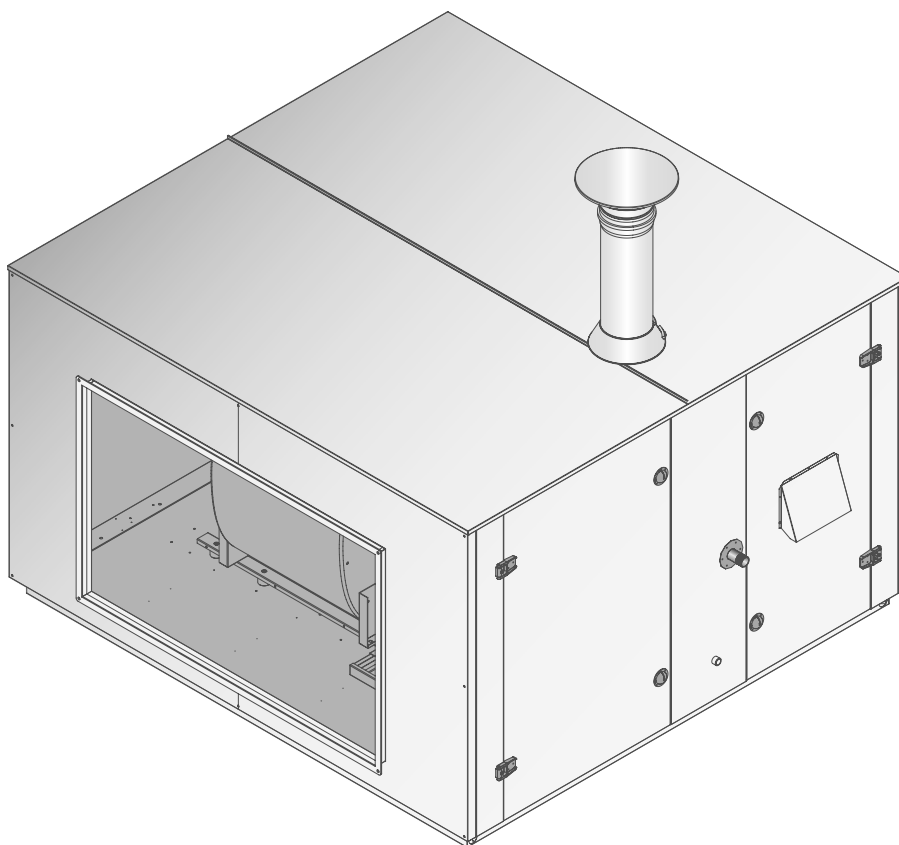


# EOLO

## HOT AIR GENERATORS GAS ROOF TOP

EOLO BC RT Condensing, modulating  
EOLO NBC RT Non-condensing, modulating



# SYSTEMA

Instruction manual installation,  
use and maintenance

**ENGLISH**

Cod. 10CNDE0063



09ENIT04052021



Rev. 09ENIT04052021

## Symbols used in the manual



### **Please note**

Indicates useful information for consulting the manual and for correct operation of the appliance.



### **Important**

Indicates important information and practical tips.



### **DANGER**

In this manual, the word DANGER combined with the symbol shown on the side indicates a danger with a high level of risk which, if not avoided, will lead to death or serious injury.



### **WARNING**

In this manual, the word WARNING combined with the symbol shown here indicates a danger with a medium level of risk which, if not avoided, could lead to death or serious injury.



### **ATTENTION**

In this manual the word ATTENTION combined with the symbol shown opposite indicates a danger with a low level of risk which, if not avoided, could lead to minor or moderate injury.



### **READ CAREFULLY BEFORE USE KEEP FOR FUTURE REFERENCE**

**Before installation, check that the local distribution conditions, the type of the gas and the pressure are compatible with the regulation of the appliance.**

**In order to improve the product, Systema reserves the right to modify its contents at your convenience and without notice.**



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Informacje handlowe

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# 1 GENERAL RULES



- These appliances are designed and built according to EU Regulation 2016/426 (GAR).
- Before using this appliance, please read this manual.
- It is compulsory to comply with the contents of this manual, particularly as regards safety standards.
- Systema declines all responsibility for direct or indirect damage to persons, animals or things deriving from failure to observe the instructions contained in this booklet.



- This instruction booklet is an integral and essential part of the appliance and must be carefully kept near the system for any further consultation.
- Carefully read the instructions and warnings contained in this booklet before installation and use as they provide important information regarding safety, installation, use and maintenance.
- If this manual is lost, contact the manufacturer immediately.
- In the event of a change of owner or a new tenant, hand over all documentation regarding the heating system to the new owner / tenant.
- Upon delivery of the product, ensure the integrity and completeness of the product and its components. If the product and / or its components do not match, contact the agency that sold the appliance.
- At the end of the work, the installer must provide the owner with the necessary documentation to certify, that the installation
- has been made in a workmanlike manner and complies with the regulations in force in the country and in the place of installation of the product.
- Temperatures that are too high in the heated environment are harmful to health as well as being a useless waste of energy. Proper use of the appliance is recommended.
- The manufacturer is responsible for the conformity of its product with the regulations in force at the time the product is marketed.
- The observance of the laws in force and the regulations for the design of systems, installation, use and maintenance are the sole responsibility, for the relative competences of the designer, installer and user.
- It is forbidden to distribute this product without notifying the manufacturer in advance about the country of final installation of the appliance, in fact specific documentation is required based on the country of destination of the product itself.
- Several appliances installed in the same room, or in directly communicating rooms, are considered as a single system, with a heat input equal to the sum of the heat rates of the individual appliances.



- **WARNING**
- To guarantee the correct functioning of the appliances, it is essential to strictly follow the instructions given by the manufacturer, use original accessories and spare parts, and have the system serviced by professionally qualified personnel (at least once a year).
- Do not install the appliances in premises intended for artisanal or industrial activities in which the processing and materials in storage involve the risk of the formation of gases, vapors or dust which can give rise to fires or explosions.
- The rooms where the appliances are installed must have a permanent ventilation surface as per regulations current.
- Entrust the installation, construction of the gas piping, electrical connection, initial start-up and maintenance to professionally qualified personnel responsible in compliance with the national and local regulations in force in the country where the system is installed and what is reported in the this booklet.
- Create the gas supply system and electrical connections in compliance with the national and local regulations in force in the country where the system is installed; moreover, where required, they must be designed by a qualified professional.
- The systems (gas pipes, power supply, etc.) must be carried out without creating obstacles or risks for people.
- Do not use gas pipes to earth electrical appliances.
- Before starting the appliances check:
  - that the data of the electricity supply and gas supply networks are compatible with what is reported in this manual and on the plates of the appliances;
  - the tightness of the gas supply system as required by the applicable standards, the exact sizing and that it is equipped with all the safety and control devices prescribed by the standards in force;
  - the correct construction and operation of the flue gas exhaust and combustion air intake duct;
  - the correct construction and operation of the condensate discharge duct.
- This appliance must only be used for the use for which it was expressly designed. Any other use is to be considered improper and therefore dangerous.
- The manufacturer declines all civil and criminal liability in the event of any damage to persons, animals or things deriving from incorrect installation, adjustment and maintenance, from modifications and tampering, from the use of non-original spare parts and accessories, from improper and / or incorrect use of the appliance, from non-observance of the instructions provided by the manufacturer itself and from the intervention of personnel not professionally qualified.
- If the appliance is not used for long periods of time, it is recommended to carry out the following operations:
  - set the main switch of the appliance and the main switch of the system to "off";

- - close the general gas interception cock.
- After long periods of time in which the appliance has not been used, it is advisable to contact the Technical Service of Assistance or qualified technical personnel upon restarting.
- In case of stop and / or malfunction of the appliance, deactivate it, refrain from any attempt to repair or direct intervention. Any repair or replacement of components must only be carried out by qualified personnel using only original spare parts. Failure to comply with these rules can compromise the safety of the appliance.
- Do not leave the packaging elements (nylon, expanded polystyrene, wood, staples, etc.) within the reach of children and / or abandoned as they are potential sources of danger and pollution, collect them and deposit them in a place prepared for this purpose.
- We remind you that the use of products that use electricity and gas implies the observance of some fundamental rules such as:
  - It is forbidden to use the product for unassisted disabled people and children.
  - It is forbidden to operate electrical devices or appliances such as: switches, electrical appliances, etc. if there is a smell of gas, in similar cases proceed as follows:
    - - open doors and windows to ventilate the premises;
    - - close the general gas interception valve;
    - - do not try to intervene on any breakdown but promptly ask the professional staff to intervene qualified or the technical assistance service.
  - It is forbidden to touch the appliance with bare feet and with wet or damp parts of the body.
  - All cleaning and maintenance operations are prohibited, with the appliance connected to the electrical power supply, to carry out these operations it is first necessary to set the main switch of the system to "off" and close the fuel gas supply.
  - It is strictly forbidden to tamper with or modify the safety or regulation systems without authorization and specific indications from the manufacturer of the appliance.
  - It is forbidden to pull, disconnect or twist the electric cables coming out of the appliance, even if it is disconnected from the mains electricity supply.
  - It is forbidden to open the appliance during operation, first set the main system switch to "off".
  - It is forbidden to place objects on top of the appliance or insert them through the combustion products exhaust ducts. It is forbidden to touch the combustion chamber, the flue gas exhaust duct and any hot part in general while the appliance is in operation, as they are surfaces at high temperatures that can cause burns. Surfaces can remain at high temperatures even after the appliance is turned off. Switch off the system in the event of activity near the appliances and supervise the control panel during the entire period of activity to prevent it from being switched on.
  - It is forbidden to intervene on the controls of the appliances placed on the control panel during maintenance activities. The maintenance technician must place a warning sign on the control panel of the system for the entire duration of the maintenance activities where the following sentence is reported: "System undergoing maintenance, IT IS FORBIDDEN to carry out operations on the control panel of the appliances."
  - It is forbidden to use the appliances as a support base and / or as a walkable surface.
  - Do not obstruct the inlet of the fan or the delivery grilles.



#### **Please note**

**To switch off the appliance, always act on the room thermostat and not on the general switch on the ground control panel; this is because the combustion chamber could overheat with consequent damage to the appliance itself. Installations with generator outside are possible, by requesting the appropriate version when ordering, up to an external air temperature of -30 ° C (outdoor version), below this value the operation of the appliance is no longer guaranteed.**

## 1.1 TERMINOLOGY USED IN THE MANUAL

TERMS	DESCRIPTION
<b>Damage</b>	Physical damage, personal injury or deterioration of property, and/or contamination of the environment.
<b>Danger</b>	A potential source of damage.
<b>Qualified professional</b>	A person who is properly trained, prepared and/or has relevant technical experience in the subject, allowing him to perceive risks and avoid dangers arising during the use of the product, and who has the necessary technical and professional certificates, if this is stipulated by the current legislation.
<b>Risk</b>	Combination of the probability of the damage occurrence and its severity.
<b>User</b>	Person or entity using the devices.
<b>Modulartig</b>	The device can automatically adjust its heat output in a certain range, depending on the actual temperature of the airflow supplied to the room, or the actual temperature of the room, based on the control values set from the ground control panel.
<b>GCV (Unit MJ/m<sup>3</sup>)</b>	Higher calorific value, the total amount of heat released by a unit quantity of fuel, when it is burned completely with oxygen, and when the products of combustion are returned to ambient temperature. This quantity includes the heat of condensation of any water vapor contained in the fuel and of the water vapor formed by the combustion of any hydrogen contained in the fuel.
<b>NCV (Unit MJ/m<sup>3</sup>)</b>	Lower calorific value, the total amount of heat released by a unit quantity of fuel with a certain amount of water vapor, when it is burned completely with oxygen and when the products of combustion are not returned to ambient temperature.
<b>Nominal Heat Input (unit kW)</b>	It is the product of the lower calorific value (NCV) of the fuel used and the flow rate of fuel burned.
<b>Nominal heat output (unit kW)</b>	It corresponds to the reduced heat input of the heat output lost to the chimney.
<b>Two stages</b>	The appliance is able to automatically adjust its own heat output in two distinct levels, according to the actual and desired temperature of the air flow introduced into the environment (parameter Y6 on the SCP674V030 motherboard, see paragraph 4.1.3).
<b>Minimum capacity (kW)</b>	minimum capacity' means the minimum heating capacity of the warm air heater ( $P_{min}$ ), expressed in kW;
<b>Nominal values of powers and efficiency</b>	These are the maximum power and efficiency values of an appliance specified and guaranteed by the manufacturer for continuous operation.
<b>Warm air heater</b>	Warm air heater means an air heating product that transfers the heat from a heat generator directly to air and incorporates or distributes this heat through an air-based heating system;
<b>B1 warm air heater</b>	B1 warm air heater' means a warm air heater using gaseous/liquid fuels specifically designed to be connected to a natural draught flue that evacuates the residues of combustion to the outside of the room containing the B1 warm air heater and for drawing the combustion air directly from the room; a type B1 warm air heater is marketed as a B1 warm air heater only.
<b>C2 warm air heater</b>	C2 warm air heater' means a warm air heater using gaseous/liquid fuels specifically designed for drawing the combustion air from a common duct system to which more than one appliance is connected and extracting flue gas to the duct system; a type C2 warm air heater is marketed as a C2 warm air heater only
<b>C4 warm air heater</b>	C4 warm air heater' means a warm air heater using gaseous/liquid fuels specifically designed for drawing the combustion air from a common duct system to which more than one appliance is connected and extracting flue gas to another pipe of the flue system; a type C4 warm air heater is marketed as a C4 warm air heater only;
<b>Master</b>	Command and control panel / terminal for the management of the devices through a serial system. The devices must be equipped with a SLAVE card for connection to the serial network.
<b>Slave</b>	Card (SCP674V202MB) installed on the machine equipped with a port for connecting the device to a serial network.

Tab. 1.1 Defintions

## 2 PACKAGING

The generators are delivered protected in nylon, and with polystyrene corners. The instruction booklet is placed inside the burner compartment of the generator.

Electrical panels and accessories can be packed together with the generator or separately on another pallet according to the quantities and dimensions of the shipment.

## 3 FEATURES

### 3.1 CONSTRUCTION FEATURES

EOLO RT expresses the innovative range of high performance roof top hot air generators.

EOLO RT is a heating and ventilation device available for installation outside heated rooms.

EOLO RT is designed for direct distribution or with channels air in the heated space. The channels can be made of aluminum, steel or elastic fabric.

SYSTEMA ensures great flexibility regarding the air flow and the useful head of the appliances. The equipment supplied can contain different grids / air intakes, electrically controlled dampers, mixing chambers, filters, etc., depending on the installation. The arrangement of the intake systems and air diffusers can be configured as required.

Thanks to the high performance, a sturdy structure, and the use of high quality components, the EOLO RT devices stand out as superior class products.

The main exchanger is made of galvanized steel, powder coated with epoxy paint. The external panels are "sandwich" panels, with insulation having a thickness of 5 cm.

**REDUCTION OF FUEL CONSUMPTION** The modulation of the heat output of the burner (BC version), allows to supply the thermal power in relation to the climatic conditions present. The advantages that we would obtain by reducing the power will be a higher combustion efficiency, lower air stratification upwards with consequent significant reduction in fuel consumption.

**HIGH PERFORMANCES** With the use of specially designed VIP premix burners (BC version) for this specific application, we will obtain high combustion efficiency, higher than 98% (ref. NVC) on the maximum power and higher than 108% (ref. NCV) on the minimum power.

**LOW EMISSIONS** The pollutants emitted into the atmosphere are minimal, in particular the NOX values are in a minimal percentage.

With the lower fuel consumption, we would obtain less CO2 emissions into the atmosphere.

**REDUCED NOISE** The use of the new burner VIP makes the generators very quiet.

**MODULATING THERMAL POWER** (BC version or NBC version with appropriate control panels) The burner VIP allows you to vary the thermal power emitted in relation to the climatic conditions present or to the needs of the user.

The power variation can be done manually with the use of a potentiometer housed inside of the generator or in the control panel, or automatically with the use of the appropriate control panels.

**CONDENSATION** (BC version) With the minimum heat output equal to 30% of the maximum heat output, the combustion fumes are condensed with a significant increase in efficiency, a decrease in fuel consumption and a further reduction in noise.

**TWO VERSIONS** All models have the following versions:

- condensing, automatically modulated heat input (BC version);
- Non-condensing modulating (NBC version).

**IT IS POSSIBLE TO REQUEST THE VERSION FOR OUTDOOR INSTALLATION WHEN ORDERING WITH TEMPERATURES DOWN TO -30 ° C EQUIPPED WITH LOW TEMPERATURE KIT.**

## 3.2 INTENDED USE

I generatori ad aria calda EOLO BC/BL RT sono adatti per il riscaldamento di piccole e medie imprese industriali, magazzini, capannoni, commerciale, sport, etc.

È possibile impostare la modalità estiva per il funzionamento della sola ventilazione per i periodi dove non è necessario il riscaldamento.

## 3.3 PRODUCT CONFIGURATION

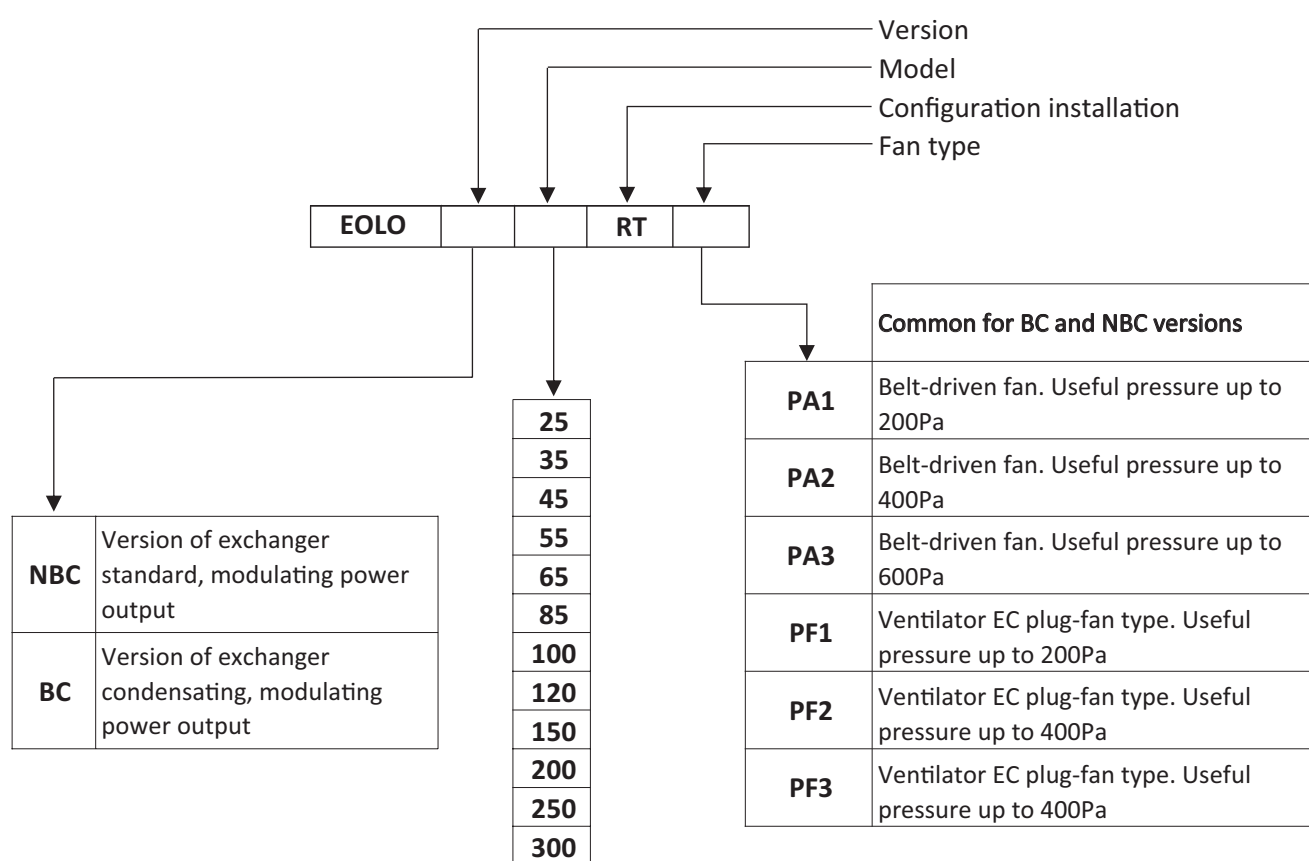


Fig. 3.1 Device coding

Example

EOLO BC 150 RT PA1

Unit model EOLO 150 (155 kW), condensation (BC), prepared for roof top installation (RT), fan with belt drive, fixed flow rate and 200 Pa pressure (PA1).

### 3.4 TECHNICAL SPECIFICATIONS

Description		U.M.	BC 25 RT	BC 35 RT	BC 45 RT	BC 55 RT	BC 65 RT	BC 85 RT
Appliance category			II <sub>2H3P</sub> II <sub>2H3B/P</sub>					
Appliance type			B <sub>23</sub>					
Maximum heat input (NCV)		kW	22	32	43	52	63	86
Minimum heat input (NCV)		kW	8	10	15	18	21	23
Efficiency at maximum / minimum heat input		%	95/106	95/106	95/106	95/106	95/106	95/106
Nominal gas consumption at 15 ° C and 1013 mbar	methane G 20	m³/h	2,33	3,39	4,55	5,50	6,67	8,89
	LPG - butane G 30	kg/h	1,73	2,52	3,39	4,10	4,97	6,62
	LPG - propane G 31	kg/h	1,71	2,49	3,34	4,04	4,89	6,53
Supply pressure	methane G 20	mbar	20					
	LPG - butane G 30	mbar	30					
	LPG - propane G 31	mbar	37					
Gas inlet diameter		Inches	3/4"	3/4"	3/4"	3/4"	3/4"	1"
Exhaust pipe diameter		mm	100	100	100	100	100	130
Maximum length of flue gas exhaust duct (B23)		m	8	8	8	8	8	8
Supply		V/Hz	3/N/PE 50Hz 400V					
Nominal electrical power		kW	See tab. 3.3 on p. 12 and 13					
Operating temperature (min ÷ max) (*)		°C	0÷35 (-30÷40 optional)					
Air flow		m³/h	2.500	3.500	5.000	6.000	7.000	9.000
Useful pressure available		Pa	See tab. 3.3 on p. 12 and 13					
Noise (1 meter from the luminaire) - standard version		dB(A)	56	57	57	58	59	61
Weight in standard configuration (excluded exhaust duct)		kg	220	250	380	400	430	590

Description		UM	BC 100 RT	BC 120 RT	BC 150 RT	BC 200 RT	BC 250 RT	BC 300 RT
Appliance category			II <sub>2H3P</sub> II <sub>2H3B/P</sub>					
Appliance type			B <sub>23</sub>					
Maximum heat input (NCV)		kW	105	125	155	210	260	315
Minimum heat input (NCV)		kW	34	40	46	65	78	95
Efficiency at maximum / minimum heat input		%	95/106	95/106	95/106	95/106	95/106	95/106
Nominal gas consumption at 15 ° C and 1013 mbar	methane G 20	m³/h	11,11	13,23	16,40	22,22	27,51	33,33
	LPG - butane G 30	kg/h	8,28	9,86	12,22	16,56	20,50	24,84
	LPG - propane G 31	kg/h	8,16	9,71	12,04	16,31	20,20	24,47
Supply pressure	methane G 20	mbar	20					
	LPG - butane G 30	mbar	30					
	LPG - propane G 31	mbar	37					
Gas inlet diameter		Inches	1"	1"	1"1/4	1"1/4	1"1/4	1"1/4
Exhaust pipe diameter		mm	130	130	200	200	200	250
Maximum length of flue gas exhaust duct (B23)		m	8	8	8	8	8	8
Supply		V/Hz	3/N/PE 50Hz 400V					
Nominal electrical power		kW	See tab. 3.3 on p. 12 and 13					
Operating temperature (min ÷ max) (*)		°C	-10÷35 (-30÷40 optional)					
Air flow		m³/h	10.000	12.000	14.000	20.000	24.000	28.000
Useful pressure available		Pa	See tab. 3.3 on p. 12 and 13					
Noise (1 meter from the luminaire) - standard version		dB(A)	62	63	65	66	67	67
Weight in standard configuration (excluded exhaust duct)		kg	620	650	840	940	1040	1290

Tab. 3.1 Technical data BC version appliances: modulating condensing

(\*) The minimum operating temperature is -10°C, it is however possible to use the appliance with temperatures down to -30 ° C by applying the kit LOW TEMPERATURE (optional). Specify when ordering the request for the assembly of the LOW TEMPERATURE Kit.

Description	U.M.	NBC 25 RT	NBC 35 RT	NBC 45 RT	NBC 55 RT	NBC 65 RT	NBC 85 RT
Appliance category		II <sub>2H3P</sub> II <sub>2H3B/P</sub>					
Appliance type		B <sub>23</sub>					
Maximum heat input (NCV)	kW	22	32	43	52	63	86
Minimum heat input (NCV)	kW	15	20	28	34	42	56
Efficiency at maximum / minimum heat input	%	93/95	93/95	93/95	93/95	93/95	93/95
Nominal gas consumption at 15 ° C and 1013 mbar	methane G 20	m³/h	2,33	3,39	4,55	5,50	8,89
	LPG - butane G 30	kg/h	1,73	2,52	3,39	4,10	6,62
	LPG - propane G 31	kg/h	1,71	2,49	3,34	4,04	6,53
Supply pressure	methane G 20	mbar	20				
	LPG - butane G 30	mbar	30				
	LPG - propane G 31	mbar	37				
Gas inlet diameter	Inches	3/4"	3/4"	3/4"	3/4"	3/4"	1"
Exhaust pipe diameter	mm	100	100	100	100	100	130
Maximum length of flue gas exhaust duct (B23)	m	8	8	8	8	8	8
Supply	V/Hz	3/N/PE 50Hz 400V					
Nominal electrical power	kW	See tab. 3.3 on p. 12 and 13					
Operating temperature (min ÷ max) (*)	°C	0÷35 (-30÷40 optional)					
Air flow	m³/h	2.500	3.500	5.000	6.000	7.000	9.000
Useful pressure available	Pa	See tab. 3.3 on p. 12 and 13					
Noise (1 meter from the luminaire) - standard version	dB(A)	56	57	57	58	59	61
Weight in standard configuration (excluded exhaust duct)	kg	220	250	380	400	430	590

Description	UM	NBC 100 RT	NBC 120 RT	NBC 150 RT	NBC 200 RT	BC 250 NRT	NBC 300 RT
Appliance category		II <sub>2H3P</sub> II <sub>2H3B/P</sub>					
Appliance type		B <sub>23</sub>					
Maximum heat input (NCV)	kW	105	125	155	210	260	315
Minimum heat input (NCV)	kW	71	88	108	147	182	220
Efficiency at maximum / minimum heat input	%	93/94	92/94	93/95	93/95	93/95	93/95
Nominal gas consumption at 15 ° C and 1013 mbar	methane G 20	m³/h	11,11	13,23	16,40	22,22	33,33
	LPG - butane G 30	kg/h	8,28	9,86	12,22	16,56	24,84
	LPG - propane G 31	kg/h	8,16	9,71	12,04	16,31	24,47
Supply pressure	methane G 20	mbar	20				
	LPG - butane G 30	mbar	30				
	LPG - propane G 31	mbar	37				
Gas inlet diameter	Inches	1"	1"	1"1/4	1"1/4	1"1/4	1"1/4
Exhaust pipe diameter	mm	130	130	200	200	200	250
Maximum length of flue gas exhaust duct (B23)	m	8	8	8	8	8	8
Supply	V/Hz	3/N/PE 50Hz 400V					
Nominal electrical power	kW	See tab. 3.3 on p. 12 and 13					
Operating temperature (min ÷ max) (*)	°C	-10÷35 (-30÷40 optional)					
Air flow	m³/h	10.000	12.000	14.000	20.000	24.000	28.000
Useful pressure available	Pa	See tab. 3.3 on p. 12 and 13					
Noise (1 meter from the luminaire) - standard version	dB(A)	62	63	65	66	67	67
Weight in standard configuration (excluded exhaust duct)	kg	620	650	840	940	1040	1290

Tab. 3.2 Technical data NBC version appliances: modulating condensing

(\*) The minimum operating temperature is -10°C, it is however possible to use the appliance with temperatures down to -30 ° C by applying the kit LOW TEMPERATURE (optional). Specify when ordering the request for the assembly of the LOW TEMPERATURE Kit.



## 3.5 MAIN COMPONENTS OF THE APPLIANCE

Description	UM	BC/NBC 25	BC/NBC 35	BC/NBC 45	BC/NBC 55	BC/NBC 65	BC/NBC 85
Gas solenoid valve		848 Sigma	848 Sigma	848 Sigma	848 Sigma	848 Sigma	822 Novamix/ VK4415
Gas blower		NRG 118	NRG 118	NRG 118	RG 148	RG 148	NRG 137 / FASCO GPM5.8H
Flame controller		BRAHMA SRM DFCM32C					
Control electronics (motherboard)		SCP674V130A1					
Control electronics automatic - OPTIONAL (slave card, if present) see paragraph 4.1.13 on page 44		SCP674V202					
PA1: Fan with belt transmission - fixed flow rate - available useful pressure 200 Pa							
Fan model		ADH E0-0180	ADH E0-0225	ADH E0-0250	ADH E0-0250	ADH E0-0355	ADH E0-0355
Number of fans x motor rated power	kW	1x1,10	1x1,10	1x2,20	1x2,20	1x2,20	1x3,00
Total nominal electric power	kW	1,19	1,19	2,29	2,42	2,42	3,25
PA2: Fan with belt transmission - fixed flow rate - available useful pressure 400 Pa							
Fan model		ADH E0-0180	ADH E0-0225	ADH E0-0250	ADH E0-0250	ADH E0-0355	ADH E0-0355
Number of fans x motor rated power	kW	1x1,50	1x1,50	1x3,00	1x3,00	1x3,00	1x4,00
Total nominal electric power	kW	1,59	1,59	3,09	3,22	3,22	4,25
PA3: Fan with belt transmission - fixed flow rate - available useful pressure 600 Pa							
Fan model		ADH E0-0180	ADH E0-0225	ADH E0-0250	ADH E0-0250	ADH E0-0355	ADH E0-0355
Number of fans x motor rated power	kW	1x2,20	1x2,20	1x4,00	1x4,00	1x4,00	1x5,50
Total nominal electric power	kW	2,29	2,29	4,09	4,22	4,22	5,75
PF/AC Direct drive fan - fixed flow rate - available useful pressure 400 Pa (for request)							
Fan model		R4D450...	R4D500...	R4D560...	R4D560...	R4D560...	R4D630...
Number of fans x motor rated power	kW	1x0,71	1x1,52	1x1,95	1x1,95	1x1,95	1x3,57
Total nominal electric power	kW	0,80	1,61	2,04	2,17	2,17	3,82
PF1 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 200							
Fan model		K3G 355-...	K3G 355-...	K3G 400-PA27-03	K3G 400-PA27-03	K3G 400-PA27-03	K3G500-PA28-03
Number of fans x motor rated power	kW	1x1,10	1x1,10	1x3,80	1x3,80	1x3,80	1x3,80
Total nominal electric power	kW	1,19	1,19	3,89	4,02	4,02	4,05
PF2 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 400 Pa							
Fan model		K3G 400-PA27-03	K3G 400-PA27-03	K3G 450-PA31-03	K3G 450-PA31-03	K3G 450-PA31-03	K3G 560-PB31-03
Number of fans x motor rated power	kW	1x3,80	1x3,80	1x4,50	1x4,50	1x4,50	1x4,40
Total nominal electric power	kW	3,89	3,89	4,59	4,72	4,72	4,65
PF3 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 600 Pa (800Pa for request)							
Fan model		K3G 450-PA31-03	K3G 450-PA31-03	K3G500-PA28-03	K3G500-PA28-03	K3G500-PA28-03	K3G-630-PC08-03
Number of fans x motor rated power	kW	1x4,50	1x4,50	1x3,80	1x3,80	1x3,80	1x4,25
Total nominal electric power	kW	4,59	4,59	3,89	4,02	4,02	4,50

Fan model may change depending on current product availability

Tab. 3.3 Principles of components for BC / NBC version devices (1 of 2)



Description	U.M.	BC/NBC 100	BC/NBC 120	BC/NBC 150	BC/NBC 200	BC/NBC 250	BC/NBC 300
Gas solenoid valve		822 Novamix/VK4415		VR 415	VR 420	VR 420	VR 425
Gas blower		NRG 137 / FASCO GPM5.8H		RG 175	RG 175	G1G 170	G1G 170
Flame controller		BRAHMA SRM DFCM32C					
Control electronics (motherboard)		SCP674V130A1					
Control electronics automatic - OPTIONAL (slave card, if present) see paragraph 4.1.13 on page 44		SCP674V202					
PA1: Fan with belt transmission - fixed flow rate - available useful pressure 200 Pa							
Fan model		ADH E0-0355	ADH E0-0400	ADH E0-0450	ADH E0-0500	ADH E0-0560	ADH E0-0630
Number of fans x motor rated power	kW	1x3,00	1x4,00	1x5,50	1x7,50	1x7,50	1x11,00
Total nominal electric power	kW	3,25	4,25	5,79	7,82	7,97	11,48
PA2: Fan with belt transmission - fixed flow rate - available useful pressure 400 Pa							
Fan model		ADH E0-0355	ADH E0-0400	ADH E0-0450	ADH E0-0500	ADH E0-0560	ADH E0-0630
Number of fans x motor rated power	kW	1x4,00	1x5,50	1x7,50	1x11,00	1x11,00	1x11,00
Total nominal electric power	kW	4,25	5,75	7,79	11,32	11,47	11,48
PA3: Fan with belt transmission - fixed flow rate - available useful pressure 600 Pa							
Fan model		ADH E0-0355	ADH E0-0400	ADH E0-0450	ADH E0-0500	ADH E0-0560	ADH E0-0630
Number of fans x motor rated power	kW	1x5,50	1x7,50	1x11,00	1x11,00	1x15,00	1x15,00
Total nominal electric power	kW	5,75	7,75	11,29	11,32	15,47	15,48
PF/AC Direct drive fan - fixed flow rate - available useful pressure 400 Pa (for request)							
Fan model		R4D630...	R4D630...	R4D630...	R4D630...	R4D630...	R4D630...
Number of fans x motor rated power	kW	3,57x1	3,57x1	3,57x1	3,57x2	3,57x2	3,57x2
Total nominal electric power	kW	3,82	3,82	3,86	7,46	7,61	7,62
PF1 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 200							
Fan model		K3G500-PA28-03	K3G500-PA28-03	K3G500-PA28-03	K3G500-PA28-03	K3G500-PA28-03	K3G500-PA28-03
Number of fans x motor rated power	kW	1x3,80	1x3,80	1x3,80	2x3,80	2x3,80	2x3,80
Total nominal electric power	kW	4,05	4,05	4,09	7,92	8,07	8,08
PF2 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 400 Pa							
Fan model		K3G 560-PB31-03	K3G 560-PB31-03	K3G 560-PB31-03	K3G 560-PB31-03	K3G 560-PB31-03	K3G 560-PB31-03
Number of fans x motor rated power	kW	1x4,40	1x4,40	1x4,40	2x4,40	2x4,40	2x4,40
Total nominal electric power	kW	4,65	4,65	4,69	9,12	9,27	9,28
PF3 (BC/NBC): Plug fan with variable flow rate - useful pressure available up to 600 Pa (800Pa for request)							
Fan model		K3G-630-PC08-03	K3G-630-PC08-03	K3G-630-PC08-03	K3G-630-PC08-03	K3G-630-PC08-03	K3G-630-PC08-03
Number of fans x motor rated power	kW	1x4,25	1x4,25	1x4,25	2x4,25	2x4,25	2x4,25
Total nominal electric power	kW	4,50	4,50	4,54	8,82	8,97	8,98

Fan model may change depending on current product availability

Tab. 3.3 Principles of components for BC / NBC version devices (2 of 2)

### 3.6 IDENTIFICATION PLATE AND INFORMATION LABELS

On the outside of the appliance there is a label that shows some information (serial number and model), see

fig. 3.3; some information labels are applied to the generator packaging (fig. 3.2).

The product identification label is applied inside the appliance (fig. 3.3) which shows all the identification data that distinguish the appliance and a warning label.

Among these indications there is the unique serial number for each product, thanks to this number the manufacturer can precisely identify the model and all the technical data relating to the product in case of requests for assistance. All labels must be kept intact on the device and must be replaced if they become illegible.

Inside the burner compartment, together with the instruction manual, there are the labels to be used for the change of fuel (fig.3.3).



#### Important

the serial number of the product is essential for an adequate and rapid assistance.

Model:	XXXXXXXXXX
Destination:	XXXXXXXXXX
SERIAL NUMBER:	XXXXXXXXXX

Adjusted for:	XXXXXXX
Gas network pressure XX mbar	

**IMPORTANT**

Read the installation instructions before installing and switching on the appliance.  
For type B applications, please forsee adequately ventilated spaces.

Model:	XXXXXXXXXX
SERIAL NUMBER:	YYYYYYYYYY
Device adjusted for:	XXXXXXX
Category:	X X X X
TYPE:	X X X X
DESTINATION	XXXXXXXXXX
Document int.	XXXXXXXXXXXXXXXXXX
XXXX XXX XX	XXXXXXX

Fig. 3.2 Labels placed on the appliance packaging

<b>SYSTEMA</b>		SYSTEMA POLSKA Sp. z o.o. ul. Długa 5 98-220 Zduńska Wola/ POLSKA www.systemapolska.pl	
<b>Condensing gas unit</b>		Year <b>XXXX</b>	<b>XX</b> <b>CE</b> <b>XXXX</b>
Serial no.: <b>XXXXXXXXXX</b>			
Model <b>XXXXXXXXXXXXXX</b>	Destination <b>LITHUANIA</b>		
Certificate no.: <b>XXXXXXX</b>	Category <b>II 2H3P</b>		
Nominal heat input (Hi) [ kW ] <b>XX kW</b>	Type <b>B23</b>		
Nominal heat output <b>XX kW</b>			
Type of gas	G20	G25	G31 G30
Gas network pressure mbar	XX	XX	XX XX
Nominal consumption max	kg/h		XX XX
	m³/h	XX XX	
Electrical supply (V/Hz)	<b>2/PE 50Hz/400V</b>		Protection class <b>IP20</b>
Max. electr. power (W)	Classe NOx		
<b>Device adjusted for: Gas G20 / 20mbar</b>			

**IMPORTANT**

Read the installation instructions before installing and switching on the appliance.  
For type B applications, please forsee adequately ventilated spaces.

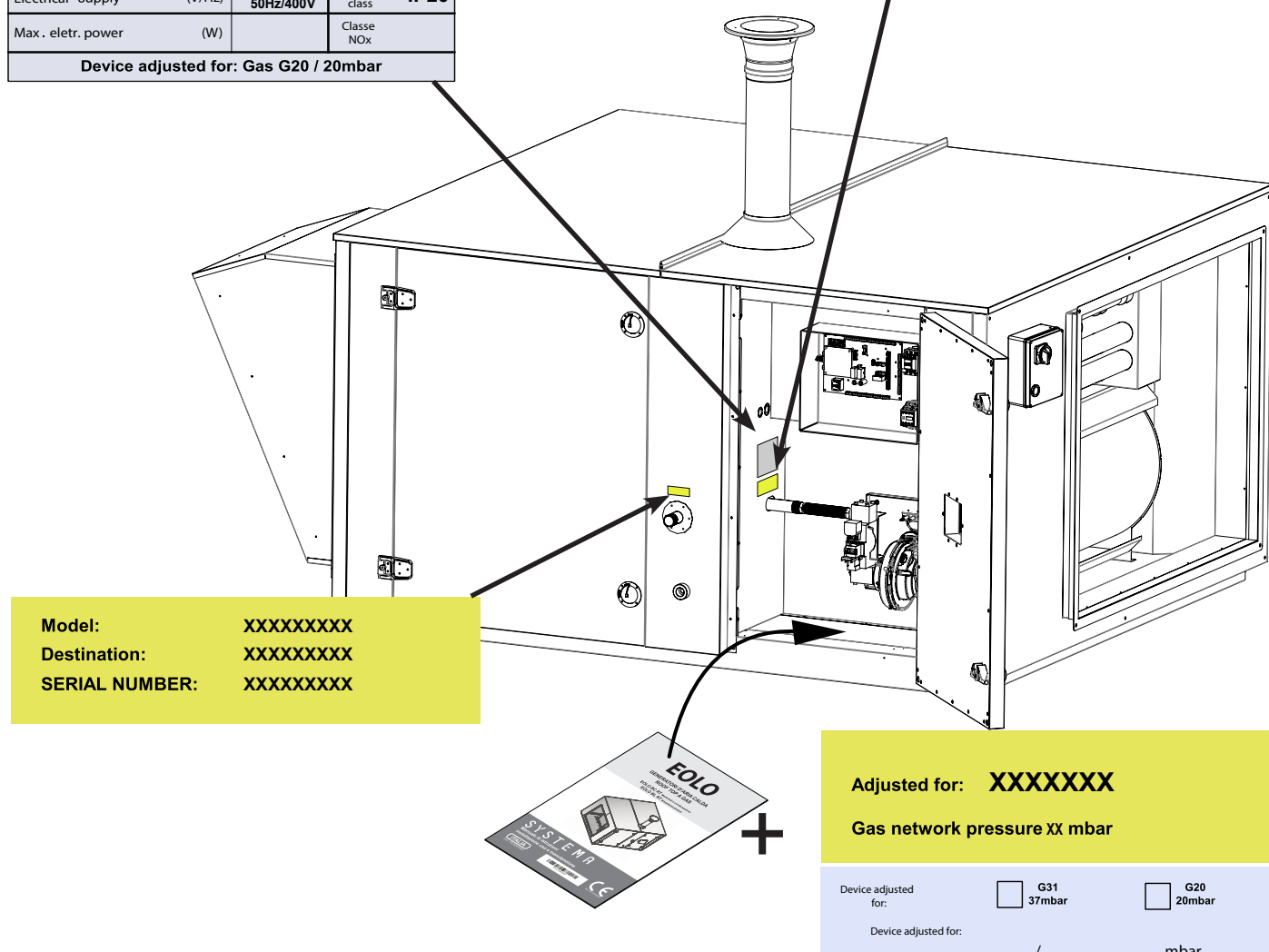
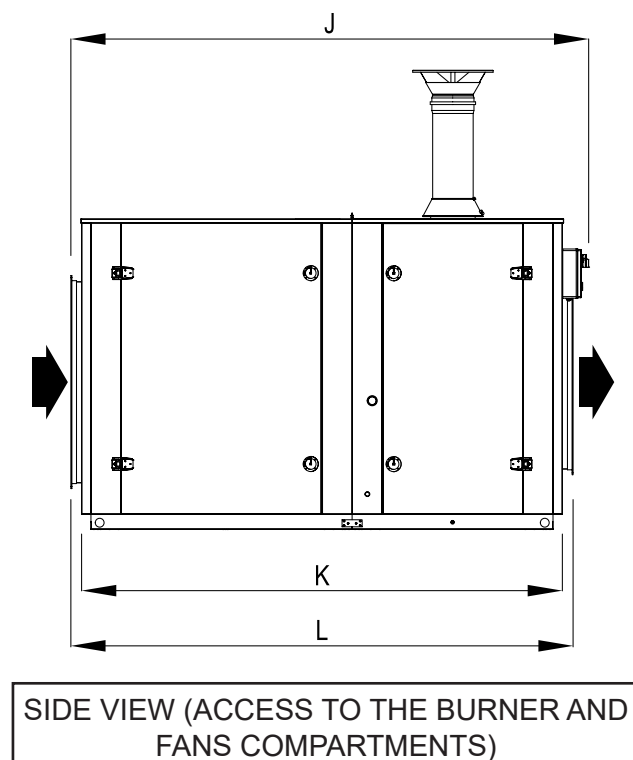
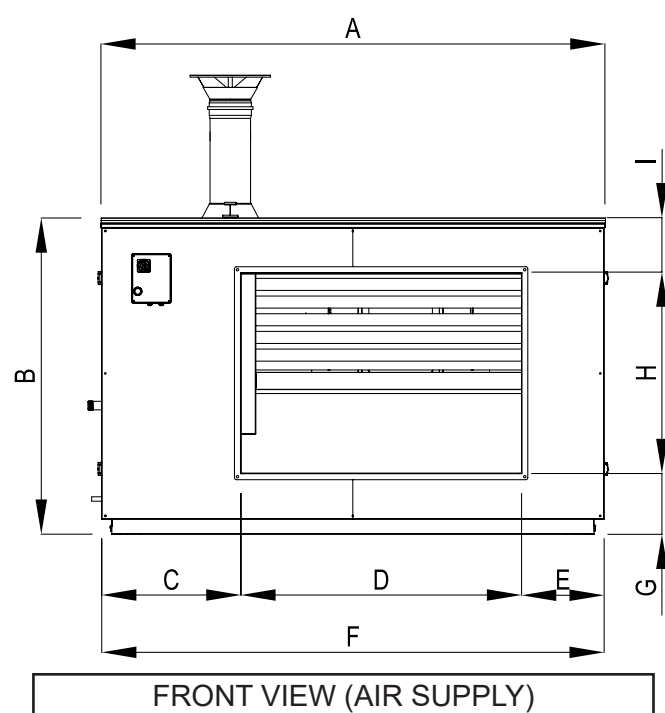


Fig. 3.3 Position of the identification plate, the warning label, the external label of the instruction manual and the labels to be used for fuel changes

## 3.7 OVERALL DIMENSIONS

### BASIC VERSION



QUOTE IN MM

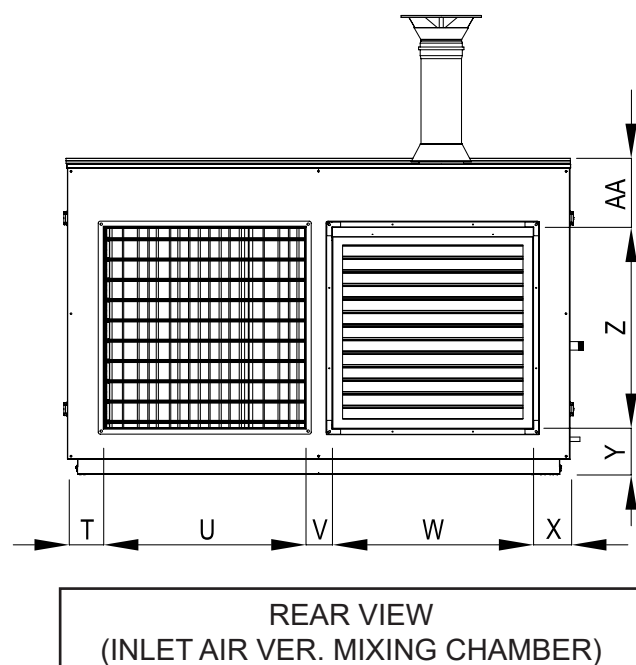
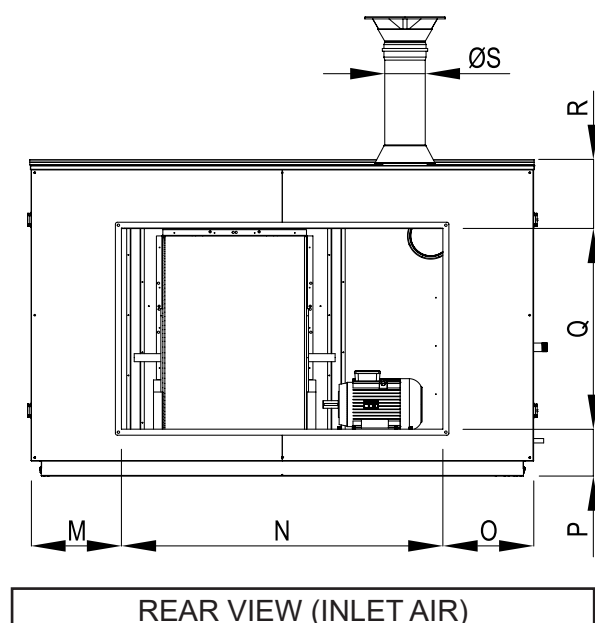


Fig. 3.4 Overall dimensions of the basic version

[mm]	EOLO BC/BL 25/35 RT	EOLO BC/BL 45/55/65 RT	EOLO BC/BL 85/100/120 RT	EOLO BC/BL 150 RT	EOLO BC/BL 200 RT	EOLO BC/BL 250 RT	EOLO BC/BL 300 RT
<b>A</b>	1205	1508	1909	2008	2260	2510	2260
<b>B</b>	788	1035	1197	1560	1560	1560	2210
<b>C</b>	350	410	530	695	695	690	600
<b>D</b>	700	900	1200	1000	1200	1400	1500
<b>E</b>	150	190	170	305	355	410	150
<b>F</b>	1200	1500	1900	2000	2250	2500	2250
<b>G</b>	200	271	149	300	300	300	325
<b>H</b>	400	500	900	1000	1000	1000	1500
<b>I</b>	188	264	148	260	260	260	285
<b>J</b>	1580	1822	2200	2500	2500	2500	3600
<b>K</b>	1400	1643	2092	2392	2392	2392	3492
<b>L</b>	1504	1745	2193	2500	2500	2500	3600
<b>M</b>	150	190	250	400	425	450	125
<b>N</b>	700	900	1400	1200	1400	1600	2000
<b>O</b>	350	410	250	400	425	450	125
<b>P</b>	200	269	151	300	300	230	325
<b>Q</b>	400	500	900	1000	1000	1000	1500
<b>R</b>	188	266	146	260	260	330	285
<b>ØS</b>	100	100	130	200	200	200	300
<b>T</b>	98	100	150	133	157	182	112
<b>U</b>	450	600	700	800	900	1000	900
<b>V</b>	104	100	200	85	136	136	226
<b>W</b>	450	600	700	800	900	1000	900
<b>X</b>	98	100	150	157	157	182	112
<b>Y</b>	151	172	149	230	230	230	325
<b>Z</b>	500	700	900	1000	1000	1000	1500
<b>AA</b>	137	163	148	330	330	330	285

Tab. 3.6 Overall dimensions of the basic version

### 3.8 MAIN COMPONENTS

#### AIR INTAKE SIDE - VERSION 1-WAY INTAKE

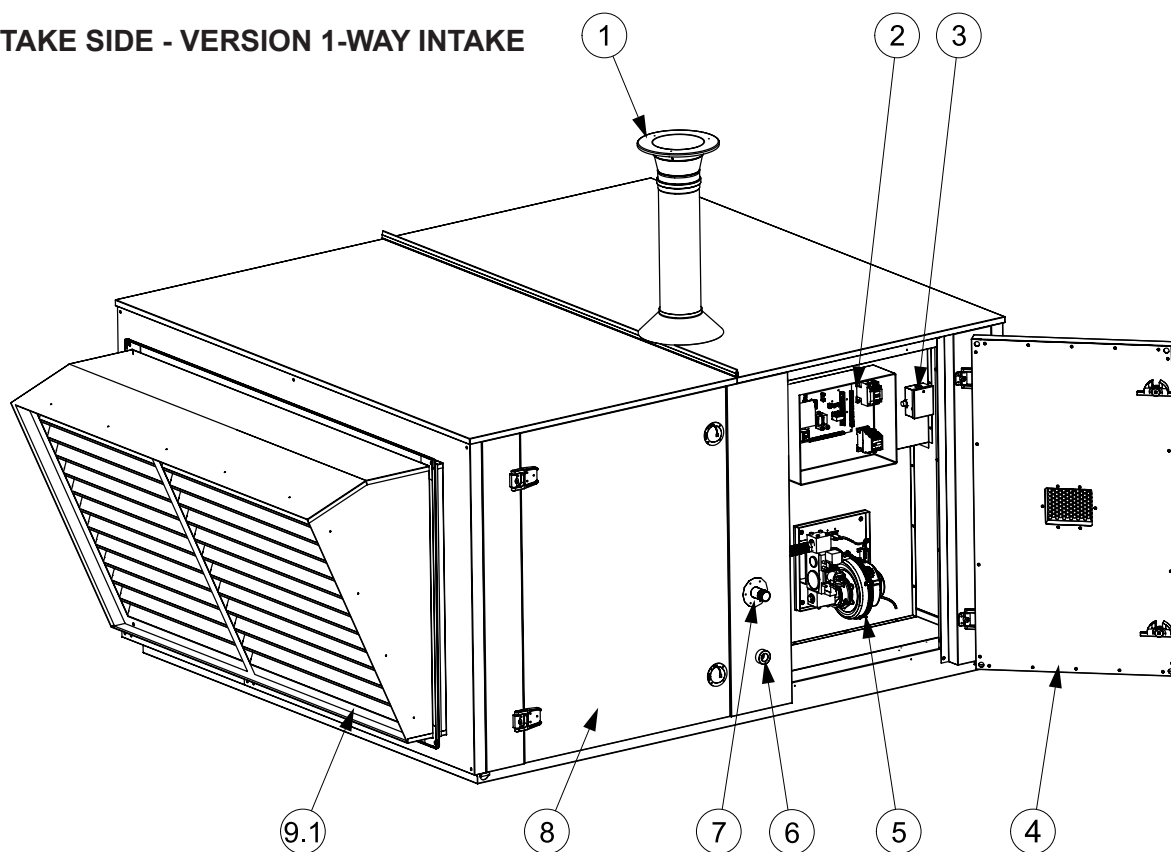


Fig. 3.5 Main components - version with 1-way air intake

#### AIR INTAKE SIDE - VERSION MIXING CHAMBER 2-WAY AIR INTAKE

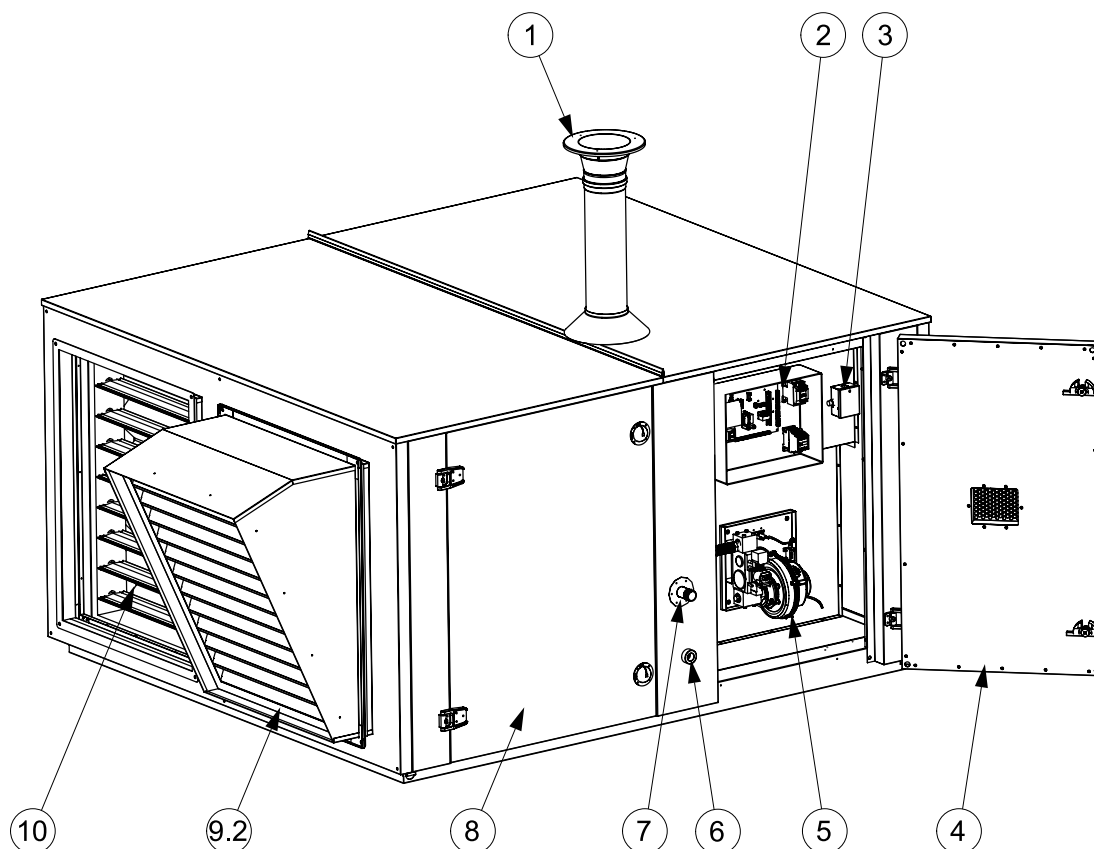


Fig. 3.6 Main components - version with mixing chamber

## SIDE VIEW - SUPPLY FLANGED PANEL

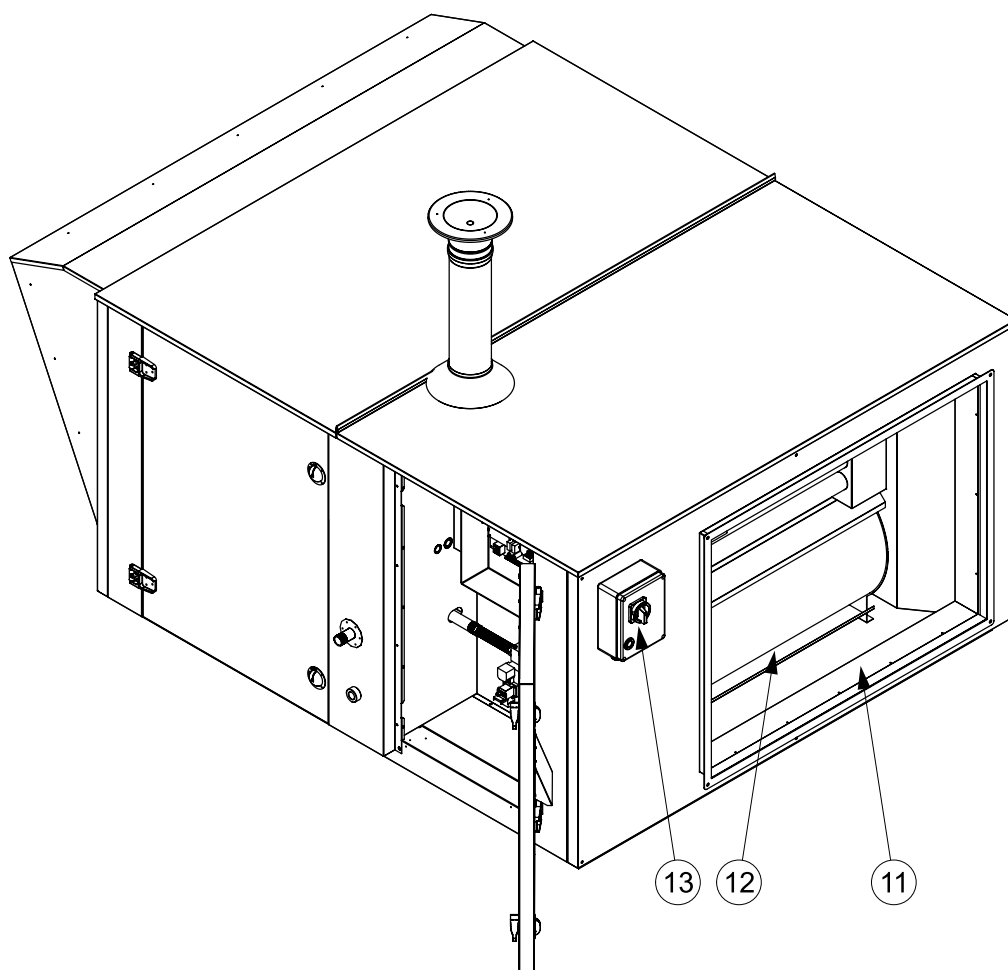


Fig. 3.7 Main components - delivery side view

POS.	DESCRIPTION	POS.	DESCRIPTION
1	Smoke exhaust duct	9.1	Fresh air intake vent (optional)
2	Electrical cabinet	9.2	Fresh air intake vent (optional - double intake version)
3	Safety thermostat (Ts) with manual reset	10	Internal air intake (optional - double intake version)
4	Access door to the burner housing compartment	11	Air delivery
5	Burner	12	Exchanger
6	Condensate drain (BC version only)	13	Main disconnecter and control panel connection terminal block
7	Gas connection		
8	Access door to the fan housing compartment		

Tab. 3.7

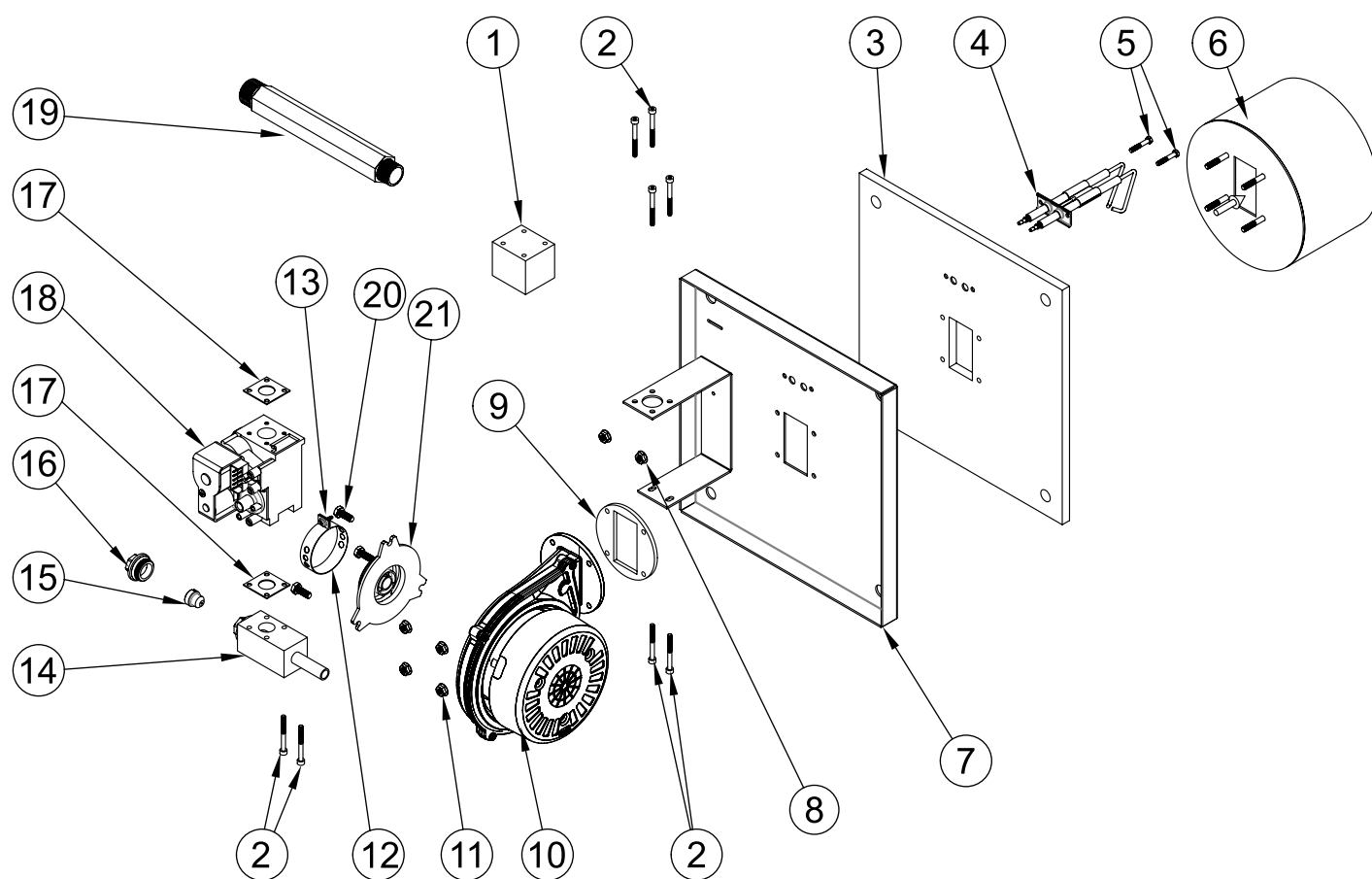
**3.9 EOLO BC / NBC BURNER 15 ÷ 65 RT**

Fig. 3.8 Exploded view of burner for Eolo mod. BC / NBC 15 ÷ 65 RT



Pos	Qty	Description	Code	Pos	Qty	Description	Code
1	1	Raccordo gas	00CNFL0182	12	1	Ghiera aria secondaria Eolo 55	94CNOP0024
2	8	Viti fissaggio raccordo gas / ugello	10WSSR2058		1	Ghiera aria secondaria Eolo 65	94CNOP0023
		Viti fissaggio raccordo gas curvo	10WSSR2032	13	1	Vite serraggio ghiera mixer aria/gas	10WSSR2111
		Viti fissaggio raccordo gas curvo	10WSSR2030	14	1	Raccordo iniettore e porta ugello gas	94ARKO6010
3	1	Isolante termico contenitore	94CNGU0070	15	1	Ugello gas Ø 3,8 (Eolo 15 - G 20)	00CNUG0992
4	1	Coppia elettrodi (SAPCO)	94CNEL0022		1	Ugello gas Ø 4,0 (Eolo 25 - G 20)	00CNUG0938
	2	Elettrodo singolo SAPCO 137*4 mm Kantal APM	94CNEL0024		1	Ugello gas Ø 4,5 (Eolo 35 - G 20)	00CNUG0972
	2	Elettrodo singolo SAPCO	94CNEL0023		1	Ugello gas Ø 5,0 (Eolo 45 - G 20)	00CNUG0939
	2	Elettrodo singolo CAST 137*4 mm Kantal	94CNEL0019		1	Ugello gas Ø 5,5 (Eolo 55 - G 20)	00CNUG0947
5	2	Vite fissaggio elettrodi	10WSWK2148		1	Ugello gas Ø 5,8 (Eolo 65 - G 20)	00CNUG0983
6	1	Testa di combustione Eolo 15/25 (Ø 89x140)	94PAGL6100		1	Ugello gas Ø 2,8 (Eolo 15 - G 30)	00CNUG0991
		Testa di combustione Eolo 35 (Ø 108x140)	94PAGL6101		1	Ugello gas Ø 2,9 (Eolo 25 - G 30)	00CNUG0965
		Testa di combustione Eolo 45 (Ø 129x140)	94PAGL6102		1	Ugello gas Ø 3,4 (Eolo 35 - G 30)	00CNUG0968
		Testa di combustione Eolo 55 (Ø 139x140)	94PAGL6103		1	Ugello gas Ø 3,5 (Eolo 45 - G 30)	00CNUG0954
		Testa di combustione Eolo 65 (Ø 154x140)	94PAGL6104		1	Ugello gas Ø 4,0 (Eolo 55 - G 30)	00CNUG0938
7	1	Supporto bruciatore Eolo 15/25/35/45 (elettrodi SAPCO)	85PLDM0121		1	Ugello gas Ø 4,3 (Eolo 65 - G 30)	00CNUG0996
		Supporto bruciatore Eolo 15/25/35/45 (elettrodi CAST)	85PLDM0103		1	Ugello gas Ø 3,0 (Eolo 15 - G 31)	00CNUG0940
	1	Supporto bruciat. Eolo 55/65 (elett. SAPCO)	85PLDM0104		1	Ugello gas Ø 3,1 (Eolo 25 - G 31)	00CNUG0999
	1	Supporto bruciat. Eolo 55/65 (elett. CAST)	85PLDM0122		1	Ugello gas Ø 3,6 (Eolo 35 - G 31)	00CNUG0967
					1	Ugello gas Ø 3,7 (Eolo 45 - G 31)	00CNUG0998
8	4	Dado M5 fissaggio elettrodi	10WSNA2041		1	Ugello gas Ø 4,2 (Eolo 55 - G 31)	00CNUG0993
9	1	Isolante termico ventilatore	94CNGU0061		1	Ugello gas Ø 4,5 (Eolo 65 - G 31)	00CNUG0972
10	1	Ventilatore EBM NRG 118 (Eolo 15/25/35/45)	94CNVE0019	16	1	Tappo 1/2	94ARKO6009
	1	Ventilatore EBM RG 148 (Eolo 55/65)	94CNVE0012	17	2	Guarnizione in sughero	01CNGU0216
11	2	Dado M5 fissaggio blocco testa/ventilatore	10WSNA2041	18	1	Elettrovalvola gas	94CEVA0003
					1	Raccordo gas (Eolo 15/25/35)	94ARPG6000
12	1	Ghiera aria secondaria Eolo 15/25	94CNOP0027	19	1	Raccordo gas (Eolo 45/55)	94ARPG6001
	1	Ghiera aria secondaria Eolo 35	94CNOP0026		1	Raccordo gas (Eolo 65)	94ARPG6008
	1	Ghiera aria secondaria Eolo 45	94CNOP0025		3	Vite bloccaggio mixer aria/gas	10WSSR2095
				20			
				21	1	Mixer aria/gas	94CNMI0013

Tab. 3.8 Exploded view of burner for Eolo mod. BC / nbc 15 ÷ 65 RT

### 3.10 EOLO BC / NBC BURNER 85 ÷ 120 RT

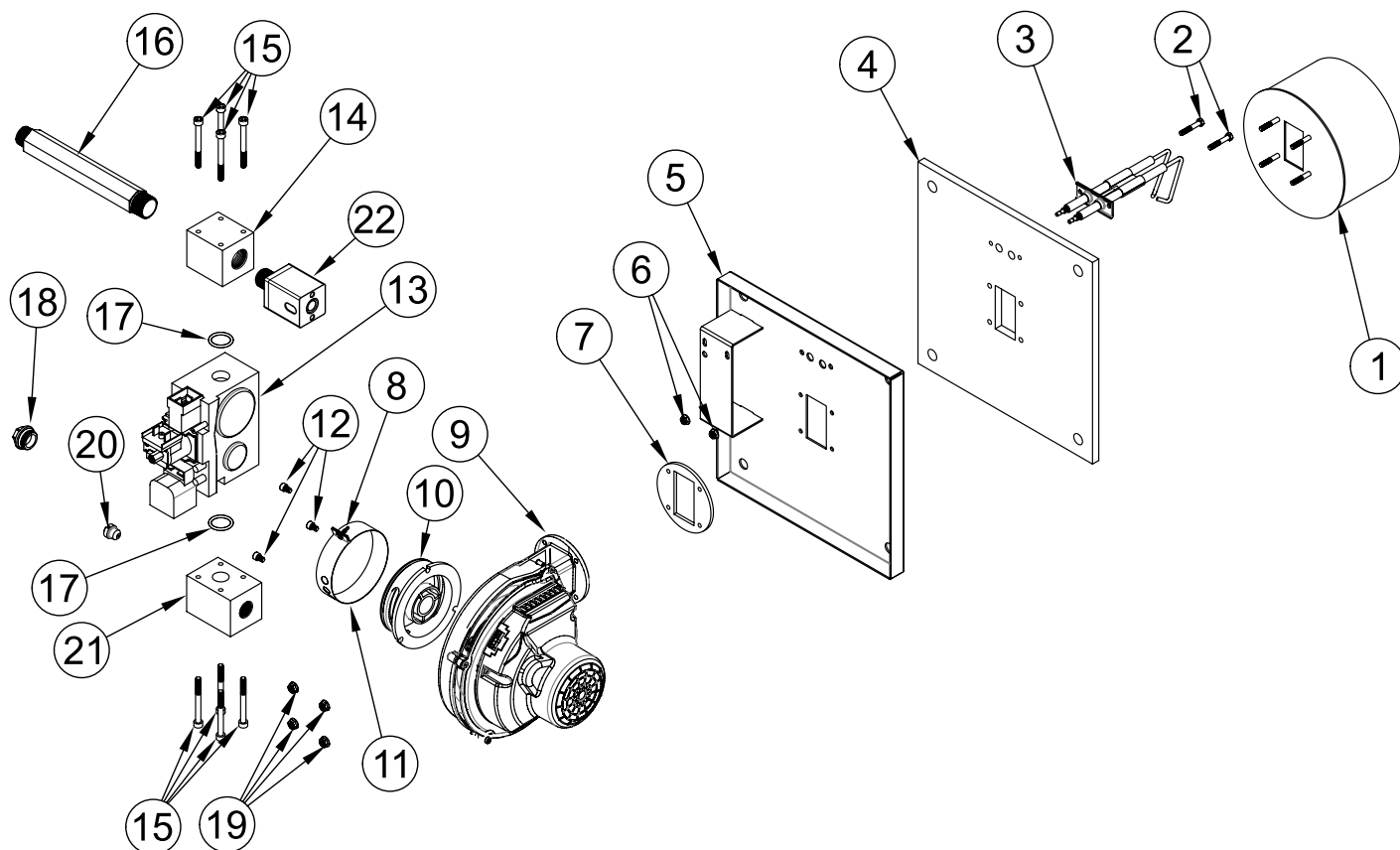


Fig. 3.9 Exploded view of burner for Eolo modd. BC / NBC 85 ÷ 120 RT

Pos	Qty	Description	Code	Pos	Qty	Description	Code
1	1	Burner head 85 ÷ 120 (Ø159x140)	94PAGL6105	9	1	EBM NRG 137 fan (Eolo 85 ÷ 120)	94CNVE0016
				10	1	Air / gas mixer	94CNMI0010
2	2	Electrode fixing screw	10WSWK2148	11	1	Secondary air ring nut (Eolo 85 ÷ 120)	94CNOP0022
3	1	Pair of electrodes (SAPCO)	94CNEL0022	12	3	Air / gas mixer locking screw	10WSSR2095
	2	Single electrode SAPCO 137 * 4 mm Kantal APM	94CNEL0024	13	1	Gas solenoid valve	94CNVA0011
	2	SAPCO single electrode	94CNEL0023	14	1	Gas connection (Eolo 85 ÷ 120)	94ARPG6000
	2	Single CAST electrode 137 * 4 mm Kantal	94CNEL0019	15	8	Solenoid valve assembly fixing screw	10WSSR2110
4	1	Thermal insulating	94CNGU0070	16	1	Gas connection (Eolo 85 ÷ 120)	94ARPG6003
5	1	Eolo 85 ÷ 120 burner support (SAPCO electrodes)	85PLDM0104	17	2	O-Ring gasket	01CNOR2525
				18	1	3/4 cap	94ARKO6008
		Eolo 85 ÷ 120 burner support (CAST electrodes)	85PLDM0105	19	4	M5 nut fixing head / fan block	10WSNA2041
				20	1	Gas nozzle Ø 8,5 (Eolo 85 ÷ 120 - G 20)	94ARDY1000
6	2	Electrode fixing nut M5	10WSNA2041		1	Gas nozzle Ø 6.0 (Eolo 85 ÷ 120 - G 30)	94ARDY1002
7	1	Thermal insulation fan	94CNGU0061		1	Gas nozzle Ø 6.3 (Eolo 85 ÷ 120 - G 31)	94ARDY1003
8	1	Air / gas mixer ring nut tightening screw	10WSSR2111	21	1	Injector connection and gas nozzle holder	94ARSZ6006
				22	1	Gas pressure switch (optional)	05CEPR0317

Tab. 3.9 Exploded view of burner for Eolo modd. BC / BL 85 ÷ 120 RT

### 3.11 3.11 BURNER EOLO BC / NBC 150 ÷ 300 RT

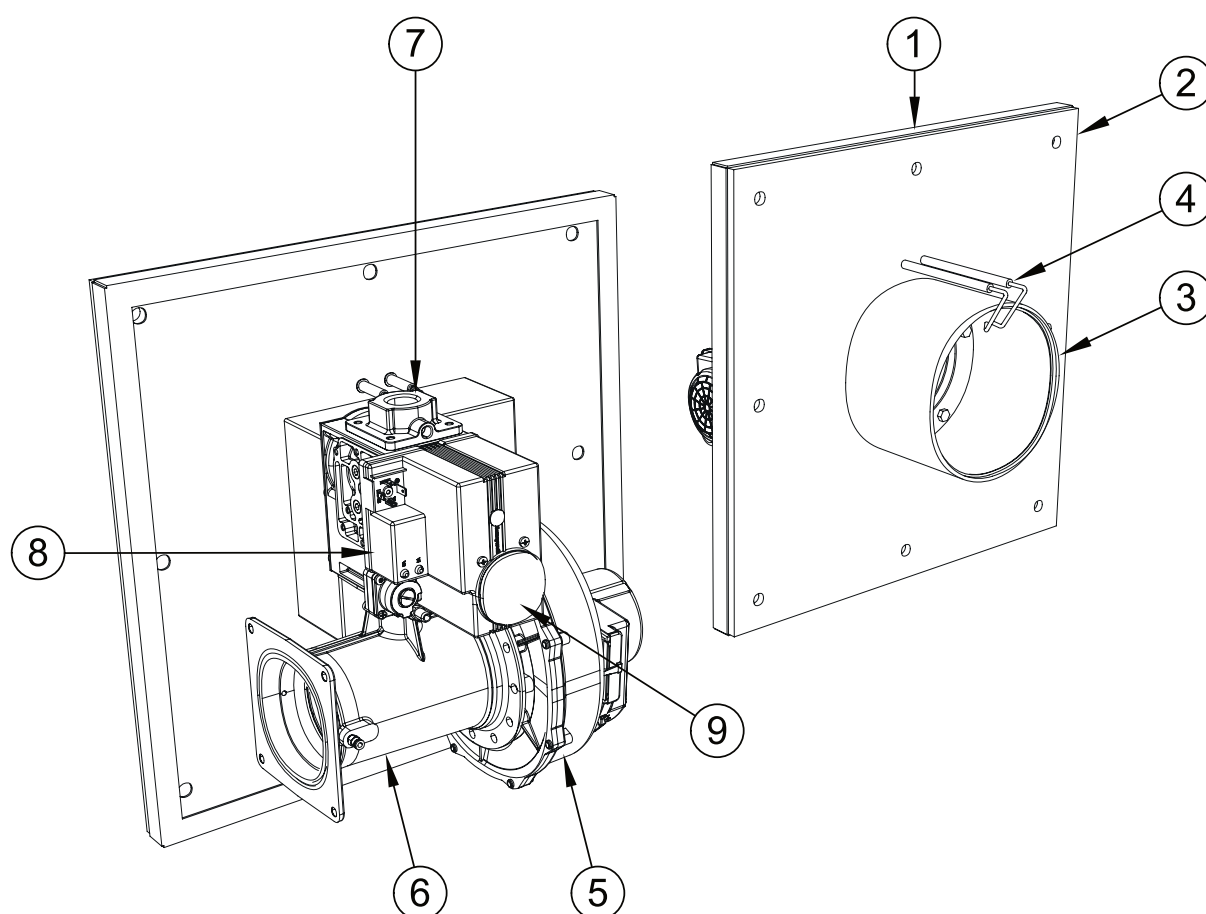


Fig. 3.10 Burner EOLO BC/NBC 150÷300 RT

POS.	DESCRIPTION		EOLO 150 BC/NBC RT	EOLO 200 BC/NBC RT	EOLO 250 BC/NBC RT	EOLO 300 BC/NBC RT
1	Burner support	Code	90PLDM0100	90PLDM0100	90PLDM0100	90PLDM0100
2	Isolation Aspak burner 400x400	Code	94CNGU0060	94CNGU0060	94CNGU0060	94CNGU0060
3	Combustion head	Code	94PAGL6111	94PAGL6115	94PAGL6115	94PAGL6114
4	Single electrode Kantal APM SAPCO 9,5x210	Code	94CNEL0023	94CNEL0023	94CNEL0023	94CNEL0023
5	EBM fan	Code	94CNVE0013	94CNVE0013	94CNVE0017	94CNVE0017
6	Honeywell Venturi mixer	Code	94CNIM0014	94CNIM0015	94CNIM0016	94CNIM0016
7	Gas connection	Code	94ARPG6000	94ARPG6000	94ARPG6000	94ARPG6000
8	Honeywell minimum and maximum gas pressure switch	Code	00CEPR1151	00CEPR1151	00CEPR1151	00CEPR1151
9	Gas solenoid valve	Code	94CEVA0004	94CEVA0004	94CEVA0005	94CEVA0005

Tab. 3.10

## 3.12 STANDARD FAN SECTION

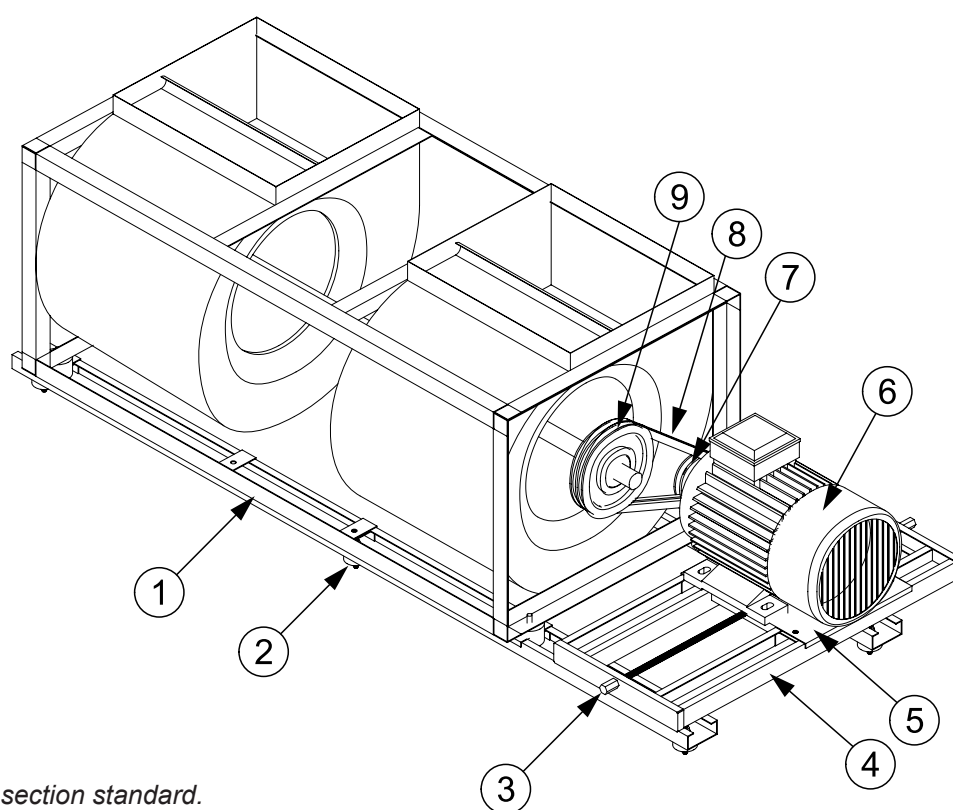


Fig. 3.11 Fan section standard.

POS.	DESCRIZIONE	POS.	DESCRIZIONE
1	Fan section	6	Three-phase electric motor
2	Anti-vibration cushions	7	Motor pulley
3	V-belt tension adjuster screw	8	V-belt
4	Motor slide guides	9	Fan pulley
5	Engine support plate with belt tensioner		

Tab. 3.11

## 3.13 EC PLUG FAN SECTION

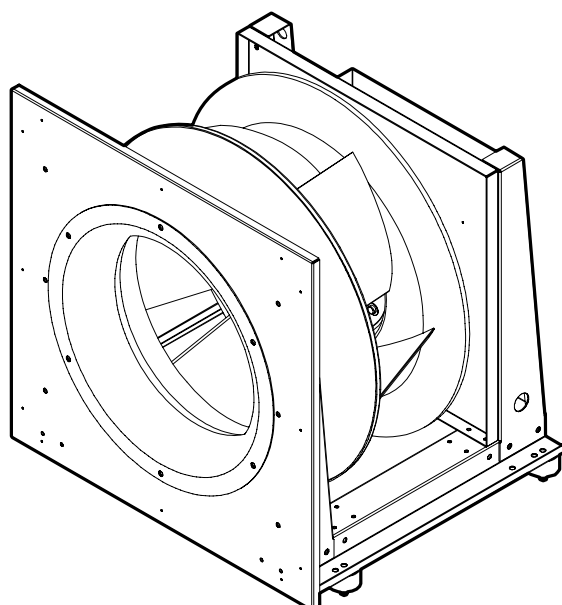


Fig. 3.12 EC plug fan

### 3.14 SUPPLY AND AIR INTAKE ACCESSORIES (OPTIONAL)

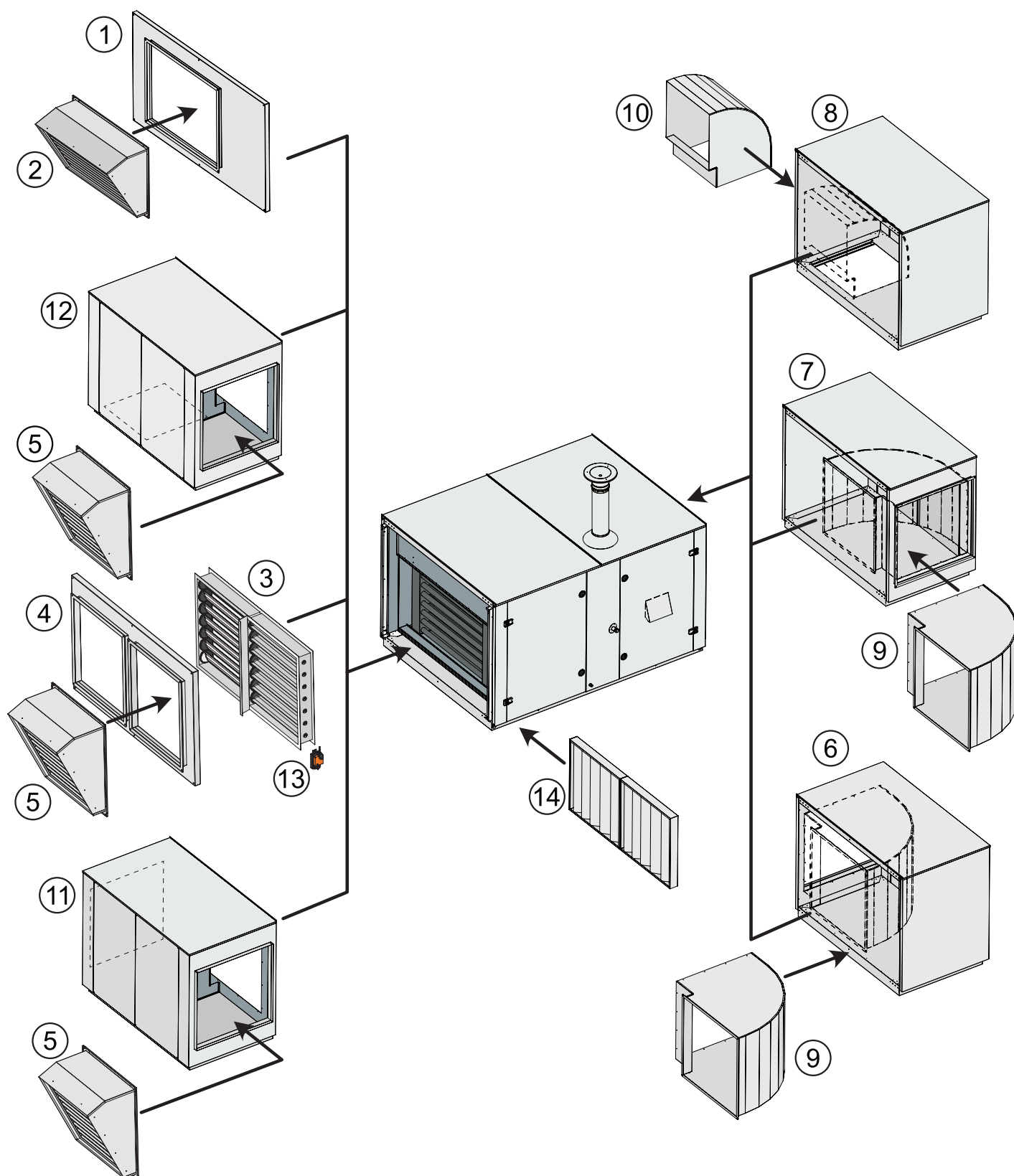
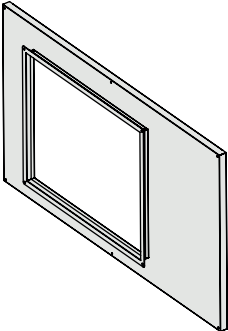
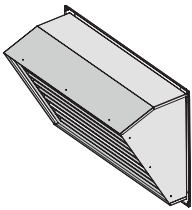
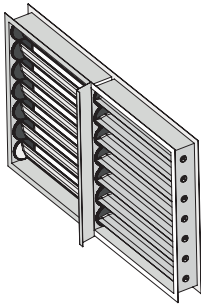
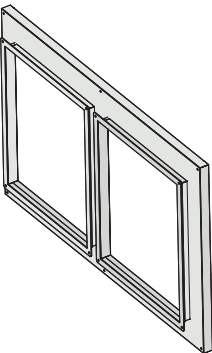
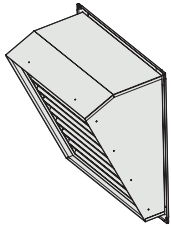


Fig. 3.13 Air delivery and return accessories (optional)

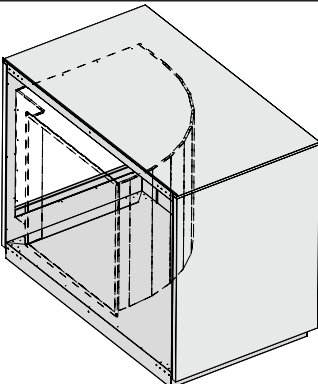
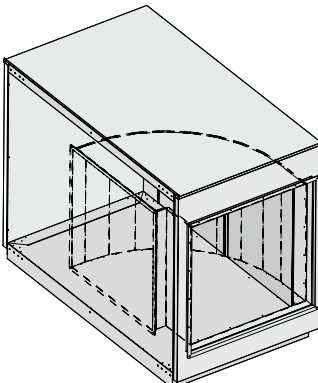
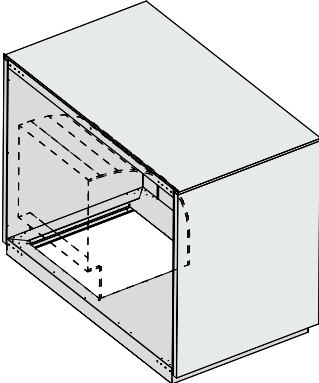
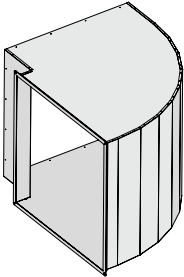


#### Important

Cleaning or replacing the filters (14) is essential to ensure proper operation unit and the correct air flow rate.

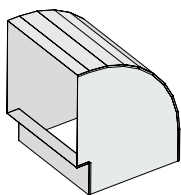
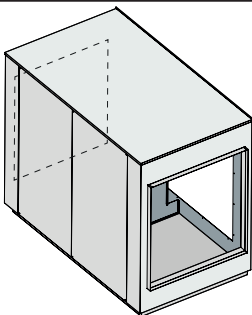
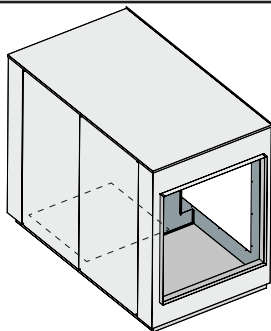

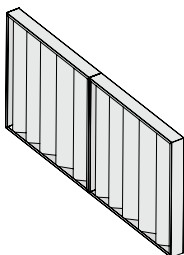
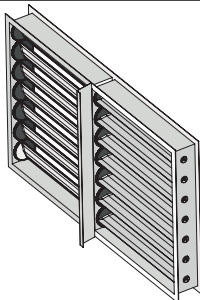
POS.	COMPONENT	DESCRIPTION	MODEL	CODE
1		Air return / delivery panel	25 RT; 35 RT	91RTAK1001
			45 RT; 55 RT; 65 RT	91RTAK1012
			85 RT; 100 RT; 120 RT	91RTAK1013
			150 RT	91RTAK1014
			200 RT	91RTAK1015
			250 RT	91RTAK1016
			300 RT	91RTAK1017
2		100% external air intake vent	25 RT; 35 RT	91RTAK1002
			45 RT; 55 RT; 65 RT	91RTAK1018
			85 RT; 100 RT; 120 RT	91RTAK1019
			150 RT	91RTAK1020
			200 RT	91RTAK1021
			250 RT	91RTAK1022
			300 RT	91RTAK1023
3		2-way air damper by-pass type	25 RT; 35 RT	91RTAK1003
			45 RT; 55 RT; 65 RT	91RTAK1024
			85 RT; 100 RT; 120 RT	91RTAK1025
			150 RT	91RTAK1026
			200 RT	91RTAK1027
			250 RT	91RTAK1028
			300 RT	91RTAK1029
4		2-way flanged return panel	25 RT; 35 RT	91RTAK1004
			45 RT; 55 RT; 65 RT	91RTAK1030
			85 RT; 100 RT; 120 RT	91RTAK1031
			150 RT	91RTAK1032
			200 RT	91RTAK1033
			250 RT	91RTAK1034
			300 RT	91RTAK1035
5		Intake grill for 2 ways panel	25 RT; 35 RT	91RTAK1005
			45 RT; 55 RT; 65 RT	91RTAK1036
			85 RT; 100 RT; 120 RT	91RTAK1037
			150 RT	91RTAK1038
			200 RT	91RTAK1039
			250 RT	91RTAK1040
			300 RT	91RTAK1041

Tab. 3.12 List of air intake and deliveries accessories optional (1 of 3)

POS.	COMPONENTE	DESCRIZIONE	MODELLO	CODICE
6		Copertura isolata mandata destra	25 RT; 35 RT	91RTAK1006
			45 RT; 55 RT; 65 RT	91RTAK1042
			85 RT; 100 RT; 120 RT	91RTAK1043
			150 RT	91RTAK1044
			200 RT	91RTAK1045
			250 RT	91RTAK1046
			300 RT	91RTAK1047
7		Copertura isolata mandata sinistra	25 RT; 35 RT	91RTAK1007
			45 RT; 55 RT; 65 RT	91RTAK1048
			85 RT; 100 RT; 120 RT	91RTAK1049
			150 RT	91RTAK1050
			200 RT	91RTAK1051
			250 RT	91RTAK1052
			300 RT	91RTAK1053
8		Copertura isolata mandata a soffitto	25 RT; 35 RT	91RTAK1008
			45 RT; 55 RT; 65 RT	91RTAK1054
			85 RT; 100 RT; 120 RT	91RTAK1055
			150 RT	91RTAK1056
			200 RT	91RTAK1057
			250 RT	91RTAK1058
			300 RT	91RTAK1059
9		Curva di mandata destra/sinistra	25 RT; 35 RT	91RTAK1009
			45 RT; 55 RT; 65 RT	91RTAK1060
			85 RT; 100 RT; 120 RT	91RTAK1061
			150 RT	91RTAK1062
			200 RT	91RTAK1063
			250 RT	91RTAK1064
			300 RT	91RTAK1065

Tab. 3.12 List of air intake and deliveries accessories optional (2 of 3)



POS.	COMPONENT	DESCRIPTION	MODEL	CODE
10		Ceiling delivery curve	25 RT; 35 RT	91RTAK1010
			45 RT; 55 RT; 65 RT	91RTAK1066
			85 RT; 100 RT; 120 RT	91RTAK1067
			150 RT	91RTAK1068
			200 RT	91RTAK1069
			250 RT	91RTAK1070
			300 RT	91RTAK1071
11		Side mixing section	25 RT; 35 RT	91RTAK1011
			45 RT; 55 RT; 65 RT	91RTAK1072
			85 RT; 100 RT; 120 RT	91RTAK1073
			150 RT	91RTAK1074
			200 RT	91RTAK1075
			250 RT	91RTAK1076
			300 RT	91RTAK1077
12		Ceiling mixing section	25 RT; 35 RT	91RTAK1078
			45 RT; 55 RT; 65 RT	91RTAK1079
			85 RT; 100 RT; 120 RT	91RTAK1080
			150 RT	91RTAK1081
			200 RT	91RTAK1082
			250 RT	91RTAK1083
			300 RT	91RTAK1084
13		0-10V proportional actuator	25 RT -120 RT	11ELSI0200
		0-10V proportional actuator	RT 150 - 300 RT	11ELSI0232
		Spring return actuator	25 RT -120 RT	11ELSI0204
		ON-OFF actuator	25 RT -120 RT	11ELSI0206
14		Air filter G4 class	25 RT; 35 RT	04CNFI2525
			45 RT; 55 RT; 65 RT	04CNFI2526
			85 RT; 100 RT; 120 RT	04CNFI2520
			150 RT	04CNFI2521
			200 RT	04CNFI2522
			250 RT	04CNFI2523
			300 RT	04CNFI2524
15		2-way air damper by-pass type	25 RT; 35 RT	91RTAK1090
			45 RT; 55 RT; 65 RT	91RTAK1091
			85 RT; 100 RT; 120 RT	91RTAK1092
			150 RT	91RTAK1093
			200 RT	91RTAK1094
			250 RT	91RTAK1095
			300 RT	91RTAK1096

Tab. 3.12 List of air intake and deliveries accessories optional (3 of 3)



## 4 ELECTRICAL SYSTEM

The electrical system must be suitable for the maximum power absorbed by the appliance as indicated on the rating plate and in this manual: the cross-section of the cables must be suitable for the electrical power absorbed. For any work on the electrical system, refer to the wiring diagrams in this manual.



### WARNING

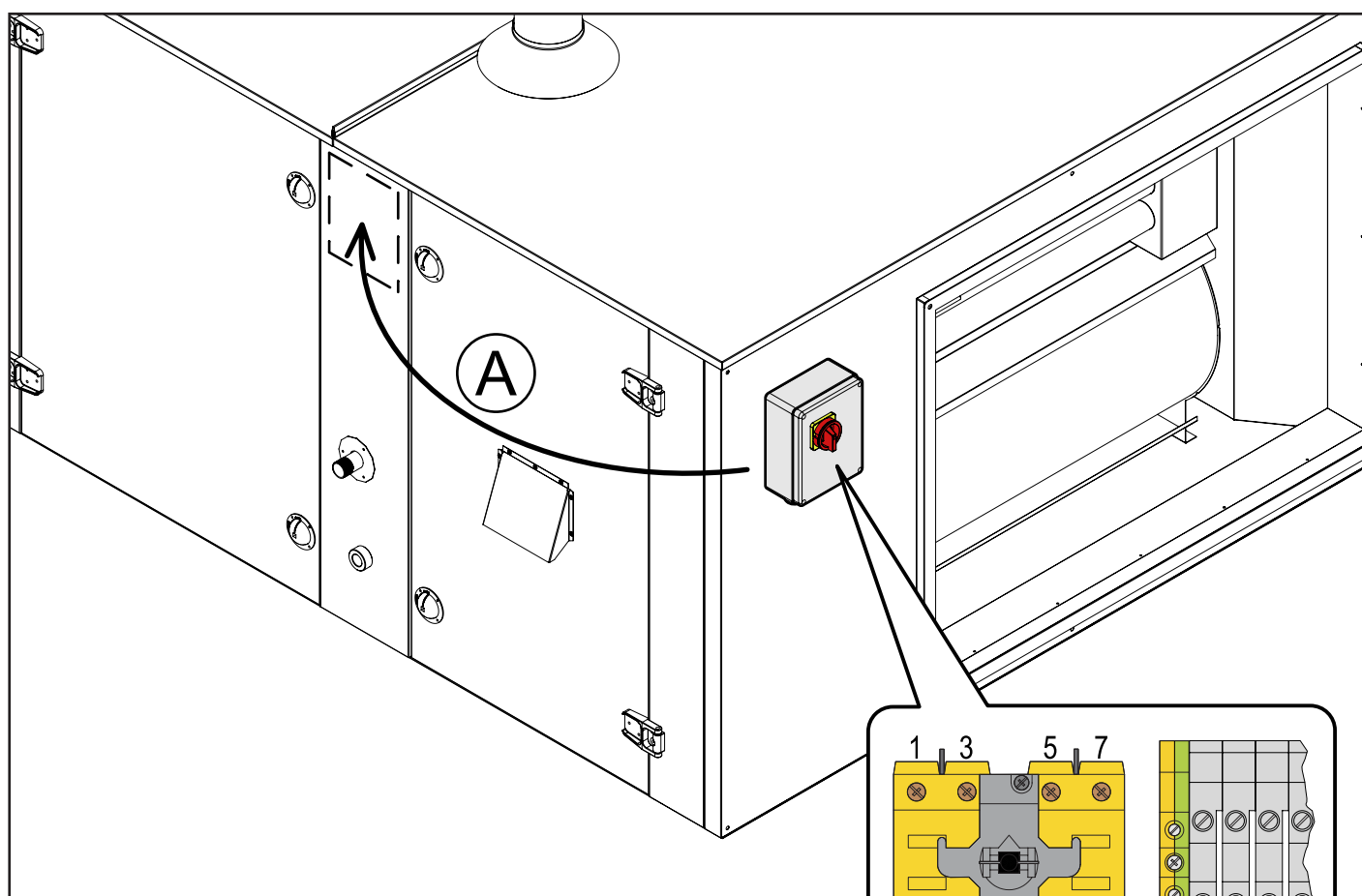
Electrical connections must be carried out by qualified personnel with the appropriate skills and in compliance with the relevant national and local regulations in force and with the information in this manual instruction.



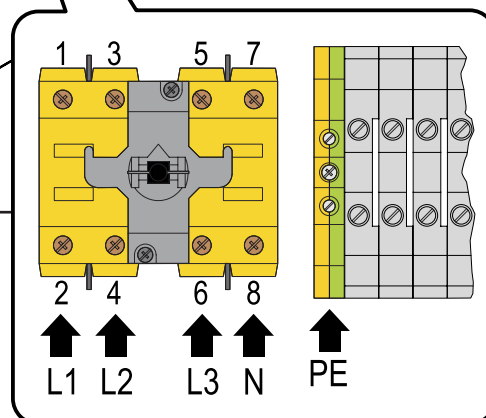
### WARNING

Protect the power supply line upstream, always provide for the use of an omnipolar switch with an opening between contacts of at least 3 mm.

It is compulsory to connect the appliance to an effective earthing system, taking care to leave the earth wire slightly longer than the line wires, so that in the event of accidental disconnection, it is the last one to disconnect, ensuring good earth continuity.



A = In the case of monobloc appliances with the burner section and the fan section already connected, the switchboard with switch is placed on the side



Connect the power supply (3N / PE ~ 50Hz 400V) to the isolator located on the panel on board the thermal unit.

Fig. 4.1 Connecting the power supply

## 4.1 QUADRI COMANDO PER IL FUNZIONAMENTO DEL BRUCIATORE

### 4.1.1 Comando manuale con controllo non fornito da Systema

The units can be supplied without a room terminal.

In this case, connect the normally open contact (TA) of the thermostat to terminals 1-2 of the terminal block (XG) to control the unit (Fig. 4.2).

For manual control of the heat flow, always refer to Figure 4.2 (alternatives A, B and C).



#### Please note

Operation is 'two-stage' according to parameter Y6 (see tab. 5.3 on p. 56). Setting value 0 (zero) excludes 'two-stage' operation and activates 'one-stage' operation.

### 4.1.2 Optional connections (room control panel not supplied by Systema)

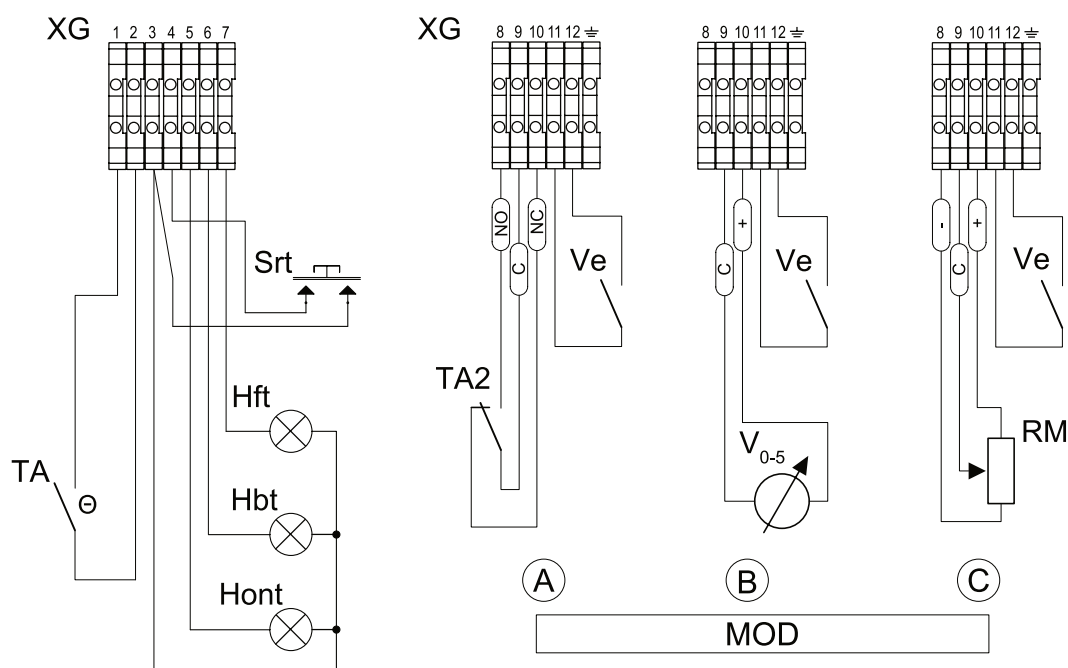


Fig 4.2 Room thermostat panel connections and burner power adjustment (optional)

#### MOD = BURNER POWER ADJUSTMENT

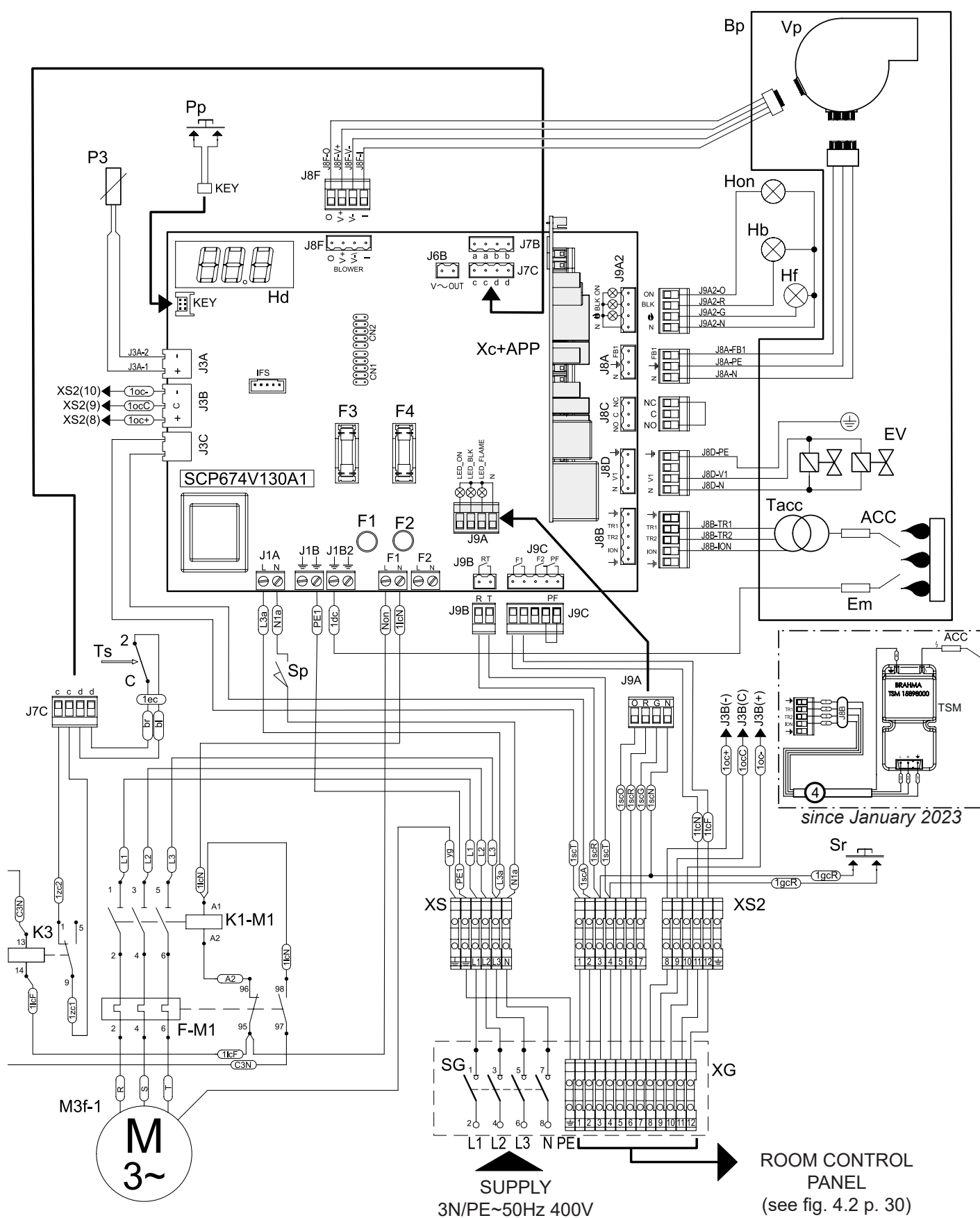
- (A) = Two-phase regulation
- (B) = Regulation with 0-5 V signal
- (C) = Adjustment with 10 kOhm potentiometer

#### Legenda fig. 4.2

- Hbt = Block signal lamp on grounded panel (not provided by Systema)
- Hft = Flame signal lamp on ground panel (not provided by Systema)
- Hont = Luminaire signaling lamp on which ground dro (not supplied by Systema)
- RM = 10 kΩ potentiometer for manual modulation of the heat capacity (not supplied by Systema)
- Srt = Reset button on remote panel - NO contact (neutral)

- TA = Room thermostat (not supplied by Systema)
- TA2 = Second stage contact of the room thermostat (not provided by Systema)
- V<sub>0-5</sub> = 0-5 V signal for automatic door modulation thermal tata (not supplied by Systema)
- Ve = Contact on earthed panel for ventilation activation summer (not provided by Systema)
- XG = Terminal block for connection to the earthed panel in the housing panel of the main disconnecter (see fig. 4.1 on p. 33)

### 4.1.3 Wiring diagram with a fan and three-phase AC asynchronous motor



*Fig 4.3 Wiring diagram.*

## 4.1.4 4.1.4 Wiring diagram with two fans and three-phase AC asynchronous motors

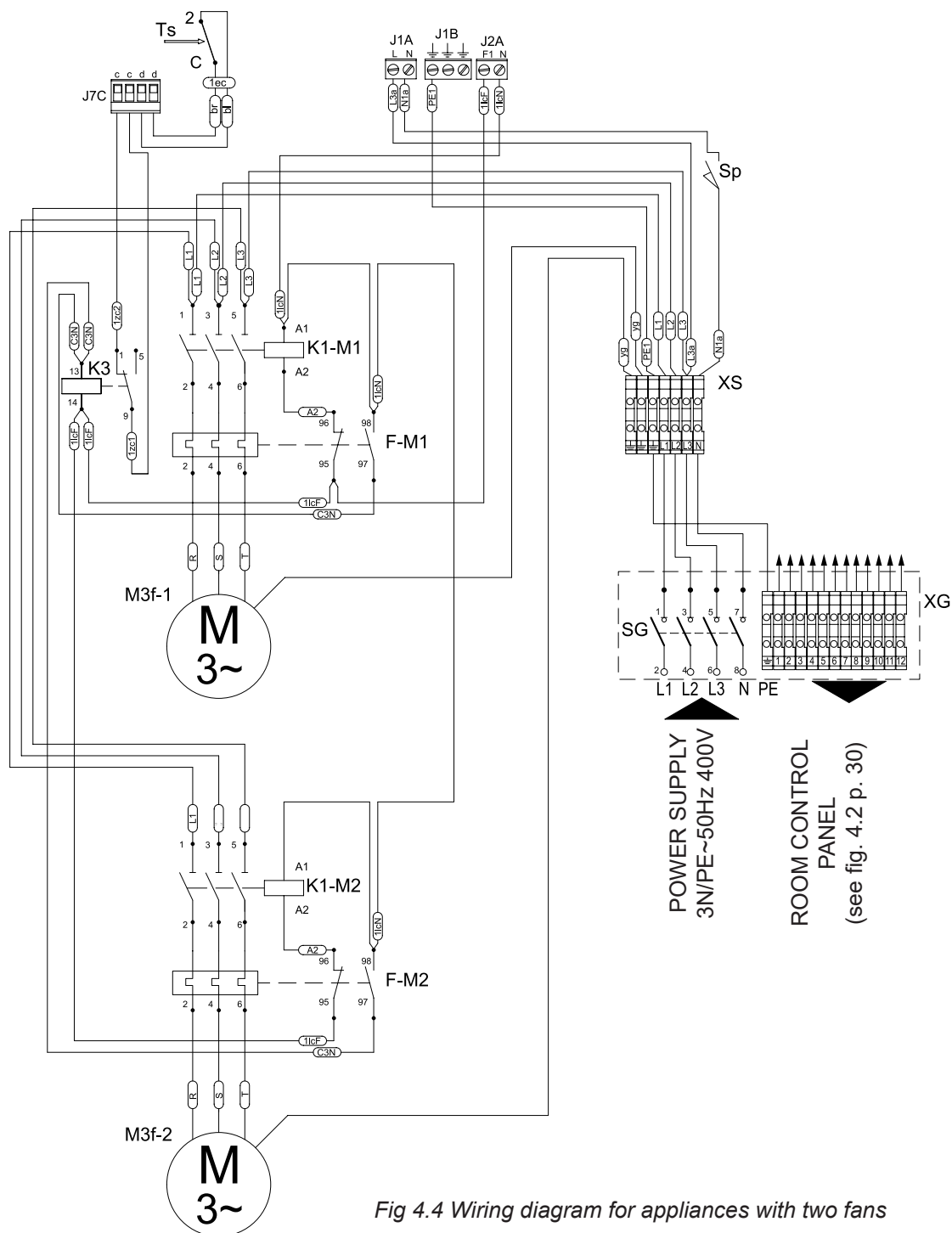


Fig 4.4 Wiring diagram for appliances with two fans

## Legend figs. 4.3 and 4.4

ACC = Ignitor

Bp = Premix burner

Em = Ground electrode

EV = Solenoid valve

F1 = Fan protection fuse (J2A)

F2 = Fan protection fuse (J2B)

F3 = Burner protection fuse

F4 = Fuse burner protection

F5 = Fuse auxiliary protection J5B - J6B

F-M1 = Fan thermal protection

F-M2 = Second fan thermal protection

TSM = High voltage transformer

Hd = Display with icons and symbols of the burner status

K3 = Relay securities

K1-M1 = Fan contactor

K1-M2 = Second fan contactor

M3f-1 = Three-phase centrifugal fan motor

M3f-2 = Second three-phase centrifugal fan motor

P3 = Probe NTC 100 inlet air flow temperature

Continued from p.30

**Pp** = Button programming (KEY), to be connected only when programming the board

**SCP674V130A1** = Motherboard mod. SCP674V130A1 for command and control of the appliance

**SG** = Main switch (see fig. 4.1 on page 29)

**Sp** = Micro switch for switching off the appliance in case of opening the doors of the fan compartment

**Sr** = Button reset - normally open contact (neutral)

**Tacc** = Transformer ignition

**Ts** = Thermostat automatic reset safety

**Vp** = gas blower of premix burner

**Xc** = Flame control board housing

**XG** = Terminal block for connection to the earth panel located in the main switch housing panel (see fig. 4.1 on page 29)

**XS** = Power line terminal located in the burner compartment

**XS2** = Terminal board located in the burner housing compartment

### 4.1.5 Optional components

**J7B-J7C** = Input of mainboard SCP674V130A1

**K3** = Contact safety relays

#### OPTIONAL

**Pa** = Pressure switch minimum air flow with manual reset

**Pg** = Pressure switch minimum gas pressure (standard for models 150 ÷ 300)

**Pg<sub>2</sub>** = Pressure switch maximum gas pressure with manual reset (standard for models 120 ÷ 300)

**Tso** = Safety thermostat - manual reset

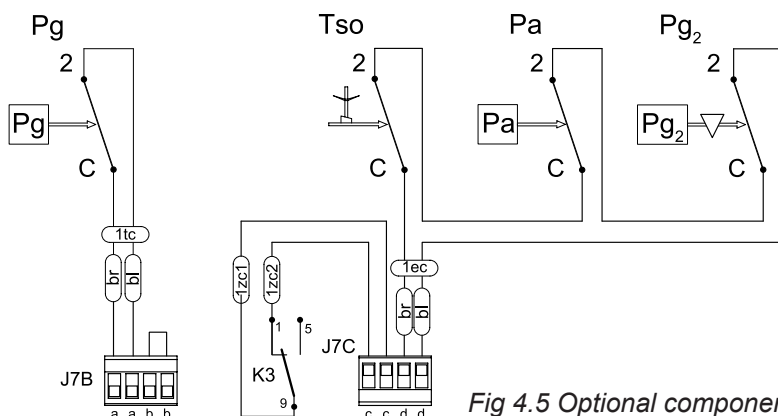


Fig 4.5 Optional components

### 4.1.6 Mainboard connections SCP674V130A1

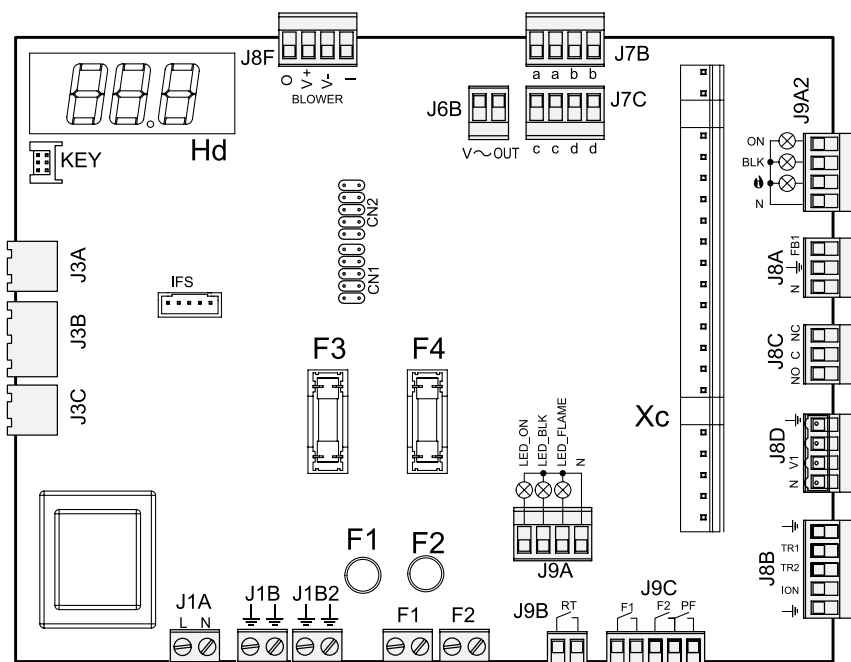




Fig. 4.6 Mainboard  
SCP674V130A1

CONNECTOR	TERMINAL	DESCRIPTION	CONNECTED COMPONENT
J1A	L	Power supply (L)	XS-L3 connector
	N	Power supply (N)	XS-N connector
J1B		Ground connection	XS connector
		Ground connection	
		Ground connection	Em

Tab 4.1 SCP674V130A1 card connections legend (1 of 3)



CONNECTOR	TERMINAL	DESCRIPTION	CONNECTED COMPONENT
J2A	F1	Connection (phase) of safety relays and fan control contactors	K3; K1-M1; K1-M2 (if present)
	F1	Soft-start (phase) connection	PSR... (version with soft-start)
	F1	Connection (phase) relay for plug fan	K
	N	Connection (neutral) of safety relays and fan control contactors	K3; K1-M1; K1-M2 (if present)
	N	Soft-start (neutral) connection	PSR... (version with soft-start)
	N	Connection (neutral) relay for plug fan	K
J2B	F2	Not connected	Not connected
	N	Not connected	Not connected
J3A	+	NTC probe supply air flow temperature	P3
	-		P3
J3B	+	Burner modulating control	Connector XS2-10
	C		Connector XS2-9
	-		Connector XS2-8
J5B	La	Actuator Belimo L (optional)	SM (if present)
	N	Actuator Belimo N (optional)	SM (if present)
J7B	a	Minimum gas pressure switch (optional 25-120kW, standard 150÷300kW).	Pg (if present)
	a		Pg (if present)
	b	Bridge contact	
	b		
J7C	c	Contact NC of K3	K3(NC)
	c		K3(NC)
	c	Contact NO of HKF - in the case of soft-start	HKF1; HKF2 (version with soft-start)
	c		
	c	Connection of plug-fan	Plug fan (KL2-2)
	c		Plug fan(KL2-3)
	d	Safety thermostat - automatic reset	Ts
	d		Ts
	d	Connection of safety thermostat with manual reset (optional, as an alternative to Ts), minimum air flow pressure switch with manual reset (optional), maximum gas pressure switch (optional, standard for models 150 ÷ 300)	Tso, Pa, Pg <sub>2</sub> (if present)
	d		Tso, Pa, Pg <sub>2</sub> (if present)

Tab 4.1 SCP674V130A1 card connections legend (2 di 3)

CONNECTOR	TERMINAL	DESCRIPTION	CONNECTED COMPONENT
J8A	FB1	Gas blower of premix burner L	Vp
		Gas blower of premix burner - Ground	Vp
	N	Gas blower of premix burner N	Vp
J8B	TR1	Ignitor connection	Tacc
	TR2		Tacc
	ION		Tacc
J8C	NC; C; NO	Contacts connected in bridge	---
J8D		Solenoid gas valve connection (ground)	EV
	V1	Solenoid gas valve connection (L)	EV
	N	Solenoid gas valve connection (N)	EV
J8F	O	PWM signal for gas blower	Vp
	V+		Vp
	V-		Vp
	I		Vp
J9A	O	Signal lamp - unit ON	Connector XS2-5
	R	Signal lamp - burner lockout	Connector XS2-6
	G	Signal lamp - burner in operation	Connector XS2-7
	N	Signal lamp - Neutral	Connector XS2-3
J9B	T	Room thermostat contact	Connector XS2-1
	A		Connector XS2-2
	R	Reset	Connector XS2-3
	T		Connector XS2-4
	R	Reset on SLAVE (SCP674V124, SCP674V143, SCP674V202)	SLAVE (J1; K1)
	T		SLAVE (J1; K1)
J9C	1	Contacts for summer ventilation	Connector XS2-11
	F		Connector XS2-12
	F	Bridge contact	---
	P		---
KEY	---	Programming button	Pp (connected only during board programming)

Tab 4.1 SCP674V130A1 card connections legend (3 di 3)

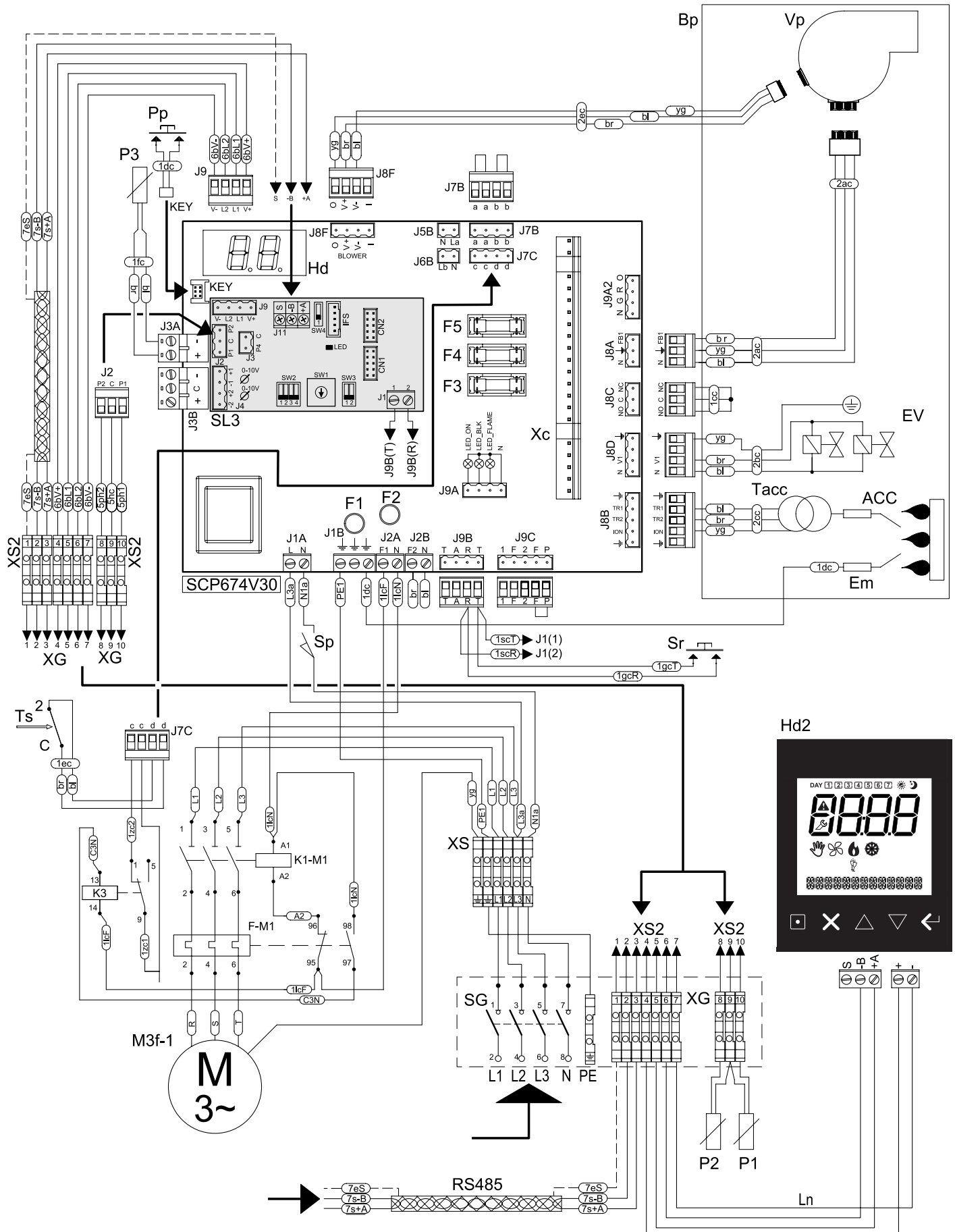
## 4.1.7 Automatic control (with optional panels supplied by Systema)

SLAVE (optional)	ROOM CONTROL PANEL	REFERENCE SCHEME	THERMAL POWER CONTROL
Mod. SCP674V202	 Stand-alone terminal SCP674V122T2	Fig. 4.8, pag. 42 Fig. 4.18, pag. 53	Chronothermostat for controlling a single RT appliance with automatic burner modulation based on room temperature and outside temperature via probes connected to the slave board installed in the appliance and control for summer ventilation
Mod. SCP674V202	 Master series SYS830/SYS850 - I²NET	Fig. 4.8, pag. 42 Fig. 4.17, pag. 52 Fig. 4.18, pag. 53	Control and control of up to 30 (16 for SYS830) EOLO RT and up to 30 (16 for SYS830) heating zones equipped with chronothermosta with automatic burner modulation based on room temperature and control for summer ventilation. Possibility of enabling and disabling the operation of each individual device

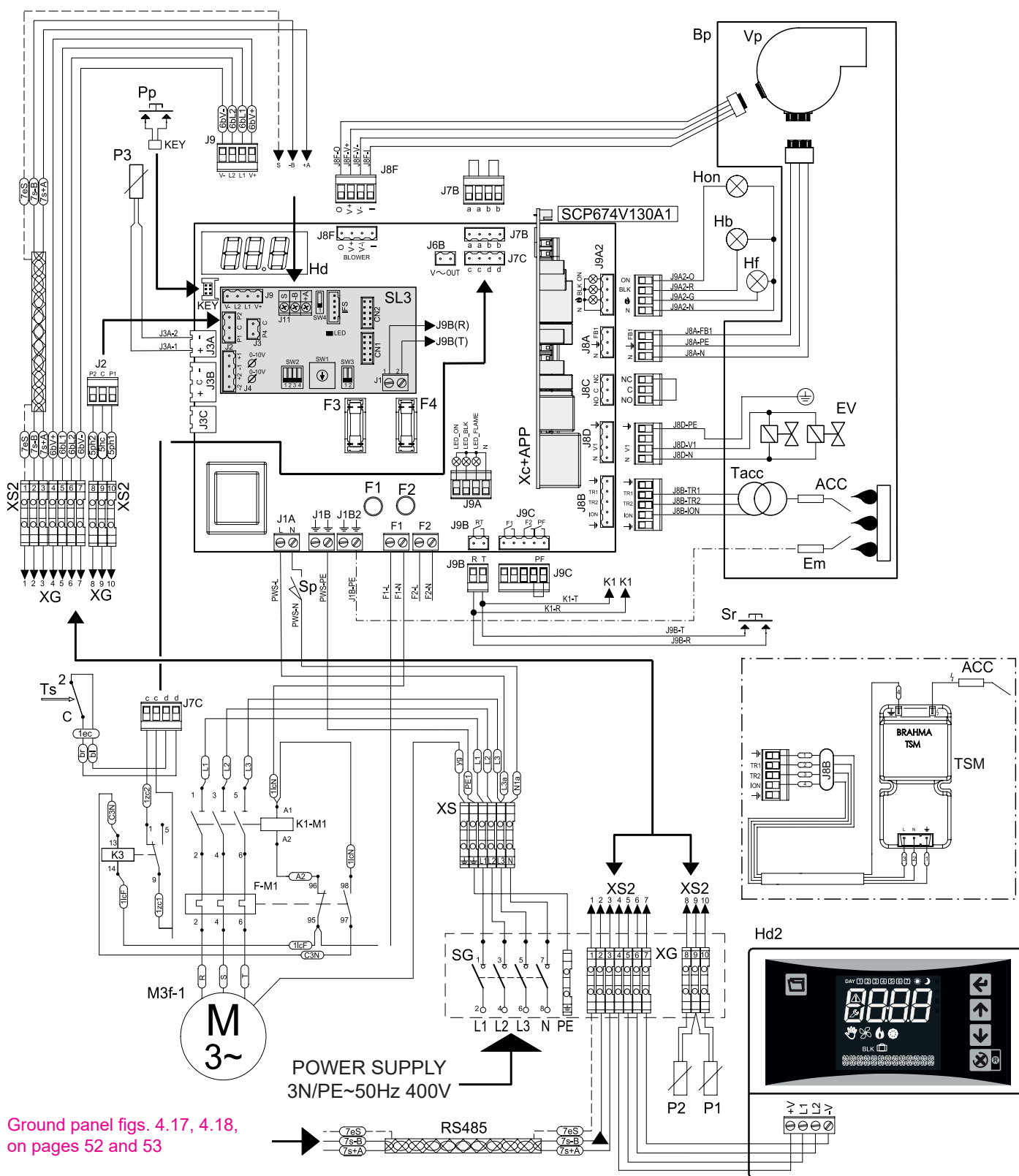
Tab. 4.2 Room control panels for automatic control



## 4.1.8 Wiring diagram with SCP674V122T terminal and slave mod. SCP674V202



#### 4.1.9 Wiring diagram with SCP674V122T terminal and slave mod. SCP674V202



*Fig. 4.8 Wiring diagram with SCP674V202 slave card for managing the appliance via I<sup>2</sup>NET and / or SCP674V122T room terminal*



### Please note

The devices equipped with the slave board mod. SCP674V202 can be managed through the ground terminal mod. SCP674V122T and / or master SCM830 / SCM850.

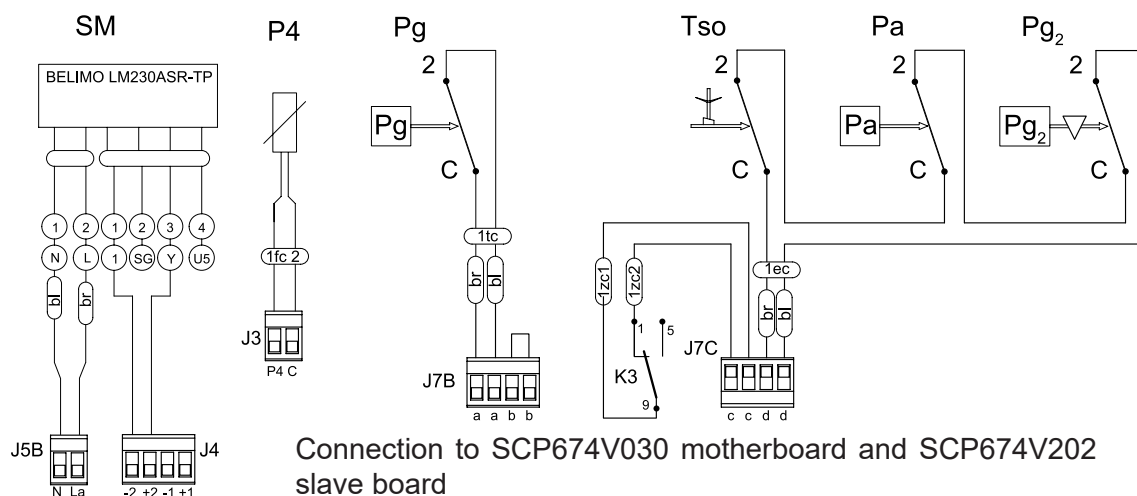


Fig 4.9 Optional components for configuration with SCP674V202 slave board

### Legend figs. 4.7, 4.8 and 4.9

<b>ACC</b> = Ignitor	<b>P4</b> = Second NTC 100 probe outlet air flow temperature (optional)
<b>Bp</b> = Premix burner	<b>Pa</b> = Pressure switch minimum air flow with manual reset (optional)
<b>Em</b> = Ground electrode	<b>Pg</b> = Pressure switch minimum gas pressure (optional, standard for models 120 ÷ 300)
<b>EV</b> = Solenoid valve	<b>Pg2</b> = Pressure switch maximum gas pressure with manual reset (optional, standard for models 120 ÷ 300)
<b>F1</b> = Fan protection fuse (J2A)	<b>Pp</b> = Button programming (KEY), to be connected only when programming the board
<b>F2</b> = Fan protection fuse (J2B)	<b>RS485</b> = Serial cable for I <sup>2</sup> NET network for connection to the SCM830 / SCM850 series earthed panel
<b>F3</b> = Burner protection fuse	<b>SCP674V030</b> = Motherboard mod. SCP674V030 for command and control of the appliance
<b>F4</b> = Fuse burner protection	<b>SG</b> = Disconnector general (see fig. 4.1 on page 33)
<b>F5</b> = Fuse auxiliary protection J5B - J6B	<b>SL1</b> = Slave card mod. SCP674V124 for connection of the ground terminal mod. SCQT02G
<b>F-M1</b> = Fan thermal protection	<b>SL3</b> = Slave card mod. SCP674V202 for connection to the I <sup>2</sup> NET series earth panel or to the earth terminal - mod. SCP674V122T (Hd2)
<b>F-M2</b> = Second fan thermal protection	<b>SM</b> = Servomotor (optional) for appliances with external air mixing
<b>Hd</b> = Display display with icons and symbols of the burner status	<b>Sp</b> = Micro switch for switching off the appliance in case of opening the doors of the fan compartment
<b>Hd1</b> = Terminal grounded SCQT02G with built-in probe	<b>Sr</b> = Reset button - normally open contact (neutral tro)
<b>Hd2</b> = Terminaleaterrastandalone "touch" mod. SCP674V122T	<b>Tacc</b> = Ignition transformer
<b>J</b> = Telephone cable, maximum length 15 meters	<b>Ts</b> = Safety thermostat with automatic reset
<b>J2 (SL1 / Hd1)</b> = Connectors for connection via the cable (J) of the ground terminal (mod. SCQT02G) with the SLAVE board mod. SCP674V124 (SL1) on the machine	<b>Tso</b> = Safety thermostat with manual reset (optional as an alternative to Ts)
<b>Ln</b> = 4-pole line protected from interference, maximum length 15 ÷ 20 meters	<b>Vp</b> = Premix burner fan
<b>K3</b> = Safety relays	<b>Xc</b> = Flame control board housing
<b>K1-M1</b> = Fan contactor	<b>XG</b> = Terminal block placed in the main switchboard housing panel (see fig. 4.1 on page 33)
<b>K1-M2</b> = Second fan contactor	<b>XS</b> = Terminal block power supply line located in the burner compartment
<b>M3f-1</b> = Three-phase centrifugal fan motor	<b>XS2</b> = Terminal block placed in the burner housing compartment
<b>M3f-2</b> = Second three-phase centrifugal fan motor	
<b>P1</b> = Room probe for command and control with mains THE2NET, and / or with the ground terminal mod(Hd2)	
<b>P2</b> = External probe for command and control with I2NET network, and / or with the ground terminal SCP-674V122T (Hd2)	
<b>P3</b> = Probe NTC 100 inlet air flow temperature	

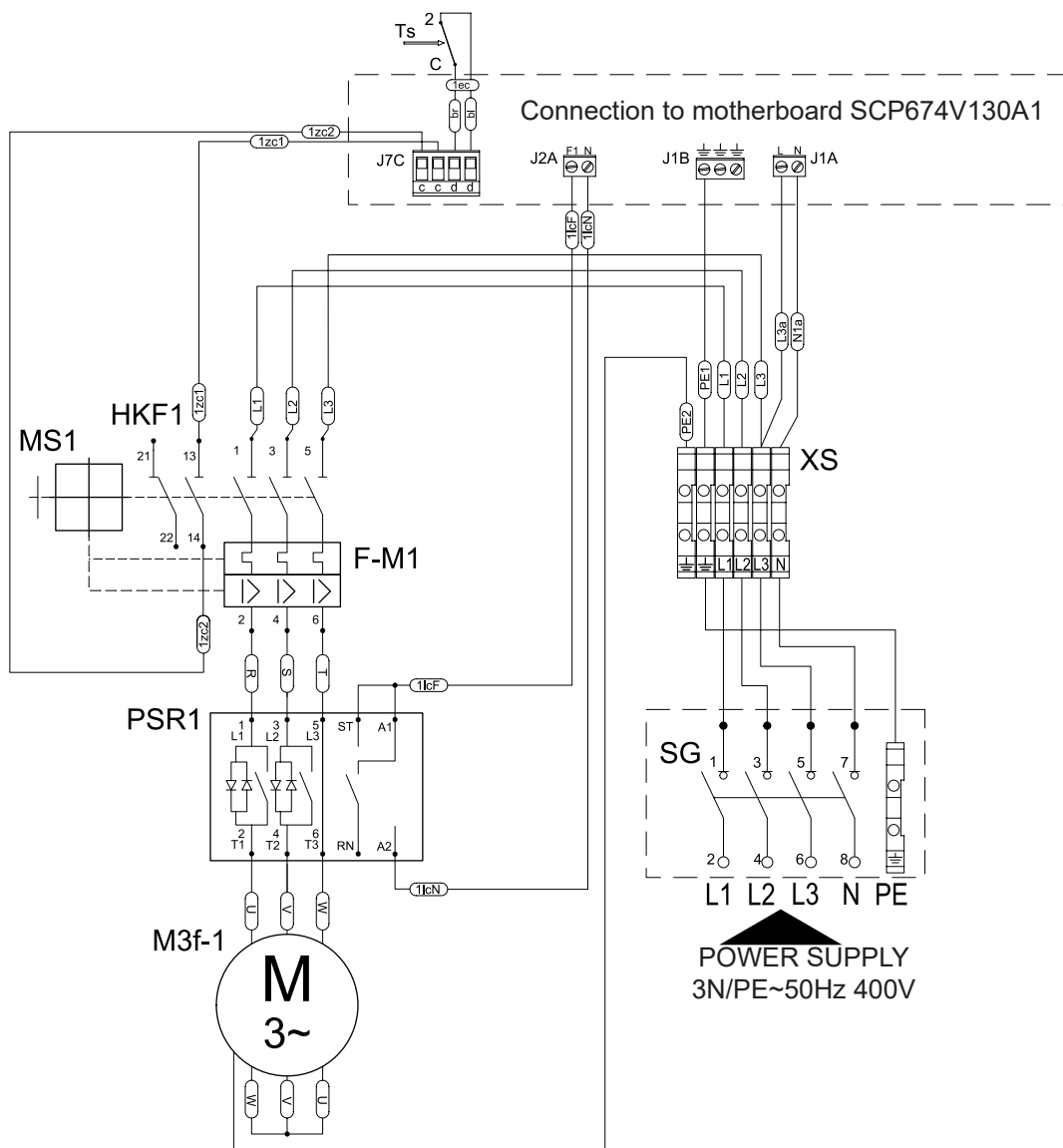


### Please note

For appliances with two fans see also fig. 4.4 on page 36.

#### 4.1.10 Variant for connecting fans with soft-start (optional)

## APPLIANCES WITH ONE FAN AND THREE-PHASE AC ASYNCHRONOUS MOTOR



*Fig. 4.10 Electrical connection of a fan with soft-start*



**Please note**

**For the complete wiring of the appliance see also paragraphs 4.1.3 to 4.1.9.**

## APPLIANCES WITH TWO FANS AND THREE-PHASE AC ASYNCHRONOUS MOTORS

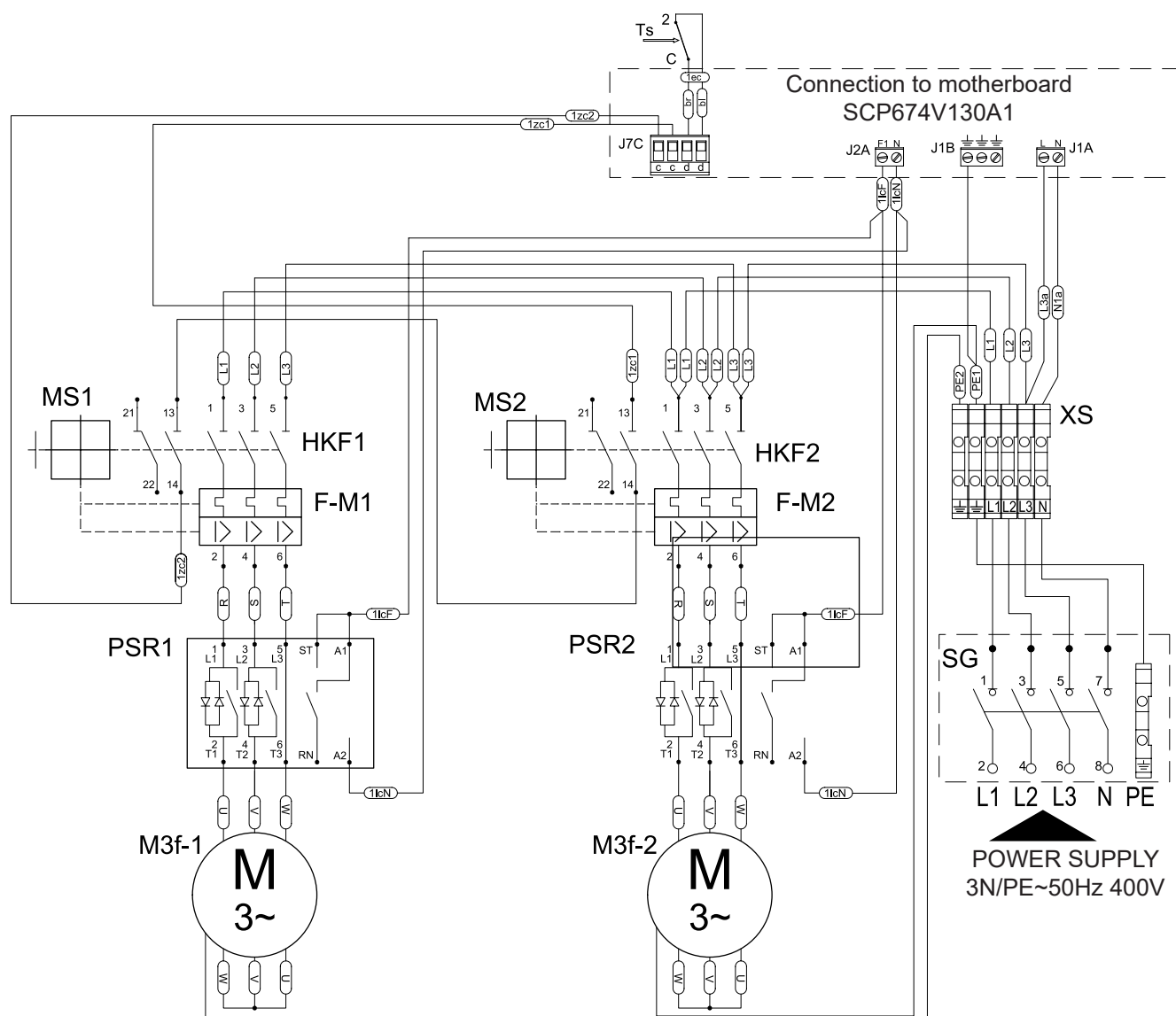


Fig. 4.11 Electrical connection of two fans with soft-start



### Please note

For the complete wiring of the appliance see also paragraphs 4.1.3 to 4.1.9.

Legend figs. 4.10 and 4.11

F-M1 = Fan magnetothermal protection

F-M2 = Second fan magnetothermal protection  
HKF1 = Overload and maximum thermal release current for the fan motor

HKF2 = Overload and overcurrent thermal release for the second fan motor

M3f-1 = Three-phase centrifugal fan motor

M3f-2 = Second three-phase centrifugal fan motor  
MS1 = Free opening mechanism

MS2 = Free opening mechanism for the second fan

PSR1 = Soft-start fan motor starter

PSR2 = Soft-start starter for the second fan motor

SG = General switch (see fig. 4.1 on page 33) Ts = Safety thermostat with automatic reset

XS = Power line terminal board located in the burner housing

## 4.1.11 Electrical connection of plug fan (optional) with potentiometer

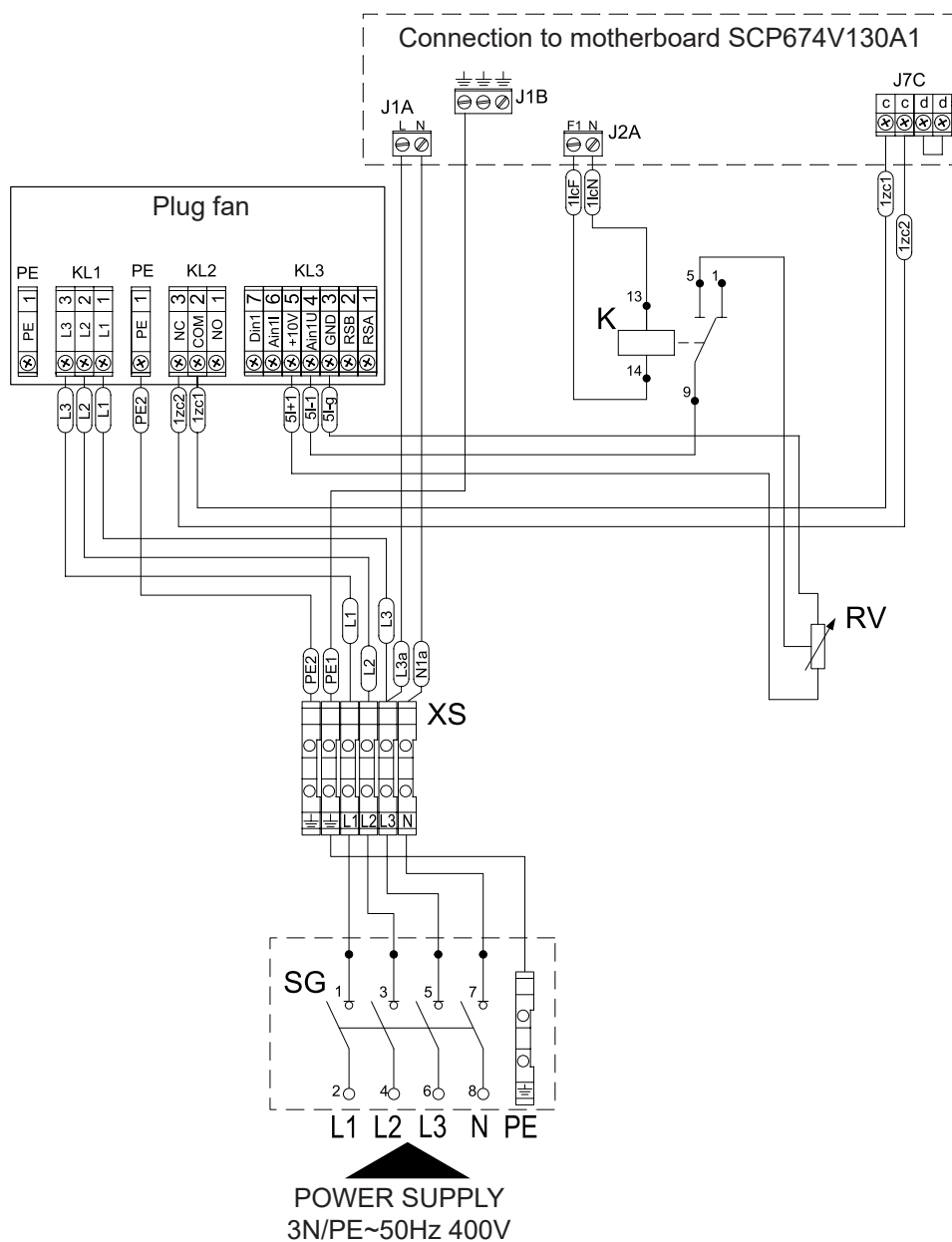


Fig. 4.12 Electrical connection of a plug fan with potentiometer

**Please note**

For the complete wiring of the appliance see also paragraphs 4.1.3 to 4.1.9.

### 4.1.12 Electrical connection with plug fan (optional), automatic operation

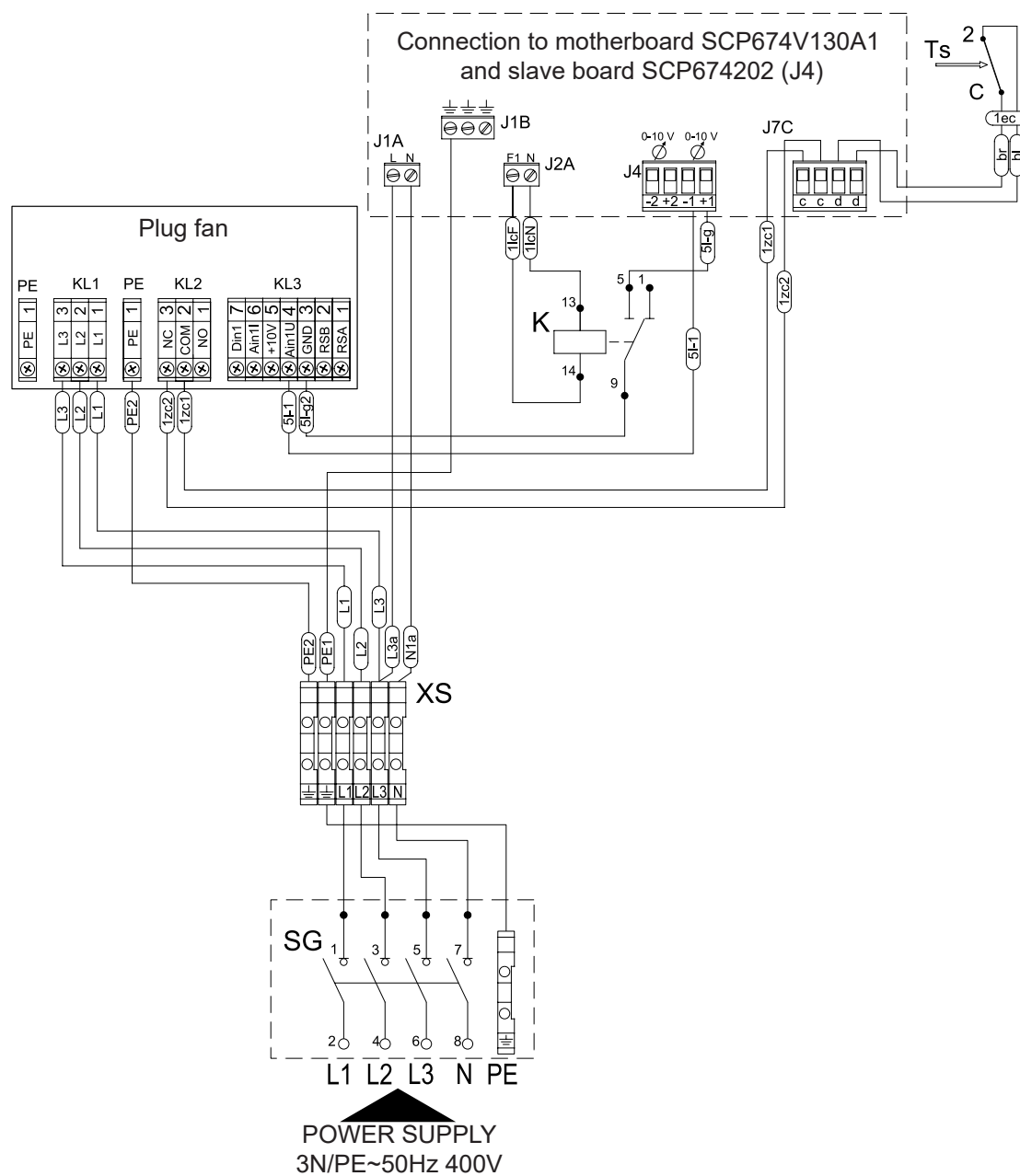


Fig. 4.13 Electrical connection of a plug fan with automatic operation



#### Please note

For the complete wiring of the appliance see also paragraphs 4.1.3 to 4.1.9.

Legend figs. 4.12 and 4.13 K = Relay

RV = 10 kΩ potentiometer for manual plug fan speed modulation

SG = General switch (see fig. 4.1 on page 33)

Ts = Safety thermostat with automatic reset

XS = Power line terminal board located in the burner housing

## 4.1.13 SCP674V202 slave card connections

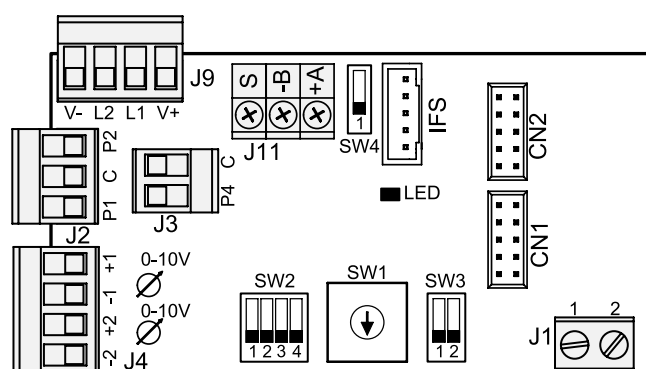


Fig.4.14 SCP674V202 slave card

CONNECTOR	CLAMP	DESCRIPTION	CONNECTED COMPONENT
CN1		Connectors for operating system extensions	
CN2		Connectors for operating system extensions	
IFS		TTL serial interface	—
J1	1	Reset contact	SCP674V130A1 board (J9B)
	2		SCP674V130A1 board (J9B)
J2	P2	External probe P2	XS2-8 connector
	C	P1 probe common; P2	XS2-9 connector
	P1	Room probe P1	XS2-10 connector
J3	P4	Second flow probe (optional)	P4
	C		P4
J4	+1	0-10 V signal plug fans (optional) with automatic operation	Plug fan
	-1		Plug fan
	+2	0-10 V signal BELIMO servomotor (optional)	SM
	-2		SM
J9	V+	Connection for touch screen panel, use only with optional ground terminal SCP-674V122T (Hd2)	XS2-4 connector
	L1		XS2-5 connector
	L2		XS2-6 connector
	V-		XS2-7 connector
J11	+A	RS 485 Sc Bus connector for connection to the network, to be used only in the case of management via network I2NET and Network Master Controller (SCM830 / 850)	XS2-3 connector
	-B		XS2-2 connector
	S		XS2-1 connector

Tab 4.3 Legend for SCP674V202 slave card connections



#### 4.1.14 Connection with master controller for I<sup>2</sup>NET network

The master panel controls up to 16 appliances (SCM830), or up to 30 appliances (SCM850) and two thermal zones with room temperature probes connected directly to the master.

It is possible to manage up to 16 independent thermal zones (30 independent thermal zones for SCM850) by connecting a probe for each appliance (see paragraph 4.1.17 on page 53)

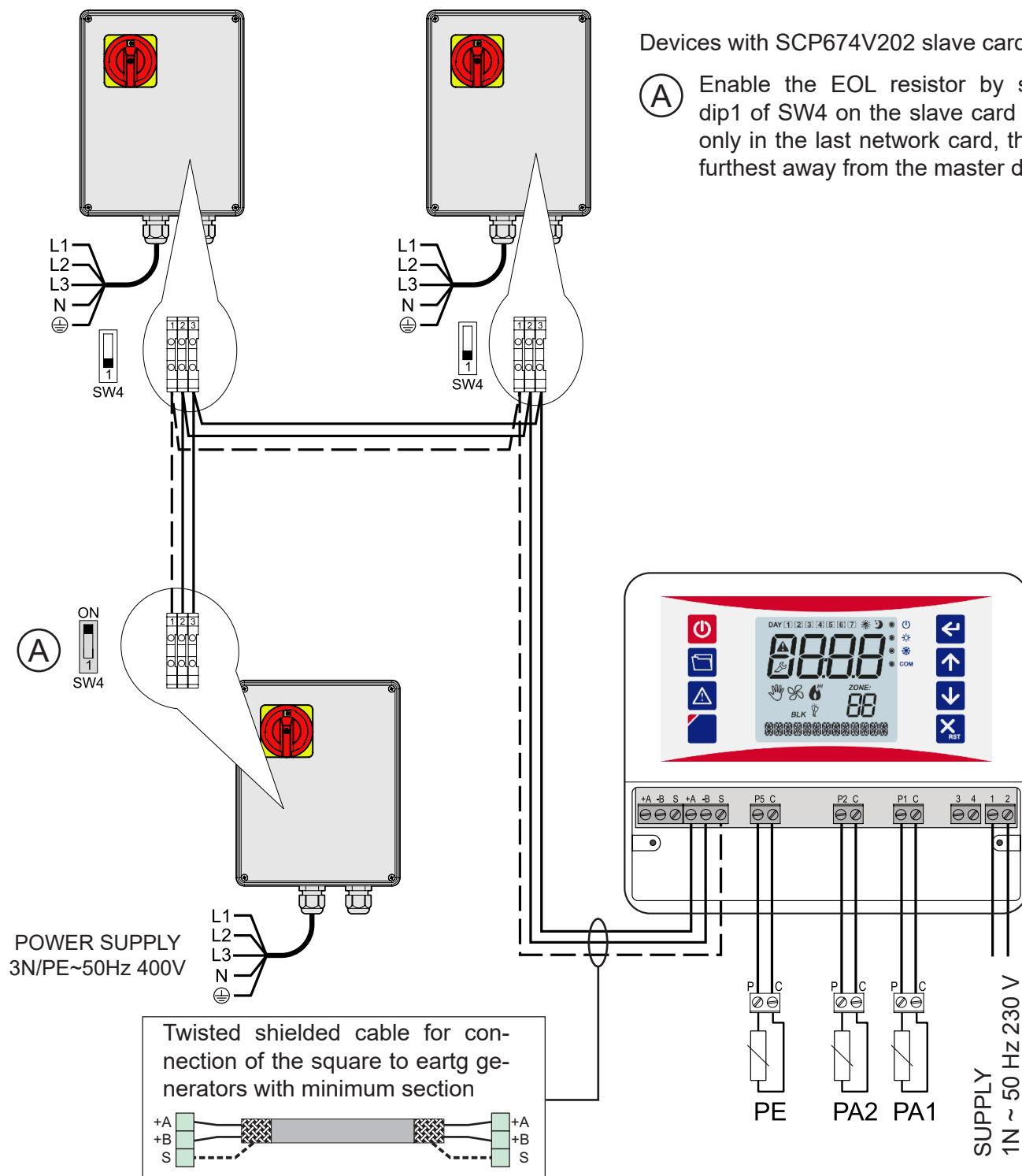


Fig. 4.17 Connection with ground control panel of the I<sup>2</sup>NET network

### 4.1.15 Connection of the I<sup>2</sup>NET network panel to earth and SCP674V122T panel

In fig. 4.18 shows an example of an I<sup>2</sup>NET network, generator n.1 is also equipped with a SCP674V122T panel for local control of the appliance.

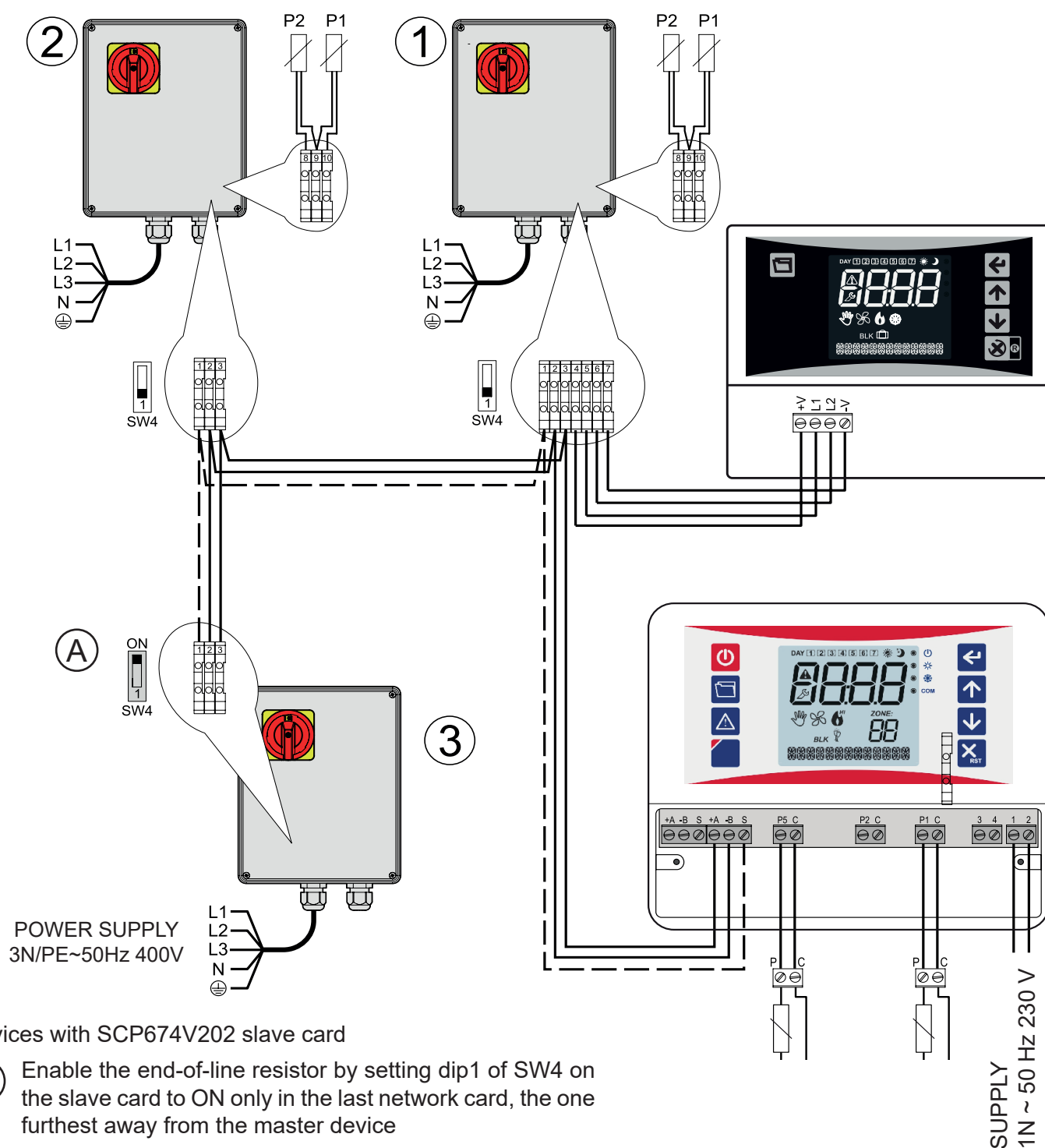
The ambient temperature and the external temperature for generators n.1 and n.2 are measured with the probes connected to the relative appliances; generator 3 is managed with the temperatures detected by the probes (PE; PA1) connected to the network controller panel

PE = probe external temperature cod. 00CESO2688

PA1 = zone 1 room temperature probe cod. 04CEGL3001

P1 = room temperature probe cod. 04CEGL3001 connected to the appliance

P2 = probe external temperature cod. 00CESO2688 connected to the appliance



Devices with SCP674V202 slave card

- (A) Enable the end-of-line resistor by setting dip1 of SW4 on the slave card to ON only in the last network card, the one furthest away from the master device

Fig. 4.18 Connection with ground control panel of the I<sup>2</sup>NET network and SCP674V122T panel

## 5 OPERATION OF THE APPLIANCE

### 5.1 FEATURES MAINBOARD SCP674V130A1

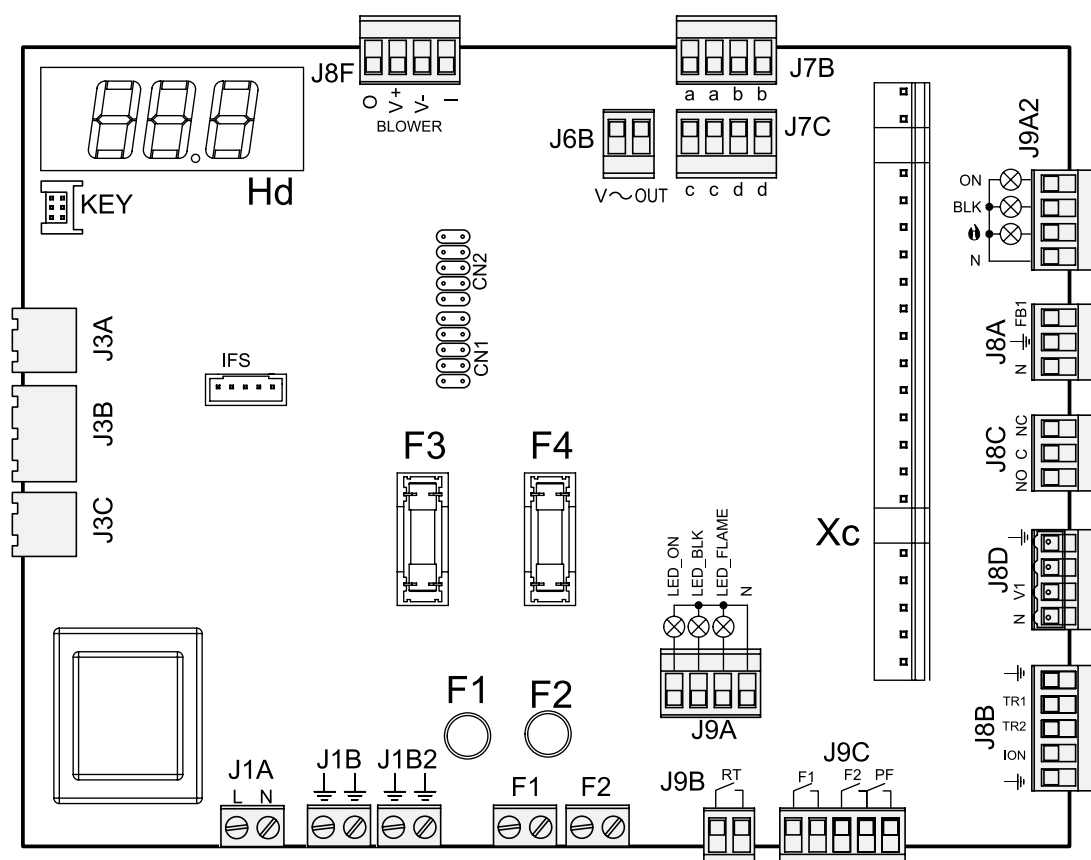


Fig. 5.1 Mainboard SCP674V130A1


Power supply:	230 Vac +/- 10%	Inputs:	9 contacts
Display range:	0÷99		6 opto-isolated indicator inputs.
Consumption:	9 VA		Maximum distance of warning lights
Board size :	193x144x35(max) mm		1mt.
Data storage:	On EEPROM memory		1 input 10KΩ potentiometer (if enabled /P=1)
Front protection :	IP00		1 NTC 10K probe input 0.5%
Operating conditions:	Ambient temperature -10÷50°C; Storage temperature -20÷70°C		@25°C, probe max. distance 3mt
Ambient relative humidity:	30 / 80%, non-condensing	Outputs:	3 230 Vac power supply outputs;
Connections:	Screw and spring terminals for wires with a max. cross-section of 1.5 mm <sup>2</sup> ; J1A / J1B terminal blocks for wires with a max. cross-section of 4 mm <sup>2</sup> .	Data output:	1 PWM output; TTL serial IFS interface
Display:	2-digit display.		

## 5.1.1 Operation indicators on the display

DISPLAY	STATUS BURNER	CONDITION	DESCRIPTION
--	Off	Adjust	SCP674V130A1 board test phase
-0	Starting	Regular	Combustion chamber pre-ignition phase
o0	Starting	Regular	Pre-ignition / BOOST phase
,1	Starting	Regular	Ignition phase, waiting for flame warning light present
rt	Off	Blocked	Burner RESET
-	Off	Regular	TA contact open - burner off
PF	Off	Regular	TA contact open - combustion chamber ventilation after burner shutdown - no operation command
Ut	On	Regular	Burner test phase
0...99	On	Regular	Flame present (indicates the operating PWM value, for the corresponding heat output see tab 7.18, page 73)
<b>ALLARMI</b>			
E1	Off	Alarm	Alarm: probe P3 short-circuited or not connected, or temperature outside instrument limits.
E2	Off	Alarm	Generic alarm, contact J7B open (if present, pressure switch Pg-, relay C3 open for three-phase motor thermal trip).
E3	Off	Alarm	Serious alarm in progress or occurred, J7C contact open (Tso, Pa, Pg+ if present). The burner is locked until reset; to eliminate the serious alarm signal and restart the burner close contact RT (reset).
E4	Off	Alarm	Burner block alarm; If the alarm persists for more than 2 minutes, the burner locks.
E5	Off	Alarm	Alarm exceeding minimum rpm blower value. When this event occurs, the burner switches off.
E6	Off	Alarm	Alarm for maximum blower rpm exceeded. When this event occurs, the burner switches off.
E7	Off	Alarm	Start-up test alarm failed. When alarm E7 occurs, the burner locks. To cancel the alarm signal, switch off and then switch the power supply back on.
E9	Off	Alarm	Alarm lockout light and operation light on at the same time. To eliminate the alarm signal and restart the burner, close the RT contact (Sr button).
Ed	Off	Alarm	Serious alarm, parameter database corrupt. Contact the service centre and check the values of parameters rL, rH and Y9. To eliminate the error Ed after entering the parameters rL / rH / Y9 with the data provided by the burner manufacturer, switch off the power supply to the board for at least 10 seconds.
EE	Off	Alarm	EEPROM alarm faulty; try switching the instrument off and on again.

Tab 5.1 Indications on the display of the SCP674V030 board

## 5.1.2 Burner operating parameters

SIGN	PARAMETERS	RANGE	UM
t1	Air flow temperature detected by NTC 100 probe (P3) - READING ONLY	0...99	°C
SP	Maximum burner power setting . 0%=rL; 100%=rH	0...99	%
Y2	Offset value from rL during ignition phase - blower speed is rL+Y2 (0%=rL; 99%=rH)	0...99	%
YC	Start of burner test phase	0...99	
Yt	YC phase duration	1...20	min
/P	Potentiometer presence: /P = 0 : potentiometer not present; burner output at set SP value /P = 1 : external control (potentiometer, thermostat, 0-5 V signal)   <b>Important: If the SCP674V130A1 motherboard is combined with a network slave board (SCP674V124; SCP674V143; SCP674V202) DO NOT USE external control in J3B</b>	0...1	-
rL	Minimum blower speed value (burner fan) = Minimum power output of burner - READ ONLY rL is a functional value, not a safety value.	10...rH	%
ro	Offset value from rL during normal operation after switch-on phase (blower speed is rL+ro) - READ ONLY	0...60	%
rH	Maximum blower speed value = maximum power output of the burner - READING ONLY rH is a functional value, not a safety value.	rL...99	%
Y3	Fan set-point for air distribution (temperature for switching fans on/off) - READING ONLY	10...80	°C
Y4	Fan switch-off delay time for air distribution after burner switch-off (post-ventilation time) - READING ONLY	0...99	Sec
Y5	Air distribution fan on/off set-point differential - READING ONLY	3...15	°C
Y6	Set-point temperature for 2nd stage shutdown (operation at min. power) temperature detected by probe P3 READING ONLY 0=function excluded	0...80	°C
Y7	Set-point differential Y6 temperature for 2nd stage shutdown - READING ONLY	3...15	°C
Y9	Blower type (burner fan): maximum speed and number of blower notches - READ ONLY 1 = RG148, NRG 137, RG175 p/n 55667-14090 8500 RPM, 2 pulses per revolution (EOLO BC/NBC 55/65/85/100 AE/AC);  2 = NRG118 9000 RPM, 2 pulses per revolution (EOLO BC/NBC 15/25/35/45 AE/AC);  3 = G1G 170-AB53-01; 7200 RPM, 3 pulses per revolution; 4 = GPM 5.8H-70060031; 7400 RPM, 2 pulses per revolution; 5 = GPM 5.8SH-70060029, RG175 p/n 55667-14091; 8200 RPM, 2 pulses per revolution; 6 = GPM 6.9-70500351; 5000 RPM, 2 pulses per revolution; 7 = GPM 7.0-70530123; 5800 RPM, 3 pulses per revolution; 8 = GPM 7.H-70530043; 7500 RPM, 3 pulses per revolution	1...8	-
HH	Firmware release (read only)	-	-

Tab 5.3 Burner operating parameters



### Please note

**Modification of these parameters should only be carried out by authorised or factory service. Incorrect parameters may cause damage to the appliance and, in extreme cases, fire and risk to human life.**

## 5.2 OPERATING SEQUENCES



### Please note

The individual operations for each operating sequence are described below with the information and the reference icon present on the display of the command and control board SCP674V030.

### 5.2.1 Start-up

1)	the internal test phase, during this phase the display shows	--
2)	the combustion chamber pre-ventilation cycle for 20 seconds;	-0
3)	the pre-ignition / BOOST cycle for 300 seconds; during this phase the PWM power depends on parameter Y2,	00
4)	the ignition phase. The board remains in this state for a maximum of 2 seconds, until the gas valve warning light comes on; if the gas valve warning light does not come on, the board will repeat the pre-ignition cycle for 300 seconds at the power set by parameter Y2.	11
	normal burner operation, in this phase the SCP674V130A1 board, depending on the value setting of parameter /P or the presence or absence of an SCP674V202 expansion board, maintains:	0...99
5)	<ul style="list-style-type: none"> <li>- the power set in parameter SP or by the potentiometer, terminal J3B, if the temperature detected by the ventilation probe is lower than Y6 - Y7.</li> <li>- The minimum value attributable to the PWM output, rL + ro, if the temperature detected by the ventilation probe is higher than Y6..</li> <li>- the value passed by the SCP674V202 expansion board connected above the SCP674V130A1 board whatever the value detected by the ventilation probe.</li> </ul> <p>During this phase, the display shows the value of the power supplied.</p>	
6)	Opening the TA contact causes the burner output to switch off; when the machine is switched off, the display shows the message	—

### 5.2.2 Burner shutdown - combustion chamber ventilation

When the set point temperature is reached, or when the TA contact is opened, the burner switches off.

5 seconds after switching off, the burner starts combustion chamber post-ventilation, PF, at this stage the blower output is at 50%. The combustion chamber ventilation lasts for 2 minutes.

PF

When the machine is stopped, the display shows the message

—



### Please note

See paragraphs 5.1.3 and 5.1.4 on pages 61 and 62 for the description of the parameters (Y0, Y1, etc.).  
See paragraph 4.1 from page 39 to page 55 for the description of the components (Ts, Mac1, etc.)

### 5.2.3 Burner shutdown due to opening of a safety contact

1)	The opening of one or both of the contacts connected to the temporary safety terminal J7B (minimum pressure switch Pg-, relay C3 for triggering the thermal protections if present) causes the burner to switch off and the message appears on the display:	E2
1.1)	The burner resumes normal operation when the open safeties are closed.	
2)	The opening of one or both contacts connected to the safety hold terminal J7C (Ts, Pg+ if present, filter pressure switch ) causes the burner to switch off and the display shows the message:	E3
3)	The burner remains locked as long as the serious alarm signal is active, the serious alarm event is saved in the memory and persists even in the event of a power failure. To cancel the serious alarm event and restart the burner close contact J7C and reset the board, reset contact RT (connector J9B) via push button Sr.	

### 5.2.4 Burner switch-off due to gas blower overrun

1)	If the alarm for fan rpm below the minimum value occurs, the burner locks and the message appears on the display:	E5
1.1)	To restart the burner, reset the board (remove and re-energise the SCP674V130A1 motherboard).	
2)	If the alarm occurs that the fan rpm exceeds the maximum value, the burner locks and the display shows the message:	E6
2.1)	To restart the burner, reset the board (remove and re-energise the SCP674V130A1 motherboard).	

### 5.2.5 Burner reset / mainbord reset

To reset the mainbord press the Sr button for at least 5 seconds or send the signal to SCP674V131MB board from terminal or close the reset contact RT (connector J9B).

for at least 2 seconds.

The flame controller device is a manual type. To reset the burner controller press the Sr button for at least 2 seconds or send the signal to SCP674V131MB board from terminal or close the reset contact RT (connector J9B).

Tab 5.7 Fault sequence - safety devices intervention

## 5.3 SCP674V202 SLAVE BOARD PROGRAMMING

(Optional - component available upon request)

### 5.3.1 SCP674V202 card encoding for network operation

Using the SW1 + SW2 switches it is possible to assign an address to each network interface (slave card SCP674V202) or disable the network port if the card is mounted on a single machine, disconnected from the network.

The network controller recognizes the network interfaces by the number with which they are coded

**i Important**  
Do not assign the same address to two or more SLAVES (network interface) in order to avoid

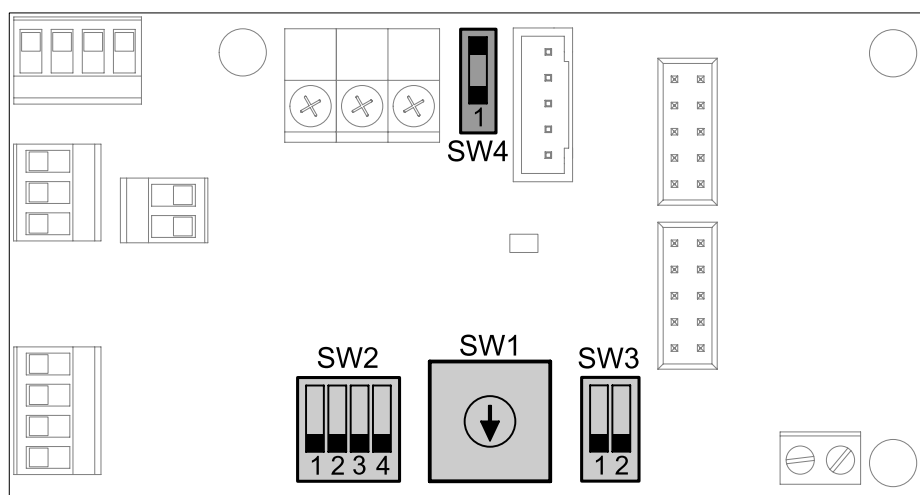




Fig. 5.3 DIP Switch position on the SCP674V202 slave board

SW2 (DIP 1 and 2)	SW1 position (rotary)	SLAVE address (module SCO674V202)
ON ↑	0...F	0...15
ON ↑	0...F	16...31
ON ↑	0...F	32...47
ON ↑	0...F	48...59

Tab 5.13 Address network interface

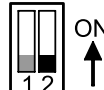



### 5.3.2 DIP Swicht configuration 3

SW3 (DIP 1)	FUNCTION DESCRIPTION
	Board internal timer and external temperature probe, if enabled, connected directly to SCP674V202 board.
	System timer, that is the timer set in the MASTER device; external probe, if enabled on the MASTER, connect ta directly to the network master. If you try to view the time, the display will show SYS.

Tab 5.14 Timer and external probe setting

DIP 2 of the SW3 switch is used to set the communication speed of the network (baud rate): 2.400 bps or 9600 bps

SW3 (DIP 2)	FUNCTION DESCRIPTION
	Baud rate at 2400bps. It is advisable to set this communication speed in systems with few network devices or in very large systems, i.e. with an extension greater than 1000 meters.
	Baud rate at 9600bps. It is advisable to set this communication speed in installations with many network devices that do not exceed 1000 meters of extension.

Tab 5.15 Communication speed setting

### 5.3.3 DIP Swicht configuration 4

DIP swicht 4 has the function of identifying the last device in the network.

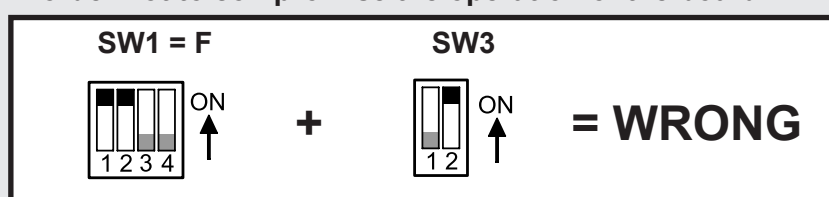
SW4	FUNCTION DESCRIPTION
	WITH RS 485 NETWORK, in the last network device, set the DIP switch to the ON position

Tab 5.16 Setting of the last device for network closure



#### IMPORTANT

Do not enable timer and the external network probe at the same time the deactivation of the network port in order not to compromise the operation of the board.



## 5.4 SCP674V202 SLAVE CODING FOR SINGLE DEVICE WITH SCP674V122T TERMINAL

To operate a single device via the SCP674V122T terminal, set SW1 / SW2 on the SCP674V202 slave board as indicated in tab. 5.17



Fig. 5.4 Terminal SCP674V122T

SW2 (DIP 1 and 2)	SW1 position (rotary)	SLAVE address (module SCO674V202)
	F	SCP674V202 slave card disconnected from the SCBus network. Single machine

Tab 5.17 Setting for a single device

## 5.5 PROBE CONFIGURATION

It is possible to connect the temperature and humidity probe directly to the network control board or it is possible to have the temperature values read by the network probes 1 and 2 installed on the master, if present. To select the probe, set dip switches 3 and 4 of dip switch SW2 as shown in table 5.18

SW2 (DIP 3 and 4)	FUNCTION DESCRIPTION
	Temperature probe present, mounted on board the SCP674V202 board
	Temperature probe present, mounted on board the SCP674V202 board
	Network probe n.2 (PA2), connected to the master controller SCM830 / 850
	Temperature probe present, mounted on the remote keyboard.

Tab 5.18 Setting for a single device



### Important

The lack of the probe, if active, generates an error on the network controller.

If you enable network probes 1 and / or 2, check that the network controller has set the correct network probe addresses.

## 5.6 CONFIGURATION OF OPERATING PARAMETERS SCP674V202

Carry out the configuration using the following equipment:

- SCP674V122T2 terminal;
- Master control panel SCM... If present (see instructions supplied with the master control panel).

### 5.6.1 Programming with SCP674V122T2 terminal

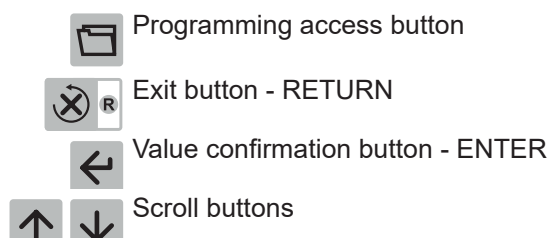


Fig. 5.5 SCP674V122T2 terminal

To access the instrument menus/parameters, proceed as follows:

- 1) Press briefly 

The first menu appears on the display (see tab. 7.12 for the various menu items) *info*
- 3) Use the scroll buttons to scroll through the various menus 

Scroll to the parameters menu *PAR*
- 5) Press ENTER to confirm 

The parameter PA (password) appears on the display *PA*
- 7) Enter password (see section 7.9.2 on page 58) using the scroll buttons 

Press ENTER to confirm
- 9) The first parameter appears on the display *IA*

Scroll to the desired parameter with the scroll buttons
- 11) Press ENTER to confirm 

Move with the scroll buttons to the desired value
- 13) Press ENTER to confirm 

To exit programming press RETURN or wait 30 seconds without acting on the keypad for automatic exit

MENU	MENU Level 1	MENU Level2	DESCRIPTION
<i>info</i>	<i>At</i>		Room probe visualisation
	<i>Et</i>		External probe display (only present if /P2 ≠ no)
	<i>Err</i>		Warnings for internal use:
	<i>FtN</i>		1. if Err = 0 there is no problem.
	<i>P in</i>		2. if Err ≠ 0 means that there are or have been errors.
	<i>F in</i>		Supply air temperature. That is the average of probes P3 and P4.
<i>AL St</i>			Flow rate of the air supplied at that time by the machine.
<i>t INE</i>			Flow rate of the air delivered at that moment by the machine
<i>Fnc</i>	<i>P-on</i>		Pending alarms menu
	<i>FRn</i>		Clock menu
	<i>Pot</i>		ON/ OFF, device stand-by
	<i>Node</i>	<i>USER</i>	Fixed speed of fan output in USER mode
		<i>AUTO</i>	Fixed power of PWM output in USER mode
	<i>A-n</i>		Manual operating mode
	<i>H-C</i>		Automatic operating mode
	<i>rSt</i>		Thermostat operation mode, automatic or manual (ON or OFF)
<i>SEt</i>			Thermostat action type, summer / winter
<i>PAR</i>			Reset relay activation, burner reset start
<i>Pt in</i>			Set point (comfort / economy)
			Parameter menu
			Timer menu

Tab 5.19 Menus and submenus

## 5.6.2 List of operating parameters SCP674V202

**Please note**

See section 7.9 on page 67 for the procedure for changing parameters (parameter menu).

**Legend parameter type and password**

☺ = USER parameters (password = any).

I = INSTALLER parameters. Before changing the value, read the instructions carefully (password = 95)

C = BUILDER parameters. These parameters are typically set by the manufacturer, the default values may be different from the recommended ones. Changing them may cause the connected equipment to malfunction. These parameters are only visible by entering the correct password.

ABBREVIATION	PARAMETER	TYPE	RANGE	UM	DEFAULT
/	Control probe parameters				
/A	Probe average P3-P4. /A=0 → 100% P3 (*)	C	0...100	°C	50
/C1	Calibration of probe P1 - temperature probe	☺	-12...12	°C	0,0
/C2	Calibration of probe P2 - external probe	I	-12...12	°C	0,0
/C3	Calibration of probe P3 - ventilation probe 1, incoming air	I	-12...12	°C	0,0
/C4	Calibration of probe P4 - ventilation probe 2, outlet air	I	-12...12	°C	0,0
/P2	Probe P2 configuration. no=absent; int=internal;	C	no...int	-	NO
/P4	Probe P4 presence. NO=NO; YES=YES	C	NO..YES	-	NO
/S	AD input reading stability	I	0...5	-	2
r	<b>Controller parameters</b>				
r0	Selects whether the controller operates with 1 or 2 set-points. 1=SP1C only. 2=SP1C+SP1E	C	1...2	-	1
rd	Set-point differential	☺	0,1...12	°C	0,5
rt	Safety set-point / antifreeze function. 0=burner output off, antifreeze function off.	☺	0,0...20	°C	6
rL	Minimum temperature limit SP1C and SP1E	I	-40...rH	°C	10
rH	Maximum temperature limit SP1C	I	rL...99	°C	30
L	<b>Output parameters</b>				
L0	Output activation delay at PWON	C	15...250	sec	15
L2	Reset pulse duration	C	1...30	Sec	7
LbP	Proportional band	I	1...12	°C	3
LP	Burner power control mode: 0 = burner modulated by room temperature; 1 = burner modulated by air flow temperature	C	0...1		0
LrA	Automatic correction parameter LrH. Represents the value of the maximum burner output if outside temperature $E_t \geq L_n8$ .	I	30...100	%	50
Ln6	Minimum outside temperature value for calculation of automatic correction algorithm for parameter LrH, 'LrA'.	I	-20...Ln8	°C	-20
Ln8	Maximum outside temperature value for calculation of automatic correction algorithm for parameter LrH, 'LrA'.	I	Ln6...15	°C	15

Tab 5.20 Operating parameters SCP674V202 (1 of 2)

ABBREVIATION	PARAMETER	TYPE	RANGE	UM	DEFAULT
<b>F</b>	<b>Fan parameters</b>				
<b>F1A</b>	Fan consent blocking during air filter blockage alarm. no = no fan consent lockout during blocked air filters error; YES = lockout of fan consent in case of blocked air filters error.	C	no...YES	-	no
<b>FH</b>	Activity during normal HEAT mode operation; brn = fans thermostated, see set-point FtA; on = fans always on; off = fans always off;	I	brn, on, off	-	brn
<b>FC</b>	Activity during normal COOL-cooling mode operation; 0 = off = fans always off; 1 = on : fans on during ON timer programme; 2 = on : fans on during ON timer programme;	I	0, 1, 2	-	0
<b>FCF</b>	Activity during normal operation FREECOOL mode; (not managed by the network master) 0 = off = fans always off 1 = off = fans always off 2 = off = fans always off	I	0, 1, 2	-	0
<b>Fd</b>	<b>Fan differential</b>	C	0,1...12	°C	5
<b>FtA</b>	Heat exchanger fan set-point. The fans will remain off if the temperature detected by the FtM probe (supply air temperature; i.e. the average of probes P3 and P4) is lower than the set value. If FH=BRN and FtA=0 fans in parallel with the burner.	C	0,0...99	°C	40
<b>Ftr</b>	Fan air flow temperature kept constant during AUTO mode.	☺	5...150	°C	5
<b>F0t</b>	Cycle time tFan function in AUTO mode	C	5...250	sec	15
<b>FLo</b>	Minimum fan speed	C	0...FHi	%	50
<b>FHi</b>	Max. fan speed	C	FLo...100	%	100
<b>A</b>	<b>Alarm parameters</b>				
<b>Ad</b>	Alarm differential	C	0,1...12	°C	2,0
<b>AE</b>	Burner lockout warning delay. 0=No delay; 1=30 seconds; 2=60 seconds; 3=90 seconds	C	0...3	-	1
<b>AL</b>	Absolute low temperature alarm Lt	☺	-40..AH	°C	-40
<b>AH</b>	Absolute high temperature alarm Ht	☺	AL...99	°C	99
<b>A3</b>	Alarm override time from instrument switch-on	☺	0...250	min.	0
<b>t</b>	<b>Timer parameters</b>				
<b>t0</b>	Maximum programme advance period 0=exclude early start function	☺	0...6	Ore	0
<b>tr</b>	Heating system efficiency	I	0,1...12	°C*Ora	3,0
<b>t8</b>	Exclusion of global timer programmes: 0=no; 1=yes;	I	0...1	-	0
<b>H</b>	<b>Other parameters</b>				
<b>H10</b>	Air damper opening percentage 1 during winter cycle with fan on	I	0...100	%	70
<b>H11</b>	Air damper opening percentage 1 during winter cycle with fan off	I	0...100	%	100
<b>H12</b>	Air damper opening percentage 1 during summer cycle with fan on	I	0...100	%	0
<b>H13</b>	Air damper opening percentage 1 during summer cycle with fan off	I	0...100	%	100
<b>H30</b>	Burner RESET function configuration 0 = RESET enabled without pulse limitation 1 = max. 5 RESET pulses in 15 minutes, exceeded within the set time, no RESET without unlocking 2 = RESET operation				
<b>H31</b>	Enable maximum RESET pulse limit in set time 0 = function NOT ENABLED 1 = function enabled				
<b>HH</b>	Firmware Release (READ ONLY)	☺	-	-	-
<b>HL</b>	Keypad lock. NO=NO; YES=YES	☺	NO..YES	-	NO

Tab 5.20 Operating parameters SCP674V202 (2 of 2)

## 6 GAS PIPE



### WARNING

The gas piping must be made by qualified personnel with adequate skills and in compliance with the national and local regulations in force on the subject and what is reported in this booklet.



### WARNING

Carry out the tightness test according to the regulations in force before putting the gas supply system into service.



### Important

The sizing of the pipes and any pressure reducers must be such as to guarantee the correct operation of the appliances. The materials used must comply with the regulations in force in the country where the system is installed.

### 6.1 CONNECTING THE APPLIANCE

- a) The appliance cannot withstand pressures higher than 40 mbar (0.04 bar) otherwise the gas valve membranes may break.
- b) For natural gas: always install on the main line upstream, after the meter, a pressure stabilizer and a pressure gauge with a scale of 0 ÷ 60 mbar (0.06 bar) and adjust the pressure to 20 mbar (0.02 bar); a higher pressure can create bad combustion, difficulty in igniting the flame.
- c) For LPG gas (Butane-Propane): near the tank it is essential to install a “1st stage” pressure reducer in order to reduce the pressure to 1.5 bar; on the main external line at the foot of the shed, always install a “2nd stage” pressure reducer to reduce the pressure to the values indicated in paragraph 8.5 on page 92.

After the “2nd stage” reducer, install a pressure gauge scale 0 ÷ 60 mbar (0.06 bar) and adjust the pressure to the values shown in tables 8.5 and 8.7 on pages 92 and 94; a higher pressure can create bad combustion, difficulty in igniting the flame.

- d) Upstream and downstream of the main gas supply line, a manometer must always be installed in a visible manner with a scale of 0 ÷ 60 mbar (0.06 bar) in order to check any difference in pressure upstream and downstream and therefore the reach of the entire network.
- e) It is also possible, by closing the general gate valve and turning off all the appliances, to check the tightness of the system and the gas valves, checking, after a short period, for any pressure drop on the pressure gauges.
- f) Always connect the appliances with a ball valve and anti-vibration flexible gas joint.
- g) Supply gas pressure adjustment: all appliances are tested and calibrated in the factory for the pressures for which they are designed (see burner plate data or paragraph 8.5 on page 92).



### WARNING

Seal the gas solenoid valve adjustment part after calibration.

**Important**

For methane supply with pressures higher than 20 mbar (200 mm ca), always provide a pressure stabilizer for each appliance and adjust the pressure to 20 mbar.

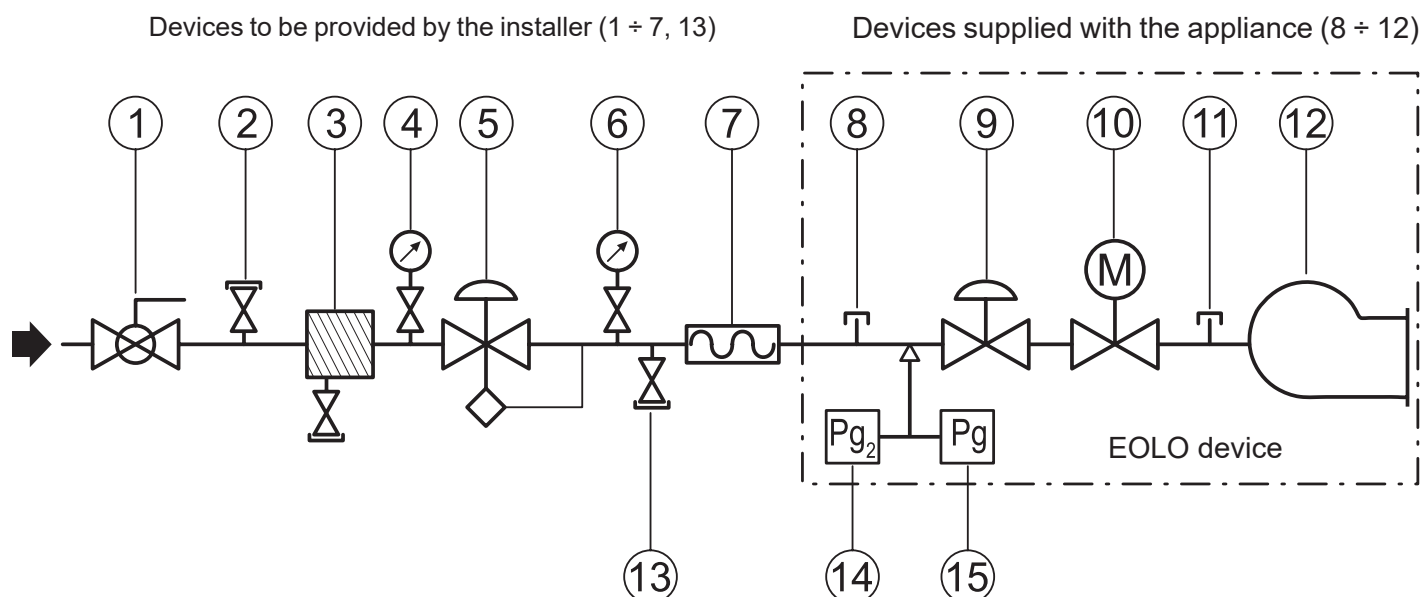


Fig. 6.1 Gas train

POS.	DESCRIPTION
1	Manual gas shut-off ball valve
2	Gas pressure point upstream of the pressure regulator
3	Gas filter
4	Manometer upstream of the pressure regulator with push button cock
5	Gas pressure regulator with minimum and maximum pressure block device (outlet pressure = 0.04 bar) - For inlet pressures <0.04 bar, provide a stabilizer
6	Manometer downstream of the pressure regulator with push button cock
7	Anti-vibration joint
8	Gas pressure socket placed at the inlet of the appliance's solenoid valve
9	Gas pressure regulator located on the appliance's solenoid valve
10	Safety solenoid valve
11	Gas pressure outlet located at the outlet of the appliance's solenoid valve
12	Burner
13	Ball valve with bleed
14	Maximum gas pressure switch with manual reset (40 mbar) - optional (standard for models 120 ÷ 300)
15	Minimum gas pressure switch (20 mbar) - optional (standard for models 120 ÷ 300)

Tab 6.1 Gas train components

## 7 INSTALLATION



### WARNING

Entrust all installation operations to professionally qualified personnel responsible in compliance with the national and local regulations in force in the country where the system is installed and with the contents of this booklet.



### WARNING

During the installation operations, the personnel must be equipped with individual protection devices in accordance with current legislation.

## 7.1 PRELIMINARY UNLOADING OPERATIONS



### WARNING

Unloading from material handling equipment and transfer to the installation site must be carried out with means suitable for the arrangement of the load and the weight. All material lifting and transport operations must be carried out by expert personnel who are informed about the operating procedures of the intervention and the prevention and protection rules to be implemented.

The handling of the material must take place according to the procedures described in this manual.

Make the area of operations inaccessible to strangers by delimiting it with barriers to prevent its permanence and transit under the loads.

Use suitable lifting and handling equipment complying with the regulations in force, do not install pulleys for lifting materials and do not place superstructures to reach higher heights.

### 7.1.1 Handling of monobloc units

Eolo units are equipped with a special profile dedicated to the forklift. Before placing the unit on the structure, both the two rails and the four transport feet must be removed. (fig. 7.1)

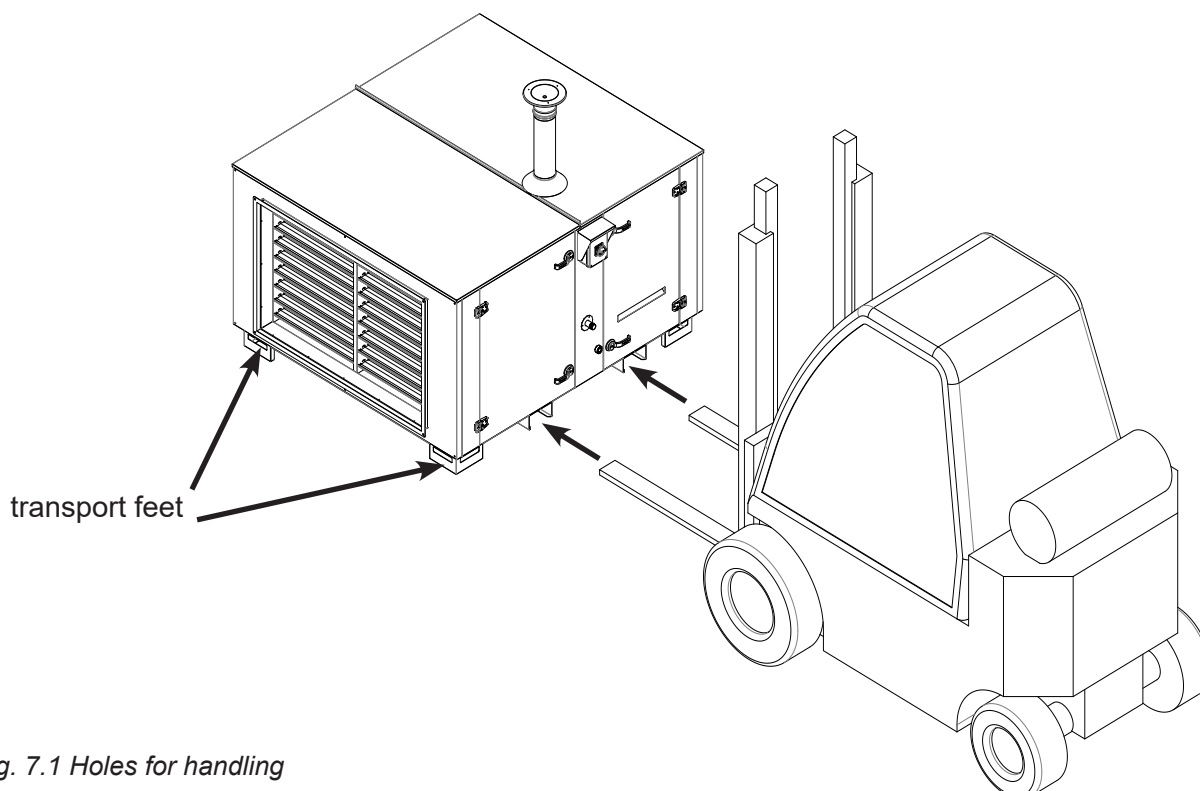
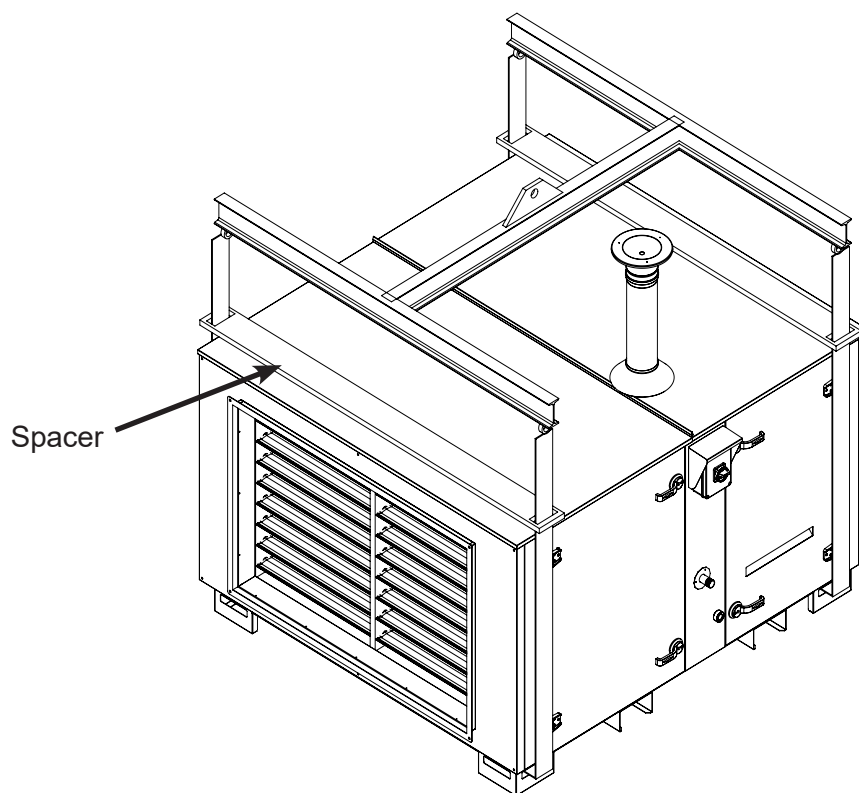


Fig. 7.1 Holes for handling



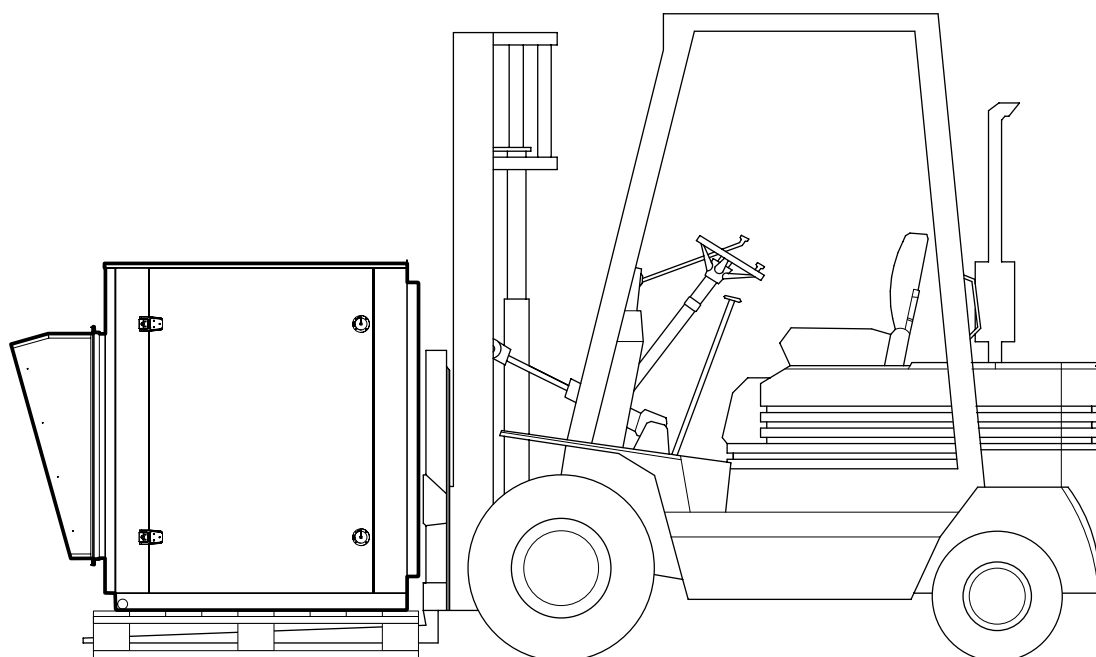
During the unloading and the positioning of the unit, it is absolutely necessary to avoid abrupt or violent maneuvers. It is mandatory to use a slingbar of adequate capacity adjusted to the width of the unit to ensure stability in handling by providing suitable spacers to prevent the slings from damaging the unit. Use approved slings of adequate capacity.



*Fig. 7.2 Unit handling*

### 7.1.2 Handling of units with separate sections

Eolo units can be shipped with separate burner and fan sections. In this case it is possible to move the sections of the unit with the aid of a forklift.



*Fig. 7.3 Handling of units with separate sections*

## 7.2 ASSEMBLY OF THE BURNER / FANS SECTIONS

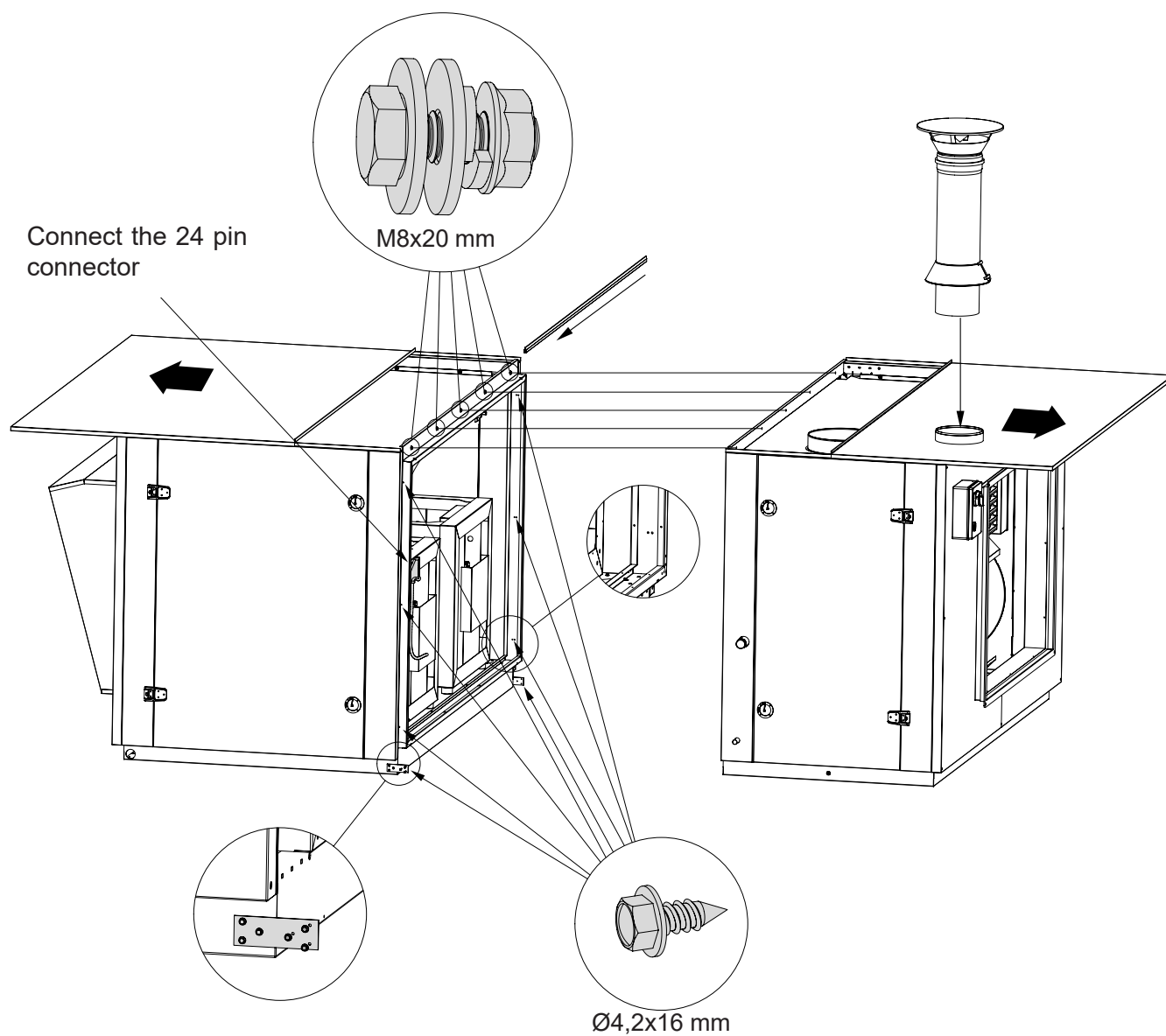


Fig. 7.4 Assembly of separate sections

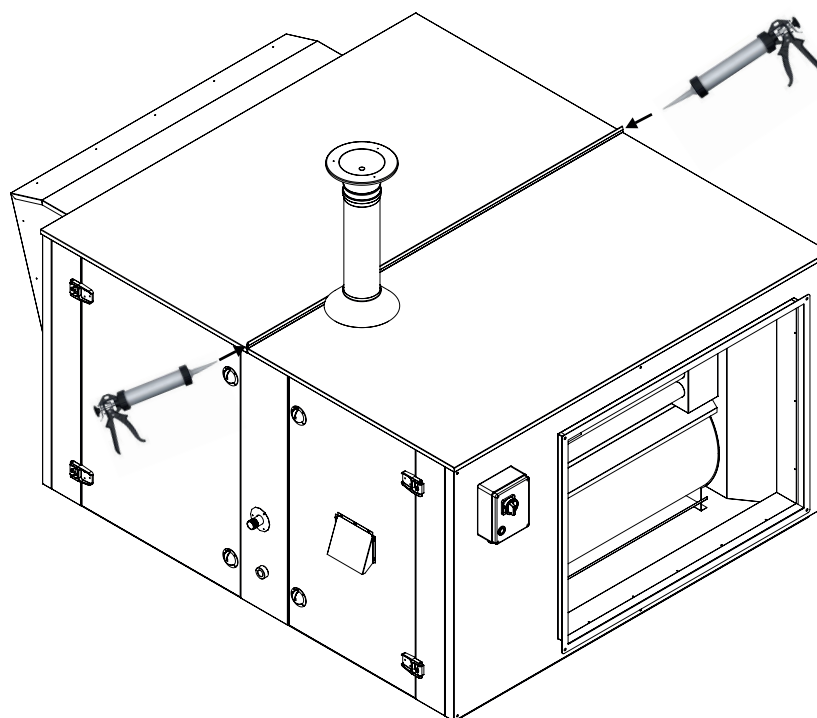


Fig. 7.5 Silicon coating of the fram

### 7.3 SERVICE ACCES

The unit must be positioned in such a way as to avoid obstacles in the immediate vicinity that prevent maintenance operations and the fresh air intake (buffer zone)

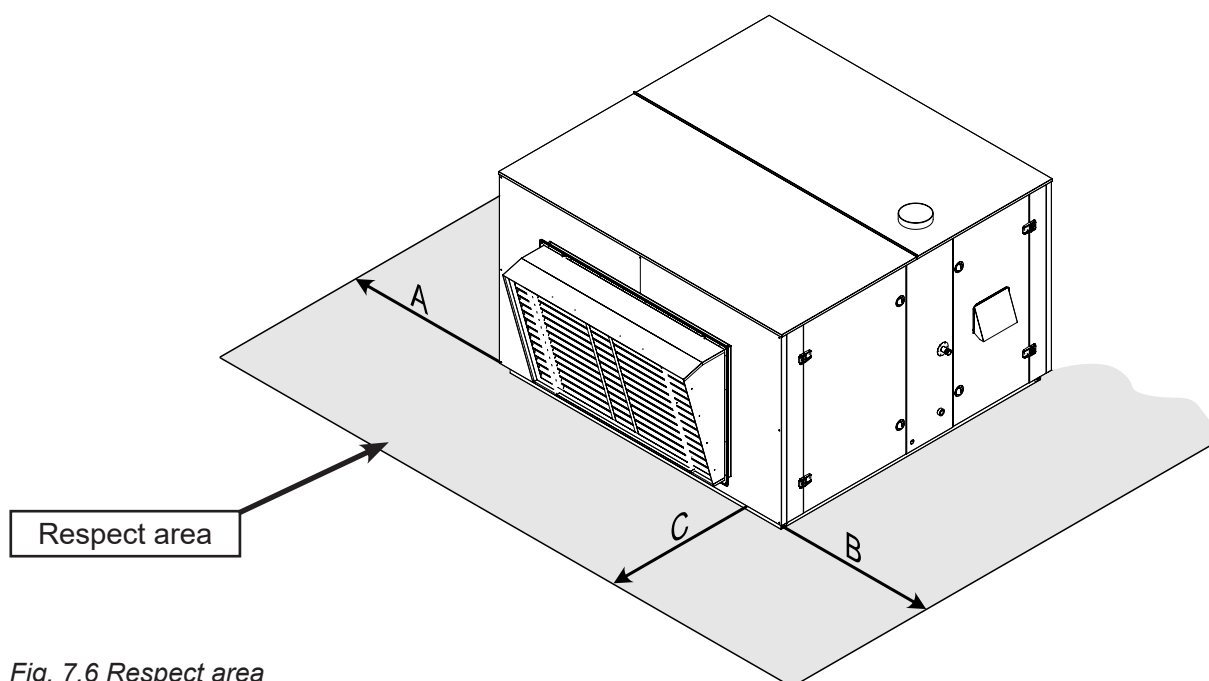


Fig. 7.6 Respect area

Dimension	U.M.	25/35	45/65	85/100/120	150	200	250	300
A	mm	900	900	1000	1100	1100	1100	1250
B	mm	900	900	1000	1100	1100	1100	1250
C	mm	500	600	1000	900	1000	1100	1300

Tab. 7.1 Respect area

## 7.4 CONDENSATE DRAIN

Pay particular attention to the construction of the condensate conveying pipes; incorrect piping can compromise the correct operation of the appliance.

For the construction of the condensate conveying pipes, use materials suitable to withstand the mechanical, thermal and chemical stresses of the condensate over time (for example stainless steel pipes or plastic material for the passage of cold water).

Do not use copper or iron pipes, materials that are easily attacked and perishable by the acidity of the condensate.

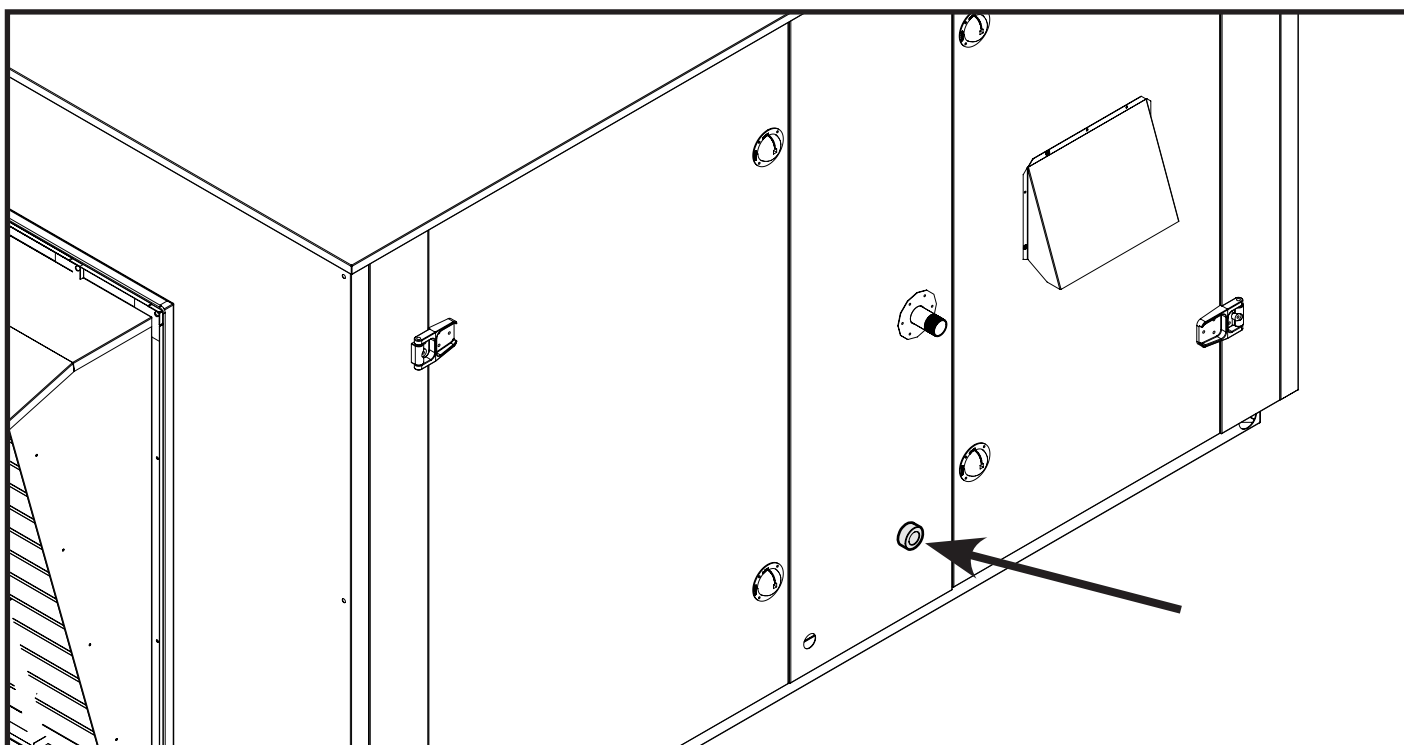


Fig. 7.7 Position of the condensate drain connection

### 7.4.1 Condensate drain connection

The appliances are equipped with a condensate drain connection on the side of the machine, under the gas pipe connection. The factors to be taken into consideration when constructing the condensate drain piping are:

- avoid the stagnation of condensate inside the exchanger;
- avoid the stagnation of condensate inside, except for the liquid head present in the siphon or similar device;
- avoid freezing of condensation water in the pipeline;
- avoid the discharge of fumes and / or unburnt gases through the condensate pipe;
- compensate for any pressure variations inside the sewerage network or other evacuation collection system where the drain is connected such as to affect the operating conditions of the appliance or gas system;
- for the correct disposal of the combustion condensates, it is necessary to assess whether the current legislation requires the need to neutralize the condensates with a special system.

### 7.4.2 Condensate stagnation in the exchanger

- Install the appliance perfectly level to maintain the natural inclination of the tube bundle and allow the condensate to drain, preventing it from accumulating inside the exchanger during normal operation

### 7.4.3 Frost protection

- The condensate drain pipe must be adequately protected to prevent condensation water from freezing.
- Run the condensate collection system inside the heated rooms.
- If the appliance is installed outdoors, it is necessary that the pipe, after the siphon, has an open type connection (cup) to prevent any freezing of the condensate inside the pipe, preventing it from draining. and run the pipe as far as possible inside the heated room, collecting the condensate flush with the internal floor.
- In the case of the appliance installed outdoors with winter temperatures that are not particularly rigid, it is possible to leave the condensate drain without connections to pipes, checking that the regulations in force allow it.
- In the case of an external path of the condensate drain pipe, it may be necessary to install a heating cable.

### 7.4.4 Discharge into the sewer system

- The connection of the condensate drain to the sewerage system must take place at atmospheric pressure, i.e. by dripping into a siphoned container, or equivalent device, designed to prevent the return of fumes, interposing, if required by current legislation, a suitable neutralizer of the condensate acidity .



#### **Important**

**To carry out the condensate drain, always refer to the prescriptions of the regulations in force since in some countries all the types of drain described are not allowed.**

## 8 TESTING AND START-UP OF THE PLANT



### WARNING

Entrust all testing and start-up operations to professionally qualified personnel responsible in compliance with the national and local regulations in force in the country of installation of the system and with the contents of this booklet.



### WARNING

Have the appliances perform an annual check by qualified personnel with adequate skills and in compliance with the national and local regulations in force on the subject and as indicated in this booklet.



### WARNING

During the testing operations, the personnel must be equipped with individual protection devices in accordance with current legislation.



### WARNING

The user must not intervene on the controls of the devices placed on the control panel during the testing activities.

The maintenance technician must place a warning sign on the control panel of the system for the entire duration of the maintenance activities where the following sentence is reported: "System undergoing maintenance, IT IS FORBIDDEN to perform operations on the control panel of the appliances."

### 8.1 PRELIMINARY OPERATIONS

Before commissioning, follow the instructions below:

- check the tightness of the gas system;
- check that the Eolo unit is set up for the available gas (if necessary, consult paragraph 9.1 on fuel change, p. 100), check the mains pressure (see paragraph 8.5 on page 92) and turn on the gas;
- check that the pressure and the type of gas comply with the data indicated on the appliance plate;
- check that the gas flow rate corresponds to what is stated on the appliance plate data; seal the gas valve adjustment part after calibration;
- check the correct electrical connection between the burner, the electrical panel and the power supply network; ensure a good earthing, respect the phase and neutral connection, check the voltage value.

At this point you can proceed with the commissioning of the device.

### 8.2 COMMISSIONING THE APPLIANCE

- 1) Bleed the gas supply line and carefully let the remaining air out of the pipes.
- 2) Restore the gas supply pipe after venting and check that there are no leaks, use a soapy solution or equivalent product, do not use open flames.
- 3) Power up the appliance, close the main switch after setting the room thermostat to the maximum temperature.
- 4) Check the direction of rotation of the fan. If the motor runs in the opposite direction, disconnect the power supply and change the order of the phases and recheck the direction of rotation of the fan.
- 5) Measure the electric absorption of the motor / and check that it falls within the plate values.
- 6) After the pre-wash time, the ignition spark occurs. After the third failed ignition attempt, the appliance locks out. After 10 seconds, the appliance can be unlocked by resetting the burner control equipment.
- 7) After opening the gas solenoid valve, the burner ignites
- 8) After the stabilization of the working conditions (about 15 min.), Carry out a combustion analysis and a

performance measurement. The steady state is considered to have been reached when the temperature of the combustion products has stabilized, ie when it does not vary more than  $\pm 2^\circ \text{C}$ .

Carry out the analysis at maximum and minimum thermal load of the burner.

- 9) Check the intervention of the safety thermostat protection ( $T_s / T_{so}$ ) by cutting off the power supply and temporarily removing fuses F1 and F2, then start the appliance for the check. The fuses must be replaced once the thermostat intervention ( $T_s / T_{so}$ ) has been checked, see paragraph 4.1 on page 34
- 10) In the case of devices supplied without fans: it is necessary to check the interventions of the safety thermostat ( $T_s / T_{so}$ ) for the external fan and the temperature increase on the exchanger:
  - trip ( $T_s / T_{so}$ ) for overtemperature at about  $100^\circ \text{C}$ ;
  - fans start up at about  $60^\circ \text{C}$ ;
  - fans shutdown at  $40^\circ \text{C}$ .

After completing commissioning, draw up the commissioning report. Instruct personnel on the use and maintenance of the device

## 8.3 ADJUSTMENTS

If during the testing phase one of the following operating anomalies occurs due to incorrect adjustment of the air-gas ratio, and one of the following conditions occurs:

- a. the burner does not have an excellent ignition at minimum power;
- b. the yields or values in combustion are not those required or those indicated in the technical data sheets;
- c. the burner at minimum power produces resonances, it will be possible to make adjustments by acting on the gas valves as described in the following points.

### 8.3.1 Adjustments on generators with 848 Sigma solenoid valve (Eolo BC/BL 15÷65 RT)

- 1) Place the pressure gauge in point (6) of the gas valve to detect the gas pressure at the outlet
- 2) Use the flue gas analyzer to check that the combustion values are correct and correspond to table 8.6 on page 92 (BC version) and table 8.8 on page 94 (BL version).
- 3) Make the adjustments in the order shown:
  - I) Remove the screw (9)
  - II) Offset adjustment by reducing the air signal to a minimum (minimum fan speed allowed by the PWM) and acting on the internal screw bringing the combustion parameters to the required value. To increase the gas pressure, tighten the screw.
  - III) Gas / air ratio adjustment by increasing the air signal to the maximum (maximum fan speed allowed by the PWM) and acting on the screw (8) to obtain the optimal combustion value. To decrease the outlet gas pressure, tighten the screw.
  - IV) Check zero by bringing the fan back to minimum speed and check the combustion values, if necessary, adjust the OFFSET again.
- 4) Final check of combustion.
- 5) Seal the screws (6) and (9).

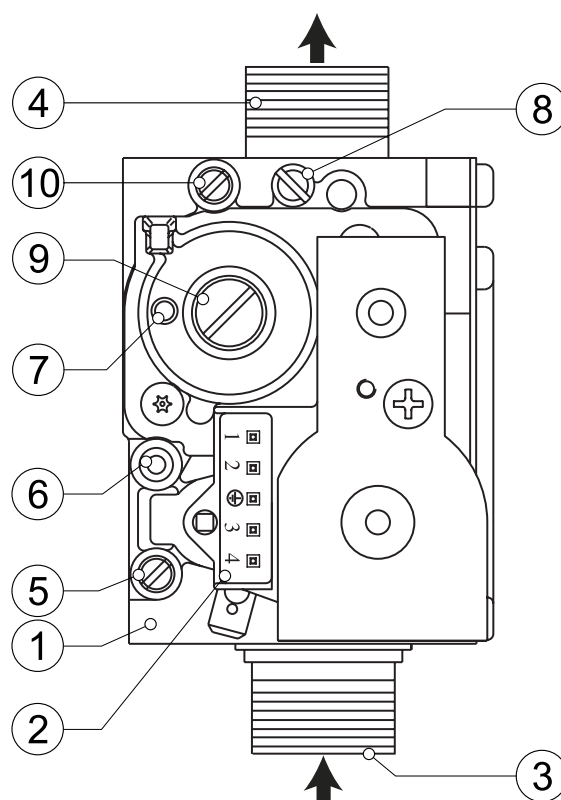


Fig. 8.1 Solenoid valve 848 Sigma



**WARNING**  
Seal the gas valve adjustment part after calibration.

POS.	DESCRIPTION	OPERATING INSTRUCTIONS
1	Solenoid valve 848 SIGMA	
2	Electrical connector	
3	Gas inlet	
4	Gas outlet	
5	Inlet gas pressure intake	Point for measuring the supply gas pressure. The gas supply pressure must not exceed 50 mbar
6	Intermediate gas pressure intake	Point for detection of the burner gas pressure. In the pre-wash procedure, a depression proportional to the speed of the fan is detected.
7	Vacuum signal connection	<b>Not used NB must remain completely open</b>
8	Maximum gas flow regulator	<b>Maximum gas flow adjustment screw.</b> <b>Adjust the CO<sub>2</sub>, CO, NO valuesX in combustion at maximum power</b>
9	Off set regulator	<b>Internal hexagonal screw for adjusting the minimum gas flow rate. Adjust the CO<sub>2</sub>, CO, NO valuesX in combustion at minimum power</b>
10	Outlet pressure outlet	

Tab 8.1 Key to 848 Sigma solenoid valve

### 8.3.2 Regolazioni su apparecchi con elettrovalvola 822 Nova Mix (Eolo BC/BL 85÷120 RT)

- 1) Place the pressure gauge in point (2) of the gas valve to detect the gas pressure at the outlet.
- 2) Use the flue gas analyzer to check that the combustion values are correct and correspond to table 8.6 on page 92 (BC version) and table 8.8 on page 94 (BL version).
- 3) Make the adjustments in the order shown
  - a. Offset adjustment by reducing the air signal to a minimum (minimum fan speed allowed by the PWM) and acting on the internal screw (4) bringing the combustion parameters to the required value. To increase the gas pressure, tighten the screw.
  - b. Gas / air ratio adjustment by increasing the air signal to the maximum (maximum fan speed allowed by the PWM) and acting on the screw (7) to obtain the optimal combustion value. To decrease the outlet gas pressure, tighten the screw
  - c. Check zero by bringing the fan back to minimum speed and check the combustion values and if necessary, adjust the OFFSET again with the screw (4)
- 4) Final combustion check
- 5) Seal the screws (7) and (4).

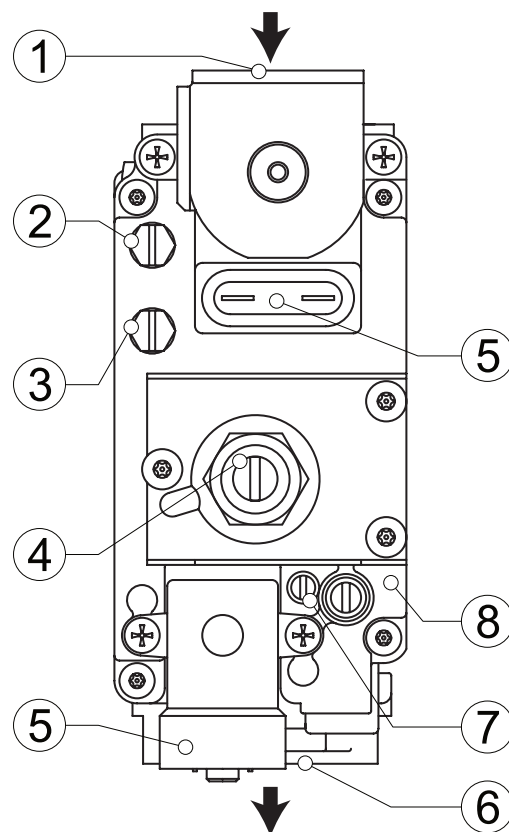


Fig. 8.2 822 Nova Mix solenoid valve



**WARNING**  
Seal the gas valve adjustment part after calibration.



POS.	DESCRIPTION	OPERATING INSTRUCTION
1	Gas inlet	
2	Inlet gas pressure intake	<b>Point for measuring the supply gas pressure.</b> <b>The gas supply pressure must not exceed 50 mbar</b>
3	Outlet gas pressure in OUTPUT	Point for measuring the burner gas pressure. In the pre-wash procedure, a depression proportional to the speed of the fan is detected. During operation, the outlet gas pressure is detected.
4	Off set regulator	Internal hexagonal screw for adjusting the minimum gas flow rate. <b>Adjust the CO<sub>2</sub>, CO, NO valuesX in combustion at minimum power</b>
5	Electrical connectors	
6	Gas outlet	
7	Maximum gas flow regulator	Maximum gas flow adjustment screw. <b>Adjust the CO<sub>2</sub>, CO, NO valuesX in combustion at maximum power</b>
8	Solenoid valve 822 NOVA MIX	

Tab 8.2 Key to solenoid valve 822 Nova Mix

### 8.3.3 Air mixer (Eolo BC / BL 15 ÷ 120 RT)

The air - gas mixer placed upstream of the burner fan (Eolo BC / BL 15 ÷ 120 RT), introduces the right volume of air and gas into it.

The air regulation must not be modified unless indicated by the manufacturer.

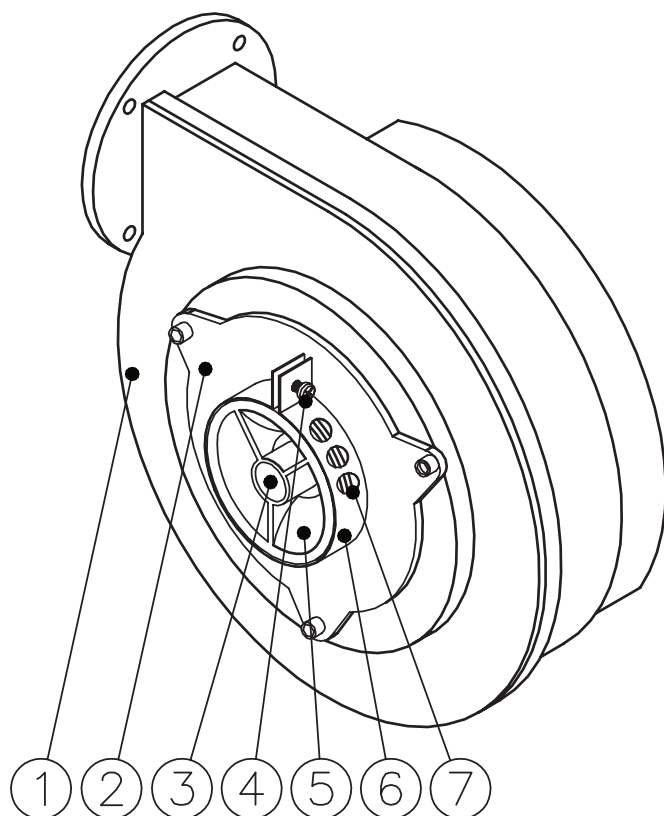


Fig. 8.3 Burner fan

POS.	DESCRIPTION
1	Fan
2	Air / gas mixer
3	Gas inlet
4	Secondary air regulator tightening screw
5	Primary air inlet
6	Secondary air regulator
7	Secondary air inlet

Tab. 8.3 Burner fan legend

### 8.3.4 Adjustment of burner parameters with solenoid valve type VR4 ... (Eolo 150 ÷ 300)

After the burner activation phase, it is necessary to check ignition at the minimum regulated output of the burner. If there are problems with ignition, correct the CO<sub>2</sub> setting with the solenoid valve. If the burner produces resonances at minimum power, it will be possible to make adjustments by making appropriate adjustments to the air / gas ratio.

After the first ignition, carry out a combustion analysis and verify the correctness of the combustion itself. When leaving the factory, Eolo appliances are always checked in terms of safety, thermal power and combustion parameters. However, always check the parameters in paragraph 8.5 on page 91 during commissioning.

POS.	DESCRIPTION
1	Burner base
2	Burner head
3	Electrodes
4	Burner plate insulation
5	VR4 solenoid valve ...
6	EBM gas blower
7	VMU Venturi mixer ...
8	Gas connection
9	Maximum pressure adjustment
10	"OFFSET" minimum pressure adjustment
11	Measurement of the gas pressure on the burner
12	Pressure measurement at the supply

Tab. 8.4

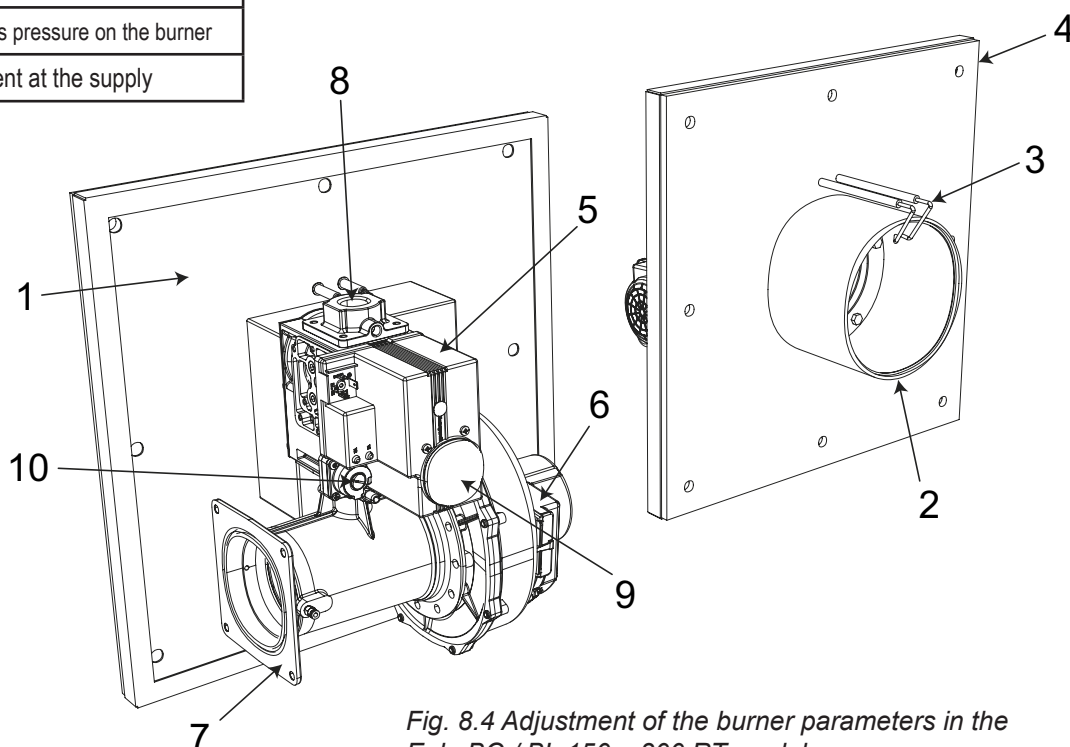
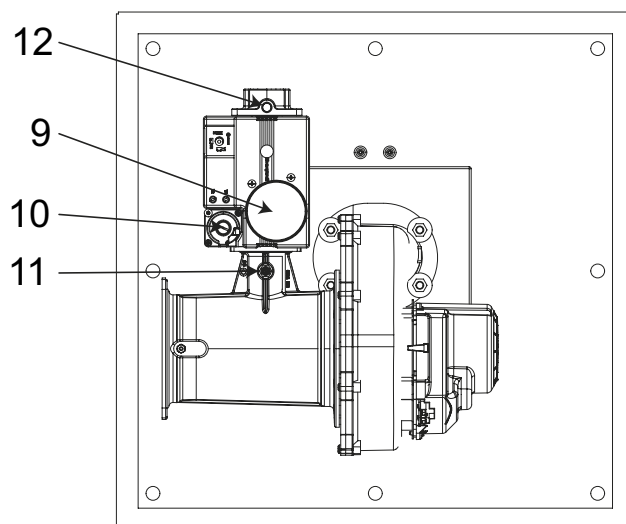


Fig. 8.4 Adjustment of the burner parameters in the Eolo BC / BL 150 ÷ 300 RT models

### 8.3.5 Maximum adjustment and fine adjustment

To adjust the burner parameters, carry out a maximum adjustment and then a fine adjustment as shown below

#### 8.3.5.1 Rough adjustment

- a. Activate the burner and adjust it to maximum thermal load.
- b. Check the gas pressure entering the solenoid valve. (it must not be lower than the nominal supply pressure in the gas system, for the type of gas envisaged and decreased by a possible pressure drop up to a maximum of -20%)
- c. Remove the cap of the maximum pressure regulator (9) - using a screwdriver.
- d. Using the Allen wrench size 3, adjust by turning to the right or left, as needed. Turning to the right "+" increases the amount of gas in the gas and air mixture. As a result the lambda value ( $\lambda$ ) decreases while the CO<sub>2</sub> value increases. Turning to the left "-" decreases the amount of gas in the air / gas mixture. As a result the lambda value ( $\lambda$ ) increases while the CO<sub>2</sub> value decreases.
- e. Reached the flue gas parameters in accordance with table 8.6 on page 92 (BC version) and the table 8.8 on page 94 (BL version), check the gas pressure at the outlet of the solenoid valve (11). Compare the value with the diagrams of the solenoid valve models and calculate the heat input of the appliance. If the power complies with the nominal value indicated on the nameplate, fine adjustment can be made - Offset.

#### 8.3.5.2 Fine adjustment

- f. Unscrew the screw that closes the minimum OFFSET pressure regulator (10)
- g. Change the PWM regulation of the burner at minimum load (see paragraph 5.1.3 on page 56, Description of command / control and paragraph 5.1.4 on page 57 for the burner parameters).
- h. Measure the combustion quality with an exhaust gas analyzer.
- i. Correct the settings with the minimum pressure regulator OFFSET +/- depending on the maximum setting. To do this, you need a TORX key n ° T40; changes must be made step-by-step every 30 degrees of rotation.
- j. After the adjustment, disable the burner and enable it again. After the second activation of the burner, carry out the flue gas analysis once more and check the functioning of the gas valve. After the adjustment, protect the adjustment screws with the appropriate caps.



#### WARNING

Check that the pressure measurement screws (11) and (12) upstream and downstream of the solenoid valve have been retightened.



#### Please note

To ensure class 5 of NO emissionsX, the value  $\lambda$  must have a maximum thermal load of not less than 1.3.

The measurement of NOX (3% of O<sub>2</sub>) with the value of  $\lambda$  equal to 1.3 gives results below 30 ppm.

## 8.3.5.3 Features for VR gas solenoid valves ...

## Honeywell solenoid valve mod. VR 415 (Eolo 150)

1/2" DN15

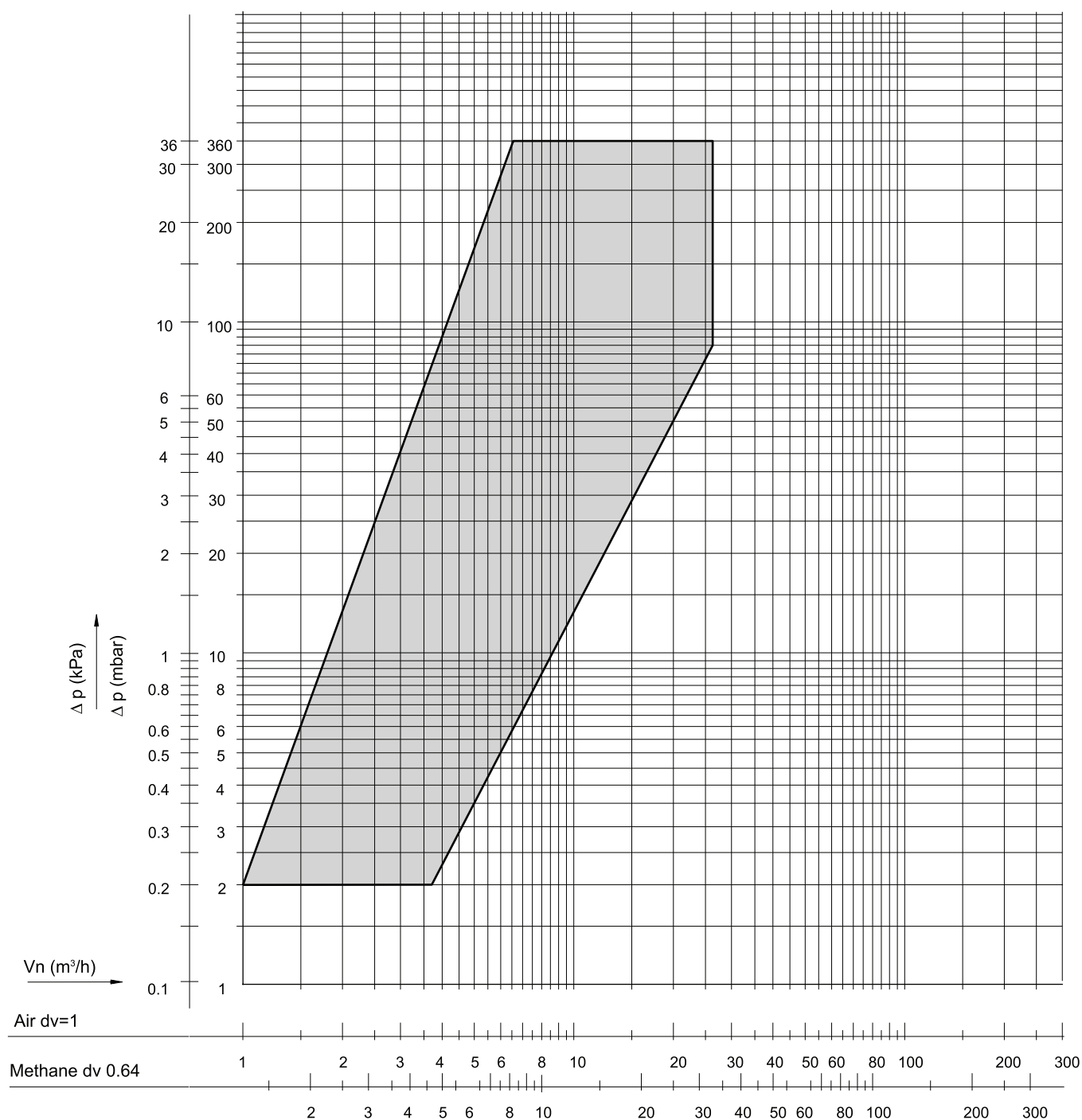
6 m<sup>3</sup>/h air at  $\Delta p = 5$  mbar

fig. 8.5

# oneywell solenoid valve mod. VR 420 (Eolo 200; Eolo 250)

3/4" DN20

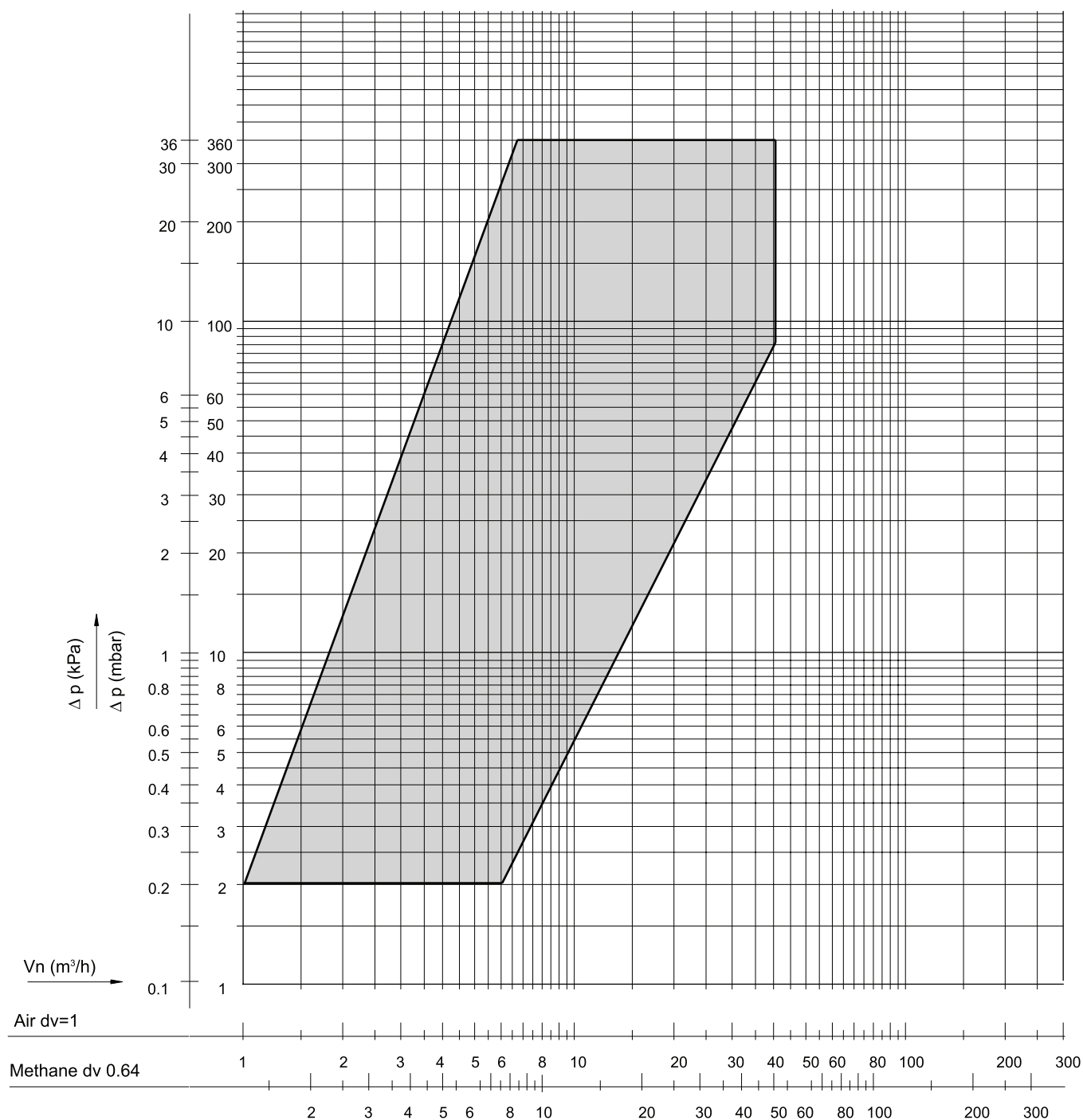
9 m<sup>3</sup>/h air at  $\Delta p = 5$  mbar

Fig. 8.6

## Honeywell solenoid valve mod. VR 425 (Eolo 300 BC / BL RT)

1" DN25

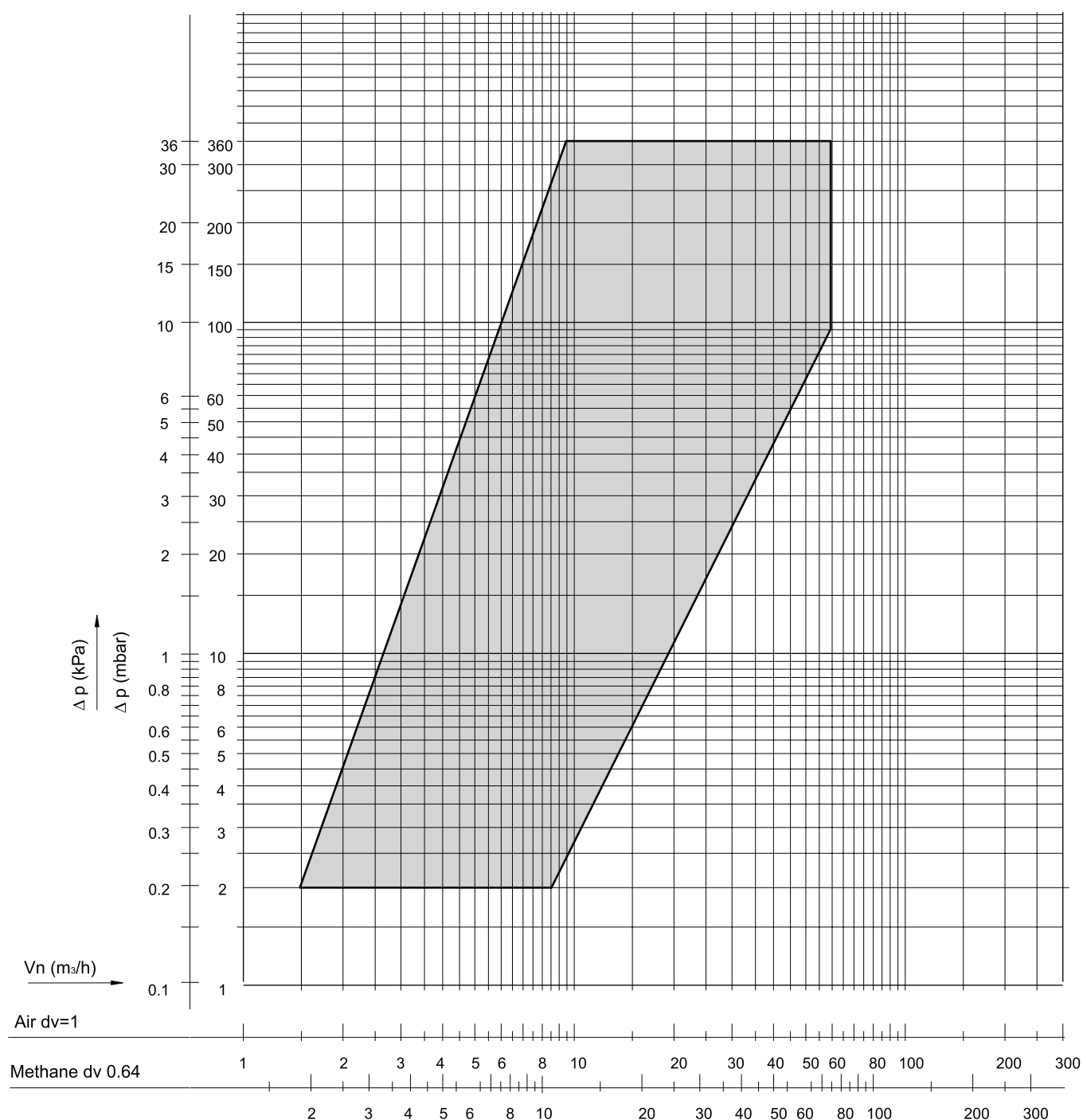
13 m<sup>3</sup>/h air at  $\Delta p = 5$  mbar

Fig. 8.7

## 8.4 POSITION OF ELECTRODES

For correct ignition and flame detection, the electrodes must be positioned inside the combustion cone in the position indicated in the drawing.

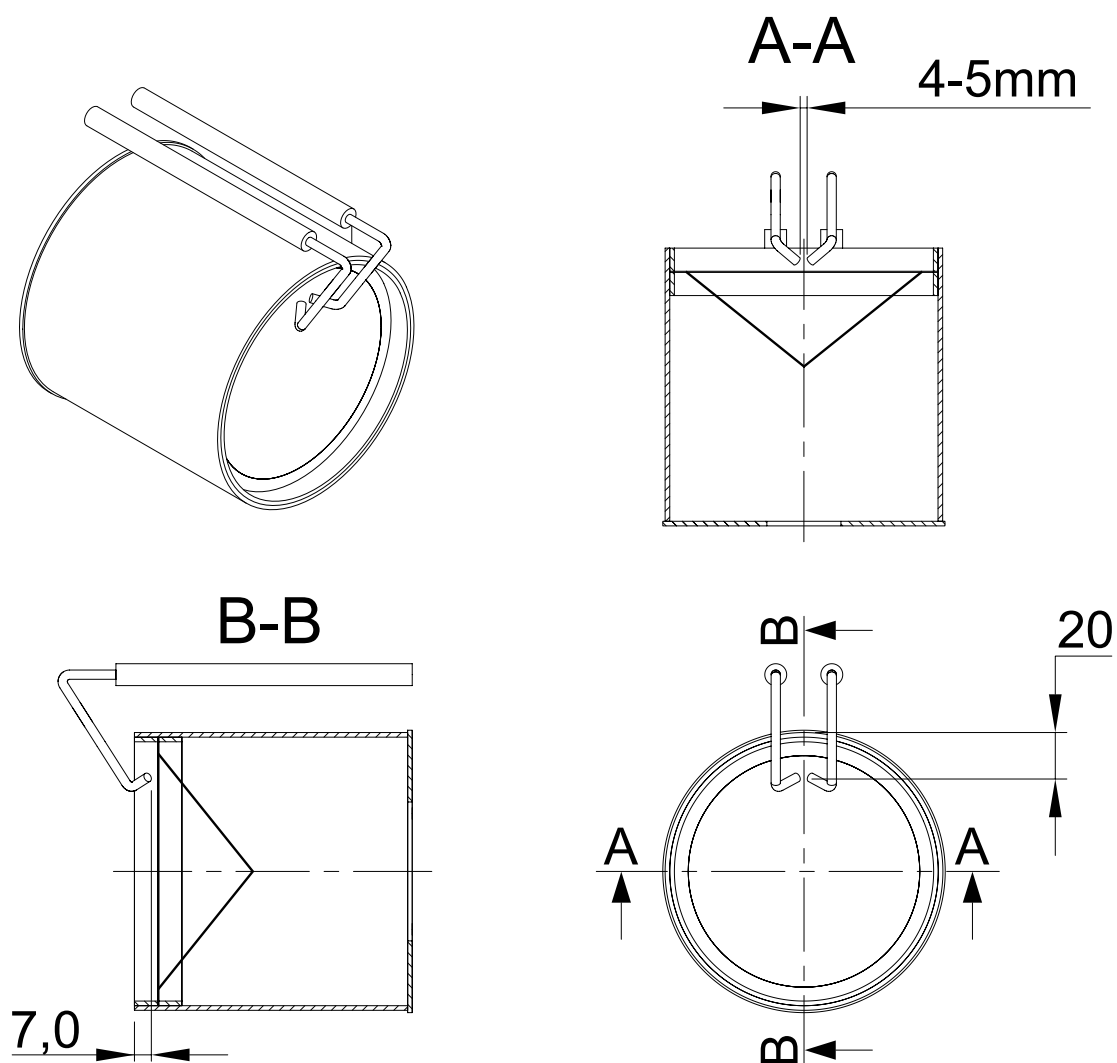


Fig. 8.9 Electrode position

## 8.7 TENSIONING THE TRANSMISSION BELTS



### ATTENTION

All belt tensioning operations must be carried out with the appliance switched off, disconnected from the power supply.

Before commissioning of the appliance, always check the direction of rotation of the motors without load. To do this, remove the V-belts by first unlocking the four screws in the motor base (fig. 8.10).

If the rotation is different from the desired direction, disconnect the power supply and invert the two power supply phases, thus setting the correct direction of rotation. Put the V-belts back and check that the pulleys are aligned, as in fig. 8.12.

V-belt tensioning method:

- loosen screws 1-4 in the motor base;
- using screw 5, adjust the tension of the V-belts appropriately (see graphic fig. 8.11);
- tighten screws 1-4 blocking the motor base.

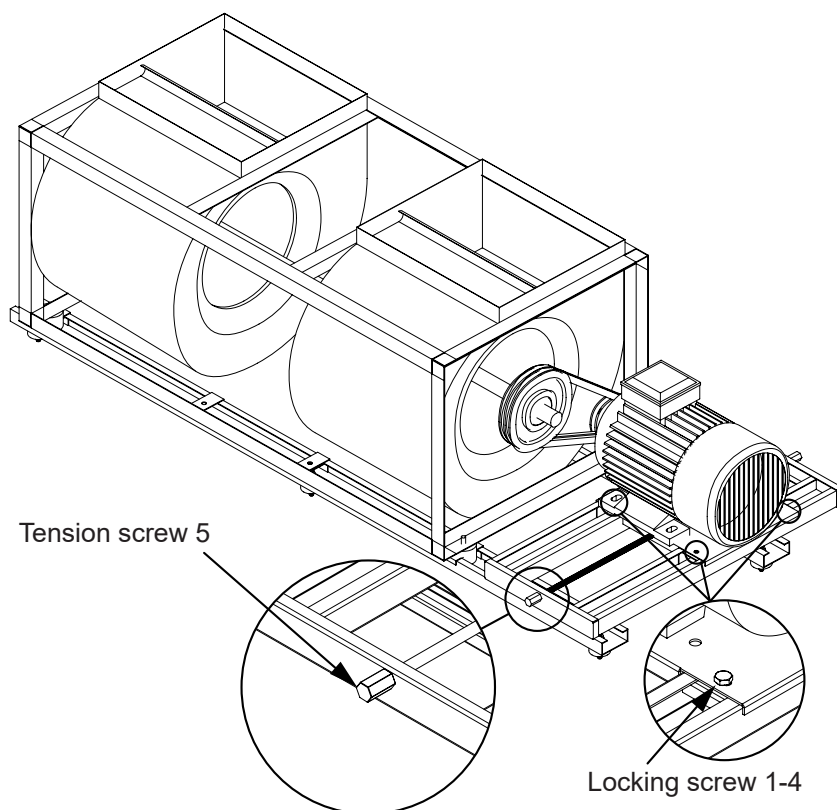


Fig. 8.10 Operating method for adjusting the tension of the straps

To find the proper tensioning of the belts, use the following formula:

$$L \text{ [mm]} / f \text{ [mm]} = 20$$

When starting the devices for the first time, check the tensioning of the V-belts after 2-4 working hours. If necessary, correct as described

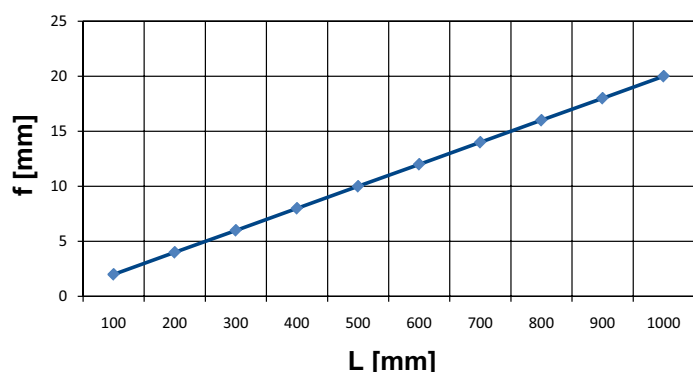


Fig. 8.11 Diagram of the tensioning force of the straps

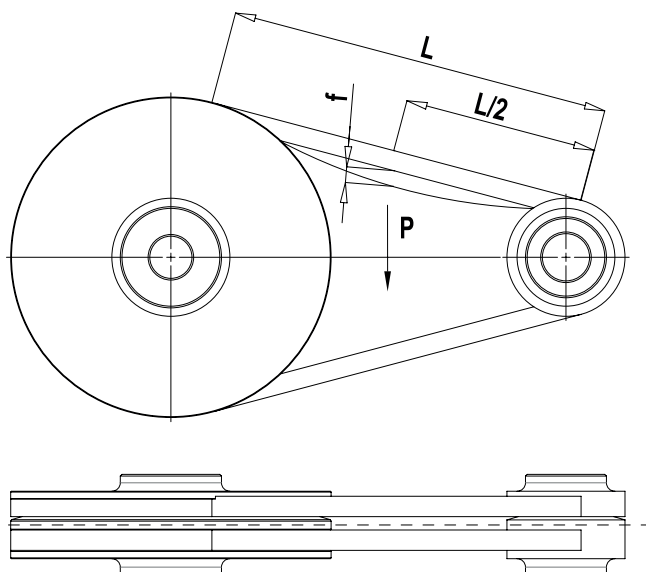


Fig. 8.12 Dimension symbols for the diagram of the belt tensioning force.



## 9 MAINTENANCE



### WARNING

Entrust all maintenance operations to professionally qualified personnel responsible in compliance with the national and local regulations in force in the country where the system is installed and with the contents of this booklet.



### WARNING

Before proceeding with maintenance operations, open the main switch by removing current and close the gas valve.

The user must not intervene on the controls of the appliances placed on the control panel during maintenance activities.

The maintenance technician must place a warning sign on the control panel of the system for the entire duration of the maintenance activities where the following sentence is reported: "System undergoing maintenance, IT IS FORBIDDEN to perform operations on the control panel of the appliances."



### WARNING

During maintenance operations, personnel must be equipped with safety devices individual protection according to current legislation.



### WARNING

Have the appliances perform an annual check by qualified personnel with adequate skills and in compliance with the national and local regulations in force on the subject and as indicated in this booklet.

In case of unusual behavior of the appliance, immediately disconnect it from the electricity and gas supply and call the assistance service.

If the appliance is equipped with an air filter, pay particular attention to its cleaning. The dirty filter can cause overheating, blocking and damage to the appliance.

Based on the cleanliness of the room where the appliance is located, it is necessary to determine the cleaning or filter replacement program.

Before the start of the winter season, carry out a complete overhaul of the appliance to avoid malfunctions during use.

During maintenance carry out the following operations

- check the general condition of the device;
- check the threaded connections of the gas system and the tightness of the gaskets of the device, replace them if necessary;
- check the condition of the electrodes and the combustion head, clean them if dirty;
- check the condition of the gas mixer, if necessary, clean it with a rag or brush;
- check the condition of the electrical system, conductors, terminals etc.
- check that the flue gas discharge and air intake ducts are not blocked;
- check the condition of the combustion chamber, the heat exchanger and the additional condensing exchanger (depending on the model);
- check the fan pulleys and the V-belt tension, if necessary, clean the pulleys and adjust the belt tension (paragraph 8.7 on page 97);
- check the condition of the air filters and replace them if necessary;
- Once the checks and maintenance have been completed, after having powered the device and opened the gas cock:
  - check the gas pressure upstream and downstream of the solenoid valve, adjust the maximum and minimum flow if necessary;
  - check the tightness of the gas system;
  - perform burner adjustment and combustion analysis.



### Important

Put the system back into operation once the maintenance operations have been completed.

## 9.1 FUEL CHANGE

### 9.1.1 Eolo BC/BL 15÷120 RT

To replace the gas nozzle, follow the procedure below.

- 1) Shut off the gas and electricity supply.
- 2) Unscrew the cap (A), fig. 9.1, from the nozzle holder fitting (C).
- 3) Unscrew the nozzle (B) located inside the fitting (C).
- 4) Choose the nozzle suitable for the type of gas used, as indicated in tables 8.6 and 8.7 on pages 97 and 99.
- 5) Screw the nozzle into the housing (C).
- 6) Screw the cap (A).
- 7) Start the burner and check the efficiency. If any anomalies occur, proceed with the adjustments following the procedures illustrated in paragraphs 8.3.1 and 8.3.2 on pages 82 and 83



#### WARNING

Seal the gas valve adjustment part after calibration.

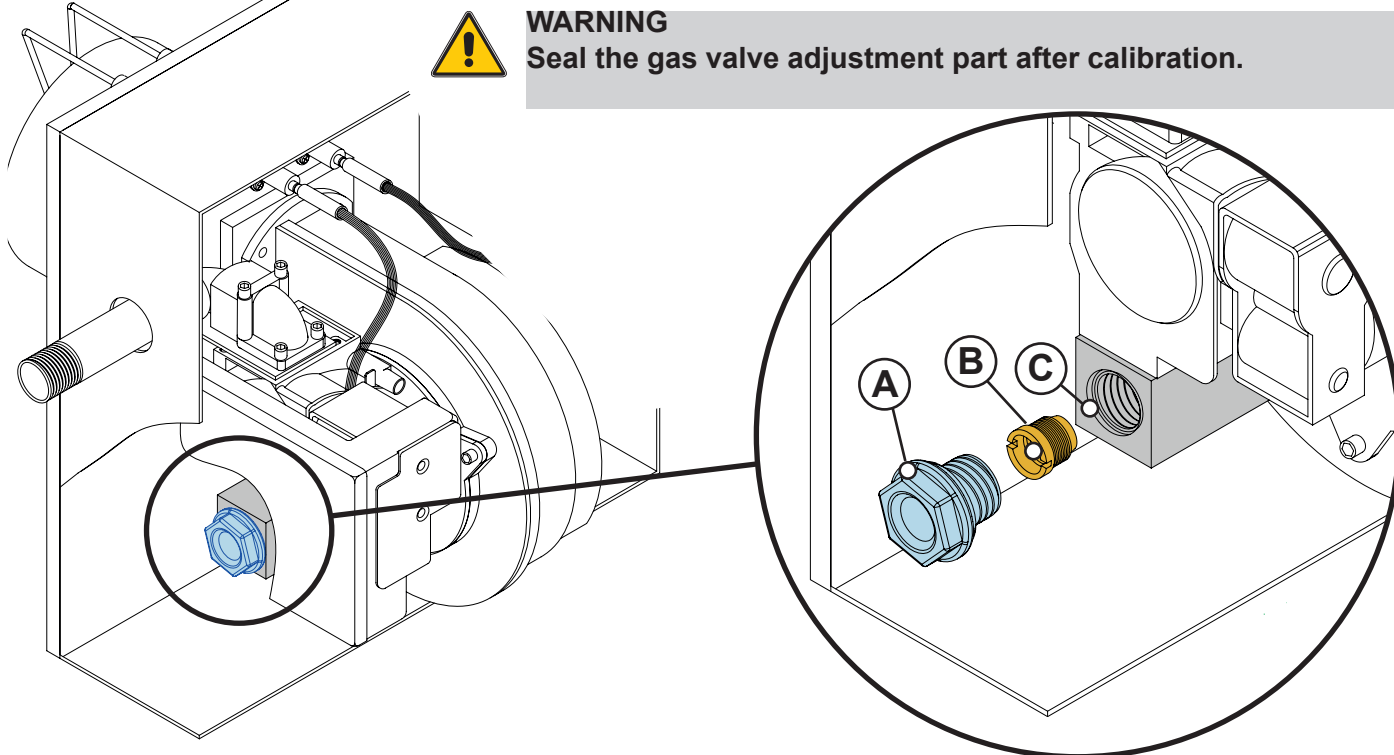


Fig.9.1 Nozzle change (Eolo 100, Eolo 120)

### 9.1.2 Eolo BC/BL 150÷300 RT

The Eolo models (from the Eolo BC / BL 150 RT model to the Eolo BC / BL 300 RT) are equipped with Premix burners without nozzles. The air-gas mixing is carried out in the Venturi type mixer with an integrated inlet air pressure switch. The adequate quantity of gas is aspirated proportionally by the passing air flow. To modify the type and quantity of the sucked gas, it is necessary to modify the PWM values electronically (see paragraphs 5.1.3 and 5.1.4, pages 56 and 57), by changing the quantity of air passing through the mixer.

By varying the speed of the burner fan, ie by acting electronically on the PWM signal, the quantity of air is reduced, and consequently the quantity of gas and the heat output of the appliance.

This operation takes place proportionally, therefore the PWM regulation levels for each type of gas correspond to the value of the burner heat output.

Changing the supply gas pressure does not cause a change in the rated output of the burner.

After changing the type of gas, adjust as described in paragraphs 8.3.4 and 8.3.5 on pages 85 and 86.



#### WARNING

Seal the gas valve adjustment part after calibration.

## 9.2 ANOMALIES AND REMEDIES

In case the device does not work or works in the way incorrect, it must be turned off. All elements must be repaired or replaced by specialized personnel. Spare parts must be original. The use of the device can be dangerous if these principles are not respected.

ANOMALY: the appliance does not switch on	
CAUSES	REMEDIES
1) Lack of power supply	1) Check the power supply
2) Motherboard fuses blown	2) Replace fuses
3) No communication between the internal control board and the command and external control panel	3) Verificare collegamenti elettrici e comunicazione, in caso di guasto sostituire o scheda interna o quadro di comando e controllo
4) There is no power	4) Verificare la posizione degli interruttori sui quadri comando e sul quadro generale

ANOMALY: the appliance does not turn on and after three ignition attempts it goes into lockout, on reset, after three more attempts it continues to lock out	
CAUSES	REMEDIES
1) Power supply reversed between phase and neutral	1) Connect correctly and respect the phase and neutral polarity
2) Lack of gas in the burner	2) Check the gas supply line
3) Wrong type of gas	3) Check that the type of gas complies with that indicated on the plate. Contact assistance or authorized and qualified personnel.
4) Wrong gas pressure	4) Check the pressure with the values shown on the plate. Seal the regulating organ of the gas valve after calibration.
5) The ignition electrode (s) are incorrectly positioned or not working	5) Position the electrode / s correctly, see diagram in this booklet or replace them with original spare parts
6) Poor grounding	6) Check the grounding
7) Ignitor broken	7) Check if the discharge occurs and / or replace it with an original spare part
8) Control unit faulty	8) Check the operation of the control unit and / or replace it with an original spare part
9) Gas valve does not activate	9.1) Check the gas supply on the valve and its operation replace with original spare parts if necessary
	9.2) Motherboard faulty replace with original spare parts
	9.3) Check operation of the gas valve coils. Replace with original parts if necessary
	9.4) Check the operation of the control unit, replace with spare parts originals if necessary
10) The valve opens but there is no gas at the valve outlet towards the burner premix fan	10) Gas valve filter dirty or clogged with installation residues, check fill filter and clean or replace filter with original spare parts
11) Presence of air in the gas supply channel	11) If necessary, bleed the air from the system
12) Dirty combustion head	12) Clean the combustion head and check operation
13) Gas nozzle blocked	13) Clean the gas nozzle and check operation
14) Wrong parameters of the burner	14) Check and set the gas parameters correctly as indicated in this booklet. The operation can be carried out by assistance or by authorized and qualified personnel.
15) Wrong parameters of the PWM burner in burner ignition	15) Check parameter Y2 and / or set it by increasing it gradually until correct ignition
CONTINUED ON NEXT PAGE	

**ANOMALY:** the appliance does not turn on and after three ignition attempts it goes into lockout, on reset, after three more attempts it continues to lock out

CAUSES	REMEDIES
16) The premix burner motor does not work and / or the premix burner internal fan board is faulty	16.1) Check that there is voltage in the premix fan of the kettle and check the electrical connection, connect the motor correctly or, in case of failure, replace it with an original spare part
	16.2) Control unit faulty, check the operation of the control unit and / or I would replace with original spare
	16.3) Motherboard faulty check the operation of the card mother and / or I would replace with original spare
17) Smoke exhaust blocked or too long	17) Check the maximum length and diameter of the smoke outlet as indicated in this booklet, and / or check that it is not blocked, then free the smoke outlet if necessary

**ANOMALY:** the appliance turns on but after a short time goes into lockout

CAUSES	REMEDIES
18) Dirty or clogged air filters	18) Check the air channel filters, faulty filter differential pressure switch or dirty, blocked, clean or replace with original spare part
19) Check the safety fuses on the motherboard	19) Replace the fuses
20) No communication between the internal control board and the command and external control panel	20) Check electrical connections and communication, in case of failure replace either the internal board or the command and control panel
21) Check the minimum gas pressure switch	21) Check the inlet gas supply

**ANOMALY:** the burner premix motor starts but the control equipment does not give signals to the combustion head and / or to the gas valve

CAUSES	REMEDIES
22) Motherboard faulty	22) Check operation of the motherboard and / or replace with original spare part
23) The flame control equipment is faulty.	23) Replace the equipment with an original spare

**ANOMALY:** the appliance is electrically powered but does not turn on

CAUSES	REMEDIES
24) No communication between the internal control board and the command and external control panel	24.1) Check power supply, electrical connections and communication, in case of failure replace either the internal board or the command and control panel
	24.2) Check the remote control panel power supply
	24.3) Check the control panel parameters
	24.4) Check the correct settings on the motherboard
25) Intervention of a security	25) Check the intervention of the safety devices and relative alarms in point 5.1 on page 47

**ANOMALY:** the fans do not start

CAUSES	REMEDIES
26) Check the fan safety fuses on the motherboard	26) Replace the fuses
27) Bi-thermostat faulty	27) Replace with original spare part
28) Air temperature probes faulty or not connected correctly	28) Check the correct connection of the probes and / or replace them with original spare part
29) Faulty fans	29) Replace with original spare part

CONTINUED ON NEXT PAGE

ANOMALY: the fans do not start	
CAUSES	REMEDIES
30) Ventilation not working	30.1) Bi-thermostat faulty, replace with original spare
	30.2) Check the fan safety fuses on the motherboard, replace the fuses with original spare parts
	30.3) Faulty fans Check fan operation and / or replace with original spare part
	30.4) Motherboard faulty check operation and / or replace with original spare part
31) Generator overtemperature	31.1) Faulty fans Check fan operation and / or replace with original spare part
	31.2) Wrong burner parameters, check and set the gas parameters correctly as indicated in this booklet. The operation can be carried out by assistance or by authorized and qualified personnel.
	31.3) Excessive gas pressure, check the pressure with the values shown on the plate. Seal the gas valve adjustment part after calibration.
	31.4) Dirty or clogged air filters, check air channel filters, differential pressure switch, faulty or dirty, blocked, clean or replace with original spare part
32) Broken ventilation belts	32) Replace with original spare part
33) Wrong belt tension	33) Check and set the tensioning of the belts as indicated in paragraph 9.7 on page 86

## 10 WARRANTY

### 10.1 OBJECT AND DURATION OF THE WARRANT

- 1) The Warranty is limited to defects in material or workmanship of the components supplied by SYSTEMA. In the event of defects in material or workmanship, SYSTEMA will repair or replace the defective parts free of charge, EXPRESSLY EXCLUDING ANY OTHER FORM OF WARRANTY OR INDEMNITY, BOTH LEGAL OR CONVENTIONAL.

The replaced parts will be promptly returned to SYSTEMA, ex its factory in Zdunska Wola - Poland, at the user's expense and expense.

In the event of an intervention under Warranty, the user will be responsible for the fixed right of call, in addition to the kilometer reimbursement, if the place of intervention is more than ten kilometers from the CA (Assistance Center) headquarters.

- 2) The validity of the Guarantee starts from the "Start-up", provided that it occurs within 6 (six) months from the date of purchase of the appliance by the purchaser. In any case, the Guarantee expires after 18 (eighteen) months from the SYSTEMA invoice date.
- 3) Any replacement of defective parts (or of the entire appliance), it will not extend the original term of expiry of the Guarantee. The Warranty on the replaced parts will cease with the expiration date of the Appliance Warranty.
- 4) The "warranty duration" will be 1 (one) years on each component of the appliance

### 10.2 WARRANTY EXCLUSIONS

- 1) The Guarantee does not operate in the case of:
  - a) defects not attributable to defects in material or workmanship, without limitation:
    - breakages occurred during transport;
    - non-compliance of the system with local laws and regulations in force;
    - failure to comply with the installation specifications indicated in the technical notes supplied with the Appliance and / or with the rules of good practice;
    - damage caused by accidents, fire, accidents in general or negligence not attributable to SYSTEMA;
  - b) tampering or failures due to interventions by unauthorized personnel;
  - c) defects caused by anomalies depending on the electrical or fuel supply network;
  - d) failures due to: poor maintenance, neglect or improper use, voltage variations in the power supply, humidity and dust in the premises, incorrect sizing and / or faulty installation;
  - e) corrosion or breakage caused by: stray currents, condensation, overheating caused by incorrect regulation of the gas pressures in the supply or to the burner, or by the use of combustible gas with caloric characteristics different from those indicated on the plate;
  - f) use of non-original spare parts or those not authorized by SYSTEMA;
  - g) normal wear and tear;
  - h) products not properly guarded or stored.

### 10.3 EFFECTIVENESS AND EFFECTIVENESS OF THE WARRANTY

- 1) In order to make the guarantee effective and effective, the user must:
  - a) ask your installer for the name of the CA for the "First start-up";
  - b) show the Certificate of Guarantee to the personnel in charge, complete it in its entirety and request the stamping and signature of the CA in the appropriate spaces.

### 10.4 RESPONSIBILITY

The customer releases the supplier from any liability for accidents or damage that may occur to machines or systems during operation. The supplier is liable to the buyer only within the limits of the aforementioned warranty obligations.



## 11 PROVISION IS DISPOSAL

### 11.1 PROVISION

If it is necessary to store the appliances for a long period of time, it is recommended to carry out the following operations:

turn the main switch to the "O" position and disconnect the appliances from the mains; close the gas supply valve and disconnect the appliances from the gas mains; seal the end of the pipe where the appliance was connected with a threaded plug;

in the event of a change of owner or a new tenant, hand over all the documentation regarding the Infra appliances to the new owner / tenant.



#### **WARNING**

**Have all the disconnection operations carried out by qualified personnel with adequate skills and in compliance with the national and local regulations in force on the subject and with what is stated in this booklet.**

### 11.2 DISPOSAL

The symbol shown in fig. 10.1 indicates that the product at the end of its useful life is a waste of electrical and electronic equipment (WEEE), which must be collected separately and not disposed of together with other mixed urban waste.

Illegal disposal of the product by the user involves the application of the administrative sanctions envisaged by current legislation.

Please note that, pursuant to art. 192 of Legislative Decree 152/2006, the abandonment and uncontrolled deposit of waste are prohibited. Anyone who violates this rule "is required to proceed with the removal, recovery or disposal of waste and the restoration of the state of the places jointly with the owner and with the holders of real or personal rights of use over the area, to whom such violation is attributable by way of willful misconduct or negligence, based on the investigations carried out, in contradiction with the interested parties, by the persons in charge of control." The separate collection of equipment for subsequent start-up for recycling, treatment and environmentally compatible disposal contributes to safeguarding the environment and protecting human health,



Fig. 11.1



#### **WARNING**

**Dismantling operations must be carried out by qualified personnel equipped with the adequate skills and in compliance with the regulations in force on the subject.**



#### **WARNING**

**During the dismantling operations, the personnel must be equipped with safety devices individual protection according to current legislation.**



#### **DANGER**

**All dismantling operations must be carried out with the appliance switched off, disconnected from the electricity and gas supply: before any dismantling operation, disconnect the electricity supply by opening the main switch and disconnect the system from the electricity mains, close the valve. general gas shut-off and gas shut-off valves to the appliances. If the piping is not dismantled, seal the terminals where the appliances were connected with threaded caps.**

# MINUTES OF MASS IN FUNCTION

Date: \_\_\_\_\_

## 1. SYSTEM IDENTIFICATION DATA

Business name	
VAT number	
Address	
Common	
province	
Responsible name	
Total system heat input [kW]	

## 2. DATA OF THE COMPANY THAT OPERATES THE PLANT

Business name	
VAT number	
Address	
Common	
province	
Phone	
E-mail	

## 3. APPLIANCE DATA

Template	
Min/Max heat output [kW]	
Fuel	
Type exhaust and intake ducts	<input type="checkbox"/> B <sub>23</sub> <input type="checkbox"/> C <sub>13</sub> <input type="checkbox"/> C <sub>33</sub> <input type="checkbox"/> C <sub>53</sub>
Indoor / outdoor installation	<input type="checkbox"/> Internal <input type="checkbox"/> External



## 4. PRELIMINARY CHECKS

Operation description	Outcome
Check if the instruction booklet for use and maintenance of the appliance is present	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check whether the instruction manual of the command and control panel is present.	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check the tightness of the gas system (use a soapy solution or equivalent product, do not use open flames)	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check that the pressure and the type of gas comply with the data indicated on the appliance plate	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check the correctness of the electrical connection	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check the correct electrical connection (phases, neutral)	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check the value of the power supply voltage	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check that the safety devices are not tampered with and / or short-circuited	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
Check that the temperature regulation system is working	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not verified
<b>Can the appliance be put into operation?</b>	<input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b>
Comments regarding commissioning:	

## 5. PUT IN ACTION

Operation description	Done	Measured / set value
Bleed the gas supply line	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Restore the gas supply pipe after venting and check that there are no leaks (use a soapy solution or equivalent product, do not use open flames)	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Power the appliance electrically (close the main switch after setting the room thermostat to the maximum temperature)	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Check the direction of rotation of the fan (In the case of appliances with centrifugal fans) If the motor runs in the opposite direction, disconnect the power supply and change the order of the phases and check the direction of rotation of the fan again	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Measure the electrical absorption of the motor / s	<input type="checkbox"/> YES <input type="checkbox"/> NO	_____ [A]
Is the electrical absorption of the motor (s) within the plate data?	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Check the tensioning of the belts in the case of fans with belt transmission	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
After the pre-wash time, does the ignition spark occur?	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
Check the intervention of the Ts / Tso thermostat protection (*). (Disconnect the power supply and temporarily remove fuses F1 and F2, then start the appliance to check. The fuses must be replaced once the intervention of the Ts / Tso thermostat has been verified)	<input type="checkbox"/> YES <input type="checkbox"/> NO	---
In the case of devices supplied without fans, check the settings of the Ts / Tso thermostat for the external fan and the temperature increase on the exchanger.  Intervention values set on Ts / Tso thermostat Overtemperature = approx. 100 ° C Fan on = approx. 60 ° C Fan off = 40 ° C	<input type="checkbox"/> YES <input type="checkbox"/> NO	Overtemperature _____ [°C]  Ignition V. _____ [°C]  Turn off V. _____ [°C]
Does the ignition of the flame take place? (After the third failed ignition attempt, the appliance locks up. After 10 seconds, the appliance can be unlocked by resetting the burner control box).	<input type="checkbox"/> YES <input type="checkbox"/> NO	---

(\*) The intervention of the thermostat Ts causes the appliance to stop, to restart it, it is necessary to act on the reset button (Sr). In the case of a Tso thermostat equipped with manual reset, before pressing the reset button (Sr), the thermostat must be reset to restore operation of the appliance.

## 6. CHECK OF COMBUSTION PARAMETERS

Wait for the appliance to reach full capacity (about 15 minutes) to carry out a combustion analysis and an efficiency measurement. The steady state is considered to have been reached when the temperature of the combustion products has stabilized, ie when it does not vary more than  $\pm 2^\circ \text{C}$ .

Measured quantity	U.M.	Measured value at the maximum heat input	Measured value at the minimum heat input
Gas pressure at the burner	[mbar]		
Fuel flow	[m³/h or kg/h]		
Thermal flow measured	[kW]		
Smoke temperature	[°C]		
Combustion air temperature	[°C]		
O2	[%]		
CO2	[%]		
CO	[ppm]		
CO (O2 = 3%)	[ppm]		
Lambda			
NOX (O2 = 0%)	[ppm]		
NOX	[mg/kWh]		
Combustion efficiency	[%]		
Result of verification of the combustion parameters			<input type="checkbox"/> Positive <input type="checkbox"/> Negative

Final
Final remarks

<b>The appliance can work?</b> <span style="float: right;"> <input type="checkbox"/> YES    <input type="checkbox"/> NO         </span>
---

The technician also declines all responsibility for accidents to people, animals or things deriving from tampering of the system or appliance by third parties, or by lack of subsequent maintenance. In the presence of deficiencies found and not eliminated, the plant manager undertakes, within a short time, to resolve them by informing the operator in charge.

Maintenance is recommended by \_\_\_\_\_

Arrival / departure time at the plant \_\_\_\_\_ / \_\_\_\_\_

Technician who carried out the check: Name e Surname \_\_\_\_\_

Legible signature of technical \_\_\_\_\_

Legible signature, for acknowledgment, of the plant manager \_\_\_\_\_



In order to improve the quality of its products, Systema reserves the right to modify their characteristics without notice.

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