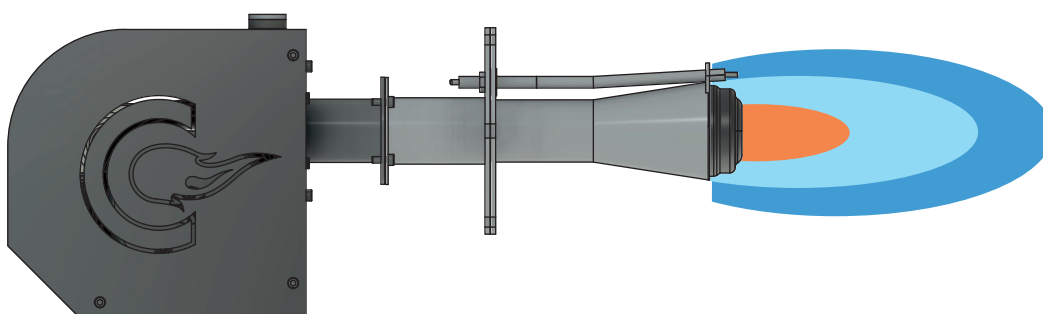


# DuoJET

## Premix gas burner

(for NG and LPG)



Model	Code
CX-28 F	1284115005313
CX-36 F	1284115005207
CX-50 F	1284115005214
CX-72 F	1284115105105
CX-100 E	1484115105000
CX-150 S	1504115105005



2422-20





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**Declaration of conformity**

Producer Combhex Combustion Systems  
Address Adnan Kahveci Mah., Yavuz Sultan Selim Bulv.  
Galaksi 2 No: 37 / 71 Beylikdüzü / İSTANBUL  
Product Premix burner

Model	Code
CX-28 F	1284115005313
CX-36 F	1284115005207
CX-50 F	1284115005214
CX-72 F	1284115105105
CX-100 E	1484115105000
CX-150 S	1504115105005

These products are in compliance with the following Technical Standards

EN 12100  
EN 676

İstanbul , 09.10.2018  
General Manager  
Hakan PEKER



## 2.1 Information about the manual

### Introduction

- This manual supplied with the product is an integral and essential part of the product and must not be separated from it; it must be kept carefully for any reason 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.
- This manual is made for qualified authorized personnel.
- This manual contains important informations and instructions about the installation safety, commissioning, use and maintenance.

### Symbols used in the manual



**DANGER**

Maximum Danger !  
This symbol indicates operations that, if not performed correctly, cause serious injury, death or long term health risks.



**WARNING**

This symbol indicates operations that, if not performed correctly, may cause serious injury, death or long term health risks.



**CAUTION**

This symbol indicates operations that, if not performed correctly, may cause damage to the product / machine / appliance and/or injury to people.

### Danger: Electrical components



**DANGER**

This symbol indicates operations that, if not performed correctly, lead to electrical shocks with lethal consequences.

### Delivery of the product

When the product is delivered,

- The instruction manual is delivered to the user by the system manufacturer, with the recommendation to keep it in the room where the appliance is to be installed.
- Serial number and other important informations are written on the appliance ID plate.
- The supplier must inform the user about ;
  - how to use the system,
  - any further tests that require by the system (e.g. leakage)
  - system must be checked (maintenance) at least once a year by manufacturer or authorized qualified technicians.

## 2.2 Warranty terms and responsibilities

- The guarantee and the responsibility will no longer be valid in case of damages to things/appliances or injury to people, if such damage/injury was caused by any of the following causes.



**WARNING**

Failure to observe the information given in this manual, operating negligence, incorrect installation, use and making of non authorized modifications will result in the annulment by manufacturer of the guarantee that it supplies with the product.

- incorrect installation, start-up, use and maintenance of the burner;
- improper, incorrect or unreasonable use of the burner;
- intervention of the unqualified/unauthorized personnel;
- carrying out of the unauthorized modifications on the appliance/equipment/system.
- 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 supply system ( like low/high gas pressure )
- 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 structurally established flame;
- insufficient and inappropriate surveillance and care of those burner components most likely to be subject to wear and tear;
- The use of non-original components, including spare parts, kits, accessories and optional;
- high temperature near burner components ( like blower, pcb and cables)
- force majeure

**Manufacturer declines any responsibility for the failure to observe the content of this manual.**

### 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.

- The burner must only be used as expressly described. Any other use should be considered improper and therefore dangerous.  
This appliance specifically can be applied to appliances operating with water, steam, dia-thermic oil, appliance with special combustion rooms, roasters 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.
- IP level ( electrical protection ) must be supplied on the application.
- Temperature for operation of the burner from 0° C to 60° C.

The dimension of the appliance combustion chamber must respond to specific values, in order to guarantee combustion with the lowest polluting emissions rate. We therefore recommend you consult the Technical Service Department before choosing this type of burner for work in conjunction with a certain appliance.

This burner must only be used for the application it was designed for.

The manufacturer accepts no liability within or without the contract for any damage caused to people, animals and property due to installation, adjustment and maintenance errors or to improper use.

### 3.2 Important safety notes

- Children or unskilled persons must not use the appliance.
- Under no circumstances the suction line grids or the dissipation grids in the installation room must be covered with cloths, paper or any other material.
- Unauthorised persons must not attempt to repair appliance.
- It is dangerous to pull or twist the electric cables.
- Do not perform any cleaning operation if the appliance is not disconnected from the main power supply.
- Do not clean the burner or its parts with inflammable substances (e.g. petrol, alcohol, etc.).
- Do not place anything on the burner.
- Do not block or reduce the size of the ventilation vents in the installation room.
- Do not leave containers and inflammable products in the installation room.

### 3.3 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/personnel;

- 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 target, 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 observe 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 must 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 every responsibility for any damage that may be caused by the use of non-original parts.

## 4.1 Technical table

Model		CX-28 / F		CX-36 / F		CX-50 / F		CX-72 / F		CX-100 / E		CX-150 / S	
Product code		1284115005313		1284115005207		1284115005214		1284115105105		1484115105000		1504115105005	
Thermal Power (Heat Input)	kW	4	28	5	36	6,5	50	9	72	13	100	20	150
	Kcal/h	3.440	24.080	4.300	30.960	5.590	43.000	7.740	61.920	11.180	86.000	17.200	129.000
	BTU/hr	13.649	95.540	17.061	122.837	22.179	170.607	30.709	245.674	44.358	341.214	68.243	511.821
Natural Gas Consumption m <sup>3</sup> /h	G20 / G25 (min/max)	0,42	2,92	0,52	3,75	0,68	5,21	0,94	7,51	1,36	10,42	2,08	15,64
LPG Consumption m <sup>3</sup> /h	G31 (min/max)	0,17	1,17	0,21	1,50	0,27	2,08	0,38	3,00	0,54	4,17	0,83	6,25
LPG Consumption kg/h		0,31	2,18	0,39	2,80	0,51	3,89	0,70	5,60	1,01	7,78	1,56	11,67
Nominal Working Pressure G20	mbar	21											
Nominal Working Pressure G25	mbar	25											
Nominal Working Pressure G31	mbar	31											
Min. / Max. Working Pressure	mbar	12 / 60											
Electrical Supply		Single-phase, 220/230 V ~ ± 10% , 47/65 Hz											
Power input	W	75		95		105		115		175		245	
NOx Class		3											

## 4.2 Gas categories - Countries of destination

Country	AT - CH - CZ - DK EE - ES - FI - GB GR - IE - IT - LT - LV NO - PT - SE - TR	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	FR
Gas Category	I <sub>2H</sub>	I <sub>2R</sub>	I <sub>3P</sub>	I <sub>2R</sub>
Gas Pressure	20 mbar	20/25 mbar	29 mbar	20/25 mbar

Country	DE	BE	LU - PL
Gas Category	I <sub>2ELL</sub>	I <sub>2E(RB)</sub>	I <sub>2E</sub>
Gas Pressure	20 mbar	20/25 mbar	20 mbar

## 4.3 Gas diaphragm table

Model	CX-28 / F	CX-36 / F	CX-50 / F	CX-72 / F	CX-100 / E	CX-150 / S
Product code	1284115005313	1284115005207	1284115005214	1284115105105	1484115105000	1504115105005
Gas Type	Diaphragm Diameter (mm)					
G20	-	-	-	-	-	-
G31	5.5	5.5	7.0	7.0	7.0	8.0

4.4 Electrical specification table

Nominal data	Value
Supply voltage	230 VAC +10%, -15%, 47 – 65 Hz
Power consumption	2,5 VA
Humidity	90% RH max at 40°C (no condensing)
Ambient temperature	-20°C – +60°C

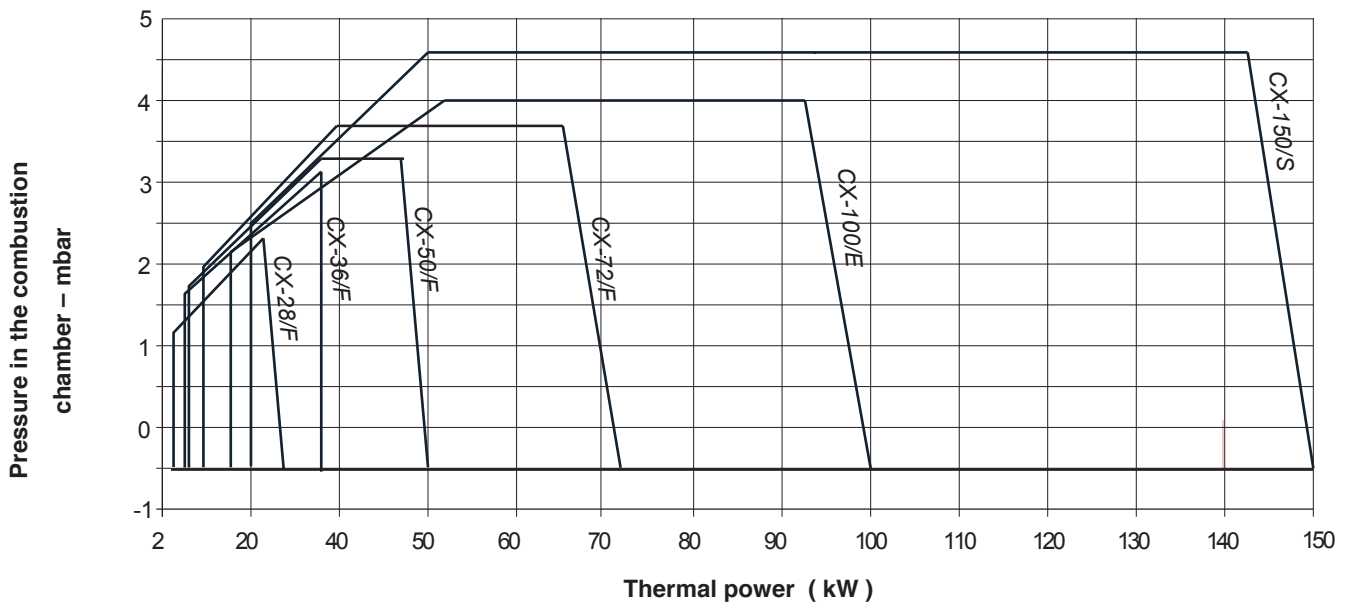
  

Electrical rating	Value
Fusing	Ext. fuse 2A slow sand filled
FAN output	230 VAC, 0,8 A max, $\cos \varphi = 0,6$
Alarm output	230 VAC, 0,8 A max, $\cos \varphi = 0,6$
Gas valve output	230 Vrac, 50 mA
Control Input	0-10 VDC voltage input, 4-20 mA current input
High Limit switch input	24 VDC (22 k $\Omega$ )
Communication input	logic "0" 0,8 VDC, logic "1" 2 – 24 VDC (10 k $\Omega$ )
Communication output	open collector 24 VDC and 10 mA max
Length of wiring for external component	1,0 m max

Ignition	Value
Spark voltage	20 kV
Spark frequency	22 Hz
Spark pulse energy	15 $\mu$ As
Spark to	ground

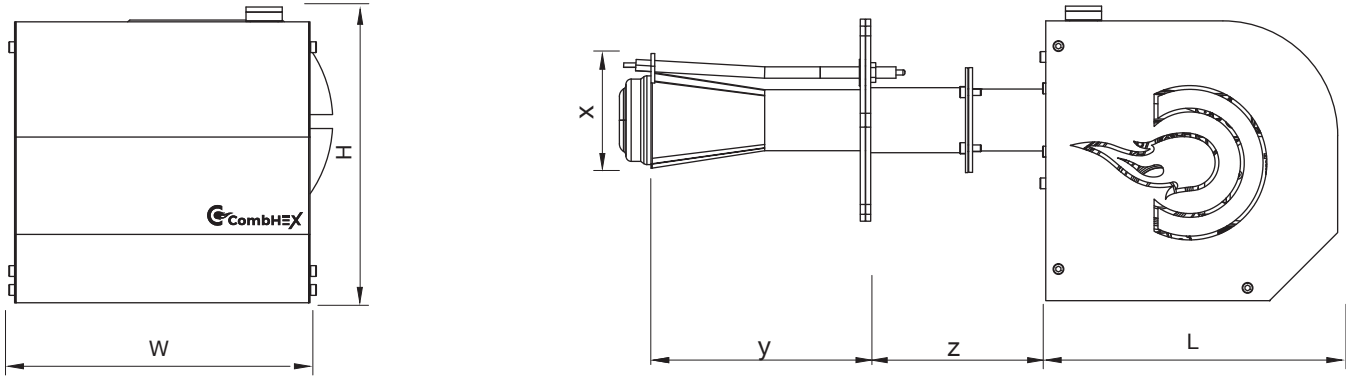
4.5 Burner capacity / Combustion chamber pressure table





4.6 Maximum dimensions

The maximum dimensions of the burners are shown in below.  
Combustion head dimensions and geometry can be changed according to the customer appliance.



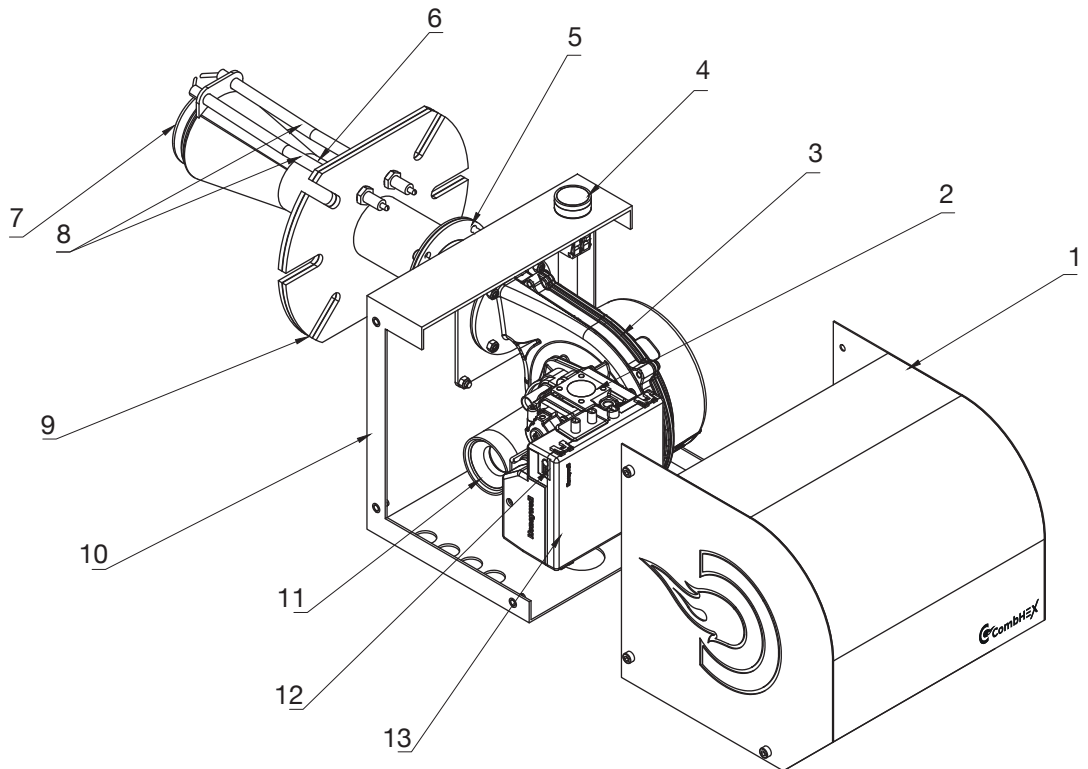
Model	CX-28 / F						CX-36 / F						CX-50 / F						CX-72 / F					
Product code	1284115005313						1284115005207						1284115005214						1284115105105					
Dimensions	x	y	z	W	L	H	x	y	z	W	L	H	x	y	z	W	L	H	x	y	z	W	L	H
Min. / Max. (mm)	96	170	150	230	230	220	96	170	150	230	230	220	96	170	150	230	230	220	96	170	150	230	230	220

Model	CX-100 / E						CX-150 / S					
Product code	1484115105000						1504115105005					
Dimensions	x	y	z	W	L	H	x	y	z	W	L	H
Min. / Max. (mm)	96	170	150	290	230	230	110	170	150	290	230	230

4.7 Burner description

- 1- Burner Cover
- 2- Gas Valve
- 3- Fan / Blower
- 4- Reset Button / Alarm LED
- 5- Sealing
- 6- Blind Zone
- 7- Combustion Surface
- 8- Ignition / Ionization Electrode
- 9- Burner Flange
- 10- Burner Chassis
- 11- Venturi / Air Intake
- 12- Internal reset / Error LED
- 13- Burner Control



## 5.1 Safety instructions for 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.



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



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 Packing

The packaging of the burner made by cardboard box, so it is possible to move the burner with hand. The handling operations for the burner can be highly dangerous if not carried out with the attention.

Keep any unqualified people at a distance; check the integrity and suitability 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 cm from the ground.

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.

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

## 5.3 ID Plate

Following informations are on the data label of the burner.

	Model (Model)	: CX-...
	Production Year (Üretim tarihi)	: 2020
	Electrical Supply (Elektrik beslemesi)	: 230 V - 50 Hz
	Electrical Consumption (Elektrik tüketimi)	: ... W
Natural Gas (Doğalgaz) : G20 (21 mbar) LPG (LPG) : G31 (31 mbar) Gas Pressure : (min/max) 12 / 50 mbar (Gaz Basıncı) Country of Destination : TR/EU (Sevkiyat Ülkesi)	Gas Consumption (Gaz tüketimi) G20	: ... m <sup>3</sup> / h
	Min. / Max. output (Min./Maks. güç)	: ... kW



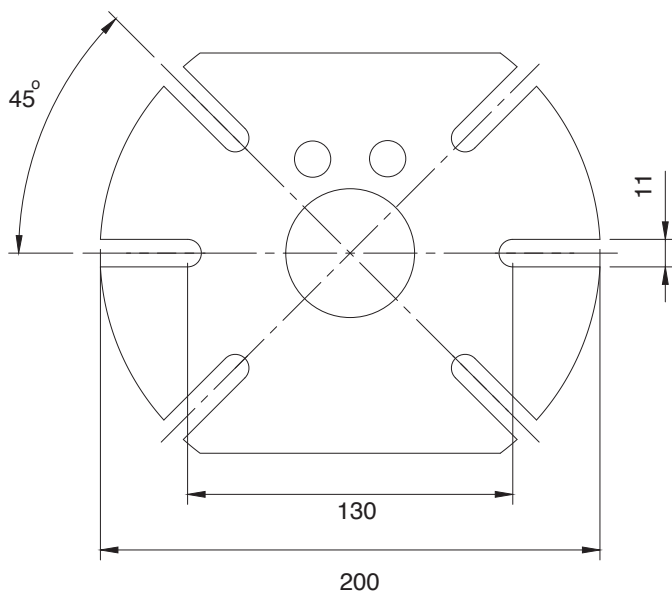
The burner capacity must be within the appliance capacity (firing rate, etc...).

Serial No:

CX/20.....

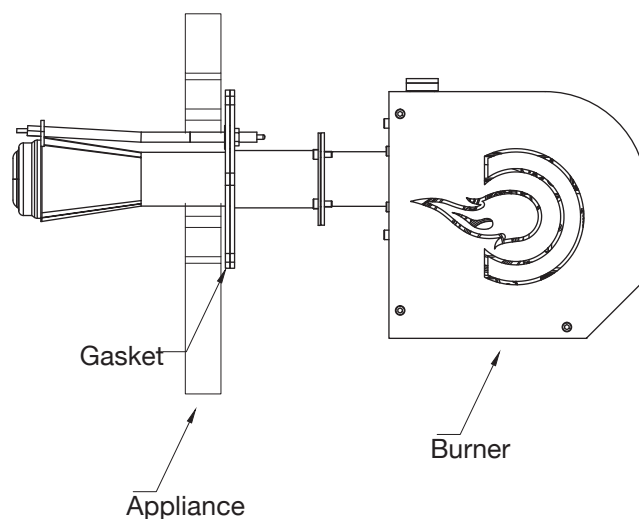
## 5.4 Burner flange

Burner flange can be used to fix the burner to the appliance. The position of the holes and flange can be marked for gasket.



## 5.5 Fixing the burner to the appliance

- Assembly the burner to the appliance with using 4 screws.
- A fire-proof gasket must be used between the burner and the appliance in order to avoid from leakage.

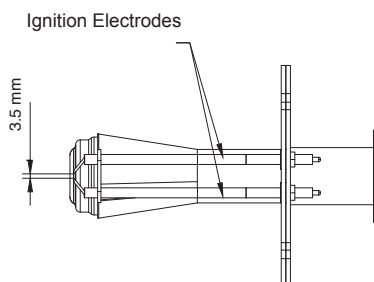
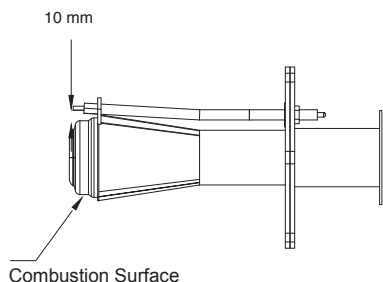


## 5.6 Electrode Positions

Check the ignition electrodes position before installing the burner to the appliance.



Do not change the electrode position. Changing the position of the electrodes may result malfunction in the control box and burner.



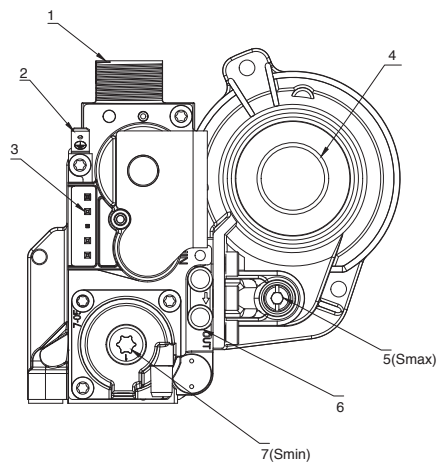
## 5.7 Gas Train

The burners are equipped with pneumatic proportional gas valve 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.

Gas and air are mixed inside the venturi circuit (mixer), starting from the intake inlet. Through the gas train, fuel is introduced into the intake air current and optimal mixing commences with the help of a mixer.

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

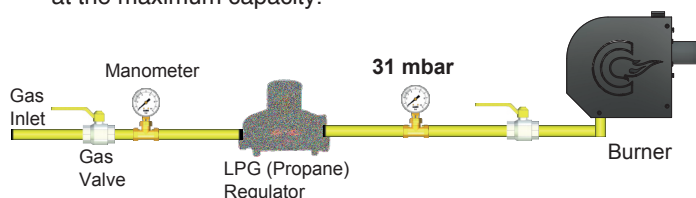


- 1- Gas supply ( 3/4" )
- 2- Earth terminal
- 3- Electrical connection
- 4- Venturi Air inlet
- 5- Max. gas flow adjustment point
- 6- Gas pressure test point
- 7- Min. gas flow adjustment point

## 5.8 Gas Connections

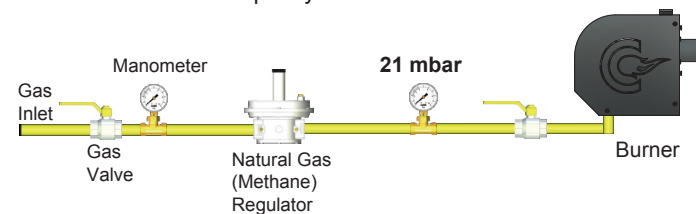
### LPG (Propane/G31) use ;

- Gas Diaphragm must be used according to table 4.3
- Gas pressure must be **31 mbar** at the burner inlet at the maximum capacity.



### Natural Gas (Methane/G20) use ;

- Gas Diaphragm must be removed for Natural gas use.
- Gas pressure must be **21 mbar** at the burner inlet at the maximum capacity.



Max. Gas inlet pressure is **60 mbar**. Higher than 60 mbar gas pressure may damage gas valve and othe components.



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.



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

### 6.1 Adjustments

The following adjustments must be carried out:

- 1- Open manual valves upline from the gas train.
- 2- Bleed the air from the gas line.
- 3- Check the electrical connections on the control box

### 6.2 Start-up the burner

Close the thermostat / set the temperature (if the temperature controller connected ), and switch on the burner's power.

The burner will start-up with pre-purging 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 to be repeated up to 2 times.

If ignition does not occur upon the third attempt, the burner goes into lockout mode and RED light starts blinking. Press reset button 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. For the solution, Turn the screw **5/Smax** (max. screw gas flow adjustment) on the venturi slightly anticlockwise.

Premix gas burners has modulation (variable-speed) technology. Combustion air delivery can be adjusted by varying the blower speed (rpm).

The proportioning gas train delivers the right amount of fuel, depending on the pressure detected in the pneumatic circuit. Hence the output delivered is adjusted by varying the motor's speed of rotation. The speed of the motor can be adjusted by digital potentiometer (0-10V / 4-20 mA) or from PLC connection.

\* 4-20 mA analog input connection requires 500 ohm resistor and parameter change from software.

### 6.3 Gas valve adjustments

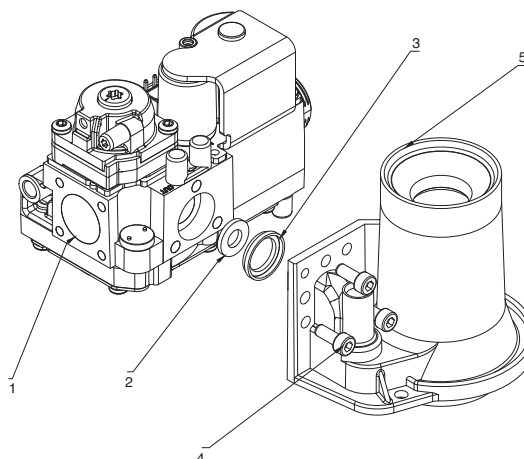
The adjustment of the output of gas is achieved by using the two screws **Smax** and **Smin**.

To change the maximum output of gas, act on the screw **Smax**.  
 – To increase the output (gas flow): turn the screw anticlockwise (unscrew).  
 – To reduce the output (gas flow): turn the screw clockwise (tighten).

To change the minimum output of gas act on the screw **Smin** on the gas valve. Remove the protection screw and act on the intern screws with a hex key. ( T40 )

- To increase the output: turn the screw clockwise (tighten)
- To reduce the output: turn the screw anticlockwise (unscrew)

### 6.4 Gas conversion instructions



The burner is supplied to operate with methane gas (G20) A diaphragm (2) 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 change the gas type;  
 - cut off the electrical supply;  
 - close the fuel interception tap;  
 - disassemble the gas valve 1) from the Venturi unit (5) by removing the screws (4);  
 - house the diaphragm (2) supplied with the kit in the gasket 3);  
 -re-assemble the gas valve and carry out all the adjustment operations described above (6.3).

The necessary values of the gas mains are:

– for G20 = 21 mbar

The emission values are: CO<sub>2</sub> 8.5 - 9.3% or O<sub>2</sub> 4.7 - 5.5%

– for G31 = 31 mbar

The emission values are: CO<sub>2</sub> 10.0 - 10.7% or O<sub>2</sub> 5.7 - 6.2%

### 6.5 Burner adjustments

The optimum adjustment of the burner requires an analysis of flue gases at the appliance outlet. The burner application at the appliance, the adjustment and the testing must be carried out in compliance with the instruction manual of the appliance itself, including the control of the CO and CO<sub>2</sub> concentration in the flue gases and of their temperature.

**Maximum output;** should match the value required by the appliance that is used. Maximum output fan speed is fixed by the manufacturer and cannot be changed by user. Changing the maximum fan speed requires software with PC connection. Using a smoke analyser, measure the value of the CO<sub>2</sub> or the O<sub>2</sub> in order to optimise the burner calibration. Adjust the burner 100 % modulation capacity from the control box/control device and check the emission values if it is correct ; The correct values are: CO<sub>2</sub> 8.5 ÷ 9.3% or O<sub>2</sub> 4,7 ÷ 5.5%. To correct these values change the gas valve adjustments in the following way:

- To increase the gas delivery and the CO<sub>2</sub>: turn the screw Smax anticlockwise (unscrew).
- To decrease the gas delivery and the CO<sub>2</sub>: turn the screw Smax clockwise (tighten).

**Minimum output;** should match the value required by the appliance that is used. Minimum output fan speed is fixed by the manufacturer and cannot be changed by user. Changing the maximum fan speed requires software with PC connection. Using a smoke analyser, measure the value of the CO<sub>2</sub> or the O<sub>2</sub> in order to optimise the burner calibration. Adjust the burner 0 % modulation capacity from the control box/control device and check the emission values if it is correct ; The correct values are: CO<sub>2</sub> 8.5 ÷ 9% or O<sub>2</sub> 5 ÷ 5.5%.

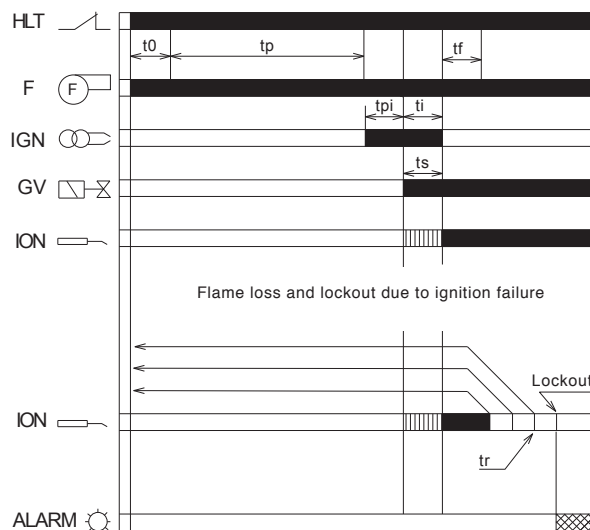
To correct these values change the gas valve adjustments in the following way:



- To increase the gas delivery and the CO<sub>2</sub>: turn the screw Smin clockwise (tighten).
- To reduce the gas delivery and the CO<sub>2</sub>: turn the screw Smin anticlockwise (unscrew).

### 6.6 Burner head

The combustion head comprises a highly thermal resistant cylinder (or other shapes) whose surface includes numerous holes, covered with a metal fiber. The air-gas mixture is blown inside the head 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 fiber is the combustion head's most important part since it improves burner performance. The flame developed on the surface of the head is perfectly retained and adheres to the metal fiber when operating at the maximum setting. This allows turn down ratios as high as 6:1, avoiding the danger of flashback when modulating at minimum. The flame features an extremely compact geometry, meaning that there is no risk of contact between the flame and parts of the appliance, consequently eliminating the possible problem of poor combustion.

### 6.7 Operation timing program



<b>HLT</b>	- High Limit Thermostat
<b>F</b>	- Blower (fan)
<b>IGN</b>	- Ignition Transformer
<b>GV</b>	- Gas Valve
<b>ION</b>	- Ionization electrode
<b>ALARM</b>	- Signal
	- RED (led signal)
	- No signal

<b>t0</b>	- Stabilization time for blower
<b>tp</b>	- Pre-purge time; from the heat demand to the end of ignition
<b>tpi</b>	- Pre-ignition time; ignition before valve closing
<b>ti</b>	- Ignition time; transformer is on during safety time
<b>ts</b>	- Safety time; if the flame not occurs after <b>ts</b> , <b>tp</b> is carried out.
<b>tf</b>	- Stabilization time; modulation is occurs after <b>tf</b> .
<b>tr</b>	- Response time after flame lost.
<b>tp</b>	- Post purge time; Additional purging when the heat request is completed, or in case of flame lost during the operation or in case of ignition failure.

- 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.

- 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.

- 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.

- To carry out the control box reset, 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. The terminal board X1 has an input RS provided for the remote resetting of the control box.

## 6.8 Protection and error conditions

Several checks are included to protect the appliance and its environment, High Limit situation is constantly monitored, safety times are constantly compared etc. Any violation of (programmable) limits (and/or internal thermostat functions) will lead to an error/fault or warning condition. Severe error (igniter lockout) will cause a lockout condition which can only be cleared by the reset key on the controller itself, or via a closed contact on the reset input. In case of error conditions, Fan will not operate.

### LOCKOUT ERRORS ;

- 01 -> Flame lockout after several ignition trials
- 02 -> False Flame lockout
- 03 -> High Limit error
- 04 -> APS related Errors (APS not opening, APS not closing)
- 05 -> Fan Tacho Signal error
- 08 -> Flame circuit error
- 09 -> Valve driver circuit error
- 13 -> Remote reset lockout (volatile)
- 21 -> ADC error
- 25 -> CRC error

Lock out condition codes are all codes from 1 till 30. The meaning of the error numbers is as following:

FAULT 1 -> Lock out signal after no flame and all ignition trials are expired. This error condition is stopping the appliance and to get to the normal operation again, manual/remote reset is required. By using the local reset key, number of resets are not limited. However all remote resets (communication) are limited to 5 resets per hour.

FAULT 2 -> False Flame error - when a flame current is detected in illegal situations (gas valve closed, safety time passed), error 2 will be generated.

FAULT 3 -> High Limit error - If switch opens, the error is set.

FAULT 4 -> APS related errors - If the APS is configured and the APS does not open or close within the configured time limits Error 4 is generated. If the APS is not configured but an APS switch is detected on the input Error 4 is also generated.

FAULT 5 -> Fan Tacho Signal error - if the measured fan speed is not within 900 RPM of the requested fan speed in 20 seconds, error 5 will be generated.

FAULT 8 -> Flame circuit error - during normal operation of the ignition controller, flame circuit is regularly checked. This check has predictable behavior and several steps. If check fails, error 8 will be generated.

FAULT 9 -> Valve driver circuit error - during normal operation of the ignition controller, valve circuit is regularly checked. This check has predictable behavior and several steps. If check fails, error 9 will be generated.

FAULT 13 -> Remote reset lockout (volatile) - the number of remote resets in an hour is more than allowed. Volatile lockout error is set; the error disappears after turning off and on the appliance.

FAULT 21 -> ADC error – analog/digital error.

FAULT 25 -> CRC error - matching error on CRC codes.

### BLOCKING ERRORS ;

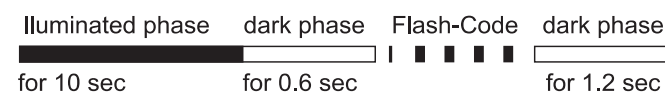
34 -> Low mains voltage

#### Blocking codes

The controller recognizes also the fault situations that can block the heat demands but do not lead to lockout condition. When the error condition becomes resolved, error will disappear but will be also written into the history data. Blocking errors are distinguished with codes from 30. If this is the case, error code will flash on the status display. The meaning of the code is as follow:

FAULT 34 = Low mains voltage (less than 157V (+/- 10V)) will trigger this error. When Mains brought back (190-250VAC), error is resolved in 10 seconds. Built-in LED is ON for a certain time but interrupted by a flash code showing the related error number. During start up or run time the LED is OFF.

#### Flash code sequence



- Long pulse: 0.6 sec
- Short pulse: 0.2 sec
- Break between pulses: 0.2 sec

#### Flash codes

Pulse meaning: — long    ☒ short

#01 Flame lockout after several ignition trials: ☒ —

#02 False Flame lockout: — ☒

#03 High Limit error: ☒ — ☒

#04 APS related errors: ☒ — —

#05 Fan Tacho Signal error: ☒ — — ☒

#08 Flame circuit error: — ☒ ☒ —

#09 Valve driver circuit error: ☒ — ☒ —

#13 Remote reset lockout (volatile): — ☒ — ☒

#21 ADC error: — — — ☒ ☒ ☒

#25 CRC error: — — ☒ ☒ ☒ ☒

#34 Low mains voltage: ☒ — —



## 7.1 Problem solution chart

In this chapter you can find some reasons and the possible solutions for the problems that may 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. 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.



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. 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 ).

PROBLEM	REASON	SOLUTION
<p>The burner does not start when the limit thermostat closes.</p>	<p>Lack of electrical supply.</p> <p>Lack of gas.</p> <p>The connections in the control box are wrongly inserted.</p>	<p>Check presence of voltage in the L-N clamps of the high voltage plug.</p> <p>Check the fuses.</p> <p>Check that safety thermostat is not lock out.</p> <p>Check that valve has changed over to open position and that there are no short circuits.</p> <p>Check the manual gas valves opening.</p> <p>Check and connect completely all the plugs.</p>
<p>Burner runs normally in pre-purging and ignition cycle and locks out after 3 firing attempts.</p>	<p>Valve lets too little gas through</p> <p>The earth connection is inefficient.</p> <p>Valve lets too little gas through.</p> <p>The gas valve is faulty.</p> <p>The electric ignition arc is irregular.</p> <p>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.</p> <p>Lack of gas.</p>	<p>Invert phase and neutral</p> <p>Make the earth connection efficient.</p> <p>Check mains pressure and/or adjust the valve as indicated in this manual.</p> <p>Replace the gas valve.</p> <p>Check the right position of the electrode , according to the instructions of this manual.</p> <p>Check the right insertion of the connectors.</p> <p>Inspect the quality of the ceramic insulator.</p> <p>Check right position and, if necessary, adjust as indicated in this manual.</p> <p>Reset the electrical connection.</p> <p>Replace the faulty connection</p> <p>Check that valve has changed over to open position and that there are no short circuits.</p> <p>Check the manual gas valves opening.</p>

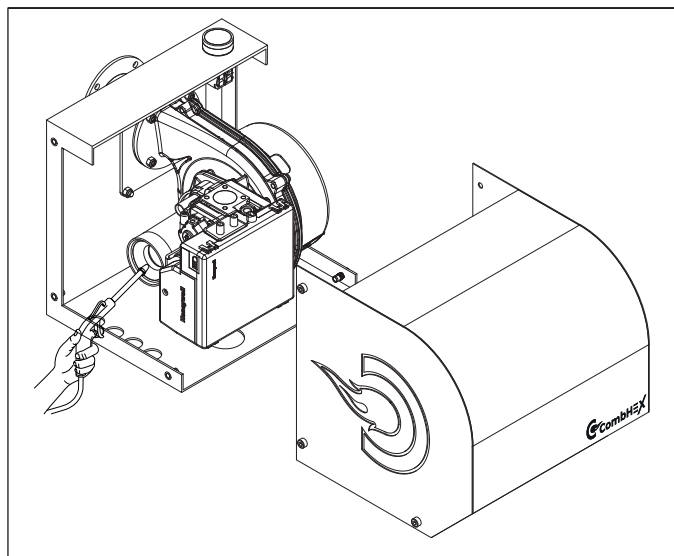
PROBLEM	REASON	SOLUTION
Burner starts with an ignition delay.	Ignition electrode is wrong positioned. Air output is too high. Valve brake not open enough, with insufficient gas allowed through.	Adjust it according to the instructions manual. Set the air output. Adjust the gas valve.
Burner lockout during the pre-purge phase.	Flame exists.	Change the faulty valve.
The burner locks out during operation.	Valve lets too little gas through The valve is faulty. Earth electrode. Disappearance of the flame.	Check mains pressure and/or adjust the gas valve as indicated in this manual. Replace the gas valve. Check right position and, if necessary, adjust as indicated in this manual. Clean or replace the ionisation electrode. Check gas mains pressure and/or adjust the gas valve as indicated in this manual.

## 7.2 Maintenance and cleaning instructions

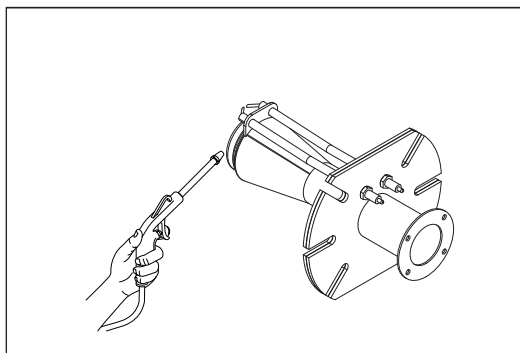
1. Shut off gas supply.
2. Shut down electric supply.
3. Open burner cover.
4. Dis-assemble burner head.
5. Clean the burner head with pressurized air.
6. Clean the fan and venturi with pressurized air.
7. Assemble the burner and be sure all sealings and screws installed properly.



Risk of damaging burner surface. Be careful while you are cleaning the combustion surface.



Risk of damaging burner fan. Be careful while you are cleaning the fan.





## 8.1 Safety instructions



If operations not performed correctly, lead to electrical shocks with lethal consequences.

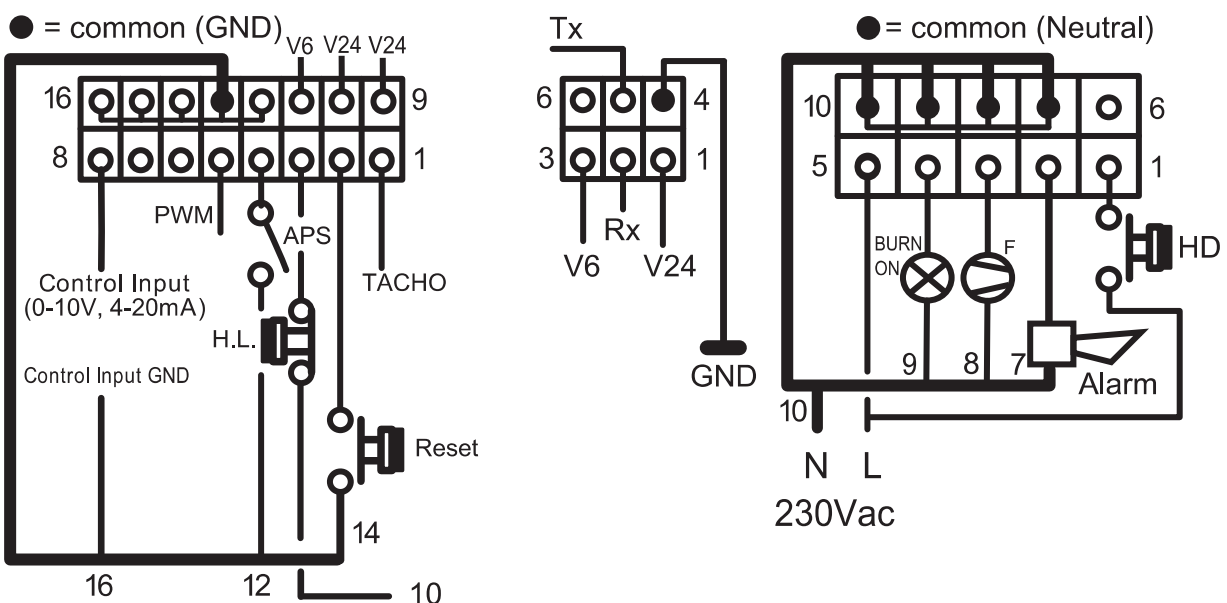
- The electrical wiring must be carried out with the electrical supply disconnected.
- Electrical wiring must be made in accordance with the regulations currently in force in the country of destination and by qualified personnel. Refer to the wiring diagrams.
- The manufacturer declines all responsibility 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.



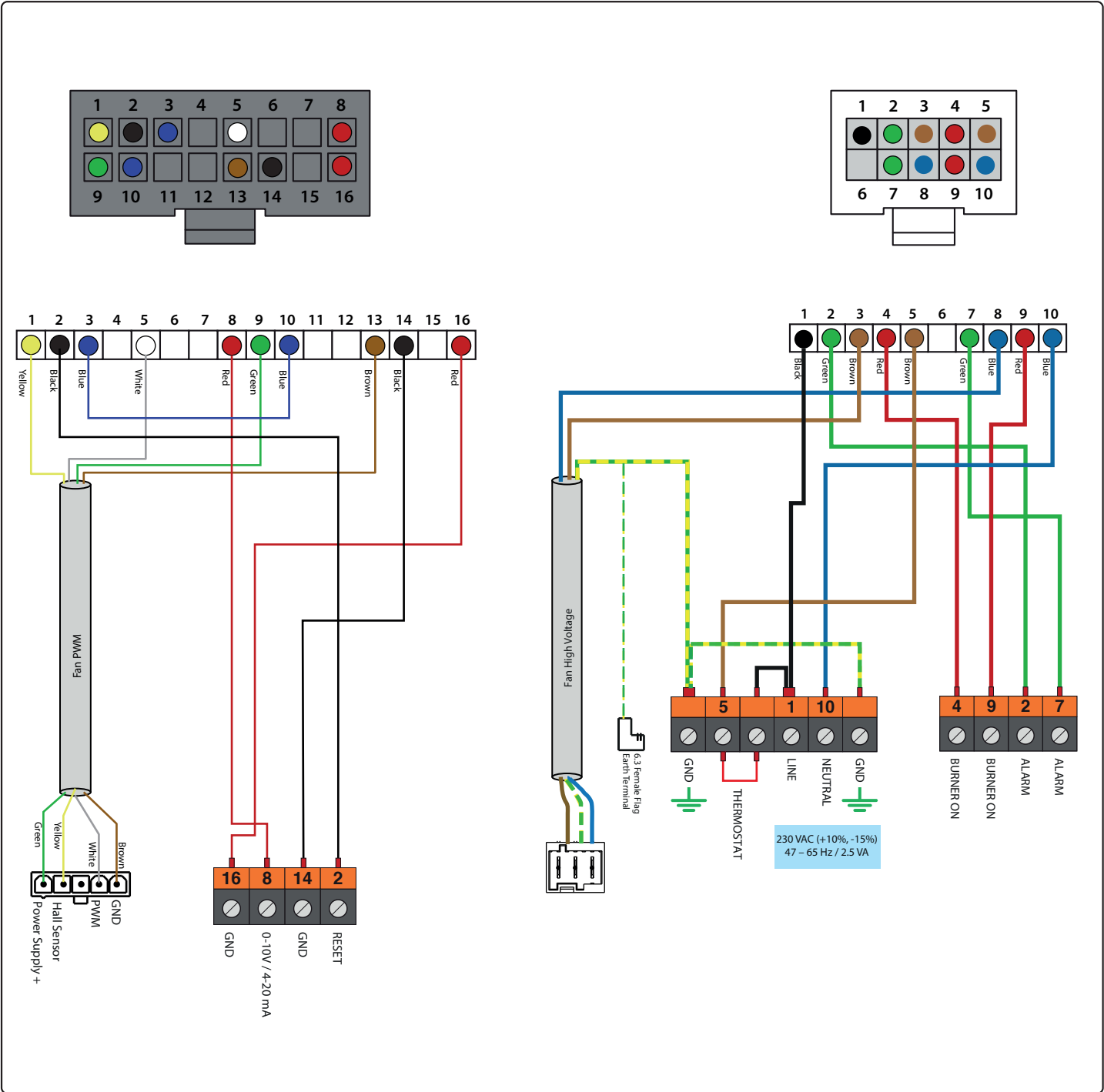
The section of the conductors must be at least 1mm<sup>2</sup> (unless requested otherwise by local standards and legislation)

## 8.2 Connector and connections

In the diagram below the connection diagram is shown. The Minifit connector contains the high voltage (230 VAC) connections, and the Microfit connectors contain the safety extra low voltage connections.



## 8.3 Wiring diagram





## **CombHEX Combustion Systems**

Premix Burners

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Yavuz Sultan Selim Bulv., Galaksi 2  
No: 37 / 71 Beylikdüzü / İSTANBUL

### **Factory**

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