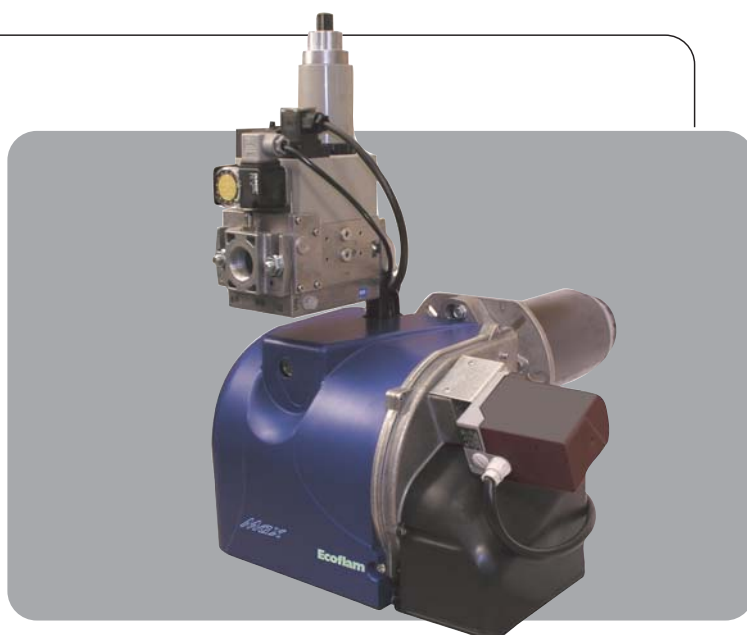


- IT BRUCIATORI DI GAS AD ARIA SOFFIATA
- EN BLOWN AIR GAS BURNERS
- FR BRULEURS GAZ A AIR SOUFFLE
- ES QUEMADORES DE GAS DE AIRE SOPLADO
- RU ДУТЬЕВЫЕ ГАЗОВЫЕ ГОРЕЛКИ

Ecoflam

CE-0085



MAX GAS 170 P

MAX GAS 170 P AB

MAX GAS 250 P

MAX GAS 250 P AB

Low Nox



420010268506

420010268506

20.06.2011

OPERATING FEATURES					
Models : Max Gas 170 -250		Gas family			
		G20	G25	G31	G30
Max. gas pressure*	mbar	360	360	362	360
Min. gas pressure*	mbar	16	16	30	30
Fuel L.C.V.	kcal/Nm ³	8.570	7.370	22.260	29.320
Model : Max Gas 170					
Portata gas	max.	17,60 Nm ³ /h	20,47 Nm ³ /h	6,78 Nm ³ /h	5,14 Nm ³ /h
	min.	5,53 Nm ³ /h	6,43 Nm ³ /h	2,13 Nm ³ /h	1,62 Nm ³ /h
Model : Max Gas 250					
Gas flow rate	max.	24,14 Nm ³ /h	28,19 Nm ³ /h	9,29 Nm ³ /h	7,06 Nm ³ /h
	min.	5,53 Nm ³ /h	6,43 Nm ³ /h	2,13 Nm ³ /h	1,62 Nm ³ /h

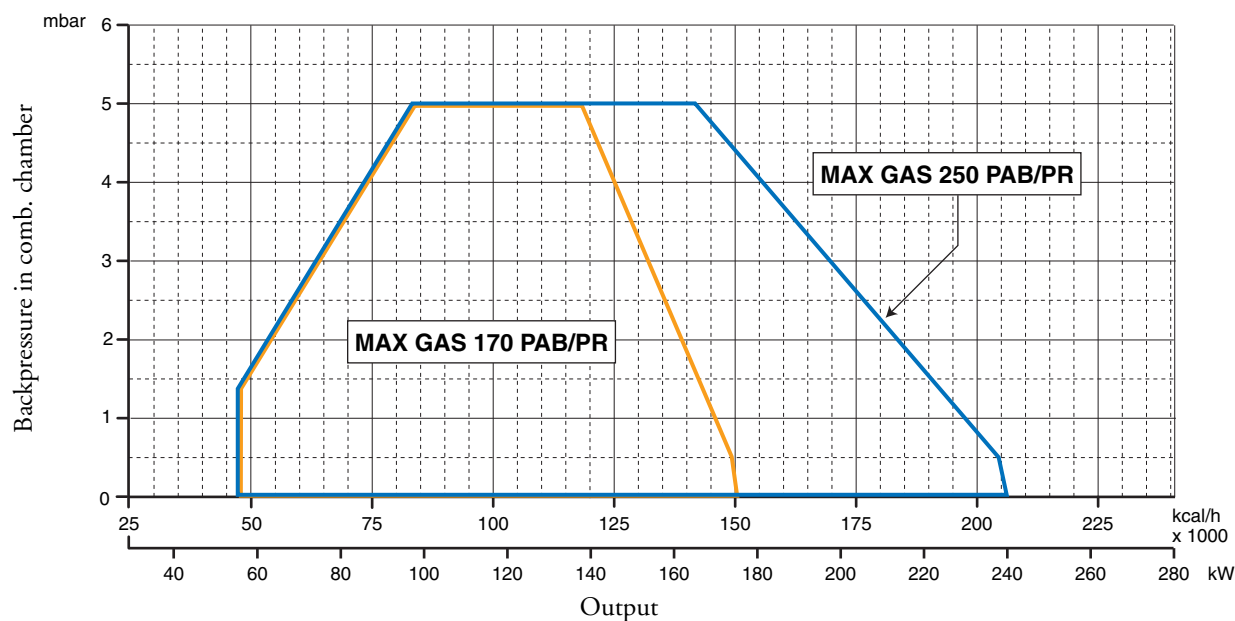
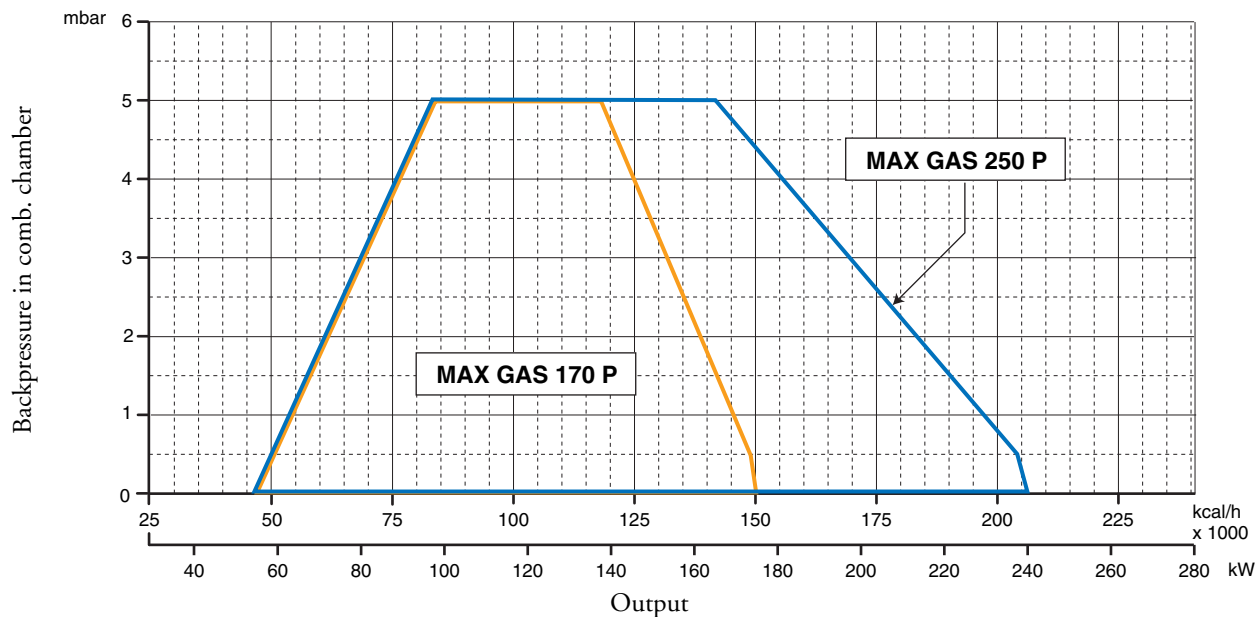
* : Minimum/maximum gas inlet pressures depend by the gas train matched to the burner. The values are written on the gas trains manual.

TECHNICAL DATA

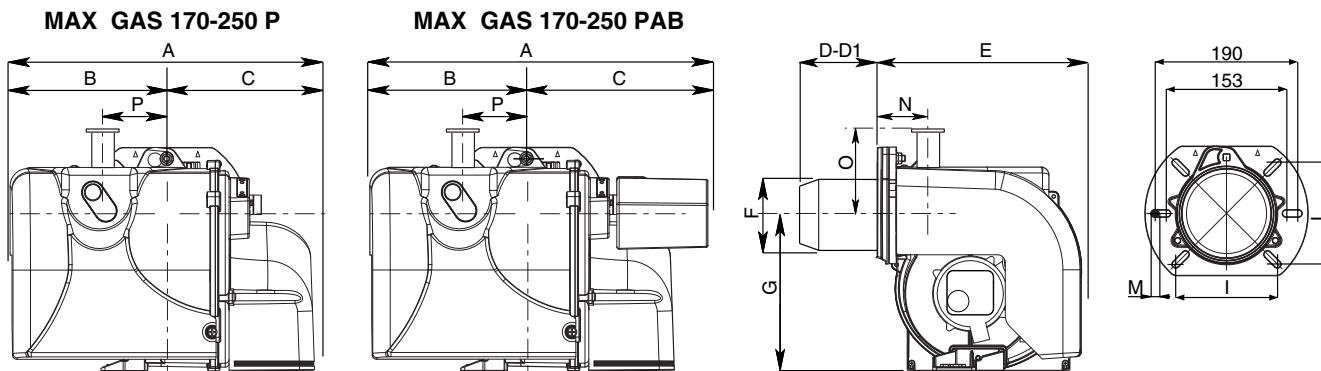
		Max Gas 170 P	Max Gas 170 P AB	Max Gas 250 P	Max Gas 250 P AB
Termal power max.	kW	175	175	240	240
	kcal/h	150.860	150.860	206.900	206.900
Termal power min.	kW	55	55	55	55
	kcal/h	47.410	47.410	47.410	47.410

Gas family :	AT	I _{2H} , I _{3B/P}	BE	I _{2E(R)B} , I _{3P}	DE	I _{2E} , I _{3B/P}	DK	I _{2H} , I _{3B/P}	SE	I _{2H} , I _{3B/P}
	ES	I _{2H} , I _{3P}	FI	I _{2H} , I _{3B/P}	FR	I _{2Er} , I _{3B/P}	GB	I _{2H} , I _{3B/P}	NL	I _{2L} , I _{3B/P}
	GR	I _{2H} , I _{3B/P}	IE	I _{2H} , I _{3B/P}	IT	I _{2H} , I _{3B/P}	PT	I _{2H} , I _{3B/P}		

WORKING FIELDS



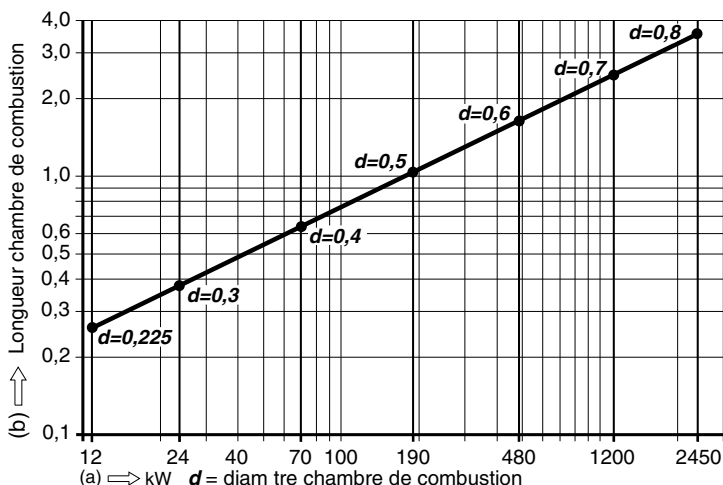
OVERALL DIMENSIONS



MODEL	A	B	C	D	D1	E	F	G	I	L	M	N	O	P
MAX GAS 170 P	392	202	190	180	280	280	125	201	106/130	106/130	M8	74	52	104
MAX GAS 170 PAB	452	202	250	180	280	280	125	201	106/130	106/130	M8	74	52	104
MAX GAS 250 P	392	202	190	180	280	280	125	201	106/130	106/130	M8	74	52	104
MAX GAS 250 PAB	452	202	250	180	280	280	125	201	106/130	106/130	M8	74	52	104

D = SHORT HEAD D1= LONG HEAD

Installation must be carried out in compliance with the local provisions



The burners have been certified in combustion chambers according to EN 676 standards. Consult the burner manufacturer if the combustion chamber of the boiler in which the burner is to be installed has smaller dimensions.

L'installazione deve essere fatta in conformità alle disposizioni locali.

STARTING-UP THE BURNER

PRELIMINARY CHECKS

Before starting up the boiler check the following: - gas type and feed pressure; - gas valves closed; - the seals in the pipe fittings; - gas pipe breather and input pressure; - that the cable complies with the diagram and the phase and neutral wires correspond; - that the burner shuts down when the boiler thermostat opens; - the seal of the boiler furnace which prevents air from entering; - the seal on the flue-boiler pipe fitting; - the condition of the flue (sealed, free from blockage, etc). If all these conditions are present, start the burner. The control device starts the motor to carry out prewashing of the combustion chamber. During this prewash period (about 30 seconds) the device checks that air pressure is correct via the air pressure switch. At the end, it supplies power to the transformer and opens the gas valves. The flame must be lit and stabilize within 3 seconds, which is the device's safety time limit. Check to ensure the flame is lit before placing any control instrument in the flue. Adjust and check the gas flow necessary for the boiler at the meter. Adjust the air flow according to the gas flow to obtain correct combustion.

IMPORTANT ADVICE

All adjustable parts must be fixed by the installer after making adjustments. Check flue combustion after each adjustment. The CO₂ values must be approx. 9.7 (G20) 9.6 (G25) 11.7 (G30) 11.7 (G31) axld the CO must be less than 75 ppm.

Adjusting the gas flow rate at the ignition for burners MAX GAS 170-250

The thermal power at the ignition, for such a burners, must be smaller than 120 kW or else than the ratio between the rated thermal power and control box's safety time (ignition time is assumed equal to safety time, i.e. 3 seconds). The adjustment of thermal power at the ignition is made by the manufacturer, anyhow, should it be necessary to intervene on such an adjustment, proceed as follows: - check that the thermal power of the burner at full running is the correct

GAS	F
G20 (nat.gas)	34,02
G25	-
G30 (buthane)	-
G31 (propane)	88

one. - With the burner switched off, disconnect the flame detection cable from relevant electrode, so as to make the valve to automatically shut off at the ignition, after the safety time. - Make a reading on the gas meter. - Start the burner and wait for the burner's lock out, after the repetition of the ignition sequence. - Make a second reading on the meter, and note the number of delivered litres. - The delivered thermal power, at the ignition, will then be equal to the ratio, between the delivered litres and the safety time, multiplied by the F factor (as function of the type of gas used) read on the table at the side. If the value thus obtained is higher than 120 kW it shall be necessary to reduce the gas valve's initial flow rate. At the end, reconnect the flame detection cable to its relevant electrode. **NOTE:** should it be difficult to measure the quantity of delivered litres of gas, due to the particular meter's dial, it is possible to repeat, sequentially, the above steps many times, so as to reach a significant amount of gas volume. In such a case, the thermal power at the ignition shall be obtained by multiplying the ratio, between the amount of delivered litres and the number of cumulated safety times (i.e. the value of the safety time multiplied by the number of ignitions) by the F factor. See the following examples: Example A: MAX GAS 170 burner, nat. gas; rated thermal power of 175 kW; safety time of 3 secs; a sequence of 4 ignitions is made, for a total amount of 41 delivered litres. The thermal power at the ignition, in kW, shall be: $41 / (3 \times 4) \times 34,02 = 116$ kW and therefore correct, being smaller than 120 kW.

CALCULATION OF WORKING OUTPUT OF THE BURNER

To calculate the burner's working output, in kW, proceed as follows:

- Check at the meter the quantity of supplied litres and the duration, in seconds, of the reading, then calculate the burner's output through the following formula:

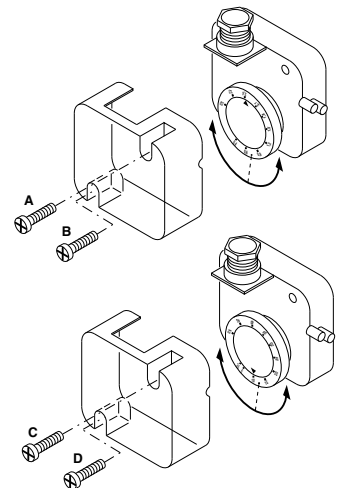
$$\frac{e}{s} \times f = \text{kW}$$

e = Litres of gas
 s = Time in seconds
 f

G20 = 34,02
G25 = 29,25
G30 = 116
G31 = 88

ADJUSTING THE AIR PRESSURE SWITCH

The air pressure switch must be adjusted so that an insufficient air flow does not allow the CO value to exceed 1% in volume. After having adjusted the gas flow and obtained optimum combustion ($CO_2 = 9.5$ to 9.8% and a CO value of less than 75 ppm), the air pressure switch must be adjusted. Remove the cover with the burner operating, cover the air intake progressively with a piece of cardboard to obtain a value of $CO_2 = 10.8$ (G20-G25) > 13 (G30-G31) and a CO value of less than 5,000 ppm. Adjust the air pressure switch until the burner shuts down. Remove the cardboard from the air intake and start up the burner again. Replace the cover.

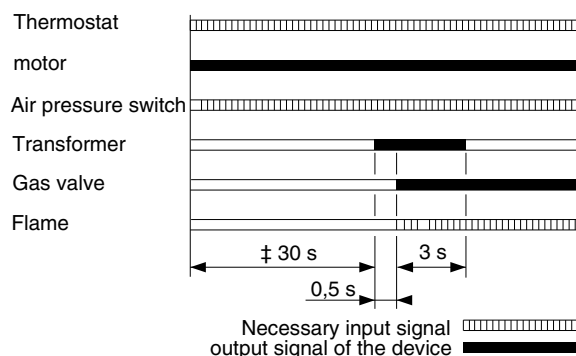


ADJUSTING THE GAS PRESSURE SWITCH

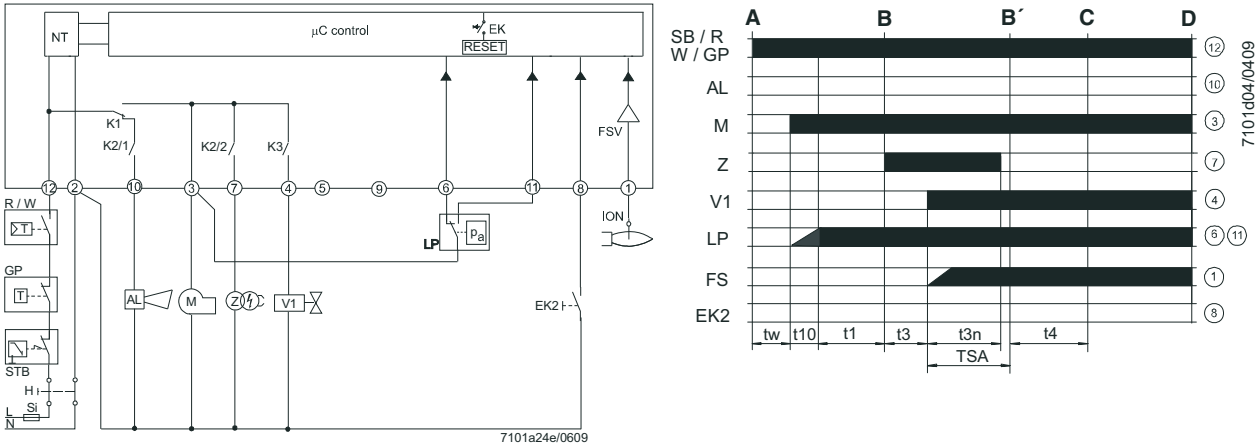
Adjust the pressure switch to 50% of the rated pressure of the gas used.

RARED PRESSURE: G 20 = 20 mbar G 25 = 25 mbar
 G 30 = 29 mbar G 31 = 37 mbar

(LANDIS & STAEEFA LGB 21/LGB 22) UP CYCLE



Connection diagram and control sequence of LME11...

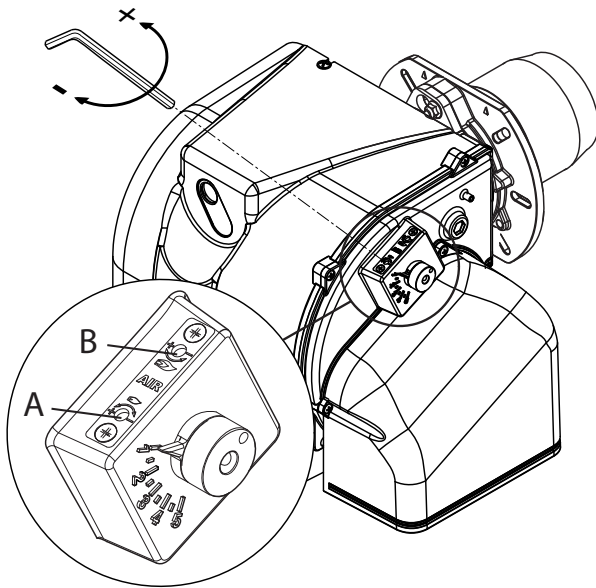


- AGK25... PTC resistor
- AL Error message (alarm)
- V... Fuel valve
- CPI Closed Position Indicator
- DBR... Wire link
- EK Lockout reset button (internal)
- EK2 Remote lockout reset button
- ION Ionization probe
- FS Flame signal
- FSV Flame signal amplifier
- GP Pressure switch
- H Main switch
- HS Auxiliary contactor, relay
- K1...4 Internal relays
- KL Low-fire
- LK Air damper
- LKP Air damper position
- LP Air pressure switch
- LR Load controller
- M Fan motor
- R Control thermostat / pressurestat
- STB Safety limit thermostat
- Si External pre-fuse
- t Time
- W Limit thermostat / pressure switch
- Z Ignition transformer
- ZV Pilot gas valve
- A Start command (switching on by «R»)
- B-B Interval for establishment of flame
- C Operating position of burner reached
- C-D Burner operation (generation of heat)
- D Controlled shutdown by «R»
- t1 Prepurge time
- t3 Preignition time
- t3n Postignition time
- t4 Interval between ignition «Off» and release of «V2»
- t10 Specified time for air pressure signal
- TSA Ignition safety time
- tw Waiting time

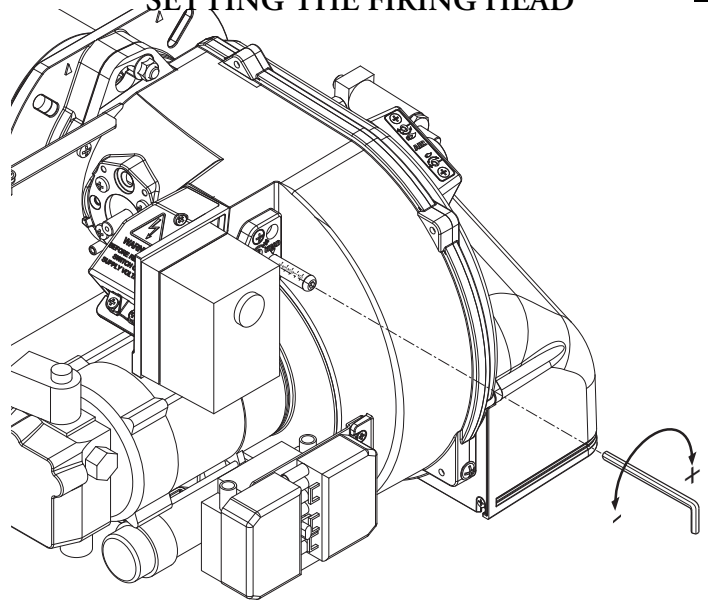
Color code table for multicolor signal lamp (LED)		
Status	Color code	Color
Waiting time «tw», other waiting states	○	Off
Ignition phase, ignition controlled	● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○	Flashing yellow
Operation, flame o.k.	□	Green
Operation, flame not o.k.	□ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○	Flashing green
Extraneous light on burner startup	□ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲	Green-red
Undervoltage	● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲	Yellow-red
Fault, alarm	▲	Red
Error code output (refer to «Error code table»)	▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○ ▲ ○	Flashing red
Interface diagnostics	▲ ▲	Red flicker light
Legend:	Steady on	
	▲ Red □ Green ○ Off ● Yellow	

Error code table		
Red blink code of signal lamp (LED)	«AL» at term. 10	Possible cause
2 blinks	on	No establishment of flame at the end of «TSA» - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition equipment
3 blinks	on	«LP» faulty - Loss of air pressure signal after «t10», - «LP» welded in normal position
4 blinks	on	Extraneous light when burner is started up
5 blinks	on	Time out «LP» - «LP» welded in working position
6 blinks	on	Free
7 blinks	on	Too many losses of flame during operation (limitation of the number of repetitions)- Faulty or soiled fuel valves. - Faulty or soiled flame detector - Poor adjustment of burner.
8 blinks	on	Free
9 blinks	on	Free
10 blinks	off	Wiring error or internal error, output contacts, other faults.
14 blinks	on	CPI contact not closed

AIR ADJUSTMENT Max Gas 170-250 P



SETTING THE FIRING HEAD



To adjust air flow, turn the screw A as required. To reduce output, turn screw clockwise, to increase it turn screw counterclockwise. **Note:** screw B not used.

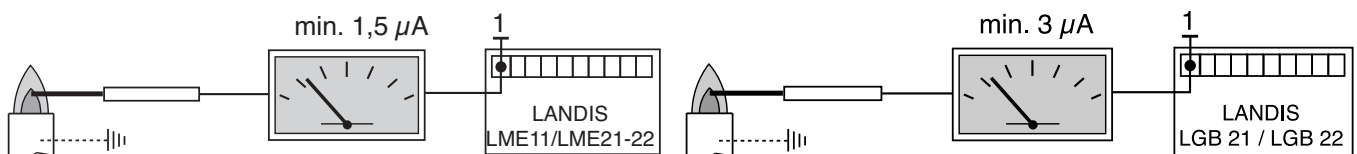


AIR SERVO MOTOR (SIEMENS SQN 75) MAX GAS 170-250 PAB

Remove cover to enter the adjusting cams. Adjust cams through the suitable key (on issue) and a screwdriver.

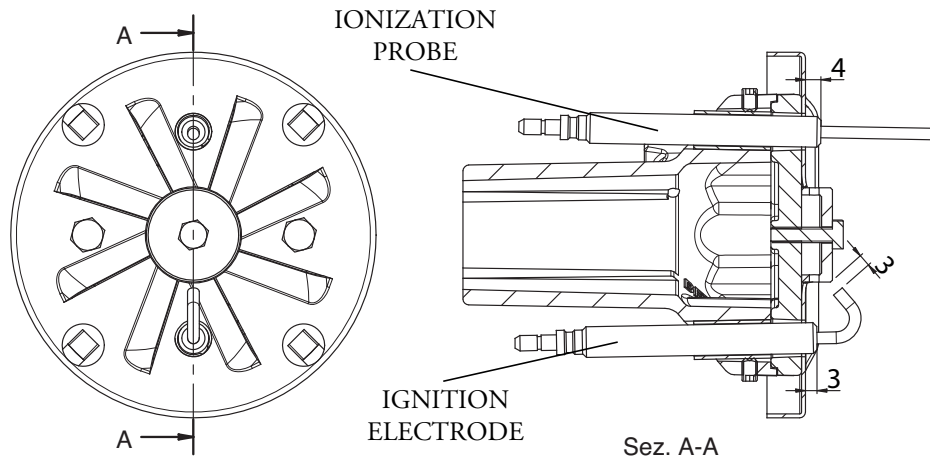
- I - Adjusting cam (BLUE) for air damper position on burner's shutdown (total close 0°).
- II - Adjusting cam (ORANGE) for opening position in ignition and Low Flame (by the screwdriver).
- III - Adjusting cam (RED) for opening position in High Flame (max. output).
- IV - Adjusting cam (BLACK) to allow the opening of High flame solenoid valve.

FLAME DETECTION SYSTEM CHECK

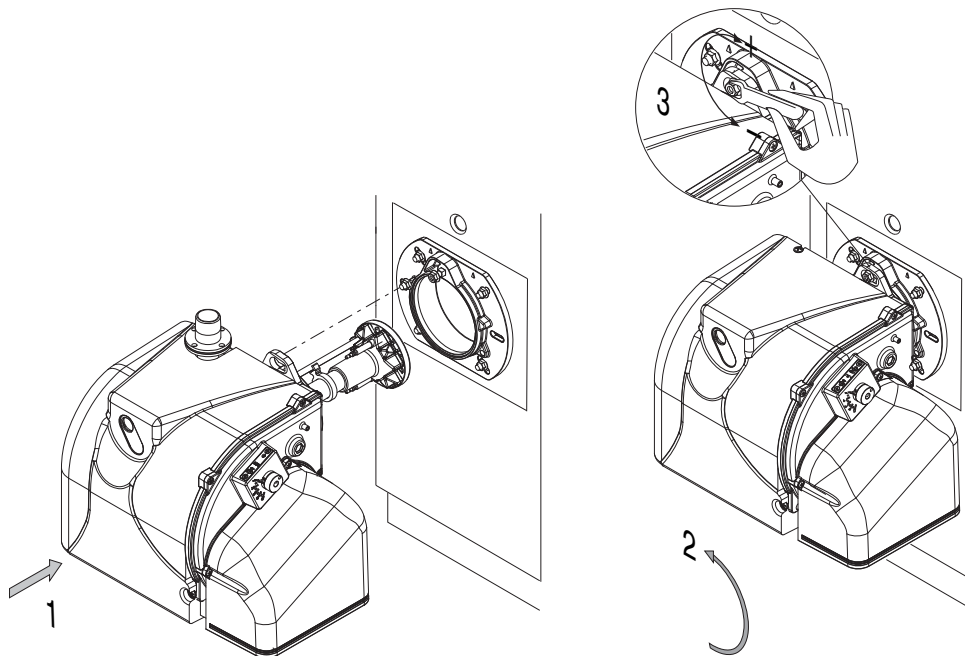


With the burner switched off, connect a DC microammeter with a 0÷50 or 0÷100 µA dial. When the burner is running, and is properly adjusted, the value read must be steady and never be smaller than 1,5 µA (LME 11/21) and 3 µA (LGB 21/22).

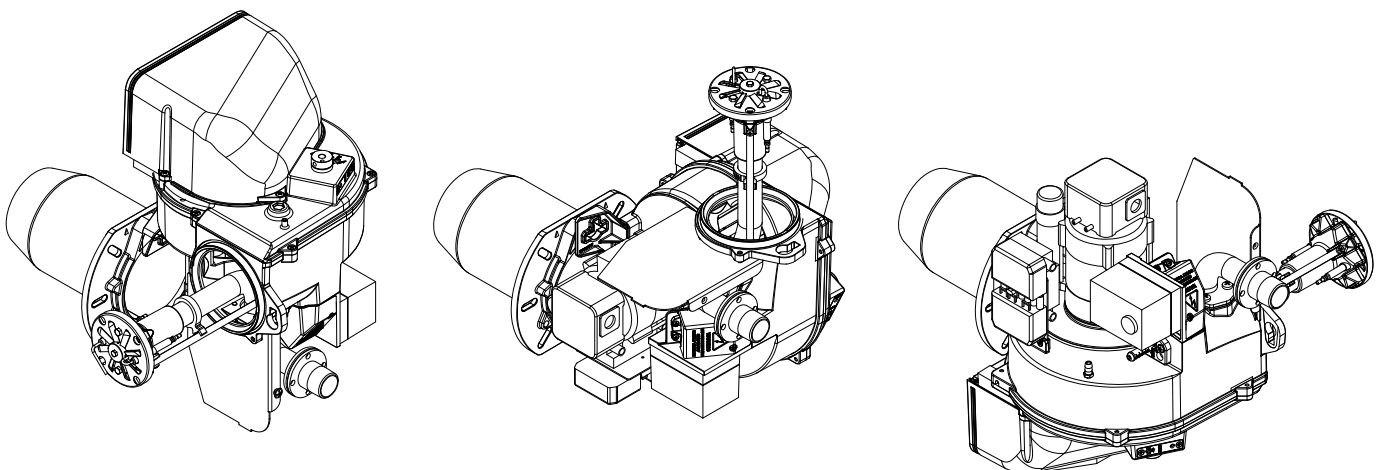
POSITION OF ELECTRODES



MOUNTING TO THE BOILER



TUBE DISASSEMBLY



MAINTENANCE

YEARLY INSPECTION

Periodic inspection of the burner (combustion head, electrodes, etc.) must be carried out by authorised personnel once or twice a year, depending of use. Before carrying out maintenance inspection on the burner, it is advisable to check its general condition and carry out the following operations:

- Disconnect the burner from the power supply (remove the plug).
- Close the gas cock.
- Remove the burner cover, clean the fan and air intake.
- Clean the combustion head and check the position of the electrodes.
- Re-assemble the parts.
- Check the seal on the gas pipe fittings.
- Check the flue.
- Restart the burner.
- Check the combustion parameters ($CO_2 = 9.5$ to 9.8), ($CO =$ less than 75 ppm)

BEFORE EACH INTERVENTION CHECK;

- That the system is supplied with power and the burner connected.
- That the gas pressure is correct and the gas cock open.
- That the control systems are correctly connected.

If all these conditions are present, start the burner by pressing the release button. Check the burner cycle.

THE BURNER WILL NOT START;

- Check the switch, thermostats, motor, gas pressure.

THE BURNER PREVENTILATES AND LOCKS AT THE END OF THE CYCLE:

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

THE BURNER PREVENTILATES AND WILL NOT IGNITE:

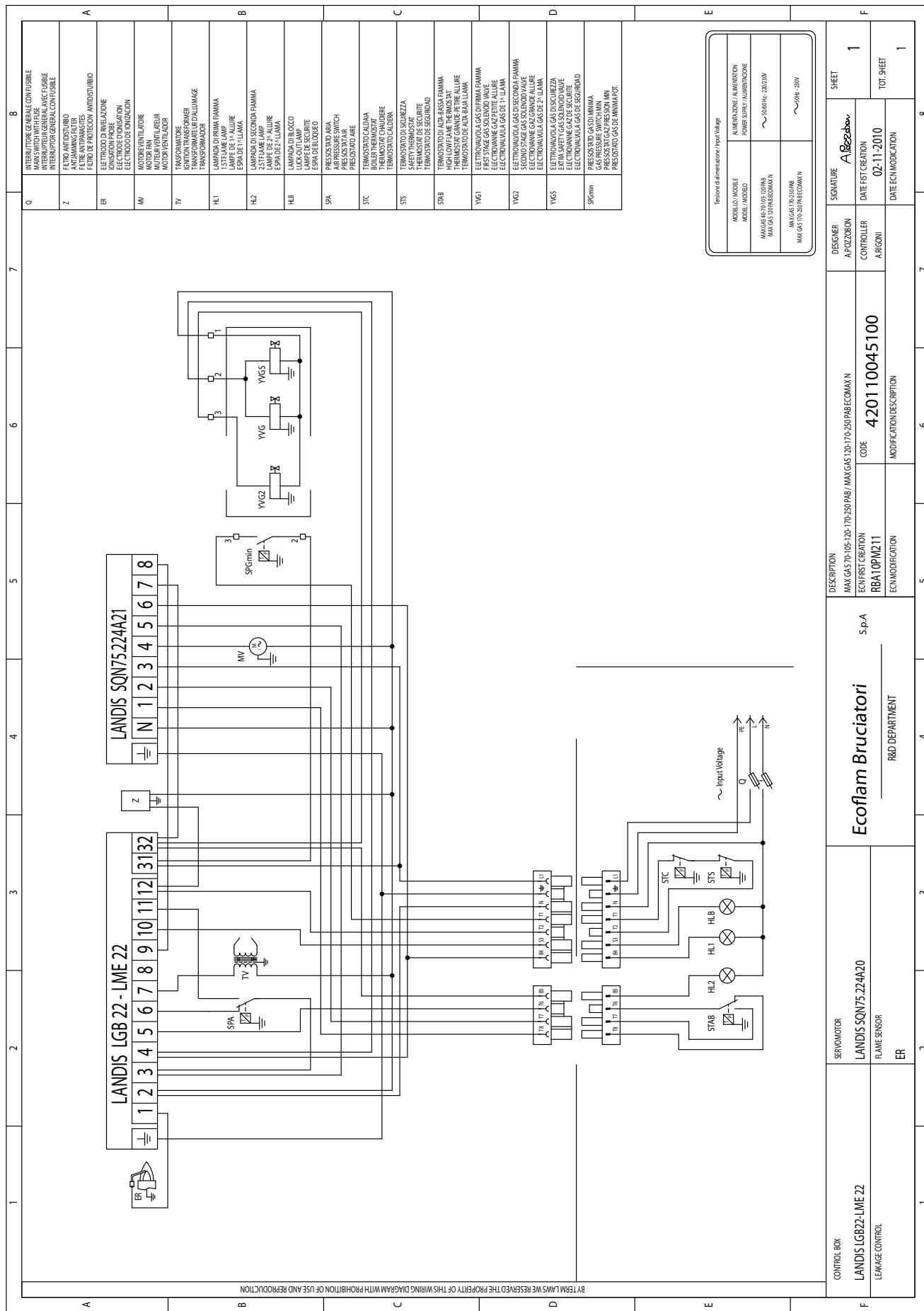
- Check the assembly and position of electrodes.
- Check the ignition cable.
- Check the ignition transformer.
- Check the safety devices.

THE BURNER STARTS UP AND LOCKS AFTER THE SAFETY TIME LIMIT:

- Check that the phase and neutral wires are correctly connected.
- Check the gas electrovalves.
- Check the position of the detection electrode and its connection.
- Check the detection electrode.
- Check the safety devices.

THE BURNER STARTS UP AND LOCKS AFTER RUNNING FOR A FEW MINUTES.

- Check the pressure regulator and the gas filter.
- Check the gas pressure with an ammeter.
- Check the detection value (min $1,5/3$ μA Landis).



BY TERNI LMS WE RESERVED THE PROPERTY OF THIS WIRING DIAGRAM WITH PROHIBITION OF USE AND REPRODUCTION

Tensione di Alimentazione / Input Voltage	
MODELLO / MODELLE	ALIMENTAZIONE / ALIMENTATION
MODELLO / MODELLE	POTERE / PUISSANCE
MAX GAS 40/70/105/130/PAB	~ 50/60/40 Hz ~ 200/230V
MAX GAS 120/PRECOMAX N	~ 230V ~ 200V
MAX GAS 192/300/360	
MAX GAS 192/PRECOMAX N	

CONTROL BOX LANDIS LGB22-LME22 LEAKAGE CONTROL	SERVOMOTOR LANDIS SON75.224A20 FLAME SENSOR ER	DESCRIPTION MAX GAS 70-105-120-170-250 PAB / MAX GAS 120-170-250 PAB-ECOMAX N ECON FIRST CREATION RBA10PM211		DESIGNER A.FIZZORON		SIGNATURE A. Scabban		SHEET 1	
		CODE 420110045100		CONTROLLER A.RIGONI		DATE FIRST CREATION 02-11-2010		TOT. SHEET 1	
		MODIFICATION/DESCRIPTION		DATE ECN MODIFICATION					

MAX GAS 170 P - P AB
MAX GAS 250 P - P AB

