OIL BURNERS

Ecoflam

MAX P 35 AB D HT
MAX P 45 AB D HT

HYDRAULIC SYSTEM

420010481201

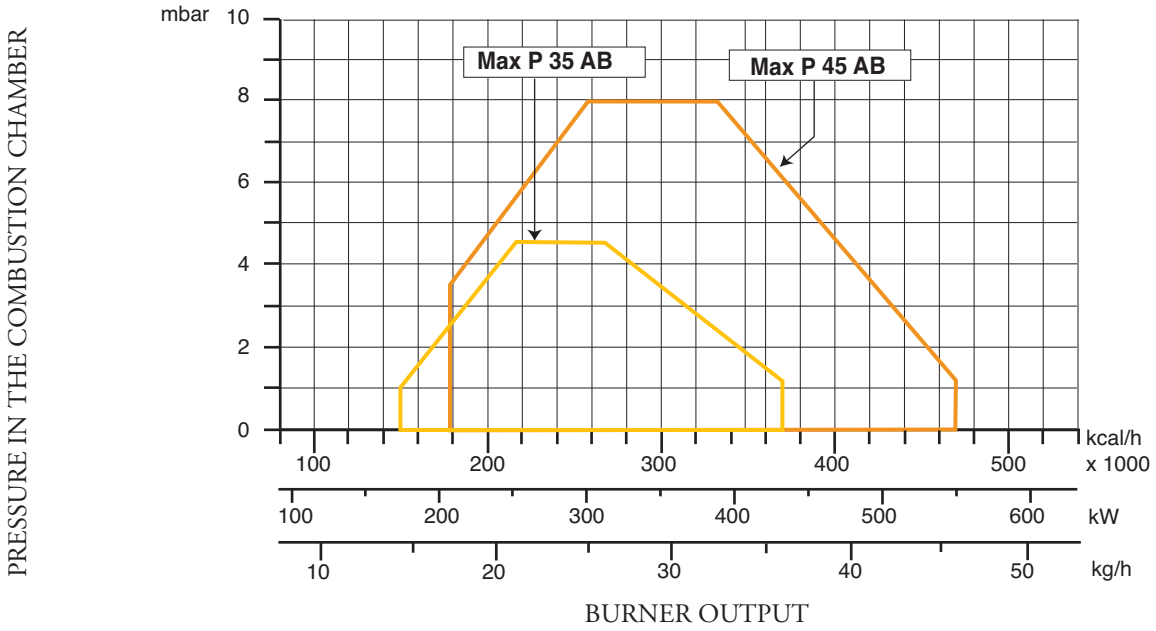
420010481201
17.02.2014

Index

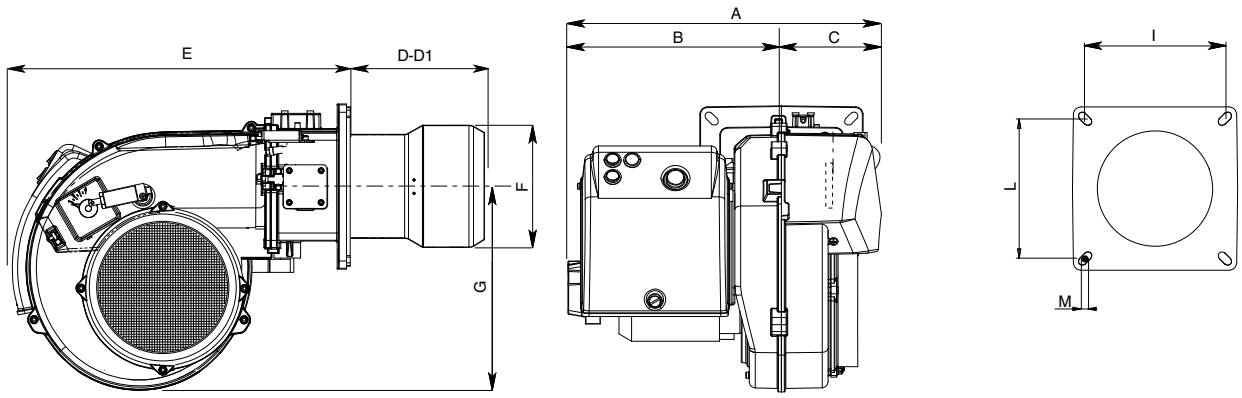
TECHNICAL DATA

MODELS		MAX P 35 AB	MAX P 45 AB
Thermal power max.	kcal/h	367.000	469.000
	kW	427	546
Thermal power min.	kcal/h	143.000	173.000
	kW	166	202
Max. flow rate light oil	kg/h	36	46
Min. flow rate light oil	kg/h	14	17
Feeding power	50 Hz V	230	230/400
Motor	W		740
Rpm	N°	2800	2800
Ignition transformer	kV/mA	2x7,5 /40	2x7,5 /40
Control box	LANDIS	LMO 44	LMO 44
Fuel: light oil	kcal/kg	10.200 max. visc 1,5°E a 20°C	

WORKING FIELDS

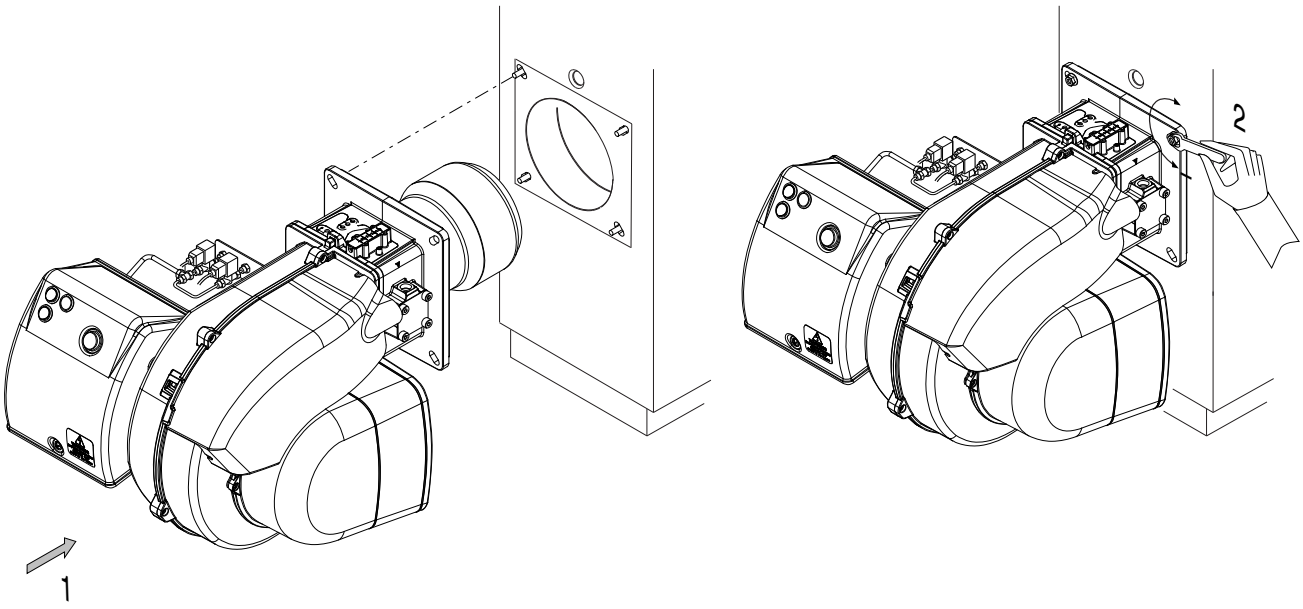


OVERALL DIMENSIONS



MODELS	A	B	C	D	D1	E	F	G	I	L	M
MAX P 35 AB HT	424	294	130	175	365	466	160	280	185/200	185/200	M8
MAX P 45 AB HT	424	294	130	175	365	466	160	280	185/200	185/200	M8
D = short head D1 = long head											

MOUNTING TO THE BOILER

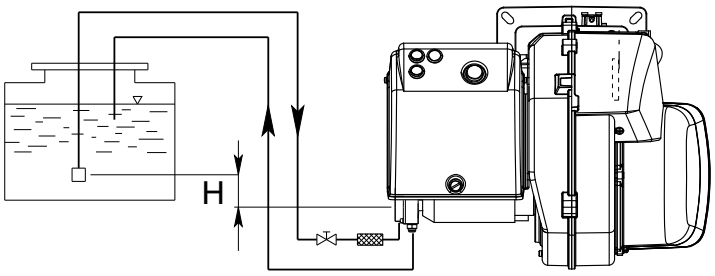


ELECTRICAL CONNECTIONS

All burners are factory tested at 230V 50 Hz single phase (Max P 35) o 400 V 50 Hz 3-phase (Max P 45) for motors and 230V 50 Hz single phase with neutral for auxiliary equipments. Should it be necessary to power the burner with 230V - 50Hz, modify the connections on motor and the terminal board as shown in the picture. Protect the burner supply line with suitable fuses and/or other safety devices as required by the local regulations on the matter.

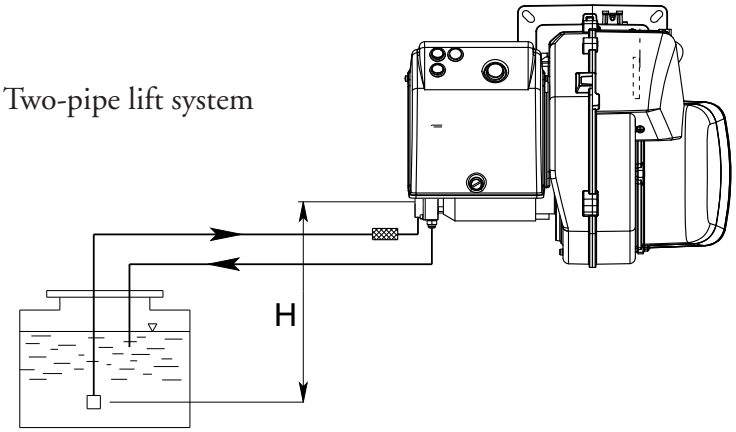
MAXIMUM LENGTHS OF SUCTION LINES FOR TWO-PIPE SYSTEM SUNTEC D 67

Two-pipe siphon feed system



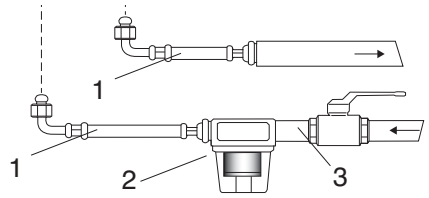
H (m)	Length pipe (m)	
	D 67 (m)	
	ø 10 mm	ø 12 mm
0		
0,5		
1		
2		
3		
3,5		

Two-pipe lift system

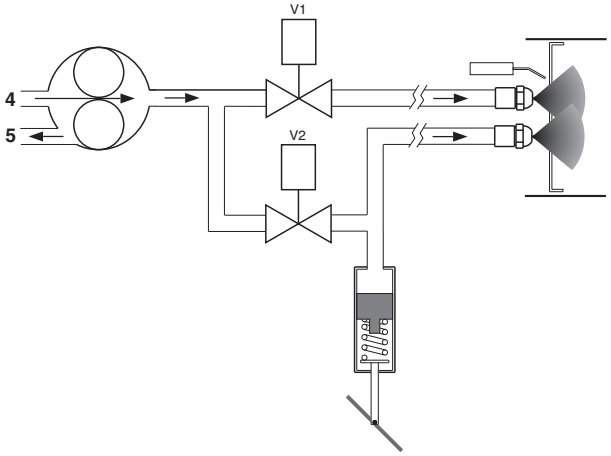


H (m)	Length pipe (m)	
	D 67 (m)	
	ø 10 mm	ø 12 mm
0		
0,5		
1		
2		
3		
3,5		

HYDRAULIC CIRCUIT

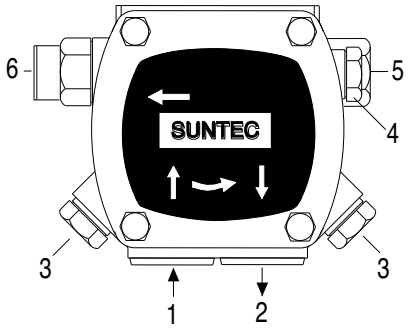


1 - HOSE
2 - OIL FILTER
3 - OIL COCK
4 - SUCTION
5 - RETURN



PRIMING AND ADJUSTMENT OF OIL PUMP

SUNTEC D 67 A



1 - INLET
2 - RETURN
3 - BLEED AND PRESSURE GAUGE PORT
4 - VACUUM GAUGE PORT
5 - PRESSURE ADJUSTMENT
6 - TO NOZZLE

VERIFY:
- That piping system is perfectly sealed.
- That the use of hoses is avoided whenever is possible (use copper pipes preferably).
- That depression is not greater than 0,45 bar, to avoid pump's cavitation.
- That check valve is suitably designed for the duty.

The pump pressure is set at a value of 12 bar during the testing of burners. Before starting the burner, bleed the air in the pump through the gauge port. Fill the piping with light-oil to facilitate the pump priming. Start the burner and check the pump feeding pressure. In case the pump priming does not take place during the first prepurging, with a consequent, subsequent lock-out of the burner, rearm the burner's lock-out to restart, by pushing the button on the control box. If, after a successful pump priming, the burner locks-out after the prepurging, due to a fuel pressure drop in the pump, rearm the burner's lock-out to restart the burner. Do never allow the pump working without oil for more than three minutes. Note: before starting the burner, check that the return pipe is open. An eventual obstruction could damage the pump sealing device.

BURNER START-UP AND ADJUSMENT

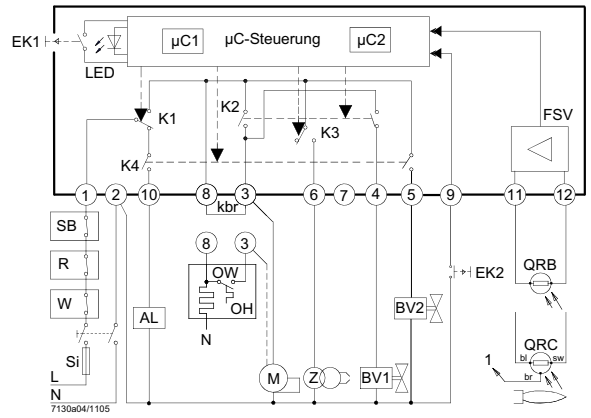
Once having installed the burner, check the following items:
- The burner power feeding and the main line protection fuses
- The correct length of pipes and that the same are sealed.
- The type of fuel, which must be suitable for burner.
- The connection of boiler's thermostats and all the safeties.

When all the above mentioned conditions are checked and accomplished, it is possible to go on with burner's tests. Power the burner. The control box feeds the ignition transformer and the burner's motor at the same time, which will run a prepurging of the combustion chamber for about 20 sec.
At the end of prepurging, the control box opens the fuel pump and the 1st stage (Low flame) solenoid valves, the ignition transformer produces a spark and the burner ignites. After a safety interval of 5÷10 seconds and a correct ignition, the control box turns off the ignition transformer and, 10 seconds later, sets the air damper to its maximum opening and opens the 2nd stage solenoid valve (High flame). In case of faulty ignition, the control box switches the burner into safety condition. In order to obtain an optimal combustion, it is necessary adjust the LOW - HIGH flame air flow, according to the instruction given further on. The fuel pump feeding pressure, must remain around 12 bar.

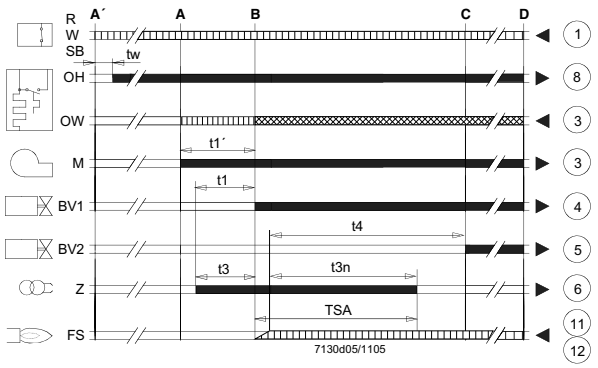
LANDIS LMO 44 CONTROL INFORMATION SYSTEM

In case of burner lockout, it is possible to read which cause originated it. Proceed as follows: with the burner in lockout mode (red LED switched on) keep pressed the lockout button for more than 3 sec. then release it. The red LED will blink according to the following error code list:

Connection diagram and internal diagram LMO44...



Control sequence LMO44...

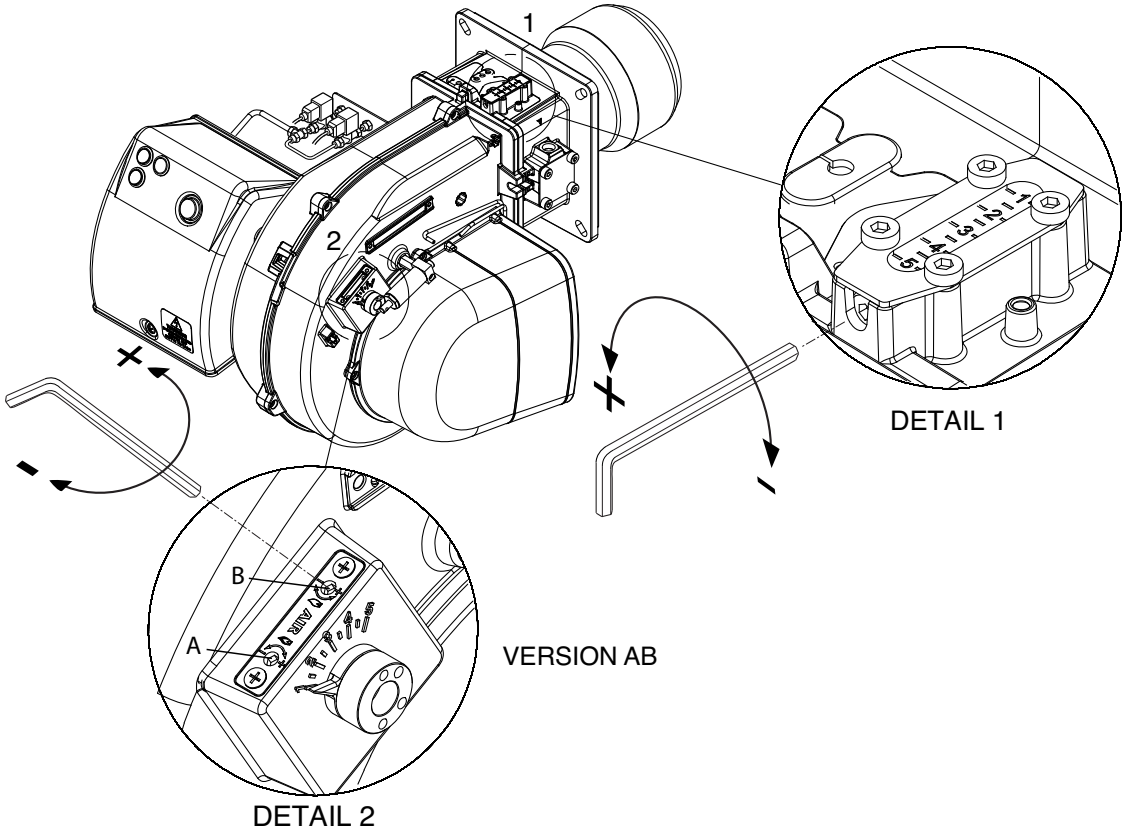


AL	Alarm device	QRB...	Photoresistive flame detector	t1	Prepurge time
BV...	Fuel valve	QRC...	Blue-flame detector	t1´	Purge time
EK1	Lockout reset button		bl = blue, br = brown, sw = black	t3	Preignition time
EK2	Remote lockout reset button	R	Control thermostat or	t3n	Postignition time
FS	Flame signal		pressurestat	t4	Interval from flame signal to
FSV	Flame signal amplifier	SB	Safety limit thermostat		release of «BV2»
K...	Contacts of control relay	Si	External primary fuse	A´	Start of startup sequence with
	kbr Cable link (required only	W	Limit thermostat or pressure		burners using an «OH»
	when no oil preheater is used)		switch	A	Start of startup sequence with
LED	3-color signal lamp	Z	Ignition transformer		burners using no «OH»
M	Burner motor	TSA	Ignition safety time	B	Time of flame establishment
OW	Release contact of oil preheater	tw	Waiting time	C	Operating position
OH	Oil preheater			D	Controlled shutdown by «R»

Color code table for multicolor signal lamp (LED)		
Status	Color code	Color
Waiting time «tw», other waiting states	❍	Off
Oil preheater on, waiting time «tw»	●	Yellow
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	Free
4 blinks	on	Extraneous light on burner startup
5 blinks	on	Free
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	Time supervision oil preheater - Oil preheater failed 5 times during prepurging
9 blinks	on	Free
10 blinks	off on	Wiring fault or internal fault, output contacts,other faults. 3 times temporary fault of the output contacts

FIRING HEAD / AIR SETTING



To adjust **LOW** air flow, turn the screw **B** as required. To reduce output, turn screw clockwise, to increase it turn screw counterclockwise.

To adjust **HI** air flow, turn the screw **A** as required. To reduce output, turn screw counterclockwise, to increase it turn screw clockwise.

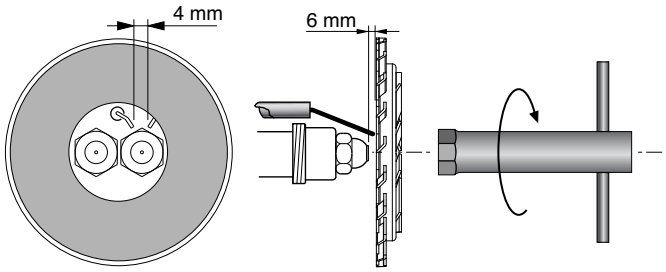
ADJUSTMENT DATA

Output kW 1°st	2°st	Output kg/h 1°st	2°st	Nozzle 1°st	2°st	Pump bar	Air Setting 1°st	2°st	Head Setting

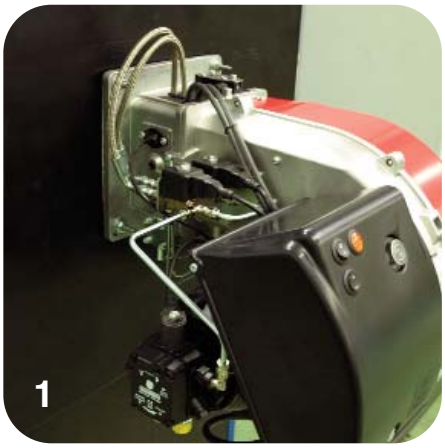
UGELLO : DANFOSS H÷S 80°÷60°; DELAVAN W 60°; STEINEN S 60°

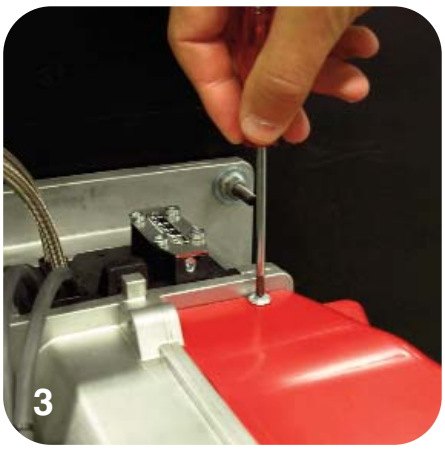
NOZZLE CLEANING AND REPLACEMENT

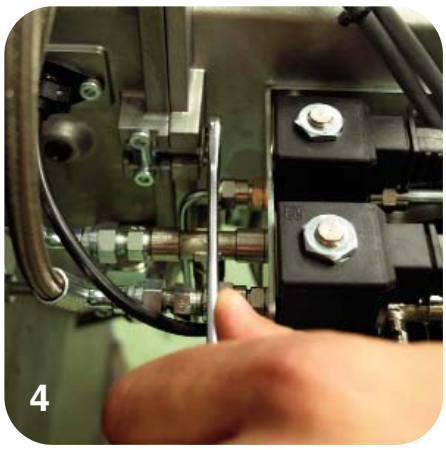
Use only the suitable box wrench provided for this operation to remove the nozzle, taking care to not damage the electrodes. Fit the new nozzle with the same care.
Note: Always check the position of electrodes after having replaced the nozzle (see illustration). A wrong position could cause ignition troubles.

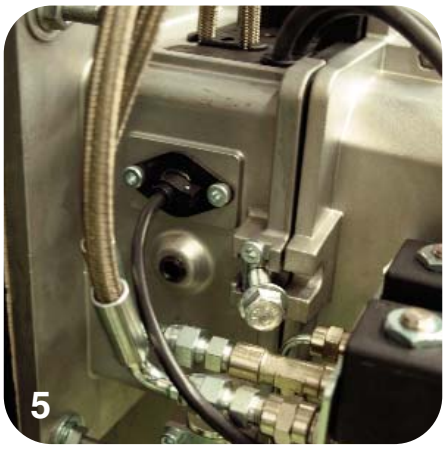


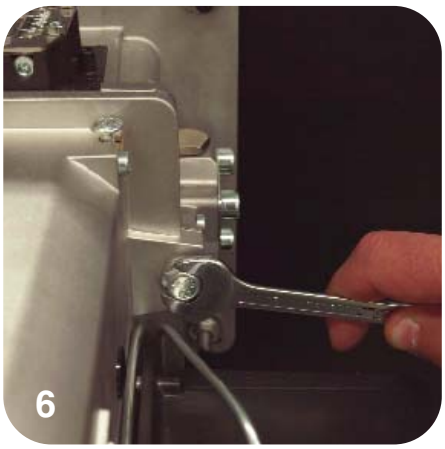
REMOVING FIRING HEAD

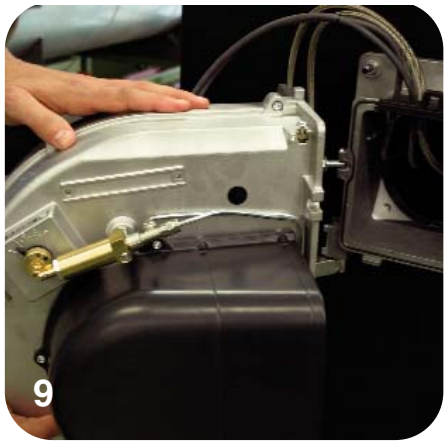




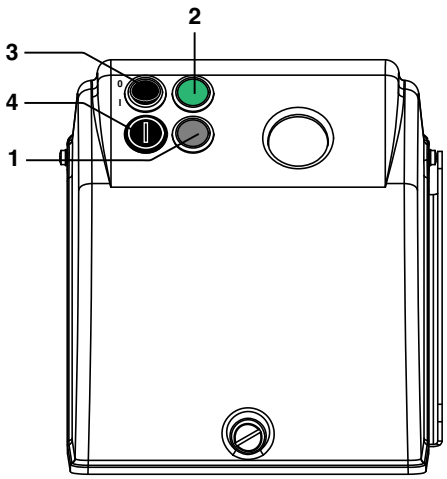








DESCRIPTION OF THE CONTROL PANEL OF THE BURNER



1 - reset key
2 - working lamp
3 - main switch I / O
4 - fuse

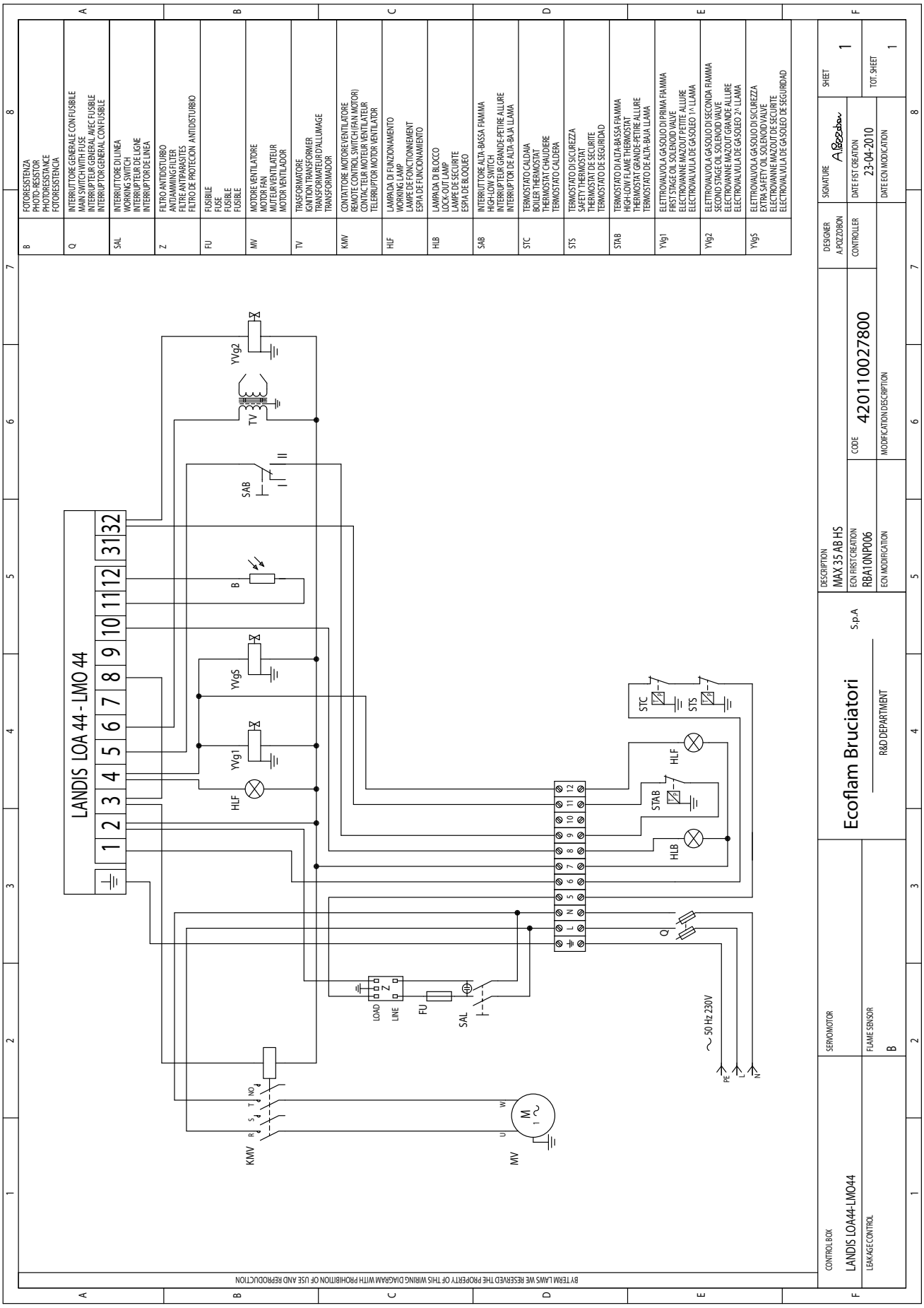
MAINTENANCE

The burner does not start.
- Main switch in “0” position.
- Fuses are blown.
- Boiler thermostats are in open position.
- Control box is faulty.

The burner runs the prepurging but does not ignite and then switches into safety condition.
- Control box is faulty.
- Ignition transformer is faulty.
- Electrodes are dirty.
- Electrodes are faulty.
- Electrodes are in wrong position.
- Nozzles are clogged.
- Nozzles are too worn.
- Filters are clogged.
- Oil pressure too low.
- Combustion air flow rate excessively high related to nozzle’s flow rate.

The burner ignites but then switches into safety condition
- Control box is faulty.
- Nozzles are clogged.
- Nozzles are too worn.
- The photocell does not detect the flame.
- Filters are clogged.
- Oil pressure too low.
- Combustion air flow rate excessively high related to nozzle’s flow rate.

The burner does not switch to High flame
- 1st(Low flame) and 2nd (High flame) stage manual switch on control board is in wrong position.
- Control box is faulty.
- 2nd stage solenoid valve coil is faulty.
- Oil pressure too low.
- Filters are clogged.
- 2nd stage nozzle is too worn.
- 2nd stage nozzle is clogged.
- Air damper’s hydraulic jack not properly adjusted or faulty.


B FOTORESISTENZA PHOTO-RESISTOR PHOTORÉSISTANCE FOTOWEERSTAND
Q INTERRUTTORE GENERALE CON FUSIBILE MAIN SWITCH WITH FUSE INTERRUPTEUR GENERAL AVEC FUSIBILE INTERRUPTOR GENERAL CON FUSIBILE
SAL INTERRUTTORE DI LINEA WORKING SWITCH INTERRUPTEUR DE LIGNE INTERRUPTOR DE LÍNEA
Z FILTRO ANTIDISTURBO ANTIJAMMING FILTER FILTRE ANTIPARASITES FILTRO DE PROTECCION ANTIDISTURBIO
FU FUSIBILE FUSE FUSIBLE FUSIBLE
MV MOTORE VENTILATORE MOTOR FAN MOTEUR VENTILATEUR MOTOR VENTILADOR
TV TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR D'ALLUMAGE TRANSFORMADOR
KMV CONTATTORE MOTORE VENTILATORE REMOTE CONTROL SWITCH (FAN MOTOR) CONTACTEUR MOTEUR VENTILATEUR TELERRUPTOR MOTOR VENTILADOR
HLF LAMPADA DI FUNZIONAMENTO WORKING LAMP LAMPE DE FONCTIONNEMENT ESPIA DE FUNCIONAMIENTO
HLB LAMPADA DI BLOCCO LOCK-OUT LAMP LAMPE DE SECURITE ESPIA DE BLOQUEO
SAB INTERRUTTORE ALTA-BASSA FIAMMA HIGH-LOW SWITCH INTERRUPTEUR GRANDE-PETITE ALLURE INTERRUPTOR DE ALTA-BAJA LLAMA
STC TERMOSTATO CALDAIA BOILER THERMOSTAT THERMOSTAT CHAUDIERE TERMOSTATO CALDERA
STS TERMOSTATO DI SICUREZZA SAFETY THERMOSTAT THERMOSTAT DE SECURITE TERMOSTATO DE SEGURIDAD
STAB TERMOSTATO DI ALTA-BASSA FIAMMA HIGH-LOW FLAME THERMOSTAT THERMOSTAT GRANDE-PETITE ALLURE TERMOSTATO DE ALTA-BAJA LLAMA
YVg1 ELETTROVALVOLA GASOLIO DI PRIMA FIAMMA FIRST STAGE OIL SOLENOID VALVE ELECTROVANNE MAZOUT PETITE ALLURE ELECTROVALVULA DE GASOLEO 1ª LLAMA
YVg2 ELETTROVALVOLA GASOLIO DI SECONDA FIAMMA SECOND STAGE OIL SOLENOID VALVE ELECTROVANNE MAZOUT GRANDE ALLURE ELECTROVALVULA DE GASOLEO 2ª LLAMA
YVgS ELETTROVALVOLA GASOLIO DI SICUREZZA EXTRA SAFETY OIL SOLENOID VALVE ELECTROVANNE MAZOUT DE SECURITE ELECTROVALVULA DE GASOLEO DE SEGURIDAD
LANDIS LOA 44 - LMO 44
1 2 3 4 5 6 7 8 9 10 11 12 31 32
SAB
TV
YVg2
B
YVgS
YVg1
HLF
STC
STS
STAB
HLB
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LOAD
LINE
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FU
SAL
KMV
MV
~ 50 Hz 230V
PE
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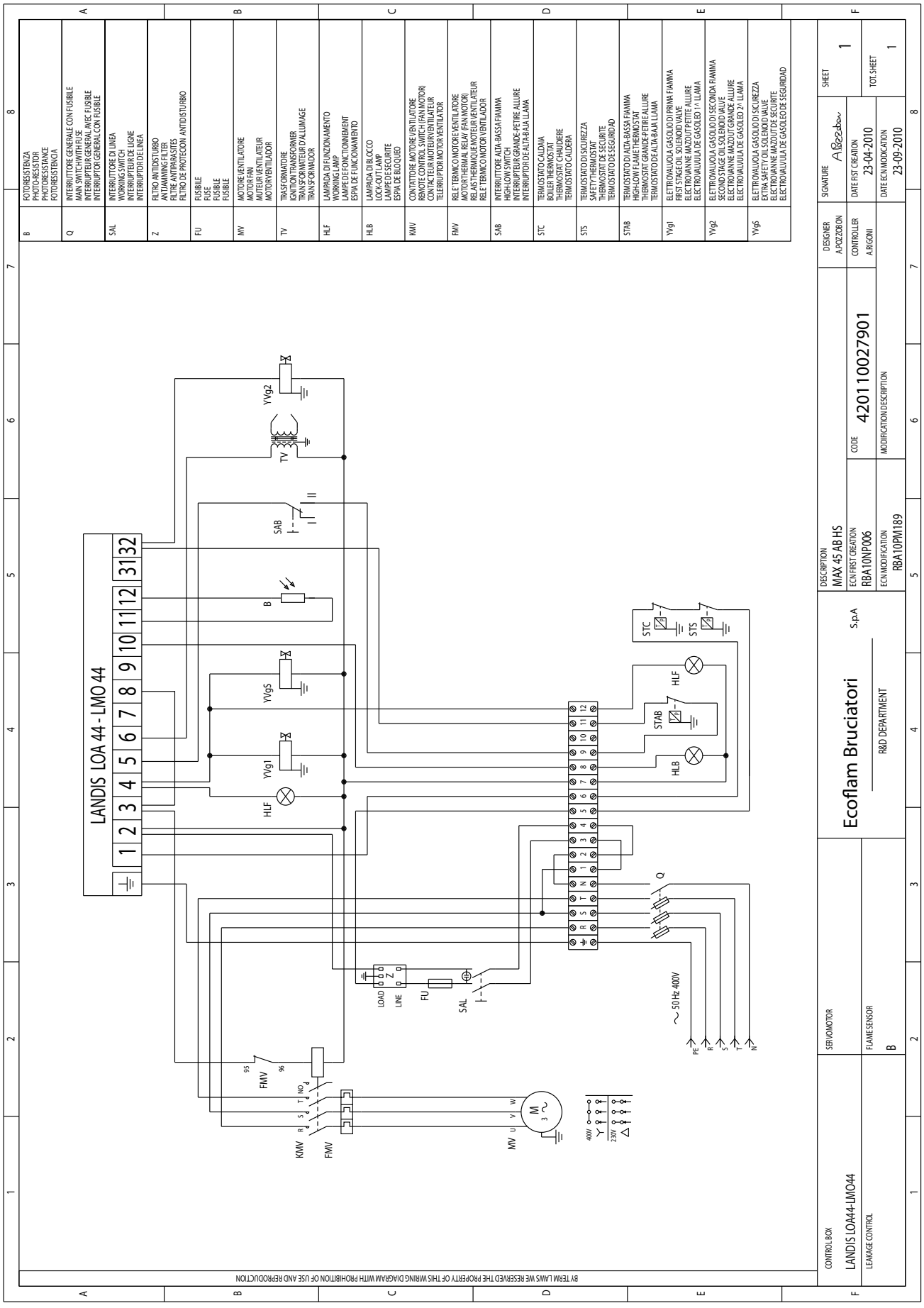
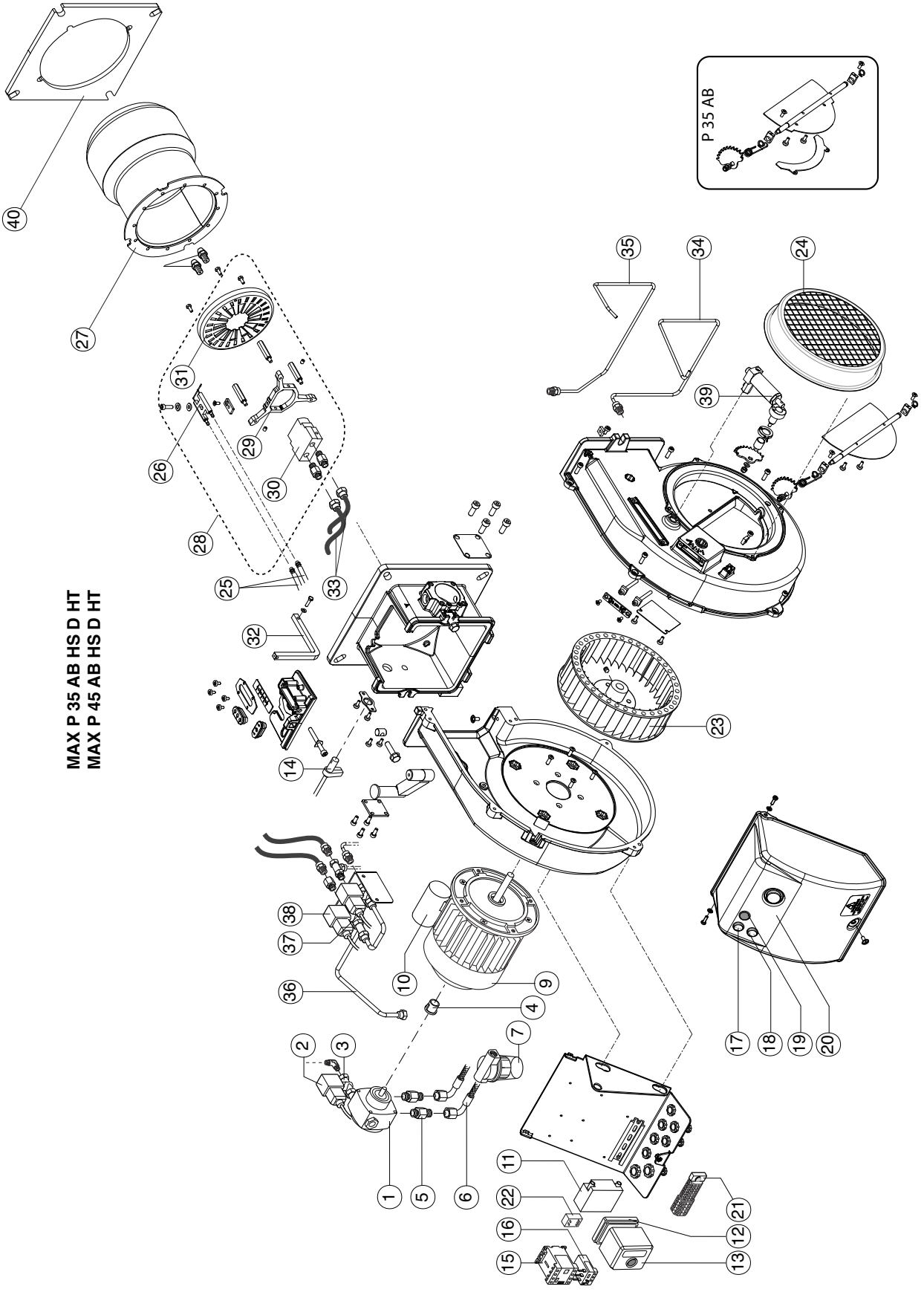
N
BY TERM LAWS WE RESERVED THE PROPERTY OF THIS WIRING DIAGRAM WITH PROHIBITION OF USE AND REPRODUCTION
CONTROL BOX
LANDIS LOA44-LMO44
LEAKAGE CONTROL
SERVOMOTOR
FLAME SENSOR
B
Ecoflam Bruciatori S.p.A.
R&D DEPARTMENT
DESCRIPTION MAX 35 AB HS
ECN FIRST CREATION RBA10NP006
ECN MODIFICATION
CODE 420110027800
MODIFICATION DESCRIPTION
DESIGNER A.POZZOBON
CONTROLLER
SIGNATURE A.Pozzobon
DATE FIST CREATION 23-04-2010
DATE ECN MODIFICATION
SHEET 1
TOT. SHEET 1



B	
	FOTORESISTENZA PHOTO-RESISTOR PHOTORESISTANCE FOTORESISTENCIA
Q	INTERRUTTORE GENERALE CON FUSIBILE MAIN SWITCH WITH FUSE INTERRUPTEUR GENERAL AVEC FUSIBLE INTERRUPTOR GENERAL CON FUSIBLE
SAL	INTERRUTTORE DI LINEA WORKING SWITCH INTERRUPTEUR DE LIGNE INTERRUPTOR DE LINEA
Z	FILTRO ANTIDISTURBO ANTI-JAMMING FILTER FILTRE ANTIPARASITES FILTRO DE PROTECCION ANTIDISTURBIO
FU	FUSIBILE FUSE FUSIBLE FUSIBLE
MV	MOTORE VENTILATORE MOTOR FAN MOTEUR VENTILATEUR MOTOR VENTILADOR
TV	TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR D'ALLUMAGE TRANSFORMADOR
HLF	LAMPADA DI FUNZIONAMENTO WORKING LAMP LAMPE DE FONCTIONNEMENT ESPIA DE FUNCIONAMIENTO
HLB	LAMPADA DI BLOCCO LOCK-OUT LAMP LAMPE DE SECURITE ESPIA DE BLOQUEO
KMV	CONTATTORE MOTORE VENTILATORE REMOTE CONTROL SWITCH (FAN MOTOR) CONTACTEUR MOTEUR VENTILATEUR TELERRUPTOR MOTOR VENTILATOR
FMV	RELE' TERMICO MOTORE VENTILATORE MOTOR THERMAL RELAY (FAN MOTOR) RELAIS THERMIQUE MOTEUR VENTILATEUR RELE TERMICO MOTOR VENTILADOR
SAB	INTERRUTTORE ALTA-BASSA FIAMMA HIGH-LOW SWITCH INTERRUPTEUR GRANDE-PETITE ALLURE INTERRUPTOR DE ALTA-BAJA LLAMA
STC	TERMOSTATO CALDAIA BOILER THERMOSTAT THERMOSTAT CHAUDIERE TERMOSTATO CALDERA
STS	TERMOSTATO DI SICUREZZA SAFETY THERMOSTAT THERMOSTAT DE SECURITE TERMOSTATO DE SEGURIDAD
STAB	TERMOSTATO DI ALTA-BASSA FIAMMA HIGH-LOW FLAME THERMOSTAT THERMOSTAT GRANDE-PETITE ALLURE TERMOSTATO DE ALTA-BAJA LLAMA
YVg1	ELETTROVALVOLA GASOLIO DI PRIMA FIAMMA FIRST STAGE OIL SOLENOID VALVE ELECTROVANNE MAZOUT PETITE ALLURE ELECTROVALVULA DE GASOLEO 1^ LLAMA
YVg2	ELETTROVALVOLA GASOLIO DI SECONDA FIAMMA SECOND STAGE OIL SOLENOID VALVE ELECTROVANNE MAZOUT GRANDE ALLURE ELECTROVALVULA DE GASOLEO 2^ LLAMA
YVgS	ELETTROVALVOLA GASOLIO DI SICUREZZA EXTRA SAFETY OIL SOLENOID VALVE ELECTROVANNE MAZOUT DE SECURITE ELECTROVALVULA DE GASOLEO DE SEGURIDAD


P 35 AB
MAX P 35 AB HS D HT
MAX P 45 AB HS D HT
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			MAX P 45 AB
N°	DESCRIPTION		code
1	OIL PUMP	SUNTEC D 67 A	65322956
2	COIL	DELTA 1/8 F.F.F84	65323765
3	OIL VALVE	DELTA 1/8 F.F.F84	65323754
4	COUPLING	SIMEL	65322918
5	NIPPLE	TN 10X1200 F/3 3/8X1/4	65323188
6	HOSES	TN 10X1200	65323187
7	FILTER	ART.70301-01P	65324051
8	COVER		-
9	MOTOR	740 W	65322808
10	CAPACITOR		-
11	IGNITION TRANSFORMER	DANFOSS CM	65323257
12	CONTROL BOX BASE	LANDIS	65320092
13	CONTROL BOX	LMO44.255C2	65320024
14	PHOTORESISTOR	QRB1A-A050B70A2	65320076
15	REMOTE CONTROL SWITCH	BG0910A	65323138
16	MOTOR THERMAL RELAY	Lovato 11RF9 1,4-2,3A	65323098
17	MAIN SWITCH	KB24448AOBB	65324696
18	HIGH-LOW FLAME SWITCH	KB11248COBB	65324697
19	LAMP	KL09248X2BY	65324695
20	COVER		65324705
21	FUSE SUPPORT	HK 520 04-1	65324279
22	ANTIJAMMING FILTER		65323170
23	FAN	200 x 80	65324710
24	COVER AIR INLET		65325586
25	CABLES	TC	65324863
		TL	65324863
26	ELECTRODES		65320923
27	BLAST TUBE	TC	65324866
		TL	65324867
28	INNER ASSEMBLY		65325987
29	NOZZLE HOLDER SUPPORT		65324868
30	NOZZLE HOLDER		65324860
31	DIFFUSER		65324869
32	ROD	TC	65324861
		TL	65324862
33	FIRING HEAD HOSES	TC	65324874
		TL	65324875
34	HYDRAULIC SYSTEM PIPE		65325527
35	PIPE (2nd FLAME)		65325364
36	PUMP PIPE		65324873
37	OIL VALVE	Parker SCEM VE131IN	65323624
38	COIL	Parker SCEM VE131IN	65323782
39	HYDRAULIC SYSTEM		65322335
40	GASKET		65324701

TC = TESTA CORTA/ SHORT HEAD TL = TESTA LUNGA/ LONG HEAD

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Ecoflam Bruciatori S.p.A.
via Roma, 64 - 31023 RESANA (TV) - Italy - tel. 0423.719500 - fax 0423.719580
http://www.ecoflam-burners.com - e-mail: export@ecoflam-burners.com

"società soggetta alla direzione e al coordinamento della Ariston Thermo S.p.A., via A. Merloni, 45 - 60044 Fabriano (An) CF 01026940427"