

PROGRESSIVE GAS BURNERS

**Ecoflam**

CE

**BLU TS 15000.1 PR**  
**BLU TS 18000.1 PR**

230/400V 60Hz



420010474400

420010474400

22.03.2012

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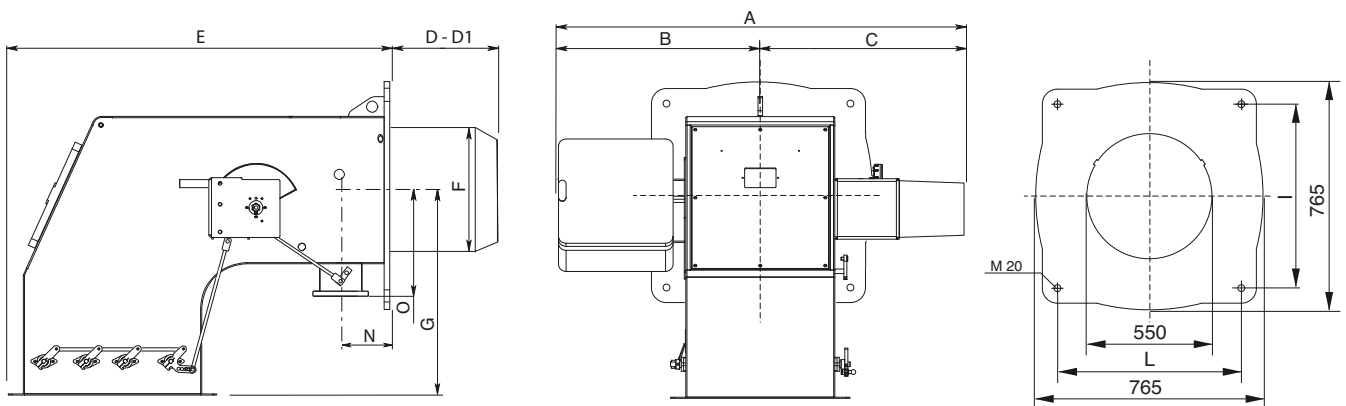
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## TECHNICAL DATA

Model		BLU TS 15000.1 PR	BLU TS 18000.1 PR
Thermal power max.	kW	15.000	17.000
	kcal/h	12.900.000	14.620.000
Thermal power min.	kW	3.690	4000
	kcal/h	3.173.400	3.440.000
Gas pressure Natural gas	mbar	125÷700	175÷700
Gas pressure LPG	mbar	135÷700	190÷700
Voltage 60 Hz	V	230/400	230/400
Fuel :		Natural Gas (L.C.V. 8.570 kcal/Nm <sup>3</sup> ), LPG (L.C.V. 22.260 kcal/Nm <sup>3</sup> )	

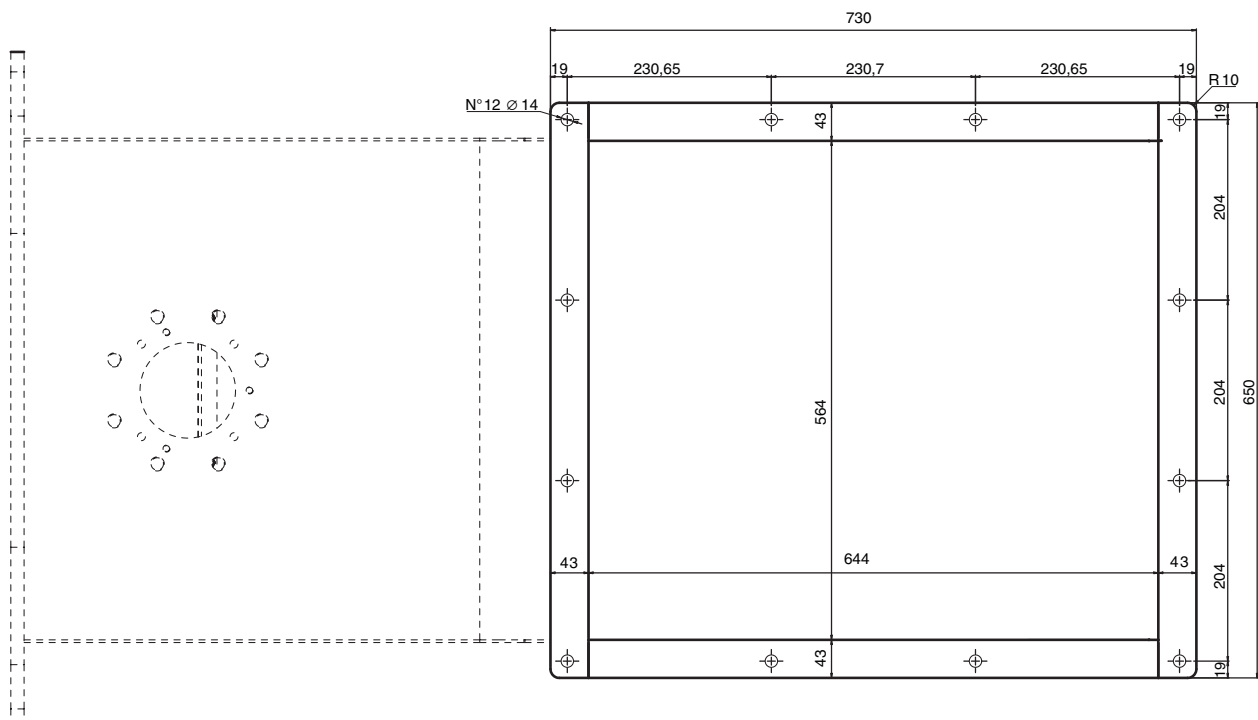
## OVERALL DIMENSIONS



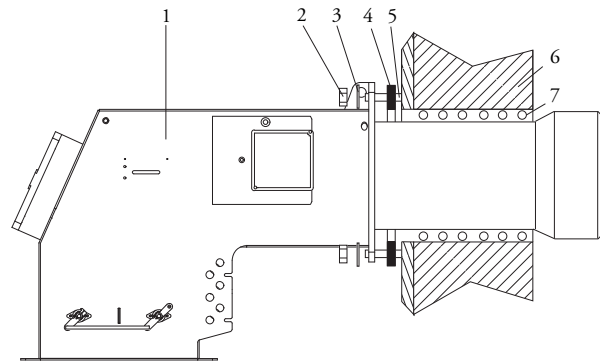
MODEL	A	B	C	D	D1	E	F	G	I	L	M	N	O
Blu TS 15000.1	1270	630	640	590	-	1480	550	670	620	620	M20	210	320
Blu TS 18000.1	1270	630	640	590	-	1480	550	670	620	620	M20	210	320

D = Short head D1= Long head Dimensions (mm)

## AIR FLANGE



### BURNER INSTALLATION

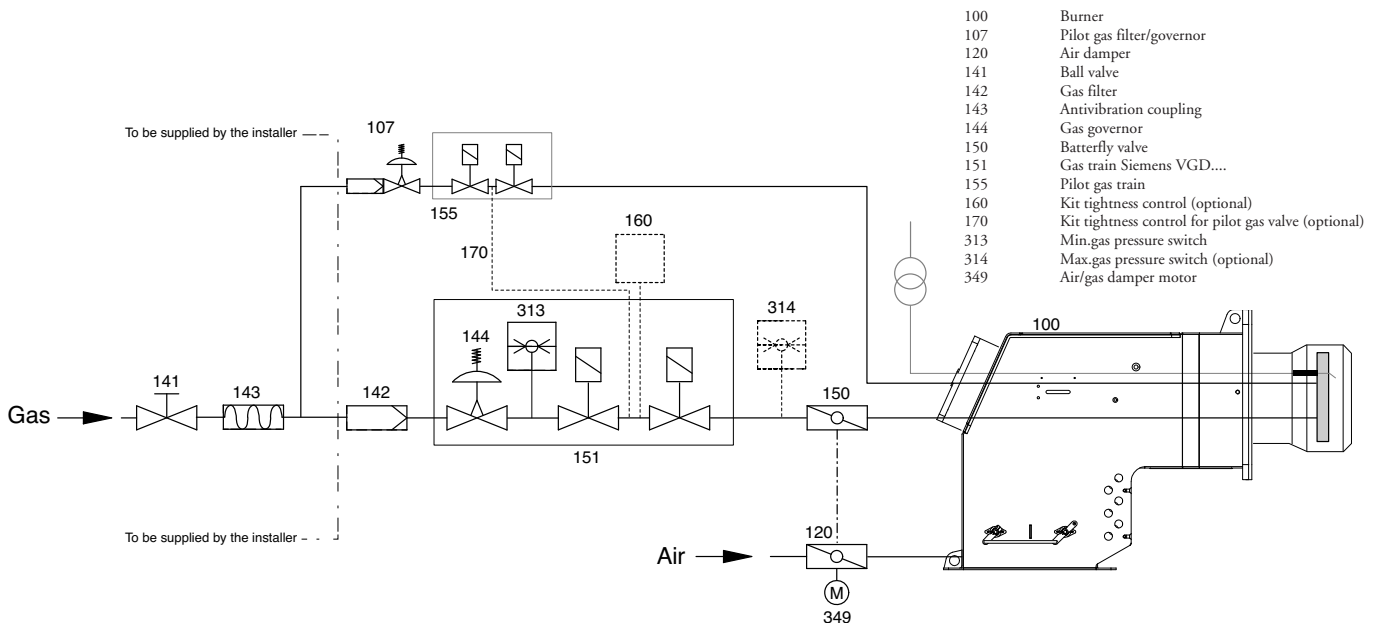


- 1 - BURNER
- 2 - NUT
- 3 - WASHER
- 4 - GASKET
- 5 - BOLT
- 6 - BOILER
- 7 - GASKET

### ELECTRICAL CONNECTIONS

All burners factory tested at 400 V 60 Hz three-phase for motors and 230 V 60 Hz monophase with neutral for auxiliary equipment. If mains supply is 230 V 60 Hz three-phase without neutral, change position of connectors on burner as in fig. Protect burner supply line with safety fuses and any other devices required by safety standards obtaining in the country in question.

### CONNECTION DIAGRAM FOR BURNERS WITH SEPARATE PILOT (gas train Siemens VGD...)



### CONNECTION TO THE GAS PIPELINE

Once connected the burner to the gas pipeline, it is necessary to control that this last is perfectly sealed. Also verify that the chimney is not obstructed. Open the gas cock and carefully bleed the piping through the pressure gauge connector, then check the pressure value through a suitable gauge. Power on the system and adjust the thermostats to the desired temperature. When thermostats close, the sealing control device runs a seal test of valves; at the end of the test the burner will be enabled to run the start-up sequence.

### BURNER START-UP

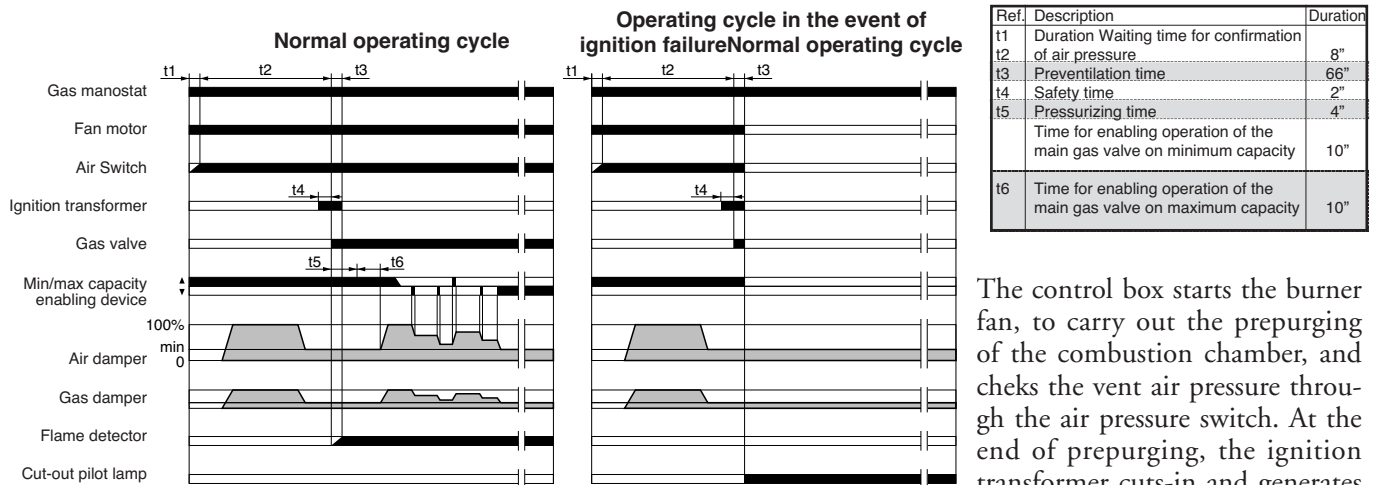
Before starting the burner, make sure it is mounted correctly. Then check connections are correct according to the diagram and piping is appropriate to the system. Before connecting the burner to the electricity supply, make sure voltage corresponds to burner plate data. The connection diagram and start-up cycle are shown separately. For wiring from control box to burner, see the enclosed connection diagram. Pay particular attention to neutral and phase connections : never exchange them!. Vent air and impurities of gas pipe. Check gas pressure conforms to the limits stated on the burner plate when connecting a master gauge to the test port provided on the burner. Blower motor starts and pre-purging begins. Since pre-purging has to be carried out with the max. air delivery, the burner control circuit turns the air damper to the max. delivery position by the air servocontrol in approximately 30 seconds time. When the servocontrol is fully open, a signal to the electronic control unit starts the 66 (36 sec. LFL 1.333) seconds pre-purge cycle. At the end of the pre-purging time, the air servocontrol gets to the Low Flame position so that burner ignition is ensured at min.

output. Simultaneously the ignition transformer receives voltage and after 3 seconds (pre-ignition) opens the pilot gas valve. Fuel flows to the combustion head and ignites. Two seconds after pilot gas valves have opened, the ignition transformer is excluded from the circuit. In case of no ignition the burner goes to lock-out within two seconds. After 6 sec. open the working gas valve, governed by the gas firing butterfly valve. Now the burner is operating at the min. firing rate (about 30% of the max. firing rate). The air servocontrol runs at the Low Flame position and in case the temperature control has to be set at the max. output it goes to a fully open position of air damper and butterfly valve. During the burner-off periods the air damper closes up fully.

### ADJUSTING THE COMBUSTION PROCESS

**IMPORTANT:** to obtain the right adjustment of the combustion and thermal capacity it is important to analyze the reducts of combustion with the aid of suitable instruments. The combustion and thermal capacity adjustment is done simultaneously, together with the analysis of the products of combustion, making sure that the measured values are suitable and that they comply with current safety standards. On this matter, please refer to the table and figure below. **THESE OPERATIONS MUST BE DONE BY PROFESSIONALLY-QUALIFIED TECHNICIANS.**

### SIEMENS , Model LFL1.622-1.333 OPERATING CYCLE



The control box starts the burner fan, to carry out the prepurging of the combustion chamber, and checks the vent air pressure through the air pressure switch. At the end of prepurging, the ignition transformer cuts-in and generates

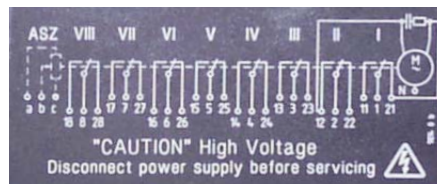
a spark between the electrodes. At the same time the two gas valves open (Vs safety valve and VI Low flame working valve). The total safety, in case of missed ignition or casual burner's flame-out, is granted by a ionisation probe which cuts-in and sets the burner shutdown within the safety time. In case of gas lack or a major pressure drop, the minimum air pressure switch shuts down the burner.

### SIEMENS SQM 50.481A2 AIR DAMPER MOTOR

Remove cover to gain access to the adjusting cams. The cams are to be adjusted through the suitable key provided for. Description:



- I - High flame opening position adjusting cam (Air)
- II - Limit switch for the air damper position at burner's shut down
- III - Min. flame opening position adjusting cam (Air).
- IV - Low flame opening position adjusting cam (Air)
- V - Not used cam
- VI - Not used cam
- VII - Not used cam
- VIII - Not used cam



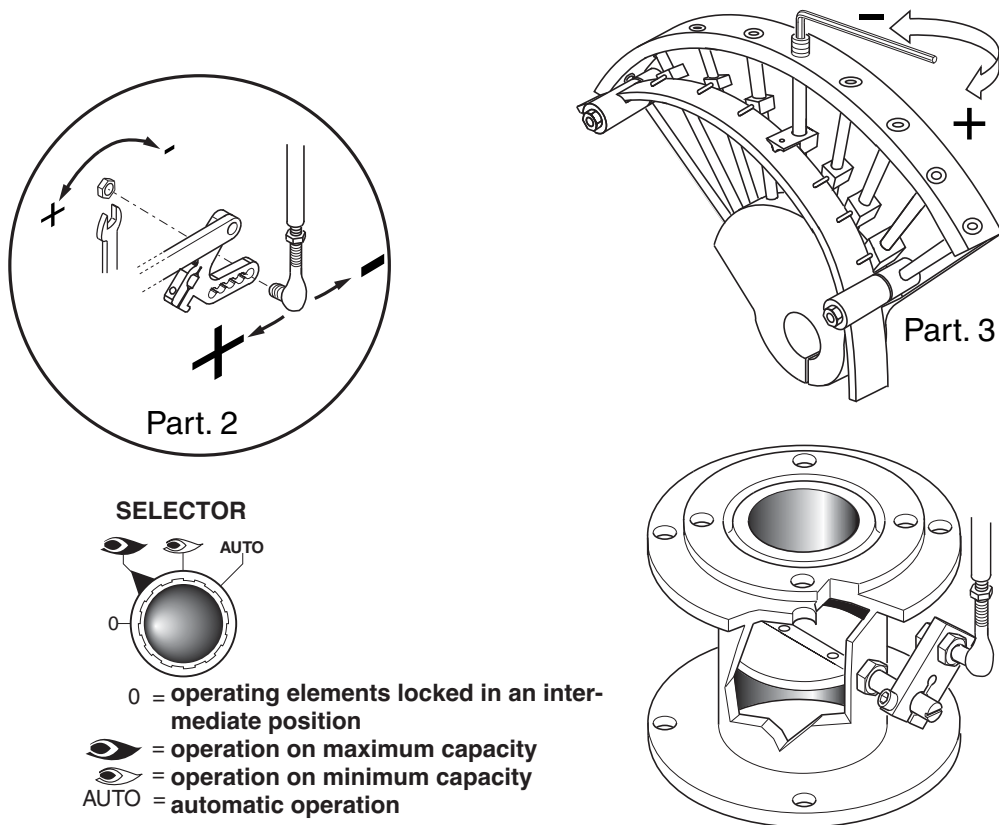
### CALCULATING THE BURNER CAPACITY

To calculate the burner's capacity in kW, proceed as follows: Check the gas flow rate (in liters) on the counter and the time of the reading in seconds.

Proceed with the calculation using the following :  $\frac{e}{\text{sec}} \times f = \text{kW}$

- e = Litres gas
- sec = Time in second
- f  $\begin{cases} G20 = 34,02 \\ G30 = 116 \\ G31 = 88 \end{cases}$

## AIR ADJUSTMENT



## ADJUSTING THE MINIMUM CAPACITY OF THE BURNER – AIR and GAS

Position the selector placed on the control panel on position 2 and proceed as follows:

Adjust the minimum gas flow rate using a suitable wrench, turn the butterfly valve until you reach the correct gas flow, as established by analyzing the combustion process.

## ADJUSTING THE MAXIMUM CAPACITY OF THE GAS

Position the selector, situated on the control panel, on position 1 and proceed as follows:

Adjusting the maximum gas flow rate (see figure on solenoid valve adjustments) or adjust the gas pressure in the governor.

## ADJUSTING THE MAXIMUM AIR FLOW RATE

Adjusting the maximum air flow rate (see figure, detail 2). Loosen the nut holding the air damper transmission rod; The correct air flow as established by analyzing the combustion process.

## ADJUSTING THE INTERMEDIATE BURNER CAPACITY

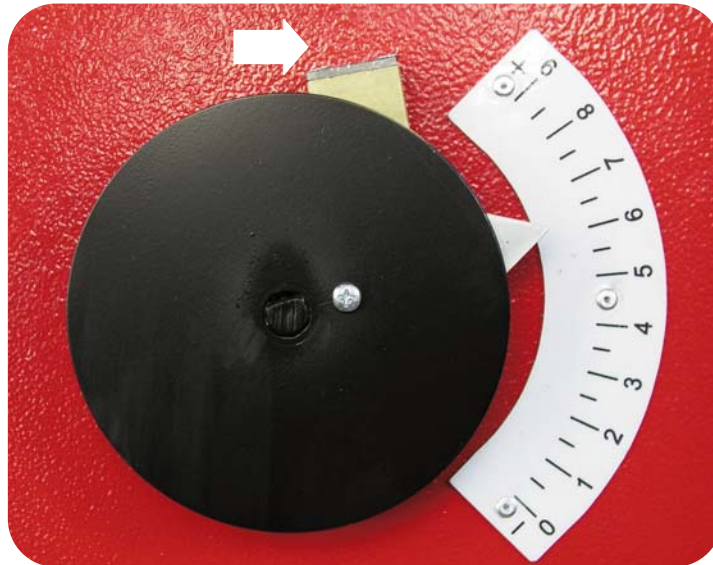
Using the selector, start the servomotor (closing or opening) and position on 0 to stop the stroke; the adjustment is made as outlined below. Repeat the operation for the other cam points.

Adjustment the intermediate gas flow rates (see figure, detail 3): - using a suitable Allen wrench, change the position of the cam guide blade; if you screw it down, the flow rate is reduced; if you unscrew it, the flow rate increases.

## COMBUSTION ADJUSTMENT

**WARNING:** In order to have a correct combustion and thermal output adjustments, these must be carried out together with a combustion analysis, to be executed through suitable devices, taking care that the values are the correct ones and are in accordance with the local safety regulations. The adjustments must be carried out by qualified and skilled technicians authorised by Ecoflam Bruciatori S.p.A.

## FIRING HEAD SETTING



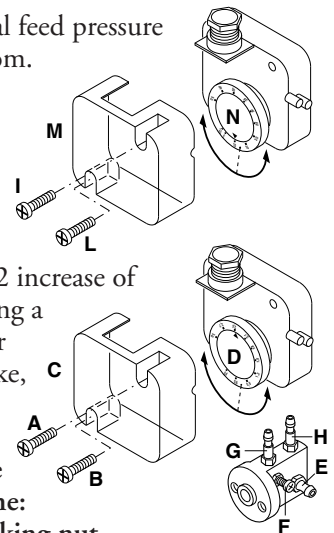
### ADJUSTMENT OF GAS MINIMUM PRESSURE SWITCH

Unscrew off and remove cover M. - Set regulator N to a value equal to 60% of gas nominal feed pressure (i.e. for nat. gas nom. pressure = 20 mbar, set regulator to a value of 12 mbar; for L.P.G. nom. pressure of G30/G31- 30/37 mbar, set regulator to a value of 18 mbar).Screw up cover M

### ADJUSTMENT OF THE AIR PRESSURE SWITCH

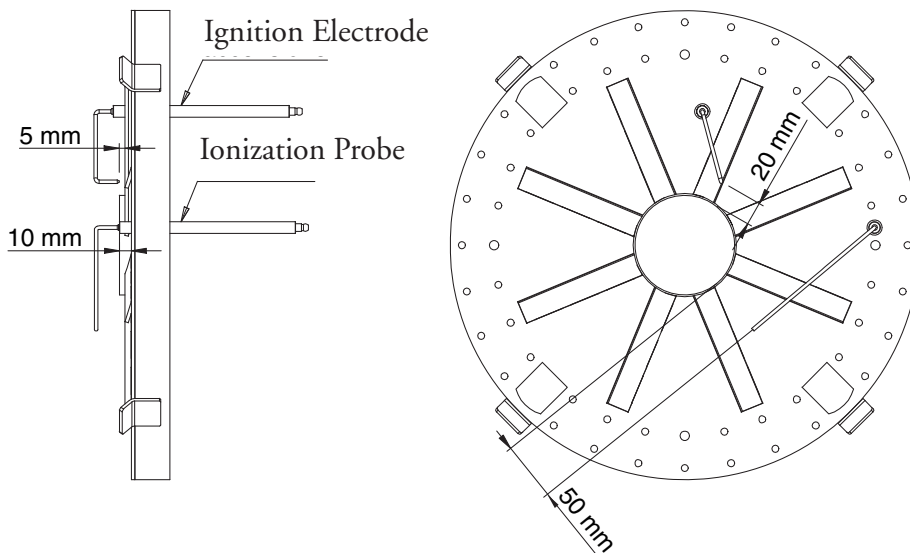
Unscrew screws A and B and remove cover C.- Set the pressure switch to the minimum by turning regulator D to position 1.

- Start the burner and keep in low flame running, while checking that combustion is correct. Through a small cardboard, progressively obstruct the air intake until to obtain a CO<sub>2</sub> increase of 0,5±0,8% or else, if a pressure gauge is available, connected to pressure port E, until reaching a pressure drop of 1 mbar (10 mm of W.G.). - Slowly increase the adjustment value of the air pressure switch until to have the burner lockout. Remove the obstruction from the air intake, screw on the cover C and start the burner by pressing the control box rearm button.



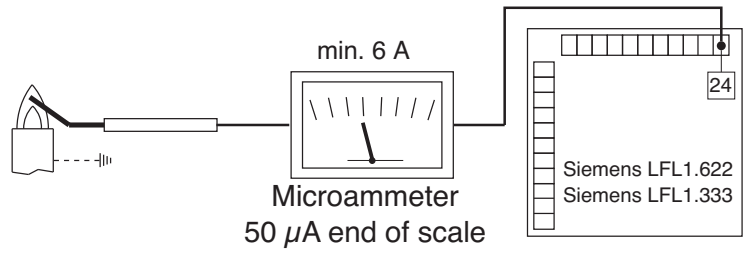
Note: The pressure measured at pressure port E must be within the limits of the pressure switch working range. If not, loose the locking nut of screw F and gradually turn the same: clockwise to reduce the pressure; counterclockwise to increase. At the end tighten the locking nut.

## IGNITION END IONIZATION ELECTRODES

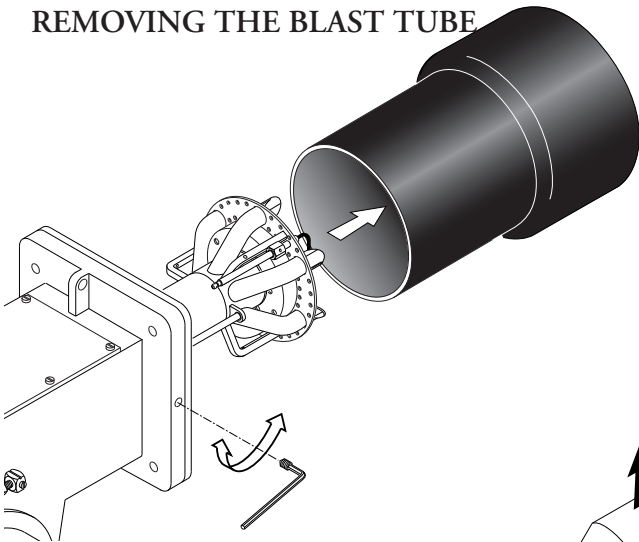


### IONIZATION CURRENT

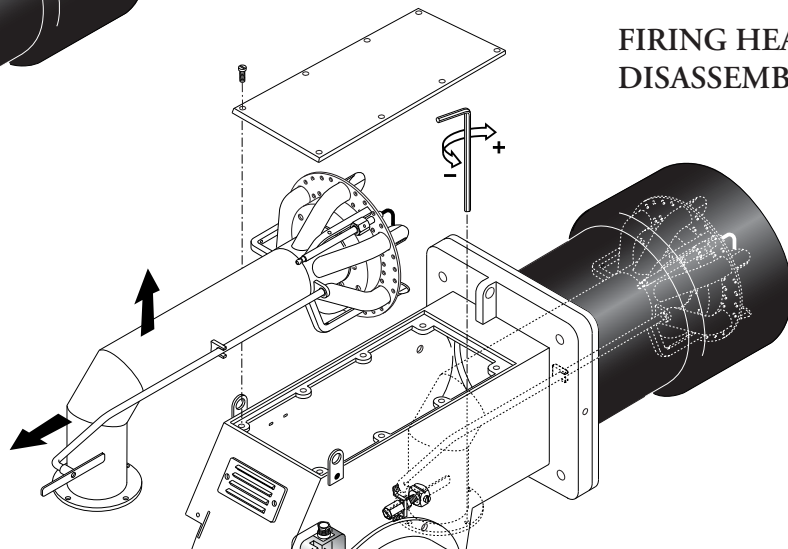
The ionization current is checked by inserting a microammeter with an end of scale of 50  $\mu\text{A}$  (d.c.) in series with the ionization probe. A faulty position of the electrode can lead to a reduction in the ionization current and cause a safety cut-out of the burner due to a flame detection failure. In this case, check the position of the electrode, its electric connection and the earthing of the burner. The ionization current is normally  $> 20 \mu\text{A}$ .



### REMOVING THE BLAST TUBE



### FIRING HEAD DISASSEMBLY





**TROUBLESHOOTING****ANNUAL CHECK**

The burner (combustion head, electrodes, etc.) must be checked regularly by an authorized technician, once or twice a year, depending on how much it is used. Before proceeding with the maintenance check-up on the burner, it is advisable to check the general condition of the burner and take the following steps: Disconnect the burner (remove the plug).

- Close the gas shut-off cock.
- Remove the cover from the burner, clean the fan and air intake.
- Clean the combustion head and check the position of the electrodes.
- Re-install the parts.
- Check the seal on the gas connectors.
- Check the state of the flue.
- Start the burner.
- Check the combustion parameters

**BEFORE TAKING ANY ACTION, CHECK:**

- that there is power in the circuit and the burner is connected;
- that the gas pressure is right and the gas shut-off cock is open;
- that the control systems are properly connected. If all these conditions have been satisfied, start the burner by pressing the reset button. Check the burner cycle.

**IF THE BURNER FAILS TO START:**

check the switch, the thermostats, the motor and the gas pressure.

**IF THE BURNER PROCEEDS WITH PREVENTILATION BUT CUTS OUT AT THE END OF THE CYCLE:**

check the air pressure and the fan. Check the air pressure switch.

**IF THE BURNER PROCEEDS WITH PREVENTILATION BUT DOES NOT LIGHT:**

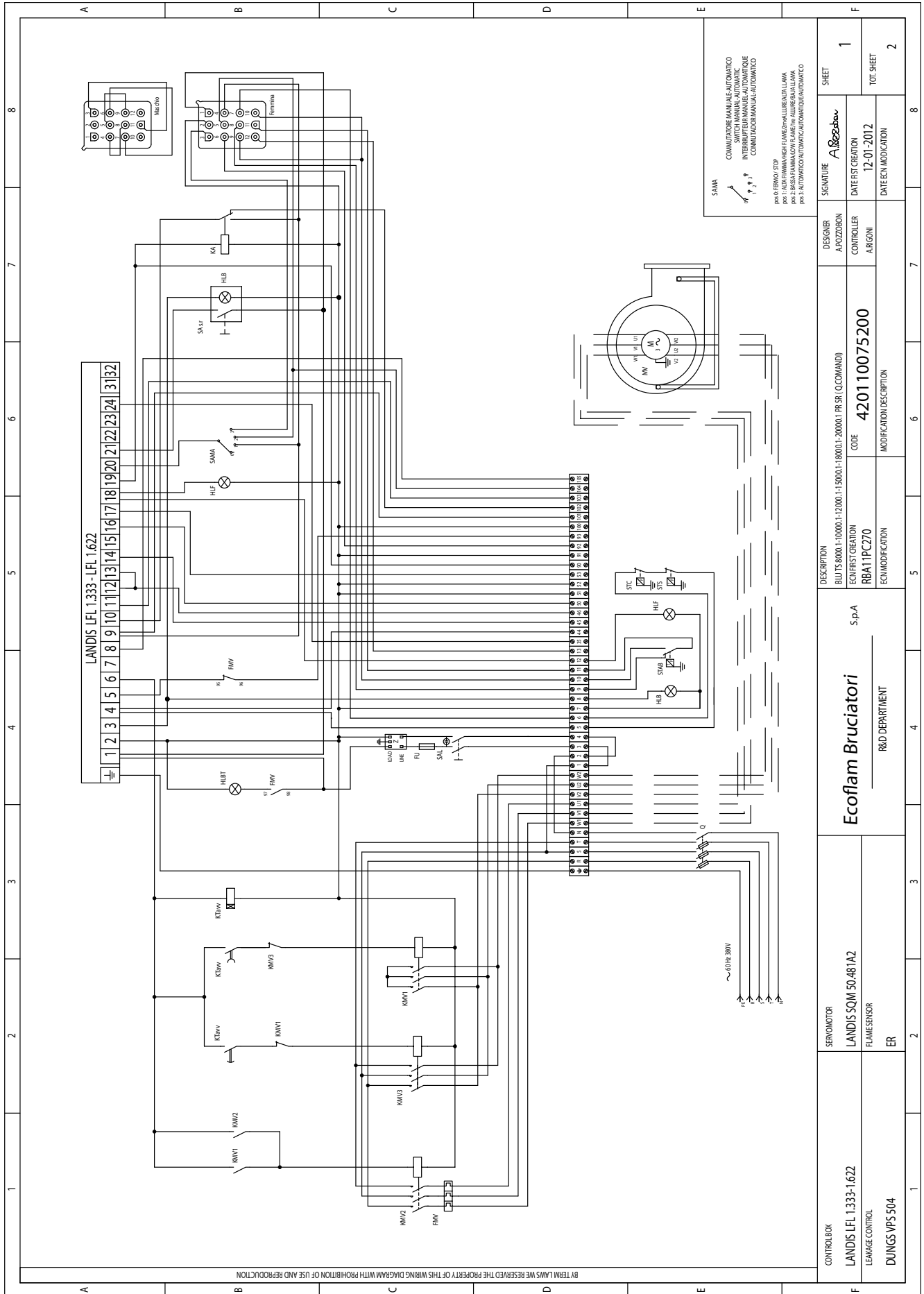
check the installation and position of the electrodes. Check the ignition cable.  
Check the ignition transformer. Check the safety device.

**IF THE BURNER LIGHTS BUT CUTS OUT AFTER THE SAFETY INTERVAL:**

check that the phase and neutral wires are connected correctly.  
Check the gas solenoid valve. Check the position and connection of the detector electrode.  
Check the detector electrode. Check the safety device.

**IF THE BURNER LIGHTS BUT CUTS OUT AFTER OPERATING FOR A FEW MINUTES:**

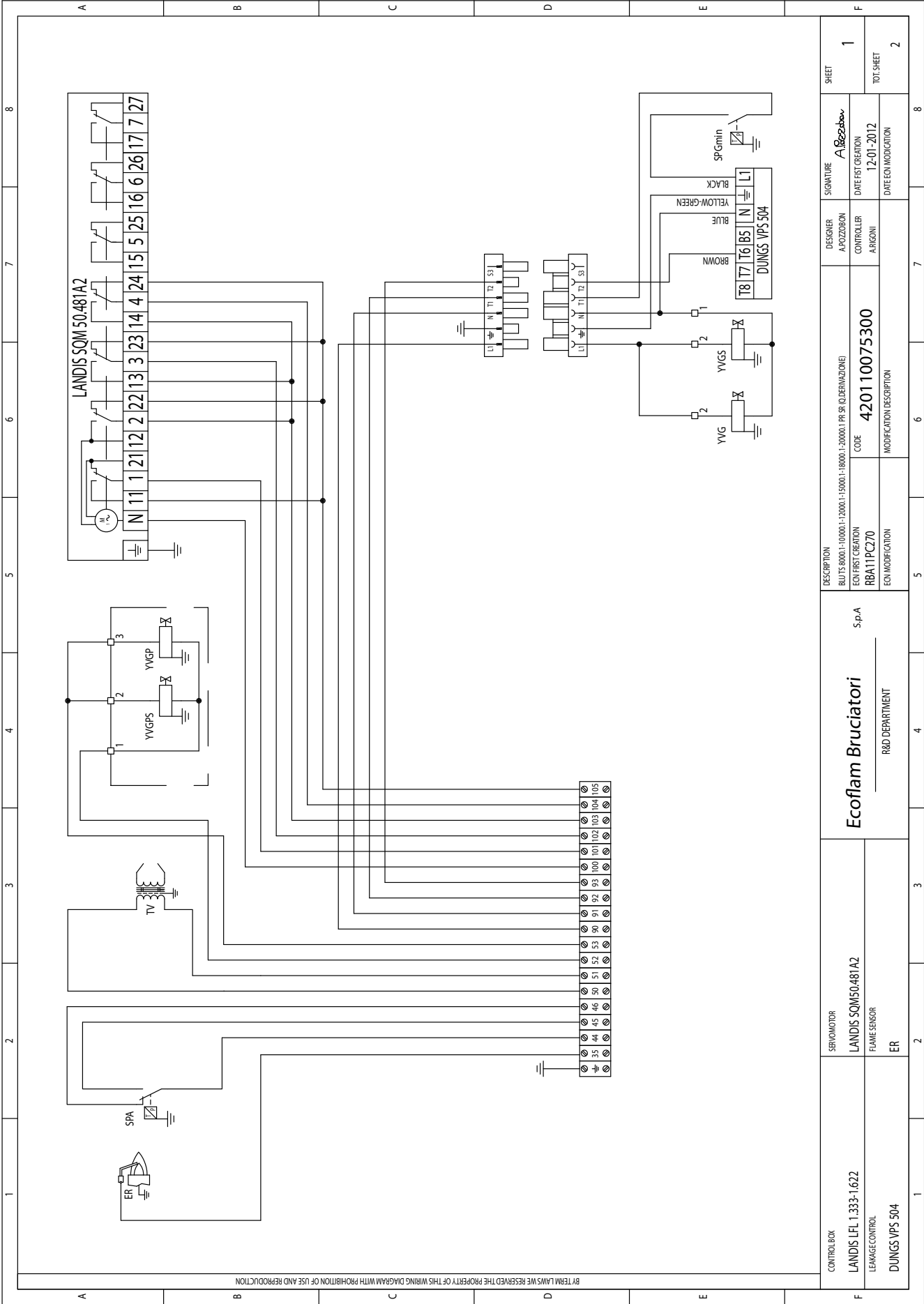
check the pressure regulator and gas filter. Check the gas pressure with a pressure gauge. Check the detector value (at least 6  $\mu$ A).



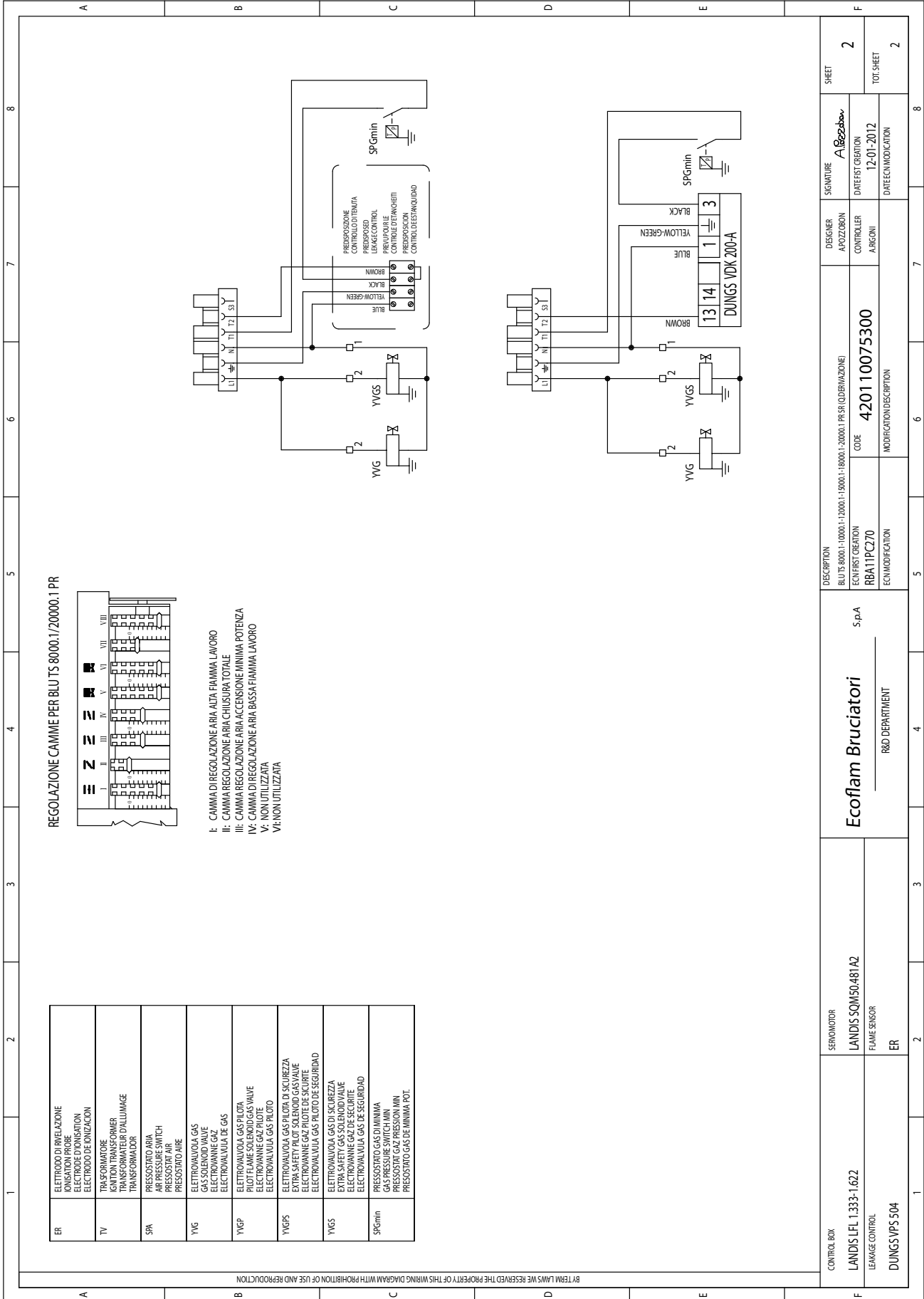
BY TERM LWS WE RESERVED THE PROPERTY OF THIS WIRING DIAGRAM WITH PROHIBITION OF USE AND REPRODUCTION

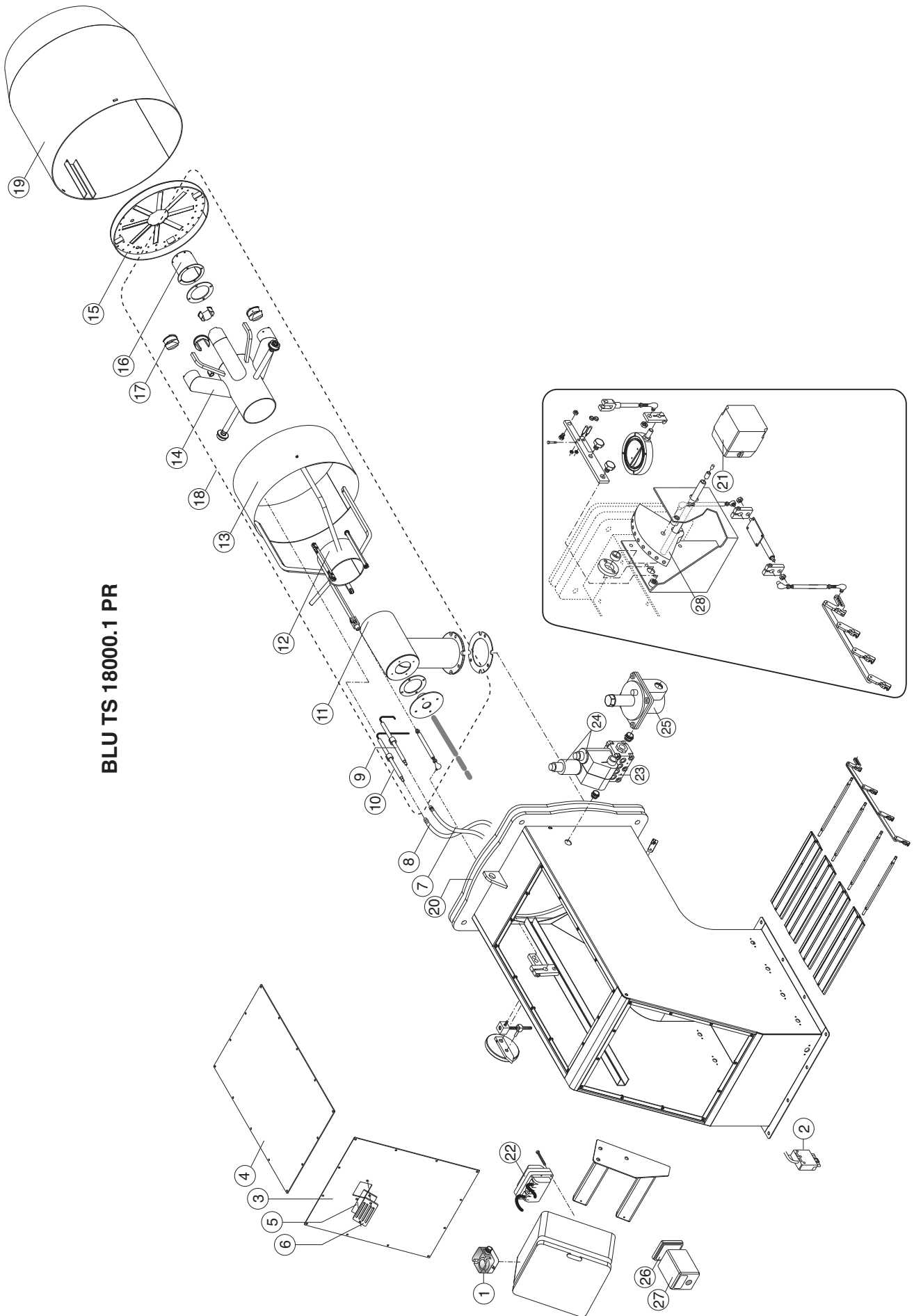
CONTROL BOX LANDIS LFL 1.333-1.622 LEAKAGE CONTROL DUNGS VPS 504	SERVO MOTOR LANDIS SOM 50.481A2 FLAME SENSOR ER	Ecoflam Bruciatori S.p.A R&D DEPARTMENT		DESCRIPTION BLU TS 8000.1-10000.1-12000.1-15000.1-18000.1-20000.1 PR SR (COMANDI) ECN FIRST CREATION RBA11PC270	CODE 420110075200	DESIGNER A. ROZZON	DESIGNER SIGNATURE <i>A. Rozzon</i>	SHEET 1
	MODIFICATION DESCRIPTION		ECN MODIFICATION	DATE FIRST CREATION 12-01-2012	DATE ECN MODIFICATION	CONTROLLER A. REGION	DATE ECN MODIFICATION	TOT SHEET 2

A	B	C	D	E	F
1	2	3	4	5	6
7	8	9	10	11	12
Q	Z	FU	MV	FMV	HLB
SAL	STC	STS	HLBT	SAMA	STPB
HLE	KA	KWT	KW3	SA.sr	K.Bw.
INTERITTORE GENERALE CON FUSIBILE MAIN SWITCH WITH FUSE INTERRUPTEUR GENERAL AVEC FUSIBLE INTERRUPTOR GENERAL CON FUSIBLE	FILTRO ANTISTURBO ANTI-KICKING FILTER FILTRO ANTIPARASTES FILTER OF PROTECTION ANTIDISTURBO	FUSIBILE FUSIBLE FUSIBLE FUSIBLE	MOTORE VENTILATORE MOTOR FAN MOTEUR VENTILATEUR MOTOR VENTILADOR	RELE TERMICO MOTORE VENTILATORE MOTOR THERMAL RELAY (FAN MOTOR) RELAIS THERMIQUE MOTEUR VENTILATEUR RELE TERMICO MOTOR VENTILADOR	LAMPADA DI BLOCCO LOCK-OUT LAMP LAMPE DE SECURITE ESPIA DE BLOQUEO
CONIATTORE MOTORE VENTILATORE REMOTE CONTROL SWITCH (FAN MOTOR) CONTACTEUR MOTEUR VENTILATEUR TELEINTERRUPTOR MOTOR VENTILADOR	INTERRITTORE DI LINEA WORKING SWITCH INTERRUPTEUR DE LIGNE INTERRUPTOR DE LINEA	THERMOSTATO CALDAIA SAFETY THERMOSTAT THERMOSTAT DE SECURITE THERMOSTATO DE SEGURIDAD	LAMPADA DI BLOCCO TERMICO THERMAL LOCK-OUT LAMP LAMPE D THERMAL DE SECURITE ESPIA DE BLOQUEO RELE TERMICO	COMIUTATORE MANUALE-AUTOMATICO SWITCH (MANUAL-AUTOMATIC) INTERRUPTEUR MANUEL-AUTOMATIQUE CONIUDADOR MANUAL-AUTOMATICO	THERMOSTATO DI ALTA/BASSA FIAMMA HIGH-LOW FLAME THERMOSTAT THERMOSTAT GRANDE-PETITE ALLURE THERMOSTATO DE ALTA-BAJA LLAMA
LAMPADA DI FUNZIONAMENTO WORKING LAMP LAMPE DE FONCTIONNEMENT ESPIA DE FUNCIONAMIENTO	RELE RELAY RELAIS RELE	CONIATTORE DI STELLA STAR CONTACTOR CONTACTEUR DE TOILE CONIATTORE DI STELLA	CONIATTORE DI TRIANGOLO DELTA CONTACTOR CONTACTEUR TRIANGLE CONIATTORE DI TRIANGOLO	PULSANTE DI SBLOCCO A RINNECCHIATURA RESET LOCK-OUT BUTTON BOITON DE DEBLOCAGE DU COFFRE DE SECUR.	TEMPORIZZATORE ELETTRONICO AVIATO STELLA TRIANGOLO ELECTRONIC TIMER STARTING STAR TRIANGLE TEMPORIZADOR ELECTRONICO PREPARADO PARA TEMPORIZADOR ELECTRONICO PREPARADO PARA
CONTROL BOX LANDIS UFL 1.333-1.622	SERVOMOTOR LANDIS SQM 5048 IA2	LEAKAGE CONTROL DUNGS VPS 504	Ecoflam Bruciatori S.p.A. R&D DEPARTMENT	DESCRIPTION BLU TS 8000.1-10000.1-12000.1-15000.1-18000.1-20000.1 PR SR (C.COMANDI) ECN FIRST CREATION RBA11PC270 ECN MODIFICATION	DESIGNER A.POZZOBON CONTROLLER A.RIGNI
SIGNATURE A. Pozzobon	DATE FIRST CREATION 12-01-2012	DATE ECN MODIFICATION	CODE 420110075200	MODIFICATION DESCRIPTION	SHEET 2
TOT. SHEET 2	8	7	6	5	4



CONTROL BOX	SERVO MOTOR	DESCRIPTION	DESIGNER	SIGNATURE	SHEET
LANDIS LFL 1.333-1.622	LANDIS SOM 50.481A2	BLU TS 6000.1-10000.1-12000.1-15000.1-18000.1-20000.1 PR SR (D. DERIVAZIONE)	A. POZZORON	A. Pozzoron	1
FLAME CONTROL	FLAME SENSOR	ECN FIRST CREATION	CONTROLLER	DATE FIRST CREATION	TOT. SHEET
DUNGS VPS 504	ER	RBA11PC270	ARIGONI	12-01-2012	2
		ECN MODIFICATION	MODIFICATION DESCRIPTION	DATE ECN MODIFICATION	





N°	DESCRIPTION		BLU TS 18000.1 PR
			code
1	AIR PRESSURE SWITCH	LGW10A2P	65323047
2	WIELAND PLUG	6 pin	65322072
3	DOWN COVER		65325031
4	UP COVER		65325024
5	GLASS		65320487
6	PEED WINDOM FRAME		65320488
7	IGNITION CABLE		65325345
8	IONIZATION CABLE		65325345
9	IGNITION ELECTRODE		65324528
10	IONIZATION PROBE		65324529
11	GAS PIPE SUPPORT		65324532
12	TRUCK		65324908
13	WAISTBAND		65324470
14	FIRING HEAD		65324534
15	DISC		65324141
16	TOOTH		65321611
17	DIFFUSER		65324535
18	INNER ASSEMBLY		65325365
19	BLAST TUBE		65324477
20	GASKET ISOMART		65324478
21	AIR DAMPER MOTOR	SQM50.481A2	65322902
22	TRANSFORMADOR	COFI 820 PM 220/60	65323229
23	GAS VALVE	KROMSCH.VCS 125R-LW	65324722
24	COIL	KROMSCH.VCS 125R-LW	65324623
25	GAS GOVERNOR/FILTER	FG1B 25	65325214
26	CONTROL BOX BASE	SIEMENS	65320091
27	CONTROL BOX	SIEMENS LFL1.333	65320031
28	GAS CAM GROUP		65322356

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