

PROGRESSIVE GAS BURNERS

Ecoflam



MAX GAS 350 PR LMV

MAX GAS 500 PR LMV

Low Nox



420010459101

420010459101

08.10.2012

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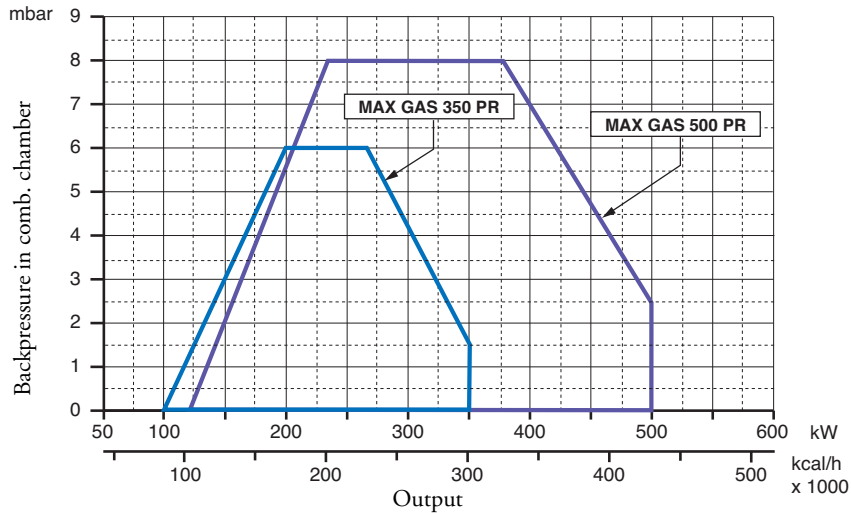
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OPERATING FEATURES				
Model : Max Gas 350 - 500		Gas family		
		G20	G25	G31
Max. gas pressure*	mbar	500	500	500
Min. gas pressure*	mbar	17	17	29
Min. gas pressure* Max Gas 500	mbar	20	20	37
Fuel L.C.V.	kcal/Nm ³	8.570	7.370	22.260
Max Gas 350 PR				
Gas flow rate max.	Nm ³ /h	35,12	40,84	13,52
min.	Nm ³ /h	10,03	11,67	3,86
Max Gas 500 PR				
Gas flow rate max.	Nm ³ /h	50,17	58,34	19,32
min.	Nm ³ /h	12,04	14	4,64

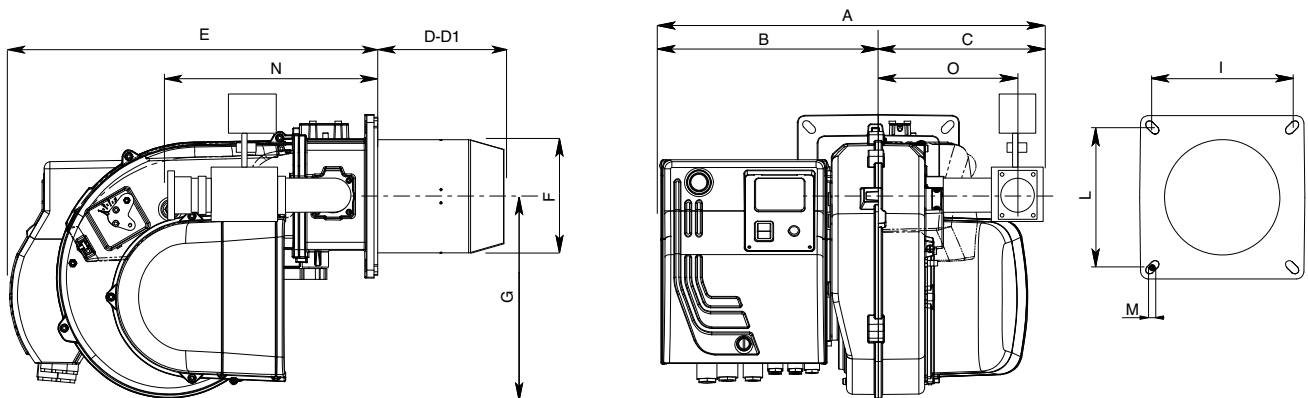
* : Minimum/maximum gas inlet pressures depend by the gas train matched to the burner. The values are written on the gas trains manual.

TECHNICAL DATA				
		Max Gas 350 PR	Max Gas 500 PR	
Termal power max.	kW	350	500	
	kcal/h	301.000	430.000	
Termal power min.	kW	100	120	
	kcal/h	86.000	103.200	
Sound level	d(B)A	73	73	

WORKING FIELDS



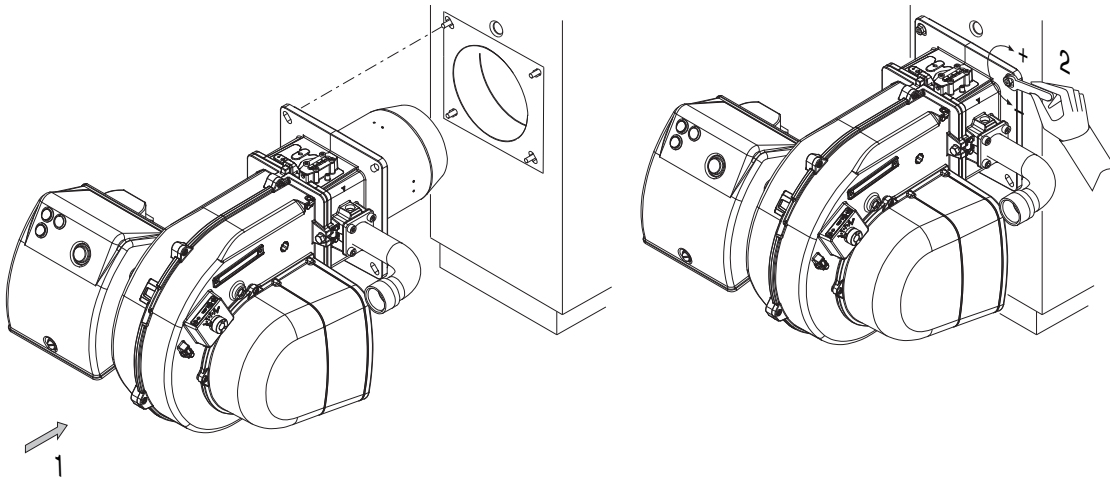
OVERALL DIMENSIONS



MODEL	A	B	C	D	D1	E	F	G	I	L	M	N	O
MAX GAS 350 PR	612	302	310	175	335	511	157	280	185/200	185/200	M8	386	260
MAX GAS 500 PR	612	302	310	175	335	511	157	280	185/200	185/200	M8	386	260

D = SHORT HEAD D1= LONG HEAD

MOUNTING TO THE BOILER



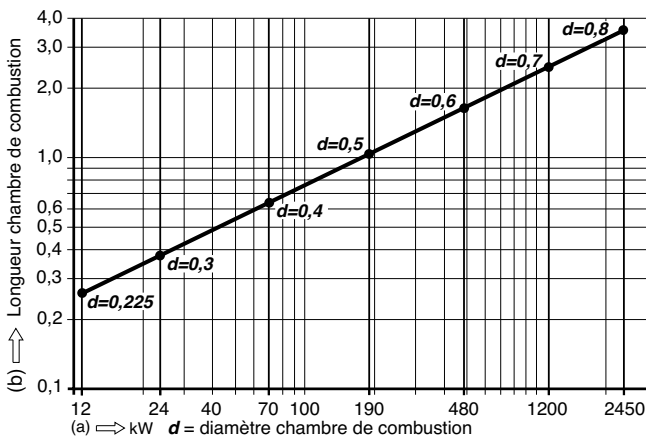
ELECTRICAL CONNECTIONS

All burners factory tested at 230V 50 Hz monophase (Max Gas 350) or 400 V 50 Hz three-phase (Max Gas 500) for motors and 230V 50 Hz monophase for auxiliary equipment. If mains supply is 230 V 50 Hz threephase 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 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.

COMBUSTION CHAMBER



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.

Installation must be carried out in compliance with the local provisions

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 (G31) and the CO must be less than 75 ppm.

Adjusting the gas flow rate at the ignition for burners MAX GAS 350-500

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 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 you see table). 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.

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:

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

e = Litres of gas

s = Time in seconds

$$f \begin{cases} G20 = 34,02 \text{ MJ/St m}^3 \\ G25 = 29,25 \text{ MJ/St m}^3 \\ G31 = 88 \text{ MJ/St m}^3 \end{cases}$$

CONTROL BOX LMV27....

The burner is equipped with control box LMV 27.100 A27.



The environmental conditions that LMV 27.100 A27 can withstand are:

5.3 Environmental conditions

Storage	DIN EN 60721-3-1
Climatic conditions	Class 1K3
Mechanical conditions	Class 1M2
Temperature range	-20...+60 °C
Humidity	<95 % r.h.
Transport	DIN EN 60721-3-2
Climatic conditions	Class 2K2
Mechanical conditions	Class 2M2
Temperature range	-30...+60 °C
Humidity	<95 % r.h.
Operation	DIN EN 60721-3-3
Climatic conditions	Class 3K3
Mechanical conditions	Class 3M3
Temperature range	-20...+60 °C
Humidity	<95 % r.h.



Caution!
Condensation, formation of ice and ingress of water are not permitted!

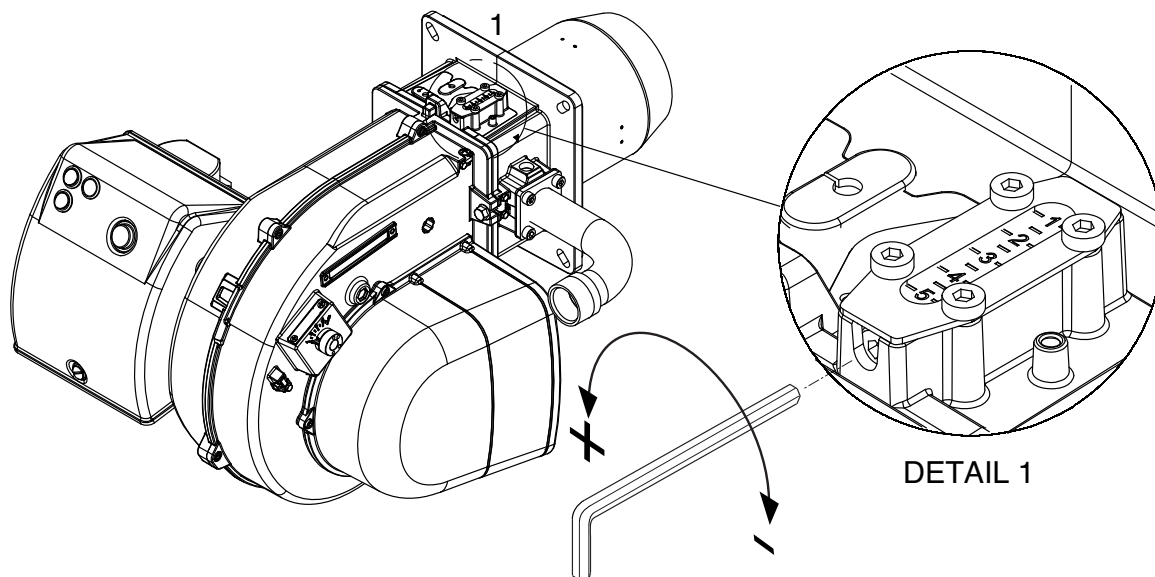
For details on control box specification and connection refer to LMV 27.100 A27 basic documentation.

ERROR CODES

If the control box goes to lock-out and error code appears on panel display.

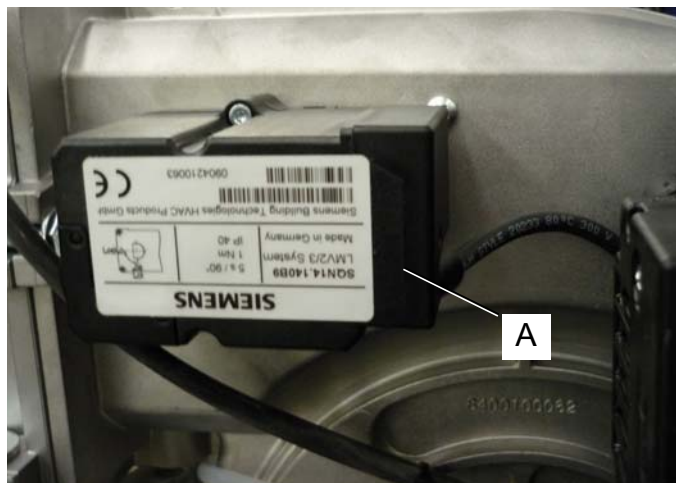
For error codes complete list refer to LMV 27.100 A27 basic documentation (Section 28).

FIRING HEAD SETTING



To adjust firing head setting refer to diagrams at page 21 and 22 (head position).
 Please note, if firing head setting is modified: check again combustion valves.









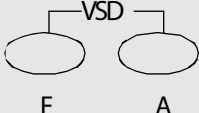






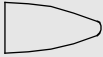
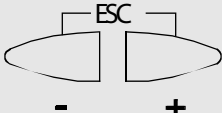


The burner includes two separate servomotors to actuate air damper (A) and gas throttle valve (G) see photo:



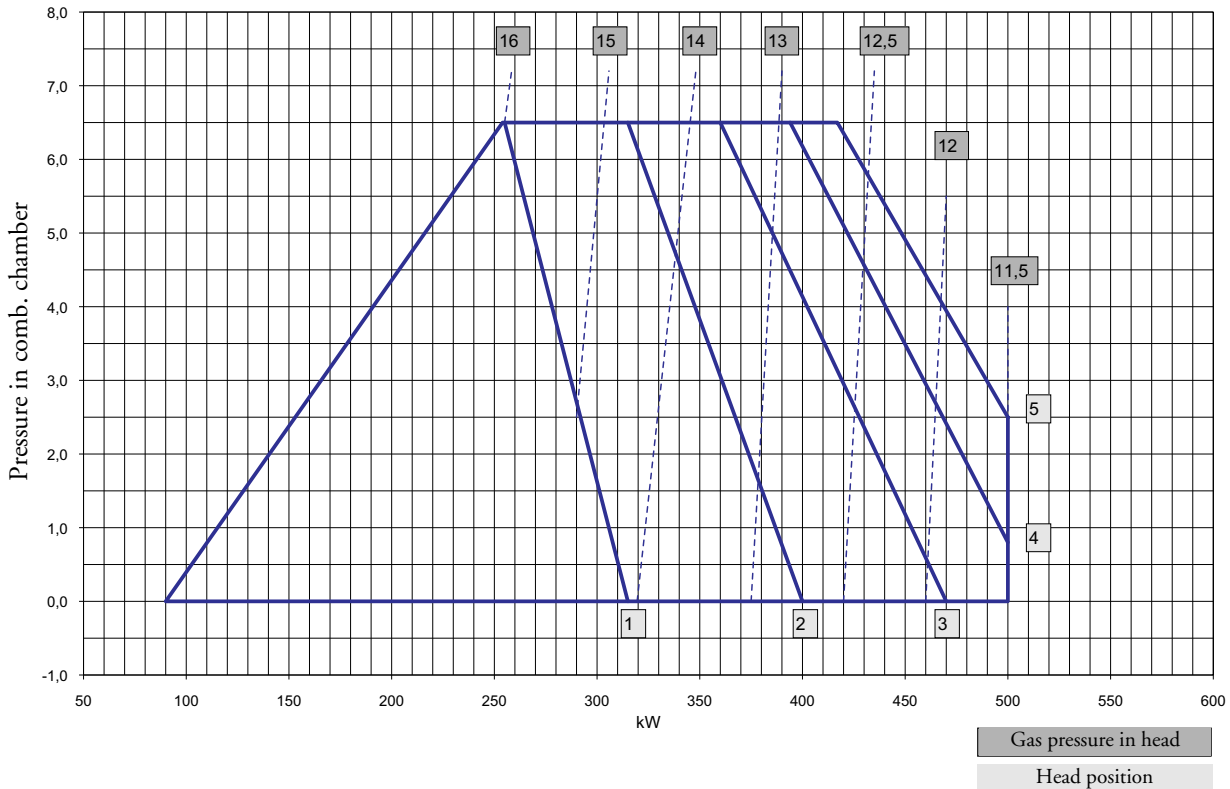
To set servomotors position follow instructions in LMV 27.100 A27 basic documentation (Section 26.11).
 Refer to pre-calibration diagrams to identify gas pressure (after throttle valve) and firing head position.

DESCRIPTION OF DISPLAY AND BUTTONS

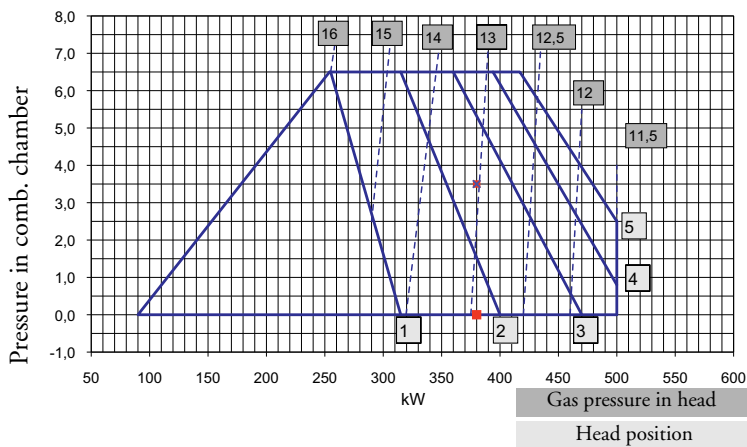


Button	Function
 F	Button F - For adjusting the fuel actuator (keep  depressed and adjust the value by pressing  or )
 A	Button A - For adjusting the air actuator (keep  depressed and adjust the value pressing  or )
 F A	Buttons A and F - For changing to parameter setting mode P (press simultaneously  and  plus  or )
 i/reset	Info and Enter button - For navigating in info or service mode * Selection (symbol flashing) (press button for <1 s) * For changing to a lower menu level (press button for 1...3 s) * For changing to a higher menu level (press button for 3...8 s) * For changing the operating mode (press button for >8 s) - Enter in parameter setting mode - Reset in the event of fault - One menu level down
 -	- button - For decreasing the value - For navigating during curve adjustments in info or service mode
 +	+ button - For increasing the value - For navigating during curve adjustments in info or service mode
 - +	+ and - button: Escape function (press  and  simultaneously) - No adoption of value - One menu level up

PRE-CALIBRATION DIAGRAM MAX GAS 500



EXAMPLE OF PRE-CALIBRATION MAX GAS 500



Warning: the pre-calibration values have been determined on EN676 test combustion chambers in ideal conditions, and are useful for the first switch-on but must be checked and corrected with calibration for the individual system.

Example in figure:

Power required by the generator: 380 kW.

Pressure envisaged in combustion chamber: 3.5 mbar. Combustion head chamber: 2.5 (between 2 and 3). Gas pressure in head: 13 mbar.

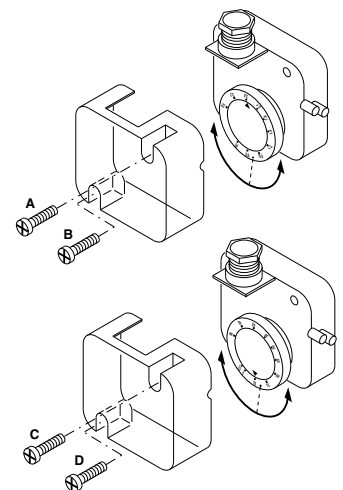
ADJUSTING THE AIR PRESSURE SWITCH

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 ($\text{CO}_2 = 9.5$ 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 $\text{CO}_2 = 10.8$ ($\text{G}20\text{-G}25$) > 13 ($\text{G}31$) 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.

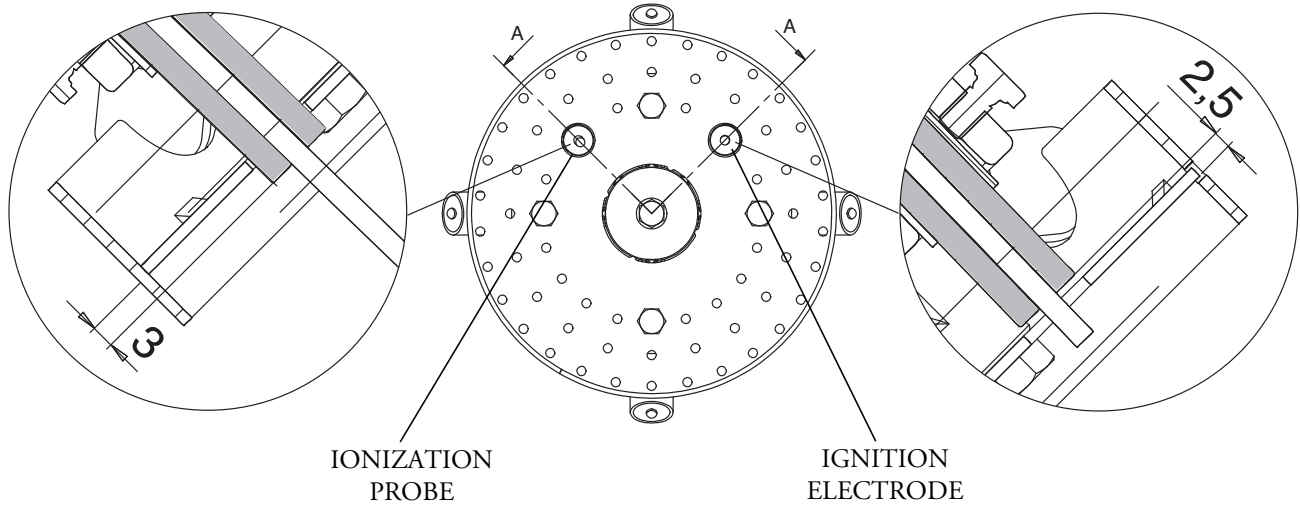
ADJUSTING THE GAS PRESSURE SWITCH

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

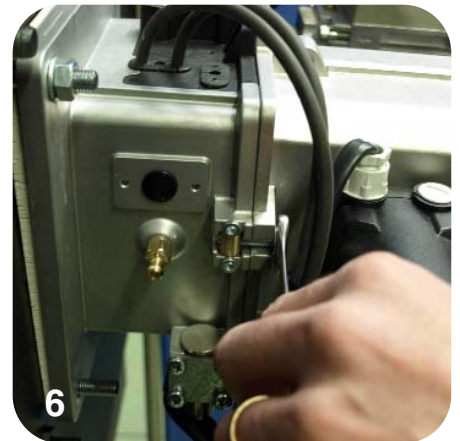
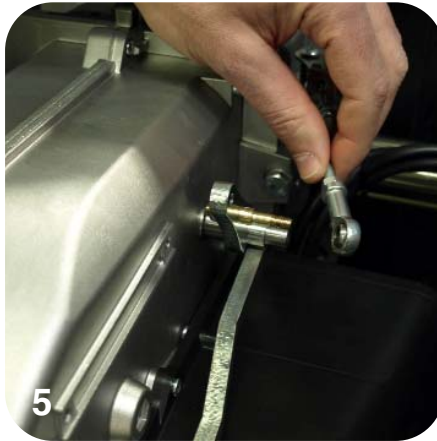
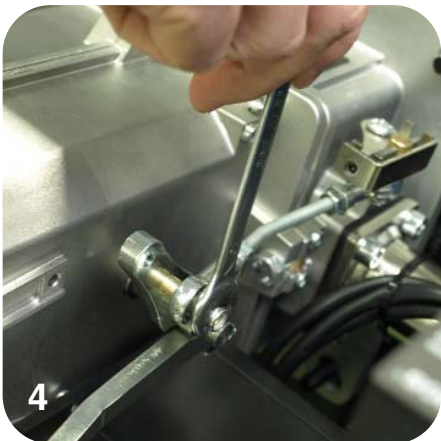
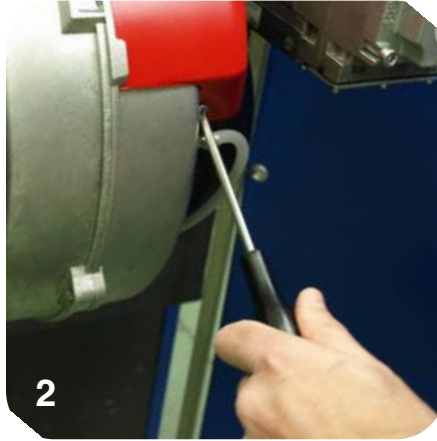
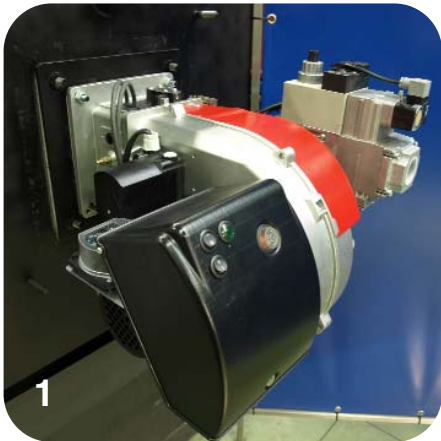
RARED PRESSURE: G 20 = 20 mbar G 25 = 25 mbar
G 31 = 37 mbar

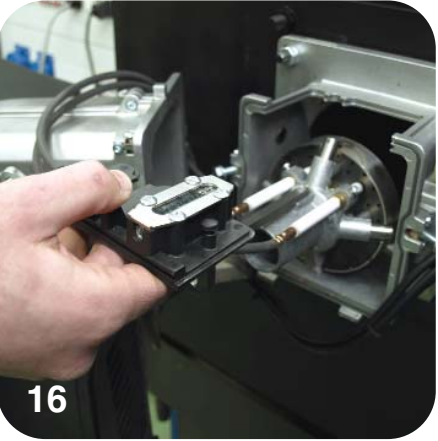
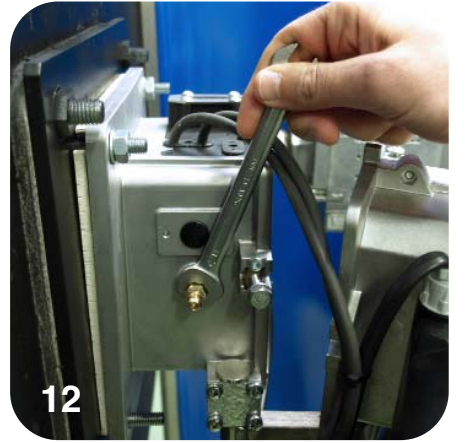
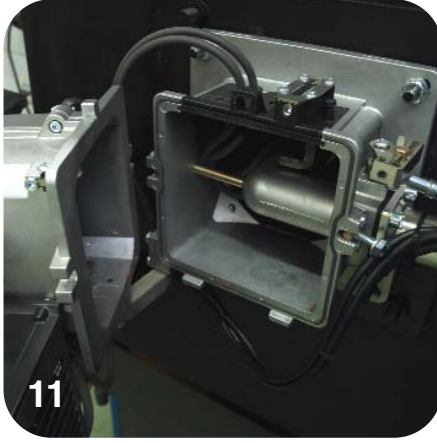
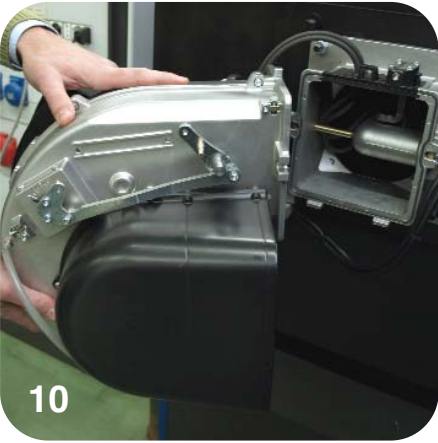
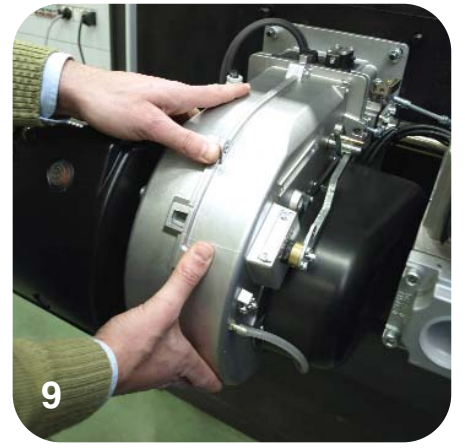
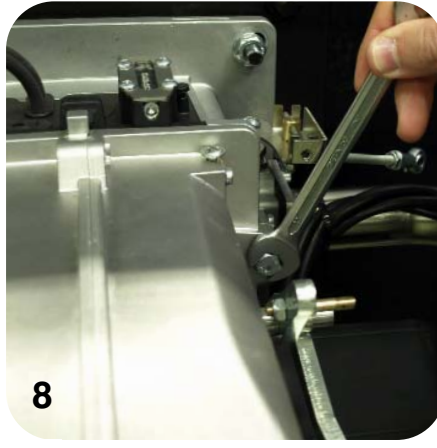


POSITION OF ELECTRODES

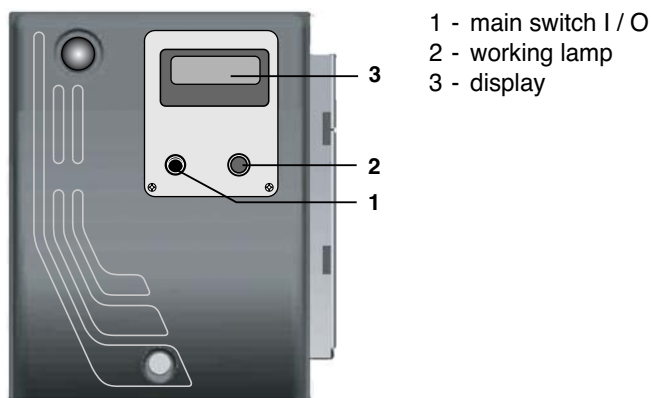


REMOVING FIRING HEAD





DESCRIPTION OF THE CONTROL PANEL OF THE BURNER



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:

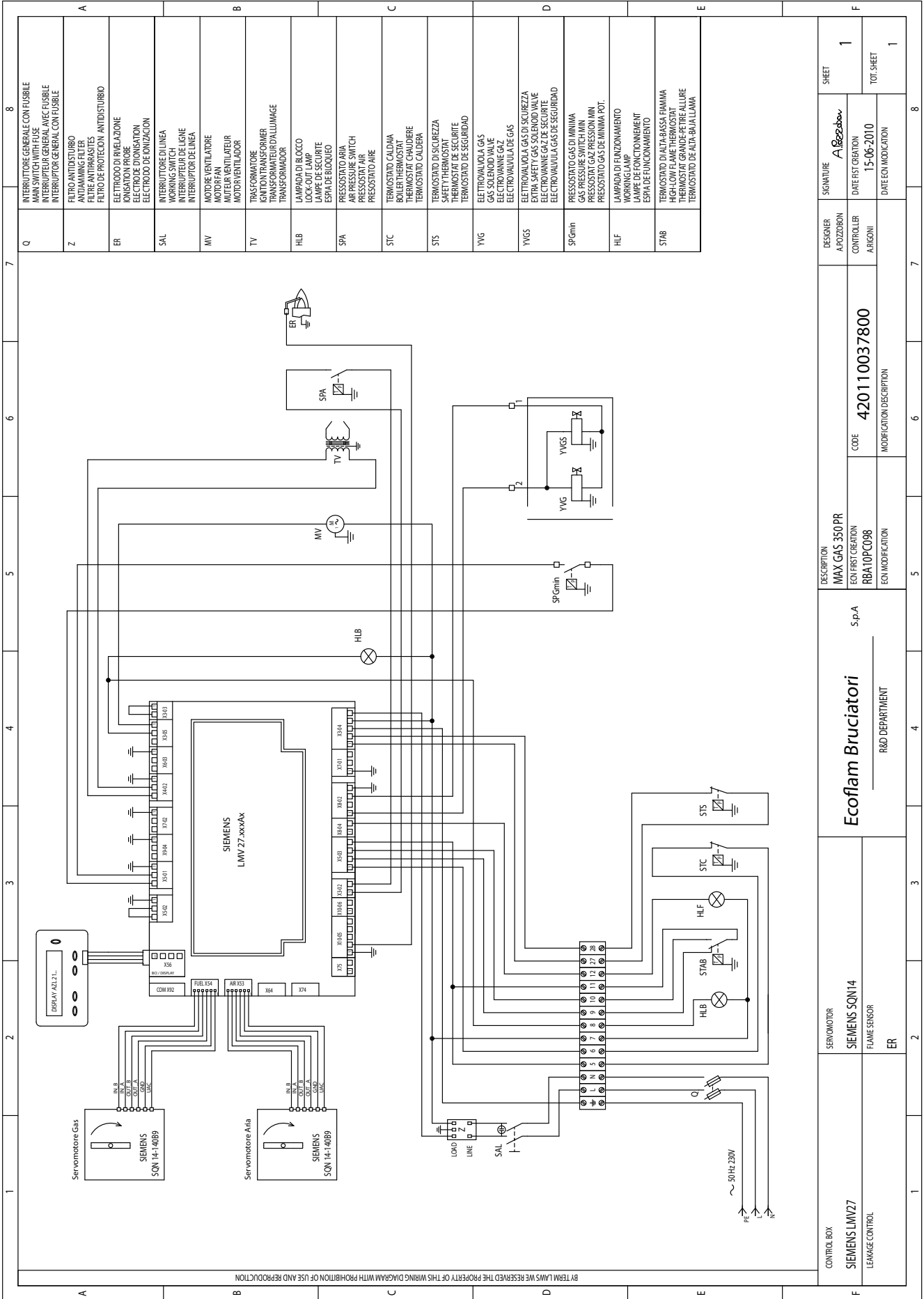
- Check the assembly and position of electrodes.
- Check the ignition cable.
- Check the ignition transformer.
- Check the safety devices.

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.

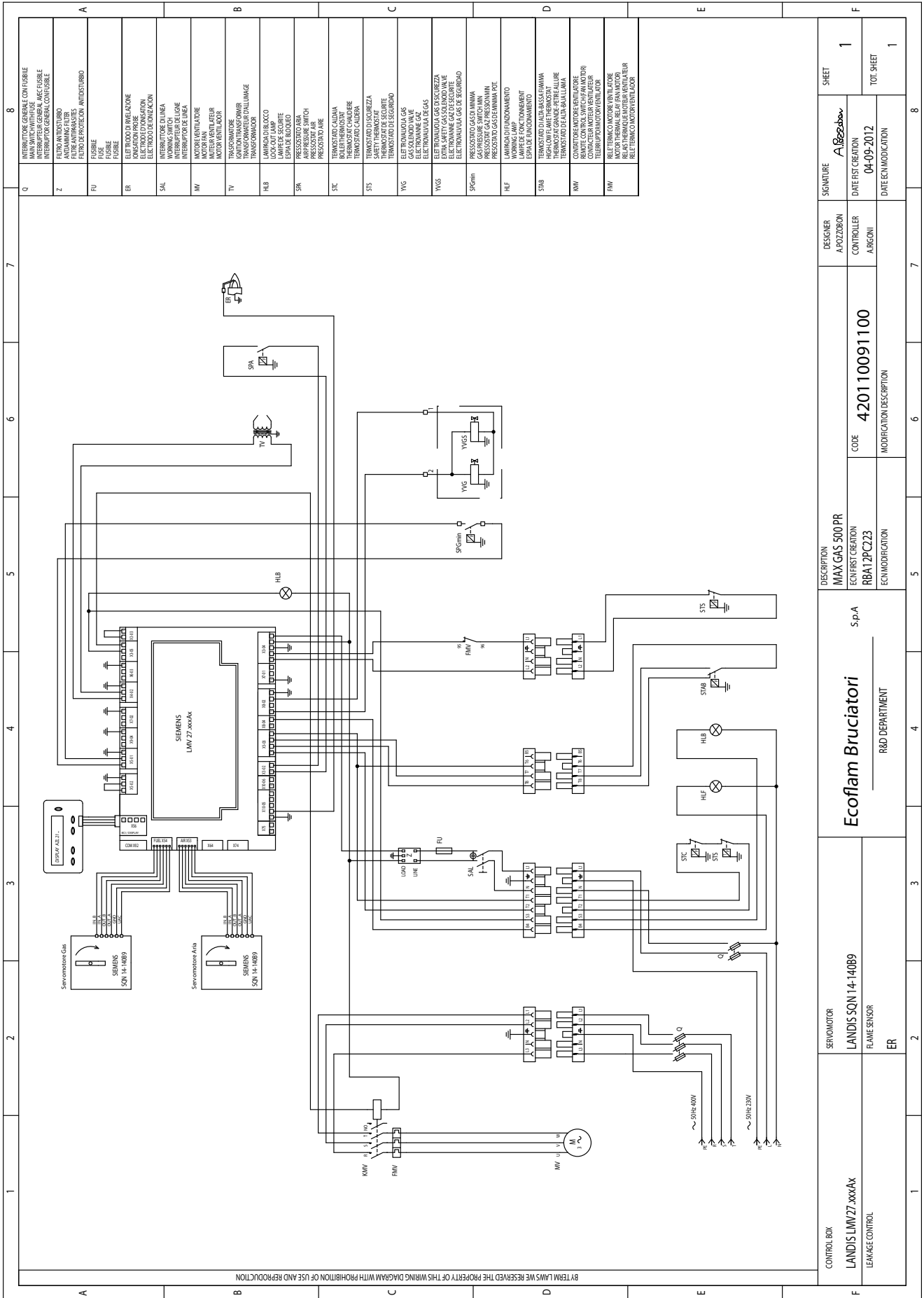
THE BURNER STARTS UP AND LOCKS AFTER RUNNING FOR A FEW MINUTES.

- Check the pressure regulator and the gas filter.
- Check the gas pressure with an ammeter.



BY TRM LMS WE RESERVE THE PROPERTY OF THIS WIRING DIAGRAM WITH PROHIBITION OF USE AND REPRODUCTION

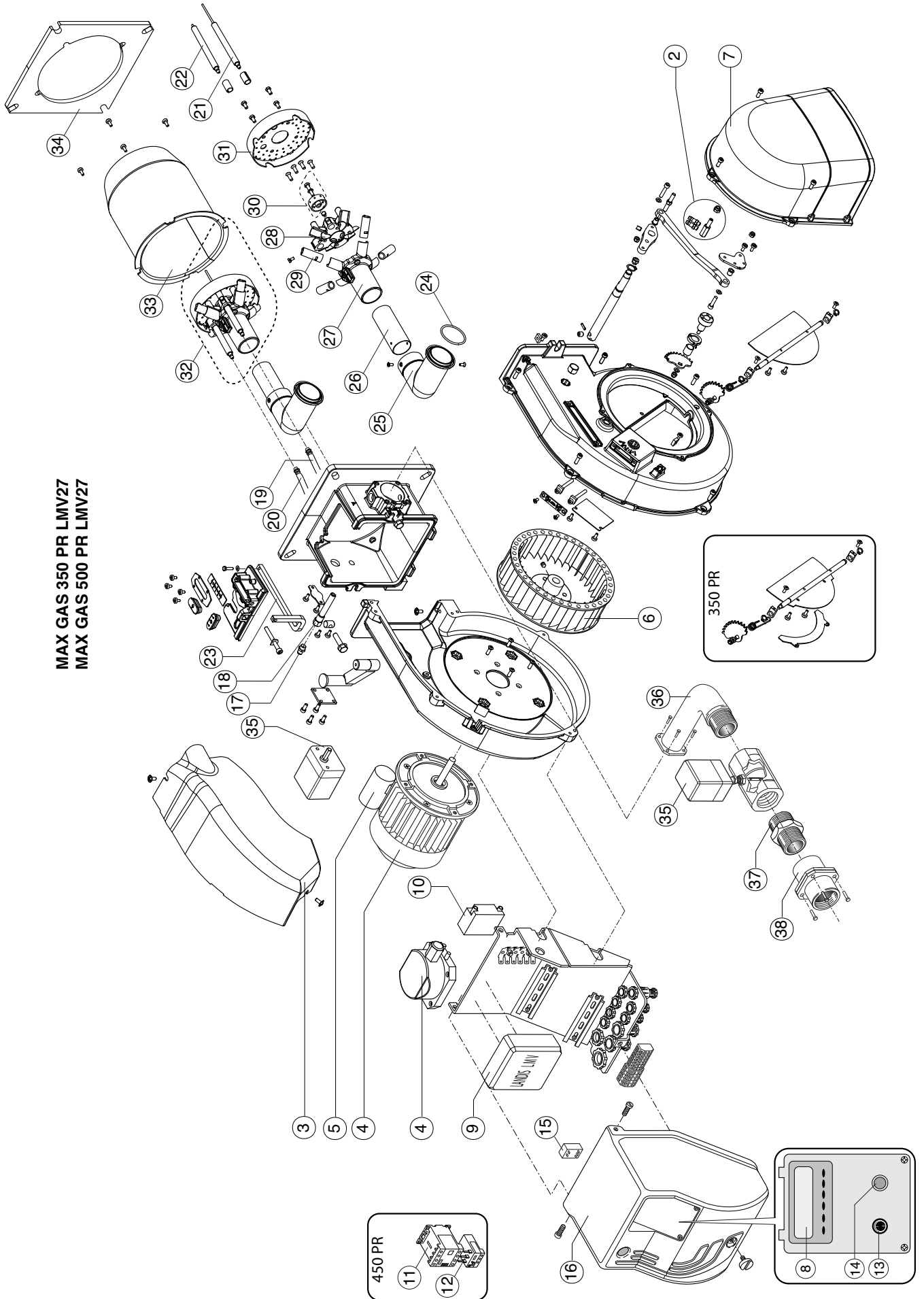
CONTROL BOX SIEMENS LMV27 LEAKAGE CONTROL	SERVO MOTOR SIEMENS SON14	Ecoflam Bruciatori		MAX GAS 350 PR		DESIGNER A. ROZZON	SIGNATURE A. ROZZON	SHEET 1
	FLAME SENSOR ER	S.p.A		ECO FIRST CREATION RBA 10PC098		CONTROLLER A. RIGNI	DATE OF CREATION 15-06-2010	TOT. SHEET 1
		R&D DEPARTMENT		ECO MODIFICATION		DATE OF MODIFICATION		
					420110037800			
					MODIFICATION DESCRIPTION			



Q	INTERRUTTORE GENERALE CON FUSIBILE INTERRUPTEUR GENERAL AVEC FUSIBLE INTERRUPCIÓN GENERAL CON FUSIBLE	8
Z	FILTRO ANTIDUSTURIO FILTRE ANTIPARTICULES FILTRO DE PROTECCIÓN ANTIDUSTURIO	
FU	FUSIBILE FUSIBLE FUSIBLE	
ER	ELETTRODO DI RIVALUTAZIONE ÉLECTRODE POUR REVALUATION ELECTRODO DE RIVALUTACION	
SAL	INTERRUTTORE DI LINEA WORKING SWITCH INTERRUPTOR DE LINEA	
MV	MOTORE SERVOMOTORE MOTOR PAN MOTOR SERVO MOTOR	
TV	TRASFORMATORE IGNITION TRANSFORMER TRANSFORMADOR	
HLB	LAMPADA DI LUCE LOCK OUT LAMP LAMP DE SECURITE	
SFA	PRESSOSTATO ARIA AIR PRESSURE SWITCH PRESOSTATO AIRE	
SFC	INTERRUTTORE A MANO BOLETTA SELEZIONATA THERMOSTAT CHAUFFERE THERMOSTAT CALDERA	
STS	TERMOSTATO DI SICUREZZA THERMOSTAT DE SECURITE THERMOSTATO DE SEGURIDAD	
YVG	ELETTROVALVOLA GAS ELECTROVALVULA GAS ELECTROVALVULA GAZ	
YVGS	ELETTROVALVOLA GAS DI SICUREZZA ELECTROVALVULA GAS DE SECURITE ELECTROVALVULA GAZ DE SEGURIDAD	
SFCmin	PRESSOSTATO GAS DA MINIMA GAS PRESSURE SWITCH MINIMUM PRESOSTATO GAZ DE MINIMA POT.	
HEF	LAMPADA DI FANALAMENTO WORKING LAMP ESPALE DE ENFUMAMENTO	
STAB	TERMOSTATO DI ALTA BASSA FANALMA HIGH/LOW FAN THERMOSTAT THERMOSTATO DE ALTA BAJA LAMA	
MW	CONVETTORE MOTORE SERVOMOTORE REMOTE CONTROL SWITCH (PAN MOTOR) SERVO MOTOR REMOTE CONTROL SWITCH	
FMV	RELE TERMICO MOTORE SERVOMOTORE MOTOR THERMAL RELAY (PAN MOTOR) RELE TERMICO MOTOR SERVOMOTOR	

DESIGNER	A-POZZOBON	SIGNATURE	Albezabov	SHEET	1
CONTROLLER	ARGONNI	DATE OF FIRST CREATION	04-09-2012	TOT. SHEET	1
DESCRIPTION	MAX GAS 500 PR	CODE	420110091100		
ECON FIRST CREATION	RBAL2PC23	ECN MODIFICATION			
ECN MODIFICATION		MODIFICATION DESCRIPTION			
S.p.A		Ecoflam Bruciatori		R&D DEPARTMENT	
CONTROL BOX	LANDIS LMV27 .xxxAX	SERVOMOTOR	LANDIS SON 14-14089	FLAME SENSOR	ER

MAX GAS 350 PR LMV27
MAX GAS 500 PR LMV27



N°	DESCRIPTION		MAX GAS 350 PR LMV	MAX GAS 500 PR LMV
			code	code
1	AIR PRESSURE SWITCH	KROMSCHRODER DL11K-3	65324484	-
		DUNGS LGW3A2	-	65323037
2	AIR INTAKE SET		65324718	65324718
3	BURNER COVER		65324704	65324704
4	MOTOR	SIMEL 300 W	65324698	-
		SIMEL 550 W	-	65324699
5	CAPACITOR	10 μ F	65321855	-
6	FAN	180X80	65324709	-
		200X80	-	65324710
7	AIR INTAKE		65324703	65324703
8	DISPLAY	SIEMENS AZL21-00A9	65325439	65325439
9	CONTROL BOX	SIEMENS LMV27-100A2	65325440	65325440
10	IGNITION TRANSFORMER	DANFOSS EBI 052F4040	65323258	65323258
11	REMOTE CONTROL SWITCH	BG0910 A230	-	65323138
12	MOTOR THERMAL RELAY	LOVATO RF9 1,4-2 ,3A 2V3	-	65323098
13	MAIN SWITCH		65324696	65324696
14	LAMP	OMEGA KL09248X2BR	65325441	65325441
15	ANTIJAMMING FILTER		65323170	65323170
16	COVER		65320477	65320477
17	PRESSURE PORT		65323053	65323053
18	PRESSURE PORT SUPPORT		65324691	65324691
19	IONIZATION CABLE	TC		65320946
		TL	65322002	65322002
20	IGNITION CABLE	TC	65320944	65320944
		TL	65324194	65324194
21	IONIZATION PROBE		65320950	65320950
22	IGNITION ELECTRODE		65324331	65324331
23	ROD	TC	65324692	65324692
		TL	65324693	65324693
24	ORING		65324700	65324700
25	HEAD SUPPORT PIPE ELBOW		65324702	65324702
26	HEAD SUPPORT PIPE	TC	65324711	65324711
		TL	65324712	65324712
27	FIRING HEAD		65324694	65324694
28	HEAD CAP		65324539	65324539
29	DIFFUSER	G20-25	65324714	65324713
		G31	65324715	65324715
30	NOOZLE GROUP	G20-25	65324716	65324716
		G31	65324717	65324717
31	DISC		65324708	65324708
32	INNER ASSEMBLY	G20-25	65324727	65324728
		G31	65324729	65324729
33	BLAST TUBE	TC	65324706	65324706
		TL	65324707	65324707
34	GASKET		65324701	65324701
35	AIR DAMPER MOTOR	SIEMENS SQN14-140B9	65325405	65325405
36	GAS PIPE		65325358	65325358
37	NIPPLE	2 X1 1/2	65323963	65323963
38	NIPPLE FLANGED	2"	65325442	65325442

TC = SHORT HEAD TL = LONG HEAD

Ecoflam Bruciatori s.p.A.

Via Roma, 64 31023 RESANA (TV) Tel. (0039) 0423-719500 (r.a.) Telefax (0039) 0423-719583
 Cod. Fis. E Part. IVA 00879740264 Codice di identificazione CEE IT00879740264
 REGISTRO IMPRESE TREVISO N. 00879740264 R.E.A. TREVISO N. 193884 CAPITALE SOCIALE € 3.690.000 I.V.
 Società soggetta a direzione e coordinamento della
 MERLONI TERMOSANITARI S.p.A. - Viale Aristide Merloni, 45 60044 FABRIANO (AN) - C.F. 01026940427

DICHIARAZIONE DI CONFORMITÀ DECLARATION OF CONFORMITY

La scrivente ditta
 The writing company

ECOFLAM BRUCIATORI S.p.A.

Con sede in via Roma, 64 – Resana (TV)
 Address: via Roma, 64 – Resana (TV)

DICHIARA DECLARES

Sotto la propria responsabilità, che tutti i propri **bruciatori di gas tipo MAX GAS...**
 sono **conformi** ai requisiti stabiliti dalle seguenti direttive e norme:
*Under his sole responsibility that all the gas burners, models MAX GAS... comply with
 requirements included in the following European Directives and Standards:*

- 2006/95/CEE “Direttiva bassa tensione” (Low voltage directive)
- 2004/108/CEE “Direttiva EMC” (EMC directive)
- 2009/142/CEE “Direttiva gas” (Gas appliance directive)
- EN 676: 2008
- EN 60335-1: 2008
- EN 60335-2-30: 2006
- EN 60335-2-102: 2007
- EN 50082-1: 1997
- EN 55014-1: 2008
- EN 55014-2: 1998

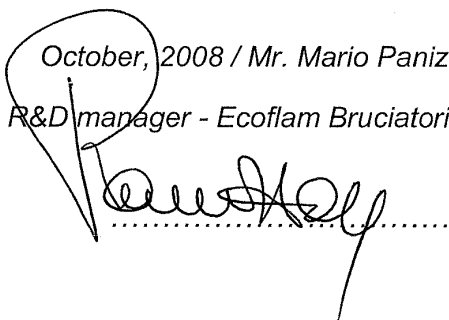
La marcatura CE è stata apposta nel 2006 a seguito di esame di tipo svolto dall'Ente
 Notificato DVGW, il prodotto è identificato con PIN 0085BR0335.
 DVGW (0085) svolge anche la sorveglianza periodica sulla produzione.
*CE marking was achieved in 2006 by means of type testing conducted by Notified Body DVGW,
 product is identified by PIN 0085BR0335.
 DVGW (0085) carries out also periodic production inspection.*

Date/Authorized Signature

October, 2008 / Mr. Mario Panizzon

Title of Signatory

R&D manager - Ecoflam Bruciatori Spa



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"Экофлам С.п.А." оставляет за собой право вносить в конструкцию оборудования любые необходимые изменения без особого предупреждения.

Ecoflam

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