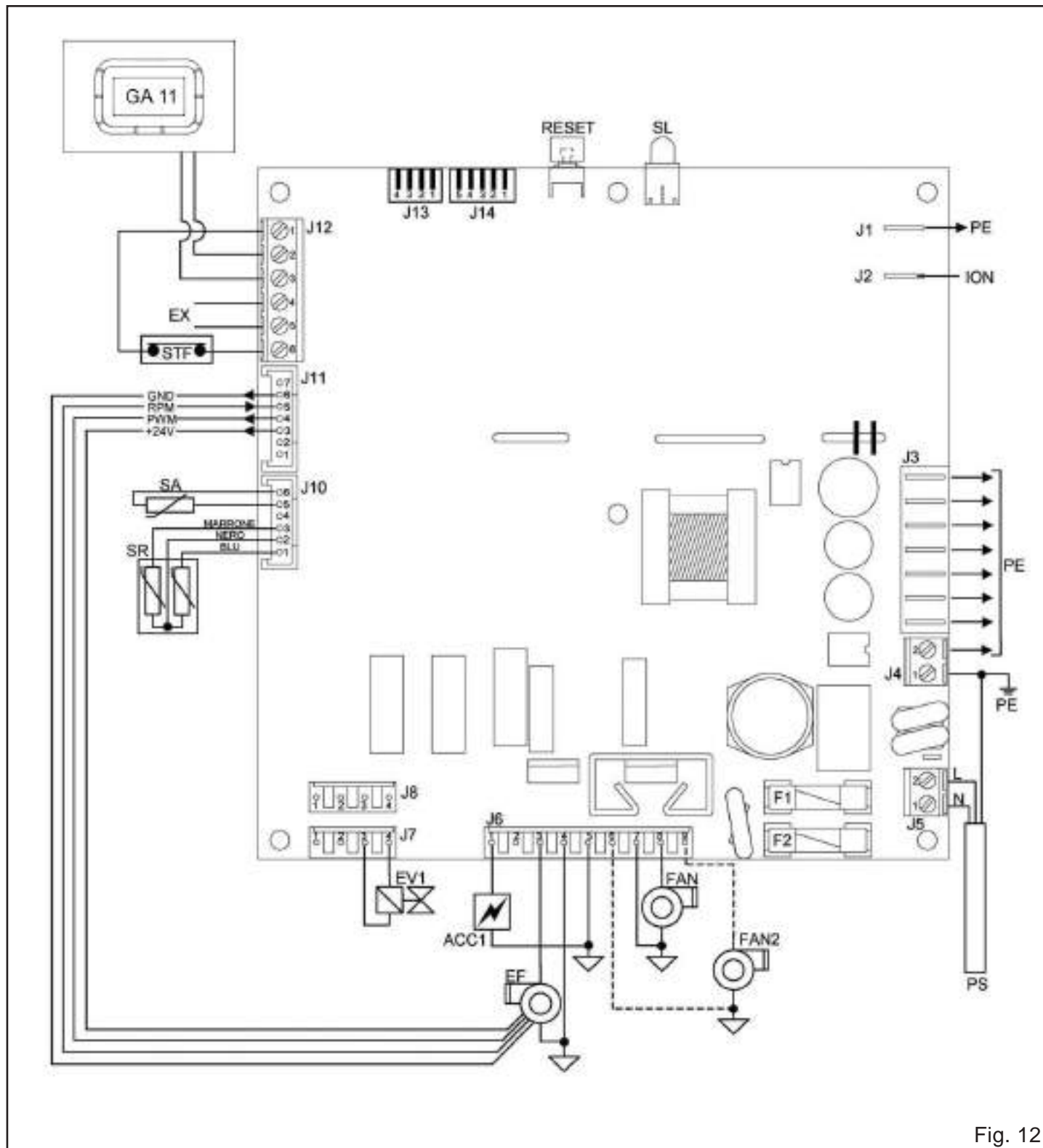
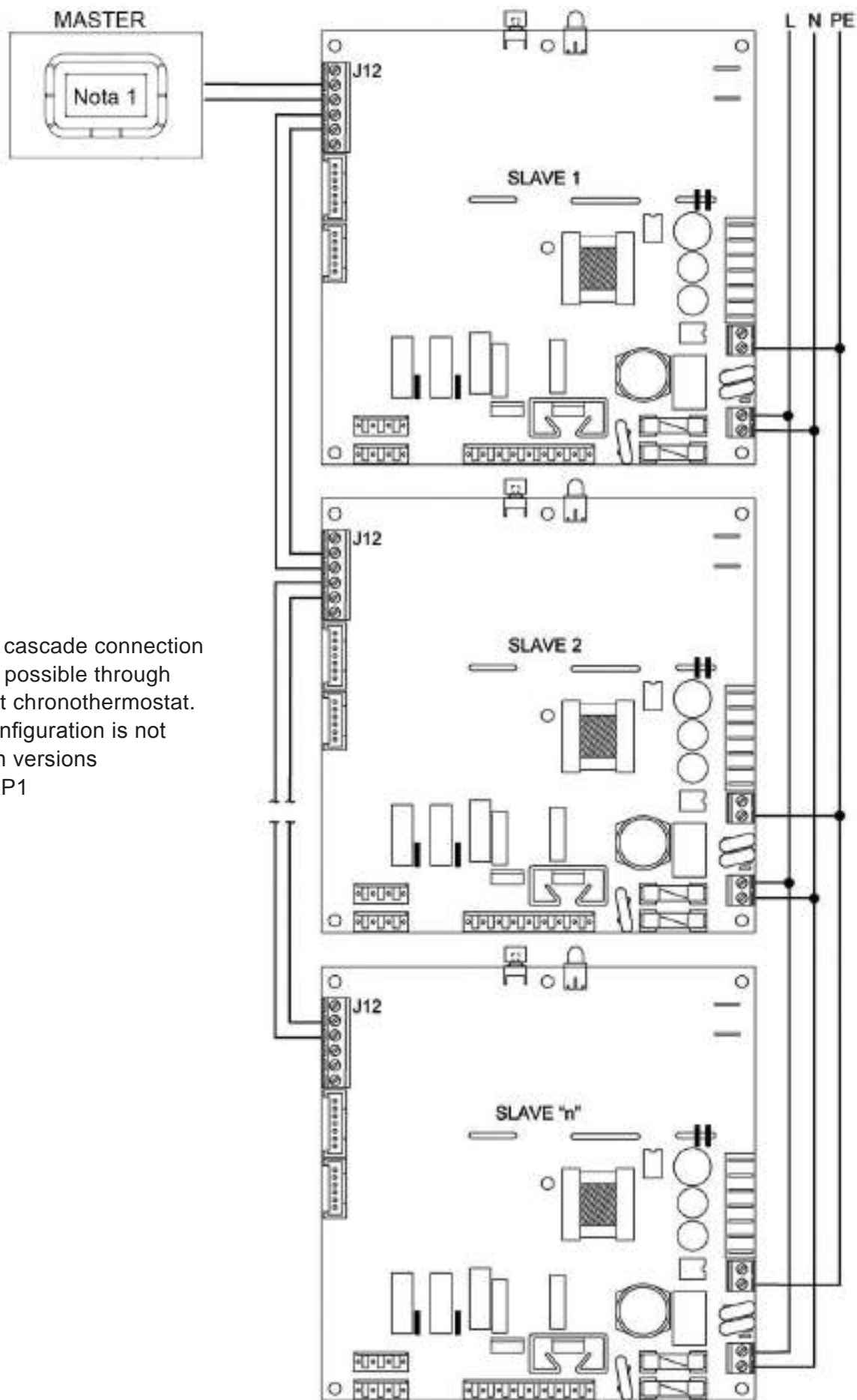


Fig. 12

Legend

GAI	Thermostat
EF	Burner fan motor
FAN	Treated air blower motor
ACC1	Auxiliary remote ignition transformer
EV1	Valve first stage
SR	Adjustment probe
STF	Fire damper
SA	Room sensor (optional)
SL	Signaling brightness and LEDs
RESET	Outlet button
EX	Connection for cascaded equipment
ION	Detection electrode

**6.7 CONNECTION DIAGRAM FOR CASCADE CONNECTIONS
MORE DEVICES THROUGH Open Therm**



NOTE

1. The cascade connection is also possible through contact chronothermostat. this configuration is not used in versions TC340P1

Fig. 13

6.8 TYPES OF CONNECTION

The following are all connection types

Reference	Description	Type of connection
J1	Functional earth for flame detection	Female faston 6,3 mm
J2	Detection electrode	Female faston 4,8 mm
ACC2	Ignition electrode	Female faston 2,8 mm
J3	Safety ground for loads	Female faston 6.3 mm (7-pole)
J4	Earth connection	2-pole screw terminal block for Ø 2.5 ©2-pole
J5	Supply	screw terminal block for Ø 2.5 mm ²
J6	Power connector for fan EF fan FAN, auxiliary electronic transformer and modulation increase / decrease inputs	9-pole connector MOLEX type 3001 series terminals type MOLEX seie 2478
J7 - 8 (nota 1)	Power connector of the first valve stage EV1 and of the second EV2	9-pole connector MOLEX type 3001 series terminals type MOLEX seie 2478
J9	Modulator power connector (MOD)	Modulator power connector (MOD)
J10	Flow regulation probe connector (SR) and ambient probe (SA)	7-pole LUMBERG series 3114 connector (LUMBERG series terminals 3111 01 L)
J11	Air pressure switch connector (APS) or low-voltage signals of the PWM brushless fan	6-pole LUMBERG series 3114 connector (LUMBERG series terminals 3111 01 L)
J12	Connector for Open Therm communication and fire damper	6-pole screw terminal block for Ø 2.5 mm ² cabler
J13	RS-232 serial communication connector for interfacing with diagnostic software	4-pole LUMBERG series 3517 04 K connector
J14	Connector for remoting of the reset signal and LED status signals	5-pole LUMBERG series 3517 05 K connector
J19	Pressure sensor	3-pole LUMBERG series 3114 connector (LUMBERG series terminals 3111 01 L)

NOTES: The JB connector is parallel to the J7 connector in the sense that in the same position it is possible to pick up the same output signal. This connector is convenient if double-coil gas valves are used.

SECTION C - HYDRAULIC INSTALLER

7. INSTALLATION

In this section you will find all the information necessary to install the MEC MIX C - MEC MIX F series generators from a hydraulic point of view.

7.1 GENERAL INSTALLATION RULES APPLIANCE

The installation must be carried out, according to the manufacturer's instructions, by professionally qualified personnel;

For professionally qualified personnel means those with specific technical competence in the sector of heating system components.

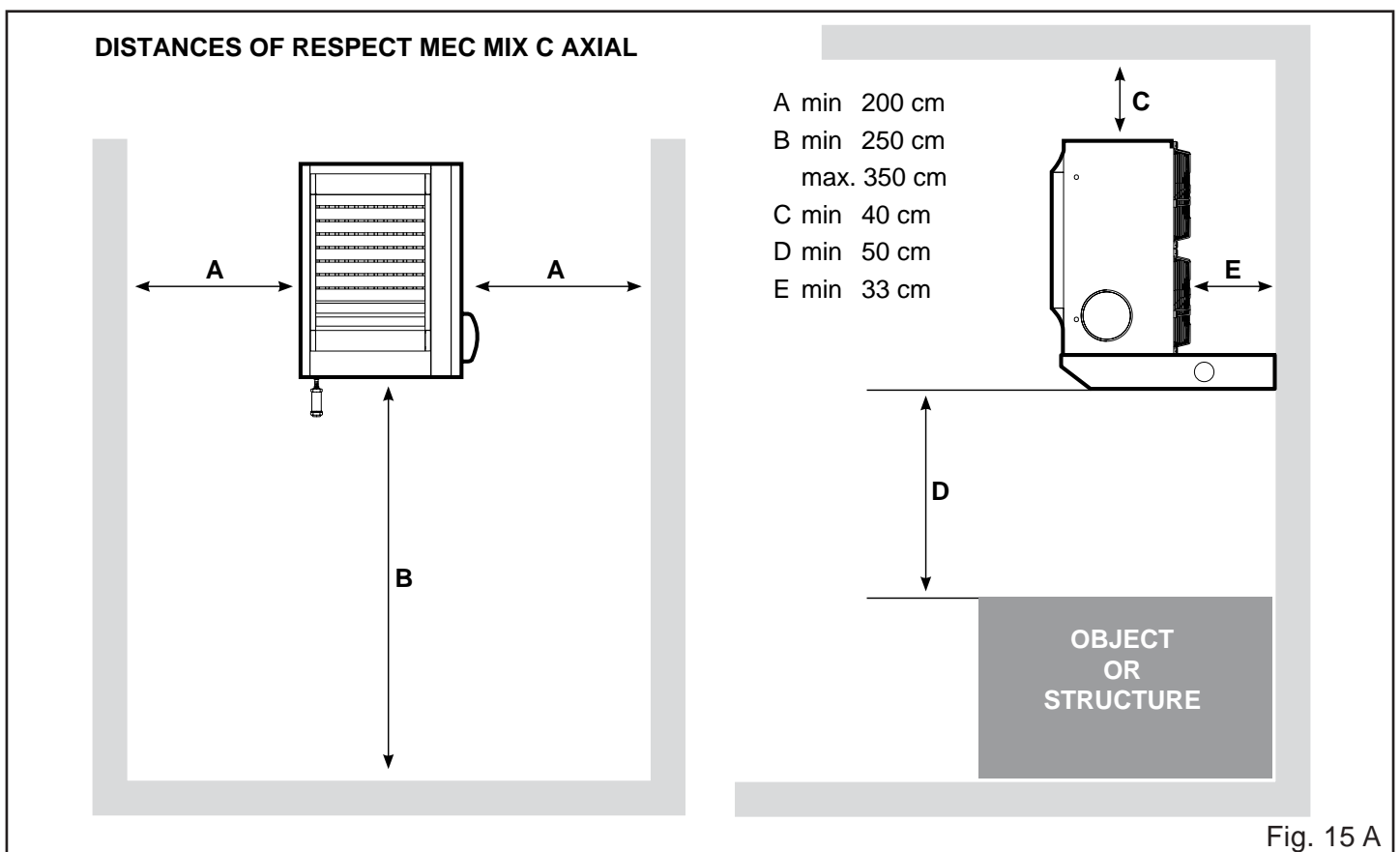
In any case, by calling the Presale office of A2B Accorroni E.G. srl (phone +39.071.723991) you can receive the necessary information.

Incorrect installation can cause damage to people, animals and things, against which the manufacturer can not be held responsible.

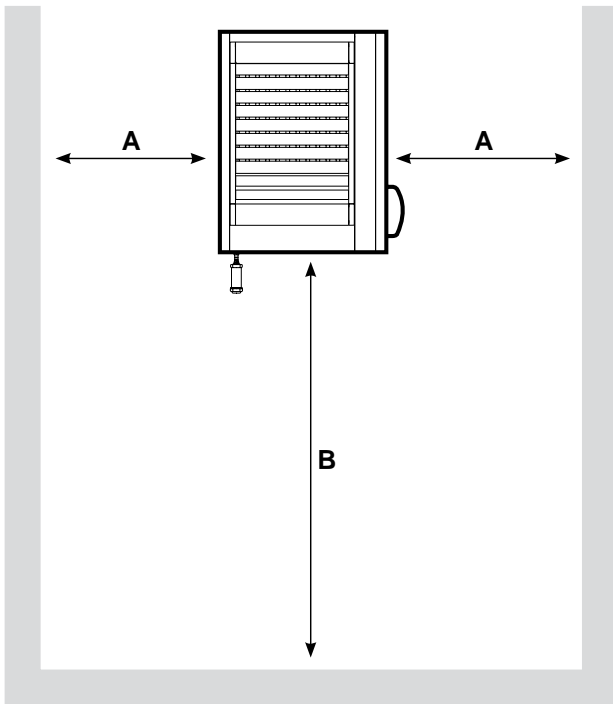
However, comply with the regulations in force and in particular:

- to the D.M. of 12 April 1996 containing the rules of fire prevention for the design, the construction and operation of thermal plants powered by gaseous fuels.
- D.P.R. n. 412/93 which regulates the design, installation, operation and maintenance of thermal plants.
- D.P.R. n. 551/99 which introduces some modifications to the D.P.R. n. 412/93.

- Legislative Decree 192/05 "Implementation of the Directive 2002 / 91CE on energy efficiency in Building "and the subsequent Legislative Decree 311/06 "Corrective and supplementary provisions to the decree legislative 19 August 2005, n. 192 ".
- To the law n. 46/90 and the related regulation of implementation (D.P.R. 447/91) on the safety of thermal plants.
- To the UNI CIG 7129 standard that regulates the installation of gas-powered appliances natural.
- To the UNI CIG 7131 standard that regulates the installation of appliances powered by LPG
- To the UNI 11071 standard that regulates the installation of heat generators a condensation.
- To the law n. 186 of March 1, 1968 concerning the installation of electrical systems. For the installation is good to respect the following requirements:
 - the distance between the back side of the generator and the wall must be sufficient to allow it air intake (minimum 330 mm). The distance minimum from the side walls is shown in Figure 21.
 - **The distance from the bottom of the generator to any object or structure below it cm must be not less than 50 cm to allow installation and maintenance of the condensate drain siphon.**
 - The optimal height recommended from the ground to the base of the generator is 2.5 - 3.5 m (see Figure 15 A / B).



DISTANCES OF RESPECT MEC MIX C DUCTABLE



- A min 200 cm
- B min 250 cm
max. 350 cm
- C min 40 cm
- D min 50 cm
- E min 33 cm

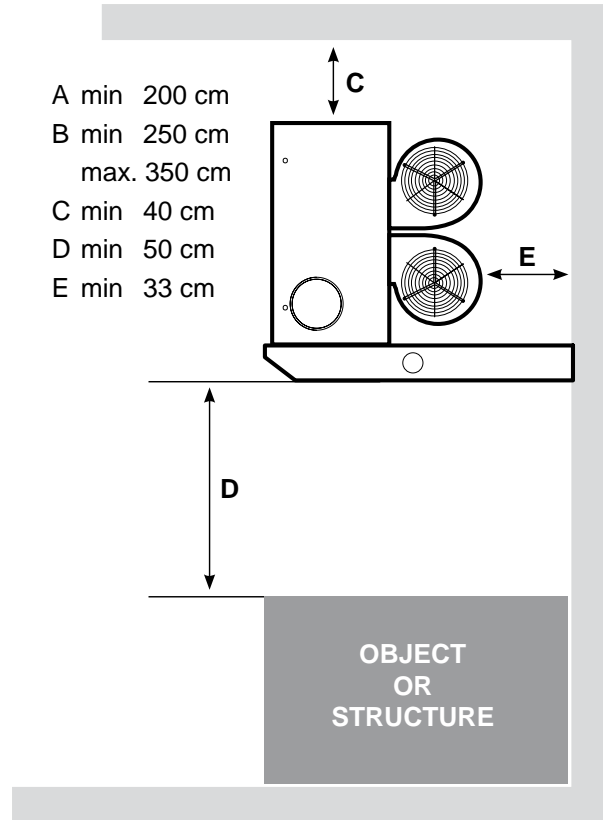


Fig. 15 B

Heights below 2.5 meters are not recommended in as the flow of air coming out of the mouth of sent could affect the present staff in the environment annoying him. It is also remembered that for heights less than 2.5 meters the legislation in force requires more prescriptions. Installation is not recommended at heights above 3.5 meters because in this way it is not guaranteed an air intake in the lower layers environment, generating potential situations of stagnation of cold air near the floor.

To achieve maximum comfort and performance from the plant it is advisable to observe the following rules:

- pay attention that the airflow does not invest directly the staff;
- take into account the presence of obstacles (pillars or other);
- for better heat distribution, in case install with multiple machines, create streams alternating hot air (see Figure 16);
- in some cases it may also be appropriate to ask the appliances in the vicinity of gates in way which also act as an air barrier at the time of opening the doors. Do not install the MEC MIX series generators in greenhouses or environments with a high degree of humidity or conditions similar atmospheres as they have not been designed for this type of use.

7.2 INSTALLATION SEQUENCE

Based on the installation project, prepare the gas and electricity supply lines, as well as the holes for the smoke outlet and the combustion air intake.

1. Unpack the appliance taking care of verify that it has not been damaged during the transport; each appliance is tested in factory before shipping, so if you are there been damaged immediately notify the conveyor.
2. Install the support bracket, following the indications given on the instruction sheet a kit with the bracket itself.
3. Fix the generator to the bracket using the screws a kit with the bracket.
4. Check that an adequate supply exists and gas distribution network. In particular if the appliance is powered by:

Natural gas

Make sure the network pressure of gas supply, with working device, is adjusted to the value of 20 mbar (204 mm H₂O) (admissible tolerance between 17 mbar and 25 mbar).

G.P.L. (mixture of Propane and Butane) It is essential to fit a pressure reducer first jump near the gas tank liquid to reduce the pressure to 1.5 bar and a second jump gearbox from 1.5 bar to 37 mbar in proximity of the generator (tolerance from 20 mbar to 45 mbar).

5. Connect the generator to the gas network by providing on the gas supply pipe a tap interception and a three piece joint.

POSITIONING EXAMPLES

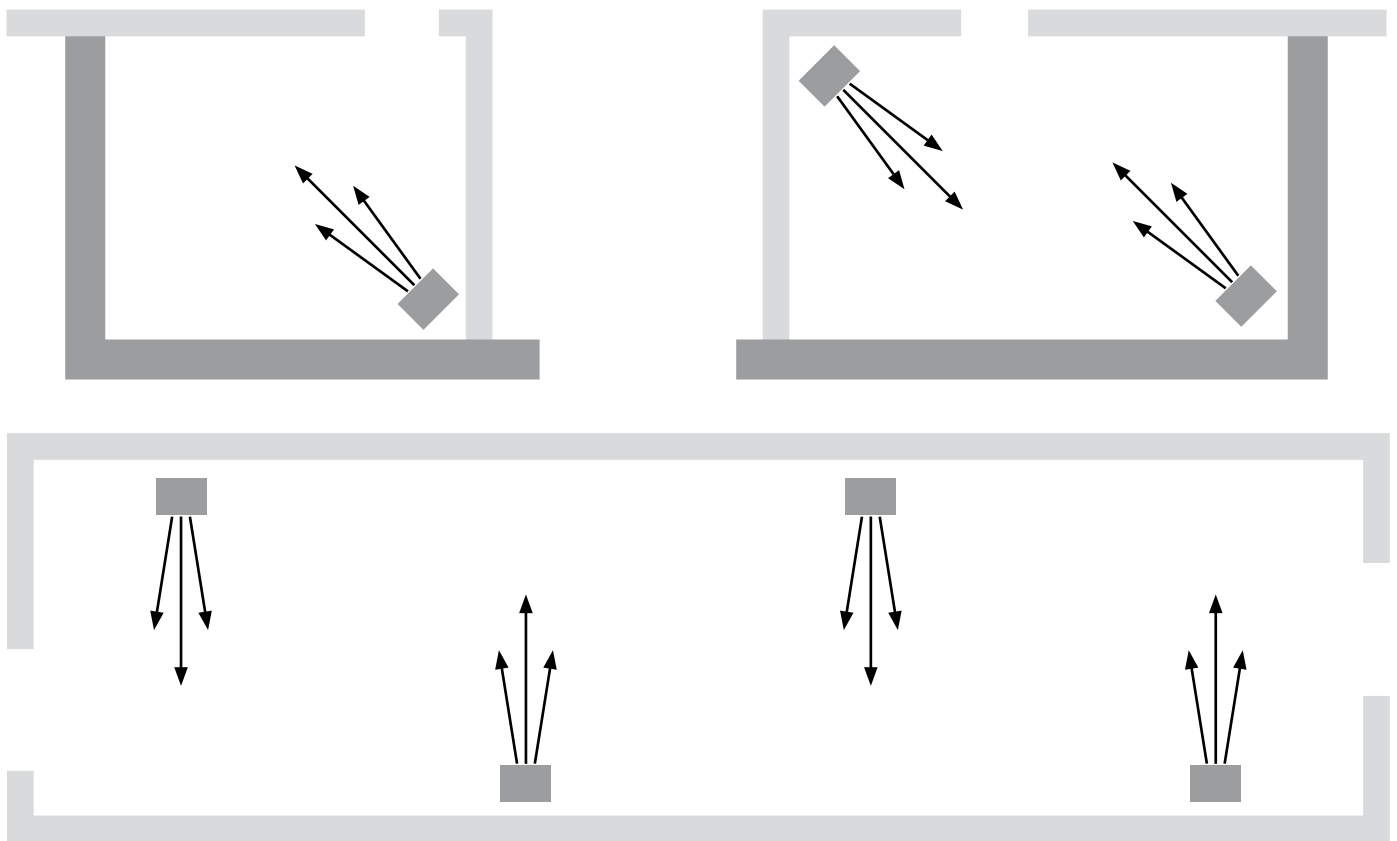


Fig.16

7.3 DIMENSIONING OF AIR TUBES COMBURENTE / FUMES DISCHARGE

MEC MIX series hot air generators can be installed in one of the following ways:

- installation type C13: product unloading of combustion and air sampling comburent occur on the wall through ducts separated (see Fig. 18 and 19) or coaxial (see Fig. 20). In this way the appliance is watertight compared to the room in which it is installed.
- installation type B23: this type includes the combustion air intake in the environment and exhaust of the fumes on the outside wall through a specific horizontal duct (see Fig. 23 e 24) or on the roof through a special duct vertical (see figures 25 and 26). installation type C53: the discharge of products of combustion and the intake of combustion air they take place through separate conduits that flow outside the building and distant from each other. This type allows to realize, to example, the air intake in the wall behind the appliance and the fume exhaust far away from the appliance or to the roof (see Fig. 21 e 22). In this way the appliance is watertight to the room in which it is installed.
- C33 type installation: product unloading combustion and the intake of combustion air they take place on the roof through coaxial pipes (see Figure 27).

In this way the appliance it is tin compared to the room in which it is installed.

- C63 type installation: this type allows to realize fume exhaust / air sampling systems using tubes, curves and terminals retrieved from trade, provided that they are approved. Also, lets use duct diameters greater than 60 mm: for example when it is necessary to realize very long air / smoke systems. With this type, for the calculation of the system air fume must also refer to the data provided by the pipe constructor, as well as the composition, at the smoke flow and temperature (see Table 12). In any case, use approved ducts according to the type of installation to be carried out.

The material used for the flue gas exhaust duct must be of class W1 according to the UNI EN 1443 standard and therefore suitable for resisting the action of the condensates of combustion products from gaseous fuels.

If you use ducts other than those supplied by manufacturer, make sure that these are suitable for the type of the device on which they are installed. In particular, the temperature class of the duct must be appropriate to the operating characteristics of the apparatus.

To size the pipe system it is necessary to calculate the equivalent length of the fumes exhaust pipes and air. For each model and for each configuration of exhaust fumes, the maximum lengths are shown

of linear pipes.

The equivalent lengths of special pieces, like curves with various angles are shown in table 13.

The load losses of the external terminals can be neglected because they are very low.

In the design phase it is necessary to verify that the equivalent total length is less than or equal to the maximum possible length as shown in figures 18÷28.

The maximum lengths of the air tube and the flue pipe, according to the type of installation made, they are shown in fig. 18 to fig. 27.

The aforementioned lengths are to be understood as indicative, valid in the case of standard installations in which the air tube and the flue pipe carry out a linear path as shown in the respective figures.

Otherwise it is necessary to calculate the load loss check (see CALCULATION EXAMPLE).

The following indications must be observed:

flue pipe length ≤ 1 m: install the flue pipe with a 2 or 3 cm slope against the generator.

Flue pipe length > 1.5 m: the condensation produced by the exhaust pipe must be adequate collected and drained by a special disposal system, in accordance with the provisions of the UNI 11071 standard.

For a correct installation of the external combustion products exhaust and combustion air intake terminals, follow the instructions given.

As can be seen from table 13, for each special piece, it is necessary to evaluate its equivalent length, which in case of 45° curve is equal to 0.9 m.

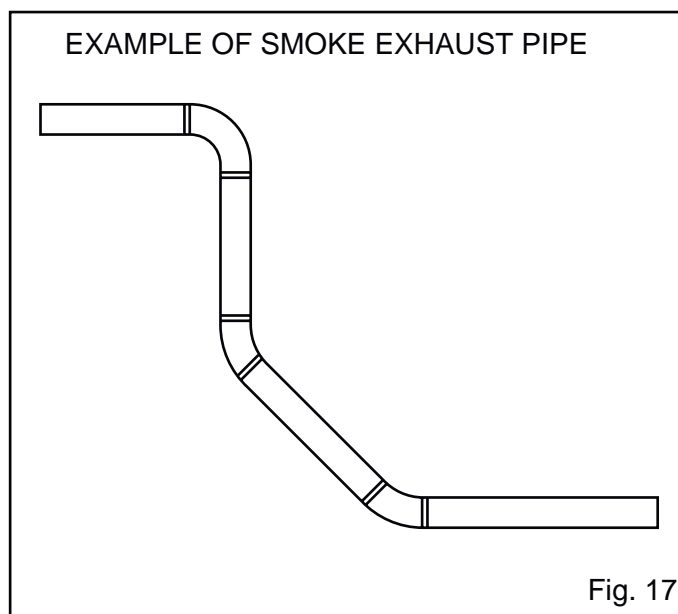


Fig. 17

Below is an example of a calculation related to a flue outlet as shown in figure 17.

The maximum length of the pipe for air and fumes provided for the model 35, type C13, is 20 m.

It is therefore possible to perform the installation.

If the total equivalent length was more than 20 meters, the path would have to be changed or pipes with a larger diameter, 80 mm in diameter, that can reach 40 m in length.

The total pressure drop of the pipe system is higher to the maximum permissible load loss (219 Pa GREATER of 200 Pa) then the installation IS NOT PERMITTED.

Table 12

DATA FOR CALCULATING THE AIR / FUMES SYSTEM WITH REFERENCE PIPES				
Mod.	Smoke outlet temperature °C	Mass smoke flow kg/h	CO ₂ smoke %	
			natural gas	GPL
35	82	52	9,4-9,6	10,7
45	96	67		

Table 13

DATA FOR THE CALCULATION OF THE AIR / FUMES SYSTEM WITH Ø 60 OR Ø 80 CONDUITS SUPPLIED ON REQUEST				
Mod.	Equivalent length Ø 60			Adapter Coaxial
	curve 15°	curve 45°	curve 87°	
u.m.	m	m	m	m
35-45	0,5	0,9	1,1	3,2

7.4 CALCULATION EXAMPLE

Suppose we install a MEC MIX 35 with drain fume and horizontal air intake pipe that develop as shown in figure 17.

First linear section = 7 m.

90° curve = 0.9 m.

Linear section = 3 m.

45° curve = 0.5 m.

Linear section = 2 m.

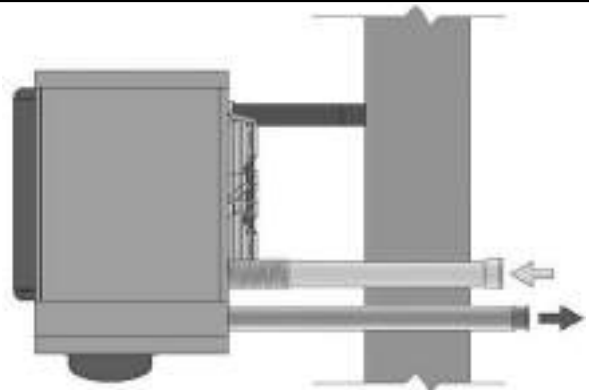
45° curve = 0.5 m.

Line section = 2 m.

Total meters = 15.9 m.

TYPE C13 INSTALLATION - SEPARATE WALL PIPES Ø 60

MAXIMUM LENGTHS ALLOWED (m)		
Mod.	AIR PIPE	SMOKE PIPE
35	18	18
45	18	18



WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 18

TYPE C13 INSTALLATION - SEPARATE WALL PIPES Ø 80

MAXIMUM ADMISSION LENGTHS (m)		
Mod.	AIR PIPE	FUMES TUBE
35	34	34
45	34	34

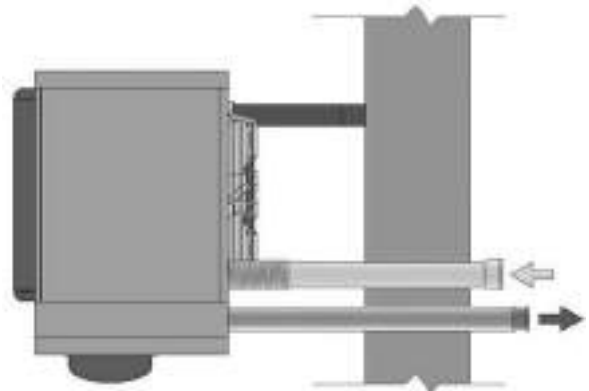
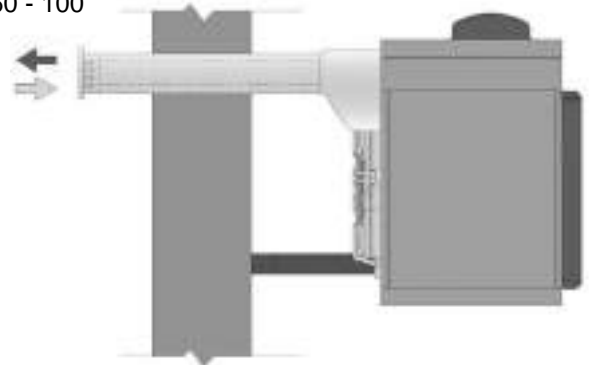


Fig. 19

TYPE C13 INSTALLATION - COAXIAL WALL WITH PIPES Ø 60 - 100

MAXIMUM ADMISSION LENGTHS (m)	
Mod.	COAXIAL TUBE
35	8
45	8

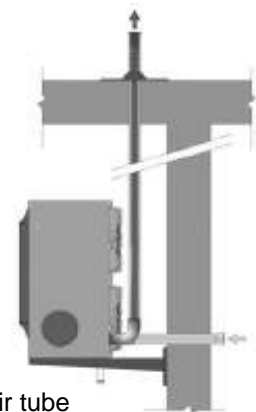


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 20

TYPE C13 INSTALLATION - WALL COAXIAL C / TUBES Ø 60 - 100

MAXIMUM ADMISSION LENGTHS (m)		
Mod.	AIR PIPE	FUMES TUBE
35	34	34
45	34	34

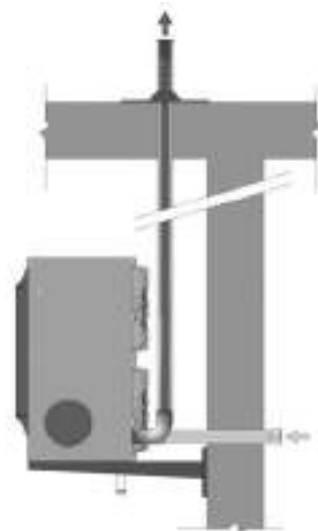


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 21

INSTALLATION TYPE C53 - SEPARATED WALL TUBES Ø 60

MAXIMUM ADMISSION LENGTHS (m)		
Mod.	AIR PIPE	FUMES TUBE
35	34	34
45	34	34

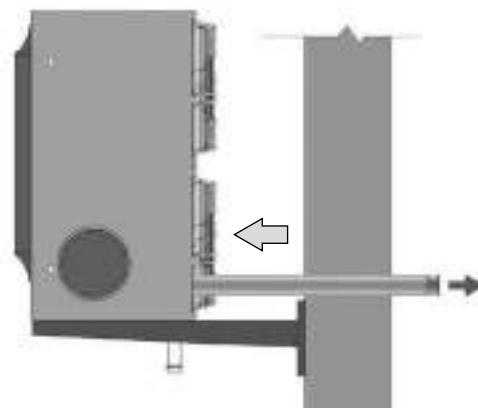


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 22

INSTALLATION TYPE C53 - SEPARATED WALL TUBES Ø 80

MAXIMUM ADMISSION LENGTHS (m)	
Mod.	FUMES TUBE
35	24
45	24

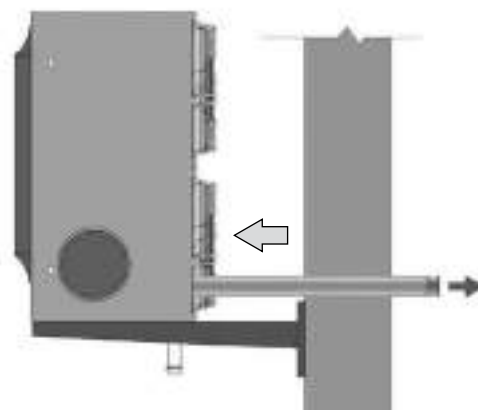


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 23

INSTALLATION TYPE B23 - TUBES Ø 60

MAXIMUM ADMISSION LENGTHS (m)	
Mod.	FUMES TUBE
35	34
45	34

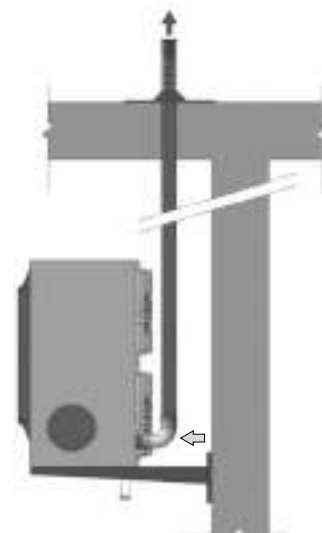


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 24

INSTALLATION TYPE B23 - TUBES Ø 80

LUNGHEZZE MASSIME AMMESSE (m)	
Mod.	FUMES TUBE
35	34
45	34

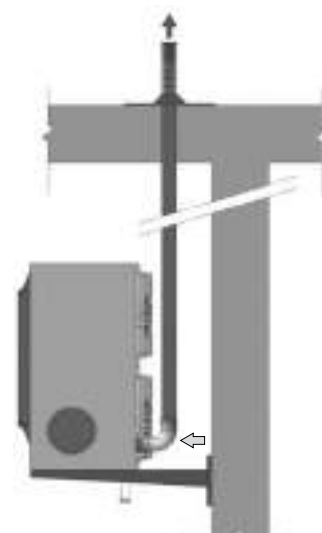


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 25

INSTALLATION TYPE B23 - ROOF EXHAUST FUMES Ø 80

LUNGHEZZE MASSIME AMMESSE (m)	
Mod.	FUMES TUBE
35	24
45	24

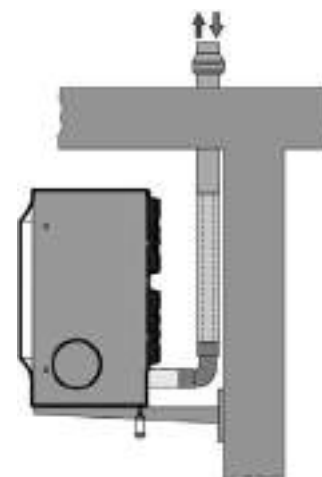


WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 26

INSTALLATION TYPE B23 - ROOF EXHAUST FUMES Ø 60

MAXIMUM LENGTHS ALLOWED (m)	
Mod.	COAXIAL TUBE
35	12
45	12



WARNING! the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

Fig. 27

MAXIMUM ADMISSION LENGTHS (m)	
Mod.	COAXIAL TUBE
35	12
45	12

WARNING!

the aforesaid lengths are to be understood in the case of installations in which the air tube and the flue pipe carry out a linear path as shown in the figure. Otherwise it is necessary to proceed with the calculation of the load loss check (see EXAMPLE OF CALCULATION).

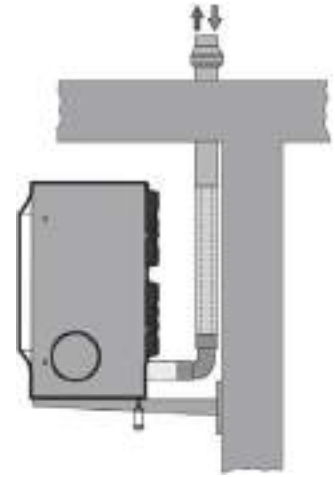


Fig. 28

7.5 CONDUCT EVACUATION

The MEC MIX series generators are equipped as standard with a condensation drain kit to be connected (by the installer) to the special outlet on the bottom of the generator.

Connect the two pieces of the kit (present in the bag supplied as standard): unscrew the upper ring nut of the “condensation drain siphon”, insert the “condensation drain connection collar” in aluminum (with the connection to the outside) and re-tighten the ring.

At this point, screw the kit (assembled) on the side of the “aluminum mounting collar” to the generator outlet (Figure 28).

The outlet on the lower part of the appliance has been set up so that it remains usable even when the

swiveling cross-piece bracket (accessory) is fitted. Adjust the siphon so that the drain fitting of this is facing the path intended for the drain pipe (Figure 29).

The drain connection to the sewage system must be carried out at atmospheric pressure, ie by dripping in a siphoned container connected to the sewage system, interposing a suitable condensate neutralizer provided for by the installation standards.

For the realization of the conveying pipes of the condensates, suitable materials must be used to withstand over time the mechanical, thermal and chemical stresses of the condensates, such as for example stainless or plastic pipes (PP). Do not use copper or iron pipes, materials that can be easily attacked and deteriorated by the condensation acidity. The condensate disposal system, including the siphon, must be adequately protected from the risk of freezing of the condensate in the circuit.

It is advisable to run the condensate collection system inside the heated rooms.

Make sure that the condensate collection pipes are tight, and before use, the siphon must be filled with water and sealed with the appropriate cap, in order to avoid the burning gases coming out during the initial ignition phase.

In the absence of specific technical standards, refer to the provisions of the UNI 11071 standard.

CONDENSATE DISCHARGE SIPHON POSITION

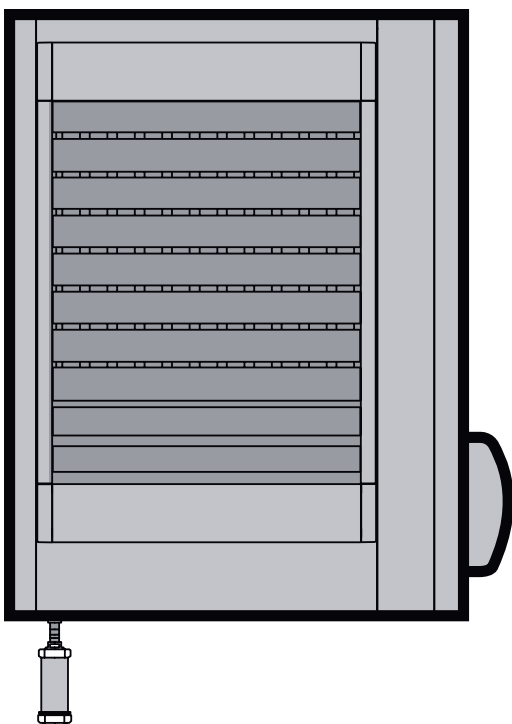
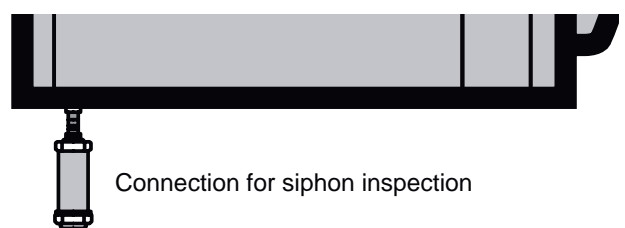


Fig. 29

PARTICULAR INSTALLATION SIPHON DISCHARGE CONDENSE



Connection for siphon inspection

Attack for condensation drainage (by the installer)

Fig. 30

SECTION D - ELECTRIC INSTALLATION

8. INSTALLATION

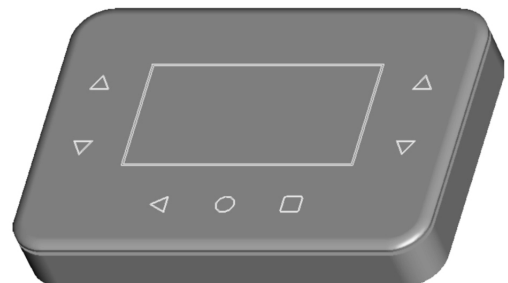
In this section you will find all the information necessary to electrically connect the MEC MIX series generators.

8.1 HOW TO CONNECT THE GENERATOR TO ELECTRIC LINE

- Electrical connections must be made from professionally qualified staff. In each case, before making electrical connections, make sure there is no voltage in the cables.
- 1. Check that the supply voltage is 230V - 50Hz single phase.
- 2. Make the electrical connection according to the electrical assembly scheme using a cable type H05 VVF 3x1.5 mm² with external diameter maximum of 8.4 mm.
- 3. Make the electrical connection so that the ground cable is longer than those under tension. It will be the last cable to tear off in case it comes accidentally pulled the power cord and a good continuity will therefore be assured.
- The electrical safety of the appliance is reached only when the same is correctly connected to an effective grounding system, performed as required by current safety regulations. Do not use the gas pipes as grounding Electrical devices.
- 4. The generator must be connected to the line electrical supply by means of a switch bipolar with minimum contact opening of 3 mm. The bipolar switch is defined as the one with possibility of opening both on the phase and on the neutral. This means that at its opening both contacts are open.
- Control cables (in particular that of connection to the chrono thermostat) must be protected by interference created by power cables. This, ad example, it can be obtained or by means of shielding of cables or by laying in raceways separate from those in which cables are used power.

8.2 DIGITAL CHRONOTHERMOSTAT INSTALLATION

- Electrical connections must be made from professionally qualified staff. In each case, before making electrical connections, make sure there is no voltage in the cables For the installation of the digital chrono thermostat proceed as follows:
 1. Locate the location where you intend to install the chrono thermostat trying to position it at approx 1.5 m from the floor, protected from drafts, direct exposure to sun rays, influence from direct heating sources (lamps, air flows of the appliance itself, etc.) and possibly NOT on walls bordering the outside, for not distort the detected temperature and then the operation of the system.
YOU WILL AVOID SO STARTING AND NO ARRESTS OF THE IMPLANT AND YOU WILL GUARANTEE AN OPTIMAL COMFORT ENVIRONMENT.
If this is not possible, screen the chrono thermostat interposing a sheet of insulating material (cork, polystyrene or other) between it and the wall.
 2. Drill the wall at the points of fixing the chrono thermostat.
 3. Fasten the chrono thermostat with 2 expansion screws.
 4. The chrono thermostat is supplied already connected to the electronic board of the generator via a cable 5 meters long. For longer lengths at 5 meters use a 2-pole cable section 0.75 mm² with maximum resistance per conductor (Use a shielded cable if the installation has strong electrical disturbances). In any case, the cable can not be more than 30 meters long.



SECTION E - ASSISTANCE AND MAINTENANCE

9. ASSISTANCE AND MAINTENANCE

9.1 FIRST START-UP OF THE APPLIANCE

The first ignition must be carried out exclusively by an authorized Technical Assistance Center or by professionally qualified personnel.

Before starting the generator, have it checked by professionally qualified personnel:

- that the plate data correspond to those of the electricity and gas supply networks; Established correctness of the installation and of the required installation data, the authorized Technical Assistance Center can proceed with the first start up of the appliance and with the verification of its correct functioning. In particular, he will have to check:
- that the data of the static and dynamic pressure of the gas network fall within the required range;
- that the calibration values of the gas valve correspond to what is indicated in Table 16;
- that the combustion air supply and the fumes are evacuated correctly as established by the current regulations;
- **the correct functioning of the evacuation duct of the fumes. If the calibration values of the gas valve do not they correspond to those indicated in Table 16, it is advisable to adjust the combustion parameters as reported in the relative paragraph 8.2. The generator is set up for operation a methane (G20): in the case of plants that provide for a type of gas supply different from that of preparation, it is necessary to perform the gas change procedure (paragraph 8.3) and the relative regulation of the parameters (paragraph 8.2).**

Technical features of the gas valve

Gas of use:	2nd / 3rd family
T° environment:	0 - 60 °C
Inlet pressure max:	60 mbar
Gas inlet / outlet:	fil. male G3 / 4 B ISO 228
Pressure sockets:	diameter 9 mm
Air signal connection:	diameter 7 mm
Degree of protection:	IP 40 with connector NAC 504 and gasket

9.2 HOW TO MAKE THE ADJUSTMENT OF THE GAS VALVE (or the combustion parameters)

Gas valve operating principle

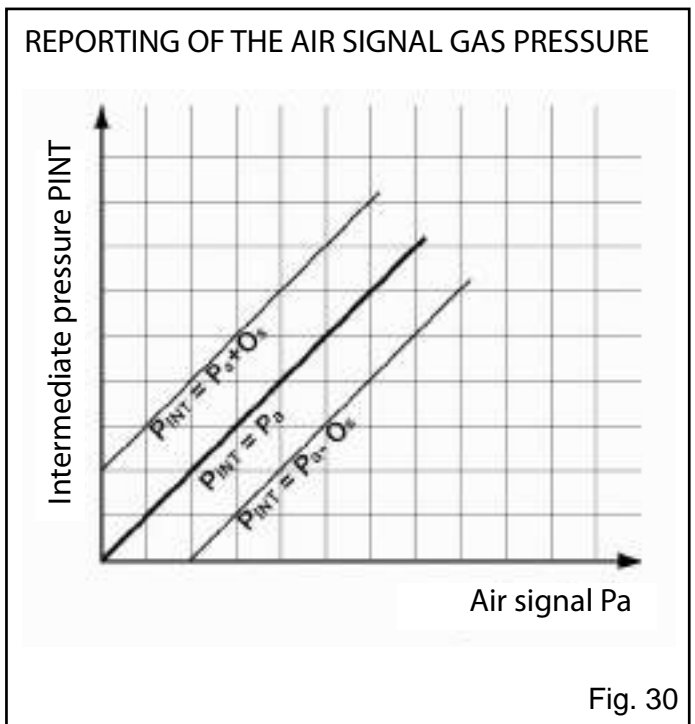
The gas valve (fig.31) installed in the MEC MIX series generators is a 1: 1 gas/air control type whose operating principle is to maintain the PINT output gas pressure constantly equal to the air pressure signal Pa increased of the set value on the offset screw.

In formula:

$$P_{INT} = P_a + O_s$$

where O_s is the value adjusted on the offset screw. The relation can be represented in a Pa / PINT graph (fig.30).

In the case where O_s (offset) is set to zero and in the hypothesis that the relation flow volumetric / flow of air pressure and gas follow in first approximation of the same law, the volumetric gas/air ratio is kept constant for any value of Pa. In other words, the ratio Q_g / Q_a , where Q_g and Q_a are respectively the flows in volume of gas and air, is constant over the entire range of the air signal Pa.



Adjustment of the gas valve

The hot air generators of the MEC MIX C series are equipped with gas valve with constant gas air ratio. All valves are calibrated at the factory for use with Natural gas, in case of replacement or performance verification or if necessary it is possible to carry out the calibration of the gas valve followed slavishly the operations described below, which must be carried out by following them in the order.

Remove the hood of the minimum adjustment screw A as shown in fig. 32.

Then proceed with the adjustment of the minimum. With the help of the GA1 remote control, set the generator power to minimum after starting the generator.

In this condition adjust the CO₂ content to the fumes by reading the value with a fume analyzer and adjusting the value by acting on the screw of the

minimum "B".

Bring the burner to maximum power and check the value of the CO₂ percentage to the fumes, correcting it if necessary by adjusting the maximum power adjustment screw "8". The minimum screw "B" adjusts the gas air ratio by moving the ideal upward or downward line of the ratio as shown in fig. 33.

The adjustment screw of the maximum "8", on the other hand, modifies the inclination of the gas-air ratio line fig. 34.

Return the burner to the minimum power and check the CO₂ content of the fumes and reconnect the value if necessary.

Bring the burner back to its maximum speed again power and check the CO₂ value on the fumes and if necessary correct it by turning the screw "8", see fig. 31.

The double check will guarantee a constant air gas ratio and within the limits of the tolerances indicated in fig. 34.

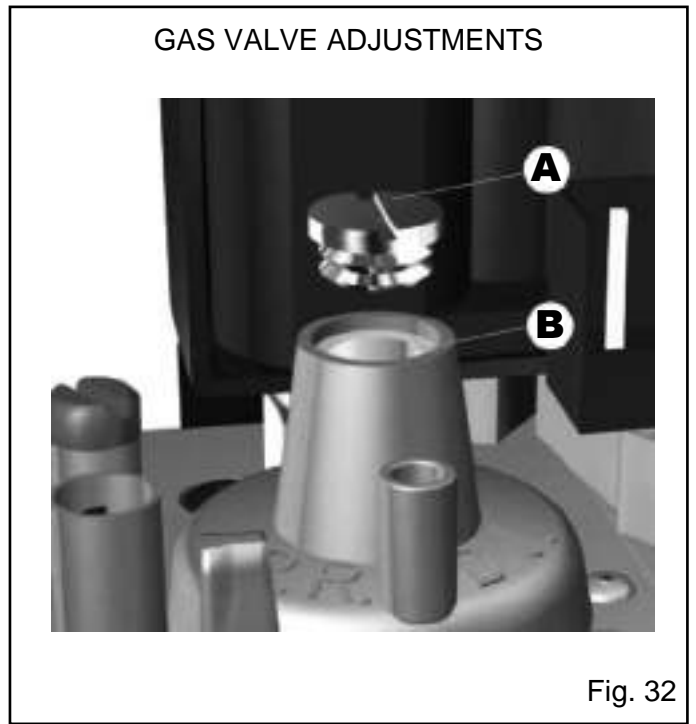


Fig. 32

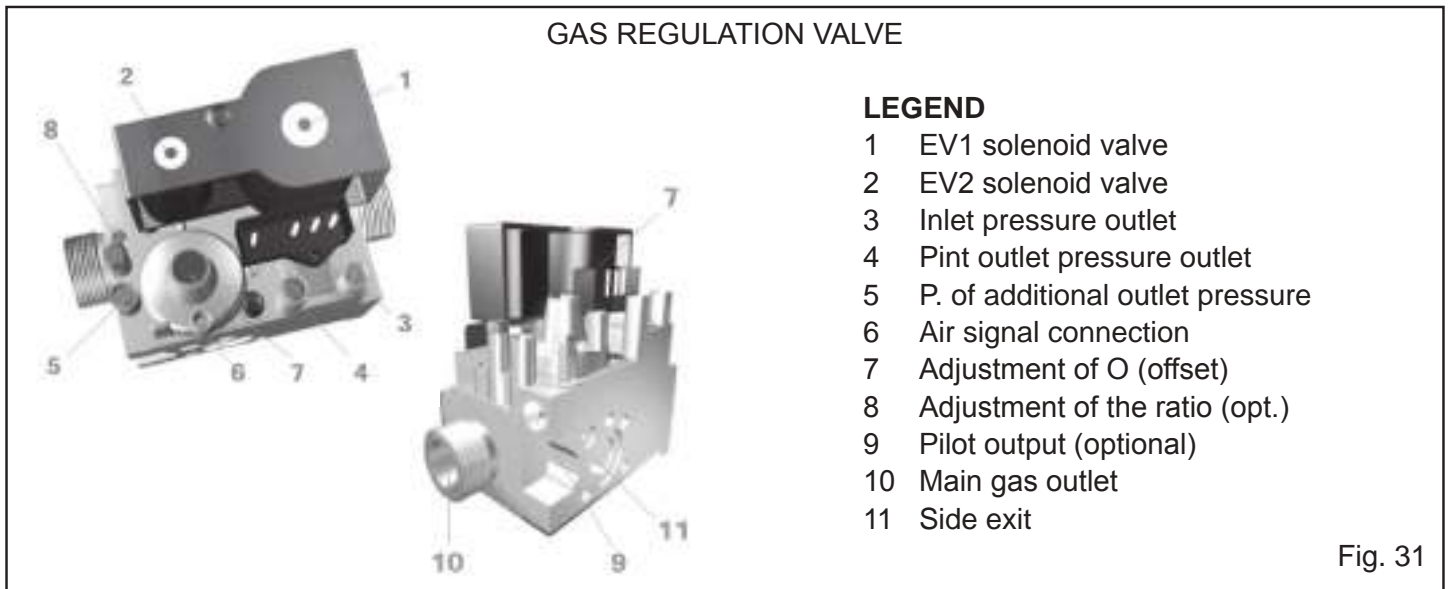


Fig. 31

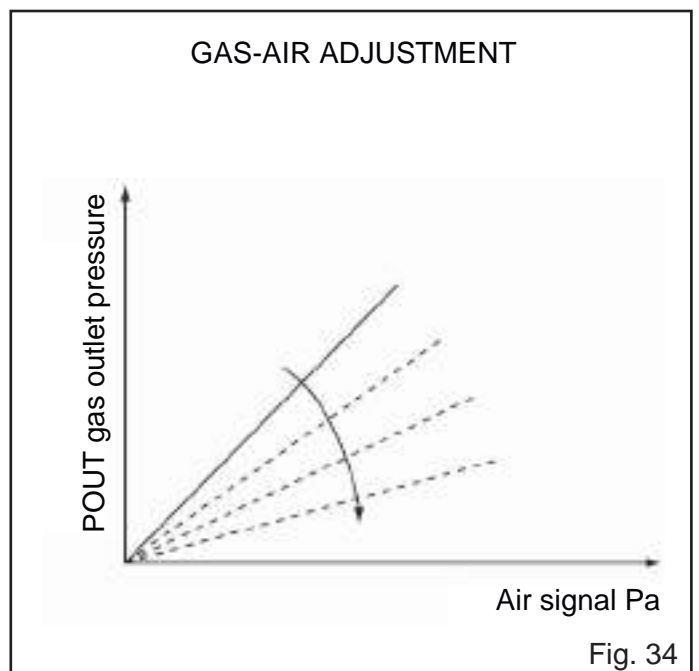
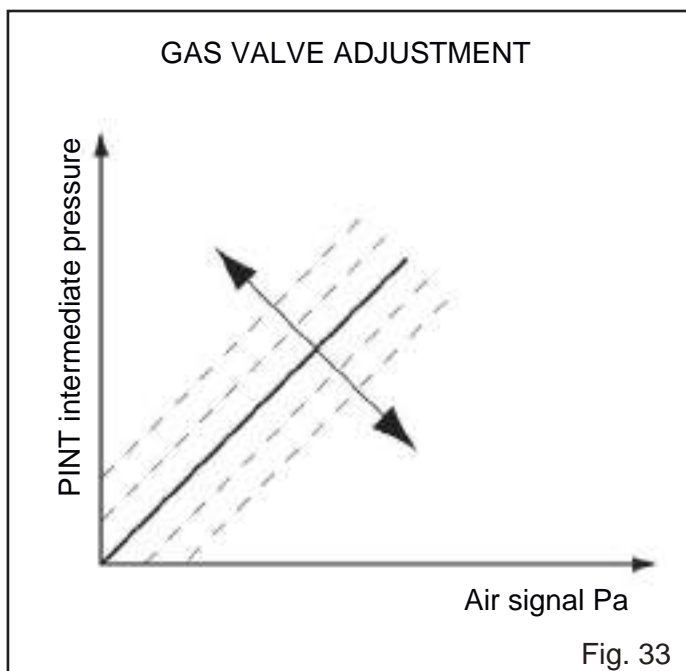


Table n. 16

CO2 VALUES FOR METHANE GAS VALVE ADJUSTMENT	
METANE	9,8% - 10,2 %
LGP	10,8 % - 11,2%

The adjustment operation of the gas valve must be carried out by professionally qualified personnel.

In this regard A2B srl has a network of Assistance Points that can be reached through the seller, the local agent, or by calling directly the Customer Care of A2B Accorroni E.G. srl - tel. +39.071.723991.

9.4 DIAGNOSTICS MEC MIX C - MEC MIX F

Error n. 20	Blockage of the air pressure switch (atmospheric versions) Presence of RPM premixed versions
Error n. 22	The air pressure switch is open (atmospheric versions) the RPM signal is not present (premixed versions)
Error n. 60	Presence of parasitic flame signal
Error n. 25 - 26 - 27	Fault on the SM probe
Error n.81	Internal fault
Error n. 82	Fault on the external probe
Error n. 84	Combustion engine feedback error
Error n. 85	Power frequency error
Error n. 86	The STF contact is open
Error n. 87	Shutdown temperature reached
Error n. 01 - 02 - 03 - 04 - 05 - 07	Block due to internal faults
Error n. 06	Remote reset not allowed - Wait 15 minutes before resetting
Error n. 08 - 09	Block due to fault on the SR probe
Error n. 10	Block due to no ignition
Error n. 11 - 19	The block for opening the safety thermostat or for the limit temperature is reached
Error n. 12	Lockout due to flame loss
Error n. 13	Block due to loss of the air pressure switch
Error n. 14	Lockout due to air pressure switch failure (atmospheric versions) o RPM signal error (premixed versions)
Error n. 15	Blockage due to parasite flame
Error n. 17	General block

9.4 MAINTENANCE

Accurate maintenance is always a source of savings and security.

Pursuant to the provisions contained in the D.P.R. n.412 / 93 and subsequent modifications and additions and of the D.P.R. n.551 / 99, maintenance for heating systems must be carried out annually, preferably at the beginning of the winter season, by professionally qualified personnel.

For a correct and prolonged operation it is recommended to carry out at least once a year a general cleaning of the

9.3 HOW TO MAKE THE GAS CHANGE

To have: the generator installed and connected to the electricity network and the gas network.

The gas change operation must be carried out by professionally qualified personnel.

A wrong or incorrect assembly of the gas circuit can cause dangerous gas leaks throughout the circuit and particularly in tampered areas.

Also use on all suitable filler joints.

If the type of gas indicated on the label does not correspond to the type to be used, the appliance must be converted and adapted to the type of gas to be used.

To change the gas, repeat the adjustment operation described in paragraph 8.2, changing the CO2 reference parameters present in the exhaust fumes.

The reference parameters to be used are those described in table 16.

appliance (taking particular care of the heat exchangers and fan grilles) and the combustion tests according to the provisions of the specific regulations.

The intervention of the limit thermostat is ALWAYS an indication of an anomalous condition.

Before restoration, it is therefore advisable to search for them reasons that led to the overheating of the appliance.

In case of frequent arrests, contact the A2B Accorroni E.G. srl.

10. TABLE OF TECHNICAL DATA ERP

10.1 TABLE OF TECHNICAL DATA ERP - MEC MIX C 20/35 - 20/90 AXIALS

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$			
Type of device:	Heaters of gaseous fuel		closed front.
Efficiency of the appliance under nominal conditions (Pci net value)	96,4	%	$\eta_{s,on} = \eta_{th,non}$
Not applicable for gas appliances	0,0	%	F(1)
Positive influence on hS, on (only one possibility)	7,0	%	F(2)
two or more phases single phase thermal power without ambient temperature control			0.0%
with manual steps without room temperature control			1.0%
with room temperature control via mechanical thermostat			2.0%
with electronic control of the ambient temperature			4.0%
with electronic control of the room temperature and daily timer			6.0%
with electronic control of the room temperature and weekly timer			7.0%
Positive influence on hS, on (only one possible multiple selection the final result is the sum)	1,0	%	F(3)
Room temperature control with presence detection (1%)	No	%	F(3)
Room temperature control with open window control (1%)	No	0,0	%
With remote control option (1%)	Yes	1,0	%
	1,9	kW	F(4)
el_{max} (consumption of electricity at nominal heat output)	0,409	kW	F(4)
el_{min} (consumption of electricity at minimum heat output) in case there is not a minimum: $el_{min} = el_{max}$	0,211	kW	F(4)
elsb (electric consumption in standby mode)	0,009	kW	F(4)
P_{nom} (rated thermal power of the appliance)	37,77	kW	F(4)
Influence of a permanent pilot burner)	0,0	%	F(5)
Pilot burner consumption	0,00	KW	F(5)
NOx emission based on gross caloric value (<130mg / kW)	31	mg/KWh	
$\eta_s =$	92,5	%	Energy efficiency class
			A

10.2 TABLE OF TECHNICAL DATA ERP - MEC MIX C 20/35 - 20/70 DUCTABLE

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$				
Type of device:	Heaters of gaseous fuel		closed	front.
Efficiency of the appliance under nominal conditions (Pci net value)	97,0	%	$\eta_{s,on} = \eta_{th,non}$	
Not applicable for gas appliances	0,0	%	F(1)	
Positive influence on hS, on (only one possibility)	7,0	%	F(2)	
two or more phases single phase thermal power without ambient temperature control			0.0%	
with manual steps without room temperature control			1.0%	
with room temperature control via mechanical thermostat			2.0%	
with electronic control of the ambient temperature			4.0%	
with electronic control of the room temperature and daily timer			6.0%	
with electronic control of the room temperature and weekly timer			7.0%	
Positive influence on hS, on (only one possible multiple selection the final result is the sum)	1,0	%	F(3)	
Room temperature control with presence detection (1%)	No	%	F(3)	
Room temperature control with open window control (1%)	No	0,0	%	
With remote control option (1%)	Yes	1,0	%	
	4,1	kW	F(4)	
el_{max} (consumption of electricity at nominal heat output)	0,779	kW	F(4)	
el_{min} (consumption of electricity at minimum heat output) in case there is not a minimum: $el_{min} = el_{max}$	0,499	kW	F(4)	
elsb (electric consumption in standby mode)	0,009	kW	F(4)	
P_{nom} (rated thermal power of the appliance)	34,22	kW	F(4)	
Influence of a permanent pilot burner)	0,0	%	F(5)	
Pilot burner consumption	0,00	KW	F(5)	
NOx emission based on gross caloric value (<130mg / kW)	17	mg/KWh		
$\eta_s =$	90,9	%	Energy efficiency class	
			A	

10.3 TABLE OF TECHNICAL DATA ERP - MEC MIX C 20/45 - 20/90 AXIAL

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$			
Type of device:	Heaters of gaseous fuel		closed front.
Efficiency of the appliance under nominal conditions (Pci net value)	95,7	%	$\eta_{s,on} = \eta_{th,non}$
Not applicable for gas appliances	0,0	%	F(1)
Positive influence on $\eta_{s,on}$ (only one possibility)	7,0	%	F(2)
two or more phases single phase thermal power without ambient temperature control			0.0%
with manual steps without room temperature control			1.0%
with room temperature control via mechanical thermostat			2.0%
with electronic control of the ambient temperature			4.0%
with electronic control of the room temperature and daily timer			6.0%
with electronic control of the room temperature and weekly timer			7.0%
Positive influence on $\eta_{s,on}$ (only one possible multiple selection the final result is the sum)	1,0	%	F(3)
Room temperature control with presence detection (1%)	No	%	F(3)
Room temperature control with open window control (1%)	No	0,0	%
With remote control option (1%)	Yes	1,0	%
	1,6	kW	F(4)
$e_{l,max}$ (consumption of electricity at nominal heat output)	0,409	kW	F(4)
$e_{l,min}$ (consumption of electricity at minimum heat output) in case there is not a minimum: $e_{l,min} = e_{l,max}$	0,211	kW	F(4)
$e_{l,sb}$ (electric consumption in standby mode)	0,009	kW	F(4)
P_{nom} (rated thermal power of the appliance)	40,80	kW	F(4)
Influence of a permanent pilot burner)	0,0	%	F(5)
Pilot burner consumption	0,00	KW	F(5)
NOx emission based on gross caloric value (<130mg / kW)	33	mg/KWh	
$\eta_s =$	92,1	%	Energy efficiency class
			A

10.4 TABLE OF TECHNICAL DATA ERP - MEC MIX C 20/45 - 20/90 DUCTABLE

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$				
Type of device:	Heaters of gaseous fuel		closed	front.
Efficiency of the appliance under nominal conditions (Pci net value)	96,0	%	$\eta_{s,on} = \eta_{th,non}$	
Not applicable for gas appliances	0,0	%	F(1)	
Positive influence on hS, on (only one possibility)	7,0	%	F(2)	
two or more phases single phase thermal power without ambient temperature control			0.0%	
with manual steps without room temperature control			1.0%	
with room temperature control via mechanical thermostat			2.0%	
with electronic control of the ambient temperature			4.0%	
with electronic control of the room temperature and daily timer			6.0%	
with electronic control of the room temperature and weekly timer			7.0%	
Positive influence on hS, on (only one possible multiple selection the final result is the sum)	1,0	%	F(3)	
Room temperature control with presence detection (1%)	No	%	F(3)	
Room temperature control with open window control (1%)	No	0,0	%	
With remote control option (1%)	Yes	1,0	%	
	3,4	kW	F(4)	
el_{max} (consumption of electricity at nominal heat output)	0,779	kW	F(4)	
el_{min} (consumption of electricity at minimum heat output) in case there is not a minimum: $el_{min} = el_{max}$	0,499	kW	F(4)	
elsb (electric consumption in standby mode)	0,009	kW	F(4)	
P_{nom} (rated thermal power of the appliance)	44,49	kW	F(4)	
Influence of a permanent pilot burner)	0,0	%	F(5)	
Pilot burner consumption	0,00	KW	F(5)	
NOx emission based on gross caloric value (<130mg / kW)	38	mg/KWh		
$\eta_s =$	90,6	%	Energy efficiency class	
			A	

10.7 TABLE OF TECHNICAL DATA ERP - MEC MIX F 50 - 100 AXIAL

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$			
Type of device:	Heaters of gaseous fuel		closed front.
Efficiency of the appliance under nominal conditions (Pci net value)	92,9	%	$\eta_{s,on} = \eta_{th,non}$
Not applicable for gas appliances	0,0	%	F(1)
Positive influence on hS, on (only one possibility)	7,0	%	F(2)
two or more phases single phase thermal power without ambient temperature control			0.0%
with manual steps without room temperature control			1.0%
with room temperature control via mechanical thermostat			2.0%
with electronic control of the ambient temperature			4.0%
with electronic control of the room temperature and daily timer			6.0%
with electronic control of the room temperature and weekly timer			7.0%
Positive influence on hS, on (only one possible multiple selection the final result is the sum)	1,0	%	F(3)
Room temperature control with presence detection (1%)	No	%	F(3)
Room temperature control with open window control (1%)	No	0,0	%
With remote control option (1%)	Yes	1,0	%
	2,4	kW	F(4)
el_{max} (consumption of electricity at nominal heat output)	0,409	kW	F(4)
el_{min} (consumption of electricity at minimum heat output) in case there is not a minimum: $el_{min} = el_{max}$	0,409	kW	F(4)
elsb (electric consumption in standby mode)	0,009	kW	F(4)
P_{nom} (rated thermal power of the appliance)	44,74	kW	F(4)
Influence of a permanent pilot burner)	0,0	%	F(5)
Pilot burner consumption	0,00	KW	F(5)
NOx emission based on gross caloric value (<130mg / kW)	53	mg/KWh	
$\eta_s =$	91,3	%	Energy efficiency class
			A

10.8 ABLE OF TECHNICAL DATA ERP - MEC MIX F 50 - 100 DUCTABLE

$\eta_s = \eta_{s,on} - 10\% + F(1) + F(2) + F(3) - F(4) - F(5)$			
Type of device:	Heaters of gaseous fuel		closed front.
Efficiency of the appliance under nominal conditions (Pci net value)	93,9	%	$\eta_{s,on} = \eta_{th,non}$
Not applicable for gas appliances	0,0	%	F(1)
Positive influence on hS, on (only one possibility)	7,0	%	F(2)
two or more phases single phase thermal power without ambient temperature control			0.0%
with manual steps without room temperature control			1.0%
with room temperature control via mechanical thermostat			2.0%
with electronic control of the ambient temperature			4.0%
with electronic control of the room temperature and daily timer			6.0%
with electronic control of the room temperature and weekly timer			7.0%
Positive influence on hS, on (only one possible multiple selection the final result is the sum)	1,0	%	F(3)
Room temperature control with presence detection (1%)	No	%	F(3)
Room temperature control with open window control (1%)	No	0,0	%
With remote control option (1%)	Yes	1,0	%
	4,6	kW	F(4)
el_{max} (consumption of electricity at nominal heat output)	0,779	kW	F(4)
el_{min} (consumption of electricity at minimum heat output) in case there is not a minimum: $el_{min} = el_{max}$	0,779	kW	F(4)
elsb (electric consumption in standby mode)	0,009	kW	F(4)
P_{nom} (rated thermal power of the appliance)	43.21	kW	F(4)
Influence of a permanent pilot burner)	0,0	%	F(5)
Pilot burner consumption	0,00	KW	F(5)
NOx emission based on gross caloric value (<130mg / kW)	42	mg/KWh	
$\eta_s =$	87,3	%	Energy efficiency class
			A

11. MAIN REQUIREMENTS FOR HOT AIR GENERATORS

11.1 TABLE REQUIREMENTS MAIN MEC MIX C 20/35 - 20/70 AXIALS

MODEL				MEC MIX C 20/35 - 20/70 AXIALS			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	35,03	kW	Useful efficiency for nominal heating capacity *	μ mon	96,4	%
Minimum capacity	P min	20,62	kW	Useful efficiency at minimum capacity *	μ pl	98,0	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	4,409	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,211	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	31	mg/kWh input power(GCV)
				Emission efficiency	μs flow		%
				Seasonal energy efficiency of space heating	μs,h	92,5	%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

11.2 TABLE REQUIREMENTS MAIN MEC MIX C 20/35 - 20/70 DUCTABLE

MODEL				MEC MIX C 20/35 - 20/70 CENTRIFUGES			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	35,28	kW	Useful efficiency for nominal heating capacity *	μ mon	97,0	%
Minimum capacity	P min	20,09	kW	Useful efficiency at minimum capacity *	μ pl	97,5	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	0,779	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,499	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	17	mg/kWh input power(GCV)
				Emission efficiency	μs flow		%
				Seasonal energy efficiency of space heating	μs,h	90,9	%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

11.3 TABLE REQUIREMENTS MAIN MEC MIX C 20/45 - 20/90 AXIALS

MODEL				MEC MIX C 20/45 - 20/90 AXIALS			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	42,64	kW	Useful efficiency for nominal heating capacity *	μ mon	95,7	%
Minimum capacity	P min	19,54	kW	Useful efficiency at minimum capacity *	μ pl	98,1	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	0,409	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,211	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	33	mg/kWh input power(GCV)
				Emission efficiency	μs flow		%
				Seasonal energy efficiency of space heating	μs,h	92,1	%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

11.4 TABLE OF MAIN REQUIREMENTS MEC MIX C 20/45 - 20/90 DUCTABLE

MODEL				MEC MIX C 20/45 - 20/90 DUCTABLE			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	43,22	kW	Useful efficiency for nominal heating capacity *	μ mon	96,0	%
Minimum capacity	P min	20,13	kW	Useful efficiency at minimum capacity *	μ pl	97,6	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	0,779	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,499	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	38	mg/kWh input power(GCV)
				Emission efficiency	μs flow		%
				Seasonal energy efficiency of space heating	μs,h	90,6	%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

11.5 TABLE REQUIREMENTS MAIN MEC MIX F 50 - 100 AXIALS

MODEL				MEC MIX F 50 - 100 AXIALS			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	48,16	kW	Useful efficiency for nominal heating capacity *	μ mon	92,9	%
Minimum capacity	P min	48,16	kW	Useful efficiency at minimum capacity *	μ pl	92,9	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	0,409	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,409	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	53	mg/kWh input power(GCV)
				Emission efficiency	μs flow	88,5	%
				Seasonal energy efficiency of space heating	μs,h		%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

11.6 TABLE OF MAIN REQUIREMENTS MEC MIX F 50 - 100 DUCTABLE

MODEL				MEC MIX F 50 - 100 DUCTABLE			
Hot air generators B1 (yes - no)				NO			
C2 hot air generators (yes - no)				NO			
C4 hot air generators (yes - no)				SI			
Type of fuel (gaseous / liquid / electricity)				Gaseous			
Element	Symbol	Value	U.M.	Element	Symbol	Value	U.M.
CAPACITY				USEFUL EFFICIENCY			
Nominal heating capacity	P ated, h	46,02	kW	Useful efficiency for nominal heating capacity *	μ mon	93,9	%
Minimum capacity	P min	46,02	kW	Useful efficiency at minimum capacity *	μ pl	93,9	%
ELECTRICITY CONSUMPTION*				HIGH ELEMENTS			
At the nominal heating capacity	el max	0,779	kW	Loss of casing factor	F env	0,0	%
At the minimum capacity	el min	0,779	kW	Burner consumption	P ing	0,0	%
In stand-by mode	el sb	0,009	kW	Emissions of nitrogen oxides (*) (**)	Nox	42	mg/kWh input power(GCV)
				Emission efficiency	μs flow		%
				Seasonal energy efficiency of space heating	μs,h	87,3	%
Contact				A2B ACCORRONI E.G. Via d'Ancona, 37 - 60020 Osimo (AN)			

(*) not required for electric hot air generators

(**) from 26 September 2018

DECLARATION OF CONFORMITY

Manufacturer: A2B Accorroni E.G. srl
Address: 60027 Osimo (AN) - Via D'Ancona, 37 Tel 071/723991 - Fax 071/7133153
VAT and C.F. 02345650424
Unit: Independent forced gas heating appliances with forced air-gas premixer
Type: MEC MIX
Model: C20 / 35 axial, C20 / 45 axial, C20 / 70 axial, C20 / 90 axial, C20 / 35 centrifugal, C20 / Centrifugal, Centrifugal C20 / 70, Centrifugal C20 / 90, Axial F35, Axial F50, Axial F70, Axial F100, Centrifugal F35, Centrifugal F50, Centrifugal F70, Centrifugal F100,
Classification: Category: I_{2H}, I_{2E}, I_{2E +}, I_{2E(S)}, I_{2Esi}, I_{3P}
Types: C₁₃ - C₁₃ COAXIAL - C₃₃ - B₂₃ / C₅₃,

with certificate of CE certification of type n ° 1312CN5748 - 1312CP5955 - 051BU3870ED - 051BU3873ED - 051BU3874ED of 31.3.2016 issued by CERTIGAZ (Notified Body No. 1312 and CI 0234 Rev. 3) to which this declaration refers, complies with the essential safety requirements expressed by the following directives applicable to the product mentioned. Under its responsibility, as a manufacturer

DECLARES

that the product

- complies with Directive 2009/142 / EC
- complies with Directive 2014/35 / EC low voltage
- complies with Directive 2014/30 / CE

and the following harmonized standards:

- EN 1020: 2009

Also declares that it is subjected to continuous CE surveillance by the Notified Body CERTIGAZ (Notified Body No. 1312 and CI 0234 Rev. 3)

Osimo, March 2016

A2B Accorroni EG srl
The legal representative
Altamura Lorenza

Altamura Lorenza



A2B Accorroni E.G. s.r.l.
Via d'Ancona, 37 - 60027 Osimo (An) - Tel. 071.723991
web site: www.accorroni.it - e-mail: a2b@accorroni.it