



SYSTEMA

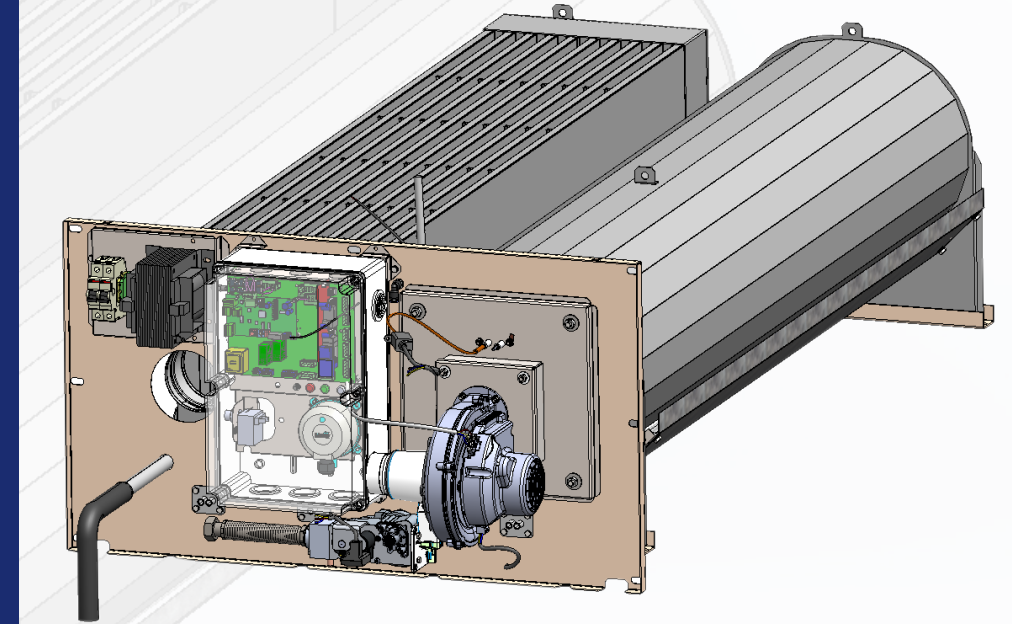


Heat exchanger gas units – service training

Federico Cortelazzo
Dariusz Przygocki
Barbara Kowalczyk
1st 3rd March 2022

Training agenda 1st March 2022

1. Basic information about HEGU + vocabulary
2. Signals on motherboard & wiring diagram
3. Control panel operating (tutorial)
4. Improvements & retrofit
5. GHEU's operating cycles
6. Commissioning- (Pre-commissioning + Start-up + Hi/Lo power flow procedure)
7. Gas valve adjustment
8. Replacement gas valves & electrodes
9. Alarms (tutorial)
10. Maintenance plan
11. Communication between Climatic & HEGU



Training agenda 1st March 2022

Devision into 2 groups

Team leaders: Boussad

ERIC

Trainer: Darek

Federico

Topics:

Preparation for commissioning

Start-up

Hi/ Lo procedure

Control panel operating / Ignition test / Alarms

Replacement of electrodes, valve

Burner disassembling & assembling


Model	EOLO LXC 50	EOLO LXD 70	EOLO LXE 90	EOLO LXE+ 110	EOLO LXF 130	EOLO LXG 170	EOLO LXH 230
Cat. No. (S)	70LENX1000	70LENX1001	70LENX1002	70LENX1003	70LENX1004	70LENX1005	70LENX1006
LGL France Goods	E BALTIC C BOX	E BALTIC D BOX	E BALTIC E BOX	E BALTIC E' BOX	E BALTIC F BOX	E BALTIC G BOX	E BALTIC H BOX
Cat. No. (Longvic)	4380816E	4380817F	4380818H	4380822M	4380819J	4380820K	4380821L
Cat. No (Burgos)	5006181	5006182	5006183	5006210	X	X	X
Nominal heat input	50 kW	70 kW	90 kW	110 kW	130 kW	170 kW	230 kW
Airflow min./max.	4 200 / 6 900	7 100 / 11 000	13 500 / 16 000	20 500 / 16 000	15 000/ 23 000	26 000/ 28 000	33 000 / 35 000

Model	EOLO LXC 50	EOLO LXD 70	EOLO LXE 90
Cat. No. (S)	70LENX0120	70LENX0121	70LENX0122
LGL France Goods	E BALTIC C BOX	E BALTIC D BOX	E BALTIC E BOX
Cat. No. (Longvic)	61298512	61299199	61299200
Nominal heat input	50 kW	70 kW	90 kW
Airflow min./max.	4 200 / 6 900	7 100 / 11 000	13 500 / 16 000

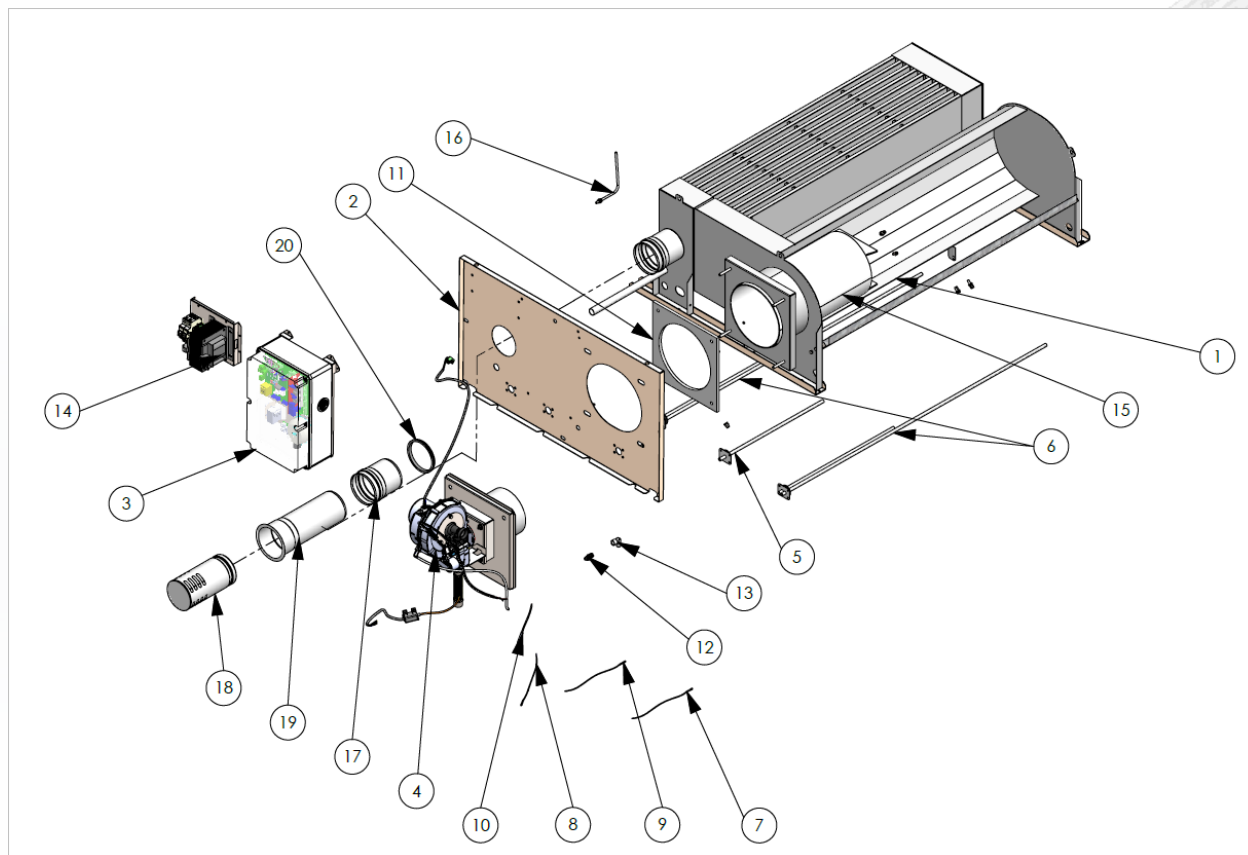
Each units has it own serial number

Name plate

1. Type of unit EOLO LXC 50 (*E Baltic C box*)
2. Serial no. L21B11084
3. CE sign & Certificate name
4. Type of gas
5. Nominal heat input & output
6. Country destination: France
7. Language: French or Spanish or English or

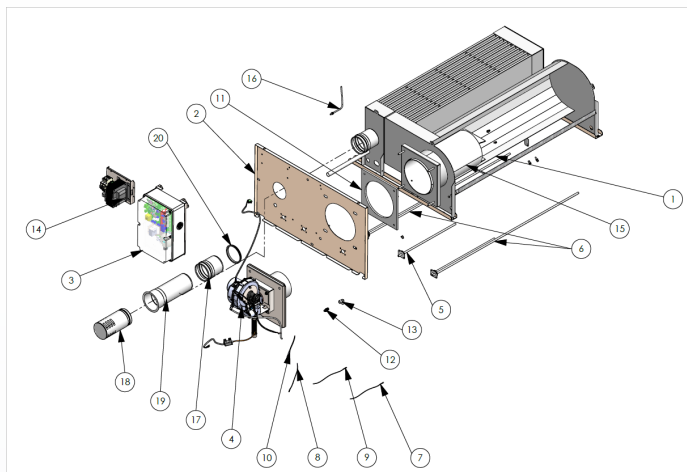
		SYSTEMA POLSKA Sp. z o.o. ul. Długa 5, 98-220 Zduńska Wola www.systemapolska.pl			
Condensing gas unit		Year	CE ²¹ 1450		
Serial number	L21B11084	2021	FRANCE		
Type	EOLOLXC 50	Destination	FRANCE		
Certificate	GAR1450DL0004	Category	II 2Esi3P		
Nominal heat input (Hi) [kW]	50	Type	B23		
Nominal heat output [kW]	47				
Type of gas		G20	G25	G31	
Gas inlet pressure	kPa	2,0	2,0	3,7	
Nominal consumption	kg/h			3,57	
	m ³ /h	5,29	6,15		
Electrical supply	V/Hz	2/PE 50Hz/400V		Protection	IP00
Max. electrical power	W	72	Class NOx	5	
Device adjusted for:		Gas G20	2 kPa		

Heat exchanger gas unit (E Baltic D box)



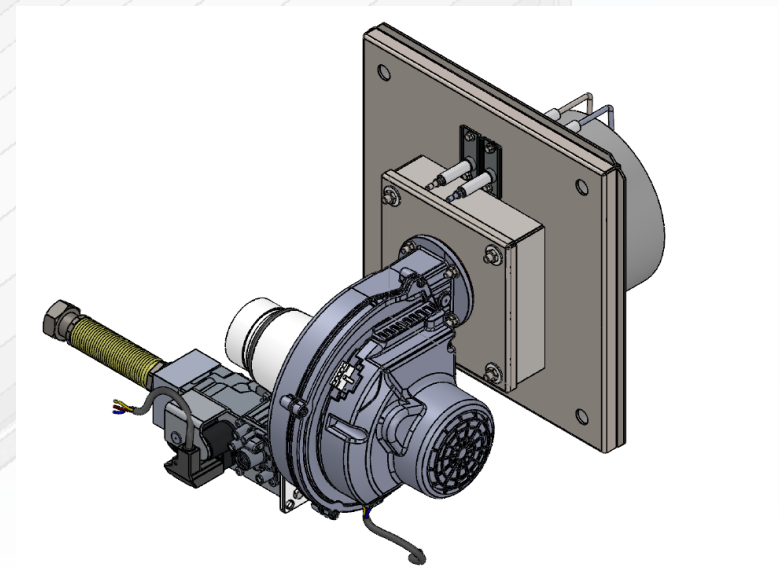
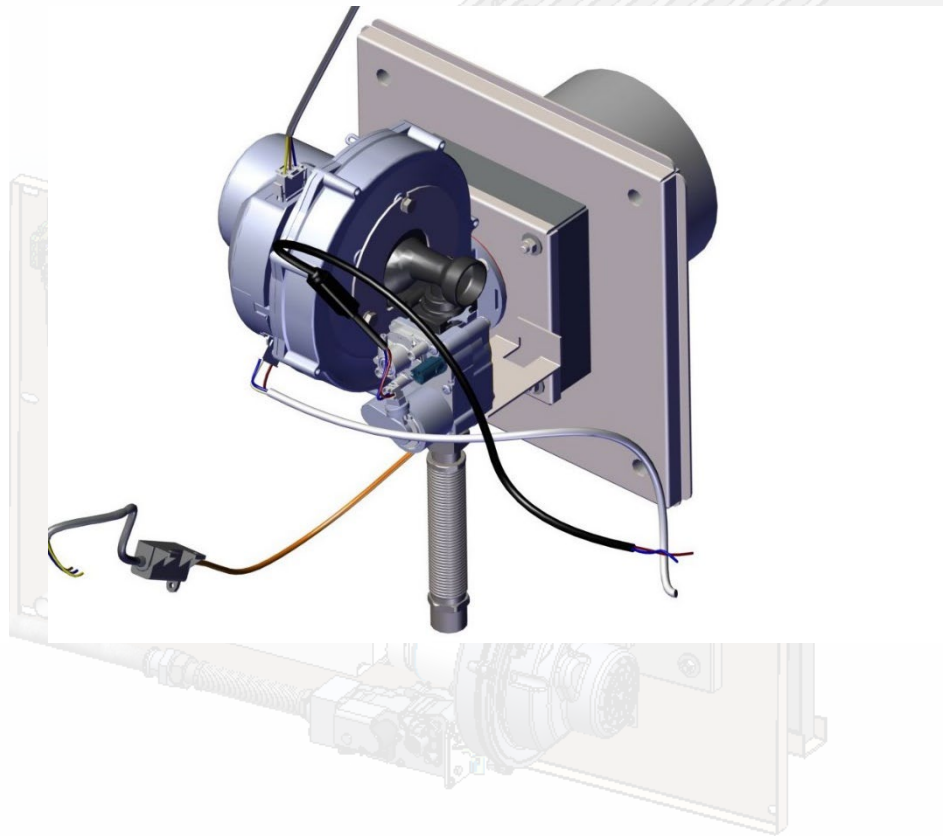
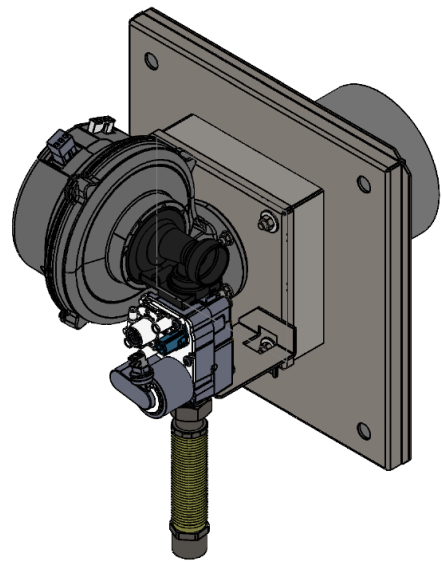
1. Plate heat exchanger
2. Mounting plate
3. Control box
4. Burner unit
- 5, 6. Sensor temp. cover + 7, 8, 9, 10 Temp. sensors
11. Insulation gasket
12. Pneumatic elbow
13. Elbow
14. Transformer
15. Internal combustion chamber
16. Measure point of pressostat
- 17, 18, 19, 20 exhaust pipes set

Heat exchanger gas unit (E baltic D box)

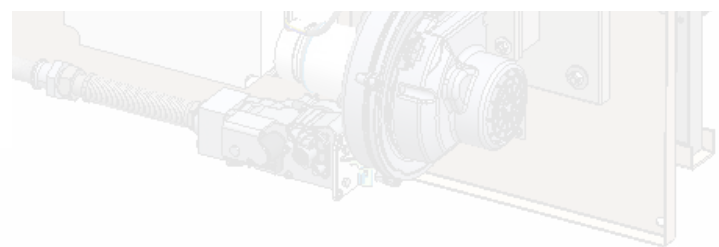
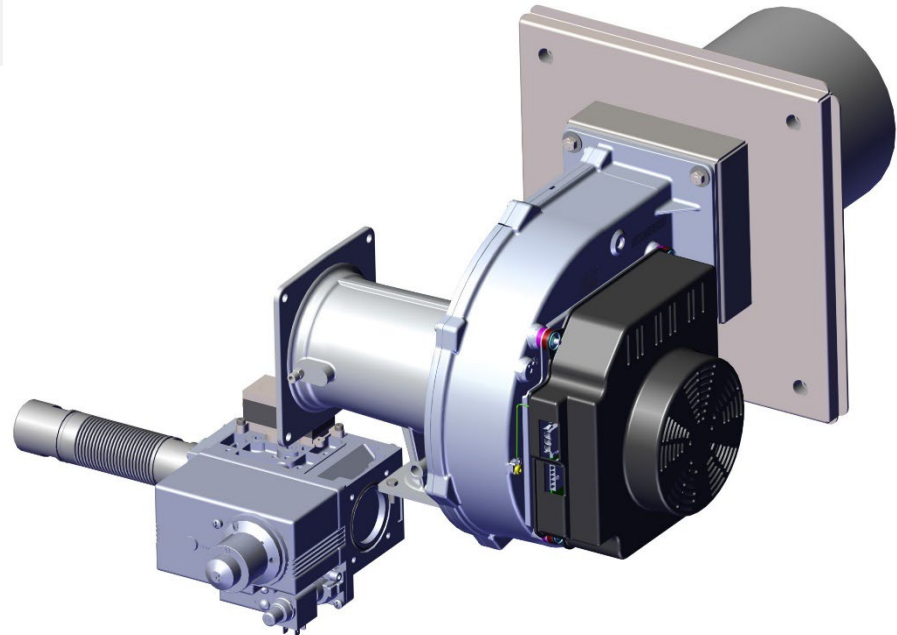
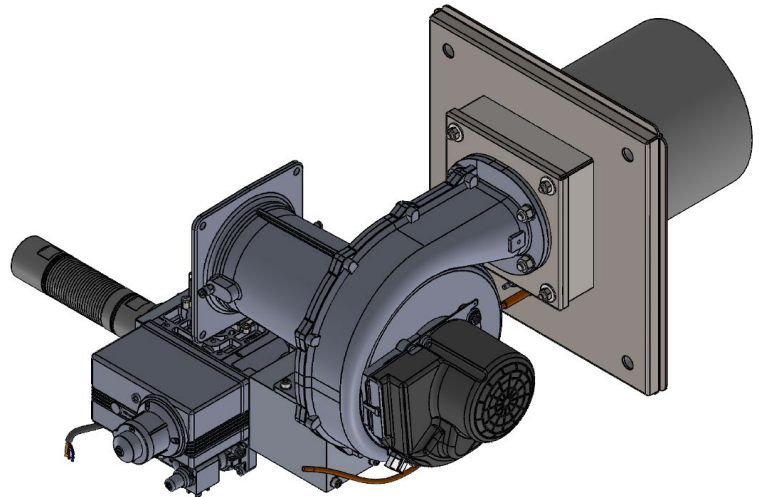
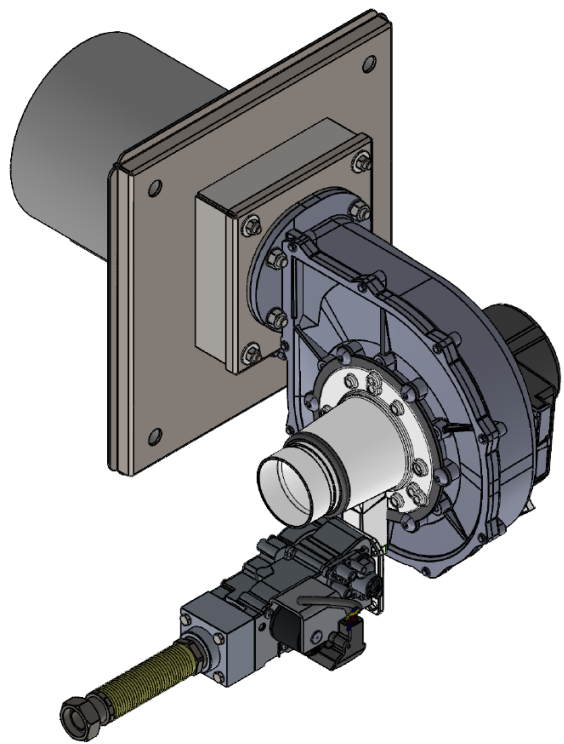


1. Plate heat exchanger (*place, where gas is burned, surface phe heats air flow*)
2. Mounting plate (*place, where whole components are fix together*)
3. Control box (*set of controllers with opportunity to connect with Climatic, Control panel, connection with necessary components*)
4. Burner unit (*gas combustion in phe*)
- 5- 10. Temp. sensors with covers (*measures temp. on the Surface of phe*)
11. Insulation gasket
12. Pneumatic elbow
13. Elbow
14. Transformer (*voltage conversion from 400 V to 230V - ERT Kr (on wring diagram)*)
15. Internal combustion chamber (*decreasing Surface of phe*)
16. Pipe
- 17,18,19, 20 exhaust pipes set (*place of exhaust outlet*)

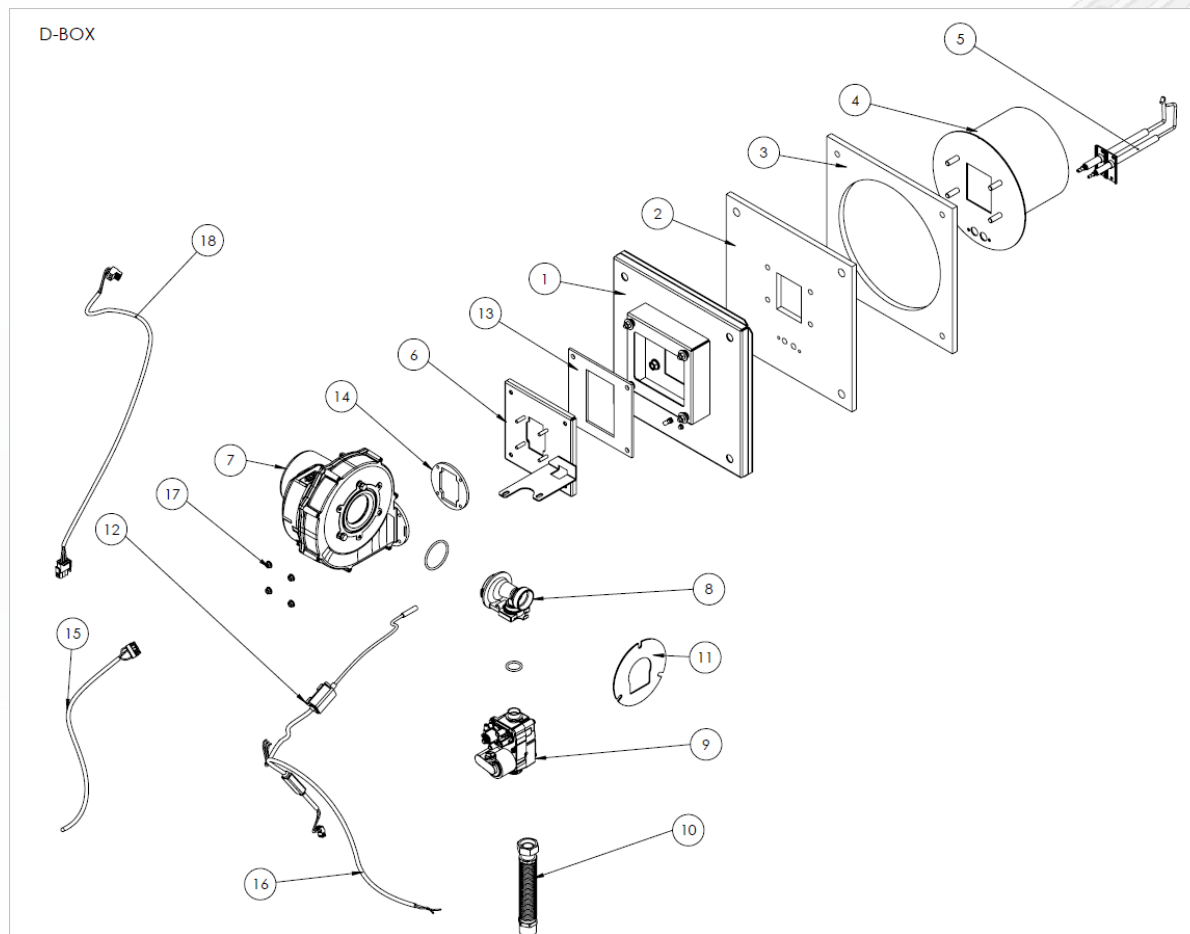
Burner units – model E Baltic C, D, E box



Burner units – model E Baltic F, G, H box

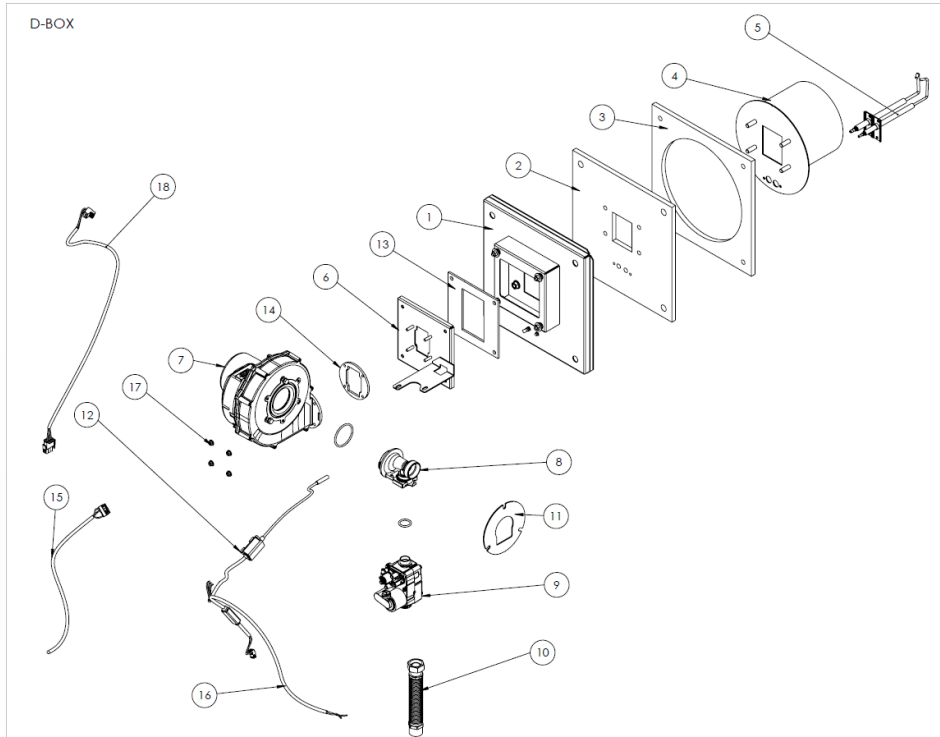


Burner unit – model E Baltic D box



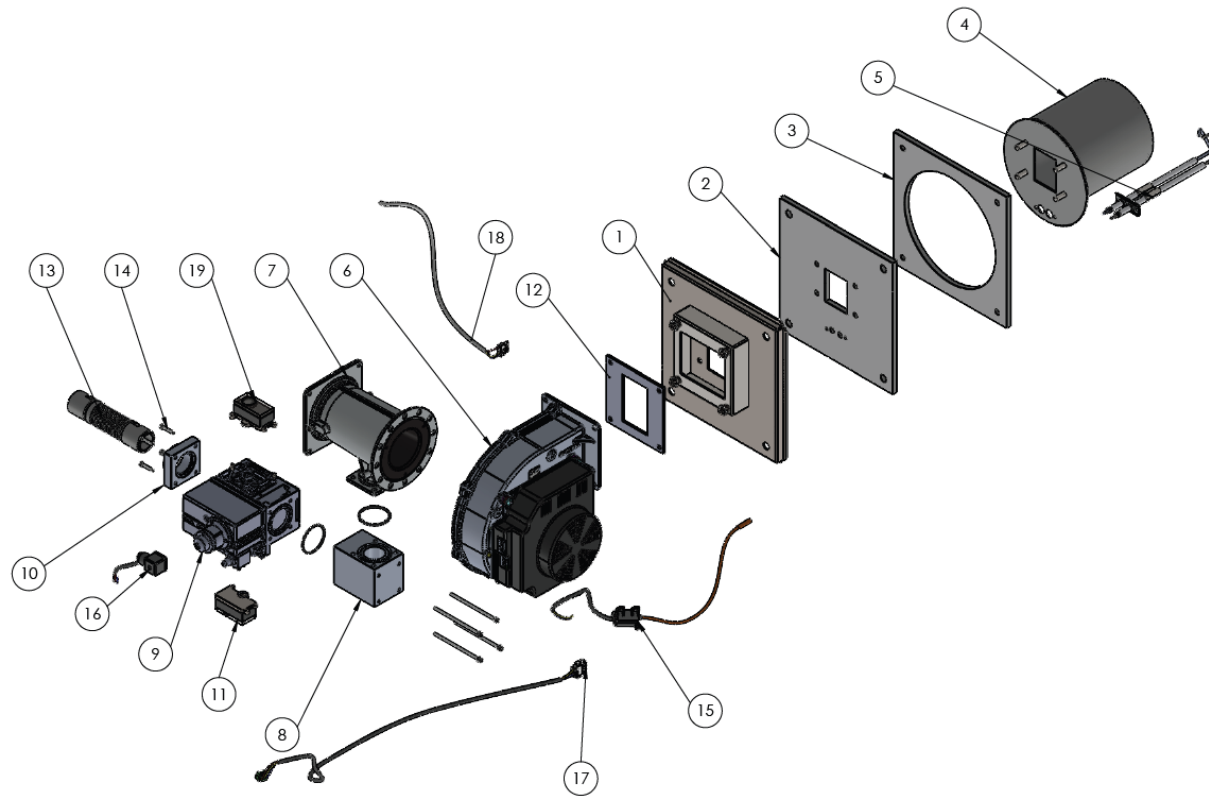
1. Burner flange
- 2,3 Insulation plate
4. Burner head
5. Electrodes – set
7. Gas blower
8. Gas-air mixer
9. Gas valve
10. Flexible gas pipe
12. Hi voltage transformer
15. Gas blower control cable
18. Gas blower wiring supply

Burner unit – model E Baltic D box



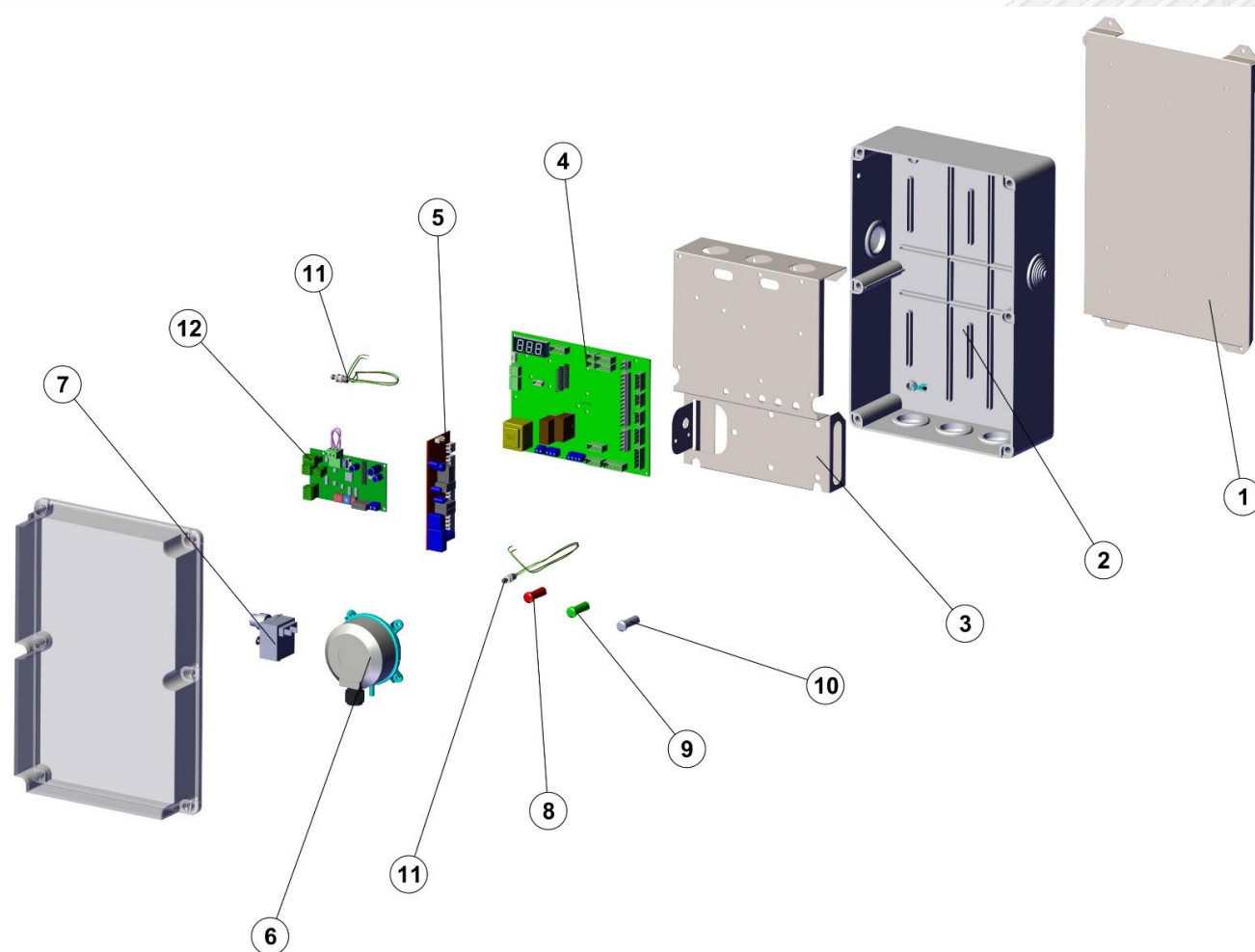
1. Burner flange
- 2,3 Insulation
4. Burner head (*proper streading of gas & air mixture*)
5. Electrodes – set (*ignition*)
7. Gas blower (*supply gas and air mixture*)
8. Gas-air mixer (*mix gas & air*)
9. Gas valve (*control gas valume in burner*)
10. Flexible gas pipe (*connection with main gas supply*)
12. Hi voltage transformer (*provide ingition*)
15. Gas blower control cable (*management modulation of burner & rotation speed*)
8. Gas blower wiring supply

Burner unit – E baltic H box



1. Burner flange
- 2,3 Insulation
4. Burner head
5. Electrodes – set
6. Gas blower
7. Gas-air mixer
9. Gas valve
- 11 & 19 Gas pressure switch**
13. Flexible gas pipe
15. Hi voltage transformer

Control box – the same for the all modules



4. Matherboard (*main electronic board*)

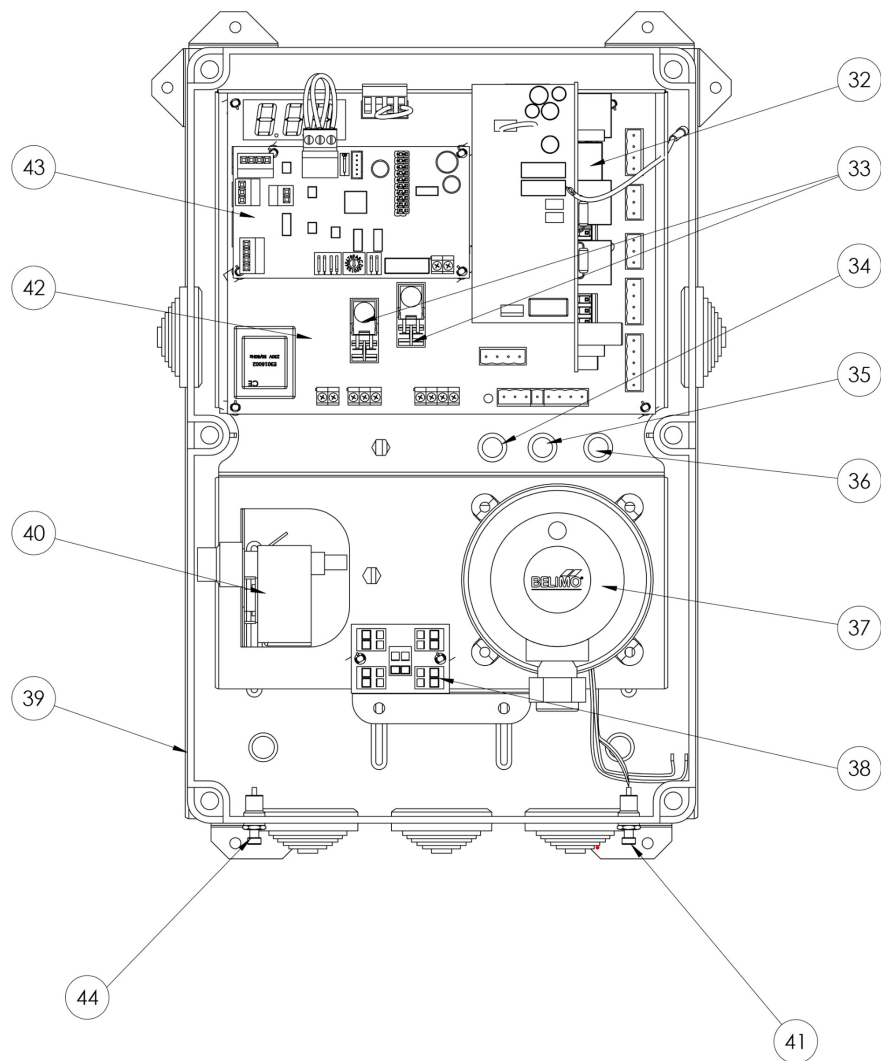
5. Burner controller GENIUS M82/
Brahma (*management burner & control
operating*)

6. Air pressure switch

7. Safety thermostat (*Klikson, overheating*)

12. Communication plate (*communicate
components with motherboard and Climatic*)

Control box – common for each modules



32. Motherboard

34 – 36 Red lamp, Green lamp, Orange lamp

37. Air flow pressure switch* (not use by Lennox)

38. 4 pin adapter (valid for all units from serial no: L21G11320)

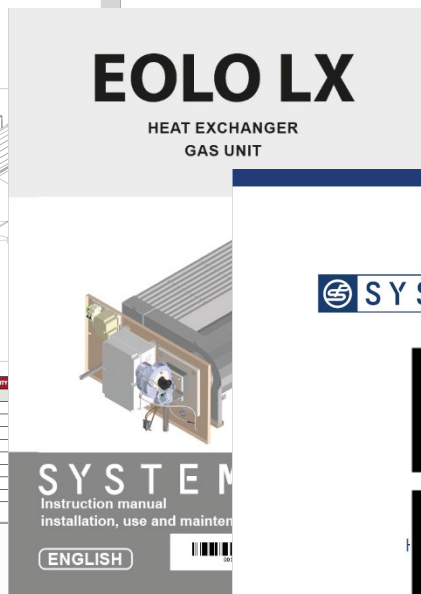
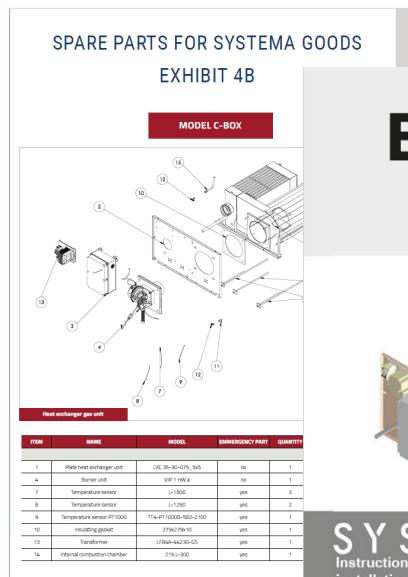
41 . Reset buton

43. Communication plate

44. Programming button

2

Technical documentation



1. Instruction Operation Manual (English, French, Spanish, Polish)
2. Spare parts list
3. Leaflet
4. PPT presentation
5. Commissioning diagram & tutorial
6. Hi/Lo procedure diagram & tutorial

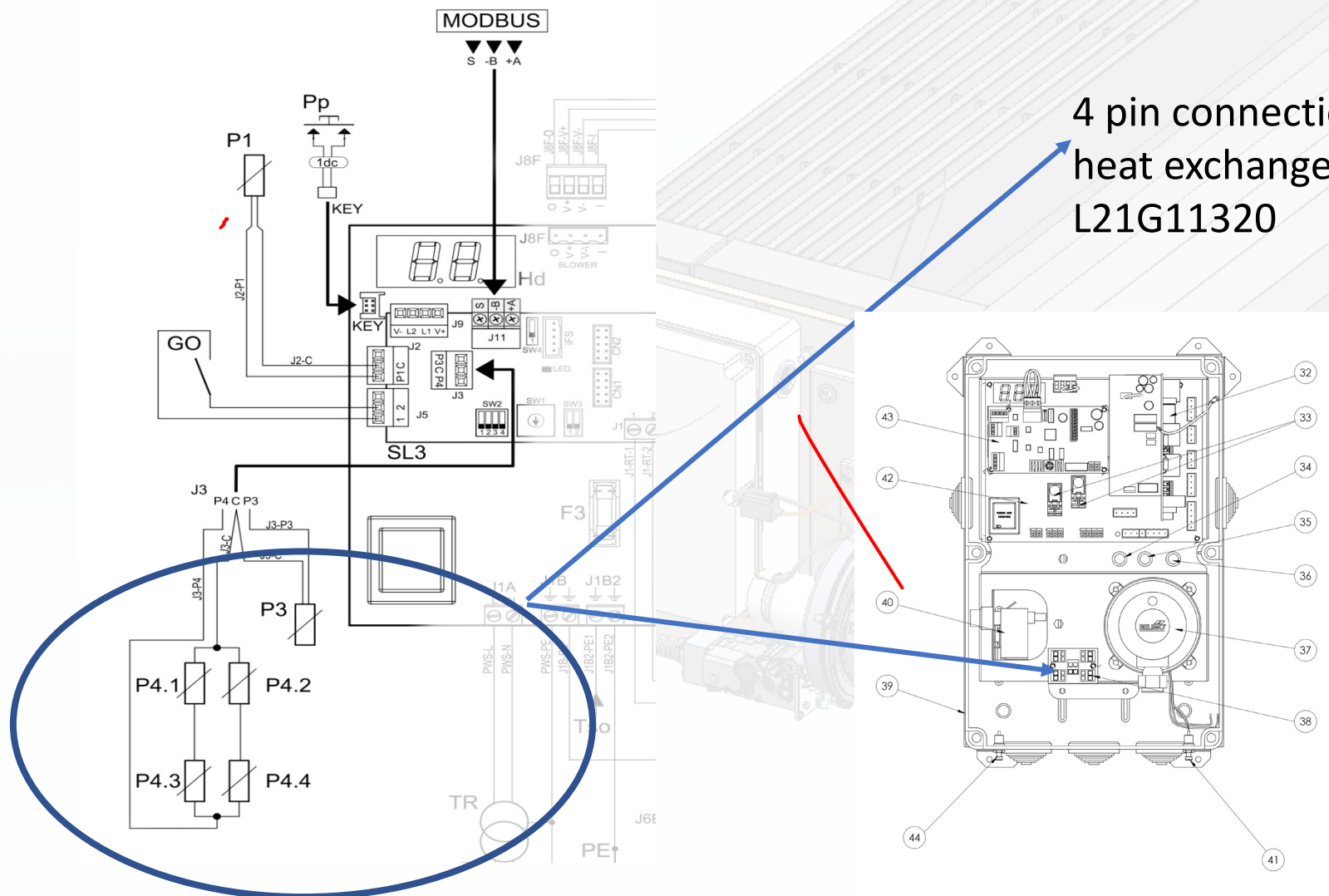
IOM in English, French, Spanish, Polish

Volume of buffer tank (between burner & regulation valve or reducer)

Model	EOLO LXC	EOLO LXD	EOLO LXE	EOLO LXE+	EOLO LXF	EOLO LXG	EOLO LXH
Capacity in kW	50	70	90	110	130	170	230
Volume in m ³	0,02	0,031	0,039	0,048	0,056	0,065	0,095

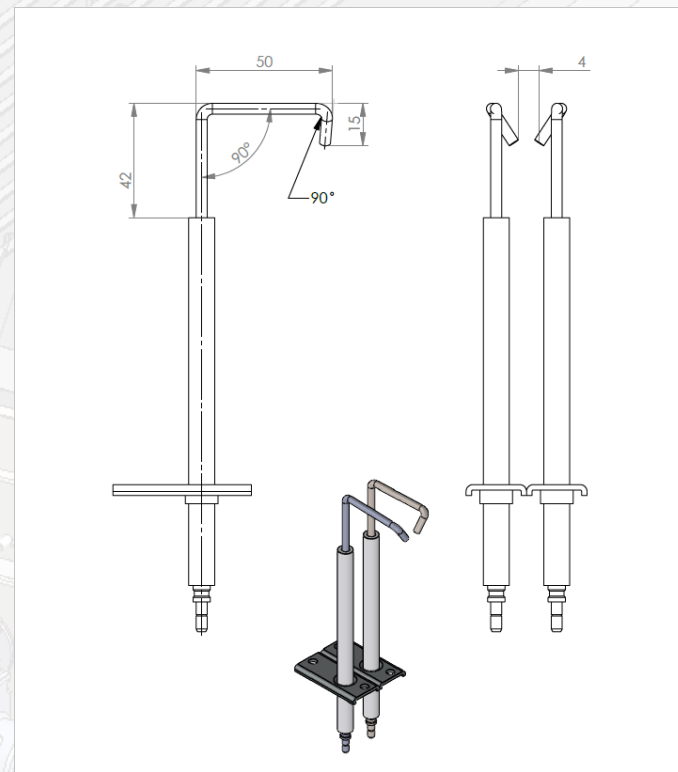
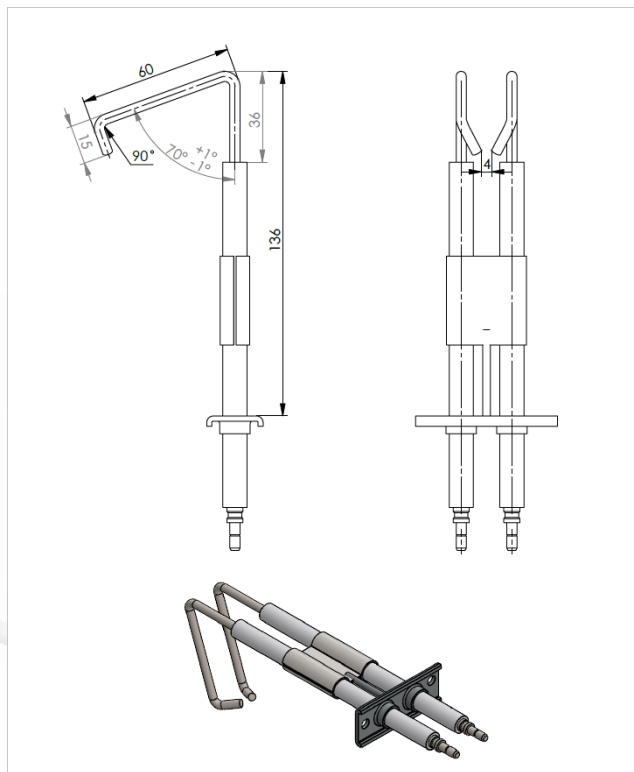
PLS ADD THE WHOLE PIPES OF GAS

HEGU – improvements & retrofit



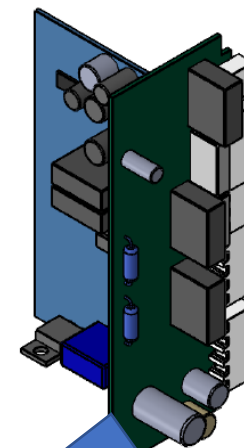
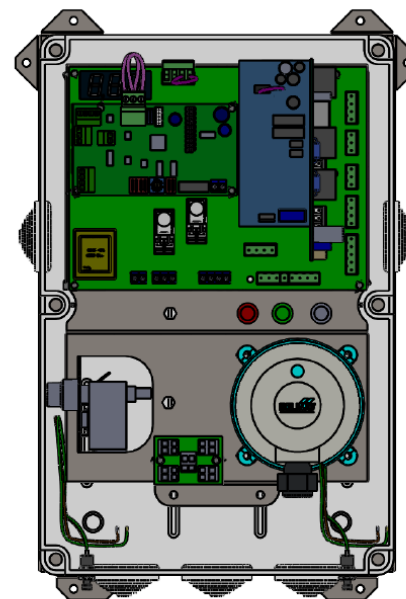
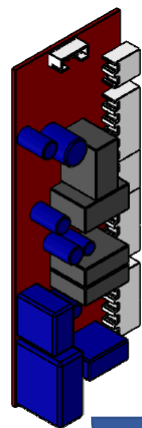
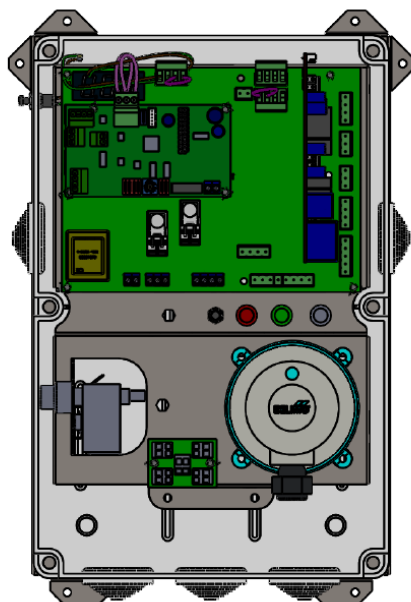
4 pin connection for 4 probes of heat exchanger from serial no: L21G11320

HEGU – Improvements & retrofit



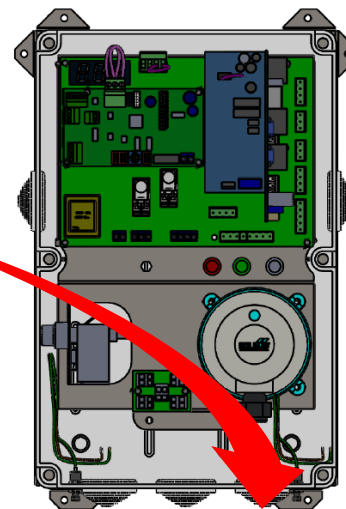
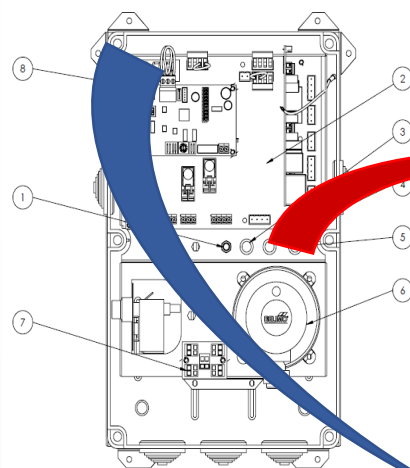
Electrodes from double to single – 2 pcs. For C, D, E, E+ From serial no: L21G11320

HEGU – improvements & retrofit



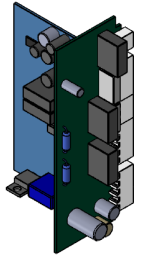
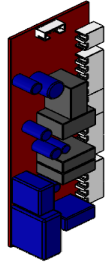
New burner Controller (Genious 821-TW30 is replcement by Brahma 500015521-32505) from serial no. L22B11503

HEGU – improvements & retrofit



Place of programming buton & reset buton form serial no.
L22B11505

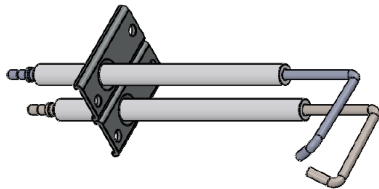
HEGU – Retrofit



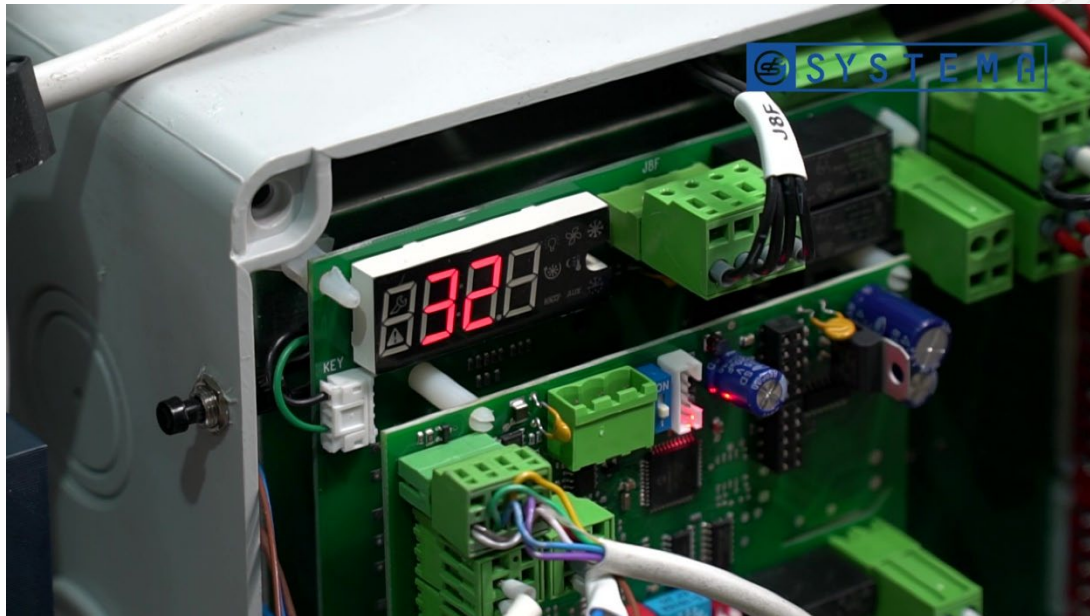
1. New burner controller Brahma instead of Genius

2. New type of electrodes 2 x single instead of one double (use repair kits)

3. New shape of electrodes



Heat exchanger gas unit – SIGNAL



Main Control board SCP674V130B1

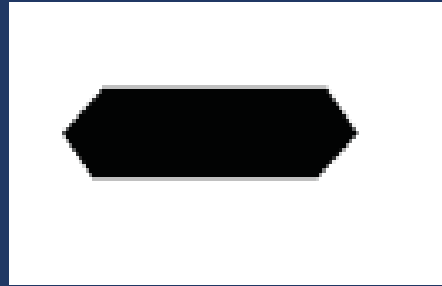
The same communication board for each models

Signals on the display

Heat exchanger gas unit – Phases



Reset burner



No command
to heat

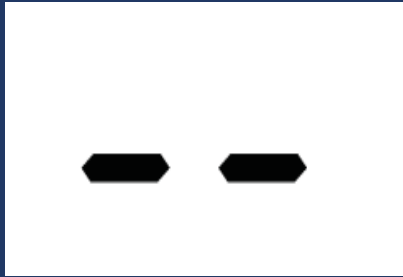


No command
to operation
Post ventilation
mode



Level of burner [%]

Heat exchanger gas unit – Mainboard operation



Test mode



Testing fase



Combustion chamber
pre-ventillation

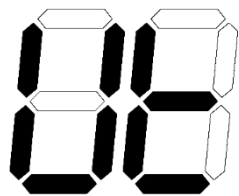


Waiting time

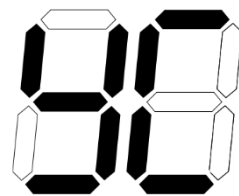
Heat exchanger gas unit – Main board operation



Pasword
to enter
Y2/YC/Yt



service mode
burner operation
according to
Yc / Yt
parameters

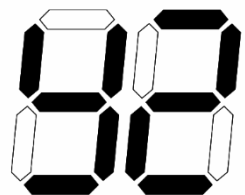


Max. & min.
setting

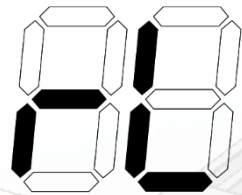


Time of
operation
at Yc level

Heat exchanger gas unit – Main board operation



BOOST
burner
starting
power



burner
min.
power

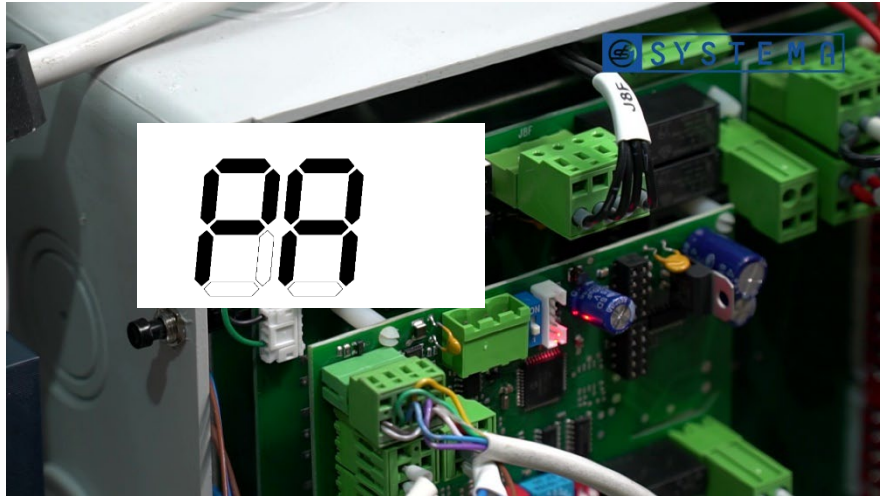


*not used
in Lennox
devices*



burner
max.
power

Motherboard checking & settings



PA - parameter introducing changes

33 – code for manual mode

Modifiable parameters:

Y2 – Burner modulation power in % fom 0 ...99,
default **20**

Burner operation parameter – MOI point 4.6, page 30, 31

Motherboard checking & settings



88



80



88



88



88



88

rL – min burner fan speed value

ro – offset of rL during standard operation

rH – max. burner fan speed value

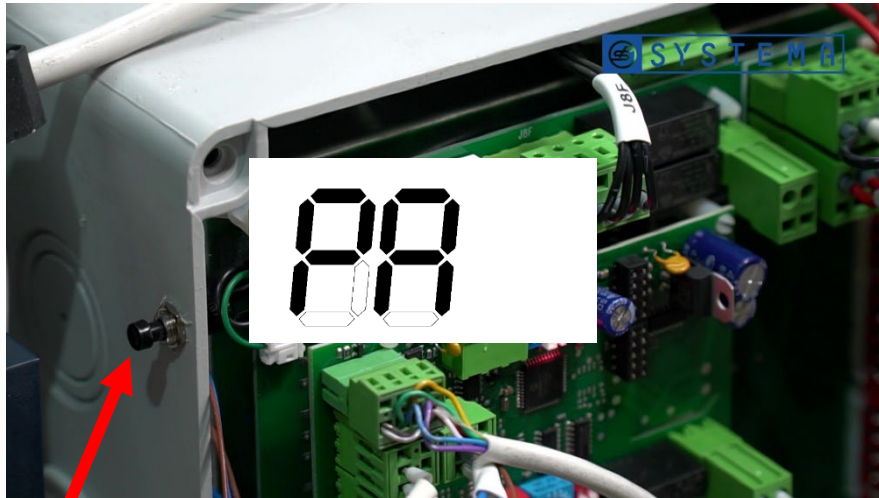
Y2 – boost level

Y9 – gas blower type

HH – release firmware

Non modifiable burner parameters (read only) !!!

Parameter Y2 - changes



button

1. Press button until PA appears
2. After releasing button, the value 00 appears
3. Press button again to enter code 33 (manual operations)
4. Wait 3 s without doing nothing
5. You are in service mode during 4 minutes
6. Press and hold button until display shows Y2 and release the button
7. Press button again to modify Y2 (from 0 – 99)

Cod	Parameters	Range	UM	Def
PA	Password to change Y2 , YC , Yt . → 33	0...99	-	-
Y2	Power of the PWM burner during pre-ignition. 0% = rL ; 99% = rH ;	0...99	%	20
YC	Start the test phase of the burner	0...99	-	0
Yt	YC duration	1..20	min	1
rL	Minimum value of the fan speed. (READ ONLY) rL it is a functional value, it is not a safety limit.	0... rH	%	18-20
ro	Offset of rL during the standard functioning of the device. (READ ONLY).	0...60	%	0
rH	Maximum value of the fan speed. (READ ONLY) rH it is a functional value, it is not a safety limit.	rL ...99	%	99
	Type of blower.			
Y9	1 = RG148 D-Box / E-Box ; NRG 137 F-Box , RG175 G-Box ; 2 = NRG118; C-Box 3 = G1G 170; H-Box 4 , 5 , 6 , 7 , = not used in Lennox devices	1...8	-	-

Heat exchanger gas unit –Main board operation

0...99

Model C

Nominal heat input – 50 kW

Min. heat input 10 kW

Signs

00 – 10 kW

99 – 50 kW

Example on E Baltic C box

Heat exchanger gas unit –Main board operation

0...99		"00" [kW]	"99" [kW]
EOLO LXC 50	C-BOX	10	50
EOLO LXD 70	D-BOX	14	70
EOLO LXE 90	E-BOX	18	90
EOLO LXE+ 110	E+ BOX	22	110
EOLO LXF 130	F-BOX	26	130
EOLO LXG 170	G-BOX	34	170
EOLO LXH 230	H-BOX	46	230

Control panel operating



1. External control panel for
Receiving information
Reseting alarms
Managing & Control HEGU

2. The name of alarms are not the same
as alarms on Motherboard' s display

Control box –wiring diagram

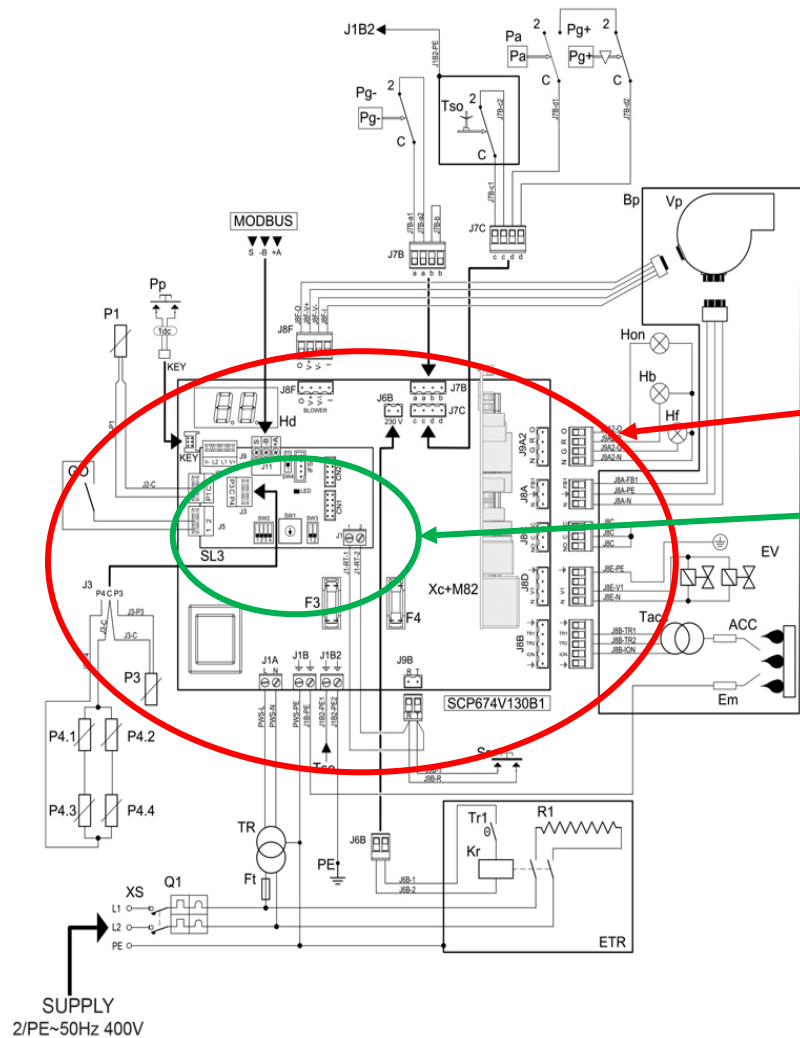
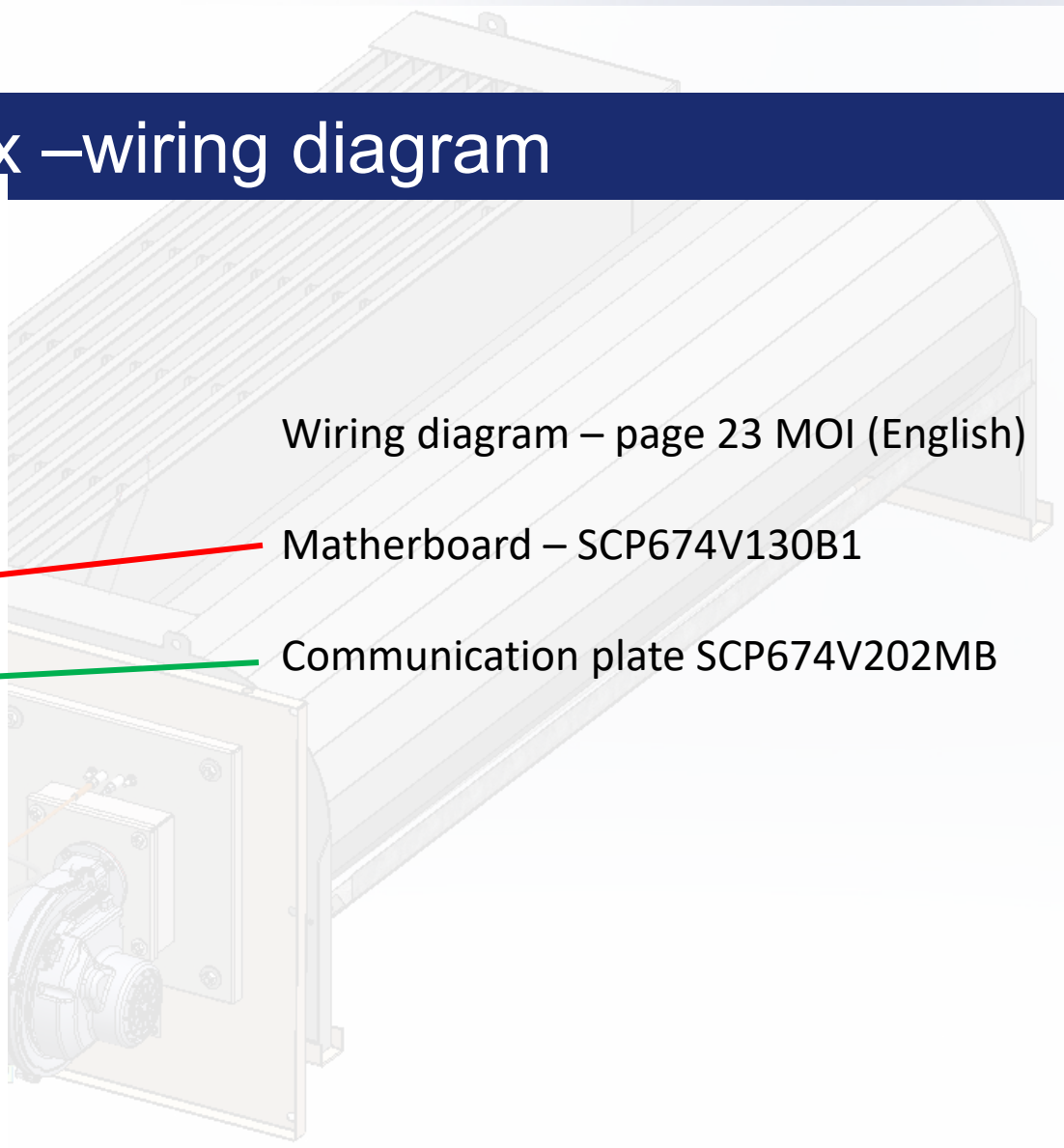


Fig. 3.1 Wiring diagram

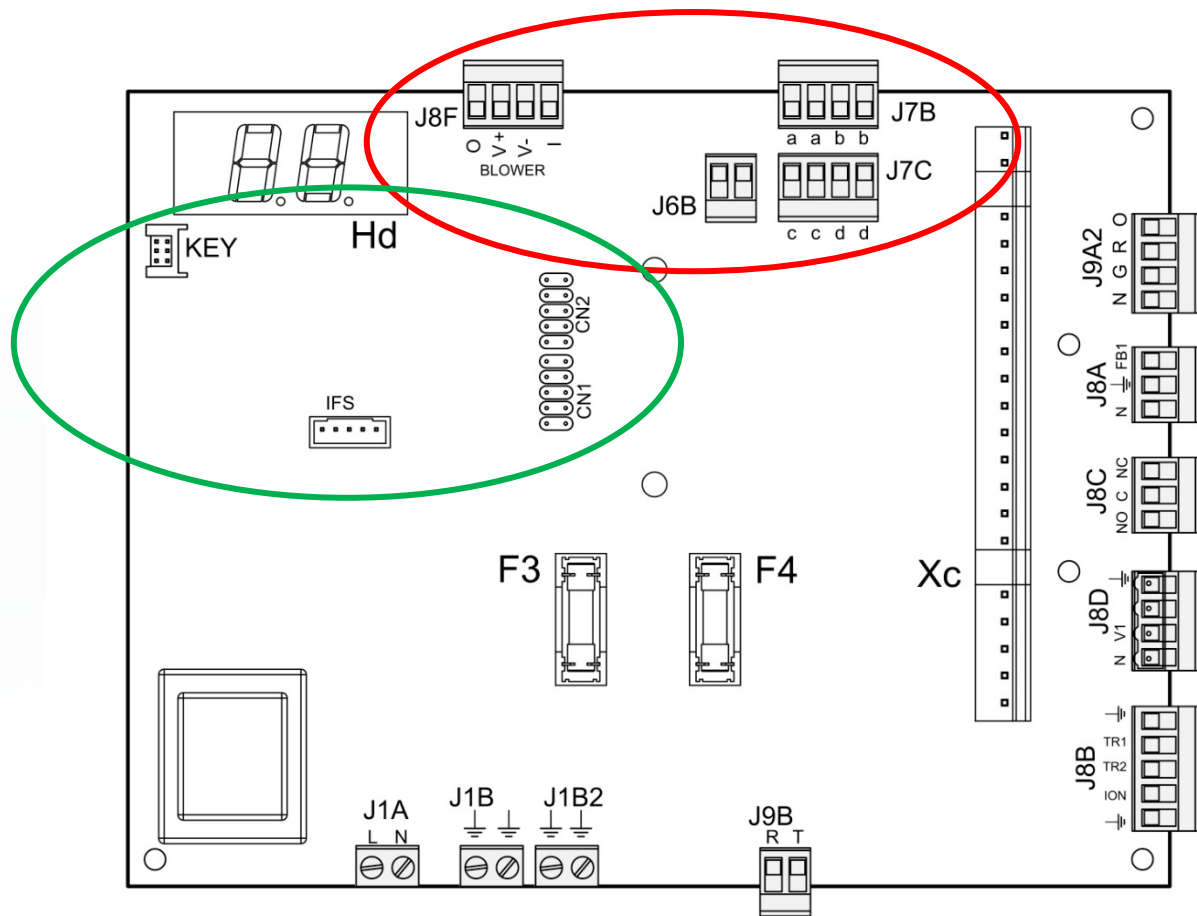


Wiring diagram – page 23 MOI (English)

Motherboard – SCP674V130B1

Communication plate SCP674V202MB

Control box –Main board



J8F – Gas blower control

- E7 / E5 / E6 error

J6B – Kr resistance kit relay power supply

J7B a – min. gas pressure switch (option)

J7B b – Air pressure switch

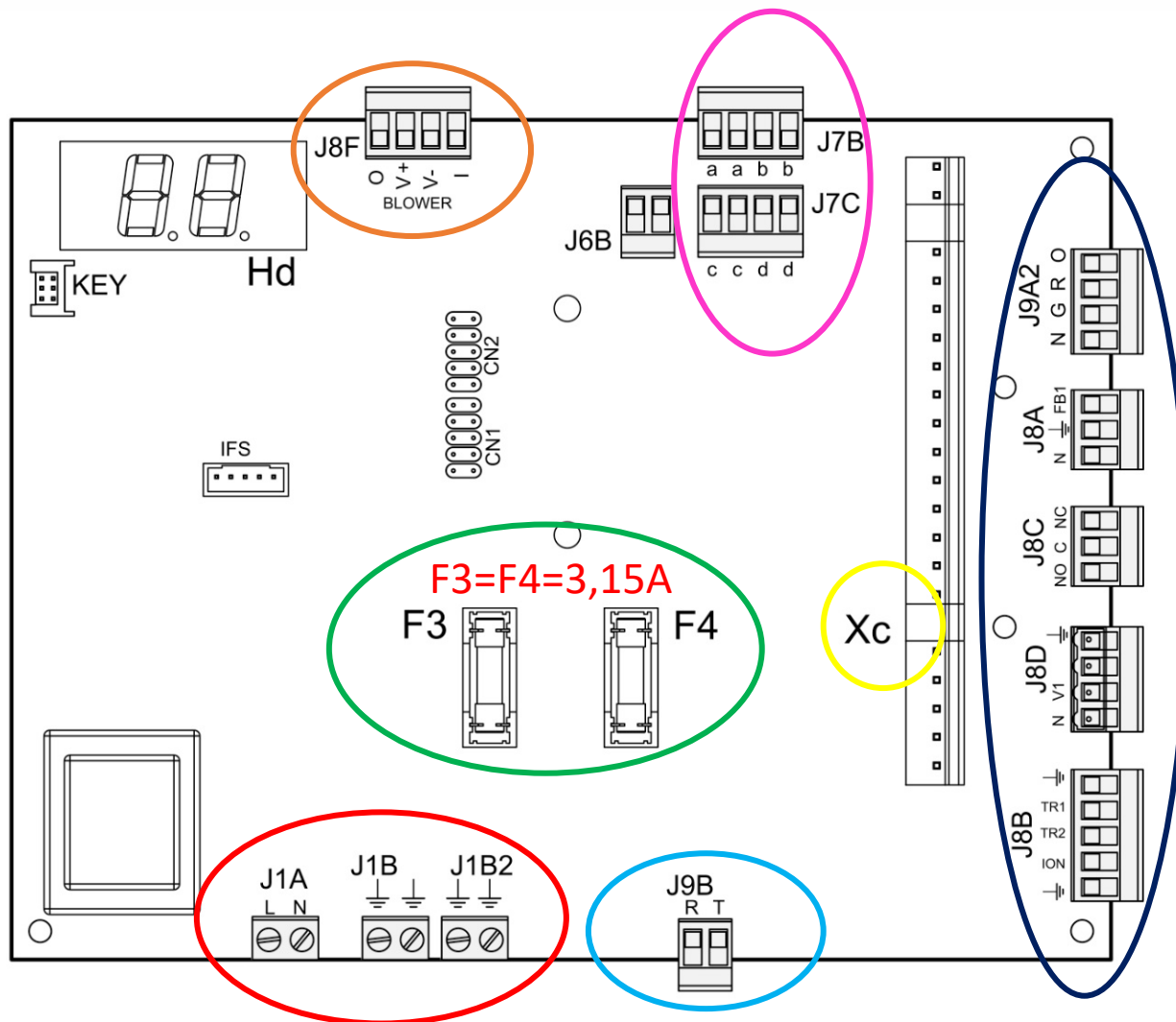
J7C c - Safety thermostat connection

J7C d – Max. gas pressure switch (option)

KEY – Programming buton connector

iFS – Copying parameters port

CN1, CN2 – SCP674V202MB slave board connector



J8F – Gas blower modulating line / Hall sensor

J1A – General power supply 230V
J1B, J1B2 – Earth connection

J9B – RESET connector

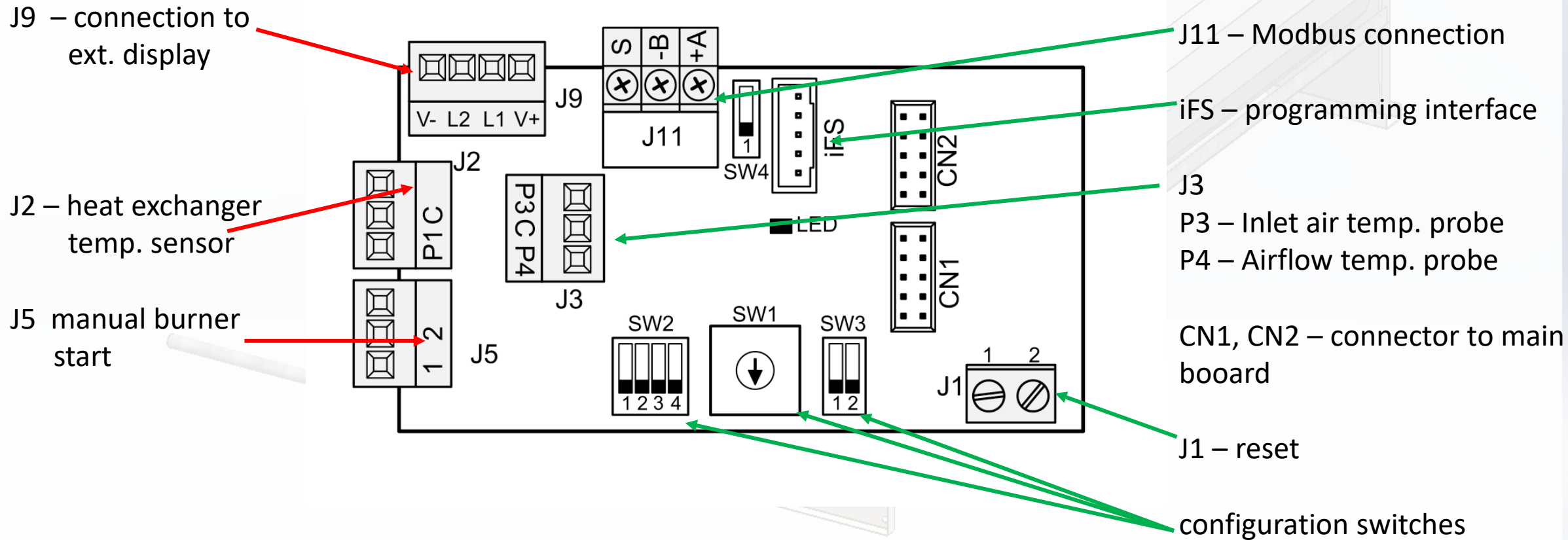
J8B - Ignitor connection
J8D - Gas valve connection
J8C – Contacts in bridge – not used
J8A – Gas blower power connection
J9A2 – signal lamps

J7B – Alarm inputs (E2) - temporary alarms
J7C – Alarm inputs (E3) - permanent alarms

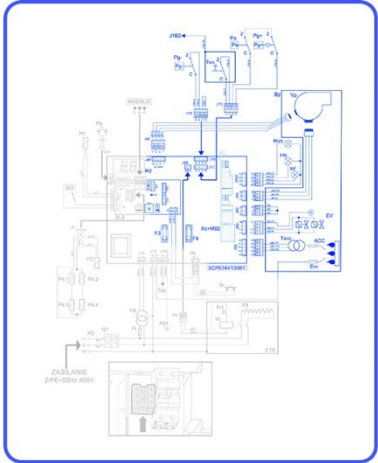
F3 & F4 – burner protection

Xc – Burner controller Genius M82

Control box –communication plate



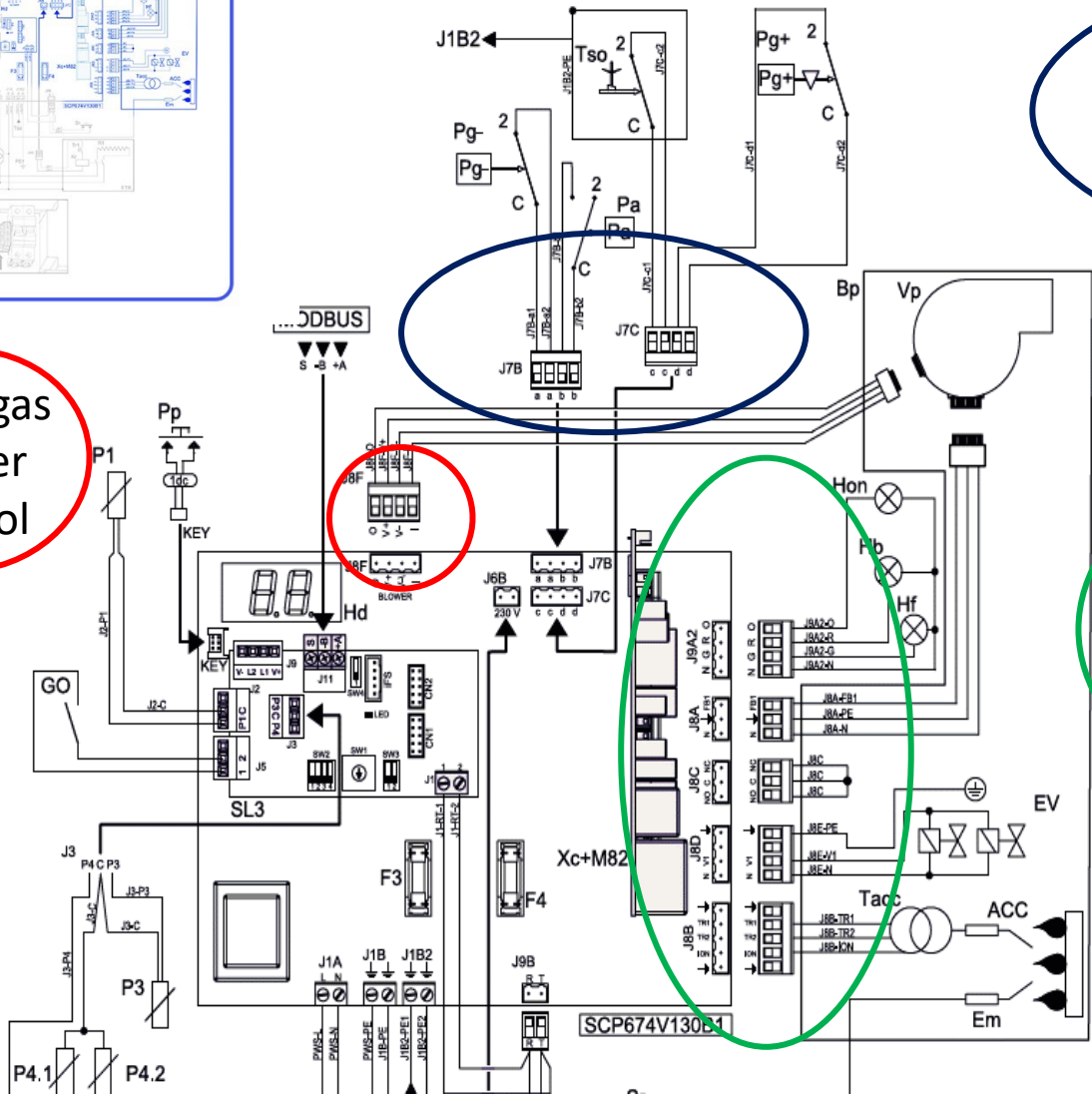
Control box –wiring diagram



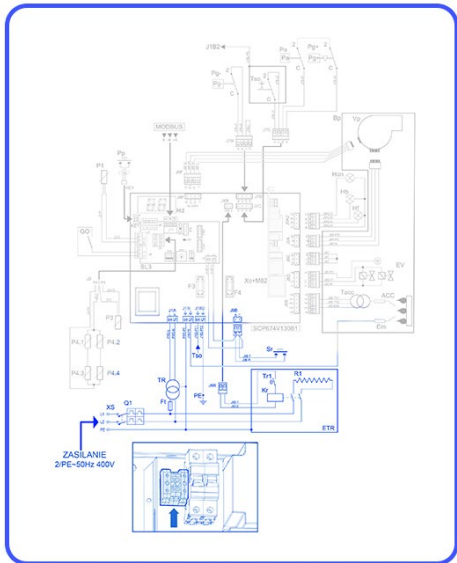
J8F –gas blower control

J7B – Min. gas pressure switch / air pressure switch
 J7C – Max. gas pressure switch / safty thermostat

J9A2 – signal lamps
 J8A – gas blower
 J8C – Not used
 J8D – gas valve
 J8B - Ignitor

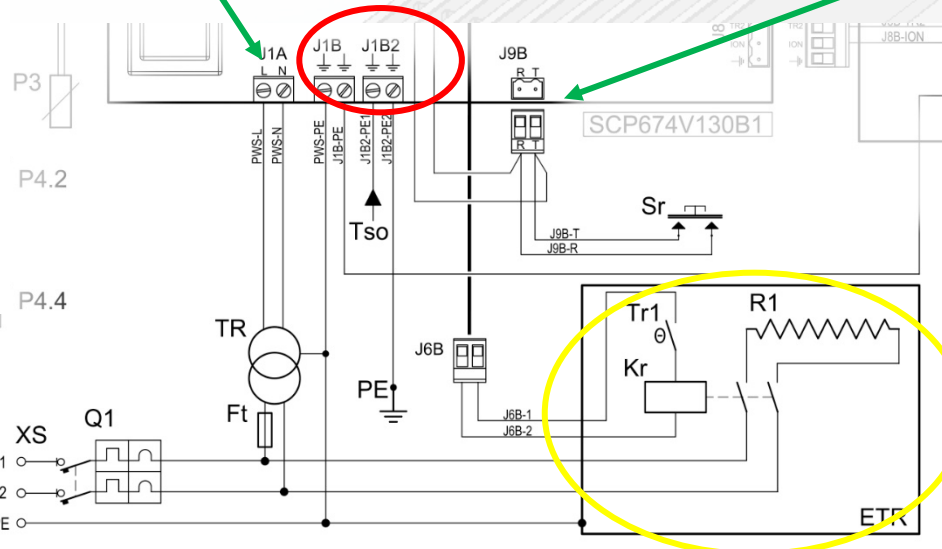


Control box –wiring diagram



J1A - General power supply

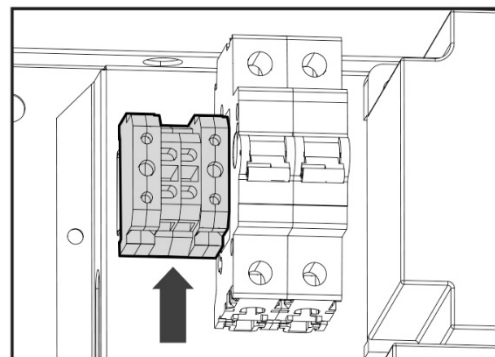
J9B – Machine reset



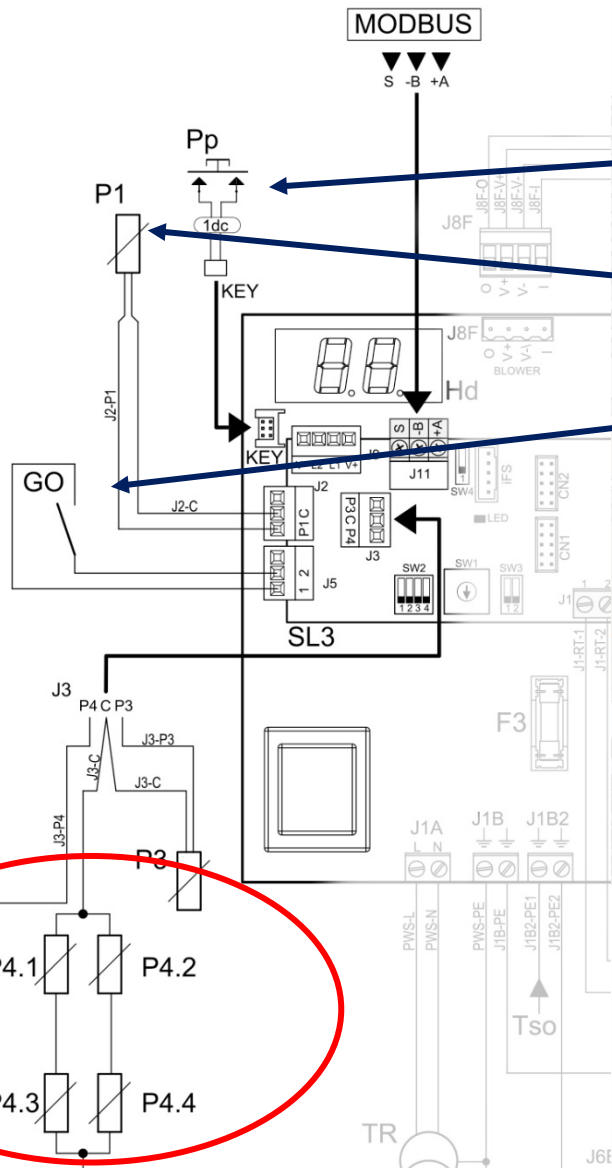
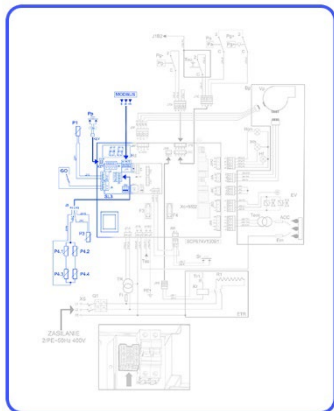
J1B, J1B2 – protective conductor

ETR – Kr resistance kit relay power supply – option (low temp outside)

ZASILANIE
2/PE~50Hz 400V



Control box –wiring diagram



Pp – use for programming main board

P1 – heat exchanger temp. sensor

GO – Manual burner operating control

P4.1 to P4.4 -
Outlet air temp.
sensor

Gas unit EOLO LX can be started by ModBus communication or manually – close connector **J5 contacts 1-2**.

Gas heater will start to work only when the **main fans are running**. Otherwise, the module will display an **E3** error.

In correct conditions gas unit will perform a startup cycle..

First symbol to appear on display is the **initial phase** (5-10 sec) **— —**

The next **testing fase starts after** (20-30 sec.) **— 0**



After testing fase burner goes to **pre-purging fase.** (30 sec.)

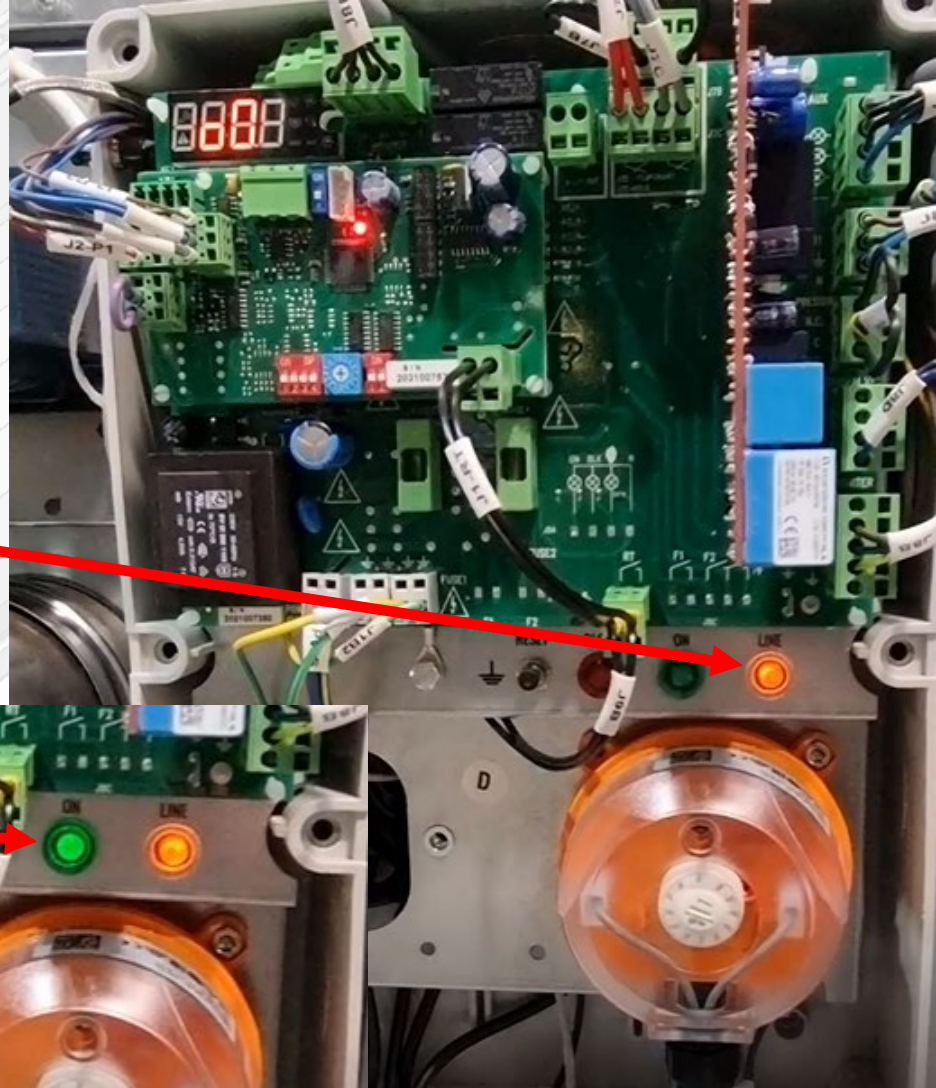
00

Orange lamp ON

The next step - open gas valve and apply high voltage to the electrodes.

Green lamp ON

Spark starts



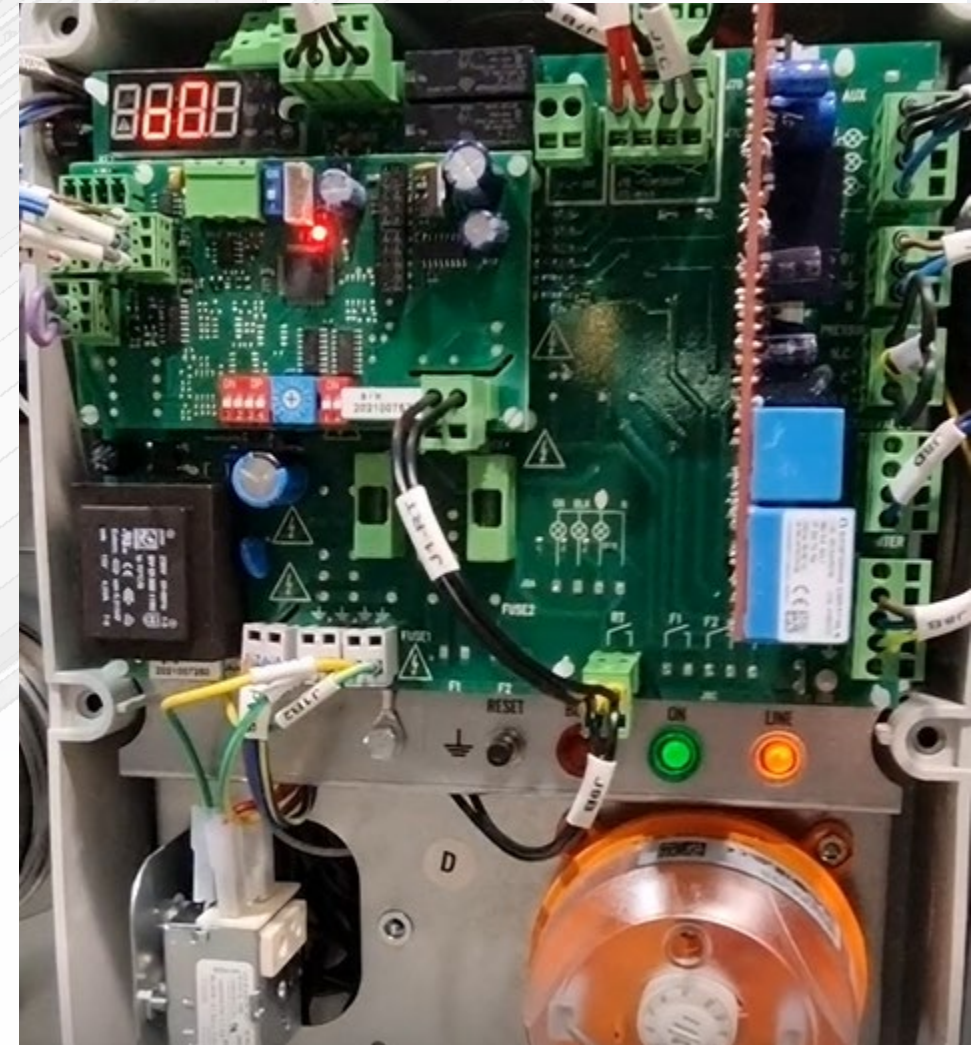
After successful ignition burner continues

After a successful ignition burner continues **boost phase**
for 3 minutes, i.e. work with starting power.

00

then, after approx. 3 minutes, the burner switches to
normal operation and displays the percentage power level
between 0-99

0...99



if the burner did not start, it makes two more attempts to start.

After third unsuccessful attempt, the burner locks.

Red lamp ON

Error E4 on the display

E4



Country	Sign	Category	Pressure	Country	Sign	Category	Pressure
Albania	AL	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Luxembourg	LU	I _{ZE}	G20=20 mbar
Austria	AT	I _{2HBP}	G20=20 mbar G30/G31=50 mbar	Macedonia	MK	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Belgium	BE	I _{2E(F)}	G20/G25=20/25 mbar	Malta	MT	I _{3BP}	G30/G31=30mbar
Belgium	BE	I _{3P}	G31=37 mbar	Norway	NO	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Bulgaria	BG	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Netherlands	NL	I _{3BP}	G30/G31=30 mbar
Cyprus	CY	II _{2HP}	G20=20 mbar G31=37 mbar	Poland	PL	II _{2E(L)3BP}	G20/G27=20 mbar G2.350=13 mbar G30/G31=37 mbar
Cyprus	CY	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Portugal	PT	II _{2HP}	G20=20 mbar G31=37 mbar
Croatia	HR	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	UK	GB	II _{2HP}	G20=20 mbar G31=37 mbar
Denmark	DK	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Czech Republic	CZ	II _{2HP}	G20=20 mbar G30/G31=28-30/37 mbar
Estonia	EE	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Romania	RO	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Finland	FI	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Romania	RO	II _{23BP}	G25=20 mbar G30/G31=30 mbar
France	FR	II _{2E3BP}	G20/G25=20/25 mbar G30/G31=28-30/37mbar	Slovakia	SK	II _{2HP}	G20=20 mbar G31=37 mbar
Germany	DE	II _{2E(L)3BP}	G20=20 mbar G25=20 mbar G30/G31=50 mbar	Slovakia	SK	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Greece	GR	II _{2HP}	G20=20 mbar G31=37 mbar	Slovenia	SI	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Greece	GR	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Slovenia	SI	II _{2HP}	G20=20 mbar G31=37 mbar
Ireland	IE	II _{2HP}	G20=20 mbar G31=37 mbar	Spain	ES	II _{2HP}	G20=20 mbar G31=37 mbar
Iceland	IS	I _{3BP}	G30/G31=30 mbar	Sweden	SE	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Italy	IT	II _{2HP}	G20=20 mbar G31=37 mbar	Switzerland	CH	II _{2HP}	G20=20 mbar G31=37 mbar
Latvia	LV	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Turkey	TR	II _{2HP}	G20=20 mbar G31=37 mbar
Lithuania	LT	II _{2HP}	G20=20 mbar G31=37 mbar	Turkey	TR	II _{2HBP}	G20=20 mbar G30/G31=30 mbar
Lithuania	LT	II _{2HBP}	G20=20 mbar G30/G31=30 mbar	Hungary	HU	I _{2HBP}	G20= 25 mbar G30/G31=30 mbar

Tabele 5.1, page 44

Make sure the gas in the mains corresponds to that for which EOLO LX is regulated – Gas pressure & type comply with the data on name plate

Check, with the pressure intake "IN" on the gas valve, that pressure entering the valve corresponds to that required for the type of gas being used.

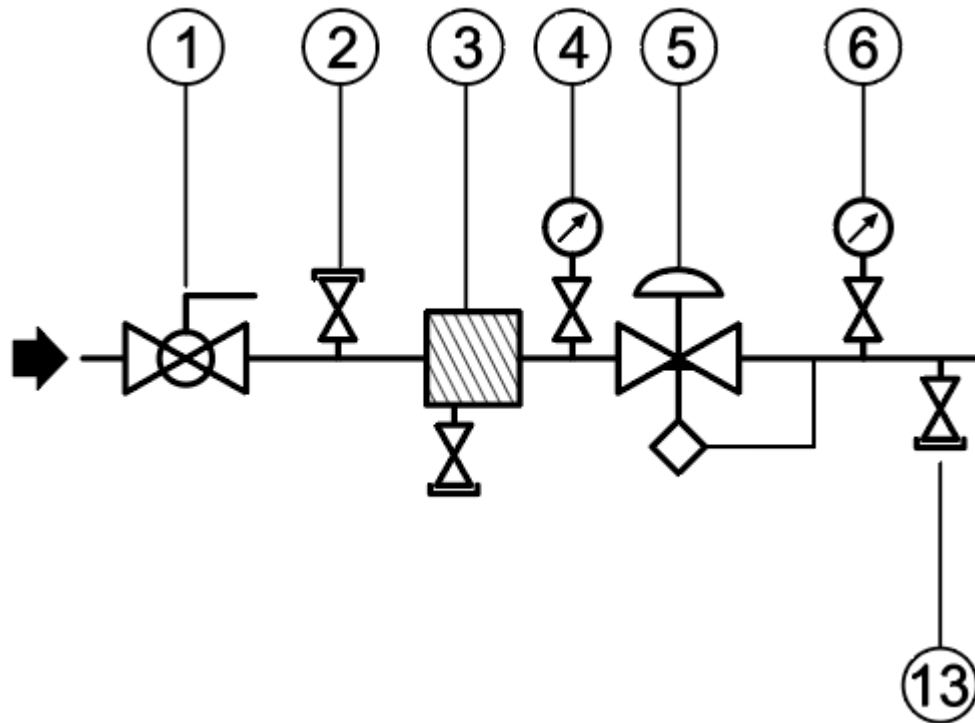
Purge the gas pipe

Check tightness of gas system

Check Correctness of electrical connection / Voltage value,

Check that efficient earthing connections have been completed, carried out as specified by current safety regulations

Pre commissioning action



1. Check the filter **(3)**
2. Open shut-off main gas valve **(1)**
3. Pre-purge gas pipe from air
4. Check tightness by tester
5. Turn on the main electrical power switch

1- shut-off valve, 2. checking point 3. filter, 4manometer, 5. gas regulator, 6. manometer, 13. checking point

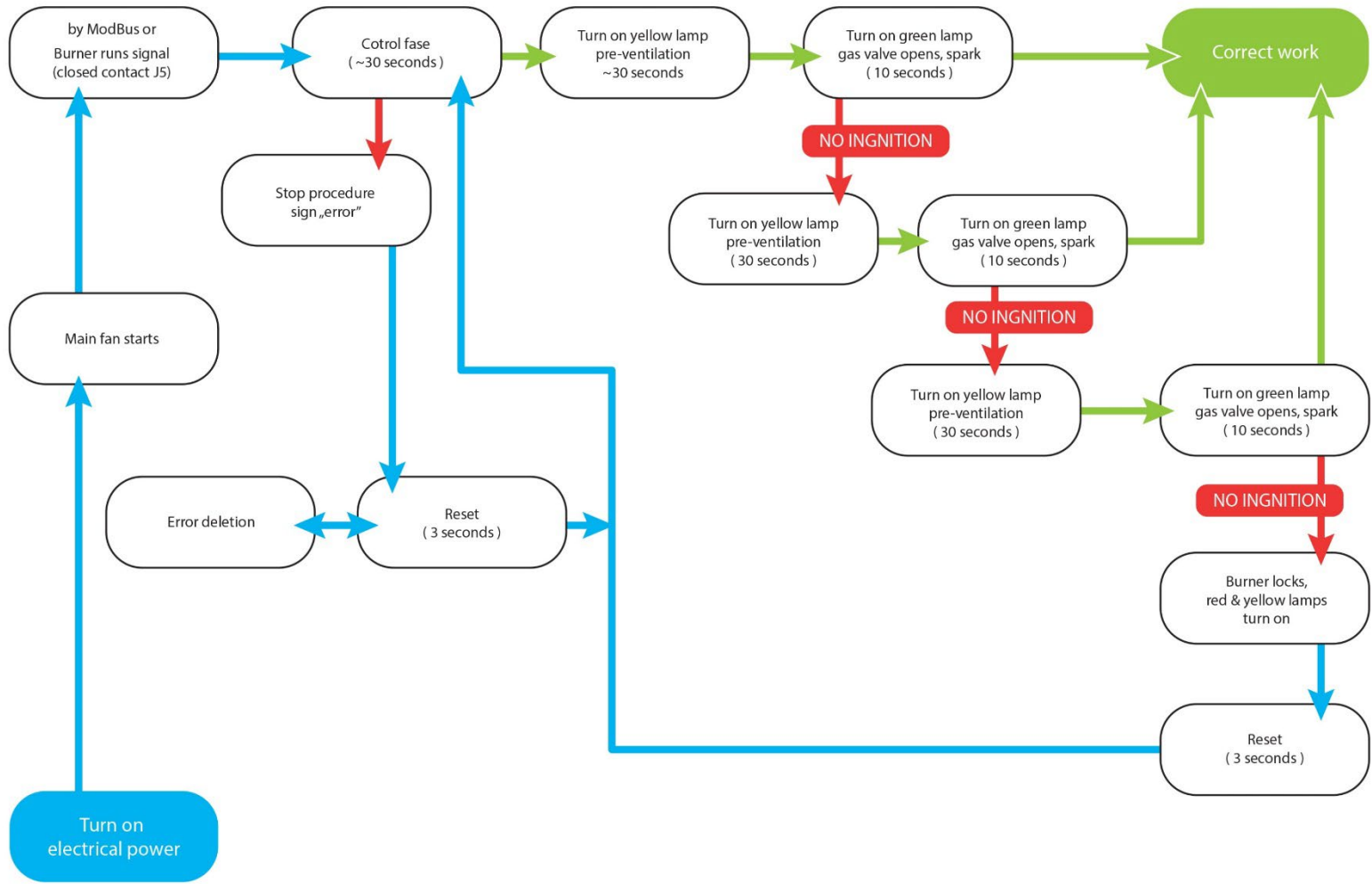
Heat exchanger gas unit – Commissioning



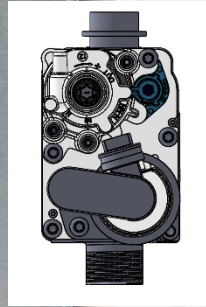
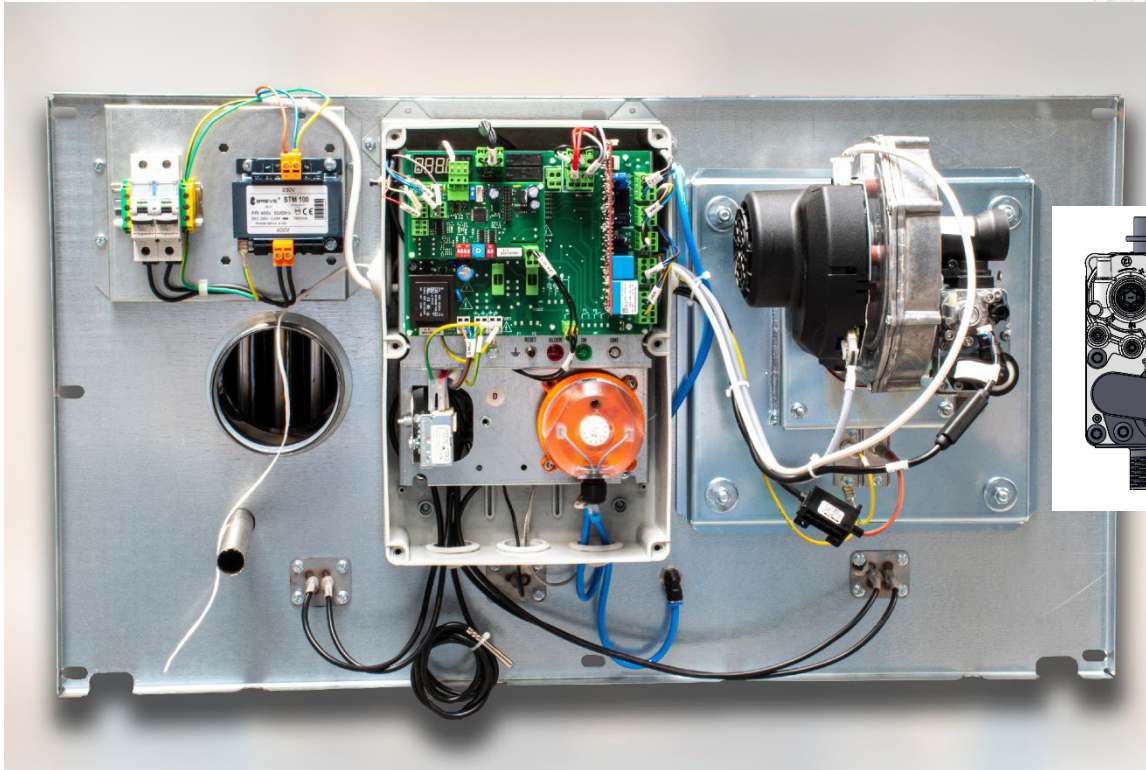
View of heat exchanger gas unit – E Baltic C box

Commissioning procedure – start-up

Procedure for starting the gas - exchanger unit



Gas valve adjustment= Hi / Lo procedure



Preparation:

1. Check type of module
2. Find the table in IOM, page 61
3. Prepare combustion analyser
4. Use HEX 4 or Torx 25 for making adjustment

Make pressure adjustment just after starting the burner

HEGU – procedure to put in Lo/Hi power



H 4



T40

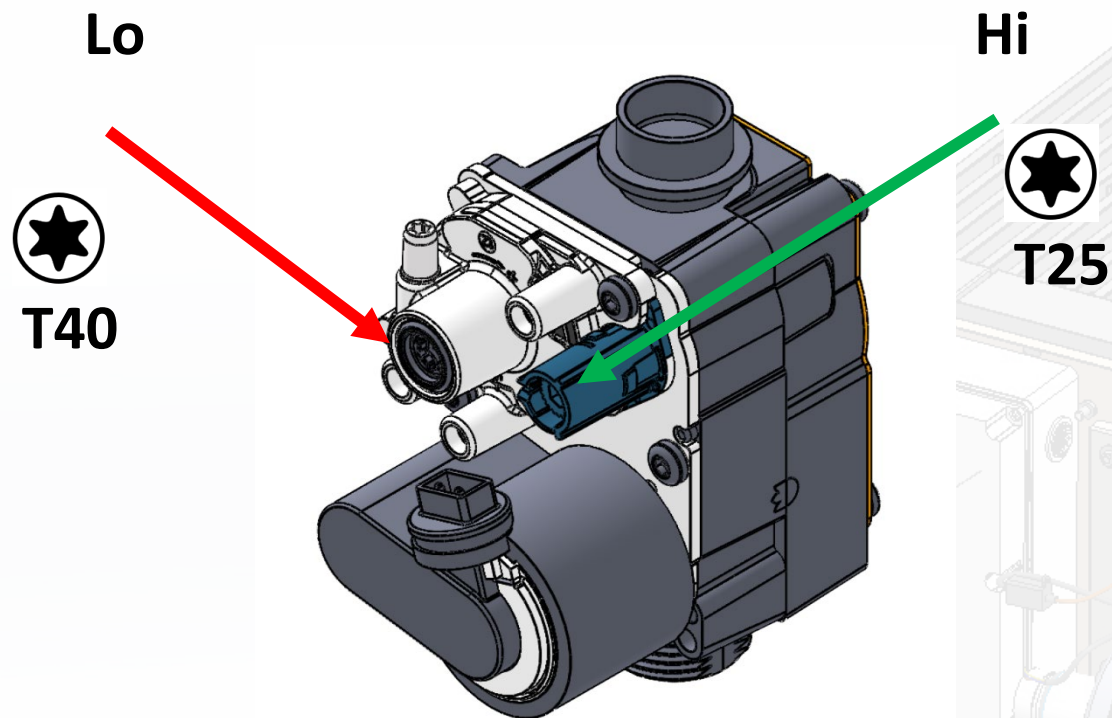


T25



Necessary tools for regulation Hex 4 or T25 / T40

Procedure Lo/Hi power flow



1. The procedure is set to has gas valve
2. Use off set regulator (or gas air mixer for E, E+, F) for Lo power flow
3. Use internal valve screw
4. Gas valve is set to manual mode for 6 minutes
5. Enter code 61 and adjust gas valve to max. power flow
6. Enter code 51 and make adjustment gas valve for min. power flow

HEGU – procedure to put in Lo/Hi power

88

Parameter manual mode

88

Time parameter

88

eg. **5..10** (minutes)

88

Setting capacity – max.

88

Setting capacity – min.

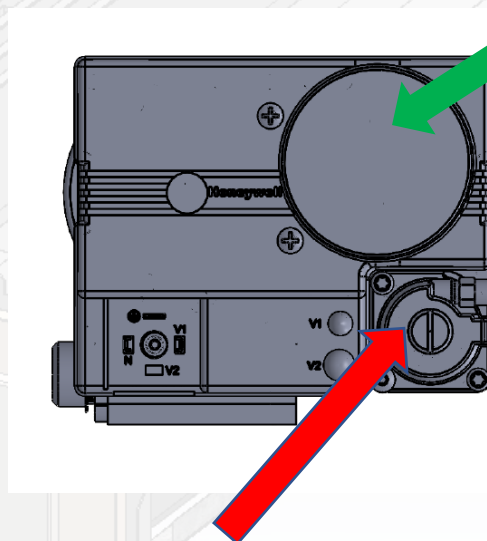
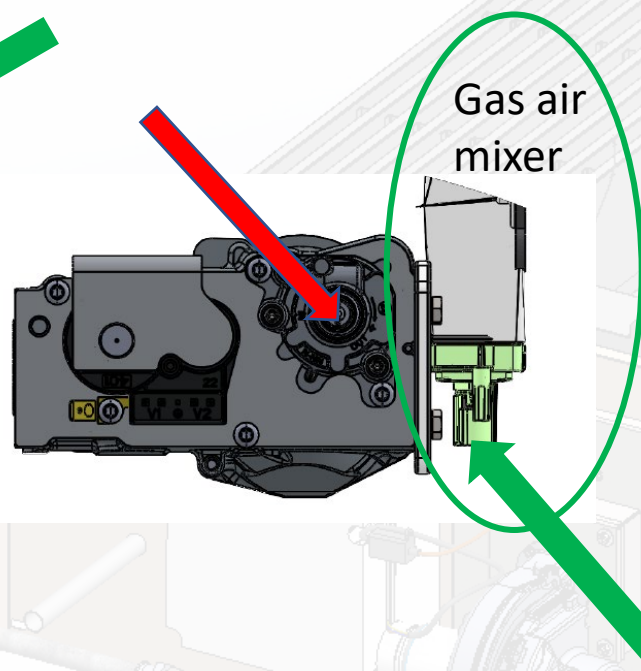
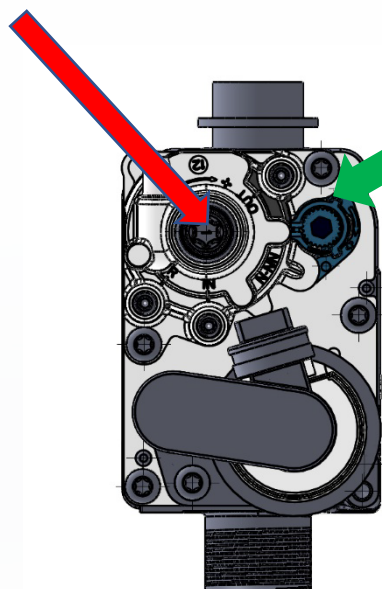
88

The main codes necessary for using during procedure

Procedure to put in Lo/Hi power

Lo

Hi



1. Model C & D – VK4205VE5002
2. Model E, E+ & F – VK 4415V1002B
3. Model G & H - VR415VE50924

Model C & D

Model E, E+ & F

Model G & H

HEGU – procedure to put in Lo/Hi power



- CO ppm ←
- CO₂ % ←
- NOx ppm ←
- T_s °C ←
- η % ←
- λ ←

Parameters on combustion analyser

CO < 100 ppm

CO₂ - 7,8 - 8,9 %

NOx < 30 ppm

T_s – fume temp.

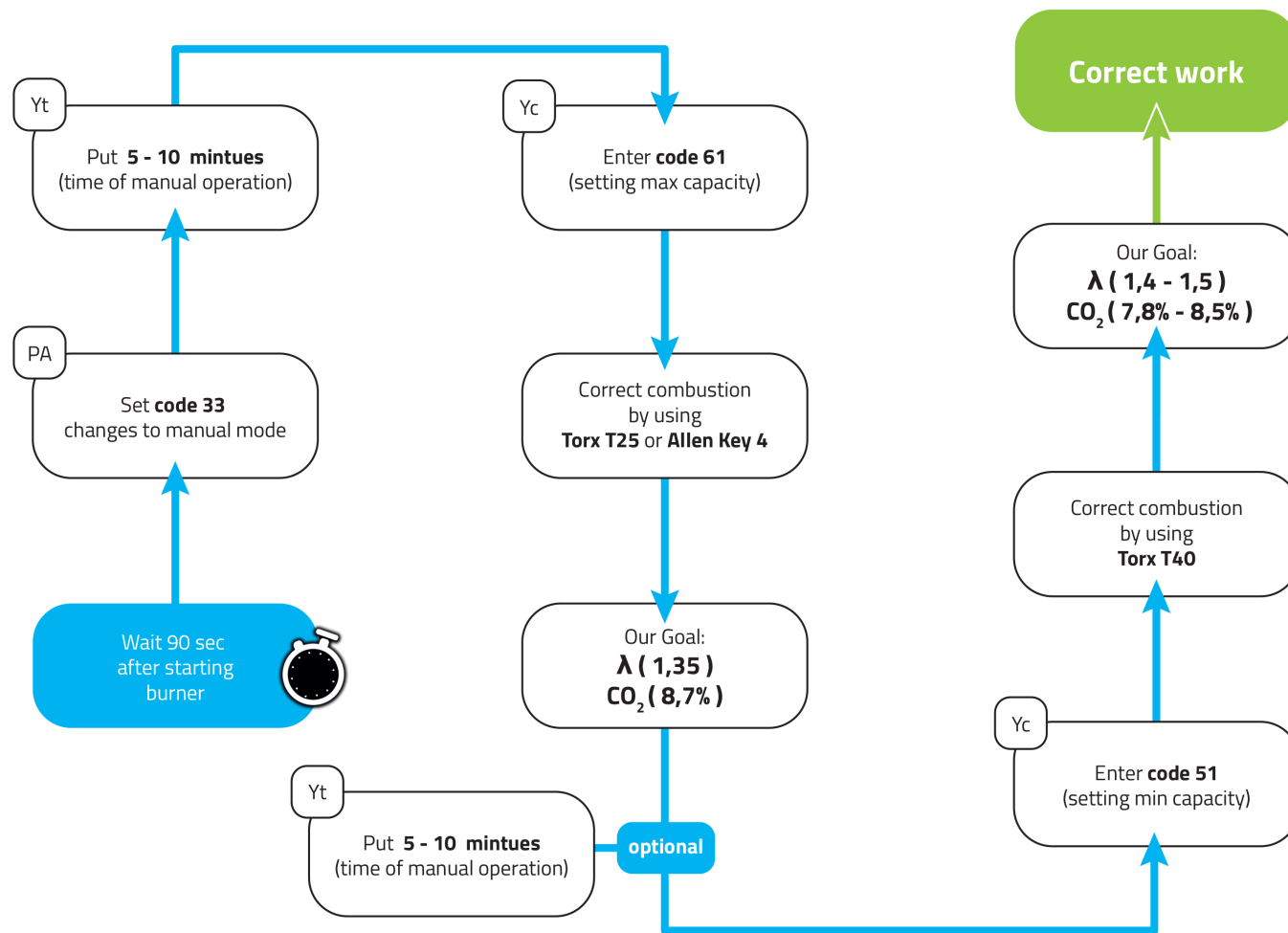
η – efficiency

λ - 1,35 – 1,48

The targeted parameters G20 : CO₂ 8,7%; λ 1.35;

HEGU – procedure to put in Hi/Lo power

Hi / Lo procedure



HEGU – procedure to put in Lo/Hi power



The procedure should be carried out after the burner has just started

Supply pressure in countries

Country	Sign	Category	Pressure	Country	Sign	Category	Pressure
Albania	AL	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar	Luxembourg	LU	I _{2E}	G20=20 mbar
Austria	AT	I _{2H3B/P}	G20=20 mbar G30/G31=50 mbar	Macedonia	MK	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar
Belgium	BE	I _{2E(R)}	G20/G25=20/25 mbar	Malta	MT	I _{3B/P}	G30/G31=30mbar
Belgium	BE	I _{3P}	G31=37 mbar	Norway	NO	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar
Bulgaria	BG	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar	Netherlands	NL	I _{3B/P}	G30/G31=30 mbar
Cyprus	CY	II _{2H3P}	G20=20 mbar G31=37 mbar	Poland	PL	II _{2ELWLS3PB/P}	G20/G27=20 mbar G2.350=13 mbar G30/G31=37 mbar
Cyprus	CY	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar	Portugal	PT	II _{2H3P}	G20=20 mbar G31=37 mbar
Croatia	HR	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar	UK	GB	II _{2H3P}	G20=20 mbar G31=37 mbar
Denmark	DK	II _{2H3B/P}	G20=20 mbar G30/G31=30 mbar	Czech Republic	CZ	II _{2H3P}	G20=20 mbar G30/G31=28-30/37 mbar

Tabele 5.1, page 44

Any changes in HEGU

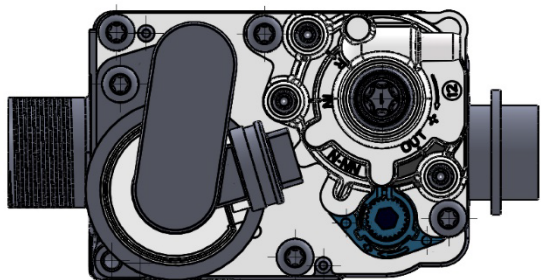


1. Always make Hi/Lo procedure after replacement spare parts, change fuel
2. Check if is necessary to replace venturi. It is valid for Poland
3. Make calibration, if the gas valve is out of control



Replacement venturi , if it is necessary (mainly Poland)

Models			C box		D box		E box		E+ box		F box	
Gas	Parameters	Unit	max	min	max	min	max	min	max	min	max	min
G 20	Exhaust gas T	°C	170	43	112	28	137	34	145	39	132	39
	CO ₂	%	8,7	8,6	8,5	8,6	8,6	8,7	8,7	8,9	8,7	8,6
	NO _x	ppm	37	20	29	32	29	26	34	22	30	21
G 25	Exhaust gas T	°C	165	39	110	28	135	34	140	39	133	38
	CO ₂	%	8,7	8,5	8,6	8,5	8,5	8,6	8,7	8,7	8,7	8,5
	NO _x	ppm	37	20	29	32	29	26	34	22	30	21
G31	Exhaust T	°C	175	42	111	28	140	35	145	39	132	39
	CO ₂	%	10,3	10,4	10,3	10,3	10,2	10,4	10,3	10,4	10,3	10,2
	NO _x	ppm	40	28	32	31	32	29	37	25	33	24

Gas valve calibration



Gas pre-setting regulation EOLO LXC 50			Screw pre-adjustment		CO2 percentage in fumes	
Gas	Gas network pressure (2)	Venturi type	Throttle (7)	Offset (4)	min. heat input	max. heat input
G20	20 mbar	45.900.451 056	full open next close 3,75	full open next close 4	8,7	8,6
G25	20 mbar	45.900.451 056	full open next close 3,5	full open next close 3,5	8,7	8,5
G31	37 mbar	45.900.451 040	full open next close 4,5	full open next close 5	10,3	10,4

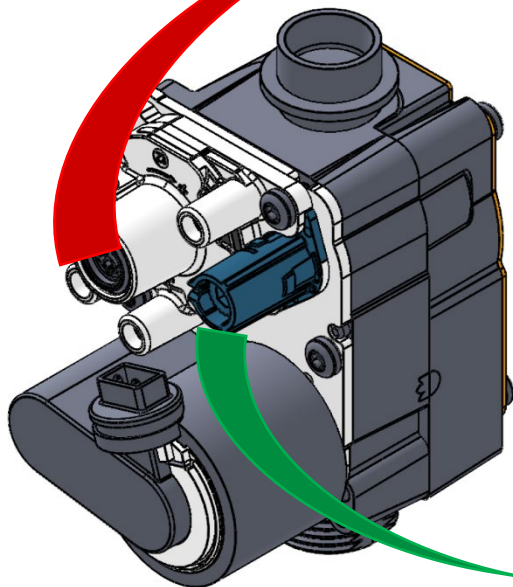
 - turn left
 - turn right

Based on E Baltic C box – IOM – page 62

Fuel changes – valve calibration



T40



Lo

1. Full open by turning right to the end
2. Set by turning 3.75 turns to the left
3. Target CO₂ – 8.7%



T25

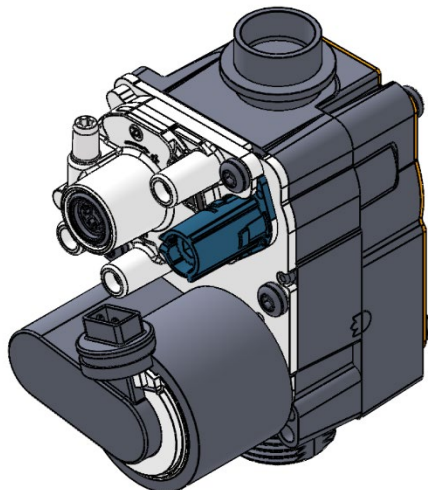
Hi

1. Full open by turning right to the end
2. Set by turning 4 turns to the left
3. Target CO₂ – 8.6 %

Module C – G20, 20 mbar, min/max. CO₂ – 7,8 - 8,9%

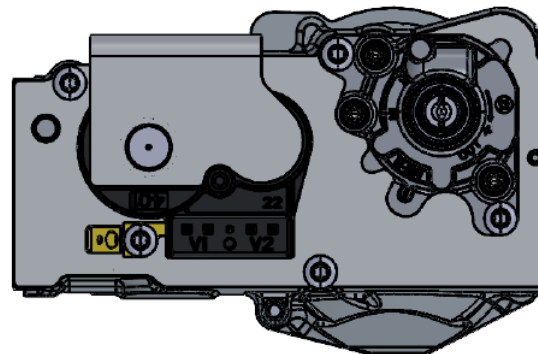
Heat exchanger gas unit – Maintenance


T40 + T25



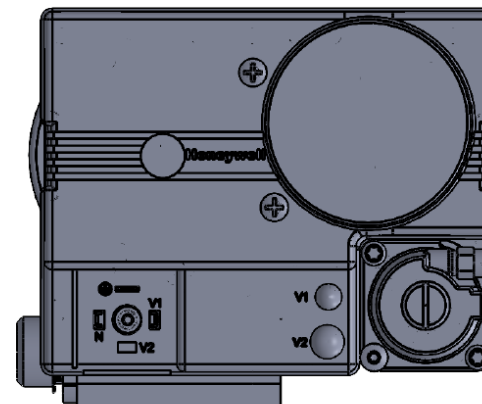
Model C, D


T40 + T25



model E, E+, F


T40 + T15



model G, H

Replacement gas valve (tutorial)

Motherboard checking & settings

88

80

88

88

88

88

rL – min burner fan speed value

ro – offset of rL during standard operation

rH – max. burner fan speed value

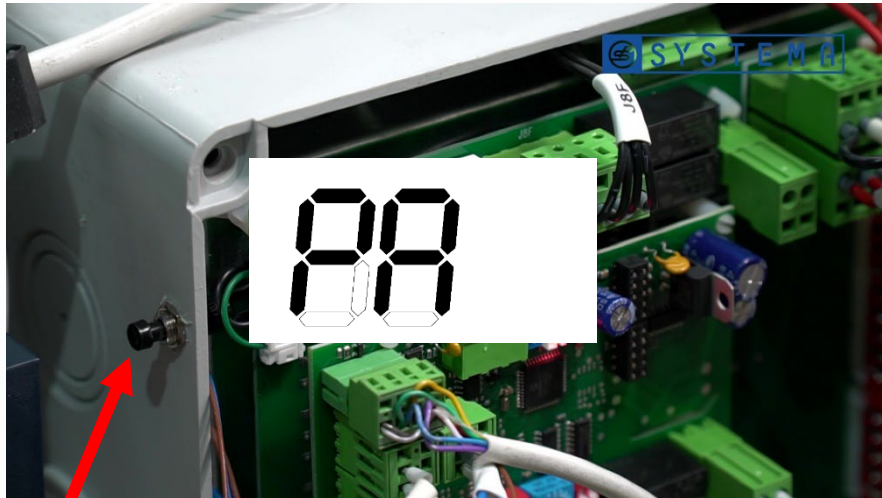
Y2 – boost level

Y9 – gas blower type

HH – release firmware

Non modifiable burner parameters (read only) !!!

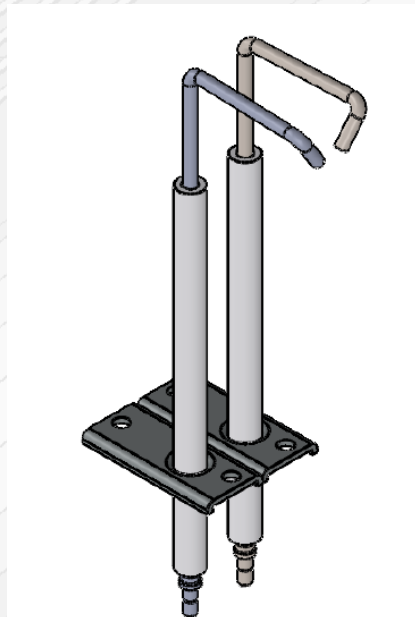
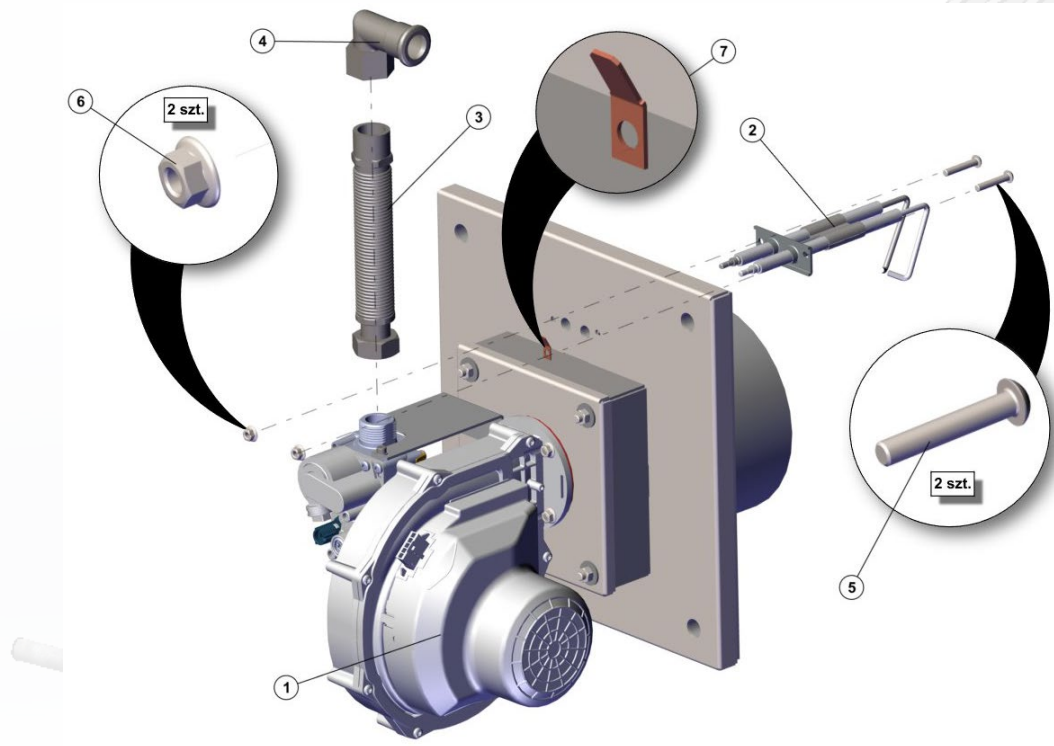
Parameter Y2 - changes



button

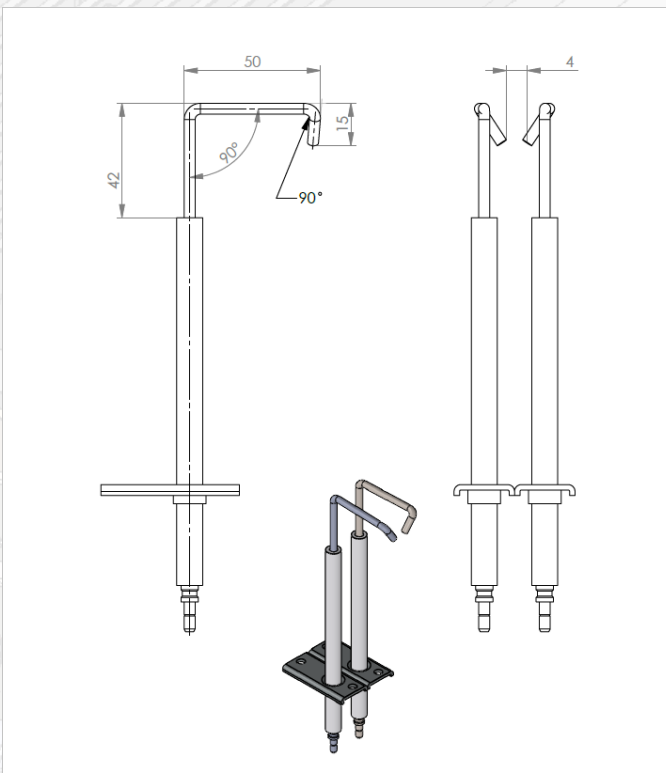
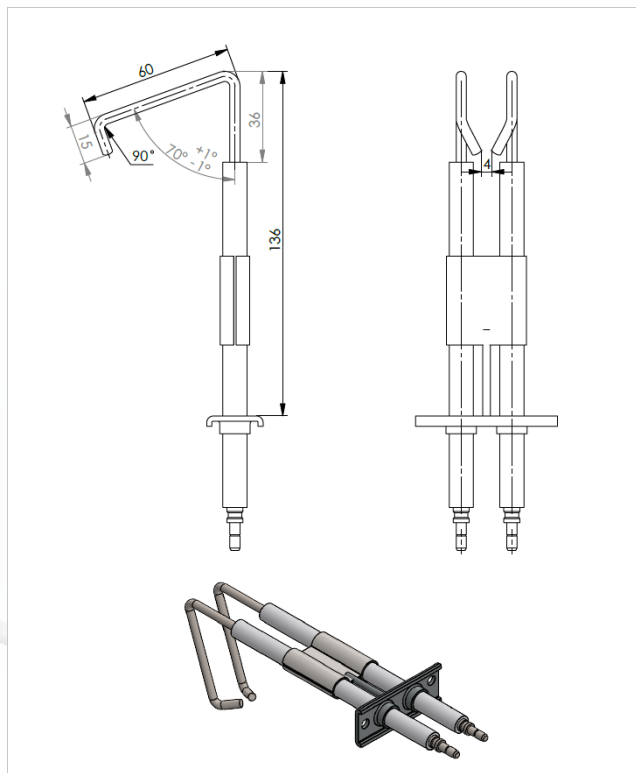
1. Press button until PA appears
2. After releasing button, the value 00 appears
3. Press button again to enter code 33 (manual operations)
4. Wait 3 s without doing nothing
5. You are in service mode during 4 minutes
6. Press and hold button until display shows Y2 and release the button
7. Press button again to modify Y2 (from 0 – 99)

Heat exchanger gas unit – Maintenance



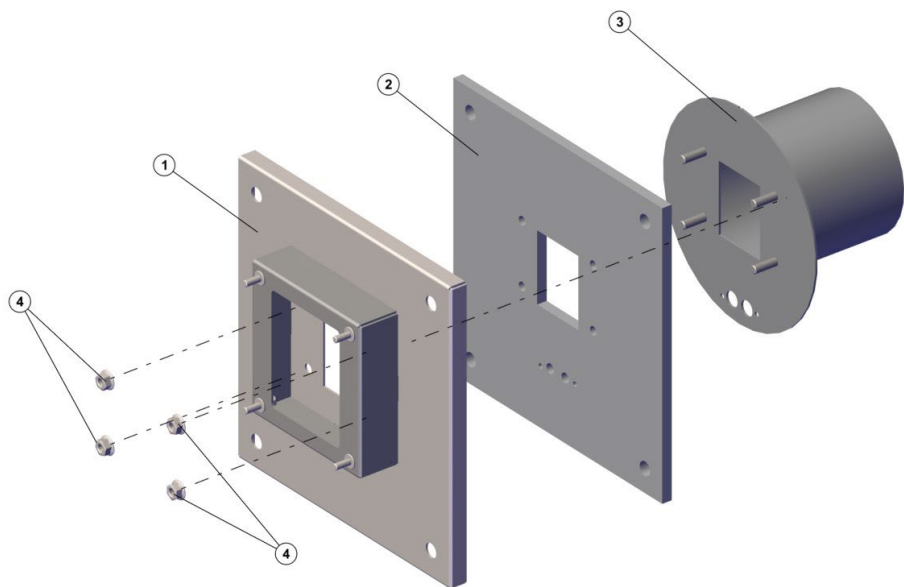
Replacement electrodes – standard procedure (tutorial)

Burner – electrode change in module C, D, E, E+

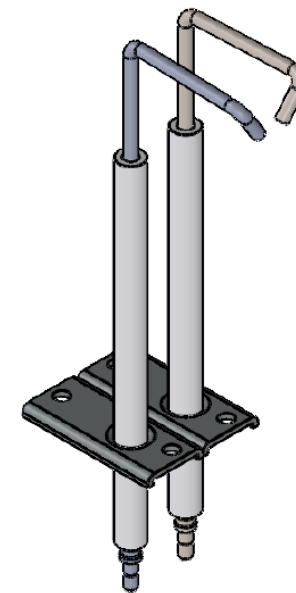


From serial no: L21G11320

Heat exchanger gas unit – Maintenance

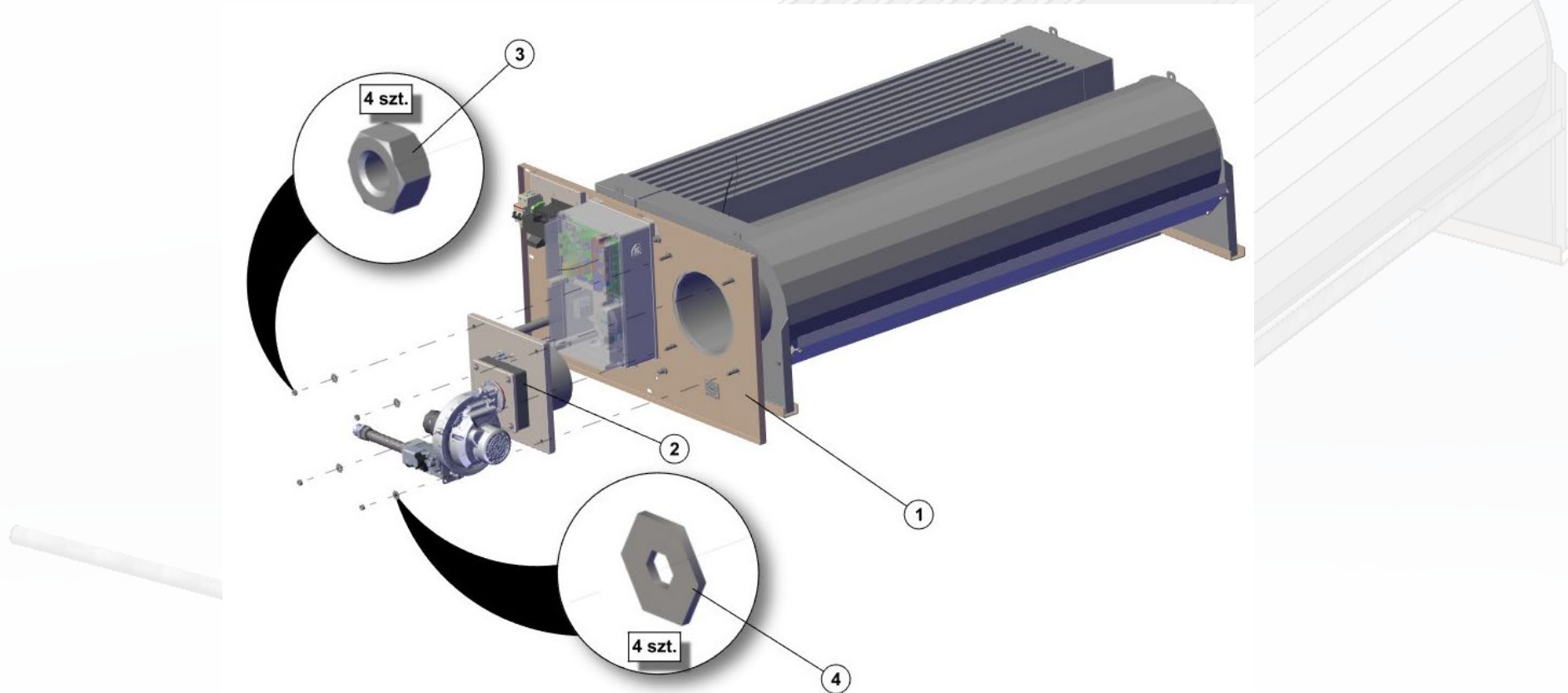


+



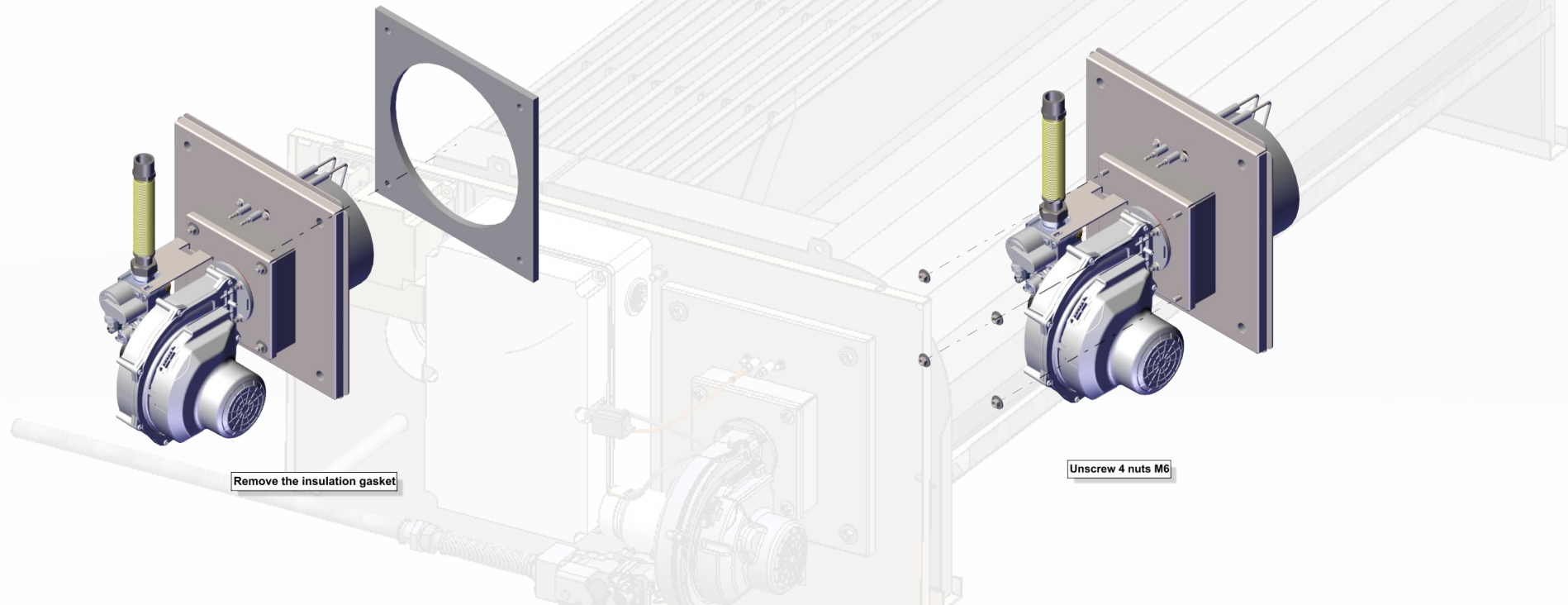
3 repair kits burner with index no. 70LXPAL0023-0025 (C, D, E)

Heat exchanger gas unit – Maintenance



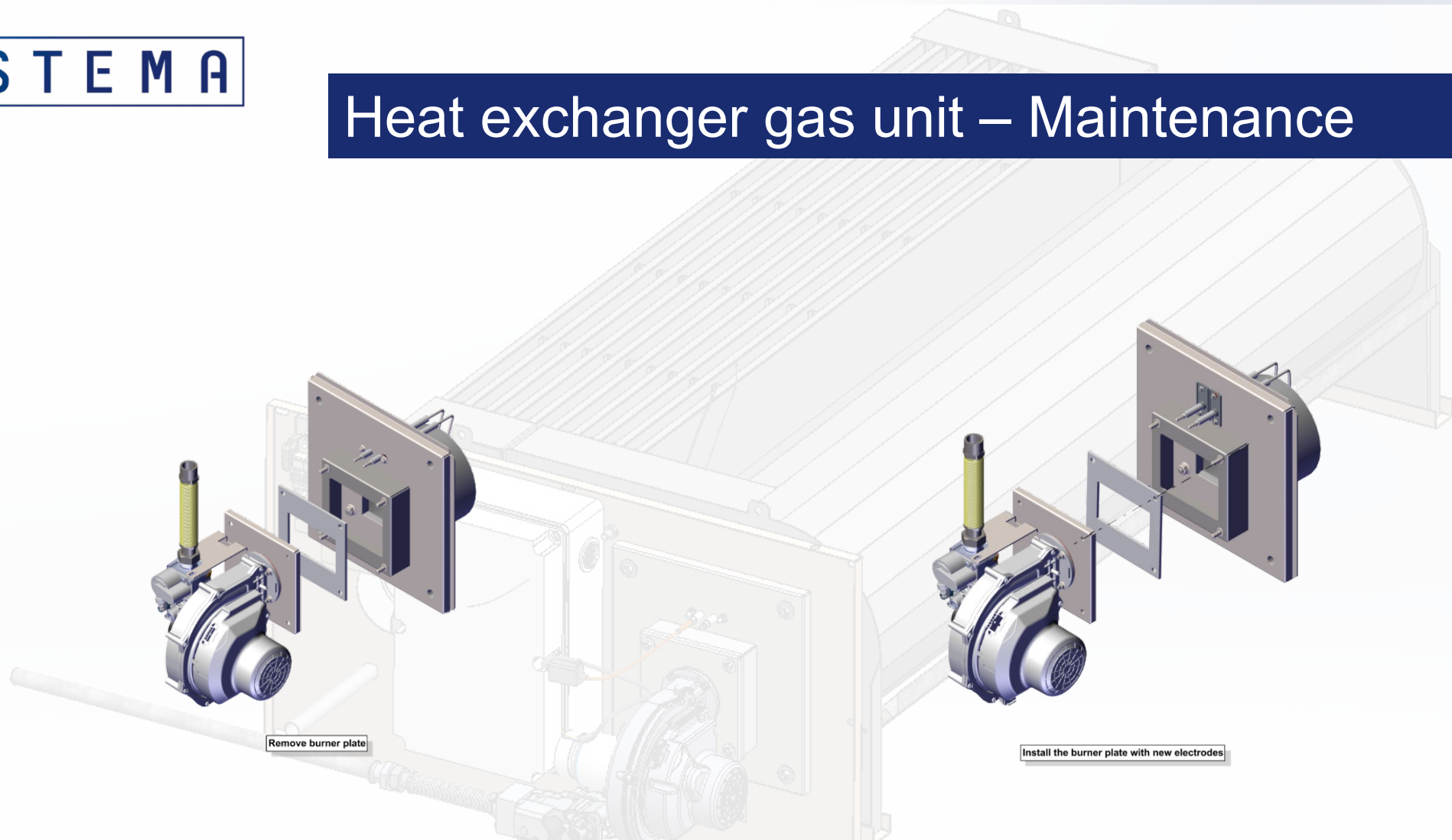
Remove burner unit from heat exchanger gas unit

Heat exchanger gas unit – Maintenance



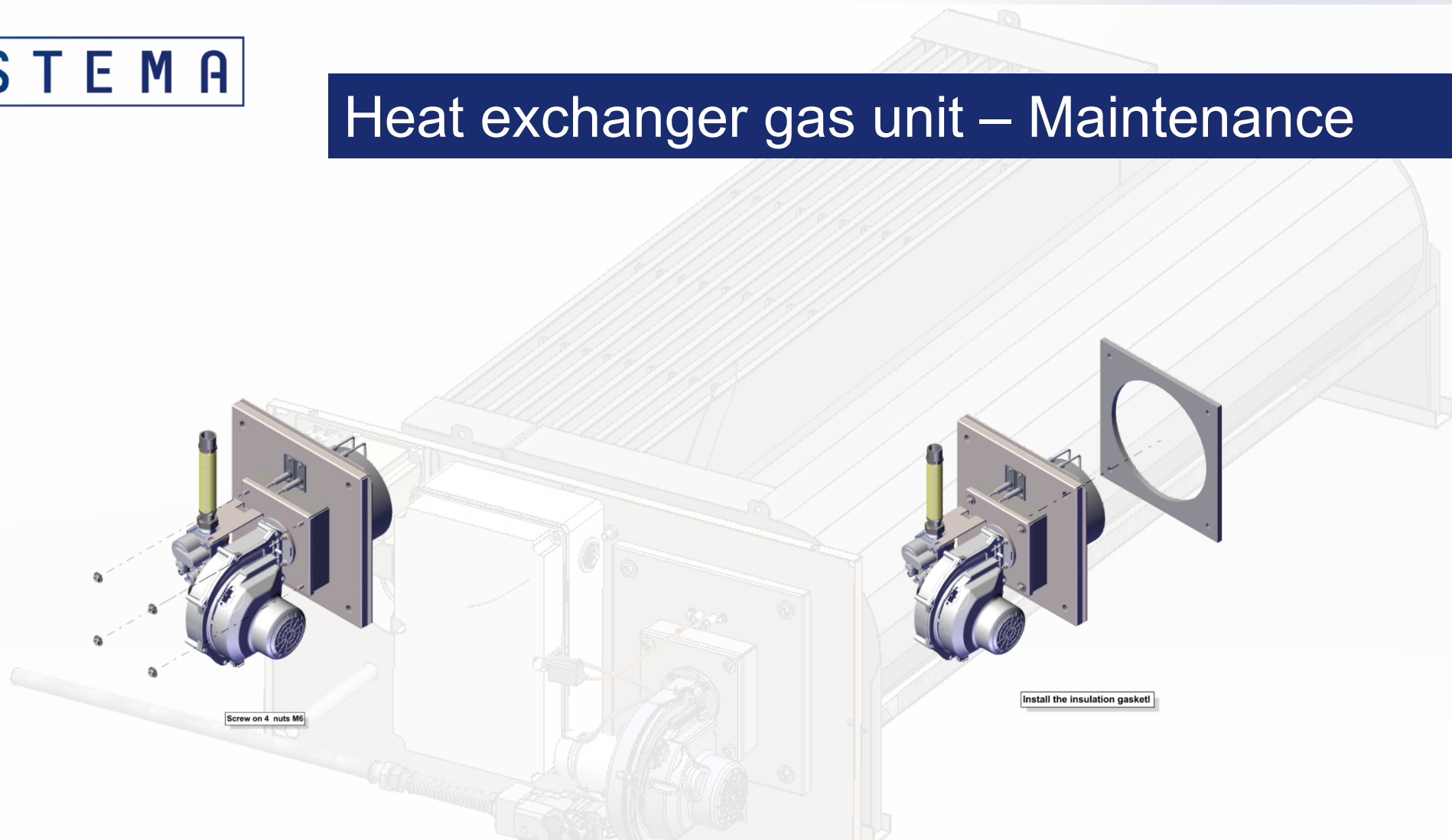
Remove the insulation gasket & Unscrew 4 nuts

Heat exchanger gas unit – Maintenance



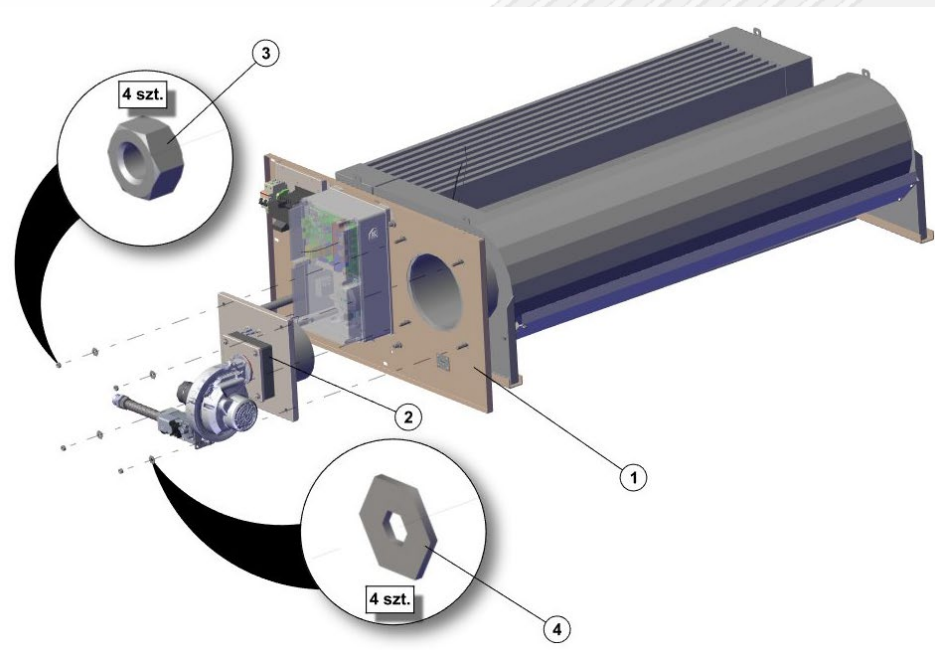
Remove burner plate & install the repair kits burner

Heat exchanger gas unit – Maintenance



Screw 4 nuts & Install the insulation gasket

Heat exchanger gas unit – Maintenance



Install the burner unit with new electrode set to heat exchanger gas unit

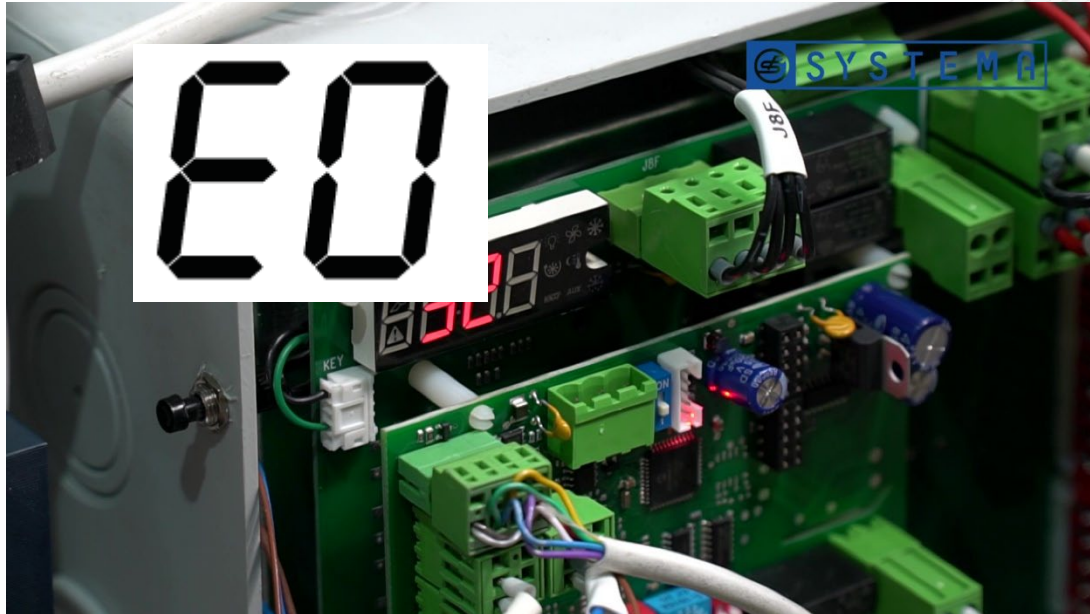
Heat exchanger gas unit – Troubleshooting

Display of motherboard	Control Panel	Reason	Solution
E2	A19	Lack of air flow	Check fan air flow & fan rotational speed
E3	A18	Overheating	Reset the burner
E4	A17	Burner is blocked	1. Make gas valve regulation 2. Change electrodes
E5 / E6	-	Lack of connection control wire with	1. Connect 2. Turn-off and turn-on units
E8	A41	Heat exchanger is overheated	Decrease level of burner operating and wait
E9	-	Burner is blocked for long time period	Make double reset

Heat exchanger gas unit – Troubleshooting

Display of Motherboard	Control Panel	Reason	Solution	Notes
E2	A19	Lack of air flow	Check fan air flow & fan rotation speed	Air switch
E3	A18	Overheating of he	Reset burner	probe
E4	A17	Burner is blocked	<ol style="list-style-type: none"> 1. Valve regulation, 2. Replace electrodes 	Valve, electrodes
E5/E6	-	Lack of connection control wiring	<ol style="list-style-type: none"> 1. Connect 2. Turn-off & turn on units 	Blower, blower wiring supply
E8	A41	HE is overheated	Decrease level of burner operating and wait	Heat exchanger
E9	-	Burner is blocked for some period	Make double reset	E4

Heat exchanger gas unit – ALARM



Alarm

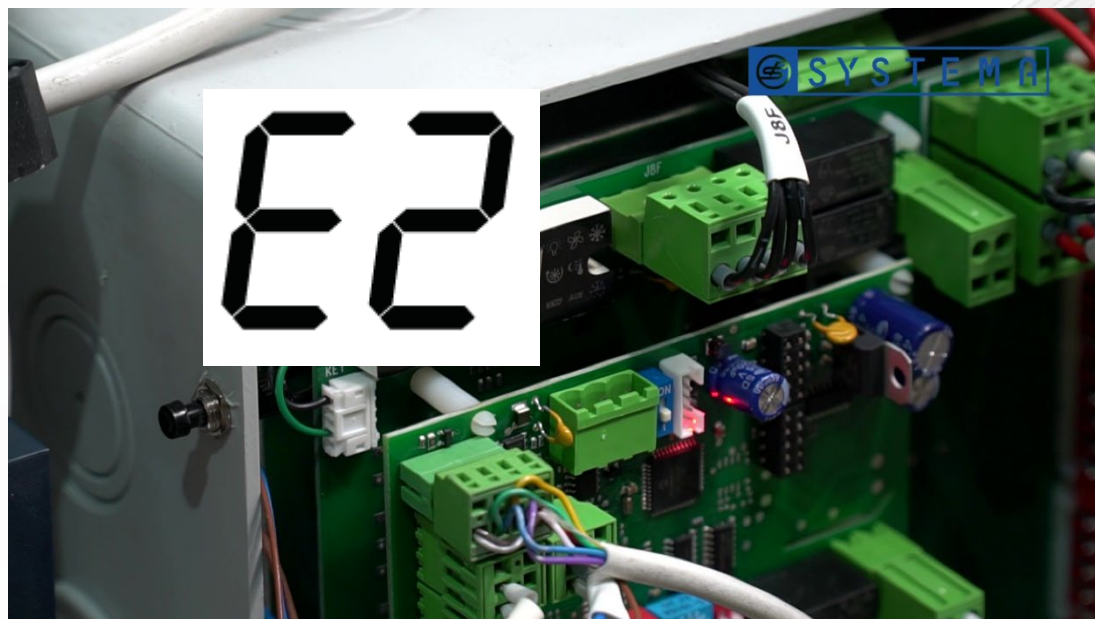
Main electronic board is disconnected with communication board

Solution

Check that the communication board is fitted correctly

Alarm & solutions

Heat exchanger gas unit – ALARM



Alarm

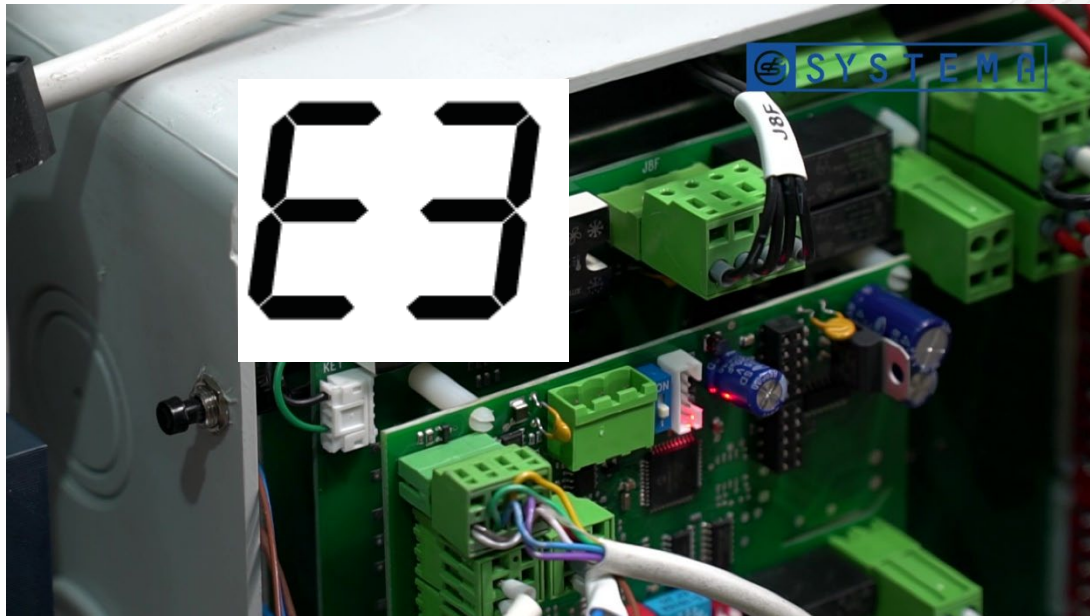
General / contact J7B is opened (min. gas pressure switch Pg / Air pressure switch)

Solution

Check the required gas pressure, check circuit of J7B contact

Alarms & solutions

Heat exchanger gas unit – ALARM



Alarm (*Happend or in progres*)

Contact J7C is open. Max. gas pressure switch is open or overheat thermostat is opened (Klikson)

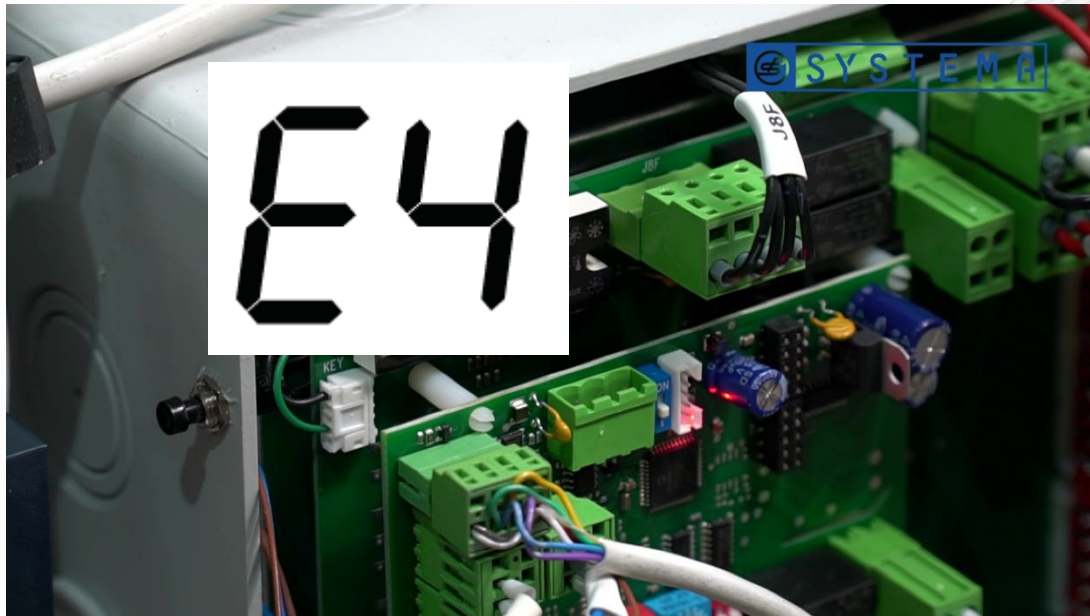
Solution

Check gas pressure

Pushes reset on overheat thermostat (Klikson)

Alarms & solutions

Heat exchanger gas unit – ALARM



Alarm

Burner is lockouted. The red light is on.

Solution

Pushes reset button during 3 s

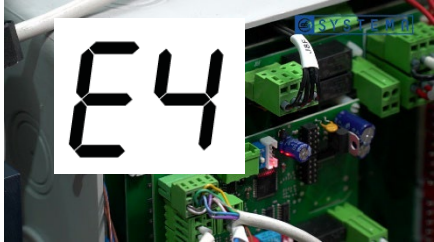
Alarms & solutions

Heat exchanger gas unit – ALARM E4



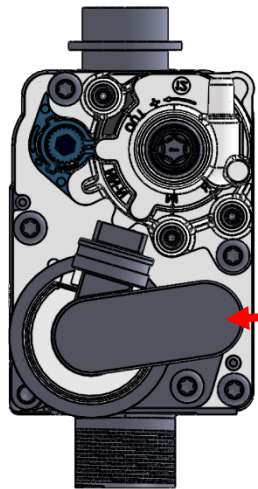
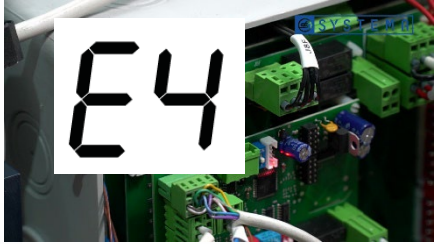
Reason	Solution
Power supply reversed between phase and neutral	Connect correctly & respect the phase and neutral polarity
Lack of gas in the burner	Check the gas supply line
Wrong type of gas	<ol style="list-style-type: none"> 1. Check , if the type of gas complies with the gas on name plate 2. If not, adjust the unit to the proper one by regulation valve & Hi/Lo procedure
Wrong gas pressure	<ol style="list-style-type: none"> 1. Check the pressure with the valve shown on name plate 2. Performe gas valve adjustment (MOI 60-66) – procedure Hi/Lo

Heat exchanger gas unit – ALARM E4



Reason	Solution
Ignition electrode(s) are incorrectly positioned or damaged or out of working	<ol style="list-style-type: none"> 1. Electrodes are installed incorrectly, improve it (see drawing in MOI page 57 2. Replace them with original spare parts. Note! Use the same type of elctrodes for box F, G, H and for C, D, E, E+ with serial no higher than L21G11320. For modules C, D, E, E+ with lower serial no – use repair kit burner 3. Replace the ground electrode conector (wire yellow-green) with the ignition electrode connector (red wire)
Ignitor broken	If it is spark issue and / or replace with the original spare parts (see above point)

Heat exchanger gas unit – ALARM E4



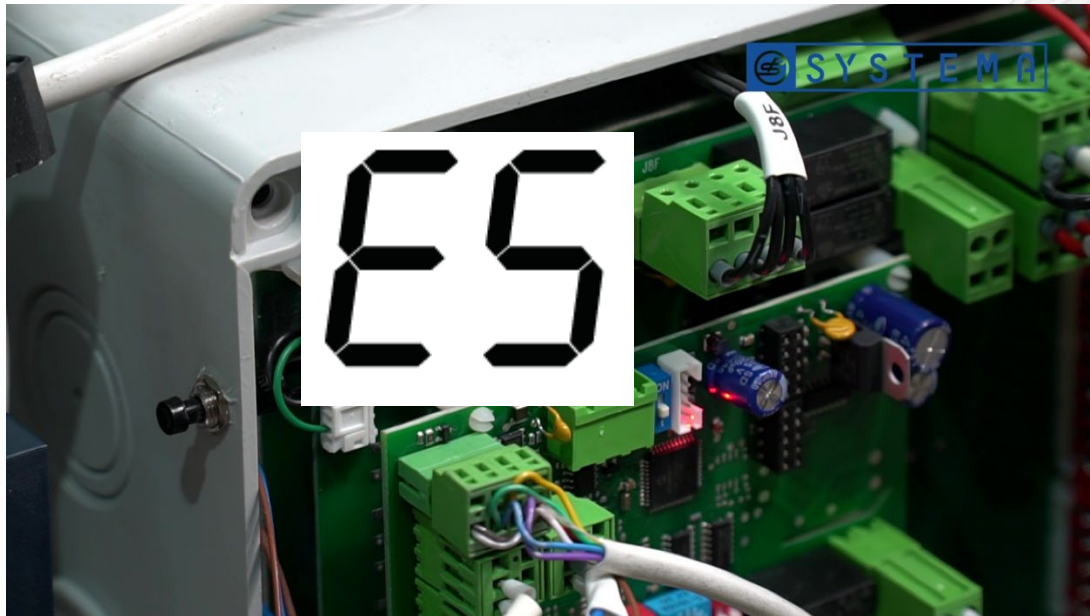
Reason	Solution
Poor grounding	Check the grounding
Burner controller faulty	Check burner controller corect operation and / or replace it
Gas valve does not work	<ol style="list-style-type: none"> 1. Check the way of operation the gas supply on the valve, replace with the original one, if it is necessary 2. Main board faulty replace with original spare parts 3. Check the operation of gas valve coils and replace with original one 4. Check the operation of control unit, replace with original one if necessary

Heat exchanger gas unit – ALARM E4



Reason	Solution
Power supply reversed between phase and neutral	Connect correctly & respect the phase and neutral polarity
Lack of gas in the burner	Check the gas supply line
Wrong type of gas	<ol style="list-style-type: none"> 1. Check , if the type of gas complies with the gas on name plate 2. If not, adjust the unit to the proper one by regulation valve & Hi/Lo procedure
Wrong gas pressure	<ol style="list-style-type: none"> 1. Check the pressure with the valve shown on name plate 2. Performe gas valve adjustment (MOI 60-66) – procedure Hi/Lo

Heat exchanger gas unit – ALARM



Alarm

To low min. speed of gas blower, than burner switches off

Solution

Check connection of gas blower control
Check parameter Y9 on the mainboard

Alarms & solutions

Heat exchanger gas unit – ALARM E5



Reason	Solution
Wrong connection of controlling gas blower	Check wire, plug & connectors (J8F) Replace with original spare part if necessary
Gas blower control cable damaged	
Gas blower defectives	
Motherboard defective	
Wrong parameters Y9 on motherboard	Check and/or set Y9 parameter: Box D, E, E+, F, G Y9 = 1 Box C – Y9-2 Box H – Y9= 3

Heat exchanger gas unit – ALARM



Alarm

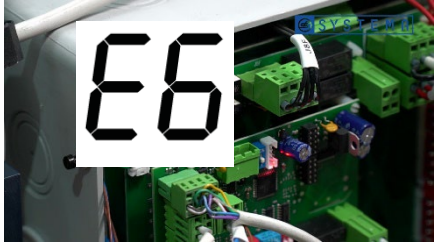
Error of high speed of gas blower, than burner switches off

Solution

Check connection of gas blower control
Check parameter Y9 on the mainboard

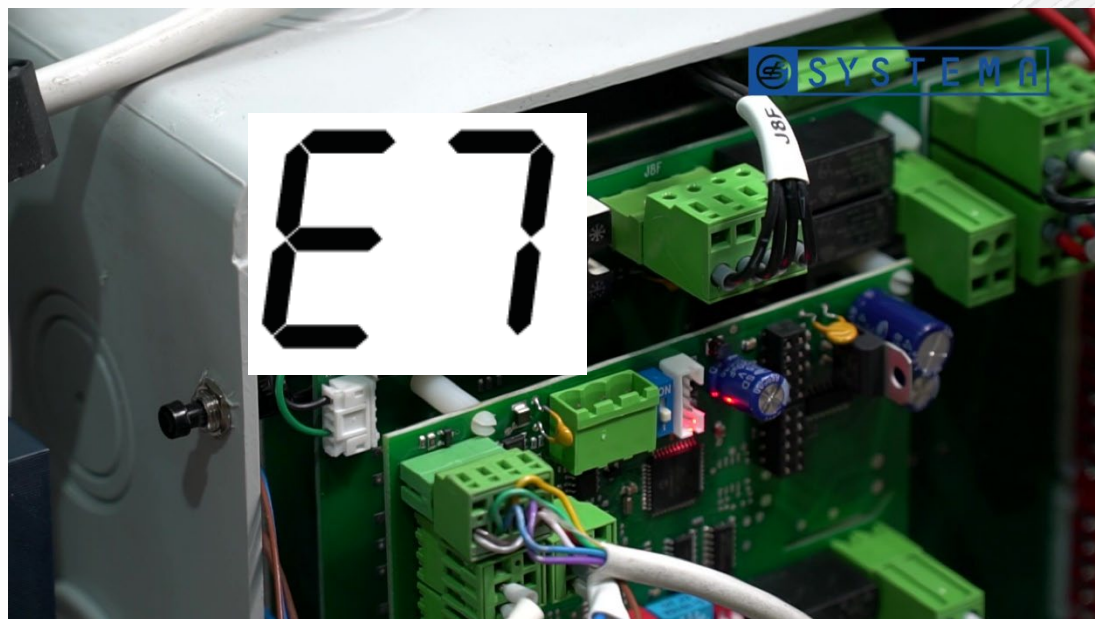
Alarms & solutions

Heat exchanger gas unit – ALARM E6



Reason	Solution
Wrong connection of controlling gas blower	Check wire, plug & connectors (J8F) Replace with original spare part if necessary
Gas blower control cable damaged	
Gas blower defectives	
Motherboard defective	
Wrong parameters Y9 on motherboard	Check and/or set Y9 parameter: Box D, E, E+, F, G Y9 = 1 Box C – Y9-2 Box H – Y9= 3

Heat exchanger gas unit – ALARM



Alarm

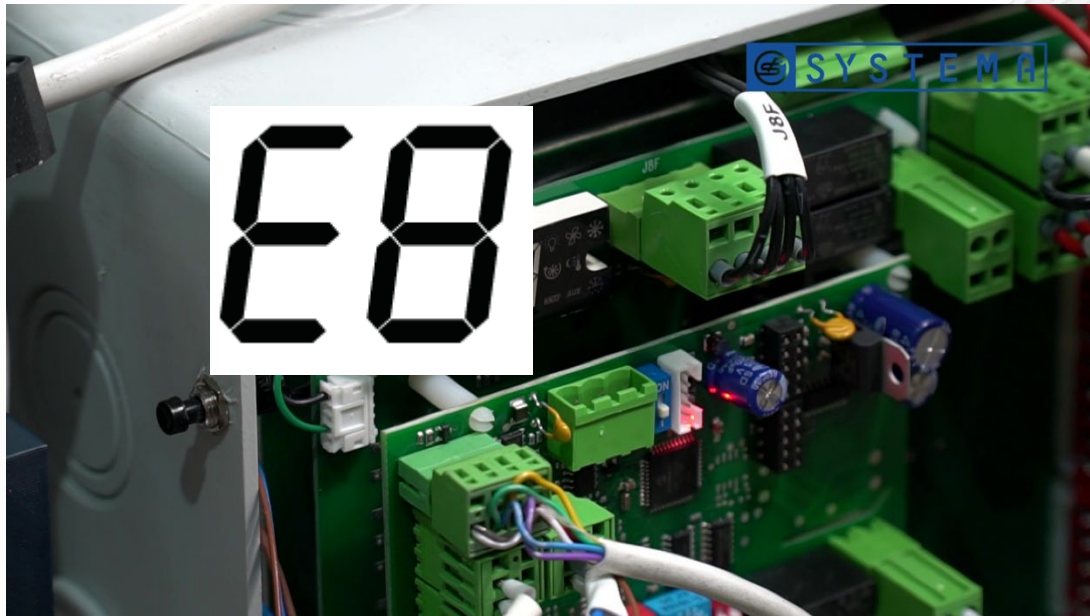
Start-up test failed, burner locks out

Solution

Remove & restore power to the board

Alarms & solutions

Heat exchanger gas unit – ALARM



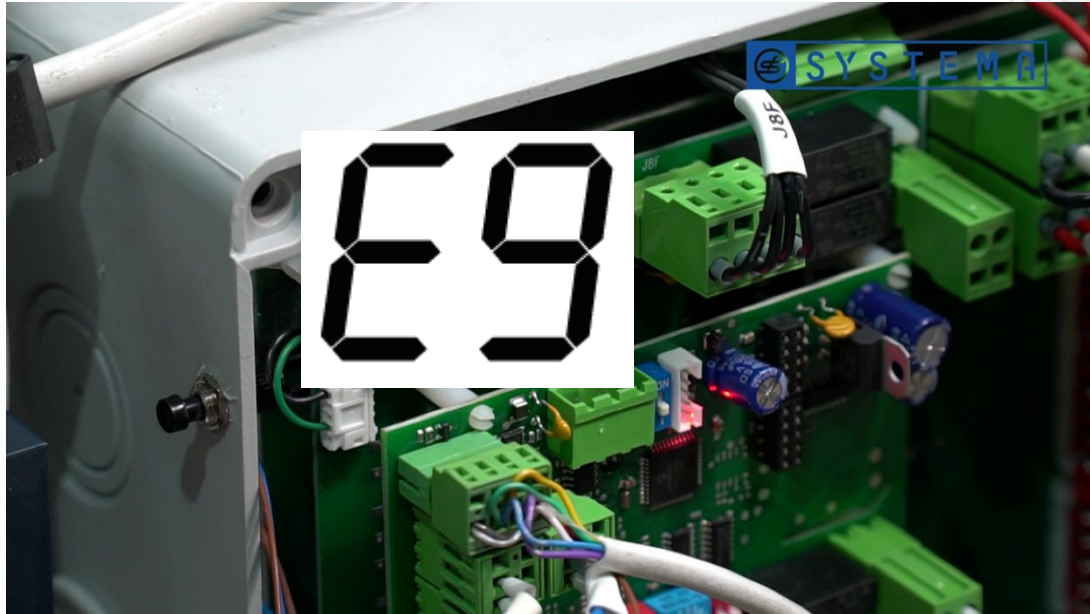
Alarm

To high temperature of heat exchanger surface - probe P1 (PT1000)

Solution

Wait for decreasing temperature using fans in operating.
Change sensor (damage)

Heat exchanger gas unit – ALARM



Alarm

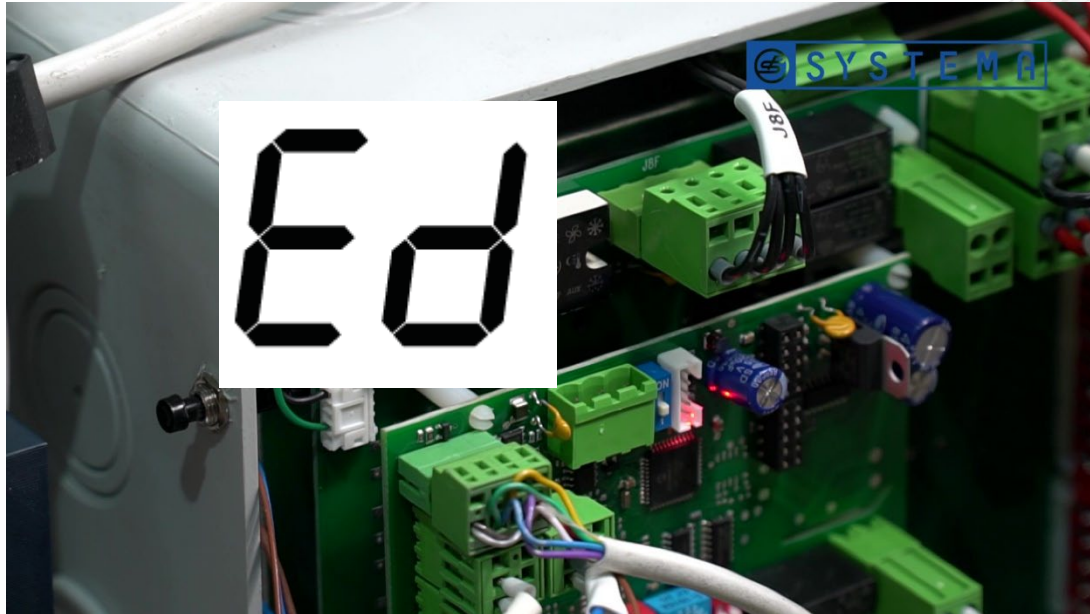
Red & green lamps is lighting at the same time
Internal error

Solution

Closes RT contact

Alarms & solutions

Heat exchanger gas unit – ALARM



Alarm

Serious alarm, damaged database

Solution

Contacts the service center

Checks the value: rL, rH & Y9

After introducing the new parameters provided by producer, turns off the power supply of the board at least 10 s.

Alarms & solutions

Heat exchanger gas unit – ALARM



Alarm

Memory fault - EEPROM

Solution

Switch off power supply for 10s.
Restore software of main board and
communication board

Alarms & solutions

MAINTENANCE INTERVAL		
	Maintenance	Every year
1	Check / clean gas filter	X
2	Check the gas pressure supply at the gas valve.	X
3	Check flue exhaust + air intake grill	X
4	Check the Venturi pipe / clean it if necessary	X
5	Check exchanger / clean it if necessary.	X
6	Check burner head / clean it if necessary.	X
7	Check electrodes / clean it if necessary.	X
8	Check and clean condensate drain.	X
9	Check operation of flame	X
10	Check the safety thermostat	X

1. Check / clean gas filter

Perform a visual inspection and clean the gas filter cartridge which is located outside the device behind the main gas valve



2. Check the gas pressure supply at the gas valve.

Measure the gas pressure with a pressure gauge. The measuring point is at the inlet to the gas valve

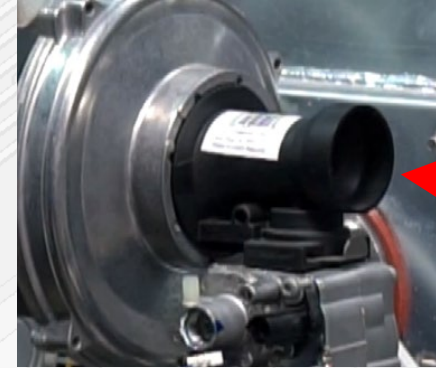


3. Check flue exhaust + air intake grill

Visually inspect where possible. Check the status of the ducts. Remove dust and any obstruction on the air intake.



4. Check the Venturi pipe / clean it if necessary
Remove any dirt at the mouth of the Venturi pipe with a brush.
Be careful to not let it fall inside the piece.



5. Check burner head / clean it if necessary.
Remove any dirt from perforated surface with a brush. Check the
condition of the head.



6. Check electrodes / clean it.
Use fine sandpaper to clean the electrode core

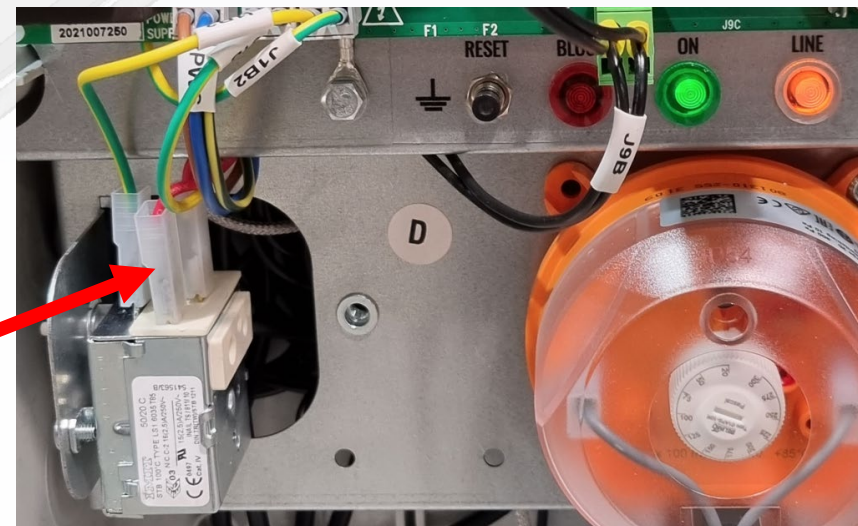
7. Check and clean condensate drain.

Remove any dirt from the pipe. Check if condensate flow out freely from the exchanger.



8. Check operation of flame and ionisation controlling.

When the burner is working, close the gas valve and verify that the burner is stopped. After 3th spark start alarm display E4. Reopen the gas valve, reset the alarm and wait for the burner to restart.



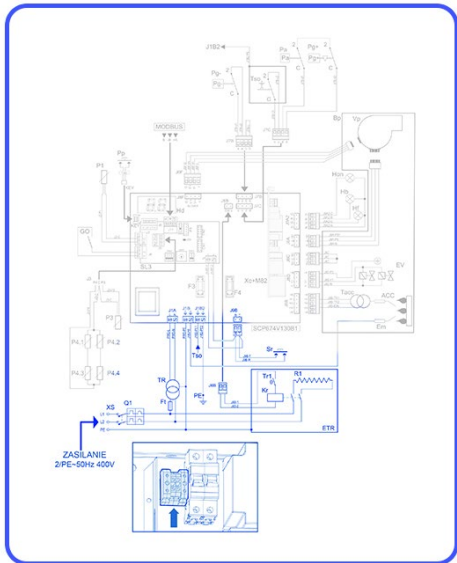
9. Check the safety thermostat

This procedure must be done under power supply. (use isolated tool) Carefully remove the fast-on from the safety thermostat, the alarm E3 must appear on the display. Then push RESET 3sec. for to cancel the alarm

A faint, light-colored technical drawing of a mechanical component, possibly a valve or actuator, is visible in the background. It shows various parts like a handle, a body, and a connection point.

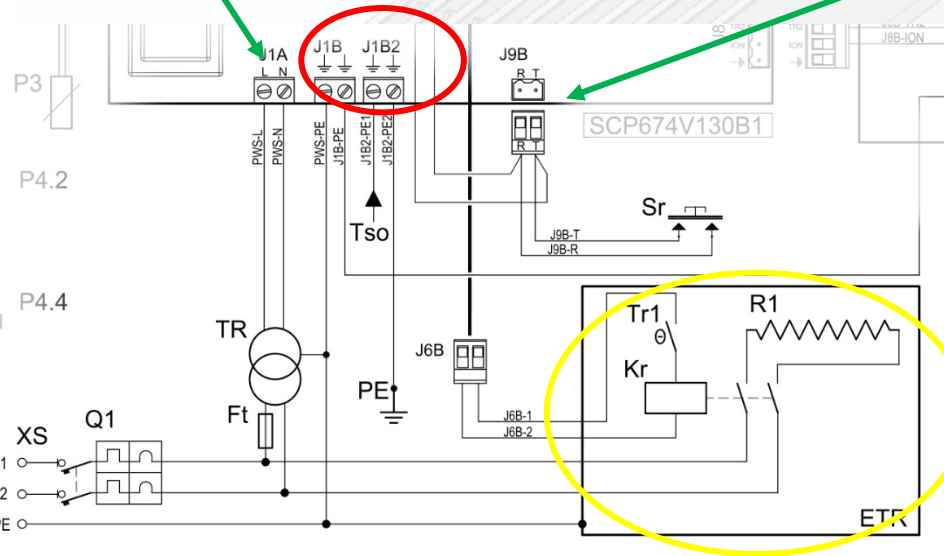
**THANK YOU FOR
ATTENTION**

Control box –wiring diagram



J1A - General power supply

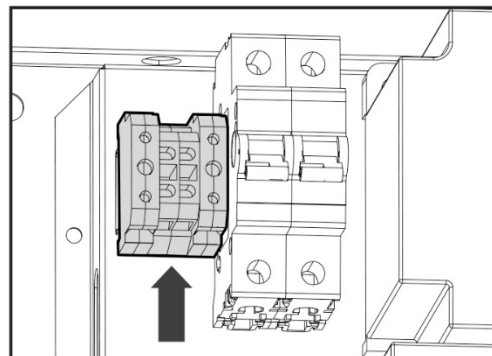
J9B – Machine reset



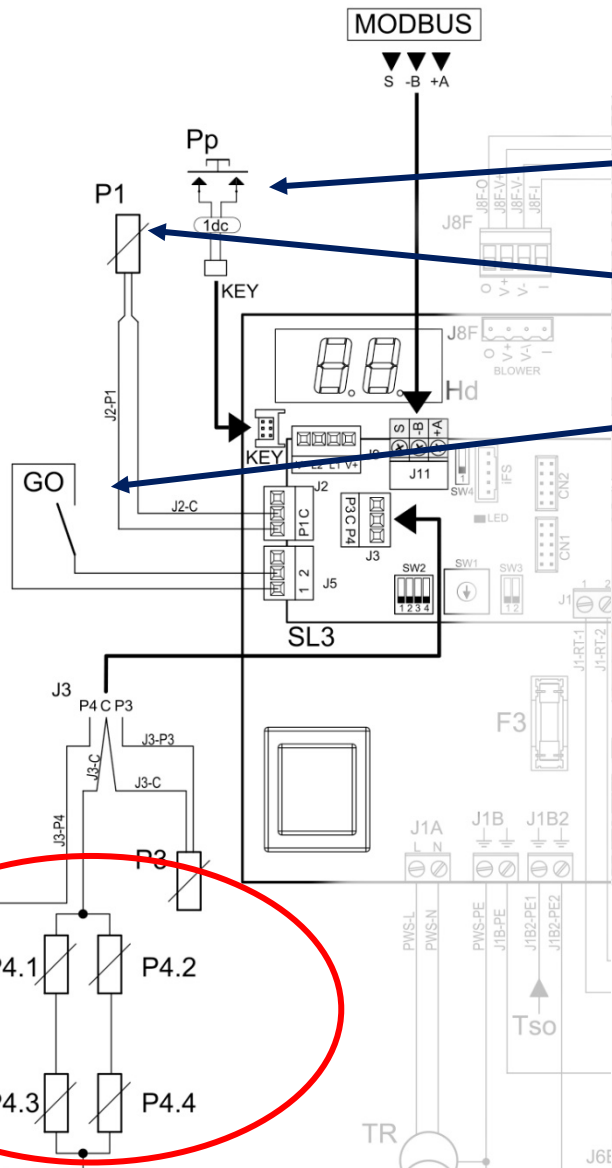
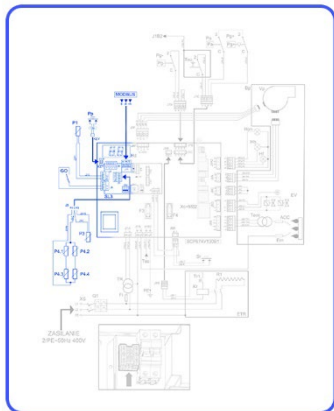
J1B, J1B2 – protective conductor

ETR – Kr resistance kit relay power supply

ZASILANIE
2/PE~50Hz 400V



Control box –wiring diagram



Pp – use for programming main board

P1 – heat exchanger temp. sensor

GO – Manual burner operating control

P4.1 to P4.4 -
Outlet air temp.
sensor