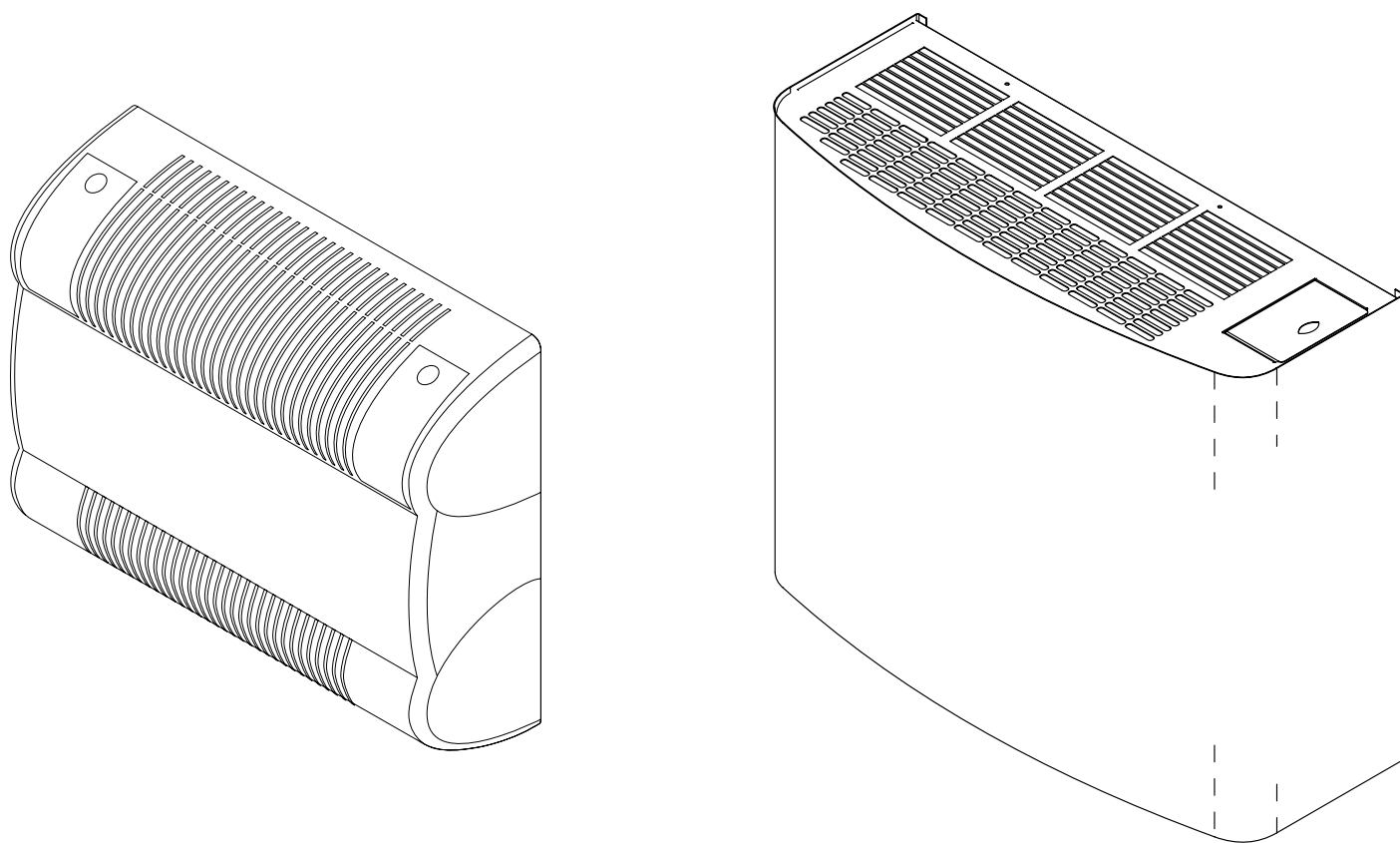


KING

AIRTIGHT GAS CONVECTORS

Pilot flame thermocouple series, natural balanced mod. KING 21
Ventilated/forced circulation series mod. KING 30 FE, KING 50 FE,
KING 70 FE



SYSTEMA

Instruction manual

“Installation, use and maintenance”

ENGLISH



14GBEN08062020



Rev. 14GBEN08062020

Symbols used in the manual



N.B.

It indicates information useful for consulting the manual and for efficient operation of the equipment.



IMPORTANT

It indicates important information and practical suggestions.



DANGER

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



WARNING

In this manual, the word **WARNING** combined with the symbol shown to the side indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



ATTENTION

In this manual, the word **ATTENTION** combined with the symbol shown to the side indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



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

Before installation, check that the local conditions of distribution, the nature of the gas and of the pressure are compatible with the setting of the appliance.

In order to improve the product, Systema reserves the right to modify its contents as required and without warning.



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1 GENERAL RULES



These devices are designed and built according to EU Regulation 2016/426 (GAR).

- Read this manual before using this appliance.
- It is necessary to follow the instructions in this manual, particularly with regard to safety regulations.
- Systema declines all responsibility for direct or indirect damage to persons, animals or objects resulting from failure to follow the instructions provided in this manual.



- This instruction manual is an integral and essential part of the appliance and must be stored carefully near the system for further consultation.
- Carefully read the instructions and warnings contained in this manual before installation and use as they provide important information regarding safety, installation, use and maintenance.
- In case of loss of this manual, contact the manufacturer immediately.
- In the event of a change of owner or a new renter, submit all the documentation relating to the heating system to the new owner/renter.
- KING appliances are conceived for the heating of small rooms, exploiting the principle of forced convection, the device can be used to heat delimited areas or complete rooms.
- When delivering the product, check the integrity and completeness of the product and of its components. If this product and/or its elements demonstrate discrepancies, contact the agency that sold the appliance.
- At the end of the work, the installer will need to release to the owner the necessary documentation to certify that the installation.
- was performed in a workmanlike manner and complies with the regulations in force in the country and in the place where the product is installed.
- Temperatures that are too high in the heated space are harmful to health and are a waste of energy. Appropriate use of the appliance is recommended.
- The manufacturer is responsible for the conformity of its product with the regulations in force when the product is marketed.
- Compliance with current legislation and regulations for the design of the systems, installation, use and maintenance are the sole responsibility for the relative competences of the designer, the installer and of the user.
- It is forbidden to distribute this product in the country where the appliance is installed without notifying the manufacturer in advance. Specific documentation is required based on the country of destination of the product.

WARNING



- **To ensure correct operation of the appliance it is essential to strictly follow the instructions given by the manufacturer, to use original accessories and spare parts and to arrange maintenance to be performed by qualified personnel (at least once a year).**
- **Do not install the system at premises intended for craft or industrial activities where the processing items and any materials in storage pose the risk of formation of gases, vapours or dusts that could generate fires or explosions.**
- The rooms where the appliances are installed must have a permanent aeration surface in compliance with the regulations in force.
- Entrust the installation, the construction of the gas piping, the electrical connection, initial ignition and maintenance to professionally qualified personnel responsible in compliance with the current national and local legislation in force in the country where the system is installed and as reported in this manual.
- Create the gas supply plant system and the 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 created without causing obstacles or risks to persons.
- Before starting the appliances, check that the data of the electric power supply and gas supply networks are compatible with the indications provided in this manual and on the plates of the appliances. To ensure correct operation of the appliance it is essential to strictly follow the instructions provided by the manufacturer and to arrange maintenance to be performed by qualified personnel (at least once a year).
- This appliance must only be used for the use for which it was expressly intended. Any different use has to be considered as improper and therefore dangerous.
- The manufacturer declines all civil and criminal liability in the event of any damage to persons or property resulting from incorrect installation, adjustment and maintenance, modifications and tampering, the use of non-original spare parts and accessories, improper use and/or incorrect device, failure to comply with the instructions provided by the manufacturer and the intervention of unqualified personnel.

- If the appliance is not used for lengthy periods of time, the following are recommended:
 - set the main switch of the appliance and the general one of the system to "off"
 - close the main gas shut-off valve.
- After lengthy periods of time when the appliance has not been used, it is advisable to contact the Technical Assistance Service or technical personnel qualified for recommissioning.
- In case of stopping and/or malfunctioning of the system, deactivate it. 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 could compromise safety of the appliance. The user has free access only to the parts of the appliance whose operation do not require the use of tools: the user is therefore not authorized to disassemble the casing of the appliance and carry out operations in the inside. The user can only use the appliance with the casing assembled and fixed.
- Do not leave the packaging elements (nylon, polystyrene foam, wood, staples, etc.) within the reach of children and/or discarded as they are potential sources of danger and contamination. Collect and store them in a place designed for this purpose.

Remember that the use of products that use electricity and gas entails the observance of certain fundamental rules such as:

- It is forbidden for unassisted disabled persons and children to use the product.
- If the installation room of the appliance is frequented by vulnerable people and / or children, provide special protections to prevent contact with hot surfaces. However, these protections must not obstruct the passage of hot air and the thermal radiation of the frontal section.
- It is forbidden to operate devices or electrical appliances such as: switches, electrical appliances, etc. where there is a smell of gas. In similar cases, proceed as follows:
 - open doors and windows to ventilate the premises;
 - close the general gas shut-off valve;
 - promptly intervene the professionally qualified personnel or the technical assistance service.
- It is forbidden to touch the appliance barefoot or with wet or damp parts of the body.
- All cleaning and maintenance operations are forbidden, with the appliance connected to the electric power supply. To carry out these operations, first turn the system main switch to "off" and close the fuel gas supply.
- It is strictly forbidden to tamper with or modify the safety or regulation systems without the authorisation and specific indications of the manufacturer of the appliance.
- It is forbidden to pull, detach or twist the electrical cables exiting the appliance, even if it is disconnected from the power supply.
- It is forbidden to open the appliance during its operation, first set the main system switch to "off".
- It is forbidden to place objects on top of the appliance or to insert them through the exhaust pipes for combustion and intake of combustion air products.
- It is forbidden to touch the exhaust pipe of the combustion products during operation of the product; contact during operation can result in burns because the pipe can reach high temperatures. Surfaces can remain at high temperatures even after the appliance has been switched off. Switch off the system in the event of activities near the equipment and monitor the control panel during the entire period of operation to prevent it from being switched on.
- Outdoor installation is prohibited.
- It is forbidden to operate on the controls of the equipment located on the control panel during maintenance activities. The maintenance technician must place a warning sign on the control panel of the system for the duration of the maintenance activities where the following phase is specified: **"System under maintenance, IT IS FORBIDDEN to carry out operations on the control panel of the equipment."**
- It is forbidden to use the appliances as a support base and/or as a pedestrian surface.
- It is forbidden to cover the appliance with curtains, draperies, etc., In case of removable curtains, move them sideways at a distance of 30 centimeters before turning on the appliance. In case of fixed curtains, these must be 30 centimeters away from the sides and upper edge of the appliance.
- Do not obstruct with rugs, hanging laundry, etc. the external air intake and flue gas exhaust terminal of the appliance.
- Do not lean the appliance against walls with combustible materials.
- It is absolutely forbidden to place clothes, paper or various objects on the top of the appliance that may obstruct the passage of hot air coming out of the slots.
- It is forbidden to place containers with water on top of the appliance.
- It is forbidden to use the appliance to place wet clothes to dry.

- King appliances must not be powered by fuel containing carbon monoxide or other toxic components.
- It is absolutely forbidden to fill the humidifier cup with water (see pic. 3.7 and 3.8 pages 20-21) when it is in its position inside the appliance. Remove the glass before filling it and be careful not to drop the water when putting it back into the appliance. Electrocutation alert, disconnect the power supply before carrying out the operation and fill the glass only up to 3-4 cm from the edge.

**ATTENTION**

Never leave clothes, paper or other objects that might obstruct the passage of hot air from the slots on top of the radiator.

Delicate surfaces such as curtains, furniture, and wooden or plastic chairs must be kept at a minimum distance of 30 cm from the device.

Provide extra protection against the risk of burning by contact of children, the elderly or disabled with the hot surfaces of the shell wherever necessary. Such additional protection must not obstruct the passage of hot air and the irradiation of heat from the front panel.

1.1 TERMINOLOGY USED IN THE MANUAL

Air-tight gas radiators

An air heating product that transfers the heat from a generator directly to the air and incorporates or distributes that heat in an air heating system.

GCV (unit of measurement MJ/m³)

Higher calorific value, the total quantity of heat emitted from a unit of dried fuel mass to intrinsic humidity, when it is subjected to complete combustion in the presence of oxygen and the combustion products are returned to room temperature; this quantity comprises the condensation heat of the water vapour formed by combustion of the hydrogen contained in the fuel.

NCV (unit of measurement MJ/m³)

Lower calorific value, the total amount of heat emitted by a unit of fuel mass containing a suitable level of moisture, when it is subjected to complete combustion in the presence of oxygen and when the combustion products have not returned to ambient temperature.

Heat output (unit of measurement kW)

It is the product of the lower calorific value (NCV) of the fuel used and of the burnt fuel flow rate.

Heating power (unit of measure kW)

It corresponds to the thermal capacity reduced from the heating output lost at the chimney.

Professionally qualified personnel

An individual with training, instruction and/or technical experience relevant to the subject which allows them to perceive the risks and to avoid the dangers that arise during use of a product, in possession of the technical-professional requirements, if imposed by the current legislation.

Vulnerable person

People with reduced physical, sensory or mental abilities (e.g. partially disabled, adults with reduced physical and mental abilities), or without experience and knowledge (e.g. older children).

Children

Young people including very young children (ages 0 to 36 months); young children (older than 36 months, but younger than 8 years); older children (aged 8 to 14).

Risk

Combination of the probability of the occurrence of damage and its severity.

Danger

Potential source of damage.

Damage

Physical injury, or damage to the health of persons or the deterioration of property or of the environment.

Electrocution

Electric discharge to which the human body is subjected by an operator who comes into contact with a part under electrical voltage.

User

An individual or organisation that uses the devices.

2 PACKAGING

2.1 PACKING LIST

- The appliance, complete with all its parts, is delivered packed in a cardboard box where you can find the screw kit for a proper installation on the wall.
- In case of supply of several units, they are overlapped in 4 appliances.
- The instruction manual is placed inside the packaging.
- The air / flue gas terminals and the mask are delivered packed in a carton.



ATTENTION

Perform the unpacking operation with the aid of appropriate equipment and/or protections according to current legislation, and use appropriate equipments.

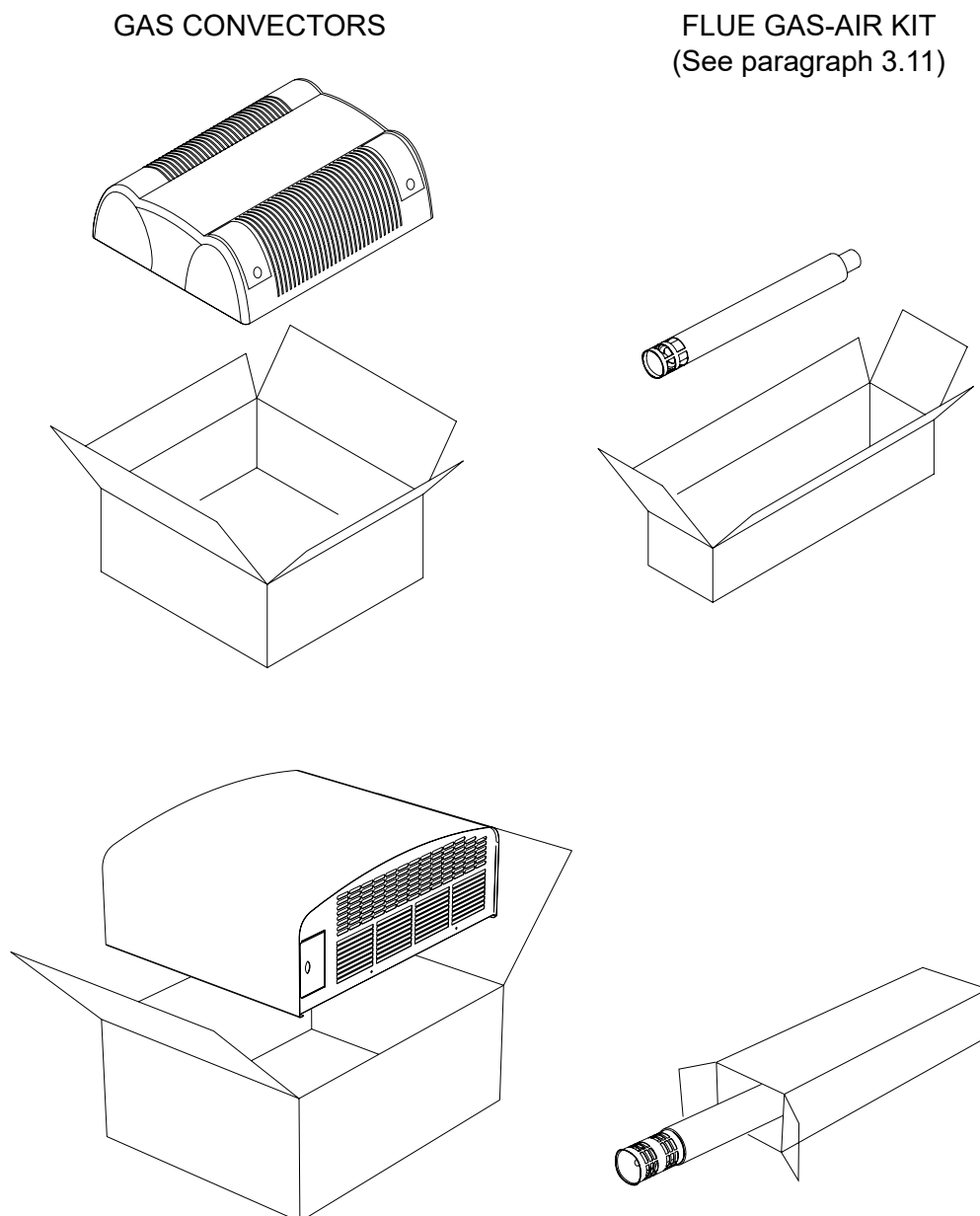


Fig. 2.1 Package contents

2.2 STORAGE

Upon the arrival at the customer or distributor site, the appliance must be stored away from atmospheric agents, in a dry place, specifically dedicated for this purpose (ex. warehouse, shed).

The handling of the packaging must be carried out safely and with care, the manufacturer declines all responsibility for damage to persons, animals or things, caused during the handling of the packaging.

The warranty on the products is void if they are stored in a place unsuitable for this purpose, or if it does not comply with the instructions described above, in order to avoid that the elements of the product can be damaged or cause malfunctions or problems once installed.



Important

It is forbidden to stack the packages supplied by the manufacturer each other on the top.



ATTENTION

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

A single operator does not have to manually move loads greater than 25 kg, it is advisable to carry out manual handling by two workers. In case of lifting of loads of less than 25 kg by a single operator, it is advisable to bend the knees and apply strength on the legs: during transport, keep the load close to the body while keeping the spine erect.

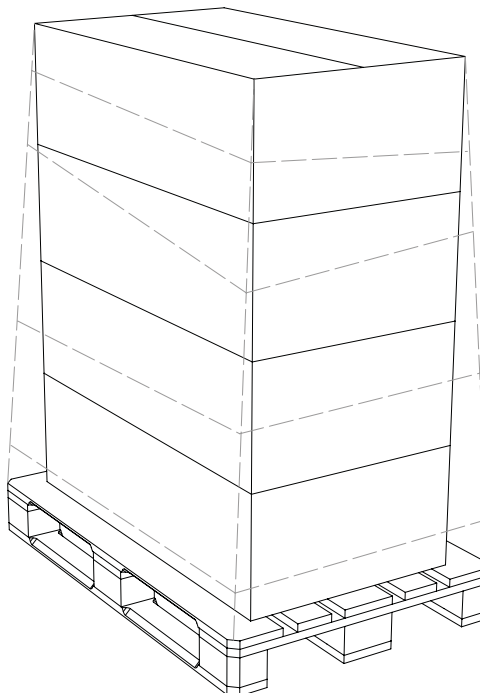


Fig. 2.2

3 GENERAL TECHNICAL CHARACTERISTICS

3.1 IDENTIFICATION PLATE AND INFORMATION LABELS

Inside the product is applied the product identification label showing all the identification data that distinguish the equipment.

These indications include the unique serial number for each product. With this number the manufacturer can precisely identify the model and all the technical data for the product in case of requests for assistance. A warning label is located on the outside. All labels must be kept intact on the appliance and must be replaced if they become illegible.

Useful life, according to a proper use and maintenance of the product recommended by the manufacturer: 20 years.

i **Important**
the serial number of the product is essential for adequate and fast service.

		SYSTEMA S.p.A. Via S. Martino 17/23 Santa Giustina in Colle (PD) - ITALY		
Serial number	XXXXXXXX	Year	XX/XXXX	CE XXXX
Model	XXXXXXXXXXXX	Destination	XXXXXXXXXXXX	
PIN Code	XXXXXXXXXX	Category	XXXXXX	
Heat output (Hi)	XX XXX	Type	XXX,XXX,XXX,XXX	
Heating capacity (Hi)	XX XXX		XXX	XXX
		Types of gas	XXX	XXX
Supply pressure	XXX	XXX	XXX	XXX
Max burner pressure	XXX	XXX	XXX	XXX
Nozzle diameter	XXX	XXX	XXX	XXX
Max nominal consumption	XXX	XXX	XXX	XXX
	XXX	XXX	XXX	XXX
Electrical Power Supply	X/XX XXX/XX		Degree of protection	
NOx Class	Electrical Power	X XXX		
	Regulated for XXXXXXXXXXXXX			

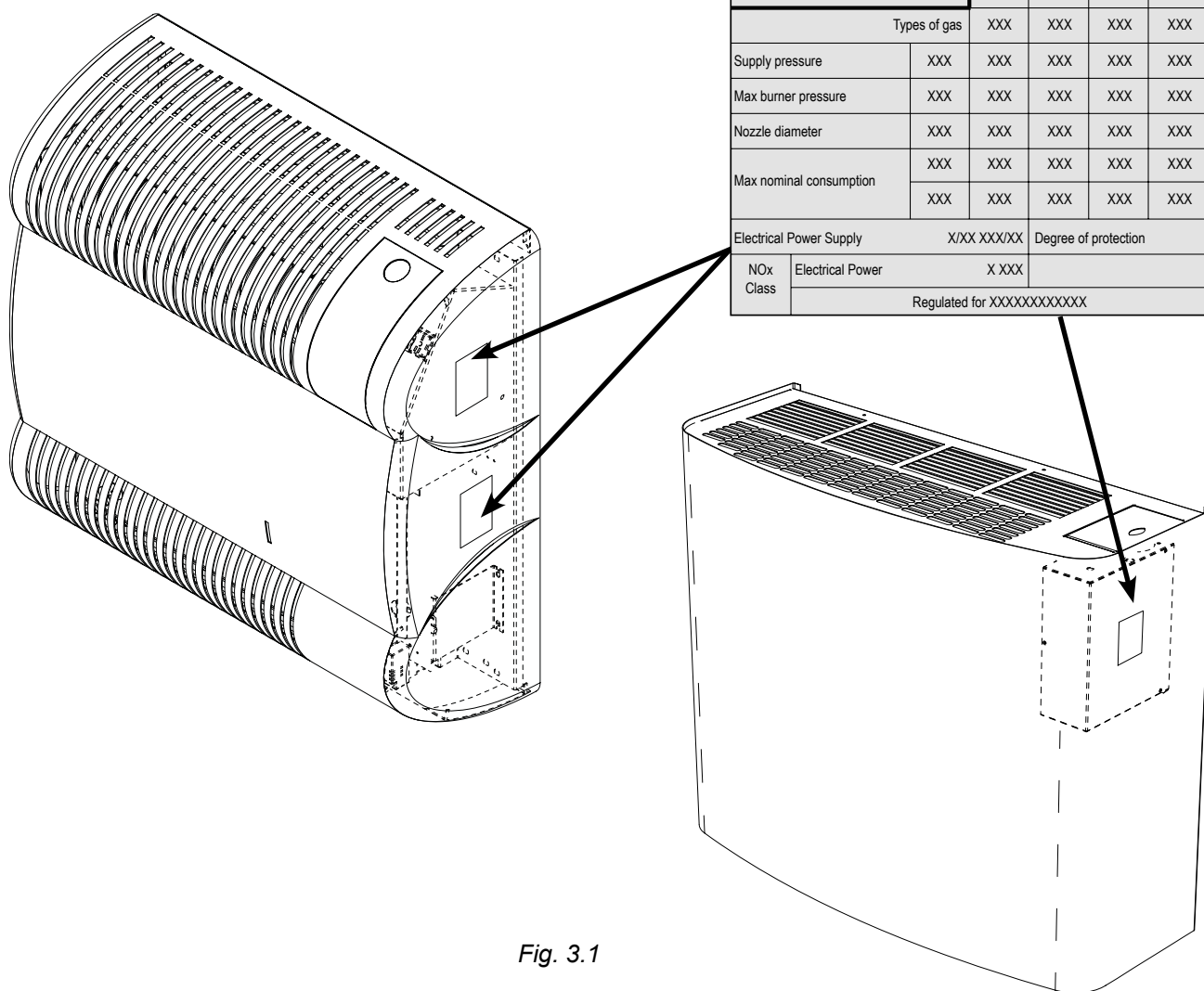


Fig. 3.1

i **Important**
The position of the product identification data-plate may change depending on the model (fig.3.1)

3.2 INFORMATION LABELS

Sull'imballo del generatore sono applicate alcune etichette di informazioni (fig. 3.2). All'interno dell'imballaggio, assieme al manuale di istruzioni, sono presenti le etichette da utilizzare per il cambio di combustibile (fig. 3.3).

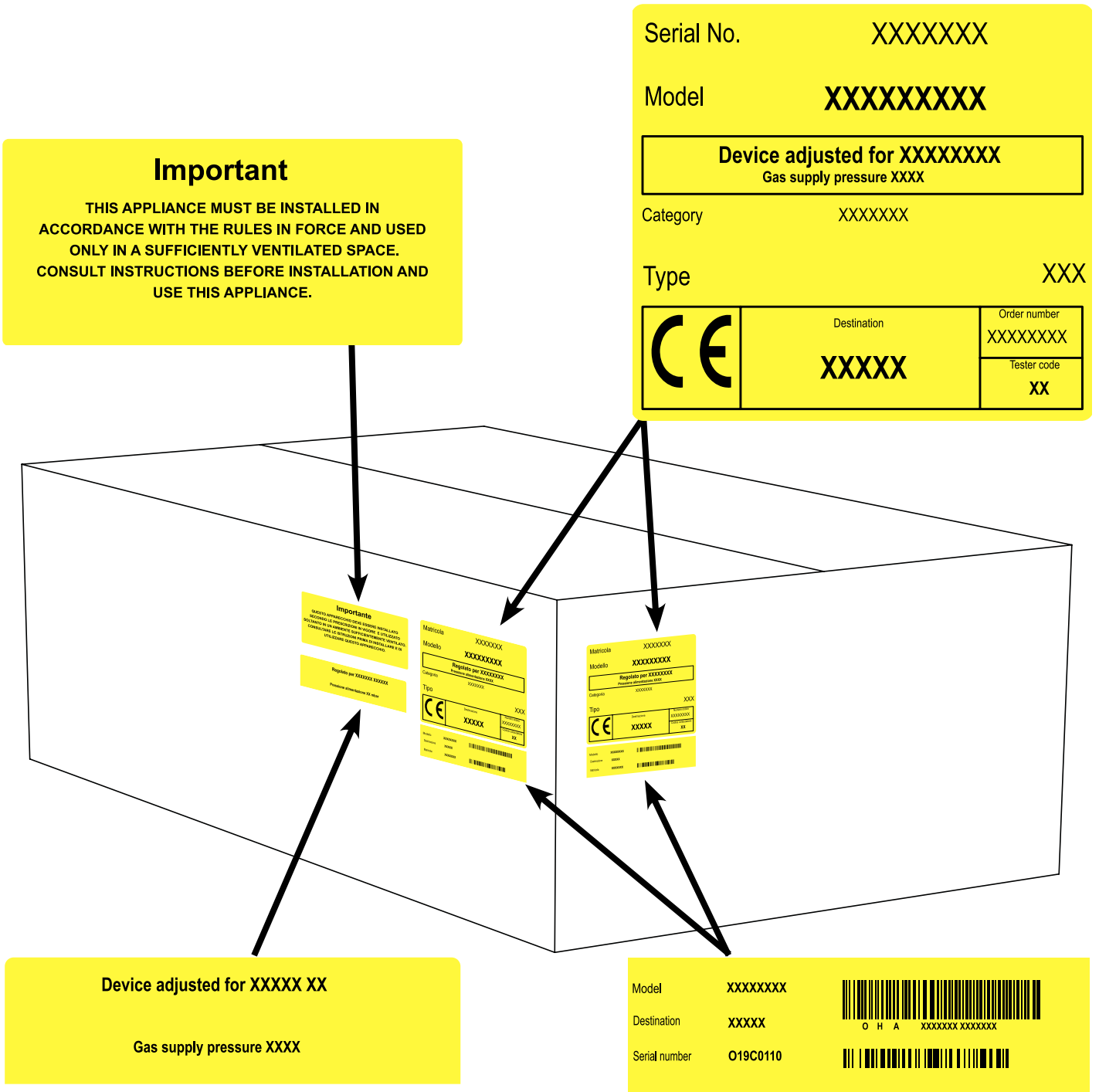


Fig. 3.2



Fig. 3.3

3.2 DEVICE CLASSIFICATION

For the classification we refer to the European standards EN 613: 2000 + A1: 2003 (balanced flow) and EN 1266: 2002 + A1: 2005 (forced flow).

Device type: C₁₁ (King 21), C₁₃ (King 30 FE e King 50 FE) and C₁₂ (King 70 FE) depending on the flue gas suction and expulsion system used. Device output class: 1

3.3 DESCRIPTION AND OPERATIONAL CHARACTERISTICS

The airtight gas convector radiator is composed of a combustion chamber for the combustion of a gaseous component (methane or LPG) (**entrust maintenance operations to a professional and qualified team in compliance with the current national and local legislation in force in the country where the appliance is installed, as reported in this manual**), in airtight cast iron divided into two half-shells that can be opened for cleaning and the inspection of the burner. The working temperature of the external surface of the combustion chamber as fanned by the natural convection movement of the surrounding air or the forced circulation of the fans is usually reached in a few minutes.

The functioning of the appliance is automatic. The device functions automatically, and is equipped with the appropriate systems for safety, control, mixing, combustion, starting, the suction of combustion air and flue gas expulsion.

The combustion air suction and flue gas expulsion systems must be mandatorily connected directly to the building's exterior (C-type devices) and therefore there is no contact between the combustion chamber and the building's interior. This guarantees the maximum safety and permits the installation of the device indoors in complete respect of the standards in force.

3.4 MAIN CONTROL AND SAFETY COMPONENTS

- a. Electric control unit for the Electronic series models: this can be of two types depending on the convector model involved (forced or naturally balanced circulation). After receiving the electric signal from the room thermostat, the control unit runs a normal check on the pressure-switch when forced convectors are being controlled (if this check is not positive, the control unit does not grant triggering). The control unit then gives the signal for the performance of the pre-starting lubrication of the combustion chamber (>4 lubrications) and then the signal for spark ignition and starting by opening the gas solenoid valve. If no flame is detected (by the ionization probe) within the established safety time, the device goes into lock-out. In order to reset after lock-out, switch off the bipolar switch with the orange l.e.d. and then switch it back on again.
- b. Pilot gas valve: there is only one type of pilot gas valve for all pilot flame convector models - a multifunctional valve with single control and combined manual all-or-nothing thermostat control equipped with thermoelectric flame detection device with reset inhibition, maximum flowrate pre-selection device or pressure regulator, minimum flowrate pre-selection screw, all-or-nothing modulation thermostat, pilot flame output with gas flowrate pre-selection screw, inlet filter and pilot filter, inlet and outlet pressure taps - lateral gas outlets or gas outlets from below with RP 3/8 ISO 7 threads. To start, press the dial and switch on the pilot flame by keeping the dial pressed down for a few seconds. Then release the dial and check to make sure that the pilot flame remains on. If the pilot flame has gone out in the meantime, the reset inhibition device will prevent the re-starting of the convector until the established pilot flame detection device safety time has elapsed.
- c. Gas solenoid valve: for all electronic series and forced ventilation convectors, multifunctional and multigas with a double safety solenoid valve (connected in series) in Class A and a built-in rectifier bridge. The aluminum body holds the inlet gas connections - threaded G 1/2" outlet with respective pressure taps. Equipped with pressure regulator to be adjusted only by qualified technicians, the only maintenance operation possible on the valve.
- d. Air suction unit: this serves to suck the air from the outside and inject it into the combustion chamber with the consequent expulsion of the flue gases outwards through the appropriate flue gas duct.
- e. Adjustment thermostat: this is a sensor-type thermostat that permits the temperature to be adjusted as required by the user for a comfortable room temperature, and also permits the control of the starting and switching off of the device from the control unit.
- f. Daily or weekly programmer (only on request): this serves to program the device's daily and weekly operation cycles and is positioned on the control panel for access by the user for adjustment purposes.

PILOT GAS VALVE TECHNICAL DATA: KING 21

Gas connections.....	RP 3/8 ISO 7
Max. inlet pressure	50 mbar
Pressure setting range	3 ÷ 18 mbar
Room temperature.....	0° ÷ 80°C
Pressure regulator.....	CLASS C
Pilot flame detection device.....	Sit series 200 or 290 thermocouple
Starting time	< 10 s
Switch off time	< 60 s

SOLENOID GAS VALVE TECHNICAL DATA T 840 Sigma: KING 30 FE; KING 50 FE; KING 70 FE

Gas connections.....	RP 1/2 F ISO 7
Power supply voltage	230 VAC 50/60 Hz
Electrical protection rating	IP44
Closing time.....	≤ 1 s
Work temperature.....	0°C ÷ +60°C (-20°C ÷ +60°C optional)
Humidity.....	90% max - 40% non condensing
Max. inlet pressure	60 mbar

CONTROL UNIT TECHNICAL CHARACTERISTICS SIT 579-DBC: KING 30 FE; KING 50 FE; KING 70 FE

Power supply voltage	230 Vac 50/60Hz (-15% + 10%)
Work temperature.....	-20 ÷ 60°C
Pre-starting lubrication time.....	1...240 s
Starting safety time.....	max. 3...120 s
Switch-off safety time	< 1 s

SUCTION UNIT MOTOR RATING DATA PLATE: KING 30 FE; KING 50 FE; KING 70 FE

Electrical power supply	230 VAC 50 Hz
Insulation	CLASS H
Motor pack.....	of 30 mm
Power	20 WATT

ELECTRONIC THERMOSTAT: KING 30 FE; KING 50 FE; KING 70 FE

Power supply voltage	230 VAC -15% +10% 50Hz
Work range	6°C ÷ 40°C
Temperature differential.....	0,5°C
Internal probe type.....	NTC 4,7kΩ @ 14°C
Relative humidity	20% ÷ 80% RH (non condensing)

PRESSURE SWITCH SPECIFICATIONS KING 70 FE COD. 00CEPR1105

Mounting position	Vertical
Max. work pressure	5000 Pa
Reset point (opening)	60 Pa (+ 12 Pa)
Pneumatic connection	Ø 6,2 mm
Work temperature.....	-30°C ÷ +85°C

DATA PLATE TANGENTIAL FAN MOTOR - single-phase asynchronous

King model.....	KING 30 FE	KING 50 FE	KING 70 FE
Type.....	TAS18B	TAS36B.....	03B-3050/1Q
Power supply voltage	230V~50/60 Hz	230V~50/60 Hz.....	230 V~50Hz
Electrical power	28 W.....	45 W	35/110 W
Electrical absorption	-	-	0,55 A
Capacitor	-	-	2,5 µF 470V
Speed	1500 RPM	1380 RPM.....	1100 RPM
Insulation type	H.....	H	B

3.5 TECHNICAL DATA

			Balanced flow pilot flame series models	Forced flow electronic series models		
Models			NATURAL CONVECTION	FORCED FLOW AND VENTILATED		
			KING 21	KING 30 FE	KING 50 FE	KING 70 FE
Category			II _{2H3B/P} II _{2H3P}			
Rated heat flow	kW		2	3	4,9	7,2
Working heat output	kW		1,75	2,73	4,37	6,62
Combustion efficiency*	%		87,3	91,0	89,1	92,0
Efficiency class			1	1	1	1
Supply pressure	Nat. gas (G 20)	mbar	20			
	LPG-Butane (G 30)	mbar	30			
	LPG-Propane (G 31)	mbar	30			
Nozzle pressure (valve regulator excluded for LPG)	Nat. gas (G 20)	mbar	12,0	13,0	9,0	14,0
	LPG-Butane (G 30)	mbar	--	--	--	--
	LPG-Propane (G 31)	mbar	--	--	--	--
Burner nozzle diameter	Nat. gas (G 20)	mm	1,25	1,50	2,10	2,20
	LPG-Butane (G 30)	mm	0,70	0,85	1,20	1,30
	LPG-Propane (G 31)	mm	0,75	0,90	1,25	1,35
Max fuel consumption (15°C-1013 mbar)	Nat. gas (G 20)	m ³ /h	0,212	0,317	0,519	0,762
	LPG-Butane (G 30)	kg/h	0,158	0,237	0,386	0,568
	LPG-Propane (G 31)	kg/h	0,155	0,233	0,381	0,559
Electrical power supply	V/Hz		--	230/50		
Electrical power (absorbed)	W		--	71,5	71,5	129
Treated ambient air flow	m ³ /h		--	150	260	470
Heated ambient volume	m ³		36	58	102	154
Fan speed number			--	2	2	2
Dimensions	Width	mm	600	590	745	880
	Height	mm	624	616	616	710
	Depth	mm	225	225	225	330
Weight	kg		31	33	52	44
Gas Fitting Diameter	Pollici (")		1/2"-M	1/2"-F	1/2"-F	1/2"-F
Air-fume coaxial pipe diameters	Air	mm	100	60	60	100
	Fume	mm	60	38	38	60
Air-fume max length (Coaxial pipes)	mm		500	5000	3000	5000
Type of equipment			C ₁₁	C ₁₃	C ₁₃	C ₁₂

* Standard conditions

Tab. 3.1 Technical data

3.5.1 Informazioni obbligatorie secondo Regolamento (UE) 2015/1188 - DIRETTIVA 2009/125/CE

Model identification			KING 21	KING 30 FE	KING 30 FE (with timer)	KING 50 FE	KING 50 FE (con timer)	KING 70 FE	KING 70 FE (with timer)
Indirect heating functionality			no	no	no	no	no	no	no
Direct thermal power			1,75 kW	2,73 kW	2,73 kW	4,37 kW	4,37 kW	6,62 kW	6,62 kW
Indirect thermal power			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Fuel (gaseous)			Natural gas (G20)						
Data	Simbolo	Unità	Value	Value	Value	Value	Value	Value	Value
Emissions due to space heating - nitrogen oxides ($\leq 130 \text{ mg/kWh}_{\text{input}}$)	NO_x	$[\text{mg/kWh}_{\text{input}}]$ (GCV)	118	126	126	87	87	128	128
Thermal power									
Nominal thermal power	P_{nom}	kW	1,75	2,73	2,73	4,37	4,37	6,62	6,62
Minimum thermal power	P_{min}	kW	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Minimum thermal output (percentage of nominal thermal output)	..	%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Electrical auxiliary consumption									
At nominal thermal power	e_{max}	kW	N.A.	0,071	0,071	0,071	0,071	0,129	0,129
At minimum thermal power	e_{min}	kW	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
In stand-by mode	e_{SB}	kW	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Power required for permanent pilot flame									
Required power for the pilot flame (if applicable)	P_{pilot}	kW	0,25	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Useful efficiency (GCV)									
Useful efficiency at nominal heat output	$\eta_{\text{th, nom}}$	%	87,3	91,0	91,0	89,1	89,1	92,0	92,0
Useful efficiency at minimum heat output	$\eta_{\text{th, min}}$	%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Seasonal energy efficiency of ambient heating ($\geq 72\%$)	η_s	%	72,2	78,5	80,5	79,0	81,0	81,1	83,1
Type of heat output / environment temperature control (indicate only one option)									
single phase heat output without environment temperature control			no	no	no	no	no	no	no
two or more manuals phases without environment temperature control			no	no	no	no	no	no	no
with environmental temperature control by mechanical thermostat			yes	no	no	no	no	no	no
with environmental temperature control by electronic thermostat			no	yes	no	yes	no	yes	no
with environmental temperature control via electronic thermostat and daily timer			no	no	yes	no	yes	no	yes
with environmental temperature control via electronic thermostat and weekly timer			no	no	no	no	no	no	no
Other control options (multiple options can be selected)									
environmental temperature control with presence detection			no	no	no	no	no	no	no
environmental temperature control with open window detection			no	no	no	no	no	no	no
with remote control option			no	no	no	no	no	no	no
with adaptable start control			no	no	no	no	no	no	no
with operating time limitation			no	no	no	no	no	no	no
with black globe thermometer			no	no	no	no	no	no	no
ENERGY EFFICIENCY CLASS			D	C	C	C	C	C	B

Tab. 3.2 Regulatory Data (UE) 2015/1188

3.6 OVERALL DIMENSIONS KING 21, 30 FE, 50 FE

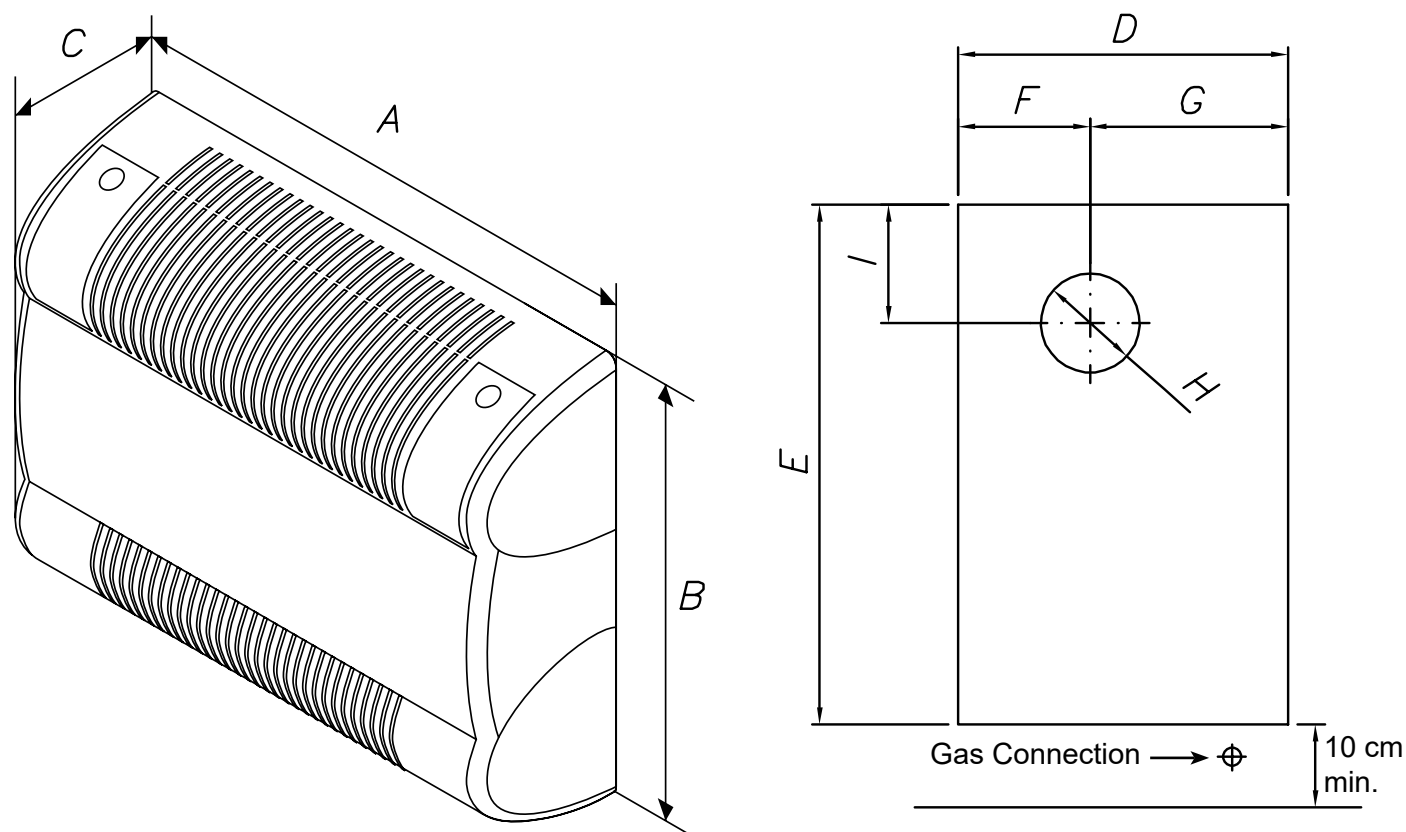


Fig. 3.4

i **IMPORTANT:** the KING gas convector must be installed at 10 cm minimum distance from the ground; it is necessary to foresee the space for the gas interception. The hole for the gas pipe has to be provided under the appliance, between the appliance and the ground, according to the gas inlet of the appliance itself.

CONVECTOR OVERALL DIMENSIONS AND ASSEMBLY FRAME									
MODELS	A	B	C	D	E	F	G	H	I
KING 21	600	624	225	385	611	173	212	125	116
KING 30 FE	590	616	225	535	612	305	230	60	108
KING 50 FE	745	616	225	689	612	399	290	60	108

The data provided above are purely indicative. The Manufacturer reserves the right to perform modifications without notice.

Tab. 3.3

3.7 OVERALL DIMENSIONS KING 70 FE

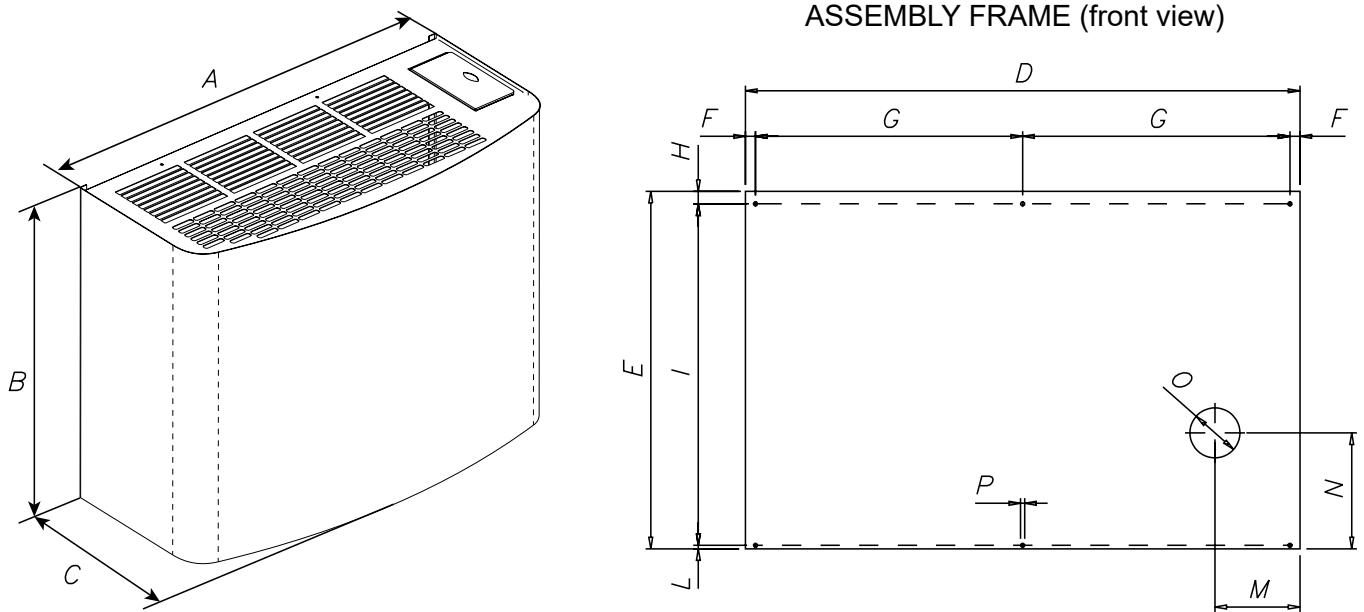


Fig. 3.5



IMPORTANT: the KING gas convector must be installed at 10 cm minimum distance from the ground; it is necessary to foresee the space for the gas interception. The hole for the gas pipe has to be provided under the appliance, between the appliance and the ground, according to the gas inlet of the appliance itself.

CONVECTOR OVERALL DIMENSIONS AND ASSEMBLY FRAME														
MODELLI	A	B	C	D	E	F	G	H	I	L	M	N	O	P
KING 70 FE	880	710	330	835	710	20	397	25	678	7	170	232	Ø100	Ø8

The data provided above are purely indicative. The Manufacturer reserves the right to perform modifications without notice.

Tab. 3.4

3.8 EXPLODED VIEW KING 21

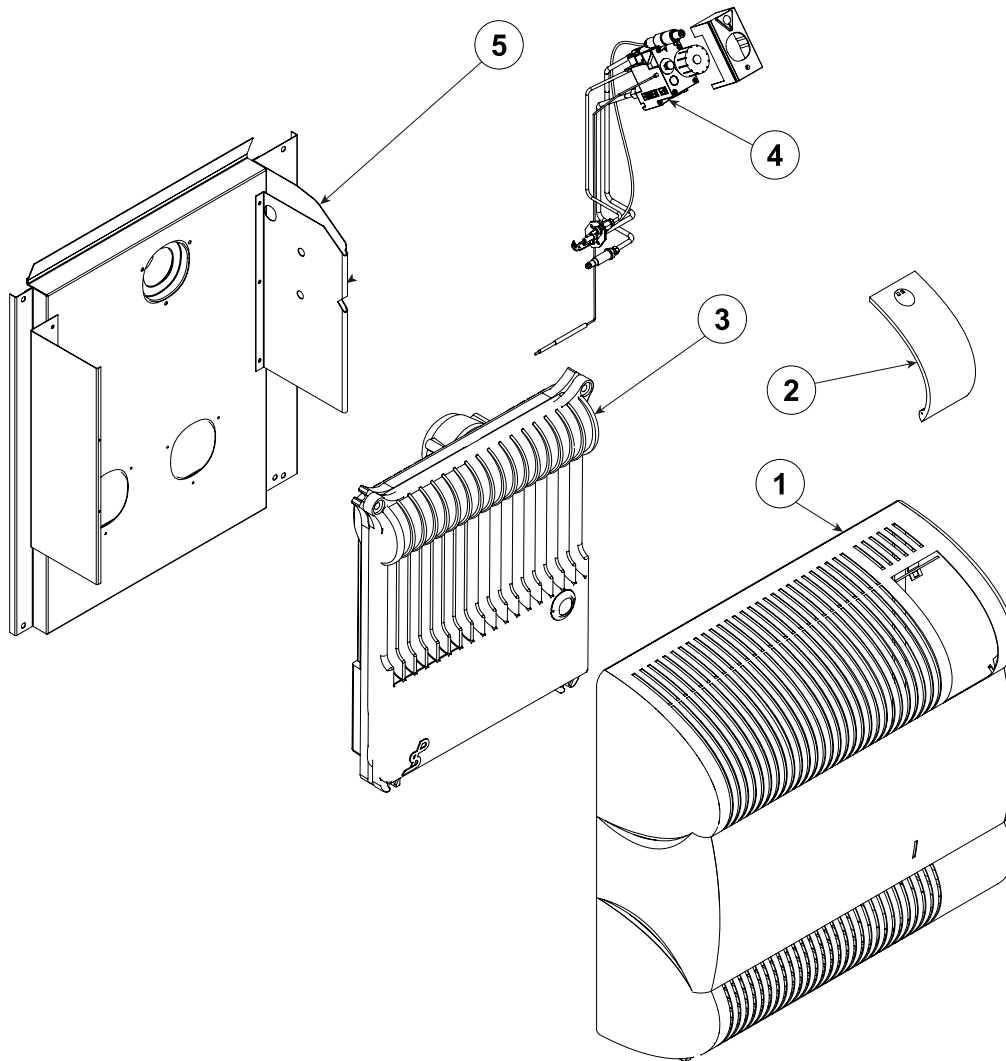
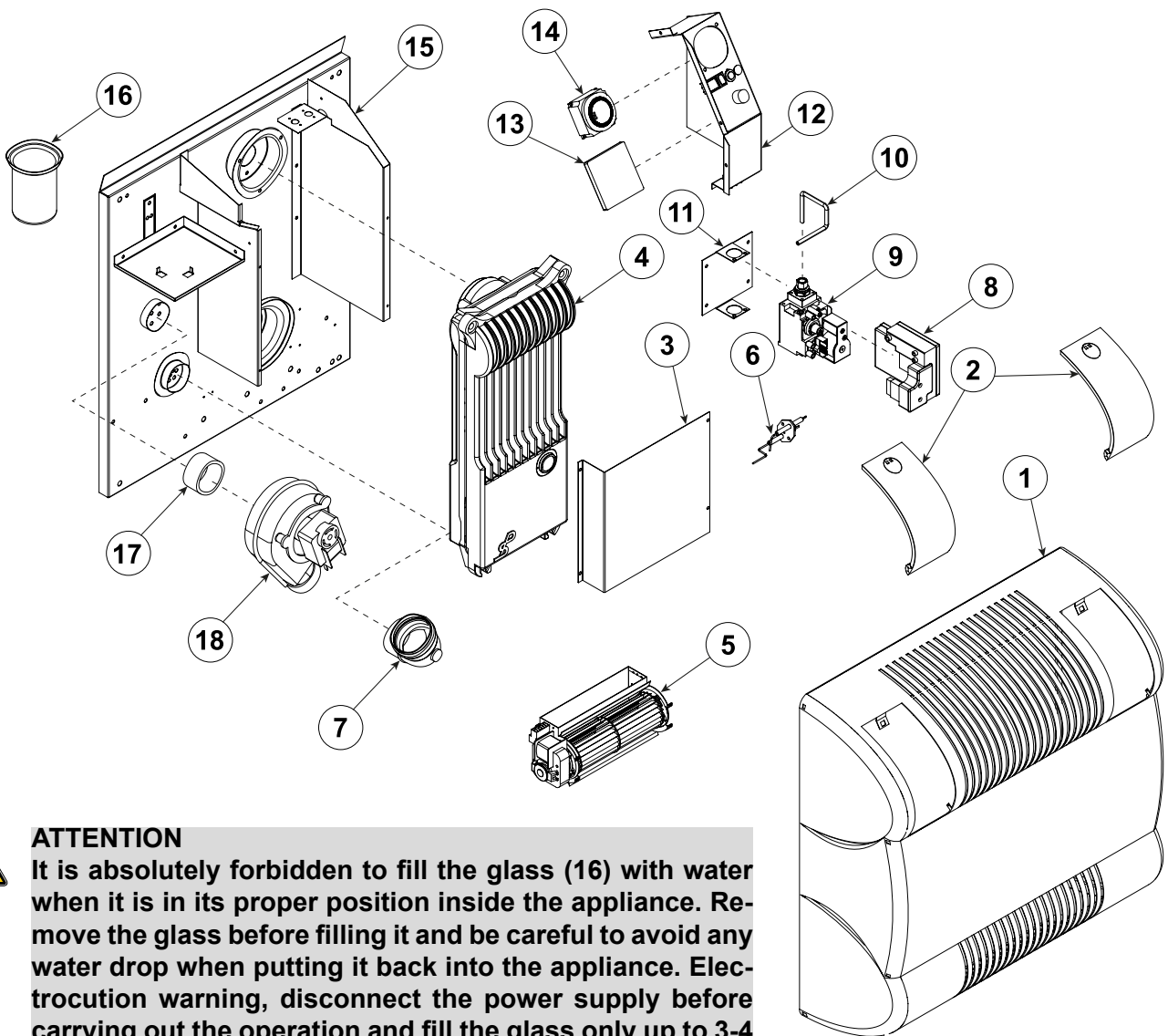


Fig. 3.6 Exploded view mod. KING 21

KING 21 PILOT FLAME TYPE THERMOCOUPLE SERIES CONVECTOR			
Pos.	Q.ty	Description	Code
1	1	Shell	02MACO0028
2	1	Door	02CNPO0304
3	1	Cast iron casting with burner	Various
4	1	Eurosit pilot flame valve	02CNVE0679
5	1	Air box	02CNSA0378

Tab. 3.5

3.9 EXPLODED VIEW KING 30 FE



ATTENTION

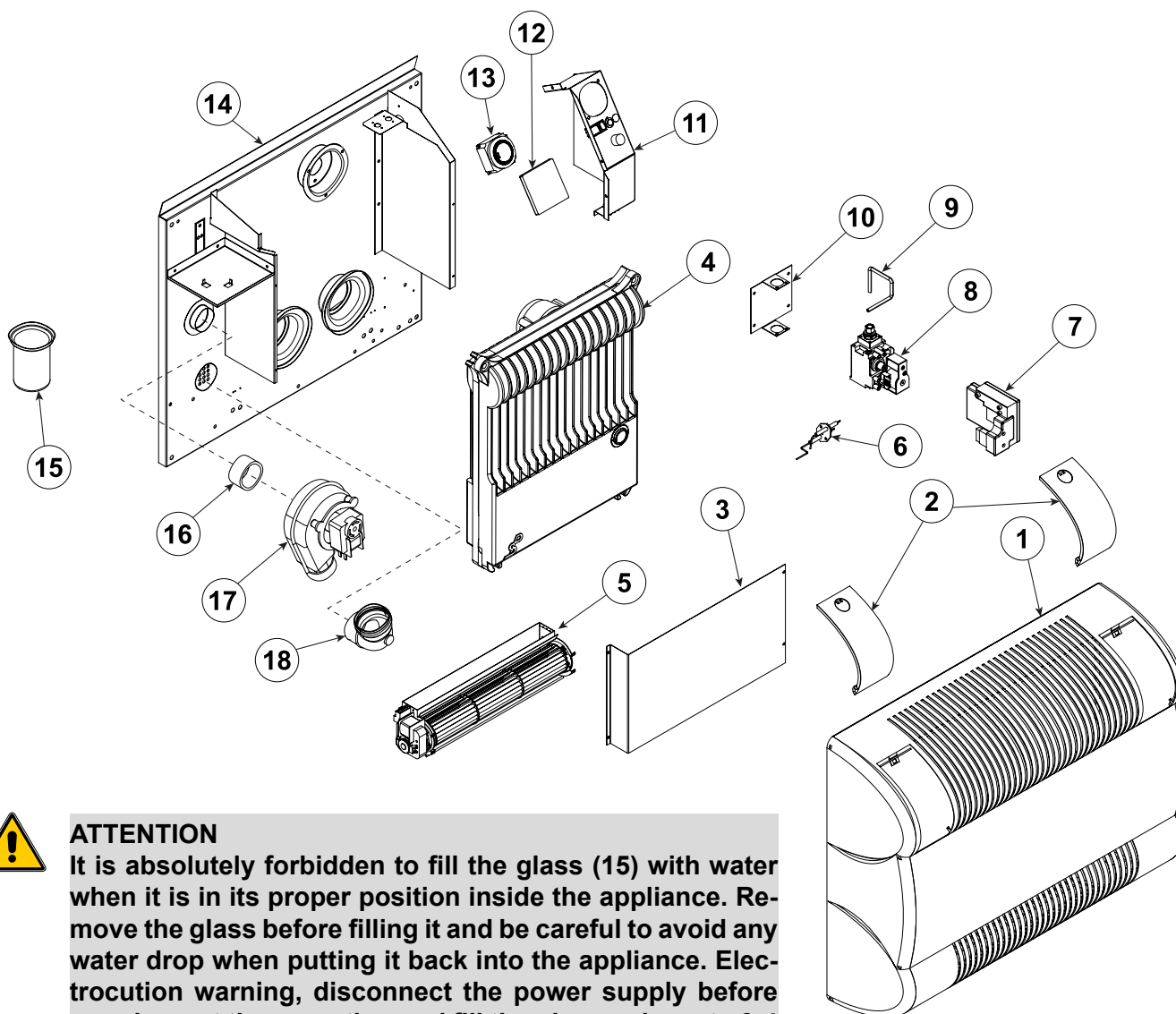
It is absolutely forbidden to fill the glass (16) with water when it is in its proper position inside the appliance. Remove the glass before filling it and be careful to avoid any water drop when putting it back into the appliance. Electrocution warning, disconnect the power supply before carrying out the operation and fill the glass only up to 3-4 cm from the edge.

Fig. 3.7 Exploded view mod. KING 30 FE

KING 30 FE VENTILATED/FORCED CIRCULATION SERIES							
Pos.	Q.ty	Description	Code	Pos.	Q.ty	Description	Code
1	1	Shell	02MACO0031	10	1	Copper pipe	02CNTU0494
2	2	Door	02CNPO0304	11	1	Gas valve support	02CNSU0741
3	1	Heat shield	02CNSE0503	12	1	Electrical control panel	02CEQU0343
4	1	Cast iron casting with burner	Various	13	1	Thermostat	02CETR2805
5	1	Tangential fan	02CEVT0622	14	1	Daily timer programmer (optional)	02CETM0475
6	1	Detection electrode	02CNER0625	15	1	Air box	02CNSA0376
	1	Ignition electrode	02CNEA0624	16	1	Humidifier container	02CNCO2708
7	1	90° bend connection	02CNCU0138	17	1	Fan connection	02CNMA0238
8	1	Control unit	02CEAP2702	18	1	Centrifugal fan EV 100	02CEAS3002
9	1	Solenoid gas valve	02CEEL0167				

Tab. 3.6

3.10 EXPLODED VIEW KING 50 FE



ATTENTION

It is absolutely forbidden to fill the glass (15) with water when it is in its proper position inside the appliance. Remove the glass before filling it and be careful to avoid any water drop when putting it back into the appliance. Electrocutation warning, disconnect the power supply before carrying out the operation and fill the glass only up to 3-4 cm from the edge.

Fig. 3.8 Exploded view mod. KING 50 FE

KING 50 FE VENTILATED/FORCED CIRCULATION SERIES							
Pos.	Q.ty	Description	Code	Pos.	Q.ty	Description	Code
1	1	Shell	02MACO0031	10	1	Gas valve support	02CNSU0741
2	2	Door	02CNPO0304	11	1	Electrical control panel	02CEQU0343
3	1	Heat shield	02CNSC0502	12	1	Thermostat	02CETR2805
4	1	Cast iron casting with burner	Various	13	1	Daily timer programmer (optional)	02CETM0475
5	1	Tangential fan	02CEVT0622	14	1	Air box	02CNNSA0376
6	1	Detection electrode	02CNER0625	15	1	Humidifier container	02CNCO2708
	1	Ignition electrode	02CNEA0624	16	1	Fan connection	02CNMA0238
7	1	Control unit	02CEAP2702	17	1	Centrifugal fan EV 100	02CEAS3002
8	1	Solenoid gas valve	02CEEL0167	18	1	90° bend connection	02CNCU0138
9	1	Copper pipe	02CNTU0494				

Tab. 3.7

3.11 EXPLODED VIEW KING 70 FE

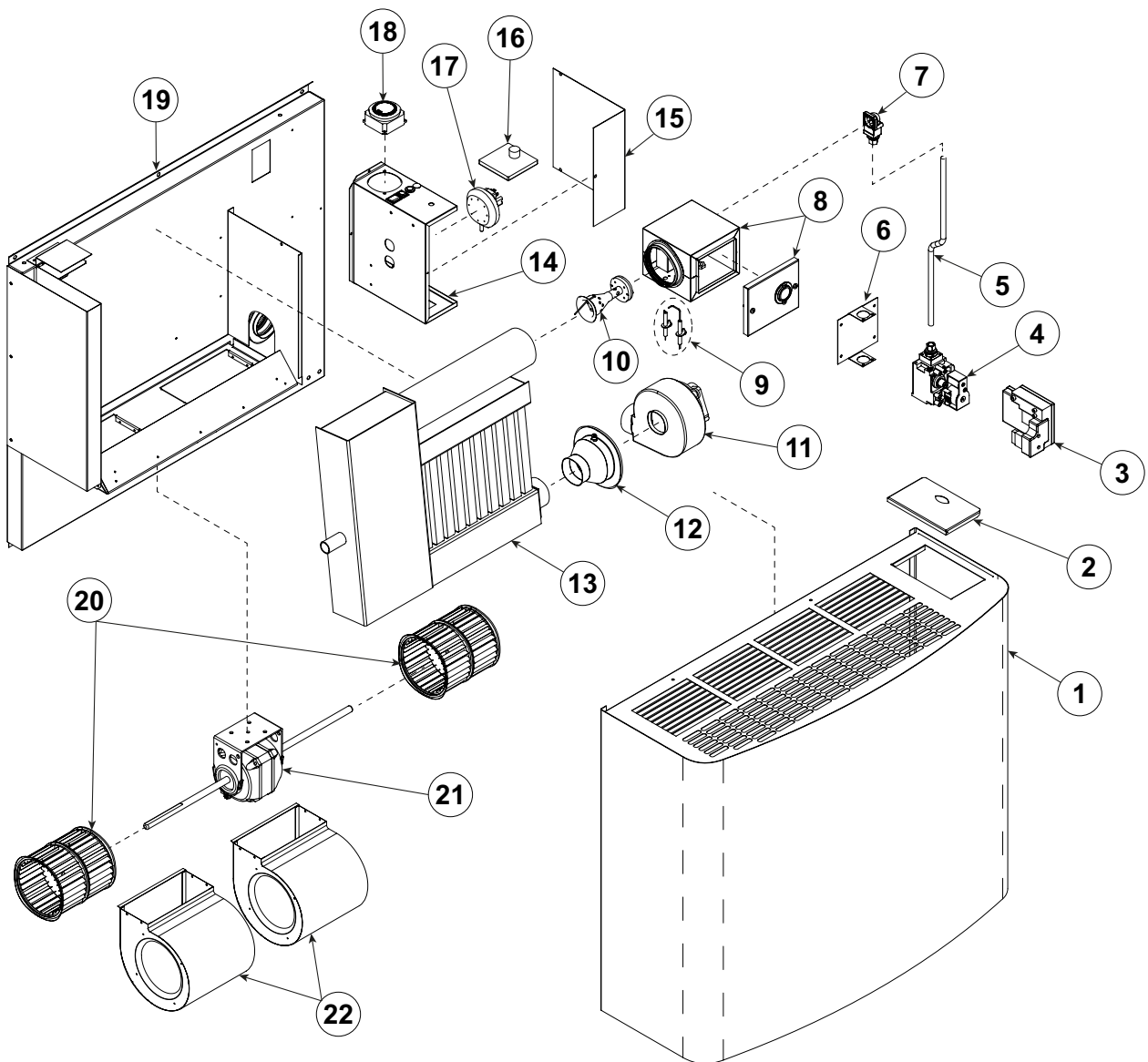


Fig. 3.9 Exploded view mod. KING 70 FE

KING 70 FE SERIE ELETTRONICA FORZATO							
Pos.	Q.ty	Description	Code	Pos.	Q.ty	Description	Code
1	1	Shell	02CVMA4024	12	1	Fume suction connection	02CNCO1116
2	1	Door	02CNPO0302	13	1	Stainless steel exchanger	02CNNSC2800
3	1	Control unit	02CEAP2702	14	1	Electrical control panel	02CNTE5000
4	1	Solenoid gas valve	02CEEL0167	15	1	Electric panel closure	02CNTE5001
5	1	Copper pipe	02CNTU1042	16	1	Thermostat	02CETR2805
6	1	Gas valve support	02CNSU0741	17	1	Air pressure switch	00CEPR1105
7	1	90° bend gas connection	02CNRA5110	18	1	Daily timer programmer (optional)	02CETM0475
8	1	Burner box	02CNNSC1081	19	1	Air box	02CVSA0384
9	1	Detection electrode	02CNER0625	20	2	Tangential fan	02CNVE0974
	1	Ignition electrode	02CNEA0624	21	1	Fan motor	02CNMO0924
10	1	Burner torch	02CNT01074	22	1	Fan auger	02CNCO0954
11	1	Centrifugal fan	02CEAS3002				

Tab. 3.8

3.12 FLUE SYSTEMS

3.12.1 Air/fume kit for King 21

For installation see paragraph 5.2

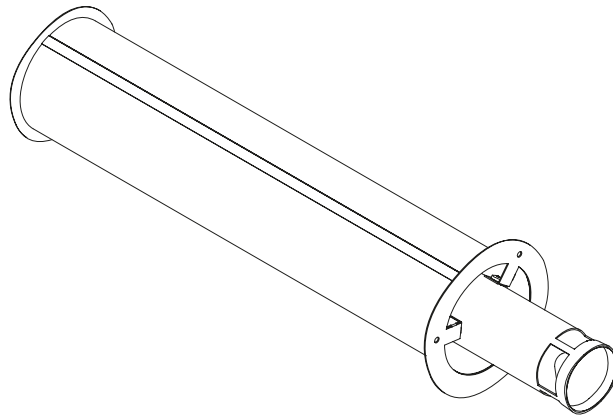


Fig. 3.10

3.12.2 Air/fume kit for King 30 FE and King 50 FE

For installation see paragraph 5.3 and 5.4

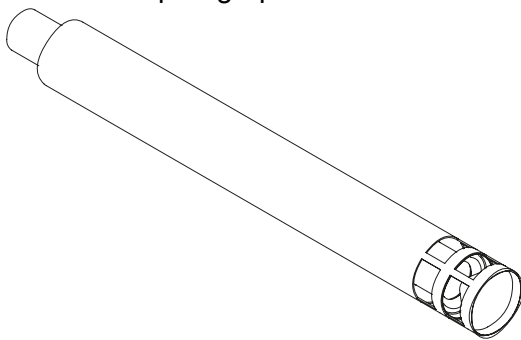


Fig. 3.11 Standard

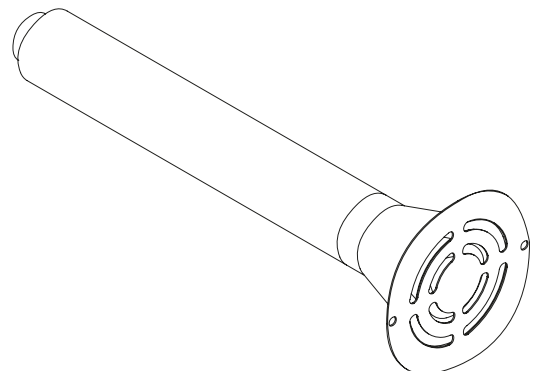


Fig. 3.12 Flush with the wall

3.12.3 Air/fume kit for King 70 FE

For installation see paragraph 5.5

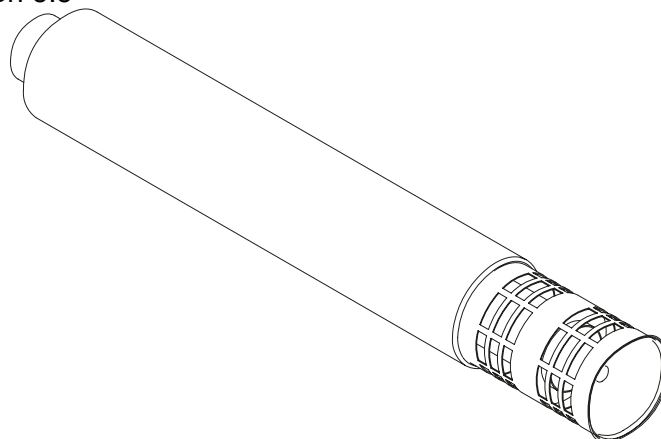
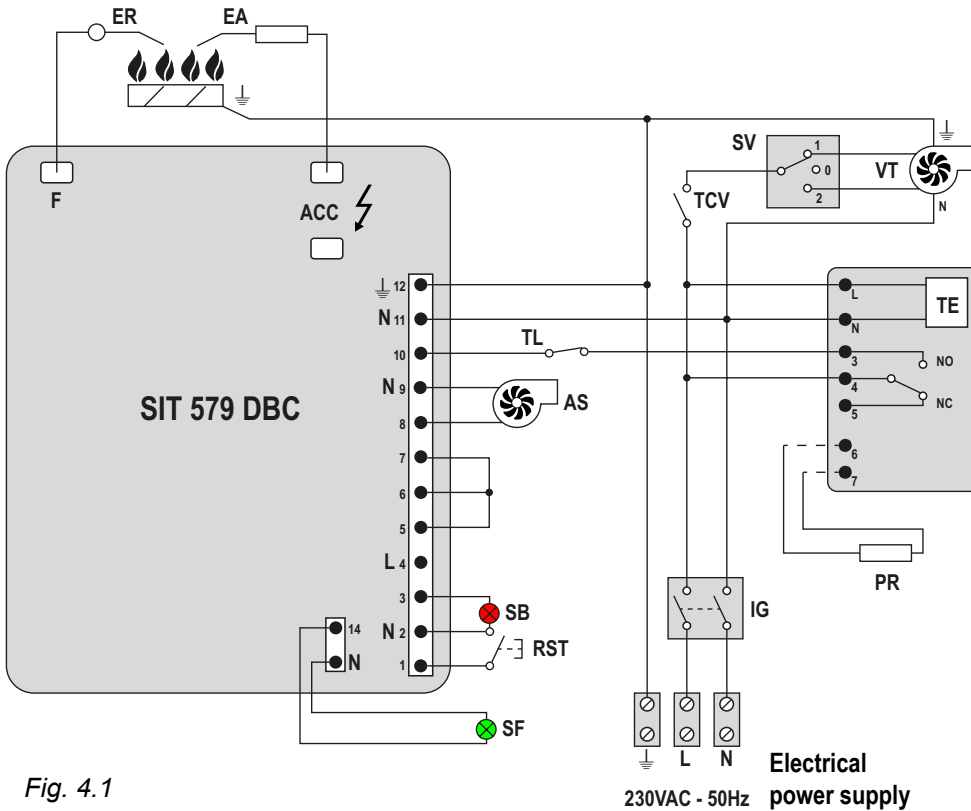


Fig. 3.13

4 ELECTRIC DIAGRAM

Electric diagram KING 30FE; KING 50 FE



LEGEND	
L	Phase
N	Neutral
⊥	Ground
F	Fiamma
ACC	Igniter
ER	Detection electrode
EA	Ignition electrode
SV	Fan switch
TCV	Fan triggering thermostat
VT	Fan
TE	Electronic thermostat
TM	Daily timer
TL	Limit thermostat
AS	Fan fume extractor
PR	Remote probe (optional)
IG	Main Switch
SB	Block signal (red)
RST	Reset button
SF	Operation signal (green)

Tab. 4.1

Fig. 4.1

Electric diagram KING 30 FE - KING 50 FE with timer

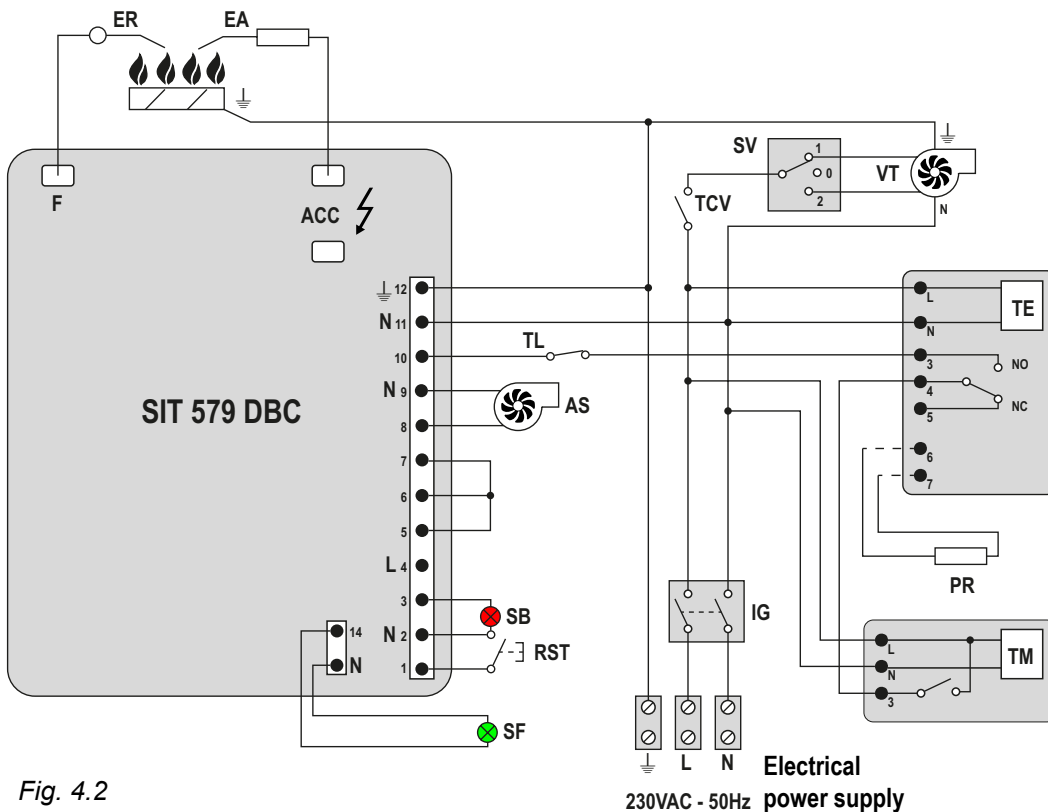
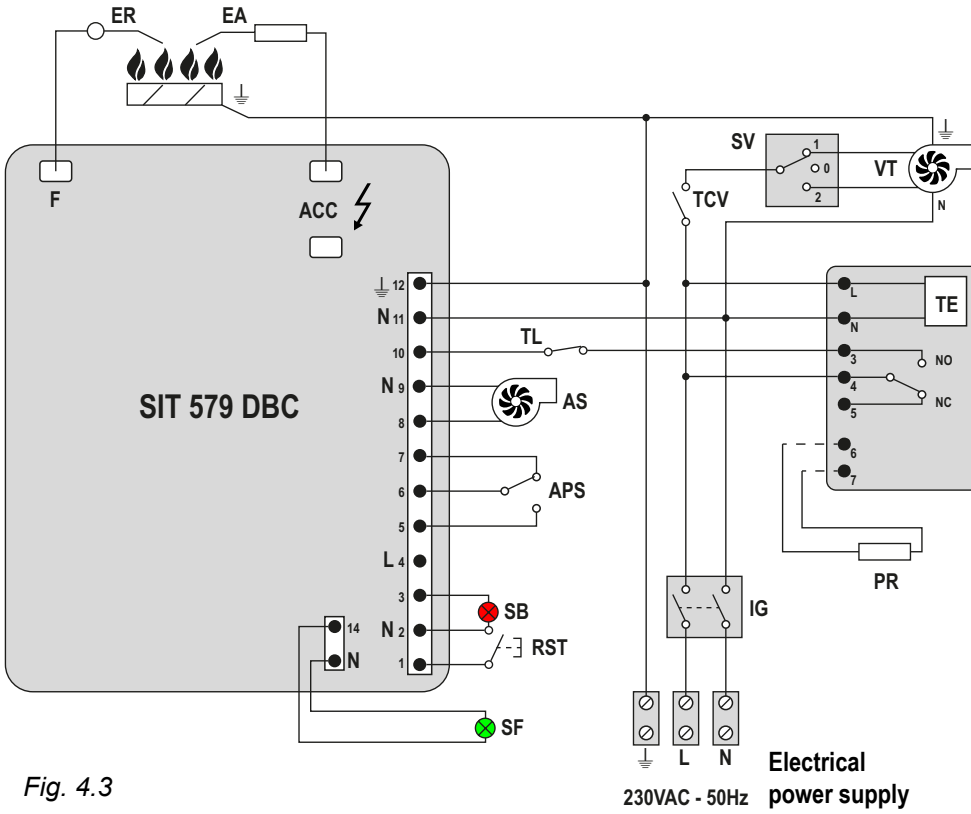


Fig. 4.2

Electric diagram KING 70 FE



LEGEND	
L	Phase
N	Neutral
⊥	Ground
F	Fiamma
ACC	Igniter
ER	Detection electrode
EA	Ignition electrode
SV	Fan switch
TCV	Fan triggering thermostat
VT	Fan
TE	Electronic thermostat
TM	Daily timer
TL	Limit thermostat
AS	Fan fume extractor
APS	Pressure switch
PR	Remote probe (optional)
IG	Main Switch
SB	Block signal (red)
RST	Reset button
SF	Operation signal (green)

Fig. 4.3

Tab. 4.2

Electric diagram KING 70 FE with timer

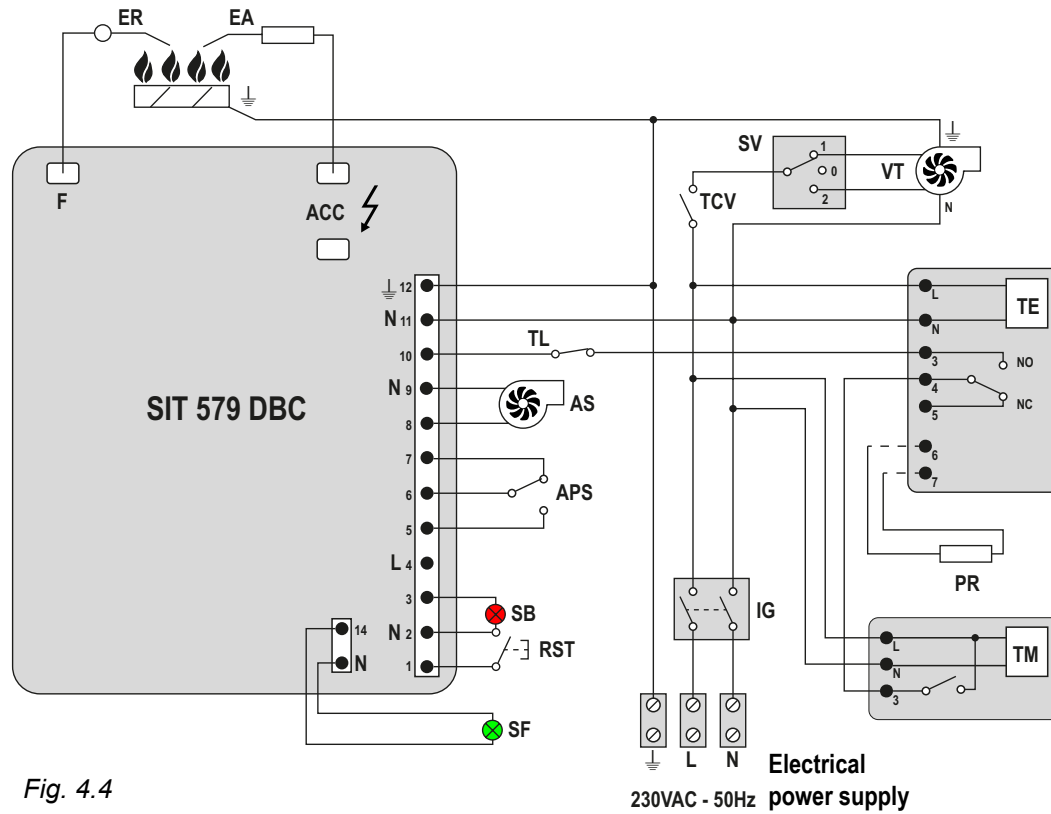


Fig. 4.4

5 INSTRUCTIONS FOR INSTALLERS



WARNING

Installation must be performed only by qualified professionals in complete respect of the safety regulations in force.

Do not use electric tools in damp or wet environments or in contact with large metal masses, check that the power cable is in perfect condition with no cuts.



WARNING

During the installation works personnel should be equipped with individual protective equipment complying with the current legislation.



ATTENTION

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

A single operator does not have to move loads greater than 25 kg manually, it is advisable to carry out manual handling by two workers. In case of lifting of loads of less than 25 kg by a single operator, it is advisable to bend the knees and put strength on the legs: during transport, keep the load close to the body while keeping the back - spine erect.



IMPORTANT

The Manufacturer declines all liability for erroneous installation or the inappropriate or incorrect use of the device.

5.1 PLACES OF INSTALLATION AND SAFETY DISTANCES

We recommend observing the following rules in order to obtain the maximum convector output efficiency:

- Position the device while bearing in mind the priority areas to be heated, the absorption walls (windows, doors, French windows etc.), and the existence of shelves and other obstacles that might compromise the circulation of the hot air released by the radiator above and the effect of the heat radiated from the front panel.
- If more than one device must be installed in the same room, we recommend staggered and opposing positioning in order to provide the entire area with uniform coverage.
- The devices must never be installed in recessed niches or positions that do not ensure sufficient aeration for good operation.
- Install the devices along perimetral walls whenever possible.
- **Observe the following rules to simplify interventions on the radiator or the removal of the shell:**
 - a. The distance of the device from the floor must never be less than 10 cm.;
 - b. Any shelves installed above the radiator must be positioned at least 10 cm higher;
 - c. A minimum distance of 10 cm from the wall must be respected whenever devices are installed in recessed niches.
- Avoid positioning furnishings above the shell.

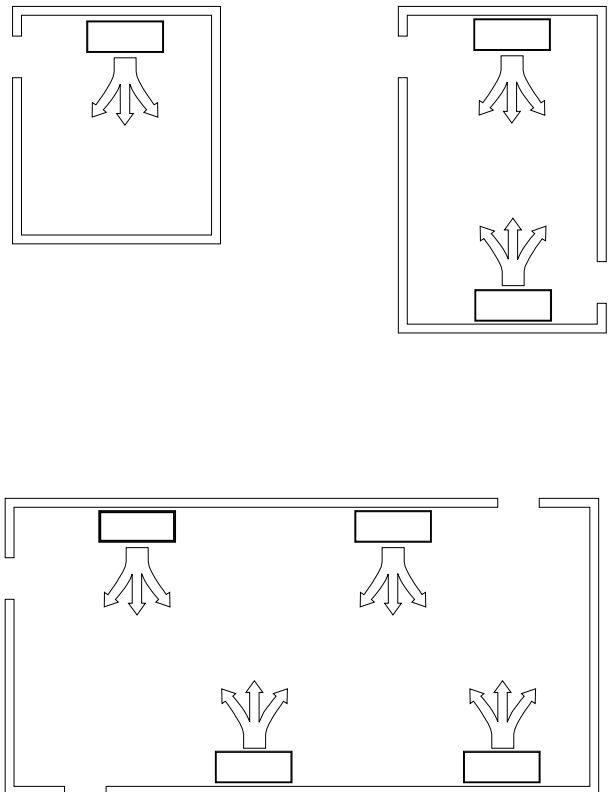
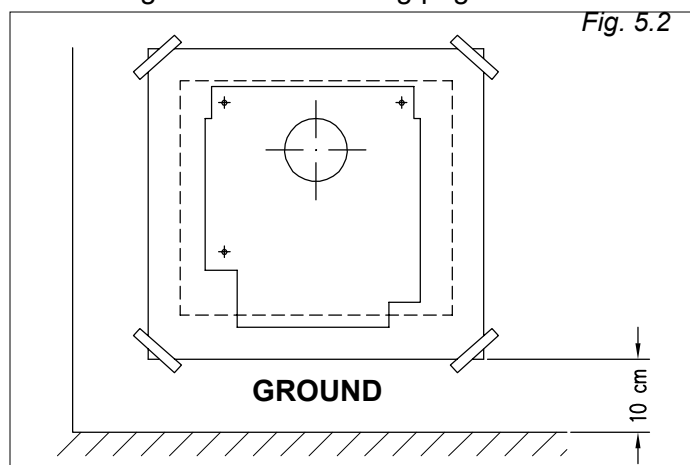


Fig. 5.1

5.2 INSTALLATION OF THE KING 21 AIR/FUME KIT

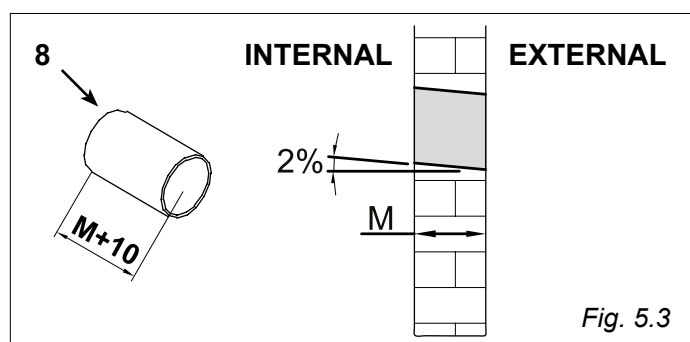
For the assembling of the appliance, please follow the instruction given in the following pages:

1. Place the template on the wall and fix it with adhesive tape at a distance of minimum 10 cm from the floor perfectly in square (see fig 5.2).
2. Draw the hole for the exhaust and, if possible, make it with a 2% inclination outwards the wall (see fig 5.3).
3. Place the template in square again and be careful when centring it with the hole for the exhaust, then make 4 holes of 8 mm in diameter and insert the supplied inserts (see fig 5.2).



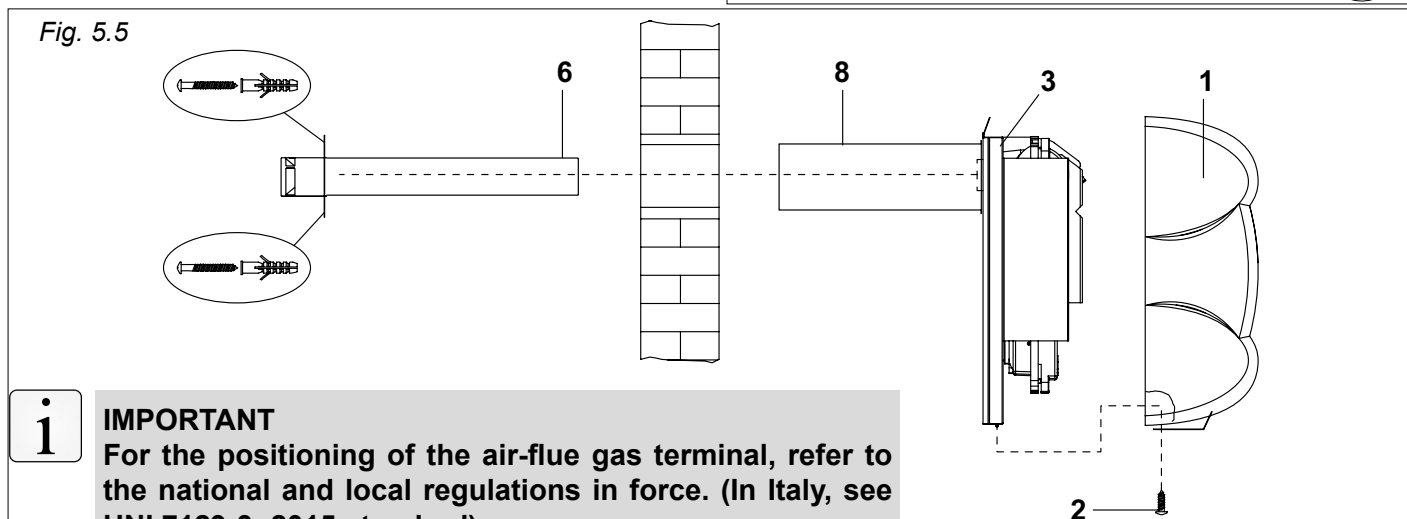
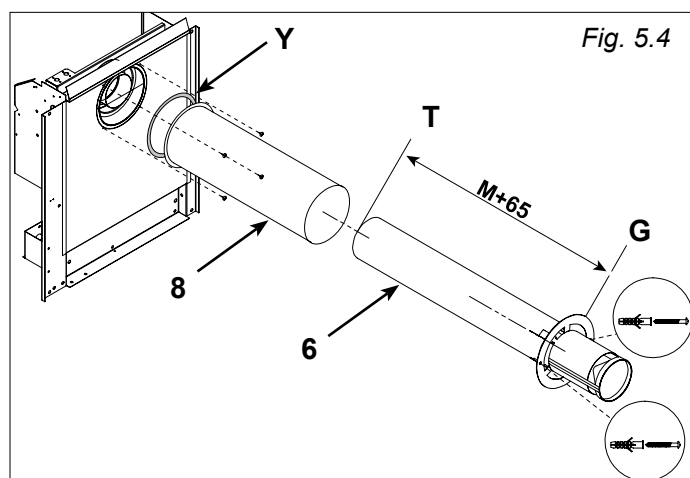
Cutting Pipes exhaust kit of King K21

1. Drilling the wall, when the hole is done, measure the thickness of the wall (M).
2. Cut the suction pipe (8) on the side without rim 10mm longer than the thickness of the wall (M) (see fig 5.3).
3. Cut the exhaust pipe (6) 65mm longer than the thickness of the wall (M) measuring it from the air intake grid (G) to the end (T) of the pipe, which has to be inserted in the convector (see fig. 5.4).



Assembling exhaust kit of King K21

4. Remove the shell (1) after having unloosing the fixing screws (2) see fig.5.5.
5. Superimpose the gasket (Y) on the pipe.
6. Fix the suction pipe on the side of the rim (8) with the 4 self-threading screws supplied (see fig. 5.5).
7. Place the convector with the supplied screws, wedge the fumes pipe grille (6) in the internal collar of the air box (3) and fix it on the external wall with the two supplied inserts.



i **IMPORTANT**
For the positioning of the air-flue gas terminal, refer to the national and local regulations in force. (In Italy, see UNI 7129-3: 2015 standard).

5.3 INSTALLATION OF THE KING 30 FE-50 FE WITH STANDARD AIR/FUME KIT

For the assembling of the appliance, please follow the instruction given in the following pages:

1. Place the template on the wall and fix it with adhesive tape at a distance of minimum 10 cm from the floor perfectly in square (see fig. 5.6).
2. Draw the hole for the exhaust and, if possible, make it with a 2% inclination outwards the wall (see fig 5.7).
3. Place the template in square again and be careful when centring it with the hole for the exhaust, then make 4 holes of 8 mm in diameter and insert the supplied inserts (see fig. 5.6).

Cutting Pipes with standard air/fume kit for KING 30 FE; KING 50 FE

1. Drilling the wall, when the hole is done, measure the thickness of the wall (M).
2. Cut the suction pipe (8) 70 mm longer than the thickness of the wall (M) and from the side opposite the terminal (see fig. 5.7).
3. Cut the exhaust pipe (6) 43mm longer than the thickness of the wall (M) (see fig. 5.7).

Mounting with standard air/fume kit for KING 30 FE; KING 50 FE

1. Remove the shell (1) after having unloosing the fixing screws (2) (see fig. 5.9)
2. Insert the fume pipe (6) into the inner collar of the air box (see fig. 5.8)
3. Insert the gasket (Y) on the air pipe (8) (see fig. 5.8)
4. Fix the pipe (8) on the collar (A) of the air box with the supplied screw (see fig. 5.8).
5. Apply the radiator (4) (fig.5.9) to the wall and matching with the hole made previously, then fix it with the supplied screws.

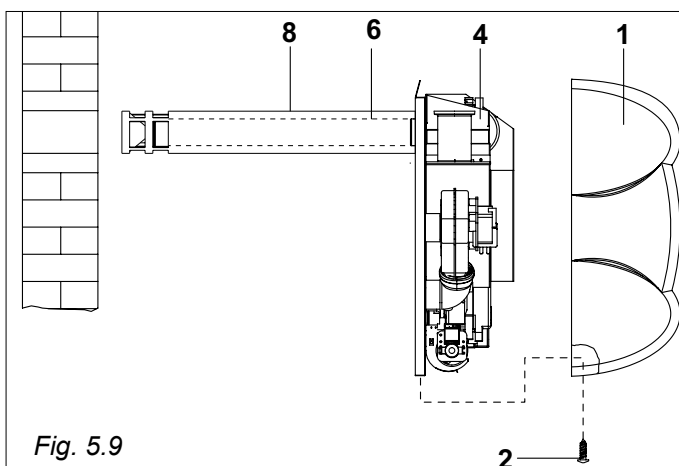


Fig. 5.9

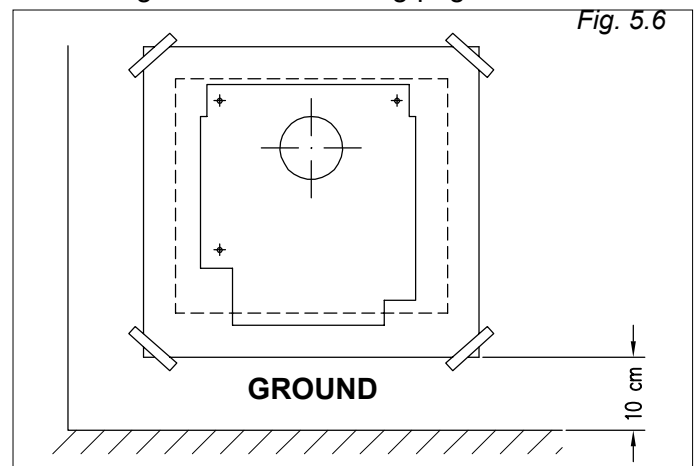


Fig. 5.6

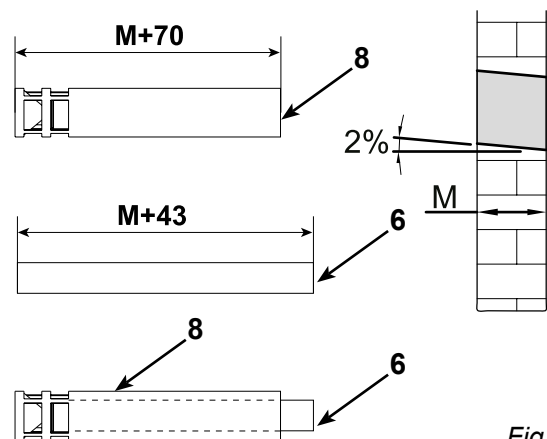


Fig. 5.7

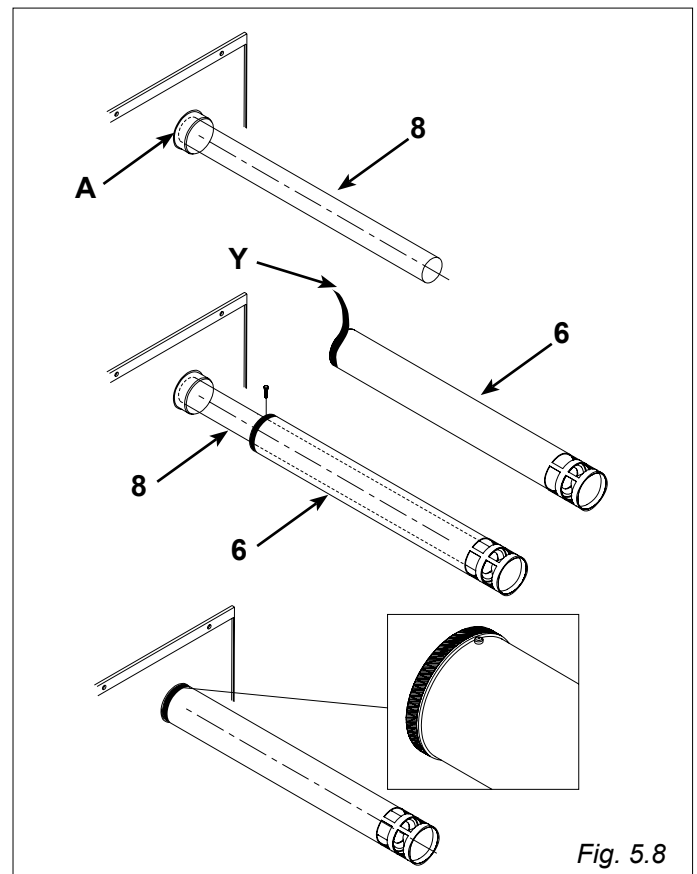
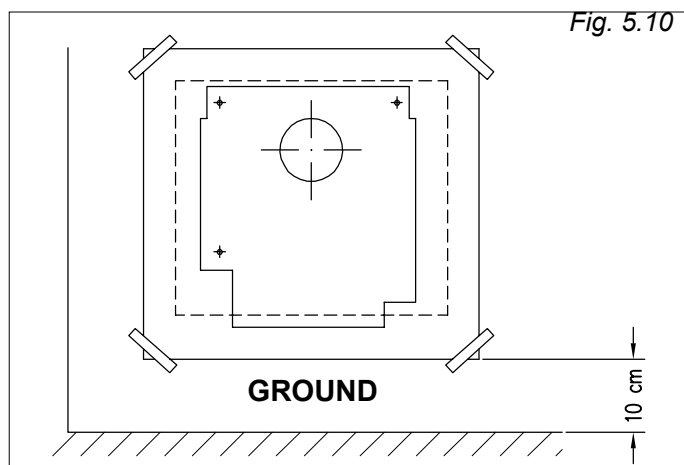


Fig. 5.8

5.4 INSTALLATION OF KING 30 FE-50 FE WITH "FLUSH WITH THE WALL" AIR/FUME KIT

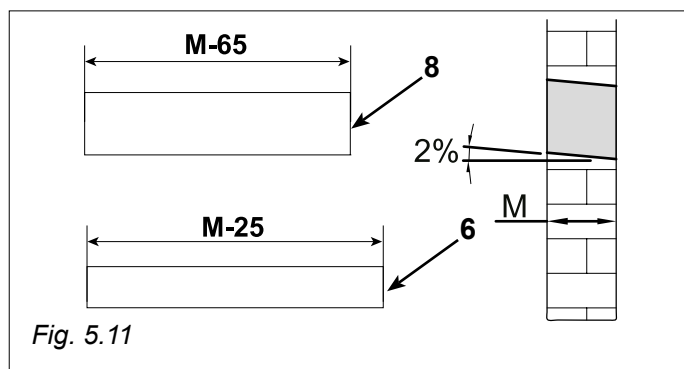
For the assembling of the appliance, please follow the instruction given in the following pages:

1. Place the template on the wall and fix it with adhesive tape at a distance of minimum 10 cm from the floor perfectly in square (see fig. 5.10).
2. Draw the hole for the exhaust and, if possible, make it with a 2% inclination outwards the wall (see fig 5.11).
3. Place the template in square again and be careful when centring it with the hole for the exhaust, then make 4 holes of 8 mm in diameter and insert the supplied inserts (see fig. 5.10).



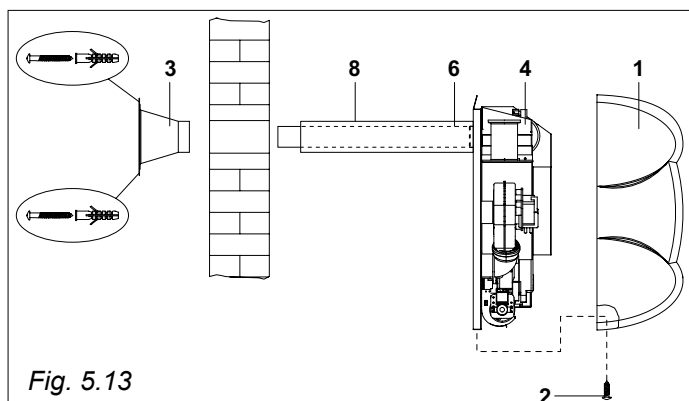
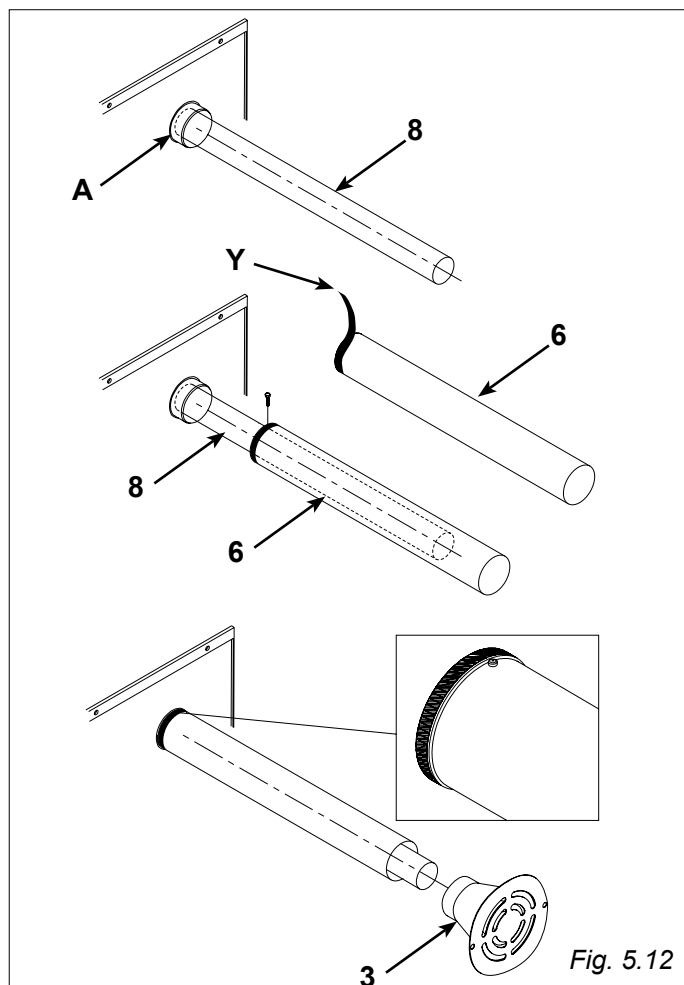
Cutting Pipes with "Flush with the wall" air/fume kit for KING 30 FE; KING 50 FE

1. Drilling the wall, when the hole is done, measure the thickness of the wall (M).
2. Cut the suction pipe (8) 65 mm shorter than the thickness of the wall (M) (see fig. 5.11).
3. Cut the drain pipe (6) 25 mm shorter than the wall thickness (M) (see fig. 5.11).

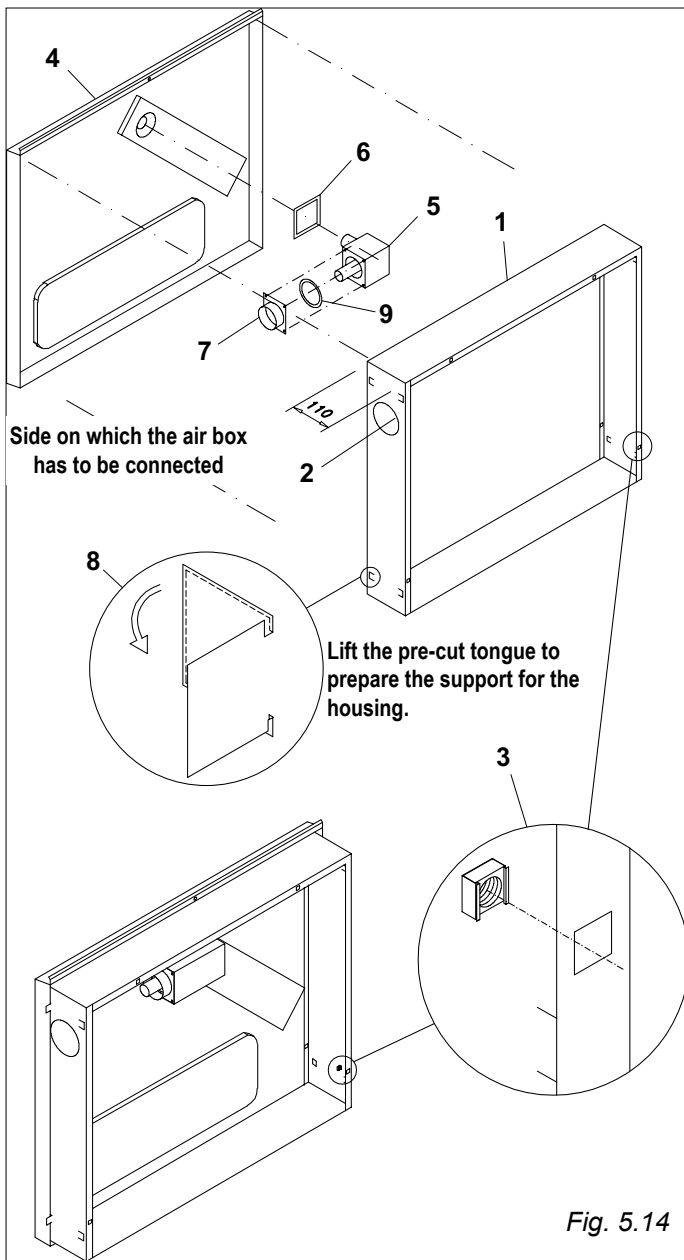


Mounting Pipes with "Flush with the wall" air/fume kit for KING 30 FE; KING 50 FE

1. Remove the shell (1) after having unloosing the fixing screws (2) (see fig. 5.13)
2. Insert the fume pipe (6) into the inner collar of the air box (see fig. 5.13)
3. Insert the gasket (Y) on the air pipe (8) (see fig. 5.12)
4. Fix the pipe (8) on the collar (A) of the air box with the supplied screw (see fig. 5.12).
5. Apply the radiator (4) (fig.5.13) to the wall and matching with the hole made previously, then fix it with the supplied screws.
6. Couple the flush-to-the-wall template (3) (fig. 5.13) from the outside and secure it with the supplied plugs.



5.4.1 Installation of King with side wall exhaust pipe for KING 30 FE, KING 50 FE



For assembly follow the instructions below:

1. Drill ($\varnothing 60$) the wall following the instructions at A and B measures (see drawing 29)
2. Fix on the wall the back connector for the side wall exhaust pipe (1) with the exhaust pipe hole (2) on the right or on the left keeping the centre of the hole $\varnothing 60$
3. Put the 4 cage nuts inside the fitting holes (3)
4. Fix on the gas convector (4) the air box (5) using the 4 screw included in the equipment
5. Fix the box (5) to the female $\varnothing 60$ collar (7) using the 4 screws included in the equipment - don't forget to put the sealing (9) before the screw
6. Lift the 4 pre-cut tongues (8) placed on the back connector (1)

LEGENDA	
1	Side exhaust back connector
2	Exhaust pipe hole
3	Hole for cage nuts or screw anchor
4	Gas convector
5	Air box
6	Sealing
7	Female 60 \varnothing collar for exhaust fixing
8	Pre-cut tongue to support the housing
9	Sealing

Tab. 5.1

7. Fix the gas convector (4) to the back connector using the screws included in the equipment - they have to be screwed on the cage nuts (3)
8. Cut the coaxial tube at the right measure and fit it on the air box (5) and on the Ø60 collar (7)

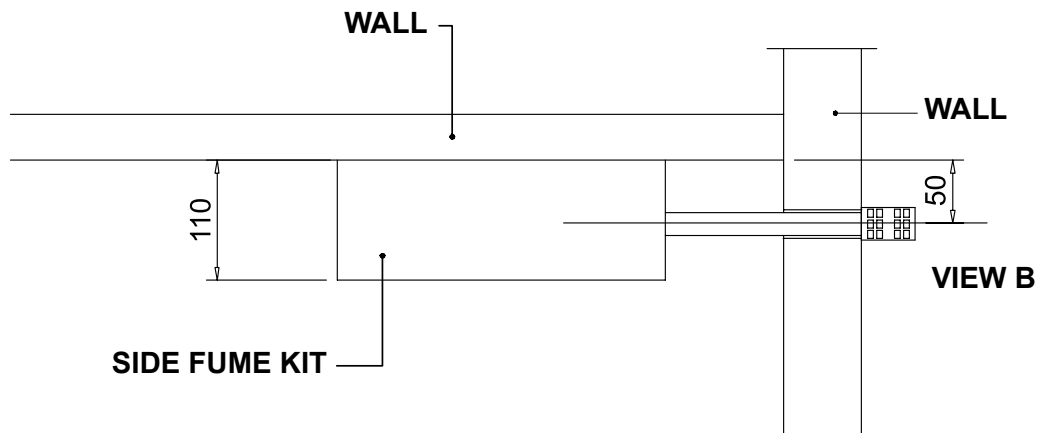


Fig. 5.15 Top view

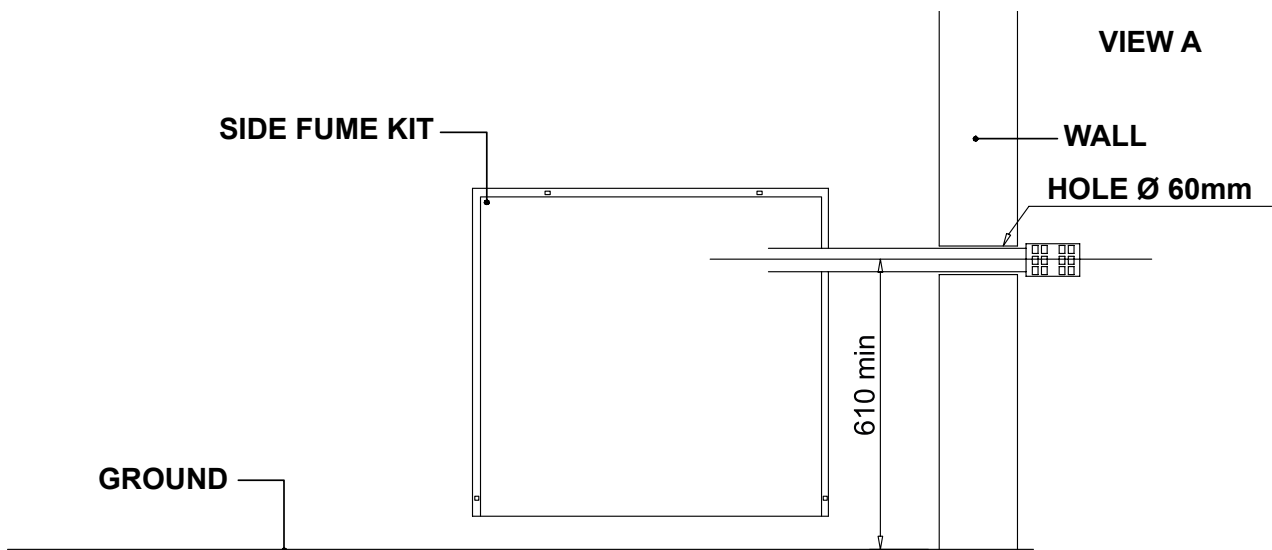


Fig. 5.16 Front view



IMPORTANT

For the positioning of the air-flue gas terminal, refer to the national and local regulations in force. (In Italy, see UNI 7129-3: 2015 standard).

5.5 MESSA IN OPERA KING 70 FE

Observe the instructions provided in the following pages for the assembly of the device:

1. Position the assembly frame on the wall and fasten it using sticky tape at a minimum distance of 10 cm from the floor perfectly squared (See fig. 5.17). Trace and drill the hole required for flue gas exhaust with a 2% inclination towards the outside of the wall if possible (See fig. 5.17).
2. Position the assembly frame perfectly squared once again, making sure that the flue gas exhaust hole is perfectly centered and then drill no. 6 holes with 8 mm diameter and insert the metal blocks provided.

STANDARD AIR/FUME KIT GRID

1. After drilling the hole, measure the thickness of the wall "M" (fig. 5.19), cut the suction pipe (1) with the same thickness of the wall. Cut the exhaust pipe (2) eliminating the same length removed from the intake pipe.

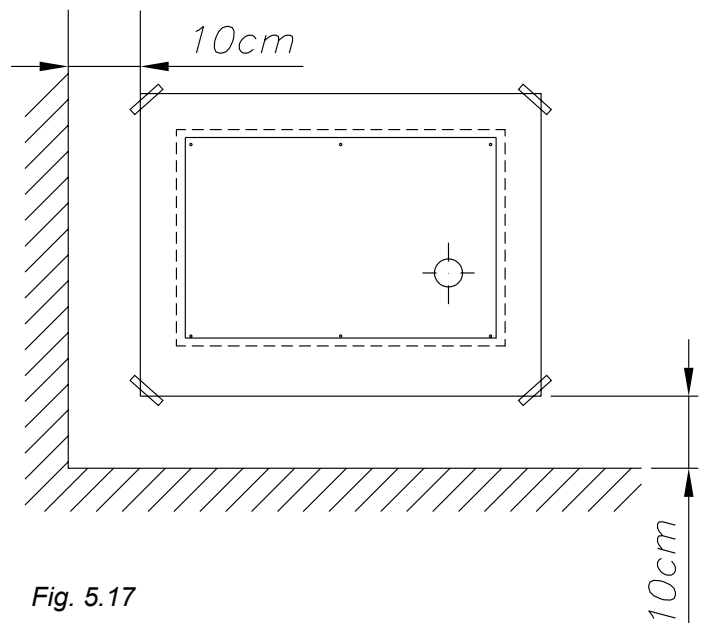


Fig. 5.17

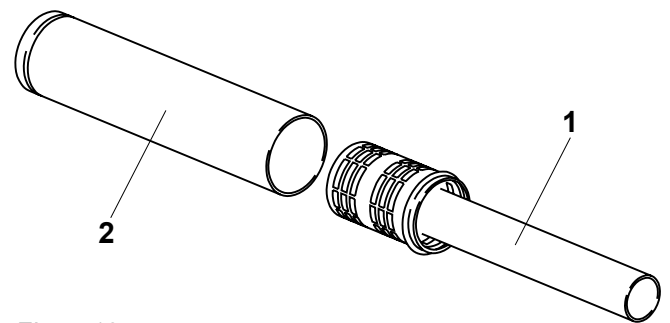


Fig. 5.18

SIZES OF STANDARD EXHAUST GRID

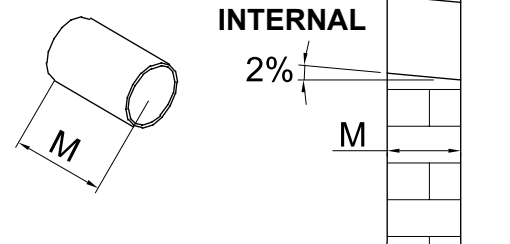


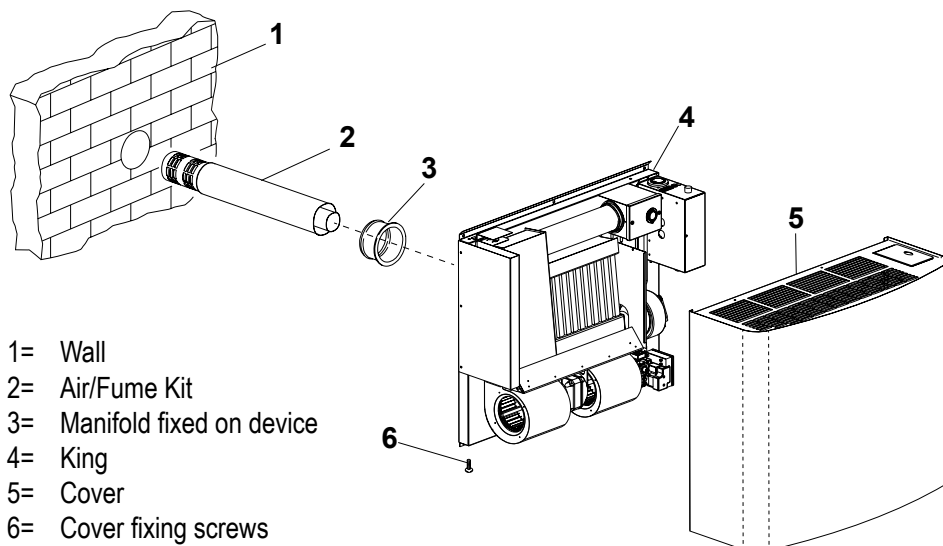
Fig. 5.19



IMPORTANT

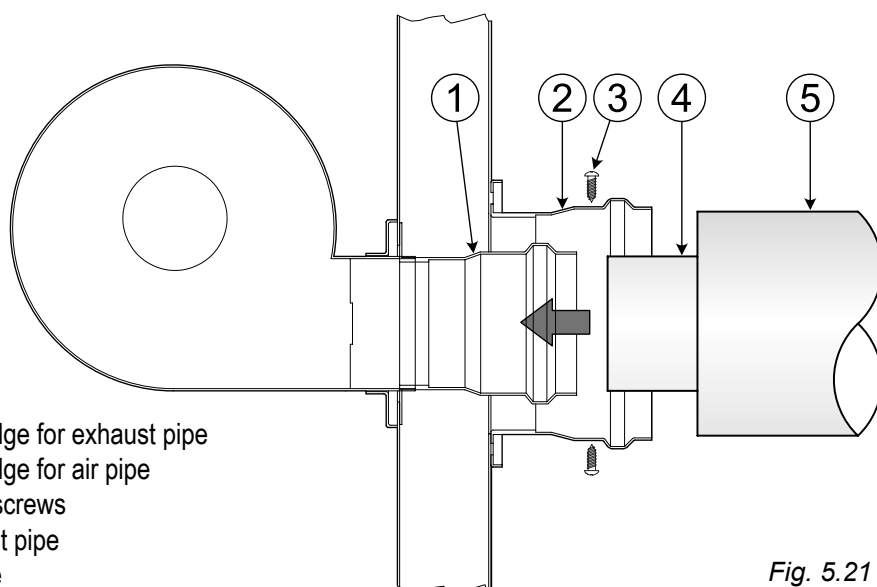
For the positioning of the air-flue gas terminal, refer to the national and local regulations in force. (In Italy, see UNI 7129-3: 2015 standard).

2. Remove the cover (fig. 5.20, point 5) after first unscrewing the fixing screw (6).
3. Insert the exhaust / intake pipe (4/5) into the air-fumes box using the sleeves up to the abutment edges (1/2), see pic. 5.21.
4. Lock the exhaust / intake pipe with the appropriate screws (3), see pic. 5.21.
5. Apply the radiator (4) to the wall and matching with the hole made previously, then fix it with the supplied screws.
6. Finally fix the casing with the screw (6), pic. 5.20.



- 1= Wall
- 2= Air/Fume Kit
- 3= Manifold fixed on device
- 4= King
- 5= Cover
- 6= Cover fixing screws

Fig. 5.20



- 1= Stop edge for exhaust pipe
- 2= Stop edge for air pipe
- 3= Fixing screws
- 4= Exhaust pipe
- 5= Air pipe

Fig. 5.21

Side wall installation with coaxial Air/Fume kit (fig. 5.22). Depth 450 mm air/fumes tube \varnothing 60-100. With side connector exhaust, coaxial curve flanged. 1 meter length terminal.

IMPORTANT: The device must be prearranged at the factory, according to the of device.

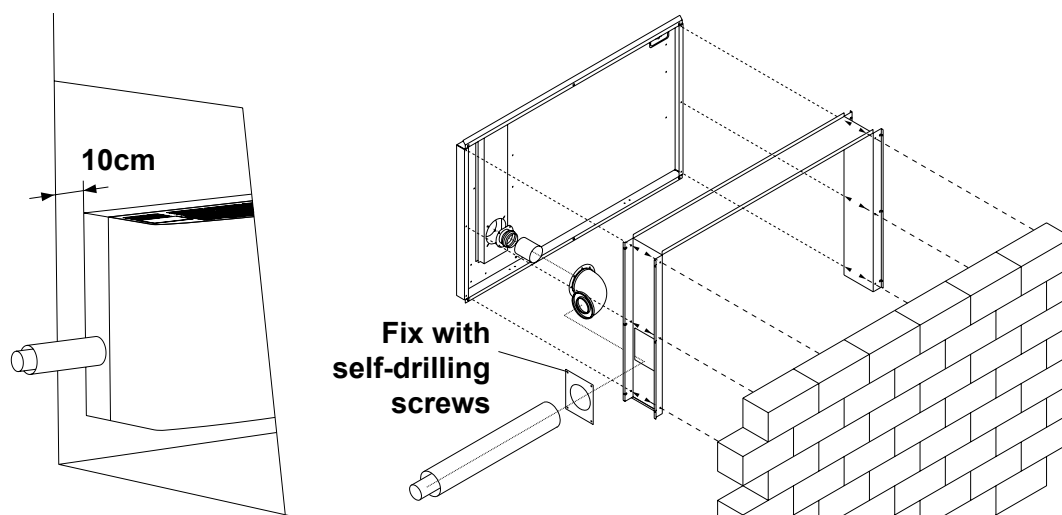


Fig. 5.22 Example of side wall installation with coaxial Air/Fume kit

5.6 GAS PIPING



WARNIG

The gas piping must be installed by qualified personnel with the appropriate skills and in compliance with the national and local regulations in force and with the contents of this manual.



WARNING

Carry out the leak test according to the regulations in force before commissioning the gas supply system.



IMPORTANT

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

- a. The device cannot withstand pressures of higher than 40 mbar (0,04 bar) without risking the breakage of the gas valve membrane.
- b. Always use ball valves and flexible joints for gas when connecting the devices.
- c. Gas supply line pressure adjustment: all the devices are tested and calibrated at the Manufacturer's factory for their respective operating pressures (see the data provided in the table).

To check the outlet pressure (Natural gas) use the check point 4 (fig. 5.23) and 1 (fig. 5.25) placed above the valve outlet after removing the locking screw. In case the pressure value should not correspond to the valued indicated check (burner working) the inlet pressure trough the check point 5 (fig. 5.23). **The check point the inlet pressure must be like indicated in the tables 3.1.**

For gas LPG (butane-propane), the valve flow adjuster must be totally excluded. Turn anti-clock-wise 1/2 spin the pressure adjuster 9 (fig. 5.23) for pilot flame device (KING 21), while for electronic devices (KING 30 FE; KING 50 FE; KING 70 FE), turn completely the pressure adjuster 3 (fig. 5.23). To check the inlet pressure use the check point placed (point 5 fig. 5.23 and point 2 fig. 5.54) above the valve inlet gas connector (with burner running). Whenever the inlet pressure values should not correspond to the value indicated on the regulation data table, adjust the pressure (with burner running) manually trough the pressure adjuster placed on the top of the valve.



ATTENTION

The team in charge of the gas piping construction operations must place a warning sign on the general gas interception valve (s) of the system for the whole duration of the activities where the following sentence is reported: "Work in progress on the gas piping, DO NOT open the main gas valve."

5.6.1 Pilot flame gas valve for King 21

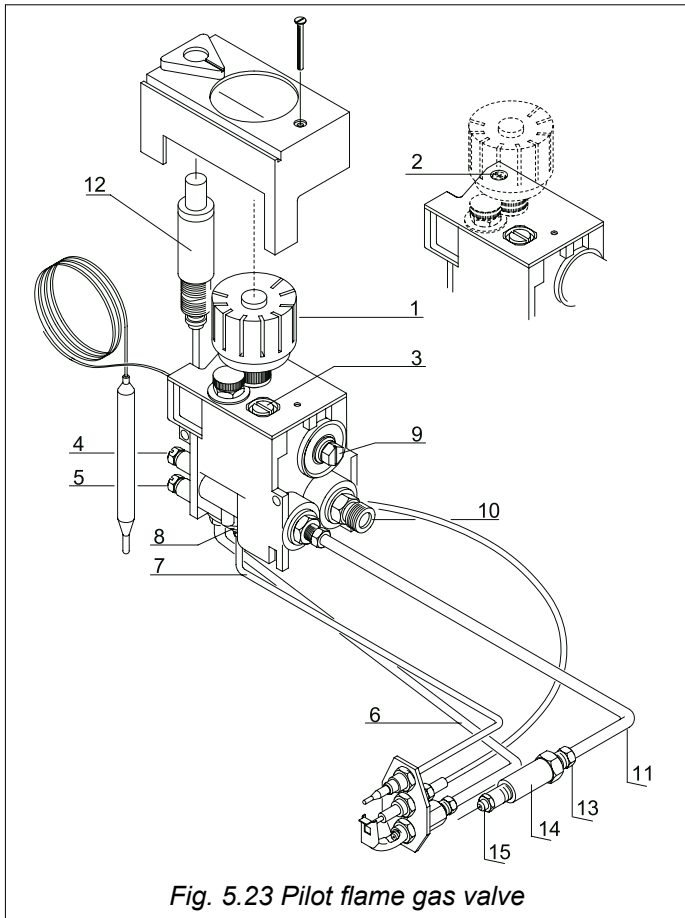


Fig. 5.23 Pilot flame gas valve

LEGEND	
1)	Control dial
2)	Pilot frame adjustment screw
3)	Minimum flow adjustment screw
4)	Outlet pressure tap (at nozzle)
5)	Inlet pressure tap (from mains)
6)	Pilot flame supply line pipe
7)	Thermocouple
8)	Magnet unit
9)	Pressure regulator - stabilizer
10)	Gas inlet connector thread
11)	Main burner supply line pipe
12)	Piezoelectric button
13)	Sealing connector
14)	Nozzle-holder sleeve
15)	Nozzler

Tab. 5.2



WARNING

After these pressure adjustment operations have been completed, remember to close the pressure taps located on the gas safety valve using the respective screws.

5.6.2 Regulation of pilot flame gas valve

1. Take out the plastic cover of the valve.
2. Regulation of gas flow of pilot burner
3. Turn the knob in Pilot position (★). To increase the flow turn the PILOT regulation screw counter-clockwise and vice-versa.
4. Regulation of gas pressure (output) at the main burner
5. The gas regulator is adjusted to the right position by the manufacturer. Modifications of such adjustment have to be done by qualified personnel, respecting the following instructions.
6. Turn the knob to the position 7, corresponding to the maximum (the bulb of the thermostat has to be at the minimum declared temperature)
7. Using a screwdriver take out the plastic cover of the valve.
8. To increase the output pressure turn the screw "9" counter-clockwise and vice-versa.
9. After this adjustment the regulator has to be in compliance with the UNI EN 126 standard for pressure regulators.
10. At the end of regulations, put again the plastic cover onto the valve.
11. Disabling the pressure regulator
12. Using a screwdriver take out the plastic cover of the valve.
13. Turn completely clockwise the screw "9" : the internal bush will be released from the screw, disabling the pressure regulator (Gas of III family).

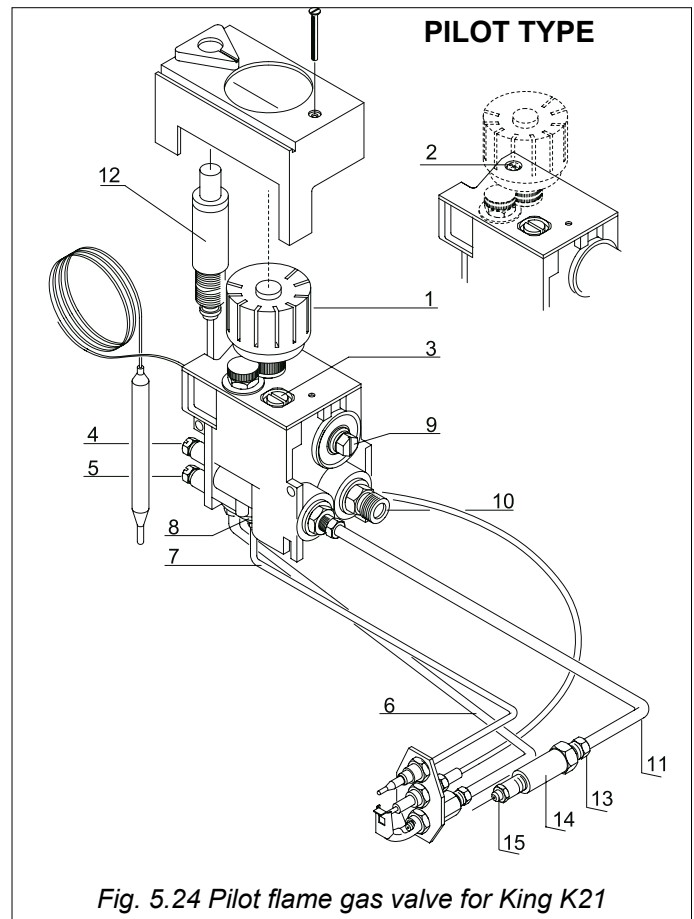


Fig. 5.24 Pilot flame gas valve for King K21

i

IMPORTANT

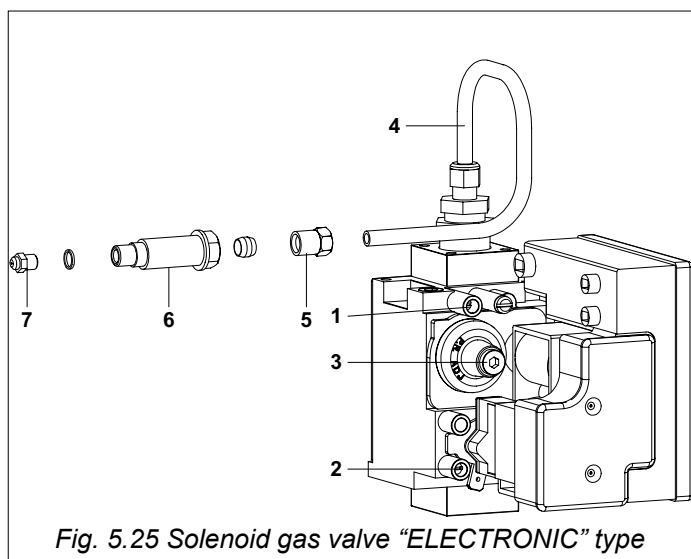
At the end of regulations, put again the plastic cover onto the valve.



ATTENTION

Adjustments must be carried out by professional and qualified people in accordance with the current safety standards; the manufacturer declines all responsibility for any damage resulting from the incorrect adjustment or improper and / or incorrect use of the appliance.

5.6.3 Solenoid gas valve “ELECTRONIC” type for King 30 FE, King 50 FE, King 70 FE



LEGEND	
1)	Outlet pressure tap (at nozzle)
2)	Inlet pressure tap (from mains)
3)	Pressure regulator - stabilizer
4)	Main burner supply line pipe
5)	Sealing connector
6)	Nozzle-holder sleeve
7)	Nozzle
8)	Brass closing plug

Tab. 5.3



ATTENTION

At the end of the above-mentioned pressure adjustment operations, remember to close the pressure points on the gas safety valve with the appropriate screws.

5.7 ELECTRICAL CONNECTIONS

The electric system shall comply with the maximum power consumed by the thermal unit, which is indicated in its dataplate and in this manual: the cross-section of cables should correspond to the consumed electric power.



WARNING

The electrical connections must be installed by qualified personnel with the appropriate skills and in compliance with the national and local regulations in force and with the contents of this manual.



WARNING

Protect the supply line upstream, always use an omnipolar switch with a gap between the contacts of at least 3 mm.

Connect the device to an effective earthing system, taking care to leave the earthing condor slightly longer than the line wires, so that in case of accidental disconnection, it would be the last to be disconnected, ensuring good earthing continuity.

5.8 STARTING AND OPERATION OF PILOT FLAME DEVICES KING 21

1. Set the dial (1) in the position (★) on the index (See fig. 5.23).
2. Press the dial (1) and keep it pressed down for approx. 10 seconds.
3. Press the piezoelectric button (12) to light the burner's pilot flame.
4. After lighting the burner's pilot flame, keep the dial (1) pressed down for approx. 10 seconds, and then release.
5. Turn the dial (1) counter-clockwise to fire the main burner and set it on the index at values from 1 to 7 which correspond to 13 ° - 38 °C respectively.
6. In order to switch the main burner off, rotate the dial (1) to the position (★) on the index. In order to switch the burner's pilot flame off (and consequently the unit itself), turn the dial (1) to the position (●) on the index.

Wait 60 seconds before trying to start the device again.

5.9 STARTING AND OPERATION OF ELECTRONIC DEVICES KING 30 FE; KING 50 FE; KING 70 FE

1. Press the bipolar switch "ON - OFF" to connect voltage to the circuit.
2. Position the 0-40 °C thermostat on the desired temperature value. Carry out these operations and after about 10 sec. (pre-wash), the "green" operating light comes on. Once the temperature set on the thermostat has been reached, the "green" operating light that indicates flame presence will switch off.
3. Press the bipolar switch to turn the device off.

5.10 USING THE DAILY PROGRAMMER (OPTIONAL)

1. Set the right time using the white reference triangle positioned above the programmer disk's starting/switch-off switch by rotating clockwise.
2. Pull the sectors on the programmer disk corresponding to the period of operation desired outward (for example, from 10.00 AM to 17.00 PM). These sectors are used to set the period of operation.
3. Numerous intervals of operation throughout the day can be programmed by selecting the sectors as required.
4. When setting starting at 10.00 AM and switch-off at 17.00 PM, the device will always start and stop at the same time, day after day, for the period of time set.

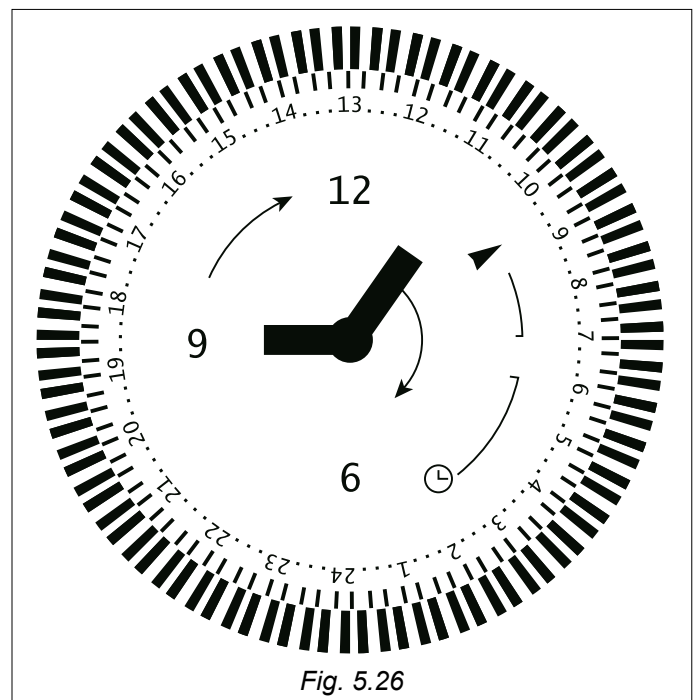


Fig. 5.26

i **IMPORTANT!**
 When using the daily programmer, the program set will be run when the switch is set in the central position. When set in the "I" position, the device will operate continuously and the timer will be disabled. When set in the "O" position, the device will switch off and the timer will be disabled.

5.12 MALFUNCTIONS AND SOLUTIONS



ATTENTION

Switch off the appliance if it does not work or if it is functioning incorrectly. All the elements must be repaired or replaced by professional and qualified people. Spare parts must be original. The use of the appliance can be dangerous if these principles are not respected.

5.12.1 Malfunctions and solutions for pilot flame devices King 21

DEFECTS: The burner pilot flame fails to light.	
CAUSES	SOLUTIONS
a) There is no gas or the pressure is too high.	a) Check the supply pressure on the valve (5 fig. 5.24).
b) There is no electrical spark discharge on the burner.	b) Check the spark plug, cable and piezoelectric element.
c) The pilot flame nozzle is clogged or inadequate to the type of gas being used (Methane or LPG).	c) Replace using original spare parts.

Tab. 5.3

DEFECTS: The burner pilot flame lights but goes off when the dial is released.	
CAUSES	SOLUTIONS
a) The dial (1 fig. 5.16) has been released before ten seconds have passed.	a) Keep the dial pressed down for more than ten seconds.
b) The thermocouple has oxidized.	b) Replace using original spare parts.
c) The gas valve is malfunctioning.	c) Replace using original spare parts.

Tab. 5.4

DEFECTS: The main burner flame goes off.	
CAUSES	SOLUTIONS
a) The gas pressure reaching the nozzle is too high.	a) Adjust the pressure to the rating plate values using the pressure tap (4 fig. 5.24).
b) The wrong type of nozzle has been used	b) Replace using the right type of nozzle for the type of gas being used.
c) The flue gas expulsion pipe has not been perfectly connected between the cast-iron casting and the external anti-wind grille.	c) Check the connection seal.
d) The anti-wind grille has been clogged.	d) Clean the grille.

Tab. 5.5

5.12.2 Malfunctions and solutions for electronic devices King 30 FE; King 50 FE

DEFECTS: The "red" block light switches on.	
CAUSES	SOLUTIONS
a) There is no gas or the pressure is too high.	a) Check the supply pressure on the valve (5 fig. 5.25).
b) There is no electrical spark discharge on the burner.	b) Check the condition of the starting electrodes, the respective spark detection system, and the position of the starting electrodes.
c) The electric polarity of the neutral phase has been inverted.	c) Invert the polarity of the neutral phase.
d) The device has not been correctly grounded.	d) Ground the device correctly.
e) There is a malfunction in the electronic unit (in most cases this is due to electrical discharges produced by lightning. We recommend disconnecting the electrical power supply during periods when the device will not be used).	e) Replace using original spare parts.
f) Air is present in the pipes and causes the device to lock-out after 10 seconds of discharge on the burner.	f) Switch the bipolar switch equipped in off and on to reset.
g) The centrifugal fan positioned in the combustion air suction circuit is malfunctioning (no starting occurs).	g) Replace using original spare parts.
h) Failure of one or both coils of gas solenoid valve.	h) Replace using original spare parts.

Tab. 5.6

DEFECTS: The tangential fan for the supply of surrounding air fails to start working.	
CAUSES	SOLUTIONS
a) The fan is jammed	a) Check and remove all foreign objects.
b) The fan motor is malfunctioning.	b) Replace the entire fan-motor unit.
c) The fan triggering thermostat is malfunctioning (this can be checked by making an electric bridge on the thermostat itself).	d) Replace the fan triggering thermostat (38 - 40 °C) using original spare parts.

Tab. 5.7

DEFECTS: Main burner with the flame which is detaching	
CAUSES	SOLUTIONS
a) Gas pressure at the nozzle too high	a) Regulate the pressure at the nominal value using the 4 intake (1 fig. 5.25).
b) Wrong nozzle	b) Replace the nozzle with the one corresponding to the gas actually used
c) Exhaust pipe not correctly connected between the cast iron body and the external terminal	c) Verify the seal of the connection
d) Obstructed terminal	d) Clean the terminal

Tab. 5.8

5.12.3 Malfunctions and solutions for electronic devices King 70 FE

DEFECTS: The "red" block light switches on.	
CAUSES	SOLUTIONS
a) There is no gas or the pressure is too high.	a) Check the supply pressure on the valve (5 fig. 5.25).
b) There is no electrical spark discharge on the burner.	b) Check the condition of the starting electrodes, the respective spark detection system, and the position of the starting electrodes.
c) The electric polarity of the neutral phase has been inverted.	c) Invert the polarity of the neutral phase.
d) The device has not been correctly grounded.	d) Ground the device correctly.
e) There is a malfunction in the electronic unit (in most cases this is due to electrical discharges produced by lightning. We recommend disconnecting the electrical power supply during periods when the device will not be used).	e) Replace using original spare parts.
f) Air is present in the pipes and causes the device to lock-out after 10 seconds of discharge on the burner.	f) Switch the bipolar switch equipped in off and on to reset.
g) The centrifugal fan positioned in the combustion air suction circuit is malfunctioning (no starting occurs).	g) Replace using original spare parts.

Tab. 5.9

DEFECTS: The tangential fan for the supply of surrounding air fails to start working.	
CAUSES	SOLUTIONS
a) The fan is jammed	a) Check and remove all foreign objects.
b) The fan motor is malfunctioning.	b) Replace the entire fan-motor unit.
c) The fan triggering thermostat is malfunctioning (this can be checked by making an electric bridge on the thermostat itself).	d) Replace the fan triggering thermostat (38 - 40 °C) using original spare parts.

Tab. 5.10

6 MAINTENANCE

**WARNING**

All equipment control operations should be performed by qualified personnel with appropriate skills and in accordance with applicable national and local regulations, as well as according to the instructions within this manual.

**WARNING**

Disconnect the system from a power supply source and shut off the gas valve before launching maintenance operations.

During maintenance works, the user shall not intervene in the device control system at the control panel.

For the period of maintenance, the service technician must place a warning sign on the system control panel with the following message: "The system is under maintenance, DO NOT operate the device control panel!" IT IS FORBIDDEN to carry out operations on the control panel / thermostat of the appliances during the maintenance

**WARNING**

During maintenance works, use safety gloves, harness, cap, and footwear for maintenance operations according to the effective regulations.

**WARNING**

All the annual equipment control operations should be performed by qualified personnel with appropriate skills and in accordance with applicable national and local regulations, as well as according to the instructions within this manual.

**WARNING**

The materials and / or components replaced during the maintenance operations must be treated, disposed or recycled according to the classification and procedures provided by the local legislation in force in the country where the appliance is installed.

6.1 TRANSFORMATIONS FOR DIFFERENT SUPPLY TYPE OF GAS

To change the type of gas supply, contact a service center authorized by the manufacturer.

**WARNING**

Transformation must be performed only by qualified professionals in complete respect of the safety regulations in force. The Manufacturer declines all liability for erroneous transformation or the inappropriate or incorrect use of the device.

7 WARRANTY

7.1 OBJECT AND DURATION OF THE WARRANTY

1. The "Commissioning" of the appliance includes only the operations of: checking the electrical wiring and the gas and hydraulic connections, commissioning and checking the operation of the appliance; everything refers only to the appliance and therefore it does not require interventions on: the electrical system, the fumes evacuation systems and any accessories not supplied by the manufacturer; It also does not include adjustments and / or adaptations of the appliance for the type of use, any combustion analyzes and system tests or interventions for the adjustment of the appliance or limits imposed by local laws and / or regulations.
2. The "Commissioning" is carried out exclusively by the local Service Center and it is mandatory to make the Warranty Period valid and effective. "Start-up" must be requested after the installation, including the electrical and hydraulic connections.
3. The Warranty is limited to defects in material or workmanship of the components supplied by the manufacturer. In the event of defects in material or workmanship, the manufacturer will repair or replace the defective parts free of charge ex works, EXPRESSLY EXCLUDING ANY OTHER FORM OF WARRANTY OR INDEMNITY, BOTH LEGAL OR CONVENTIONAL.
4. The replaced parts will be promptly returned to the manufacturer, ex works, at the user's expense. In the event of an intervention under warranty, the user will be charged of a fixed right of call, in addition to the kilometer reimbursement, if the place of intervention is more than 10 kilometers away from the closest Service Center.
5. The validity of the Guarantee starts from the "Commissioning" if it occurs within one year from the date of purchase of the Appliance by the user. In any case, the warranty expires after 3 (three) years from the invoice date. The duration of the warranty will be 1 (one) year on each component of the appliance.
6. Any replacement of defective parts (or the entire appliance) will not extend the original expiration date of the Warranty. The warranty on replaced parts will cease with the expiration date of the appliance warranty.

7.2 EXCLUSIONS FROM THE WARRANTY

The warranty is not operative in the following cases:

- a. Faults not attributable to defects in materials or workmanship, without limitation
 - breakages occurring during transportation;
 - non-compliance of the system with the local laws and regulations in force;
 - failure to comply with the installation specifications indicated in the technical notes supplied with the Appliance
 - and/or the rules of good technique;
 - damage caused by accidents, fire, accidents in general or negligence not attributable to SYSTEMA.
- b. Manoeuvres or failures due to interventions of unauthorised personnel.
- c. Faults caused by anomalies dependent on the power or fuel supply.
- d. Damage due to: poor maintenance, neglect or improper use, voltage variations in the electrical supply, moisture and dust in rooms, incorrect dimensioning and/or defective execution of the installation.
- e. Corrosions or breaks 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 fuel gas with caloric characteristics other than those referred to on the plate
- f. Use of spare parts that are not original or not authorised by SYSTEMA.
- g. Normal wear and deterioration
- h. Products not properly kept or stored.

The Warranty is not operative in the following cases

- a. Payment for the Appliance has not been made within the time limits of the contract.
- b. "Start-up" has not been carried out by the Authorised Centre and/or no copy of the Warranty Certificate has been received, duly completed and signed in its entirety.
- c. The User has not reported the defect within 10 days of the discovery.

7.3 COMPETENCES

- 1) Operations under Guarantee must be requested, on pain of expiry, to the S.C. that carried out "Commissioning". In this case the user must show the S.C. the Guarantee Certificate.
- 2) The S.C. will take action during normal working hours, depending on its own organisation necessities.

7.4 OPERATION AND EFFICIENCY OF THE WARRANTY

In order to make the warranty operative and effective, the user must:

- a. Request from their installer the named person of the Authorised Centre for "Start-up".
- b. Present to the personnel responsible for the Warranty Certificate, complete it in all its parts and request the application of the stamp and signature of the Authorised Centre in the appropriate spaces.

7.5 RESPONSIBILITY

The customer exempts the supplier from any liability for any accidents or damage that could occur to the machines or to the systems during operation. The supplier will only be liable to the buyer within the limits of the above warranty obligations.

7.6 JUDICIAL DISPUTES - TERRITORIAL COMPETENCE AND POWERS OF THE PARTIES

Jurisdiction of the Court of Padua is established, even in the case of an action for connection or warranty claim. Pending proceedings do not exempt the customer from payment obligations, which must follow their contractual course, until the final decision of the Judicial Authority.

8 STORAGE AND DISPOSAL

8.1 STORAGE

If it is necessary to store the appliance for a lengthy period of time, the following is recommended: perform the following operations:

- turn the main switch to the "O" position and disconnect the appliance from the power supply;
- close the gas supply valve and disconnect the appliance from the gas supply network;
- seal the terminal of the pipe where the appliance was connected with a threaded cap;
- In the event of a change of owner or a new renter, submit all the documentation relating to the heating system to the new owner/renter.



WARNING

All disconnections operations must be installed by qualified personnel with the appropriate skills and in compliance with the national and local regulations in force and with the contents of this manual.

8.2 DISPOSAL

The symbol shown in fig. 8.1 indicates that the product at the end of its service 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.

Improper use of the product by the user results in the application of administrative sanctions according to the current regulations.

Please note that, pursuant to the national and local regulations in force, abandonment and uncontrolled storage of waste are prohibited. Anyone who violates this rule "is required to proceed with the removal, transportation, recovery or disposal of waste and restoration of the state of the sites jointly and separately with the holder of proprietary or personal rights to use the area" to which this violation is attributable by way of fraud or negligence, on the basis of the verifications carried out by the authorities in charge of the control.

The separate collection of this equipment at the end of its service life is organized and managed by the manufacturer. Therefore, the user planning disposal of this equipment can contact the manufacturer and follow the system adopted by the manufacturer for separate collection and disposal of the equipment at the end of service life. The user can also select any authorized center on own discretion.

Separate collection of equipment components for subsequent recycling, treatment, and environmentally friendly disposal contributes to the environment safeguarding and human health protection, reduces resource consumption, and promotes the reuse and/or recycling of the materials used in the equipment.

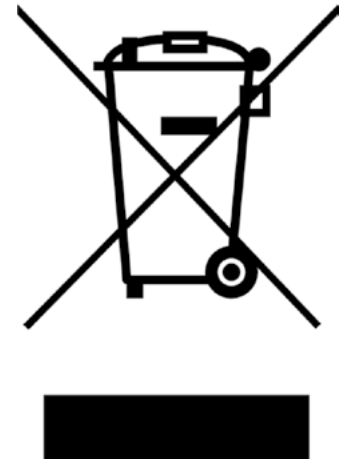


Fig. 8.1



WARNING

All operations must be carried by qualified personnel with the appropriate skills and in compliance with the national and local regulations in force.



WARNING

During operations, use safety gloves, harness, cap, and footwear for maintenance operations according to the effective regulations.

**ATTENTION**

The people in charge of the dismantling operations must place a warning sign on the main switch / general electrical panel of the system for the whole duration of the activities where the following sentence is indicated: "System under dismantling, DO NOT activate the main switch / thermostat."

**DANGER**

All dismantling operations must be carried out with the system switched off, disconnected from the electricity and the gas supply: before any dismantling operation, disconnect the power supply by opening the main switch and disconnect the system from the mains valves, close the general gas shut-off valve 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.



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