FLEXIHEAT UK LTD
www.flexiheatuk.com
01202 822221

INSTRUCTION MANUAL FOR USE AND MAINTENANCE

FHG

AIR HEATERS

CE

Read this manual carefully before
installing and operating the appliance

INDEX

1 - INTRODUCTION

1.1 General safety instructions

This appliance must only be used for the function for which it was designed: "Gas-fired hot air generator". Any other use is to be considered improper and dangerous. Flexiheat cannot be held responsible for any damage resulting from improper, incorrect and unreasonable use or if the appliance is used in systems that do not comply with the safety regulations in force.

Check the integrity of the appliance when you open the packaging, paying particular attention to the presence of damage or deformation which could lead to breakage and/or malfunction during use. In such cases, do not connect the machine to the electricity and gas mains. Periodically carry out a general inspection of the appliance.

Comply with the safety rules indicated for electrical equipment, and in particular:

- Follow the installation instructions of the appliance.
- Do not place any objects on the hot air generator.
- Prevent children and/or incapacitated persons from using the appliance without proper supervision;
- Do not touch the appliance during operation or during the cooling phase.
- Never immerse the appliance in water or any other liquid.
- Do not put any objects inside the machine as this could cause irreparable damage.
- Do not use accessories, spare parts or components not intended for or supplied by the manufacturer.
- Avoid touching the device with wet or damp hands.
- Do not pull power cables or expose them to risk of shearing.
- Do not leave the appliance directly exposed to the weather (rain, sun, etc.).
- In the event of a fault or malfunction, switch it off immediately and disconnect the power and gas supply.
- Do not attempt to open or tamper with the appliance: contact a qualified technician.

1.2 Guidelines for the correct disposal of the product

Pursuant to European Directive 2012/19/EU:
At the end of its useful life, the product must not be disposed of with municipal waste.
It can be handed in at the separate waste collection centres set up by the municipalities, or at retailers who provide this service. Disposing of the product separately avoids possible negative consequences for the environment and for health deriving from its improper disposal and allows the recovery of the materials of which it is composed in order to obtain a significant saving of energy and resources. To emphasise the obligation to dispose of electrical and electronic equipment separately, the product is marked with a crossed-out wheeled bin.

1.3 Conventions used in this manual

The manual is divided into chapters, within which the operators to whom the instructions are addressed are specified, where necessary, in order to operate the machine safely.
The sequence of chapters responds to the temporal logic of the machine's life.
To facilitate immediate understanding of the text, terms, abbreviations and pictograms are used, the meaning of which is indicated below.

ABBREVIATIONS

Cap. = Chapter
Par. = Paragraph
Page = Page
Fig. = Figure
Tab. = Table

UNITS OF MEASUREMENT
The units of measurement used are those of the International System (SI).

1.4 Keeping and updating the instruction manual

The instruction manual must be kept with care and must accompany the machine at all times during its life. Parts must not be removed, torn or arbitrarily modified.
The manual should be stored in an environment protected from moisture and heat and in the immediate vicinity of the machine to which it relates. At the request of the user, the manufacturer can supply additional copies of the machine instruction manual. You can request this by writing to **sales@flexiheatuk.com**
The manufacturer reserves the right to modify the design and make improvements to the machine without informing the customer, and without updating the manual already delivered to the user. However, in the event of changes to the machine installed at the customer's premises, agreed with the manufacturer and which involve the modification of one or more chapters of the instruction manual, it will be the manufacturer's responsibility to send the users concerned the chapters affected by the change.
It is the responsibility of the user to replace the old chapters, homepage and table of contents with the new ones in all copies owned.

1.5 Target readers

This manual is intended for the installer, the operator and qualified personnel authorised to service the machine.
OPERATOR: means the person or persons responsible for installing, operating, adjusting, cleaning, repairing and moving machinery and for carrying out the simplest maintenance operations;
QUALIFIED PERSONNEL/QUALIFIED WORKERS: these are people who have attended specialised courses, training, etc. and have experience in the installation, commissioning and maintenance, repair, transport of the machine.

The machine is intended for industrial use, and therefore professional and not general use, so its use must be entrusted to **qualified personnel, in** particular who:

- have reached the age of majority;
- are physically and mentally fit to carry out work of particular technical difficulty;
- have been properly instructed in the use and maintenance of the machine;
- have been judged by the employer to be suitable for the task;
- are able to understand and interpret the operator's manual and safety instructions;
- are familiar with emergency procedures and their implementation;
- have the ability to operate the specific type of equipment;
- are familiar with the specific rules of the case;
- have understood the operating procedures defined by the machine manufacturer.

The appliance may be used by persons with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, provided that they are supervised or have received instructions concerning the safe use of the appliance and an understanding of the hazards involved.

1.6 Pictograms

This section explains the meaning of the pictograms indicating the operator's qualification, the state of the machine, the hazards and the obligations/prohibitions to be respected. Their use makes it possible to provide rapid and unambiguous information necessary for the correct and safe use of the machine.

PICTOGRAMS RELATING TO OPERATOR QUALIFICATION

Symbol	Description
	**General labourer**: operator without specific skills, able to carry out only simple tasks on the instructions of qualified technicians.
	**Driver of lifting and handling equipment**: an operator qualified to use lifting and handling equipment and machines (strictly following the manufacturer's instructions), in accordance with the laws in force in the country of the machine user.
	**Mechanical maintenance** technician: qualified technician, able to operate the machine under normal conditions, to make it work with protections disabled, to intervene on the mechanical parts to carry out the necessary adjustments, maintenance and repairs. Typically, he is not qualified to work on live electrical installations.
	**Electrical maintenance** technician: qualified technician, able to operate the machine under normal conditions, to make it work with protections disabled, is in charge of all electrical regulation, maintenance and repair work. He is able to work in the presence of voltage inside cabinets and distribution boards.
	**Manufacturer's technician**: a qualified technician made available by the manufacturer to carry out operations of a complex nature in particular situations or, in any case, as agreed with the user. The skills are, depending on the case, mechanical and/or electrical and/or electronic and/or software.

SAFETY PICTOGRAMS (ISO 7010)

Pictograms contained within a triangle indicate DANGER.
Pictograms contained within a circle impose a PROHIBITION/OBLIGATION.

Pictogram	Description
	Dangerous electrical voltage.
	General danger.
	Danger of hot surfaces
	Do not remove safety devices.
	It is forbidden to clean, oil, grease, repair or adjust moving parts by hand.
	Obligation to switch off power before starting work or repairs.
	Protective gloves are mandatory.
	Compulsory safety footwear.
	Helmet use mandatory

1.7 Applications

The **G** heaters are direct combustion gas appliances, specifically designed for heating premises in **agriculture** and **livestock** applications (poultry farms, greenhouses, etc.). The air is heated using the thermal energy developed by the combustion of the gas and is then sent to the room to be heated together with the products of combustion, thus making 100% of the thermal power produced available. The environment must be suitably ventilated to ensure air renewal and emission control.
Do not use the generator in basements or below ground level, nor in rooms used for domestic purposes.

The appliance is equipped with all the safety devices required by the standards, which ensure safe operation in all conditions:

- Flame control equipment: carries out pre-ignition checks, controls the ignition sequence, checks the presence of the flame during operation and shuts down the machine in the event of anomalies.
- Manual reset safety thermostat: protects the appliance from overheating by switching off the burner.
- Air pressure switch: intervenes in the event of an abnormal reduction in the air flow rate, causing the flame to extinguish.

The materials and components used ensure reliability, corrosion resistance and durability even in the most critical environments.

This machine must only be used for the purpose
for which it was designed:
"Gas-fired air heater for space heating
for agricultural and livestock use'.
All other uses are improper and potentially dangerous.

1.8 Versions

The **FG** series generators are available in the following versions:

1458200	FHG36-25	25kW	3000m³/h	230V ~ 50Hz
1458300	FHG45-40	40kW	4000m³/h	230V ~ 50Hz
1458400	FHG56-65	65kW	7000m³/h	230V ~ 50Hz
1458500	FHG56-90	90kW	8000m³/h	230V ~ 50Hz

1.9 Machine identification data and plates

Each machine is identified by a CE plate on which the machine's reference data are indelibly marked. For any communication with the manufacturer or service centres, always quote these references (Fig. 1.9.1)

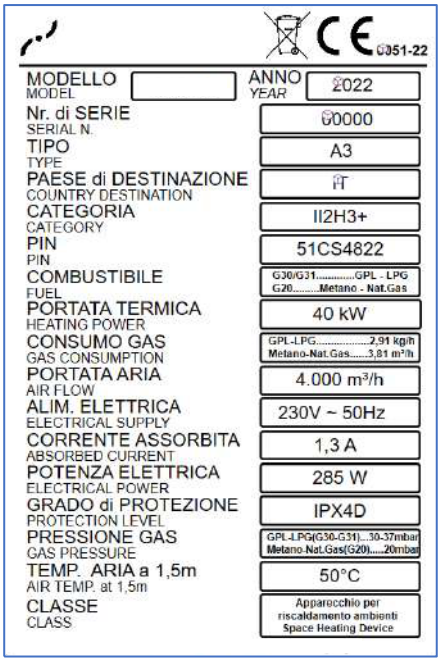


Fig. 1.9.1

1.10 Description of equipment

Components of the air heater.

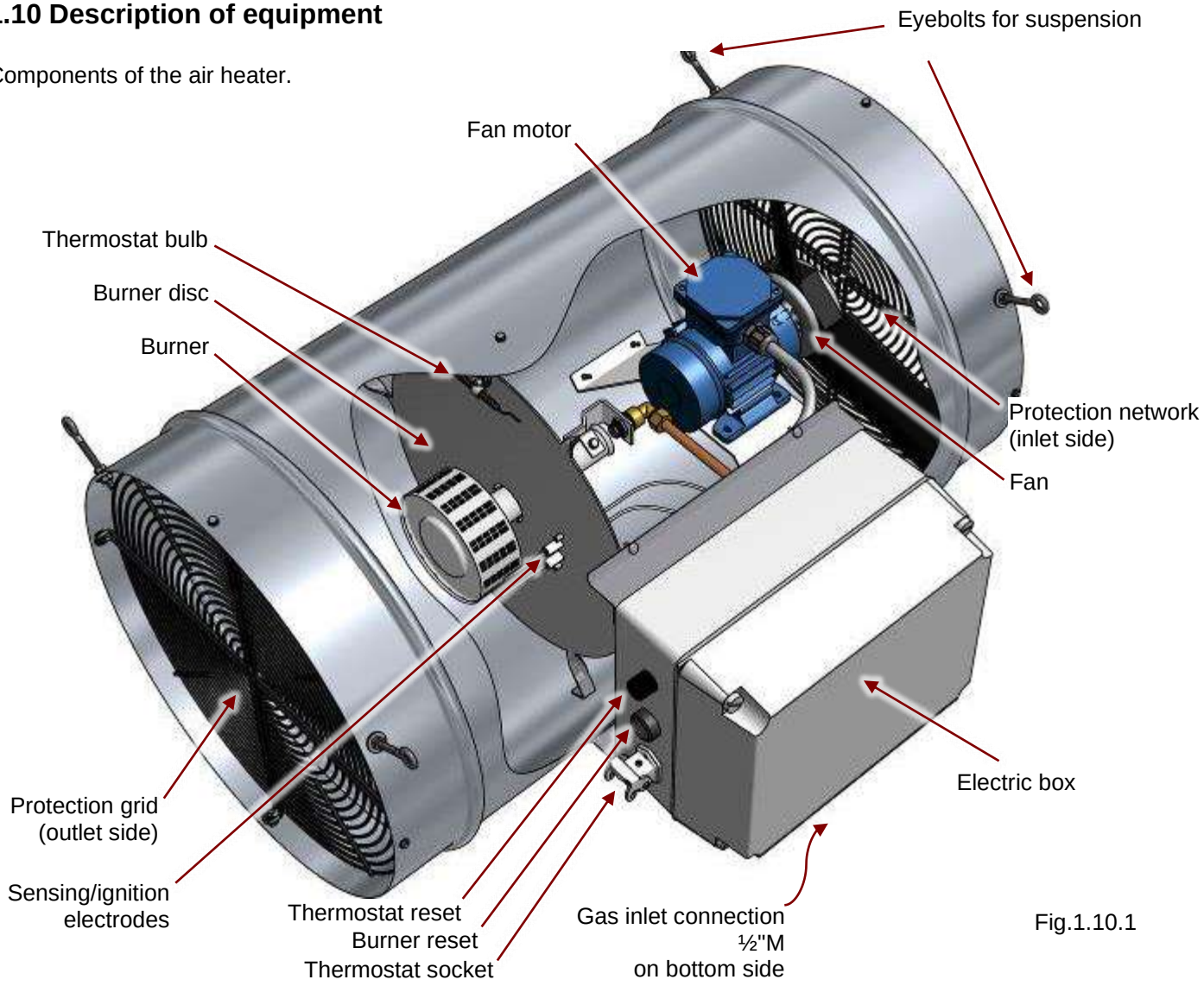


Fig.1.10.1

1.11 Transport and handling

The machine is properly packed in sturdy cardboard containers.
Open the packaging carefully to avoid damage to the machine. Check the integrity of the machine making sure that there are no visibly damaged parts.
Do not dispose of packaging elements in the environment: they should be placed in appropriate collection points.
The **G** series generators can be lifted and suspended using the eyebolts provided.

ATTENTION!
Before moving the appliance:

a. stop the machine,
b. switch off the power supply,
c. interrupt the gas supply,
d. wait for the generator to cool down.

Use suitable lifting gear to move the machine. The weight is indicated on the nameplate and in the manual at par. 5.1 "Technical data". Carry out the operations with caution, using appropriate personal protective equipment, taking care that the machine does not suffer shocks or fall and positioning the lifting belts correctly.

1.12 Warranty

This appliance is guaranteed for 12 months from the date of manufacture for all faults attributable to a proven manufacturing or material defect. The warranty does not cover all parts damaged by transport, bad or incorrect maintenance, neglect, inability to use, improper use, tampering by unauthorised personnel and, in any case, causes not dependent on Flexiheat. During the warranty period, Flexiheat undertakes to provide, free of charge, those parts which are defective at the origin.
Repair work must be carried out by a qualified technician authorised. Flexiheat do not cover the cost of labour and offer a parts only warranty

1.13 Manufacturer's identification data

1.14 Declarations

The machine is manufactured in accordance with the relevant Community Directives applicable at the time of placing on the market.
The machine is not included among those mentioned in All. IV of Directive 2006/42/EC.

1.15 Declaration of conformity

(Annex IIa Directive 2006/42/EC)

THE SUPPLIER

FLEXIHEAT

Company

UNIT 49-AZURA CLOSE, WOOLSBRIDGE IND. ESTATE

THREE LEGGED CROSS, DORSET BH21 6SZ

DECLARES under its own responsibility that the machine:

Gas fired heater	**FHG36-25; FHG45-40; FHG56-65; FHG56-90**
Description	*Model*

1458200, 1458300, 1458400, 1458500

Article number

Gas-fired hot air generator FHG36-25; FHG45-40; FHG56-65; FHG56-90

Trade name

Heating of agricultural and livestock premises

Intended use

complies with the following European Directives:

2006/42/EC	Machinery Directive
EU 2016/426	Gas Appliances Regulation, Cert. n° CE51CS4822
(2014/35/EU)	(Low Voltage Directive)
2014/30/EU	Electromagnetic Compatibility Directive

Harmonised standards and reference specifications used:

EN 12100:2010
EN 525:2009
EN 60335-1:2012 + A11:2014 + A13:2017
EN 60335-2-102:2016
EN 61000-3:2013, EN 55014-1:2017, EN 55014-2:2015

Date of document

20/01/2022

Rev. 00/2022

The manufacturer

Signature

Marco Fantino
Administrator

2 - INSTALLATION

2.1 Preliminary operations

In order to operate the **FHG** series heaters, you need:

- electrical network with voltage and frequency ratings suitable for the machine, with earth connection and protection devices;
- gas supply line with characteristics suitable for the machine

Before installing the appliance make sure that:

- the local distribution conditions, the type of gas and the supply pressure are compatible with the current setting of the appliance
- the local power supply conditions are compatible with the electrical characteristics of the appliance as indicated on the nameplate on the side of the appliance (see section 1.9).

2.2 Positioning

FHG series heaters must be installed inside the room to be heated, in a **horizontal** position**,** with the electrical box placed to the side and the gas pipe connection pointing downwards. Use the 4 eyebolts supplied as standard to hang or bracket the machine, keeping it in a stable working position by means of a properly sized support structure (see Fig. 2.2.1).

The position of the hot air generator inside the room to be heated must be defined by the designer of the system or by a competent person, taking into consideration both technical and legislative aspects (e.g. risk assessment, fire prevention regulations, see par. 2.3 and 2.4). In any case, the following requirements must be complied with:

- Any gas cylinders must be used and stored in accordance with the relevant regulations.
- Accessibility for maintenance and control operations must always be ensured.
- Do not connect any air ducts to the generator's discharge port.
- Do not modify the air supply and intake sections.
- The device must be used within the ambient temperature and humidity ranges indicated in the technical data table.
- Do not install the appliance in rooms with extreme environmental conditions (dust, dirt, etc.) that could impair its proper functioning.
- Do not install the unit in environments with a flammable or explosive atmosphere.
- Avoid the formation of condensation inside the appliance.

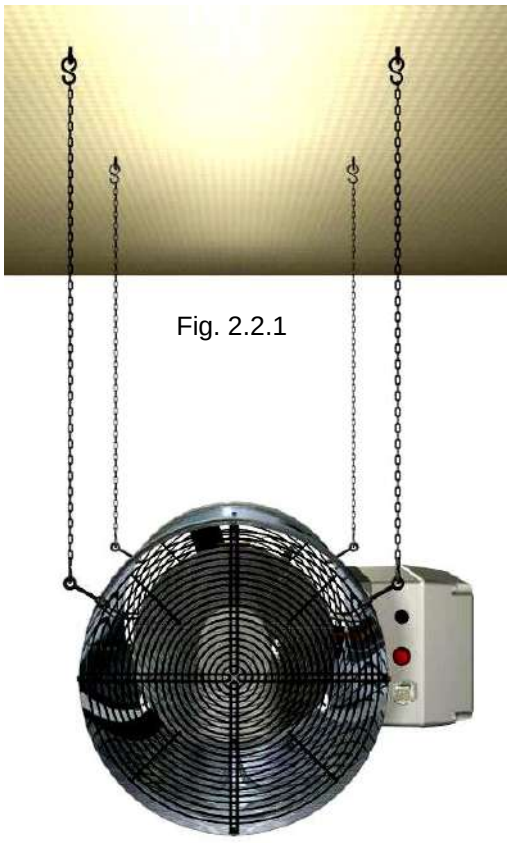


Fig. 2.2.1

2.3 Fire prevention guidelines

Make sure that the installation of the generators complies with all the local and national fire prevention rules and laws in force in the country of destination, if necessary seeking advice from experts or the competent authorities (Fire Brigade, etc.) and, if necessary, obtaining the necessary authorisations. In the absence of more specific regulations or legislation, the following general guidelines should be followed, which are provided for guidance only (Fig. 2.3.1):

- The heated room must be completely above ground.
- Do not place any combustible materials or objects, or use open flames within 4 m of the hot air generator.
- Maintain the following minimum safety distances between the appliance and walls/ceilings:

  - Minimum distance from ceiling: 1 m
  - Minimum distance from wall - inlet side: 0.6 m
  - Minimum distance from side walls: 1 m
  - Minimum distance from wall - outlet side: 3 m

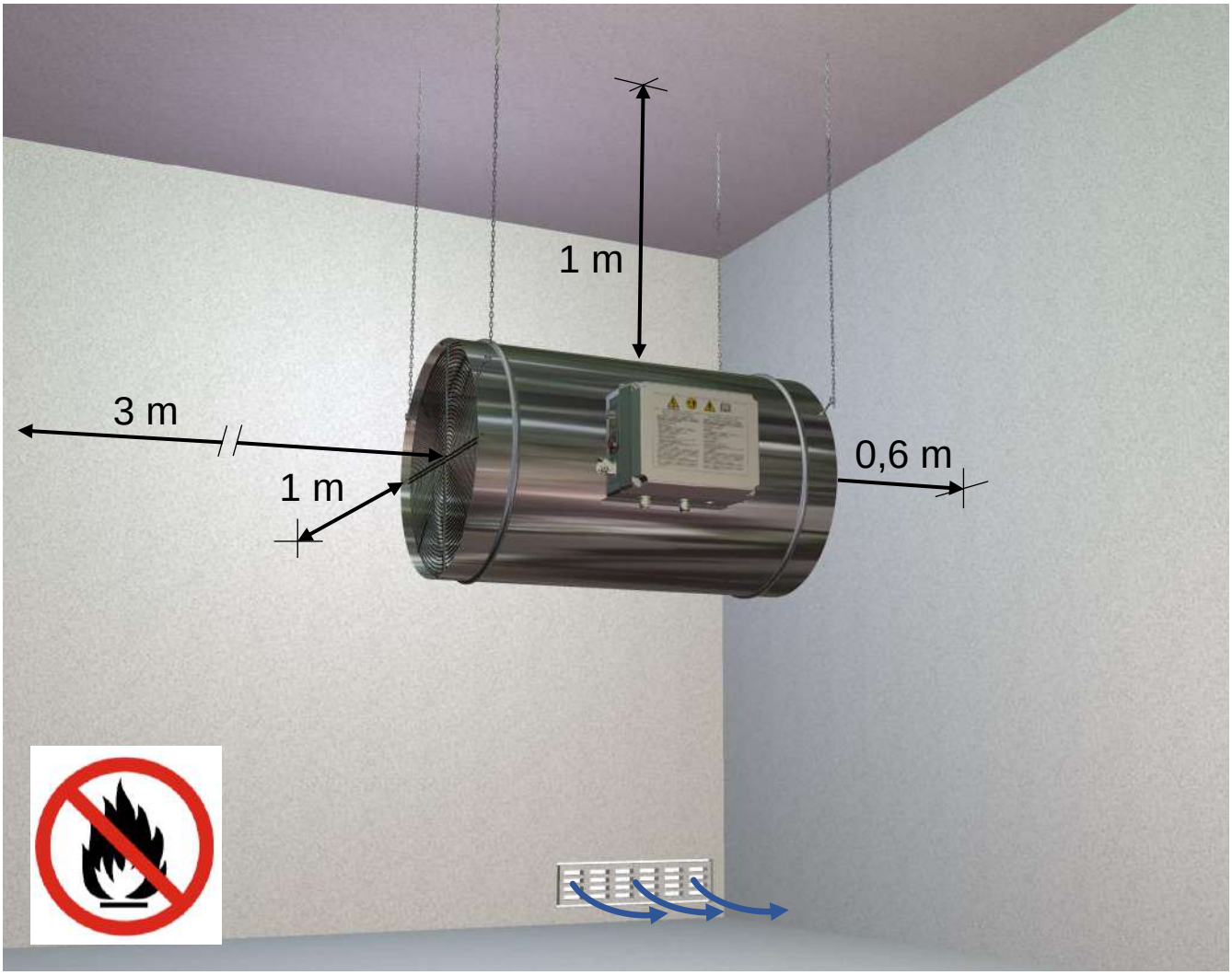


Fig. 2.3.1

Provide ventilation openings evenly distributed on the outside walls of the room, with a minimum section as shown in the following table:

Model	Minimum cross-section of ventilation openings per installed **FG** unit
FHG 36-25	500 cm^2
FHG 45-40	800 cm^2
FHG 56-65	1300 cm^2
FHG 56-90	1800 cm^2

2.4 Ventilation requirements

The **FG** series heaters are direct exchange appliances, which release hot air mixed with the products of combustion into the heated environment. It is therefore necessary, in order to keep the emissions within the safety limits, to ensure an appropriate renewal of the air in the room. According to European guidelines (EN 525:2009, annex C), the system as a whole, including hot air generators, any fans, ventilation openings, etc., must be sized in such a way as to ensure that the air in the room is adequately ventilated. According to European guidelines (EN 525:2009 annex C), the system as a whole, including hot air generators, any fans, ventilation openings, etc., must be sized so that the volume concentration of carbon dioxide (CO_2) in the environment does not exceed 0.28% (2800 ppm), particularly in areas where people may be present.
The following table shows the theoretical values of the fresh air flow rate to be introduced into the room as a function of the installed heating capacity, in order to maintain a CO concentration $<_2$ 0.28% for the most commonly used gases.

	G20 (methane)	G30 (butane)	G31 (propane)
Minimum fresh air flow rate per kW of installed heat output (m/h^3)/kW	37.8	47.3	45.7
Fresh air flow rate for each **FHG 36-25** installed unit (m/h^3)	945	1183	1143
Fresh air flow rate for each **FHG 45-40** unit installed (m/h^3)	1512	1892	1828
Fresh air flow rate for each **FHG 56-65** unit installed (m/h^3)	2457	3075	2971
Fresh air flow rate for each **FHG 56-90** unit installed (m/h^3)	3402	4257	4113

2.5 Electrical connection

The **FHG** series heaters are supplied with a power cable and Schuko plug for connection to a single-phase 230V ~ 50Hz mains supply with earth. The heaters are set up for operation with a room thermostat which, when connected to the thermostat socket, automatically controls the start-up and shut-down of the machine according to the set temperature. Alternatively, an On/Off switch can be used for manual control of the appliance (see par. 3.4).

- The electrical connection must be carried out by recognised and authorised specialist technicians in accordance with current regulations.
- Ensure that the power supply characteristics comply with those indicated on the nameplate and in the manual.
- It is mandatory to connect the equipment to an efficient earthing line.

In any case, there must be a device for disconnecting the appliance from the mains supply.

2.6 Connection to the gas supply line

The **FHG** series heaters are designed for connection to a gas supply line via a ½" threaded connection on the underside of the electrical box.

- Check that the type of gas supplied and the supply pressure are as prescribed on the appliance's nameplate and in the technical data table (see section 2.6).
- Connect the appliance to the supply line, providing a manual shut-off valve and, if necessary, a pressure reducer (not supplied).
- For connection, only use an approved type of flexible hose with a maximum length of 2m and ensure that it has no constrictions. **Do not use rigid hoses.**
- The gas supply line must be constructed in accordance with the relevant regulations.

N.B.: When connecting the gas hose, hold the lock nut on the side of the electrical box with a spanner while tightening the hose fixing nut to avoid excessive torsional stress on the internal fittings, which could compromise the tightness of the same.

3 - OPERATION

3.1 Preliminary checks

Before starting up the generator, check that:

1. All connections, both electrical and gas, are made according to the instructions in this manual;
2. The generator is free and clean;
3. The manual gas shut-off valve is open.

3.2 First start-up

The operations described in this paragraph must only be carried out by authorised and qualified technical personnel, using suitable personal protective equipment.

- Check that the air inlet and outlet sections are not obstructed, even partially;
- Ensure that all cables are correctly positioned and that they are not pinched or pulled too tight;
- Ensure that the connections to the gas supply line are correct;
- Open the tap on the gas supply line (or cylinder);
- Check the gas supply line and connection fittings for leaks using leak detector fluid or soapy water;
- Check that the supply pressure complies with the specifications in the technical data tables in relation to the type of gas used;
- Start up the heater by setting the room thermostat to the desired temperature, or, in the case of manual operation, by energising the appliance via an ON/OFF switch, electrical panel, etc;
- Check that the start-up sequence is correct.

Start-up sequence

Contact on pins 1-2 of the thermostat socket is closed	**KO→**	**Wait for closure**
OK ↓		
Gas valve test (3")	**KO→**	**Lockout + light signal**
OK ↓		
Pressure switch test: NO contact open?	**KO→**	**Wait for opening**
OK ↓		
Fan start		
OK ↓		
Pressure switch test: NO contact closed (4")?	**KO→**	**Lockout + light signal**
OK ↓		
Estimation (3")		
OK ↓		

Flame failure check	**KO→**	**Lockout + light signal**
OK ↓		
Opening of gas valve and spark		
OK ↓		
Flame detection	**KO→**	**Lockout + light signal**
OK ↓		
Flame on: smooth operation		

Checking and adjustment of working pressures

The appliance is equipped with a multifunctional gas valve, which includes two safety solenoid valves and a regulator, and allows you to control the inlet and outlet gas pressures and to regulate the outlet pressure to the burner (see Fig. 3.2.1).
The appliance is factory-set for operation in the country of destination, with the type of gas and pressure indicated on the setting data label on the side of the appliance.

To **check** the inlet and outlet pressures, with the appliance in operation, access the gas valve inside the electrical box and carry out the following operations:

- Unscrew the locking screw from the "P IN" socket (ref. A), connect a differential pressure gauge to the socket and check the inlet pressure
- Unscrew the locking screw from the "P OUT" socket (ref. B), connect a differential pressure gauge and check the outlet pressure

If the pressures are correct (see setting data table), seal the measuring sockets.

To **adjust** the outlet pressure:

- Remove protective threaded cap (C)
- Tighten the internal adjusting screw (D) clockwise using a fine-blade screwdriver (5.5x0.8) to increase the outlet pressure and counterclockwise to decrease the outlet pressure.
- Once adjustments have been made, seal the adjustment screw and reapply the threaded plug (C).

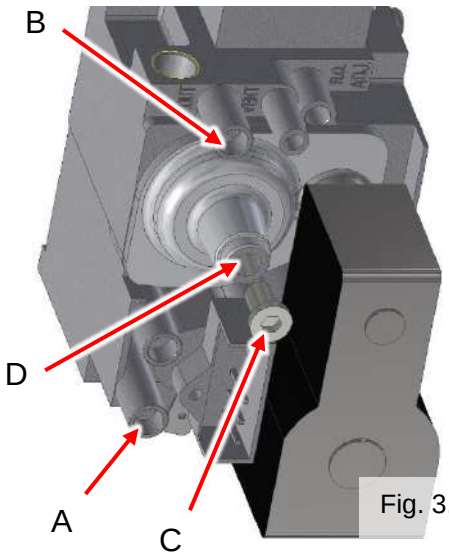


Fig. 3.2.1

Model	Type of gas	Category	Nozzle	Inlet pressure	Output pressure
FHG36-25	G20	II2H3+	4.30 mm	20 mbar	9.0 mbar
	G30/G31	II2H3+	2.40 mm	28/30-37 mbar	no adjustment
FHG45-40	G20	II2H3+	5.50 mm	20 mbar	9.0 mbar
	G30/G31	II2H3+	3.00 mm	28/30-37 mbar	no adjustment
FHG56-65	G20	II2H3+	- -	20 mbar	no adjustment
	G30/G31	II2H3+	4.20 mm	28/30-37 mbar	no adjustment
FHG56-90	G20	II2H3+	- -	20 mbar	no adjustment
	G30/G31	II2H3+	4.70 mm	28/30-37	no adjustment

3.3 Start and stop

Start

To start the heater, set the room thermostat to the desired temperature, or set the external switch, which may be provided in the electrical system in case of manual operation, to ON.

During operation

- In the event of an abnormal reduction in the air flow rate, the pressure switch trips, the machine locks out and the lock indicator light comes on.
- In the event of flame failure or combustion anomalies, the machine makes three attempts to re-ignite. If the flame does not re-ignite, the machine stops and the lockout warning light illuminates.
- In the event of abnormal overheating of the machine, the safety thermostat trips, the machine makes three attempts to restart and then locks up.
- When the desired temperature is reached in the room, the contact on the thermostat socket opens and the heater stops without signalling. The appliance restarts automatically by performing the start-up sequence when the temperature falls and the contact closes again.

If the appliance breaks down

- Look for and eliminate the cause of the blockage (flame failure, reduced air flow, gas shortage, overheating, etc.). If necessary, contact qualified personnel.
- Press and hold the Reset button for at least 3 seconds. The signal lamp goes off and the start-up sequence is repeated. If the appliance still freezes, switch it off and contact the service department (Fig. 3.3.1, A).

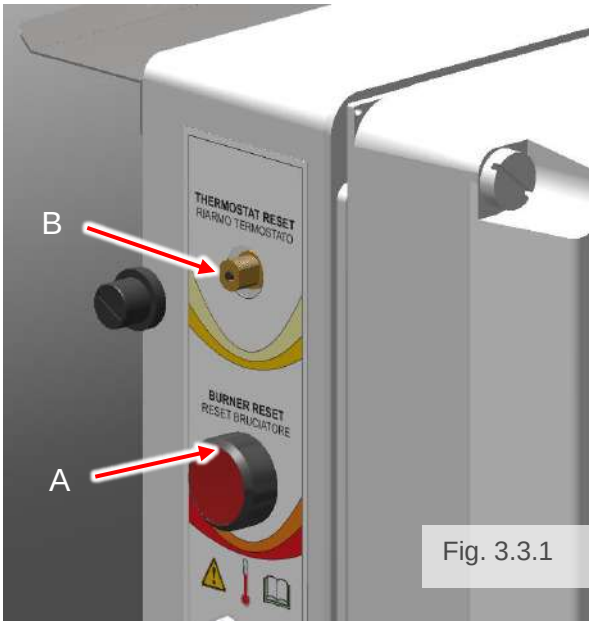


Fig. 3.3.1

If the safety thermostat trips

- Switch off the power, turn off the gas and wait for the appliance to cool down completely.
- Look for and eliminate the cause of overheating. If necessary, contact qualified personnel.
- Unscrew the protective cap of the thermostat reset button on the side of the electrical box, press the thermostat reset button and then the luminous Reset button to restart. If the appliance does not restart, or if the safety thermostat continues to trip, contact the service department (Fig. 3.3.1, B).

ATTENTION!
The unit releases a high temperature air flow. Do not place any flammable objects or materials within 4m of the generator's air outlet. During normal operation, and for some time after shutdown, some parts of the machine can reach very high temperatures! Always use suitable personal protective equipment.

Stop

- In the case of operation with a thermostat, the heater stops automatically when the desired temperature is reached. In manual operation, cut the power off by turning the switch, if fitted, to the OFF position.

Seasonal use

The FHG series heaters are mainly intended for seasonal use. At the end of the winter season, or in general if the appliance is not used for long periods:

- Disconnect the appliance from the power supply and close the gas supply valve.
- Carry out a thorough general cleaning of both the external surfaces and the internal parts (fan, burner, etc., see also sections 4.1 and 4.2).
- At the beginning of the next winter season, before using the appliance again, restore the power and gas supply and carry out a complete check-up of the machine.

3.4 Using the thermostat socket

The FHG series heaters are equipped with a room thermostat socket for automatic or manual control of the appliance.
The thermostatic socket is supplied with a protective cover with an internal jumper between terminals 1 and 2 which, when inserted into the socket, enables the machine to be switched on as soon as it is powered.
Remote on/off can also be controlled by means of a room thermostat, timer, control unit, or manually by means of a switch, etc., always closing a contact between terminals 1 and 2 of the supplied plug. Remote on/off can also be controlled via a room thermostat, timer, control unit, or manually via a switch, etc., always by closing a contact between terminals 1 and 2 of the supplied plug.
On the G56-90 model, you can enable the ventilation-only function by closing a contact between terminals 1 and 3 (Fig. 3.4.1).

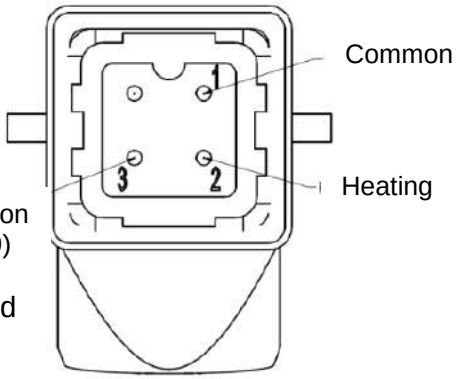


Fig. 3.4.1

4 - MAINTENANCE

The operations described in this chapter must only be carried out by authorised and qualified personnel, using suitable personal protective equipment.
Before carrying out any work: switch off the power, close the gas valve and ensure that the machine has cooled down completely.

4.1 General cleaning of the unit

Clean the external surfaces regularly, with appropriate frequency depending on the conditions of use, and in particular the air intake and outlet grilles, which must always be perfectly free of any obstructions. Regularly clean the machine body, fan, surfaces and internal components with a soft, damp cloth and a non-toxic, solvent-free cleaning agent, wiping carefully and if necessary using compressed air to remove deposits of dust and dirt.
Do not direct water jets, even indirectly, at the motor, burner or electrical parts. Check the tightness of screws and bolts periodically, especially in the event of unusual noises and vibrations.

4.2 Cleaning and replacing the nozzle

Use a size 7 hex spanner to remove the four screws securing the protective grille on the suction side of the generator. Unscrew the nozzle from the nozzle holder using a size 13 hex spanner (Fig. 4.2.1). Check and clean the nozzle using compressed air and make sure that the internal hole is perfectly free of impurities. If necessary, replace the nozzle with one of the same diameter. Refit the nozzle, close the door and check operation. If a change of gas is required (e.g. from methane to propane/butane), replace the nozzle and adjust the outlet pressure of the gas valve with reference to the setting data table (see Section 3.2).

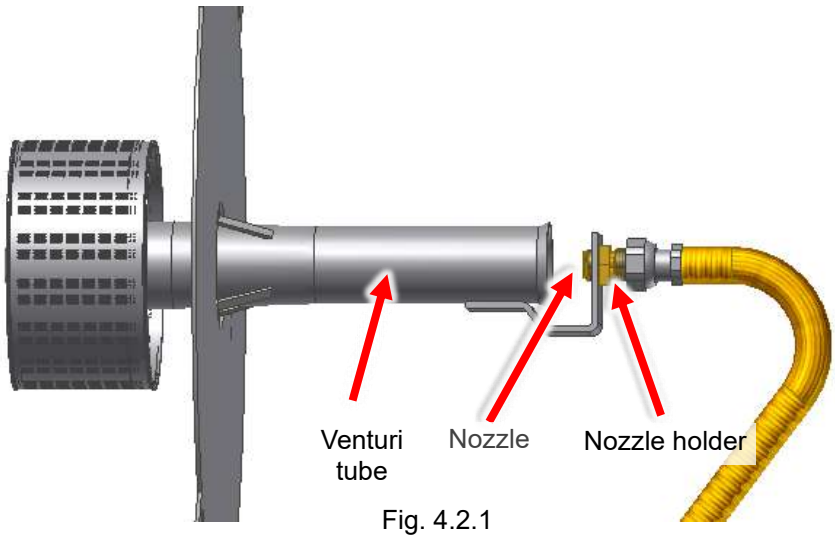


Fig. 4.2.1

4.3 Accessories

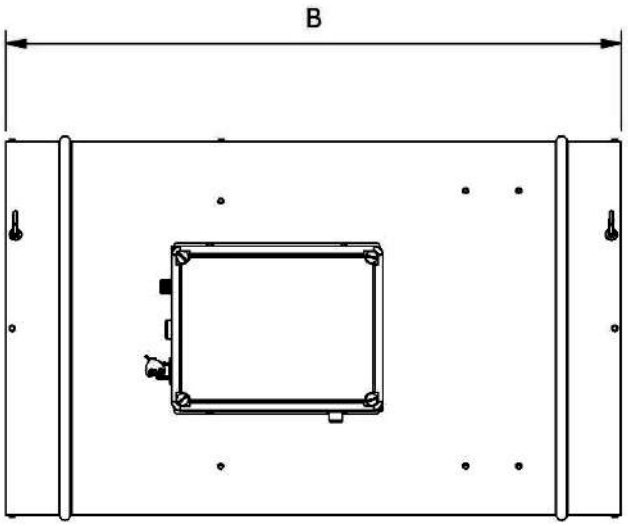
A full range of accessories is available to match your heater, such as electronic thermostats, brackets, air outlet deflectors.
Ask your supplier for the accessories catalogue for more details.

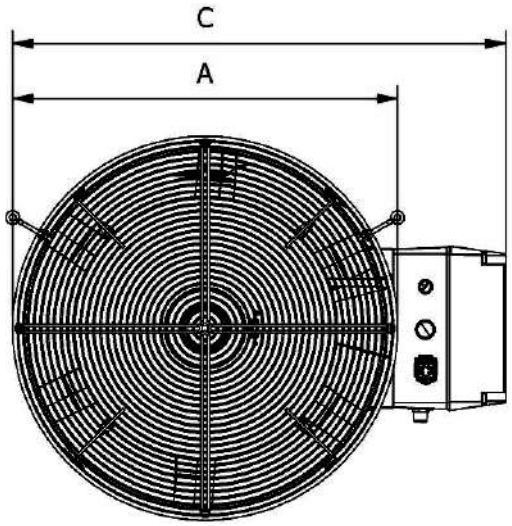
5 - TECHNICAL SPECIFICATIONS

5.1 Technical data

			FHG36-25	FHG45-40	FHG56-65	FHG56-90
HEATING POWER		kW	25	40	65	90
		kcal/h	21500	34400	55900	77400
AIR FLOW		m³/h	3000	4000	7000	8000
		cfm	1765	2355	4120	4710
GAS CONSUMPTION @ 1013 mbar/15°C	G30	kg/h	1,82	2,91	5,09	6,55
	G31	kg/h	1,79	2,86	5,00	6,43
	G20	m³/h	2,38	3,81	5,91	8,58
POWER SUPPLY	Voltage	V/Hz	230~50	230~50	230~50	230~50
	Current	A	1,5	2,0	2,7	4,0
ELECTRICAL POWER		W	265	285	475	800
NOISE at 1 m		dB(A)	73	71	71	71
OPERATING CONDITIONS	Temperature	°C	-15/+35			
	Relative humidity*	%	95			
DIMENSIONS	A	mm	360	450	560	560
	B		800	800	930	930
	C		520	630	750	750
WEIGHT		kg	20	22	32	32
PACKAGE DIMENSIONS	L	mm	800	800	1200	1200
	B		600	600	800	800
	C		400	400	650	650

* @30°C without condensation

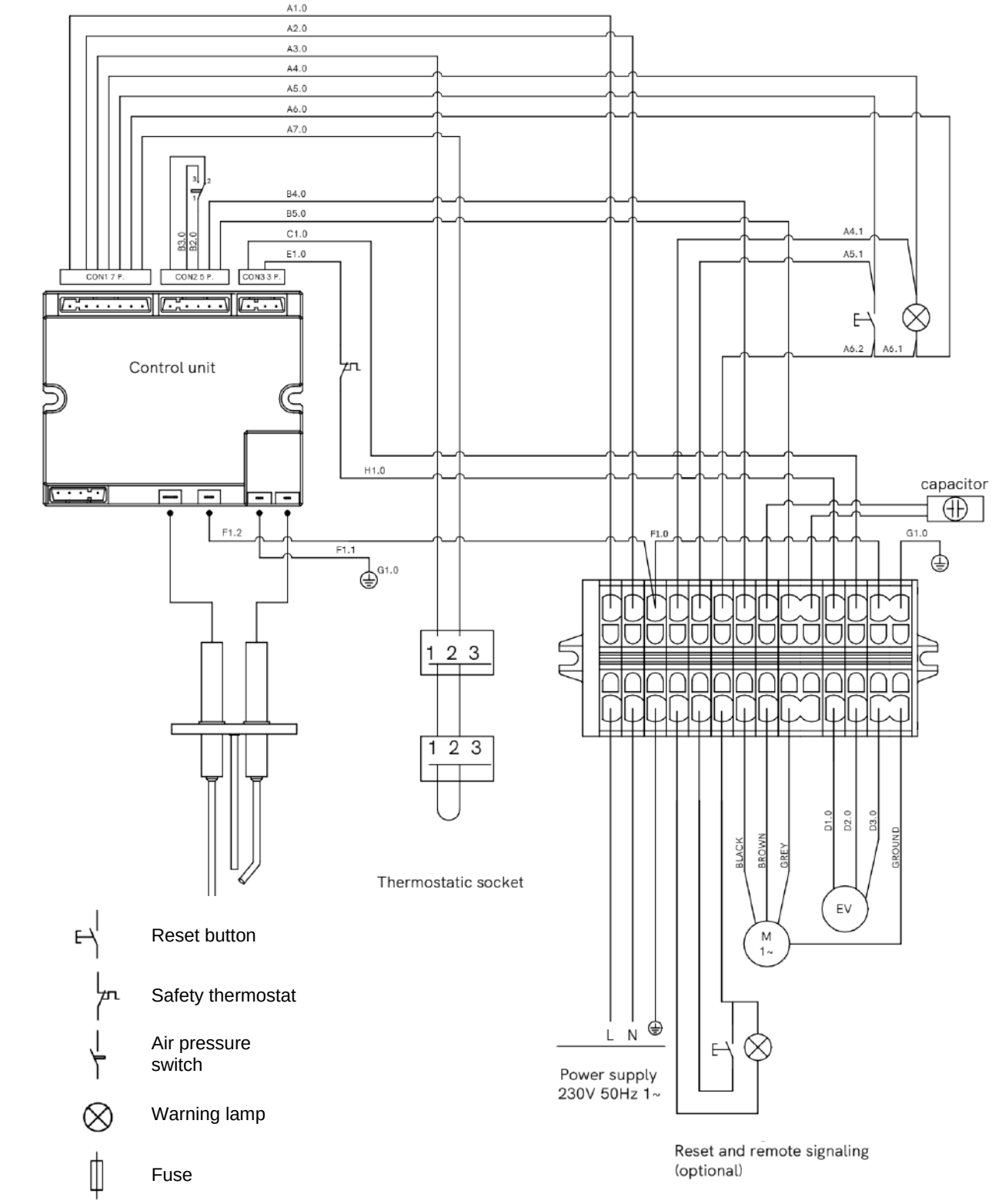




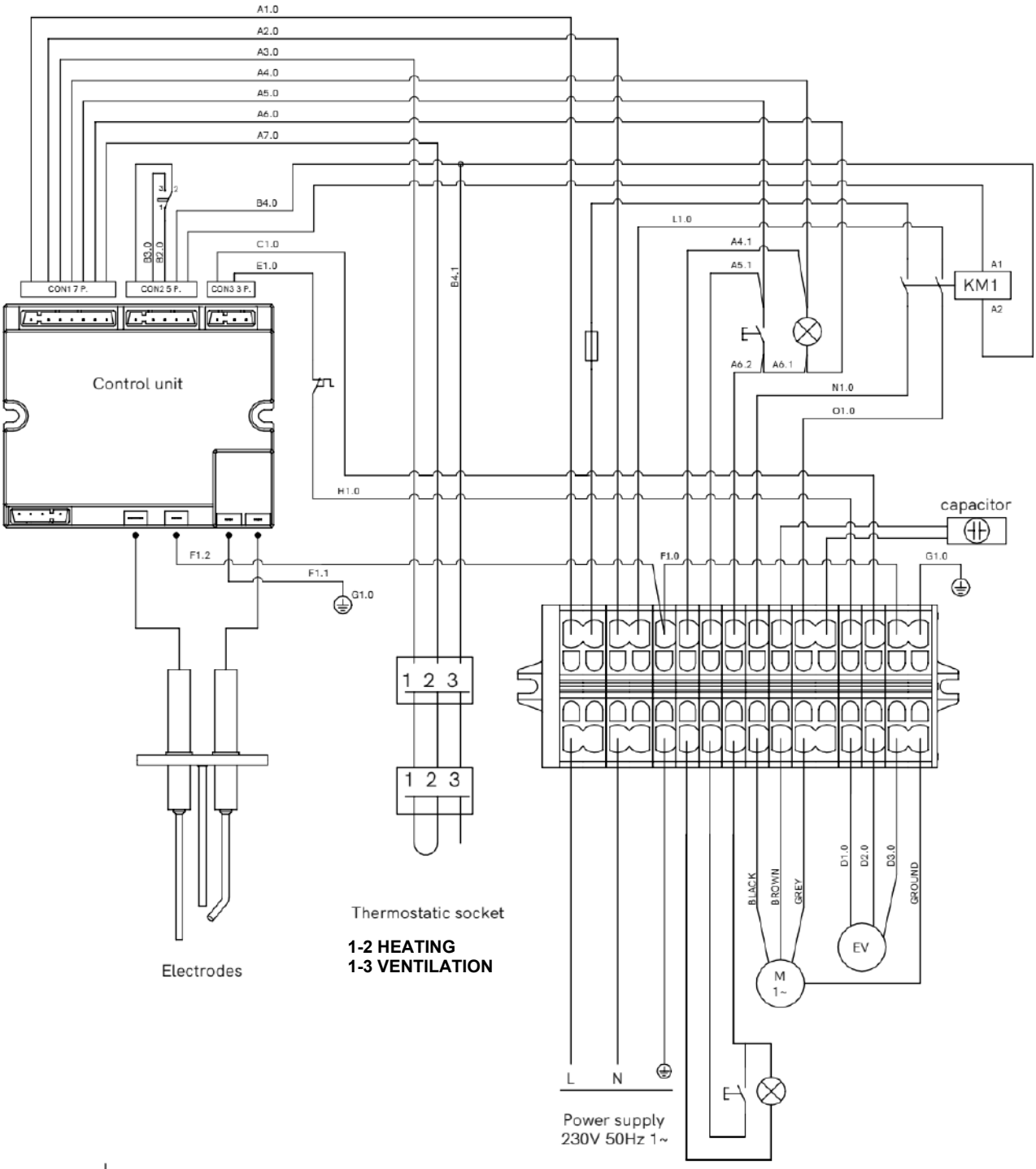
5.2 Electrical diagrams

The power cables used must be of a cross-section and type suitable for the electrical ratings of the equipment. Install a differential magnetic circuit breaker in the electrical system upstream of the appliance. (see par. 5.1 - Technical data).
Ensure that all electrical connections on the terminal block and components are secure, that the box cover is tightly closed and that the closing screws are tightly tightened to ensure the required degree of protection and insulation.

MODELS FHG 36-25, FHG 45-40



MODELS FHG 56-56, FHG 56-90



Reset button

Safety thermostat

Air pressure switch

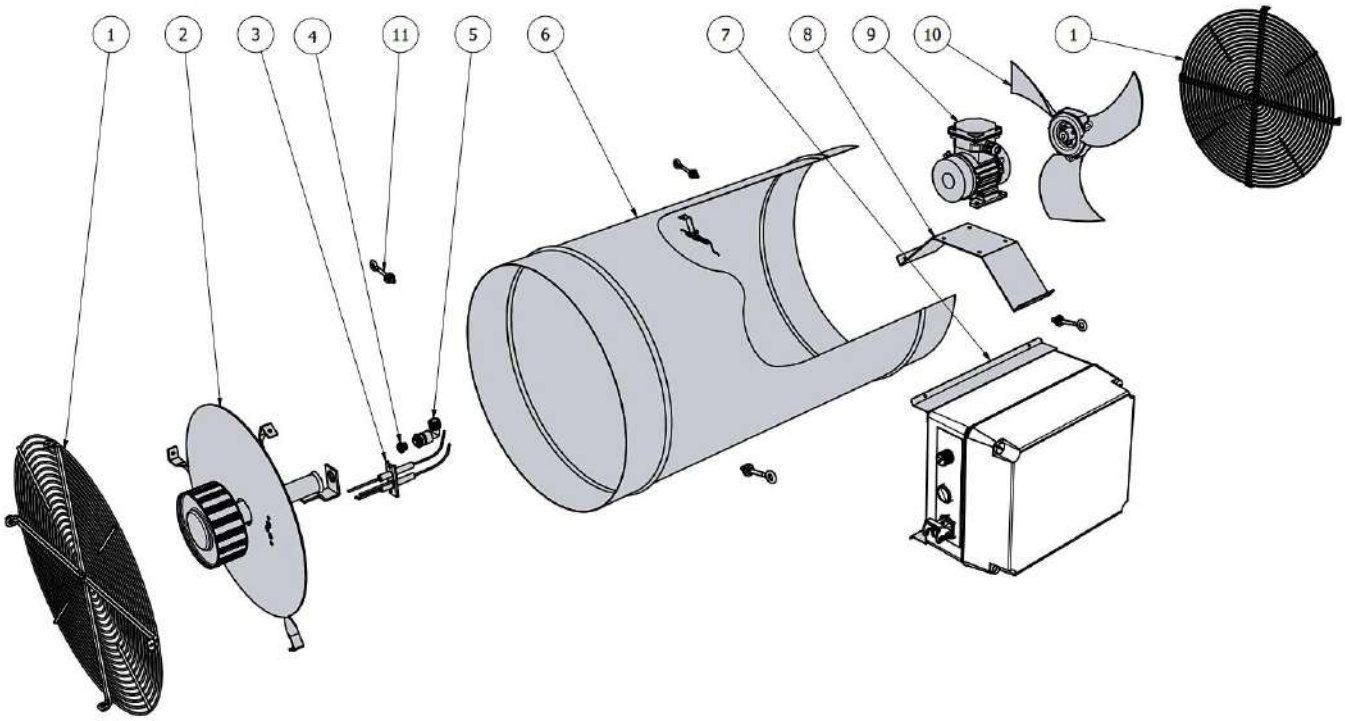
Warning lamp

Fuse

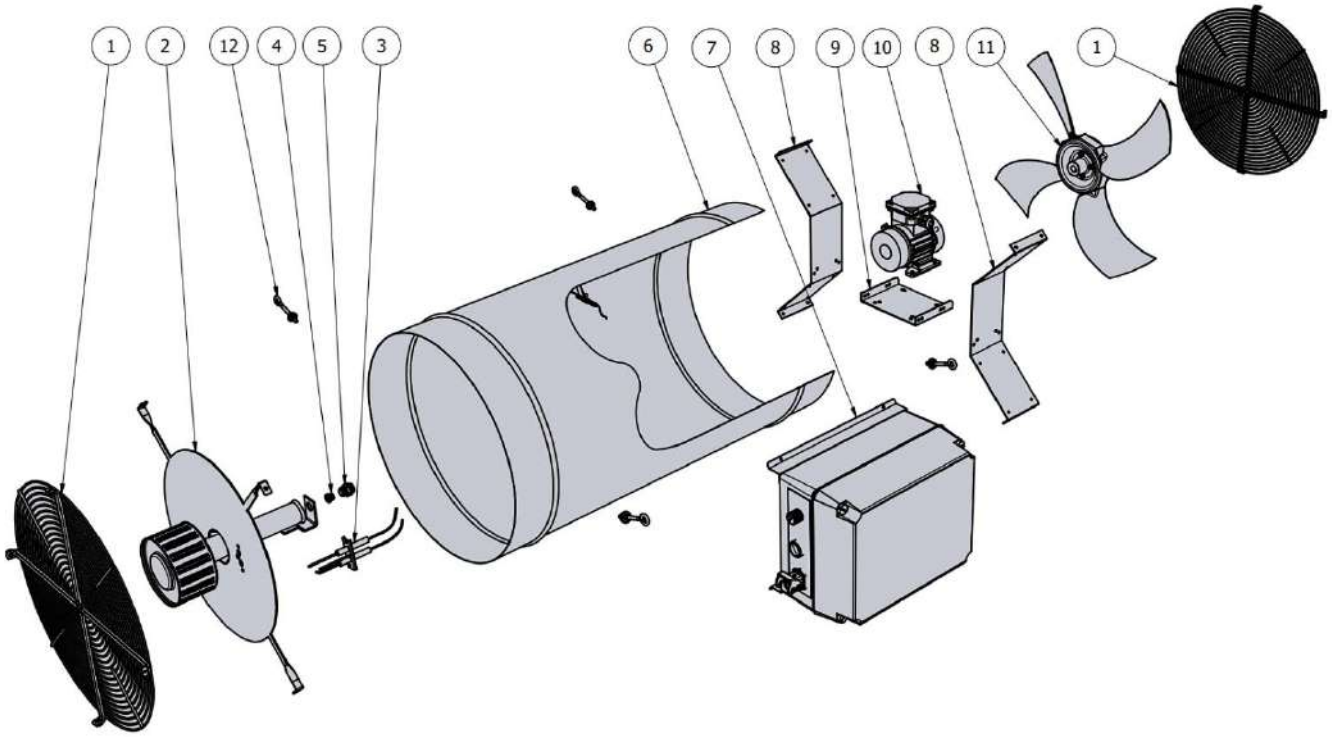
5.3 Spare parts list

Use only original spare parts.
Orders must be placed specifying the following:

- Model
- Part number
- Quantity
- Shipping address

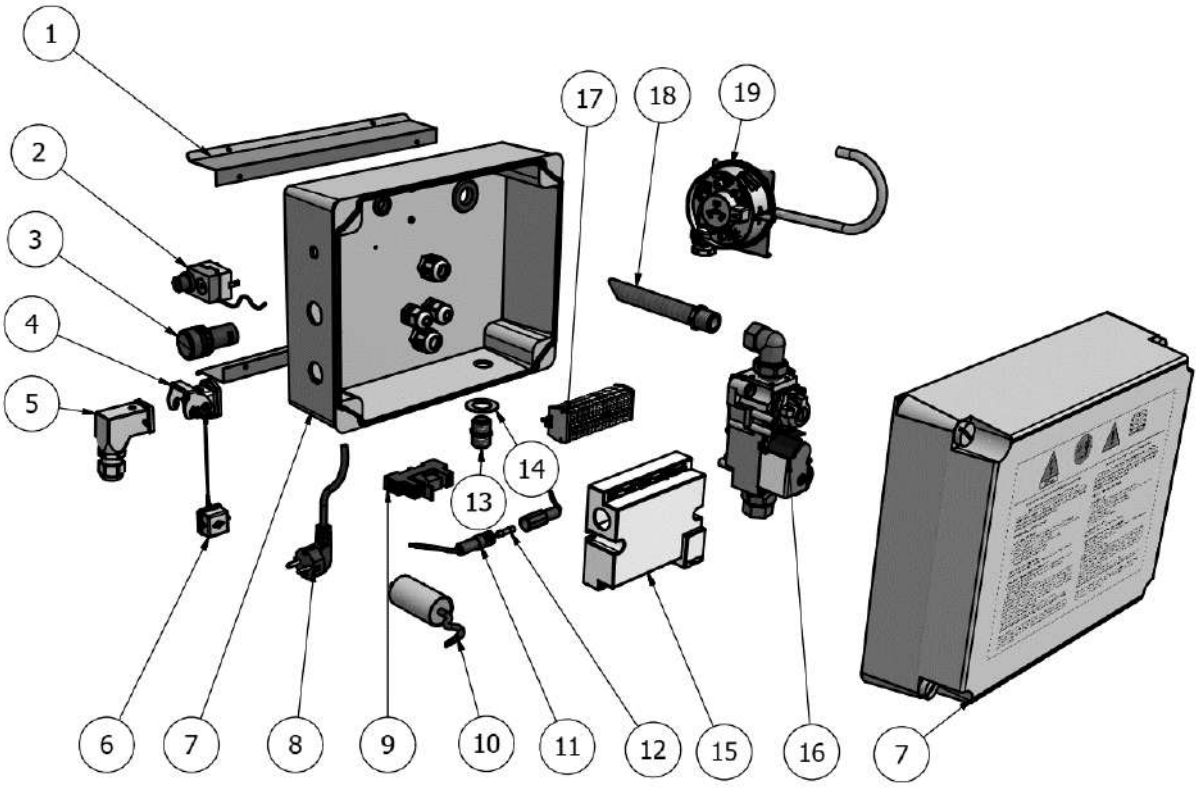


Pos.	FHG36-25	FHG45-40	Qty	Description
1	1201006	1301006	1	Protection network
1.1	1203004	1203004	1	Protective net fixing kit
2	1451500	1452500	1	Complete burner
2.1	1203005	1203005	1	Burner fixing kit
3	7302003	7302003	1	Spark plug block
3.1	1257500	1257500	1	Ignition/detector spark plug block fixing kit
4	8101510	8101515	1	Nozzle G30/G31 (Propane/Butane)
4	8101643	8101551	1	Nozzle G20 (Methane)
5	1404000	1404000	1	Nozzle holder with ring nut
6	1451001	1452001	1	Generator body
7	- -	- -	1	Complete electrical box
7.1	1203008	1303008	1	Electrical box fixing kit
8	1451004	1452003	1	Motor bracket
8.1	1203006	1203006	1	Motor bracket fixing kit
9	5002001	5002001	1	Fan motor
9.1	1203007	1203007	1	Motor fastening kit
10	5102011	5102012	1	Fan
10.1	1203009	1203009	1	Fan mounting kit
11	6002010	6002010	4	Eyebolt



Pos.	FHG56-65	FHG56-90	Qty	Description
1	1401006	1401006	1	Protection network
1.1	1203004	1203004	1	Protective net fixing kit
2	1453500	1453500	1	Complete burner
2.1	1403005	1403005	1	Burner fixing kit
3	7302003	7302003	1	Electrode block
3.1	1257500	1257500	1	Ignition/detector electrode block fixing kit
4	8101525	8101559	1	Nozzle G30/G31 (Propane/Butane)
	- -	- -	1	Nozzle G20 (Methane)
5	1404000	1404000	1	Nozzle holder with ring nut
6	1453001	1453001	1	Heater body
7	- -	- -	1	Complete electrical box
7.1	1403008	1403008	1	Electrical box fixing kit
8	1453004	1453004	2	Motor support side bracket
8.1	1203006	1203006	1	Motor bracket fixing kit
9	1453003	1453003	1	Motor bracket
10	5202002	5202003	1	Fan motor
10.1	1403007	1403007	1	Motor fastening kit
11	5102013	5102014	1	Fan
11.1	1403009	1403009	1	Fan mounting kit
12	6002010	6002010	4	Eyebolt

ELECTRICAL BOX



Pos.	G36-25	FHG45-40	FHG56-65	FHG56-90	Qty	Description
1	1451005	1452005	1453005	1453005	2	Box support
2	7303000	7303000	7303000	7303000	1	Safety thermostat
2.1	1451002	1453002	1453002	1453002	1	Thermostat bulb bracket
3	7301005	7301005	7301005	7301005	1	Light Reset button
4	7307005	7307005	7307005	7307005	1	Room thermostat socket
5	7307006	7307006	7307006	7307006	1	Room thermostat plug
6	7305503	7305503	7305503	7305503	1	Thermostat socket cap
7	1453502	1453502	1453502	1453502	1	Electric box w/cover
8	7004000	7004000	7004000	7004000	1	Power cable with plug
9	-	-	-	1454215	1	Motor relay
10	5005011	5005011	5005012	5005013	1	Capacitor
11	-	-	-	7301100	1	Fuse holder
12	-	-	-	7304001	1	Fuse 5x20 4A
13	8101005	8101005	8101005	8101005	1	Straight fitting
14	1201022	1201022	1201022	1201022	1	Gas connection washer
15	7302100	7302100	7302100	7302100	1	Flame control board
16	8100104	8100104	8100104	8100105	1	Gas valve complete with fittings
17	1454302	1454302	1454302	1454312	1	Complete terminal box
17.1	1454100	1454100	1454100	1454110	1	Wiring kit
18	8102001	8102001	8102000	8102000	1	Flexible gas hose
19	7303007	7303007	7303007	7303007	1	Safety pressure switch
19.1	1451520	1452020	1453020	1453020	1	Air hose pressure switch
19.2	1454005	1454005	1454005	1454005	1	Pipe fixing bracket
19.3	1451006	1451006	1451006	1451006	1	Pressure switch bracket

6 - TROUBLESHOOTING GUIDE

The operations described in this chapter must only be carried out by authorised and qualified personnel, using suitable personal protective equipment.
Before carrying out any work, disconnect the appliance from the mains supply and close the gas interception valve.

Defect	Cause	Solution
The fan does not start	Power failure	Check the electrical connections and the power supply network (electrical panel, circuit breaker, fuses, external switch, etc.).
	Room thermostat not connected or set to too low a temperature	Connect room thermostat and/or set it to higher temperature
	Thermostat socket cap not inserted (in manual operation)	Insert thermostat socket cover
	Faulty room thermostat	Check and replace the thermostat
	Blown motor protection fuse	Check and replace
	Motor/fan blocked or defective	Check that the motor and fan can rotate freely. Check voltage at motor terminals. Replace if necessary
	Previous triggering of an external thermal motor protection (if fitted)	Check that the motor rotates freely, inspect the air passage sections, check the thermal protection setting
	Pressure switch contact open or blocked (does not close/do not open)	Check pressure switch, clean contacts, replace if necessary
	Previous triggering of the safety thermostat	Search for and eliminate the causes of overheating (e.g. reduction of air inlet/outlet sections, etc.), and reset the safety thermostat and press the release button
	The appliance is in lockout mode (indicator lamp lit)	Search for and eliminate the causes of the blockage and press the reset button
	Faulty flame control device or blown internal fuse	Check the equipment and the internal protection fuse. Replace if necessary

The fan starts, but the flame does not ignite and the appliance goes into lockout.	No gas from the supply line	Check gas supply line, open manual valve if necessary
	Solenoid valves do not open	Check that voltage is reaching the solenoid valves, replace if defective
	Incorrect supply pressure or burner pressure	Check adjustments and correct if necessary
	Incorrect gas type	Check that the type of gas used is one of those indicated on the plate
	No ignition spark	Check and clean the ignition electrode, check the electrical connections and the flame control equipment.
	No or weak flame signal (even in the presence of a flame)	Check and clean the flame sensor, check the electrical connections and the flame control equipment.
	Faulty flame control equipment	Check and replace equipment
Generator not heating enough or heating too much	Incorrect supply pressure or burner pressure	Check adjustments, correct if necessary
	Incorrect gas type	Check the type of gas used, replace if necessary
	Partial obstruction of air inlet/outlet sections	Check and maintain clean and clear air inlet and outlet sections
	Insufficient or excessive installed power for the room to be heated	Review the sizing of the system
Generator goes into lockout (or stops) during operation	Lack of voltage	Check the electrical installation (cables, distribution board, circuit breaker, fuses, etc.) and restore power
	Gas shortage	Check the gas supply line
	Flame failure and/or combustion anomalies (no or weak flame signal)	Check that the operating pressures and gas used are correct, check the nozzle and clean it if necessary Check flame sensor, connection cable and flame control equipment, replace if necessary
	Air flow reduction (pressure switch tripping)	Check that the air inlet and outlet ducts are completely clear, remove any obstructions Check that the motor and fan rotate freely (at the correct speed) Replace defective parts if necessary
	Appliance overheating (safety thermostat tripping)	Check that the operating pressures and type of gas used are correct Check that the air inlet and outlet ducts are free of obstructions and that the motor/fan rotates freely
	Faulty flame control device, safety thermostat or pressure switch (action in the absence of problems)	Check function of components, clean contacts, check connections, replace if defective