GB

Premixed gas burner

One stage operation

CE

Contents

1 Declaration ... 3

2 Information and general warnings ... 4

2.1 Information about the instruction manual ... 4
2.1.1 Introduction ... 4
2.1.2 General dangers ... 4
2.1.3 Danger: live components ... 4
2.2 Guarantee and responsibility ... 5

3 Safety and prevention ... 6

3.1 Introduction ... 6
3.2 Personnel training ... 6

4 Technical description of the burner ... 7

4.1 Models available ... 7
4.2 Technical data ... 7
4.3 Destination country - Gas category ... 7
4.4 Accessories ... 7
4.4.1 Fan control card kit ... 7
4.5 Maximum dimensions ... 8
4.6 Description of the burner ... 8
4.7 Burner equipment ... 8

5 Installation ... 9

5.1 Notes on safety for the installation ... 9
5.2 Handling ... 9
5.3 Preliminary checks ... 9
5.4 Generator plate ... 10
5.5 Securing the burner to the boiler ... 10
5.6 Positioning the probe - electrode ... 10
5.7 Positioning the diaphragm (LPG operation) ... 11
5.8 Fuel supply ... 11
5.8.1 Gas train assembly ... 11
5.8.2 Air/gas mixer ... 11
5.8.3 Testing ... 12
5.8.4 Ionisation current ... 12

6 Operation ... 13

6.1 Notes on safety for the first start-up ... 13
6.2 Adjustments prior to ignition ... 13
6.3 Burner start-up ... 13
6.4 Fan adjustment ... 13
6.5 Gas valve adjustment ... 14
6.6 Burner adjustment ... 14
6.7 Combustion head ... 15
6.8 Operating programme ... 16
6.8.1 Normal operation ... 16
6.8.2 Lockout due to ignition failure ... 16
6.8.3 Lockout due to a flame or flame simulation detected during pre-purging ... 16
6.9 Recycle function if flame goes out during operation ... 17
6.10 Restart function following firing failure ... 17
6.11 Control of the motor rpm ... 17
6.12 Control box reset (using built-in button) ... 17

7.2.1 Maintenance frequency 18
7.2.2 Checking and cleaning 18

8 Faults / Solutions 19
8.1 Start-up problems 19
8.2 Operating faults 20

9 Electrical wiring 21
9.1 Electrical panel layout 21

1 Declaration

Declaration of conformity in accordance with ISO / IEC 17050-1		
Manufacturer:	RIELLO S.p.A.	
Address:	Via Pilade Riello, 7 37045 Legnago (VR)	
Product:	Pre-mixed gas burner	
Model:	RX28 S/PV H	
These products are in compliance with the following Technical Standards:		
EN 12100 EN 676		
and according to the European Directives:		
LVD	2006/95/EC	Low Voltage Directive
EMC	2004/108/EC	Electromagnetic Compatibility

The quality is guaranteed by a quality and management system certified in accordance with UNI EN ISO 9001.

Legnago, 08.04.2013

Executive Director
RIELLO S.p.A. - Burner Department
Mr. I. Zinna

Research & Development Director
RIELLO S.p.A. - Burner Department
Mr. R. Cattaneo

2 Information and general warnings

2.1 Information about the instruction manual

2.1.1 Introduction

The instruction manual supplied with the burner:

- ➤ is an integral and essential part of the product and must not be separated from it; it must therefore be kept carefully for any necessary consultation and must accompany the burner even if it is transferred to another owner or user, or to another system. If the manual is lost or damaged, another copy must be requested from the Technical Assistance Service of the area;
- ➤ is designed for use by qualified personnel;
- ➤ offers important indications and instructions relating to the installation safety, start-up, use and maintenance of the burner.

Symbols used in the manual

In some parts of the manual you will see triangular DANGER signs. Pay great attention to these, as they indicate a situation of potential danger.

2.1.2 General dangers

The **dangers** can be of **3 levels**, as indicated below.

DANGER

Maximum danger level!
This symbol indicates operations which, if not carried out correctly, cause serious injury, death or long-term health risks.

WARNING

This symbol indicates operations which, if not carried out correctly, may cause serious injury, death or long-term health risks.

CAUTION

This symbol indicates operations which, if not carried out correctly, may cause damage to the machine and/or injury to people.

2.1.3 Danger: live components

DANGER

This symbol indicates operations which, if not carried out correctly, lead to electric shocks with lethal consequences.

Other symbols

ENVIRONMENTAL PROTECTION

This symbol gives indications for the use of the machine with respect for the environment.

➤ This symbol indicates a list.

Abbreviations used

Ch.	Chapter
Fig.	Figure
Pag.	Page
Sec.	Section
Tab.	Table

Delivery of the system and the instruction manual

When the system is delivered, it is important that:

- ➤ The instruction manual is supplied to the user by the system manufacturer, with the recommendation to keep it in the room where the heat generator is to be installed.
- ➤ The instruction manual shows:
  - – the serial number of the burner;

    .....

  - – the address and telephone number of the nearest Assistance Centre.

    .....
    .....
    .....

- ➤ The system supplier carefully informs the user about:
  - – the use of the system,
  - – any further tests that may be necessary before the system is started up,
  - – maintenance and the need to have the system checked at least once a year by the manufacturer or another specialised technician.
    To ensure a periodic check, the manufacturer recommends the drawing up of a Maintenance Contract.

2.2 Guarantee and responsibility

The manufacturer guarantees its new products from the installation date, in accordance with the regulations in force and/or the sales contract. At the moment of the first start-up, check that the burner is integral and complete.

WARNING

Failure to observe the information given in this manual, operating negligence, incorrect installation and the carrying out of non authorised modifications will result in the annulment by the manufacturer of the guarantee that it supplies with the burner.

In particular, the rights to the guarantee and the responsibility will no longer be valid, in the event of damage to things or injury to people, if such damage/injury was due to any of the following causes:

- incorrect installation, start-up, use and maintenance of the burner;
- improper, incorrect or unreasonable use of the burner;
- intervention of unqualified personnel;
- carrying out of non authorised modifications on the equipment;
- use of the burner with safety devices that are faulty, incorrectly applied and/or not working;
- installation of untested supplementary components on the burner;
- powering of the burner with unsuitable fuels;
- faults in the fuel power supply system;
- use of the burner even following an error and/or an irregularity;
- repairs and/or overhauls incorrectly carried out;
- modification of the combustion chamber with inserts that prevent the regular development of the flame, as structurally established;
- insufficient and inappropriate surveillance and care of those burner components most subject to wear and tear;
- use of non-original components, including spare parts, kits, accessories and optionals;
- force majeure.

The manufacturer furthermore declines any and every responsibility for the failure to observe the contents of this manual.

3 Safety and prevention

3.1 Introduction

The burners have been designed and built in compliance with current regulations and directives, applying the known technical rules of safety and envisaging all the potential danger situations.

It is necessary, however, to bear in mind that the imprudent and clumsy use of the equipment may lead to situations of death risk for the user or third parties, as well as the damaging of the burner or other items. Inattention, thoughtlessness and excessive confidence often cause accidents; the same applies to tiredness and sleepiness.

It is a good idea to remember the following:

➤ The burner must only be used as expressly described. Any other use should be considered improper and therefore dangerous.

In particular:

it can be applied to boilers operating with water, steam, diathermic oil, and to other users expressly named by the manufacturer; the type and pressure of the fuel, the voltage and frequency of the electrical power supply, the minimum and maximum deliveries for which the burner has been regulated, the pressurisation of the combustion chamber, the dimensions of the combustion chamber and the room temperature must all be within the values indicated in the instruction manual.

➤ Modification of the burner to alter its performance and destinations is not allowed.

➤ The burner must be used in exemplary technical safety conditions. Any disturbances that could compromise safety must be quickly eliminated.

➤ Opening or tampering with the burner components is not allowed, apart from the parts requiring maintenance.

➤ Only those parts envisaged by the manufacturer can be replaced.

3.2 Personnel training

The user is the person, body or company that has acquired the machine and intends to use it for the specific purpose. He is responsible for the machine and for the training of the people working around it.

The user:

➤ undertakes to entrust the machine exclusively to suitably trained and qualified personnel;

➤ must take all the measures necessary to prevent unauthorised people gaining access to the machine;

➤ undertakes to inform his personnel in a suitable way about the application and observance of the safety instructions. With that aim, he undertakes to ensure that everyone knows the use and safety instructions for his own duties;

➤ must inform the manufacturer if faults or malfunctioning of the accident prevention systems are noticed, along with any presumed danger situation.

➤ Personnel must always use the personal protective equipment envisaged by legislation and follow the indications given in this manual.

➤ Personnel must follow all the danger and caution indications shown on the machine.

➤ Personnel must not carry out, on their own initiative, operations or interventions that are not within their province.

➤ Personnel are obliged to inform their superiors of every problem or dangerous situation that may arise.

➤ The assembly of parts of other makes, or any modifications, can alter the characteristics of the machine and hence compromise operating safety. The manufacturer therefore declines any and all responsibility for any damage that may be caused by the use of non-original parts.

4 Technical description of the burner

4.1 Models available

Designation	Voltage	Code
RX28 S/PV H	230V/50-60Hz	20033678

4.2 Technical data

Model		RX28 S/PV H
Thermal power		28 kW 24,080 Kcal/h
Natural gas - **(Family 2)**	G20	Ncv: 9.45 kWh/Sm^3 = 8,100 kcal/Sm^3 - Pressure 10 - 30 mbar
	G25	Ncv: 8.125 kWh/Sm^3 = 7,000 kcal/Sm^3 - Pressure 10 - 30 mbar
LPG - **(Family 3)**	G31	Ncv: 24.44 kWh/Sm^3 = 21,000 kcal/Sm^3 - Pressure 10 - 30 mbar
Electrical supply		Single-phase, 230V ~ ± 10% , 50 Hz
Motor		Max 6,840 rpm - 50/60 Hz
Ignition transformer		Primary 220V/240 - 50/60Hz – Secondary 15 kV - 25 mA
Reference conditions: Air temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m a.s.l.		

4.3 Destination country - Gas category

Country	AT - CH - CZ - DK - EE - ES FI - GB - GR - IE - IT - LT - LV NO - PT - SE	BE - DE - DK - ES - FI - FR GB - GR - IE - IT - LU - NO PT - SE	AT - BE - CH - CZ - DE - ES FR - GB - GR - IE - IT - PT
Gas category	I_{2H}	I_{2R}	I_{3P}
Gas pressure	20mbar	20/25mbar	29mbar

Country	DE	BE	LU - PL	FR
Gas category	I_{2ELL}	$I_{2E(R)B}$	I_{2E}	I_{2Er}
Gas pressure	20mbar	20/25mbar	20mbar	20/25mbar

NOTES:

➤ The requested protection level must be reached on the application.

➤ Temperature and operation of the burner from 0° C to 60° C.

4.4 Accessories

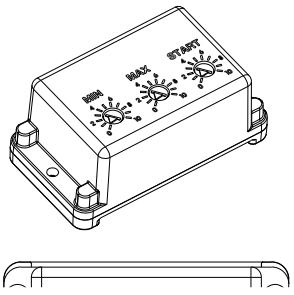
4.4.1 Fan control card kit

A special kit is available for modifying the operating and ignition output (Fig. 1).

– To modify the operating output, adjust the MAX trimmer.

– To modify the ignition output, adjust the START trimmer.

Model	Code
RX28 S/PV H	20035266



4.5 Maximum dimensions

The maximum dimensions of the burner and flange are shown in Fig. 2.

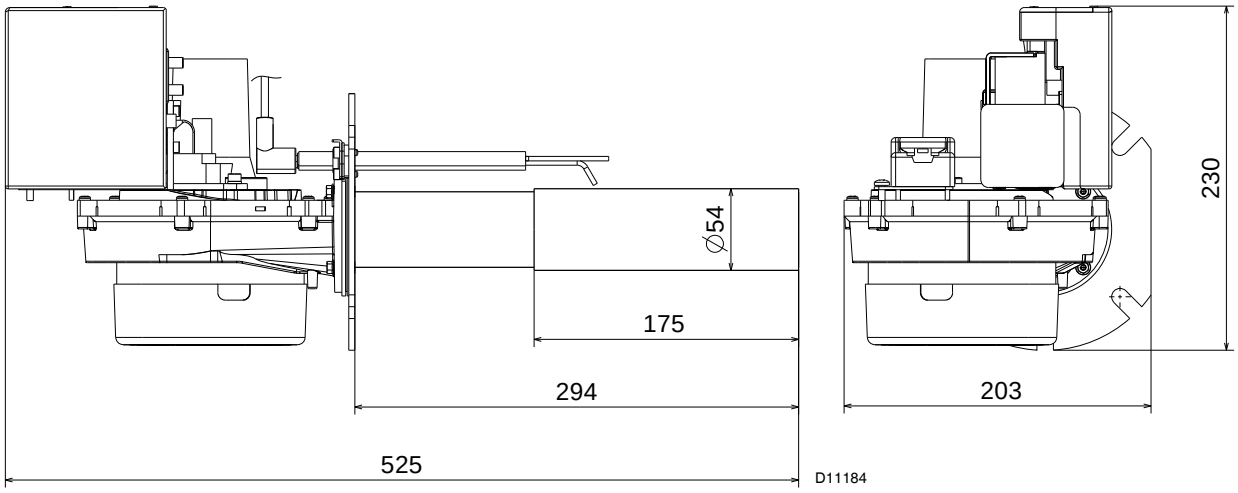


Fig. 2

4.6 Description of the burner

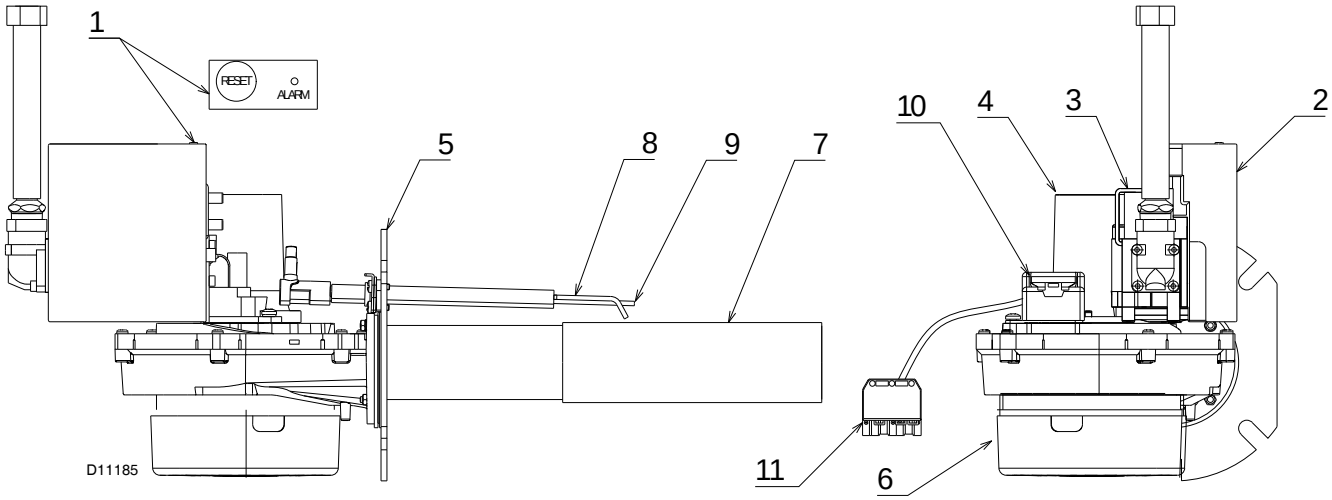


Fig. 3

1 Reset button with lockout signal
2 Control box
3 Gas valve
4 Air/gas mixer in intake circuit
5 Flange
6 Fan motor
7 Combustion head with metal mesh
8 Ignition electrode
9 Flame detection probe
10 Ignition transformer
11 7 pole socket

4.7 Burner equipment

Gas valve fitting + screws . . . . . No. 1
Insulating gasket . . . . . No. 1
7 pin plug . . . . . No. 1
Screws and nuts for fixing the flange to the boiler . . . . . No. 4
Diaphragm for LPG operation . . . . . No. 1
Instruction. . . . . No. 1

5 Installation

5.1 Notes on safety for the installation

After carefully cleaning all around the area where the burner will be installed, and arranging the correct lighting of the environment, proceed with the installation operations.

DANGER

All the installation, maintenance and disassembly operations must be carried out with the electricity supply disconnected.

WARNING

The installation of the burner must be carried out by qualified personnel, as indicated in this manual and in compliance with the standards and regulations of the laws in force.

5.2 Handling

The packaging of the burner includes a wooden platform, so it is possible to move the burner (still packaged) with a transpallet truck or fork lift truck.

WARNING

The handling operations for the burner can be highly dangerous if not carried out with the greatest attention: keep any unauthorised people at a distance; check the integrity and suitableness of the available means of handling.
Check also that the area in which you are working is empty and that there is an adequate escape area (i.e. a free, safe area to which you can quickly move if the burner should fall).
When handling, keep the load at not more than 20-25 cm from the ground.

CAUTION

After positioning the burner near the installation point, correctly dispose of all residual packaging, separating the various types of material.
Before proceeding with the installation operations, carefully clean all around the area where the burner will be installed.

5.3 Preliminary checks

Checking the consignment

CAUTION

After removing all the packaging, check the integrity of the contents. In the event of doubt, do not use the burner; contact the supplier.

The packaging elements (wooden cage or cardboard box, nails, clips, plastic bags, etc.) must not be abandoned as they are potential sources of danger and pollution; they should be collected and disposed of in the appropriate places.

Checking the characteristics of the burner

Check the identification label of the burner, showing:
- ➤ the model **A**) (Fig. 4) and type of burner **B**);
- ➤ the year of manufacture, in cryptographic form **C**);
- ➤ the serial number **D**);
- ➤ the electrical supply data **E**);
- ➤ the electrical power consumption **F**);
- ➤ the types of fuel used and the relative supply pressures **G**);
- ➤ the data of the burner's minimum and maximum output possibilities **H**).

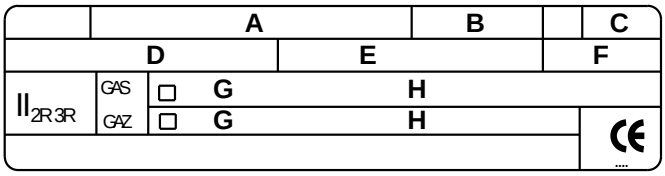


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Fig. 4

WARNING

The burner output must be within the boiler's firing rate;

WARNING

A burner label that has been tampered with, removed or is missing, along with anything else that prevents the definite identification of the burner and makes any installation or maintenance work difficult.

5.4 Generator plate

Pierce the closing plate of the combustion chamber, as in Fig. 5.

The position of the threaded holes may be marked using the gasket joint supplied with the burner.

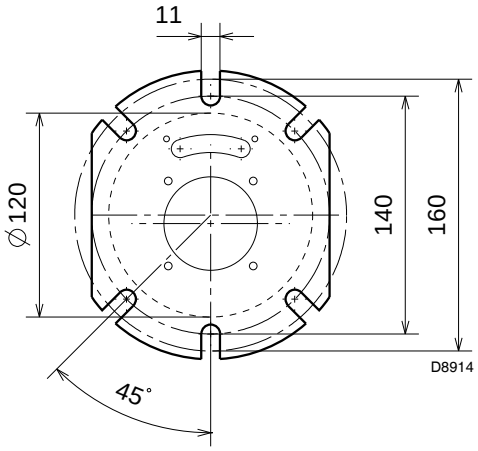


Fig. 5

5.5 Securing the burner to the boiler

For the installation proceed as follows:

➤ fix the burner 1)(Fig. 6) to the boiler door 2) using the 4 screws and (if necessary) the 4 nuts supplied to the standard equipment, interposing the insulating gasket 3).

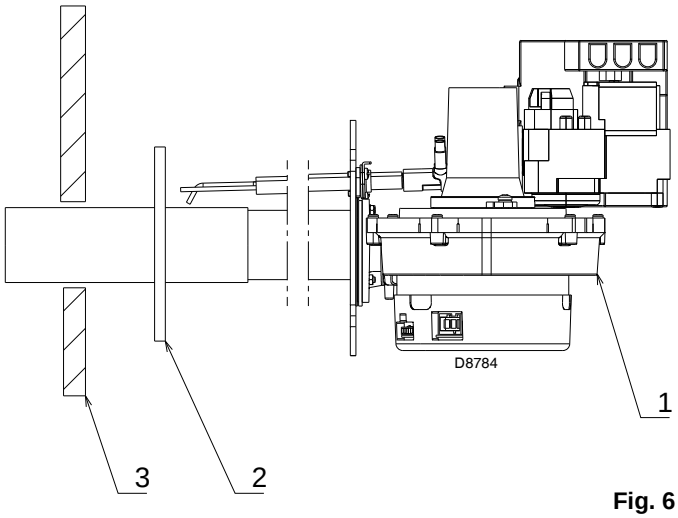


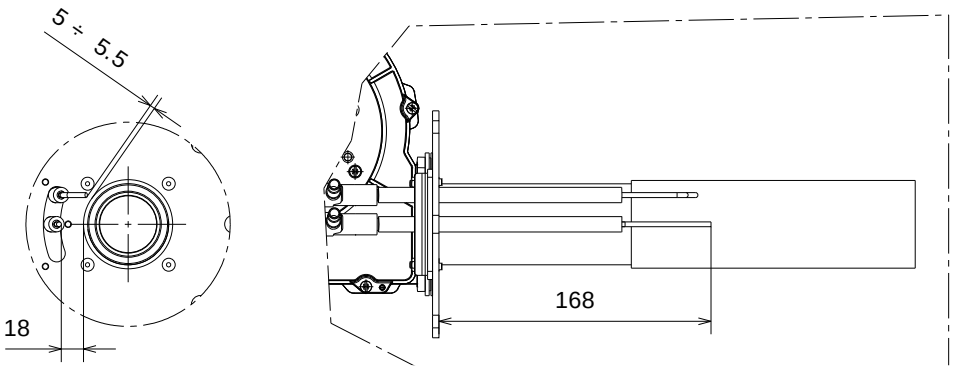
Fig. 6

5.6 Positioning the probe - electrode

Before installing the burner on the generator, make sure the probe and electrode are placed correctly as in Fig. 7.

WARNING

Do not turn the electrode: position it as illustrated. Placing the electrode near the ionisation probe may result in the control box amplifier being damaged.



5.7 Positioning the diaphragm (LPG operation)

The burner is supplied to operate with methane gas (G20)

A diaphragm 4)(Fig. 8) supplied with the kit, allows burners to operate on LPG (G31) if fitted to the gas valve 1).

The diaphragm must be installed in compliance with local laws and regulations. .

To carry out the modification:

- ➤ cut off the electrical supply;
- ➤ close the fuel interception tap;
- ➤ disassemble the gas valve 1) from the Venturi unit 2) by removing the screws 3);
- ➤ house the diaphragm 4) supplied with the kit in the gasket 5);
- ➤ reassemble the gas valve and carry out all the adjustment operations described above.

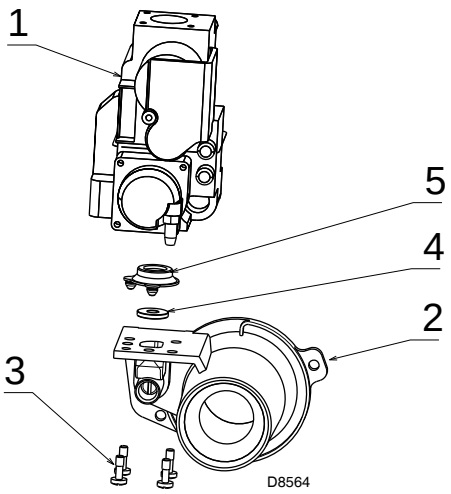


Fig. 8

5.8 Fuel supply

The burners are teamed with one-piece pneumatic proportioning gas valves, via which the amount of gas delivered, and hence the output produced, can be modulated.

A signal reporting pressure detected in the air circuit is carried to the pneumatic gas valve, which delivers an amount of gas in proportion to the airflow produced by the fan.

To optimise the bulk, the gas train is assembled directly on the body of the burner.

5.8.1 Gas train assembly

The connection valve-manifold allows compensating the accidental occlusion of the suction line through the distributed gas reduction.

Technical data

Valve model	Honeywell VK4125V 2003 4
Mixer model	Honeywell 45.900.444-003B
Gas line connection	DN 15 - inlet 1/2”
Working temperature	-15°C/70°C
Max. working pressure	30 mbar
Min. working pressure	15 mbar
Max. inlet pressure	60 mbar
Valve class	B + B
Electrical supply	220-240 V
Protection level	IP 40 according to IEC 529

Tab. A

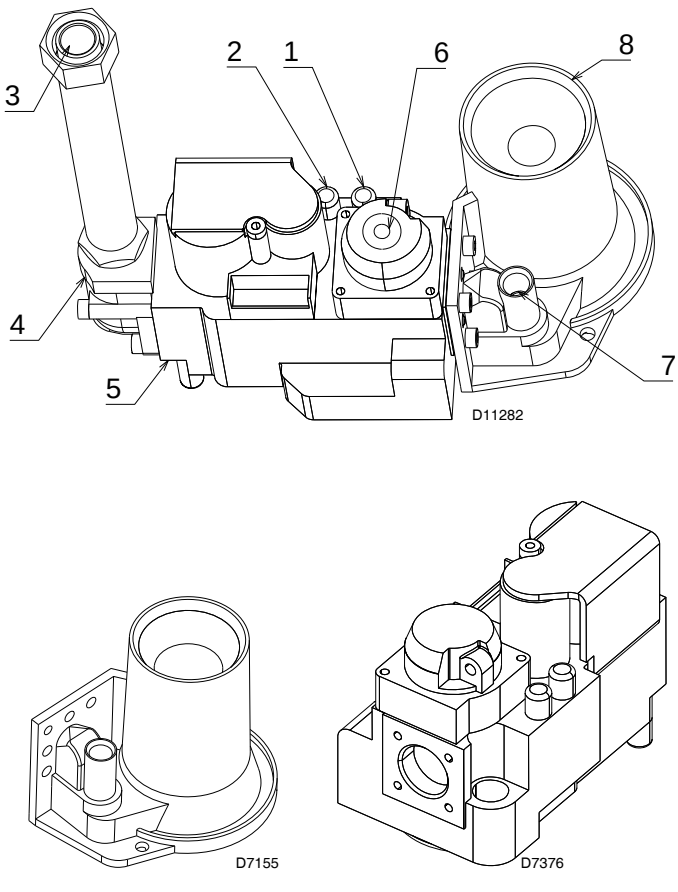


Fig. 9

5.8.2 Air/gas mixer

Gas and combustive air are mixed inside the purging circuit (mixer), starting from the intake inlet.

Through the gas train, fuel is introduced into the intake air current

Key (Fig. 9)

1 Gas pressure downline test point (**P2**)
2 Gas pressure downline test point (**P1**)
3 Gas supply
4 Flange

5.8.3 Testing

Check the standby of the burner by opening the thermostats (TL); check that the burner is blocked while is working by opening the connector (CN) inserted in the probe red wire and located outside the control box.

5.8.4 Ionisation current

The minimum current necessary for the control box operation is 5 µA. The burner normally supplies a higher current value, so that no check is needed.
Anyway, if you want to measure the ionisation current, you need to open the connector (CN1) fitted on the red wire and insert a microammeter.

Optimum calibration values

	MIN. output		MAX. output	
	CO_2 (%)	O_2 (%)	CO_2 (%)	O_2 (%)
Methane	8	6.6	9	4.9
LPG	9.5	6.4	10	5.6

Tab. B

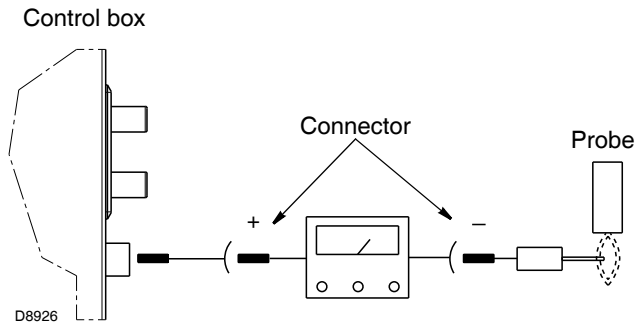


Fig. 10

6 Operation

6.1 Notes on safety for the first start-up

WARNING

The first start-up of the burner must be carried out by qualified personnel, as indicated in this manual and in compliance with the standards and regulations of the laws in force.

WARNING

Check the correct working of the adjustment, command and safety devices.

6.2 Adjustments prior to ignition

The following adjustments must be carried out:

➤ open manual valves upline from the gas train.

➤ Bleed the air from the gas line using the screw on the socket "**P1**".

➤ Installare un manometro sulla presa di pressione "**P2**" posta sulla valvola gas.

6.3 Burner start-up

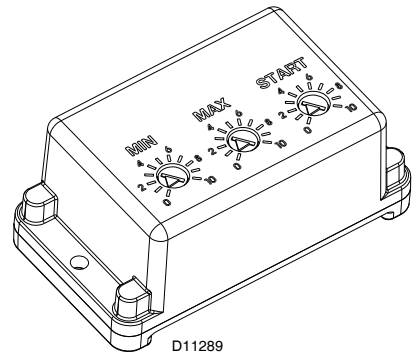
– Close the thermostat and switch on the burner's power.
– The burner starts up under pre-purging conditions to the "**START**" and the ignition occurs.
– If the fan starts up, but no flame appears by the end of the safety time, the control box allows the start-up programme to be repeated up to 3 times.
– If ignition does not occur upon the third attempt, the burner goes into lockout mode. Reset and wait for a new start-up attempt.
– If ignition is still not achieved, it may be that gas is not reaching the combustion head within the safety time period of 5 seconds.
– Turn the screw "**V1**" on the gas valve mixer slightly anticlockwise.
– Check the pressure shown on the pressure gauge connected to the socket "**P2**" of the valve, and compare it with that indicated on the table below.
– Once the burner has ignited, proceed with the global adjustment of the burner.

6.4 Fan adjustment

Modulation is based on variable-speed technology. Combustion air delivery can be adjusted by varying the motor's speed (rpm).

The proportioning gas train delivers the right amount of fuel, depending on the pressure detected in the purging circuit. Hence the output delivered is adjusted by varying the motor's speed of rotation.

The motor speed can be adjusted via the Trimmers on the fan control card kit (supplied separately). When using the kit to make the adjustments, intervene on the "**START**" and "**MAX**" trimmers only (Fig. 11).



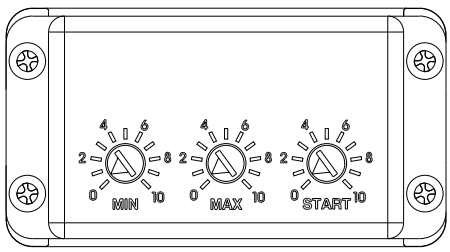


Fig. 11

6.5 Gas valve adjustment

The adjustment of the output of gas is achieved by using the screw “V1”(Fig. 9).
– To increase the output: turn the screw anticlockwise (unscrew).
– To reduce the output: turn the screw clockwise (tighten).

6.6 Burner adjustment

Check the output supplied, which must correspond with that requested by the oven used.

To increase or reduce its value, intervene directly on the trimmer on the fan control card kit supplied separately (Fig. 11).

Measure the gas delivery on the counter to precisely establish the burnt output. Using a smoke analyser, measure the value of the CO_2 or the O_2 in order to optimise the burner calibration.

The correct values for the gas G20 (natural gas) are:
CO_2 8.5 - 9% or O_2 5 - 5.5%.

To correct these values act on the gas valve in the following way:
➤ to increase the gas delivery and the CO_2: turn the screw V1 anticlockwise (unscrew)
➤ to reduce the gas delivery and the CO_2: turn the screw V1 clockwise (tighten).

The burner is supplied for operation with G20 (natural gas). For conversion to G31 (LPG), use the special kit supplied.

Before carrying out the conversion:

WARNING

Remove the electricity supply.

– Close the fuel interception tap.
– Disassemble the gas valve 1)(Fig. 12) from the venturi unit 2), removing the screws 3).
– Substitute the diaphragm 4) on the gas valve 1) with the one supplied.
– House the diaphragm 4) in the gasket 5).
The Tab. C shows the various diameters of the diaphragms calibrated on the basis of the type of gas used.

DIAMETER	DIAPHRAGM
Gas type	Diameter (mm)
G20	6
G31	3,5

Tab. C

– Reassemble the gas valve and carry out all the adjustment operations described above.

The correct values for the gas G31 (LPG) are:
CO_2 10 - 10.7% or O_2 5.7 - 6.2%.

To correct these values act on the gas valve in the following way:
➤ to increase the gas delivery and the CO_2: turn the screw V1 anticlockwise (unscrew)
➤ to reduce the gas delivery and the CO_2: turn the screw V1 clockwise (tighten).

The necessary values of the pressure on the gas mains are:
– for G20 = 20 mbar
– for G31 = 37 mbar

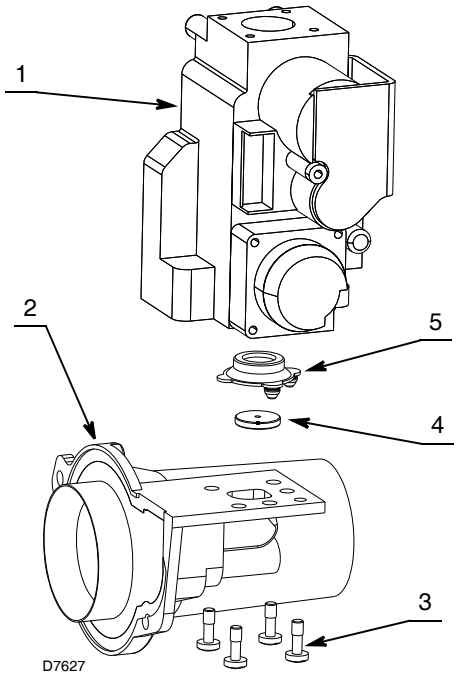


Fig. 12

The Tab. D below gives the possible settings for a generator.

Output (kW)	Gas type	Pressure P2 (mbar)	No. of turns per min. (rpm)	CO_2 (%)	Trimmer position
28	G20	-0,1	5500	8 - 9%	10

Tab. D

6.7 Combustion head

The combustion head comprises a highly thermal resistant cylinder whose surface features numerous holes, encased in a metal "mesh" (Fig. 13).

The air-gas mixture is pushed inside the cylinder and out of the head through the holes in the perimeter.

Combustion starts when the air-gas mixture is ignited by a spark generated by the electrode.

The metal "mesh" is the combustion head's most essential element since it improves burner performance considerably.

The flame developed on the surface of the head is perfectly retained and adheres to the mesh when operating at the maximum setting.

This allows modulating ratios as high as 6:1, avoiding the danger of flashback when modulating is at its minimum.

The flame features an extremely compact geometry, meaning that there is no risk of contact between the flame and parts of the generator, consequently eliminating the possible problem of poor combustion.

The flame's structure means that smaller combustion chambers can be developed, designed to exploit this particular feature.

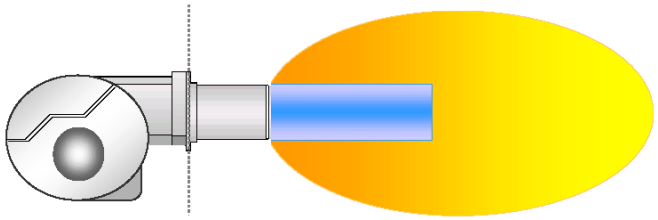


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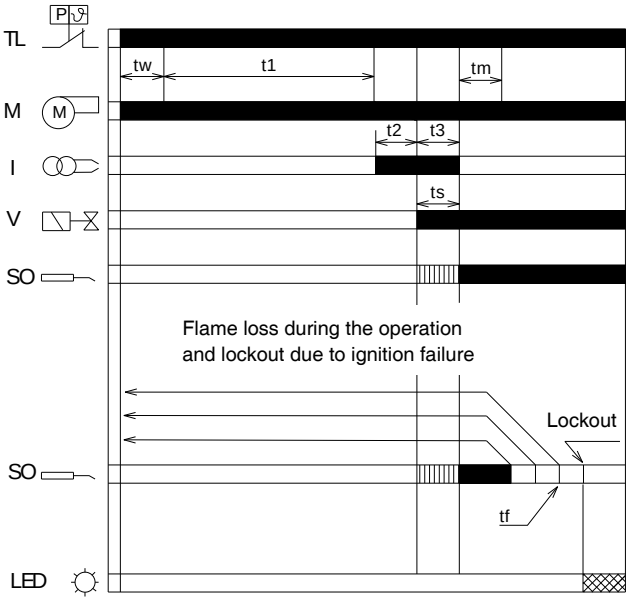
Fig. 13

6.8 Operating programme

6.8.1 Normal operation



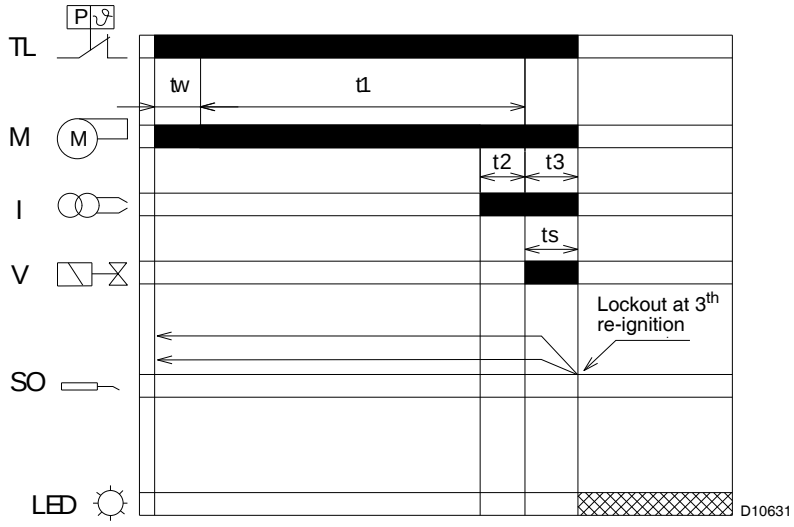
Key
I – Ignition transformer
LED – Reset button LED indicating operating status
M – Fan motor
SO – Ionisation probe
TL – Limit thermostat
V – Gas valve

Red (LED signalling)

No signal needs to be received

Fig. 14

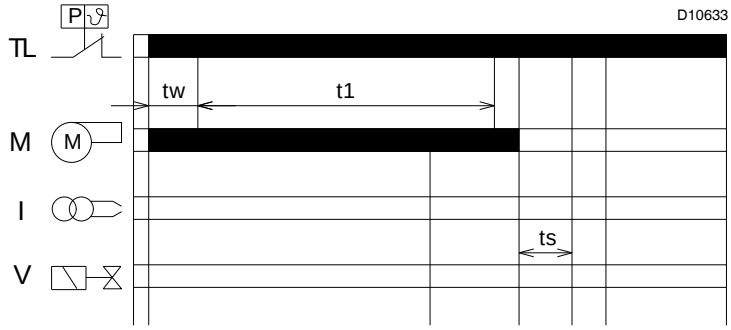
6.8.2 Lockout due to ignition failure



Red (LED signalling)

Fig. 15

6.8.3 Lockout due to a flame or flame simulation detected during pre-purging



Key
I – Ignition transformer
LED – Reset button LED indicating operating status
M – Fan motor
SO – Ionisation probe
TL – Limit thermostat
V – Gas valve

Red (LED signalling)

Operating times

ta	tf	tl	tm	ts	tw	t1	t2	t3	t8
20	1	40	10	5	-	25	3	5	10

Time expressed in seconds

ta	Time for checking motor turns: if the number of turns is lower than 900 rpm, after **ta** will be carried out a lockout.
tf	Response time after the flame disappearance.
tl	Flame or flame simulation detected during pre-purging: immediate lockout.
tm	Stabilisation time: the modulation occurs after this time.
ts	Safety time: if at the end of the time **ts** a flame is not present, **tpp** is carried out. After 3 times follows a lockout.
tw	Stabilisation time motor turns.
t1	Pre-purging time: by the signal of heat request to the end of the ignition.
t2	Transformer pre-ignition time: ignition before the valve closing.
t3	Transformer ignition time: the transformer remains on during the safety time.
t8	Post-purging time: Additional purging when the heat request is completed, or in case of flame failure during the operation or in case of ignition failure.

Tab. E

Lockout types and triggering times in case of burner malfunction

Description of types of faults	Lockout
Presence of flame in pre-purging “t1”	At the end of the time of “t1”
No ignition at end of safety time “ts”	After max. 3 repeats, within 1 second
Flame goes out during operation	After max. 1 repetition, if there is no flame at the end of ts
Not correct No. of turns of the fan motor (< 900 rpm)	After max. 20 seconds
Fault at the valve circuit	At the end of the time of “t1”

Tab. F

6.9 Recycle function if flame goes out during operation

The control box allows recycling, i.e. the complete repetition of the start/up program.

If after the safety time since the last recycle the flame does not appear, the burner carries out a lockout.

6.10 Restart function following firing failure

The control box allows the start-up programme to be repeated, making up to 3 attempts, if no flame is formed by the end of the safety time.

If the flame still fails to appear after the fourth ignition attempt, the burner locks out at the end of the safety time.

6.11 Control of the motor rpm

Check of the motor operation if the rotation number per minimum minute exceeds (900 rpm).

If the motor does not exceed the number of minimum turns, it stops after 20 seconds.

6.12 Control box reset (using built-in button)

To carry out the control box reset, proceed as follows:

➤ Press and hold the reset button for 1-2 seconds.

➤ In case the burner does not restart it is necessary to check if the limit thermostat (**TL**) is closed.

7 Maintenance

7.1 Notes on safety for the maintenance

The periodic maintenance is essential for the good operation, safety, yield and duration of the burner.

It allows you to reduce consumption and polluting emissions and to keep the product in a reliable state over time.

The maintenance interventions and the calibration of the burner must only be carried out by qualified, authorised personnel, in accordance with the contents of this manual and in compliance with the standards and regulations of current laws.

Before carrying out any maintenance, cleaning or checking operations:

disconnect the electricity supply from the burner by means of the main switch of the system;

Close the fuel interception tap.

7.2 Maintenance programme

7.2.1 Maintenance frequency

The combustion system should be checked at least once a year by a representative of the manufacturer or another specialised technician.

7.2.2 Checking and cleaning

Flexible hoses

Check there are no occlusions or obstructions in the fuel supply pipes, in the air suction areas and in the combustion product waste pipe.

Electrical wiring

Check that the burner and gas train electrical connections are correct.

Gas leaks

Make sure there are no gas leaks in the following areas:
– on the meter-burner pipework
– on the mixer/valve connection
– on the burner fastening flange where gaskets are fitted.

Combustion head

Inspect the combustion head and make sure the fabric is undamaged and does not feature large or deep holes or corroded areas.

Also make sure that no parts have warped as a result of the high temperature.

Electrodes assembly

Make sure neither the electrodes nor probe show marked warping or oxidation on surfaces.
Make sure distances are still in line with those indicated in Fig. 7, readjusting to the right values where necessary. Where necessary, remove oxide from the surface of the probe with abrasive paper.

Gas train

Check valve setting and proportionality of operation by analysing

Combustion

Let the burner run at full capacity for about ten minutes, setting all the elements correctly as explained in this manual.

Then carry out the analysis of the combustion by checking:
- CO_2 percentage (%);
- CO content (ppm);
- NOx content (ppm);
- Ionisation current (μA);
- Flue gas temperature at the flue.

Adjust the burner if the combustion values found at the beginning of the operation do not comply with the regulations in force or, at any rate, do not produce good combustion.

Use the appropriate card to record the new combustion values; they will be useful for subsequent controls.

8 Faults / Solutions

Here below you can find some causes and the possible solutions for some problems that could cause a failure to start or a bad working of the burner. In most cases, an operation irregularity leads to the lighting up of the signal inside the reset button of the control box (1, Fig. 3, page 8).

When this lamp lights on, the burner will attempt to operate only after pressing the reset button.

After this, if the burner functions correctly, the lockout can be attributed to a temporary fault.

If however the lock out continues the cause must be determined and the solution found.

WARNING

In the event of a burner lockout, more than two consecutive burner reset operations could cause damage to the installation. On the third lockout, contact the Aftersales Service.

DANGER

If further lockouts or burner faults occur, interventions must only be made by qualified, authorised personnel (as indicated in this manual, and in compliance with the laws and regulations currently in force).

8.1 Start-up problems

FAULTS	POSSIBLE CAUSES	SOLUTION
The burner does not start when the limit thermostat closes.	Lack of electrical supply.	Check presence of voltage in the L1-N clamps of the 7 pin plug.
		Check the conditions of the fuses.
		Check that safety thermostat is not lock out.
	Lack of gas.	Check the manual cock opening.
		Check that valve has changed over to open position and that there are no short circuits.
	The connections in the control box are wrongly inserted.	Check and connect completely all the plugs.
Burner runs normally in pre-purging and ignition cycle and locks out after 3 firing attempts.	The phase-neutral connection is inverted	Invert them.
	The earth connection lacks or is inefficient.	Make the earth connection efficient.
	Valve lets too little gas through	Check mains pressure and/or adjust the valve as indicated in this manual.
	The gas valve is faulty.	Replace.
	The electric ignition arc is irregular.	Check the right insertion of the connectors.
		Check the right position of the electrode according to the instructions of this manual.
		Inspect the quality of the ceramic insulator.
	The ionisation probe is earthed or not in contact with the flame, or its wiring to the control box is broken, or there is a fault on its insulation to the earth.	Check right position and, if necessary, adjust as indicated herein.
		Reset the electrical connection.
		Replace the faulty connection.
	Lack of gas.	Check the manual cock opening.
		Check that valve has changed over to open position and that there are no short circuits.
Burner starts with an ignition delay.	The ignition electrodes is wrongly positioned.	Adjust it according to the instructions of this manual.
	Air output is too high.	Set the air output.
	Valve brake not open enough, with insufficient gas allowed through.	Adjust it.
The burner locks out during the pre-purge phase.	The flame exists.	Faulty valve: change it.

8.2 Operating faults

FAULTS	POSSIBLE CAUSES	SOLUTION
The burner locks out during operation.	Valve lets too little gas through	Check mains pressure and/or adjust the valve as indicated in this manual.
	The valve is faulty.	Replace.
	Earth probe.	Check right position and, if necessary, adjust as indicated herein.
		Clean or replace the ionisation probe.
	Disappearance of the flame.	Check gas mains pressure and/or adjust the valve as indicated in this manual.

9 Electrical wiring

Notes on safety for the electrical wiring

DANGER

- The electrical wiring must be carried out with the electrical supply disconnected.
- Electrical wiring must be made in accordance with the regulations currently in force in the country of destination and by qualified personnel. Refer to the wiring diagrams.
- The manufacturer declines all responsibility for modifications or connections different from those shown in the wiring diagrams.
- Do not invert the neutral with the phase in the electrical supply line. Any inversion would cause a lockout due to firing failure.
- The electrical safety of the device is obtained only when it is correctly connected to an efficient earthing system, made according to current standards. It is necessary to check this fundamental safety requirement. In the event of doubt, have the electrical system checked by qualified personnel.
- The electrical system must be suitable for the maximum power absorption of the device, as indicated on the label and in the manual, checking in particular that the section of the cables is suitable for that level of power absorption.
- For the main power supply of the device from the electricity mains:
  - do not use adapters, multiple sockets or extensions;
  - use a omnipolar switch with an opening of at least 3 mm between the contacts (overvoltage category), as foreseen by the current safety standards.
- Do not touch the device with wet or damp body parts and/or in bare feet.
- Do not pull the electric cables.

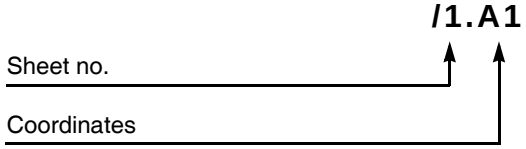
WARNING

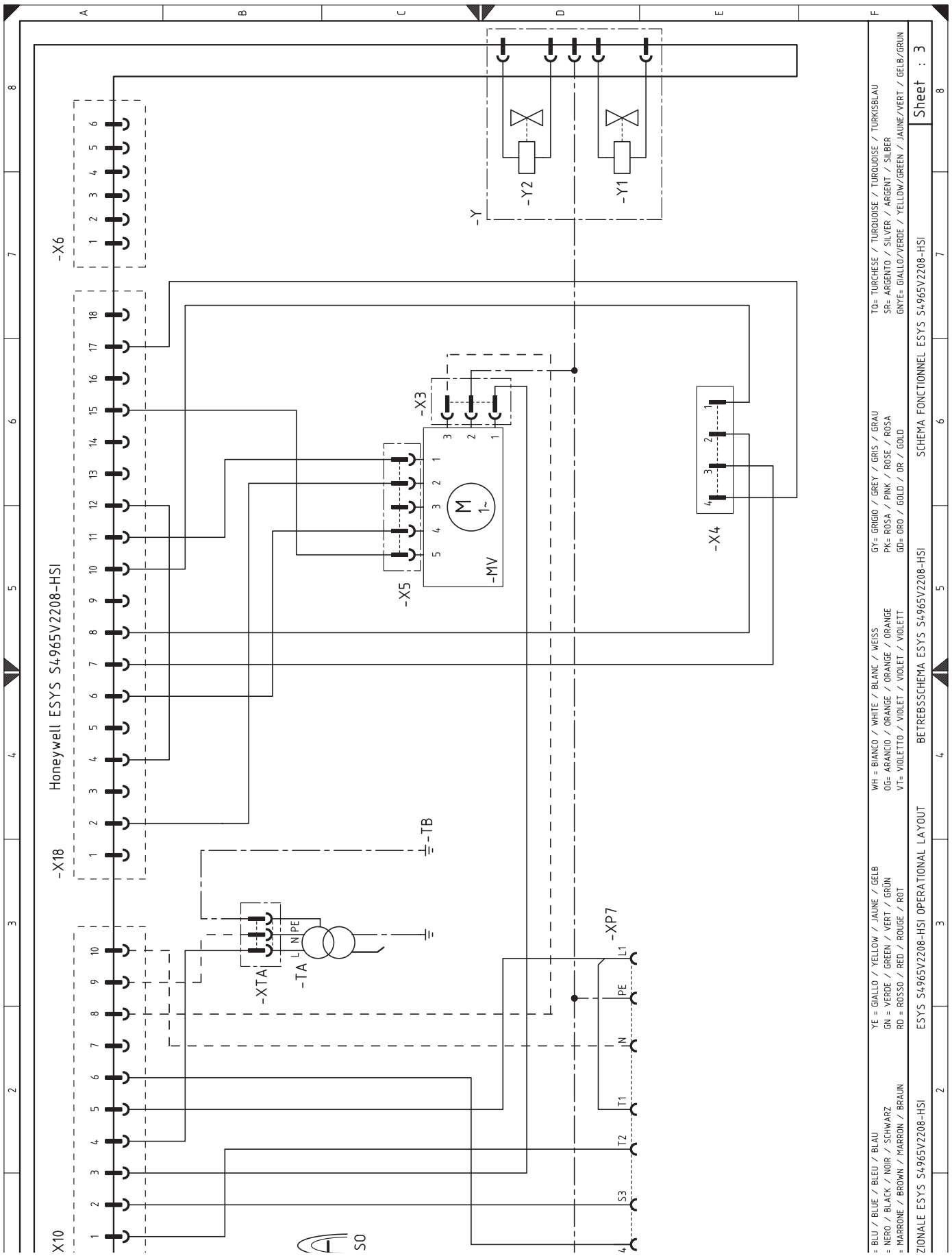
The section of the conductors must be at least 1mm^2 (unless requested otherwise by local standards and legislation).

9.1 Electrical panel layout

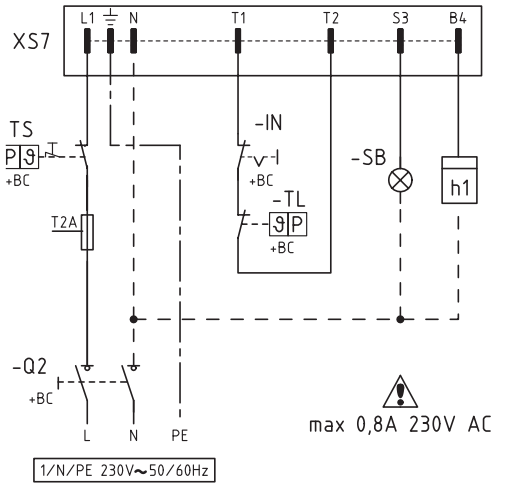
1	**Index of layouts**
2	References layout
3	Operational layout
4	Electrical connections set by installer

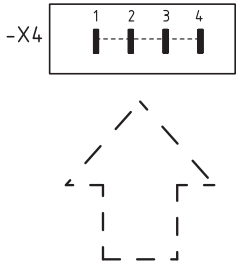
2 Reference layout




Honeywell ESYS S4965V2208-HSI
-X10
-X18
-X6
-Y
-Y2
-Y1
-X3
-X5
-MV
-X4
-TB
-XTA
-TA
-XP7
SO
BLU / BLUE / BLEU / BLAU
NERO / BLACK / NOIR / SCHWARZ
MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRUN
RD = ROSSO / RED / ROUGE / ROT
WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
ZIONALE ESYS S4965V2208-HSI
ESYS S4965V2208-HSI OPERATIONAL LAYOUT
BETREBSSCHEMA ESYS S4965V2208-HSI
SCHEMA FONCTIONNEL ESYS S4965V2208-HSI
Sheet : 3

ELECTRICAL POWER





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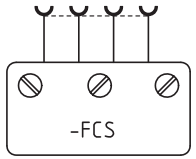
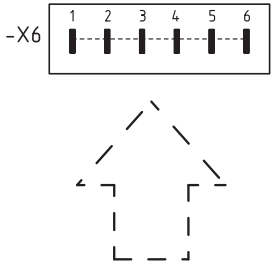


DISPOSITIVO PER REGOLAZIONE GIRI MOTORE VENTILATORE

DEVICE FOR THE ADJUSTMENT OF MOTOR-FAN RPM

DISPOSITIF POUR LE REGLAGE DES TOURS MOTEUR-VENTILATEUR

VORRICHTUNG FUR DIE REGELUNG DES MOTOR-GEBLASEDREHZAHLS



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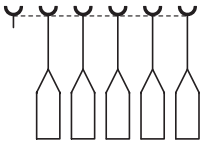

KIT INTERFACCIA SOFTWARE PC

SOFTWARE PC INTERFACE KIT

KIT INTERFACE DE SOFTWARE PC

SATZ PC SOFTWARE SCHNITTSTELLE

E / BLEU / BLAU
ACK / NOIR / SCHWARZ
/ BROWN / MARRON / BRAUN

YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRÜN
RD = ROSSO / RED / ROUGE / ROT

WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT

GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD

TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN

TI ELETTRICI A CURA DELL' INSTALLATORE ELECTRICAL CONNECTIONS SET BY INSTALLER ELEKTROANSCHLÜSSE VOM INSTALLATEUR AUSZUFÜHREN RACCORDEMENTS ÉLECTRIQUE EFFECTUÉ PAR L' INSTALLATEUR

Key to electrical layout

A1 - Electrical control box
FCS - Fan control speed
G - Signal converter 0-10V / 4-20mA
h1 - Hour counter
IN - Switch for manual burner stop
MV - Fan motor
RS - Remote reset button
Q2 - Single-phase disconnecting switch
SB - Lock-out external signal
SO - Ionisation probe connector
TA - Transformateur d'allumage
TB - Burner earth connection
TL - Limit thermostat
TR - Adjustment thermostat
TS - Safety thermostat
T2A - Fuse single phase supply
X1 - Terminal strip
X3 - 3 pole connector
X4 - 4 pole connector
X5 - 5 pole connector
X6 - 6 pole connector
X10 - 10 pole connector
X18 - 18 pole connector
XP7 - 7 pole socket
XS7 - 7 pin plug
XTA - 3 pin plug
Y - Valve assembly
Y1 - Valve 1
Y2 - Valve 2