

OIL BURNERS

Ecoflam



MAIOR P 60 AB

MAIOR P 80 AB

MAIOR P120 AB

HYDRAULIC SYSTEM

240 / 415 V 50 Hz



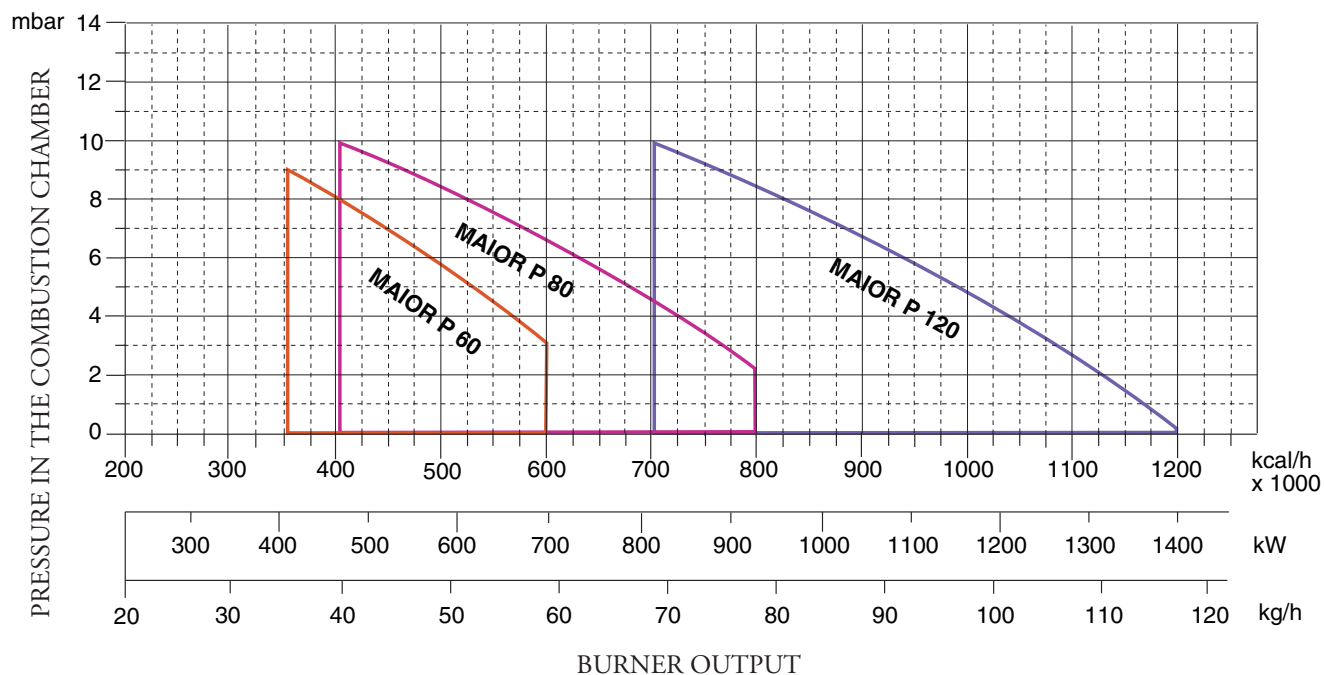
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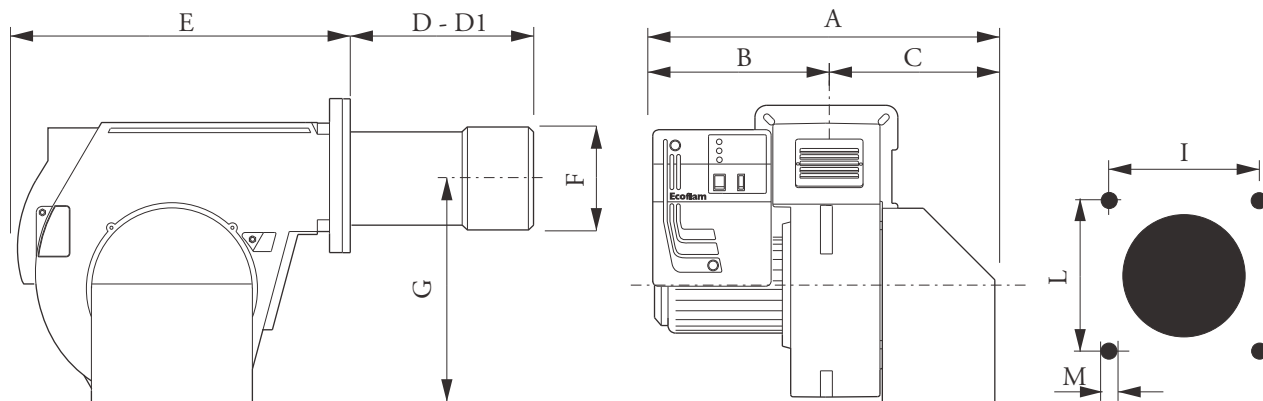
29.07.2013

TECHNICAL DATA

MODELS		MAIOR P 60	MAIOR P 80	MAIOR P 120
Thermal power max.	kcal/h	600.000	800.000	1.200.000
	kW	710	949	1423
Thermal power min.	kcal/h	350.000	400.000	700.000
	kW	415	474	830
Max. capacity light oil	kg/h	60	80	120
Min. capacity light oil	kg/h	35	40	70
Voltage three phase 50 Hz	V	240/415	240/415	240/415
Motor	kW	1,1	1,1	2,2
Rpm	Nº	2.800	2.800	2.800
Ignition transformer	kV/mA	10/20	10/20	10/20
Control box	LANDIS	LMO 44	LMO 44	LMO 44
Fuel : light oil	kcal/kg	10.200 max. visc 1,5°E a 20°C		

WORKING FIELDS

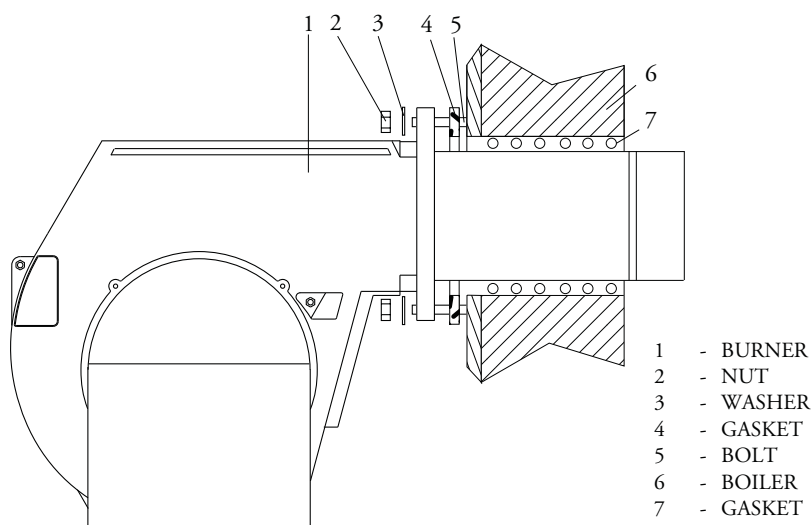
OVERALL DIMENSIONS



MODELS	A	B	C	D	D1	E	F	G	I	L	M
MAIOR P 60 AB	590	330	260	235	395	555	180	376	190	190	M10
MAIOR P 80 AB	590	330	260	235	395	555	180	376	190	190	M10
MAIOR P 120 AB	690	350	340	225	445	555	190	376	190	190	M10

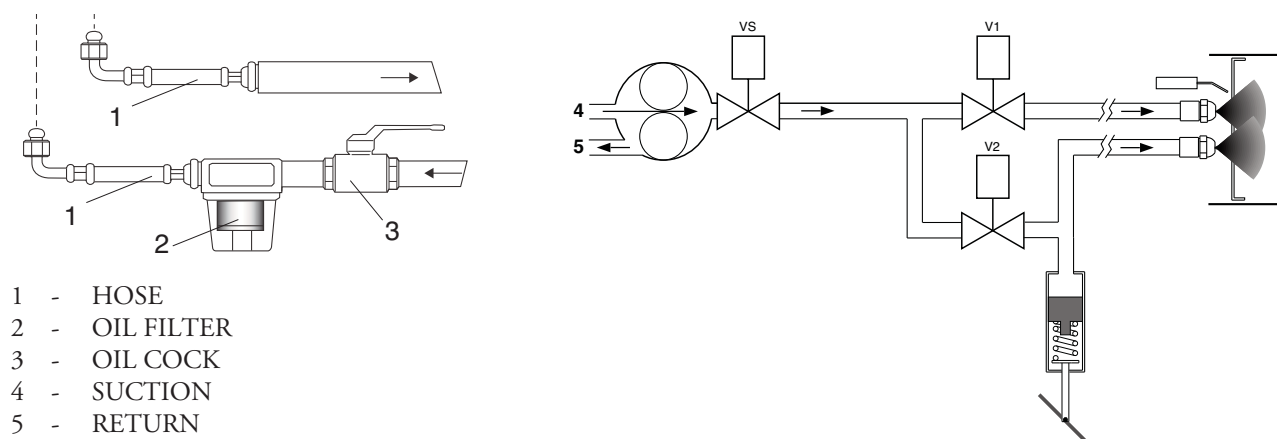
D = short head D1 = long head

BURNER INSTALLATION



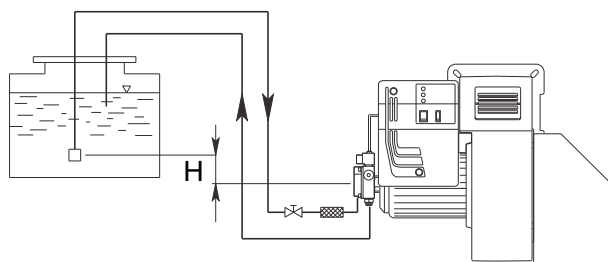
Attach the burner to the boiler as in fig. Fill the gap between the burner blast tube and door with asbestos rope.

HYDRAULIC CIRCUIT



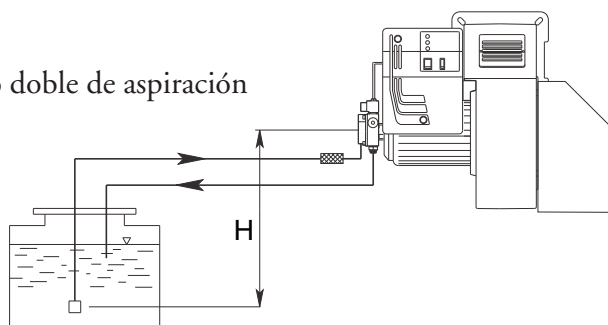
ALIMENTACION DEL COMBUSTIBLE

Tubo doble de la parte superior del depósito



H (m)	Longitud de los tubos			
	AS 67 / AN 77 (m)		AJ 6 (m)	
	~ 10 mm	~ 12 mm	~ 14 mm	~ 16 mm
0	32	90	22	38
0,5	36	90	25	45
1	40	90	30	50
2	48	90	35	60
3	56	90	38	70
3,5	60	90	40	80

Tubo doble de aspiración



H (m)	Longitud de los tubos			
	AS 67 / AN 77 (m)		AJ 6 (m)	
	~ 10 mm	~ 12 mm	~ 14 mm	~ 16 mm
0	25	70	25	45
0,5	21	62	20	38
1	18	54	18	33
2	10	38	10	20
3	5	20	5	10
3,5	---	10	2	4

La longitud de la tubería se obtiene de la suma de todas las secciones rectilíneas horizontales y verticales y de las curvas. La altura estática de aspiración (máx. 3.5m) es la distancia entre la válvula anti retorno y el eje bomba del quemador. La depresión no debe superar los 0.45 bar; una depresión mas grande podría perjudicar el funcionamiento de la bomba, con consecuente aumento del ruido mecánico y , al final, una ruptura.

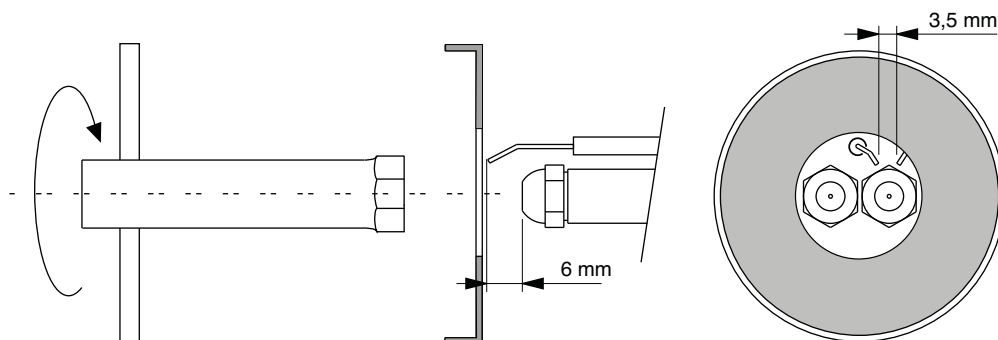
NOZZLE OUTPUT**TYPE : DELAVAN B - MONARCH PLP**

NOZZLE GPH	PUMP PRESSURE BAR						
	10	11	12	13	14	15	16
2,50	9,50	9,97	10,41	10,83	11,24	11,64	12,02
3,00	11,40	11,96	12,49	13,00	13,49	13,96	14,42
3,50	13,30	13,95	14,57	15,17	15,74	16,29	16,83
4,00	15,20	15,94	16,65	17,33	17,99	18,62	19,23
4,50	17,10	17,94	18,73	19,50	20,24	20,95	21,63
5,00	19,00	19,93	20,82	21,67	22,48	23,27	24,04
5,50	20,90	21,92	22,90	23,83	24,73	25,60	26,44
6,00	22,80	23,92	24,98	26,00	26,98	27,93	28,84
6,50	23,70	25,91	27,06	28,17	29,23	30,26	31,25
7,00	26,60	27,90	29,14	30,33	31,48	32,58	33,65
7,50	28,50	29,90	31,22	32,50	33,73	34,91	36,05
8,30	31,54	33,08	34,55	35,97	37,32	38,63	39,90
9,50	36,10	37,87	39,55	41,17	42,72	44,22	45,67
10,50	40,06	41,73	43,74	45,41	47,20	48,90	50,50
12,00	45,60	47,80	50,00	52,00	54,00	55,90	57,70
13,80	52,40	55,00	57,50	59,80	62,10	64,20	66,30
15,30	58,10	61,00	63,70	66,30	68,80	71,10	73,60
17,50	66,50	69,80	72,90	75,80	78,70	81,50	84,10
19,50	74,10	77,70	81,20	84,50	87,70	90,80	93,70
21,50	81,70	85,70	89,50	93,20	96,70	100,10	103,40
24,00	91,20	95,70	99,90	104,00	107,90	111,70	115,40
GPH	OUTPUT Kg/h						

NOZZLE CLEANING AND REPLACEMENT

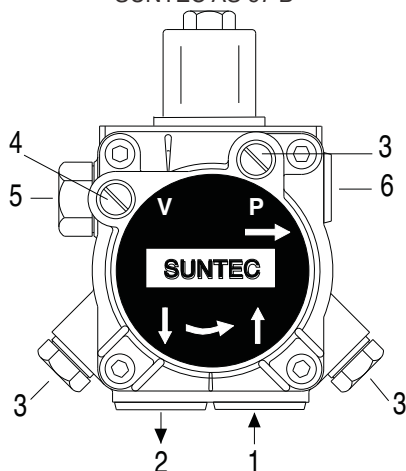
Use only the suitable box wrench provided for this operation to remove the nozzle, taking care to not damage the electrodes. Fit the new nozzle with the same care.

Note: Always check the position of electrodes after having replaced the nozzle (see illustration). A wrong position could cause ignition troubles.

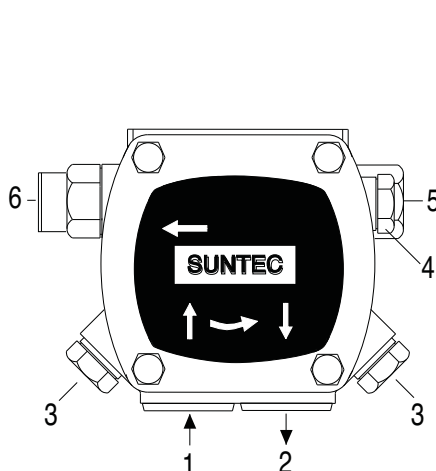


PRIMING AND ADJUSTMENT OF THE PUMP

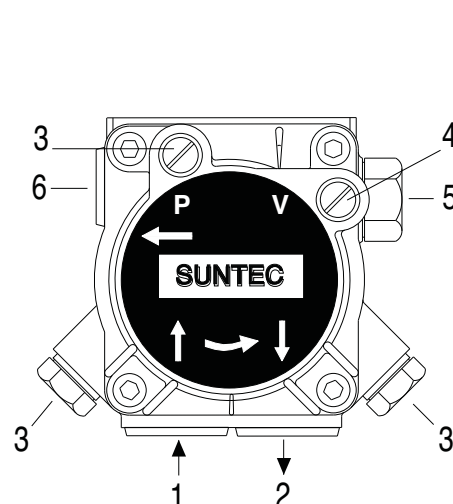
SUNTEC AS 67 B



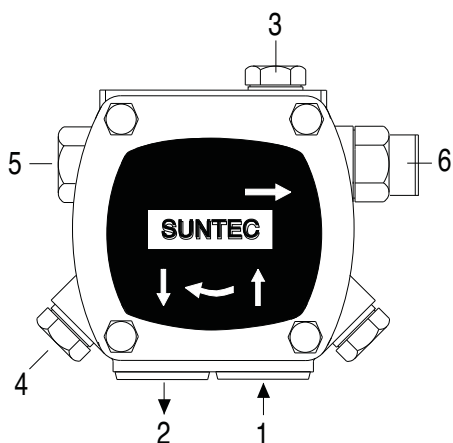
SUNTEC D 67 A



SUNTEC AN 77



SUNTEC AJ 6 C-C



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

The pump is factory set at 12 bar during the testing of the burner. To prime the pump first of all start the burner and bleed air from the pump through the gauge port. If the burner goes to lock-out after the prepurging time due to lack of pressure in the oil pump, restart the burner.

NOTE : before starting up the burner, make sure that the return pipe is clear. Check that the pipes do not leak. It is advisable to use copper pipes. Do not exceed the depression limit of 4 mt.(0,45 bar) to keep low noise levels. The return pipe must reach the same level as the check valve at the bottom of the oil tank..

BURNER START-UP AND ADJUSTMENT

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.
- The motor rotation direction.
- The correct calibration of the motor's thermal protection.

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 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 such a case, the manual rearming of the burner shall not take place before 30 seconds have elapsed from the burner's safety shutdown. In order to obtain an optimal combustion, it is necessary adjust the LOW - HIGH flame air flow, according to the instruction given further on. During such a phase, it will be possible to manually switch between HIGH (II) and LOW (I) flame and viceversa, through the High/Low flame switch. At the end of the adjusting phase, leave the switch in position II (HIGH flame). The fuel pump feeding pressure, must remain around 12 bar.

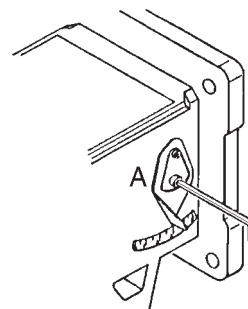
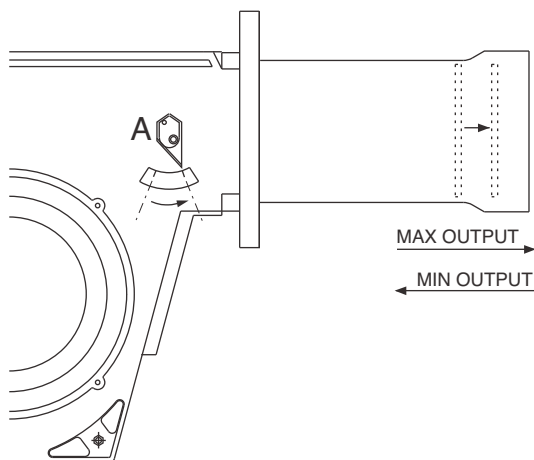
LANDIS LMO 44 CONTROL INFORMATION SYSTEM

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:

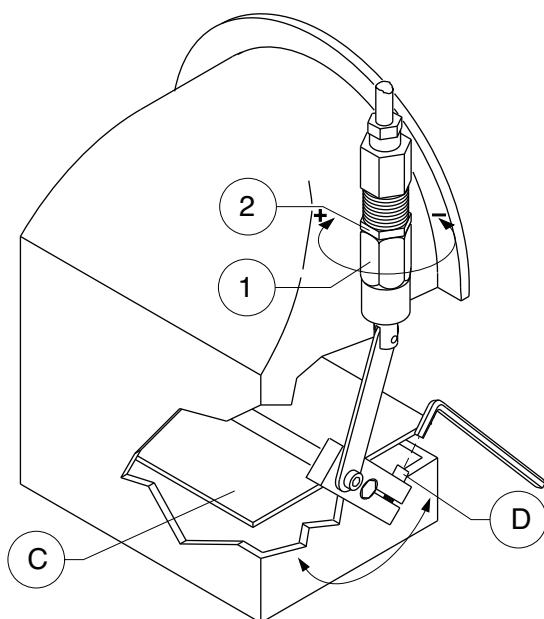
Error Code	Possible cause
2 blinks	No establishment of flame at the end of «TSA» - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition
3 blinks	Free
4 blinks	Extraneous light on burner start-up
5 blinks	Free
6 blinks	Free
7 blinks	Too 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	Time supervision oil pre-heater
9 blinks	Free
10 blinks	Wiring error or internal error, output contacts

FIRING HEAD SETTING

The main feature is the capability to adjust the head to obtain maximum result from different types of plant. The position of the mixing head determines the speed of the air flow according to pressure upstream from mixing mixer device.



COMBUSTION AIR FLOW ADJUSTMENT (HIGH-LOW FLAME)



Air flow rate adjustment in Low flame running:

- 1) - Start the burner (checking that the air damper is partially open).
- 2) - Loosen clamping screw D.
- 3) - Turn air damper C until obtaining a correct combustion (checked with a combustion gas analysis set).
- 4) - Tighten clamping screw D.

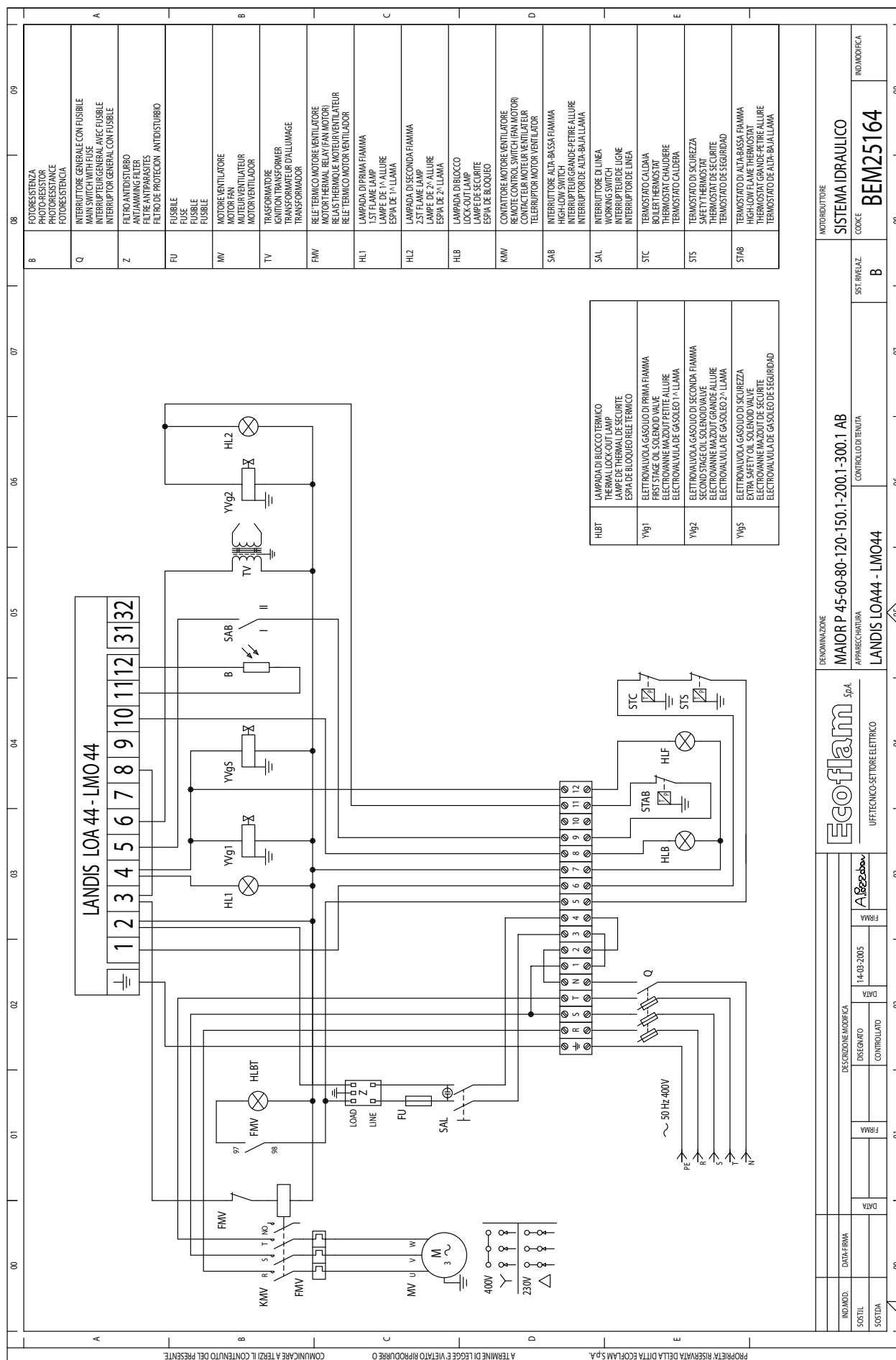
Air flow rate adjustment in High flame running:

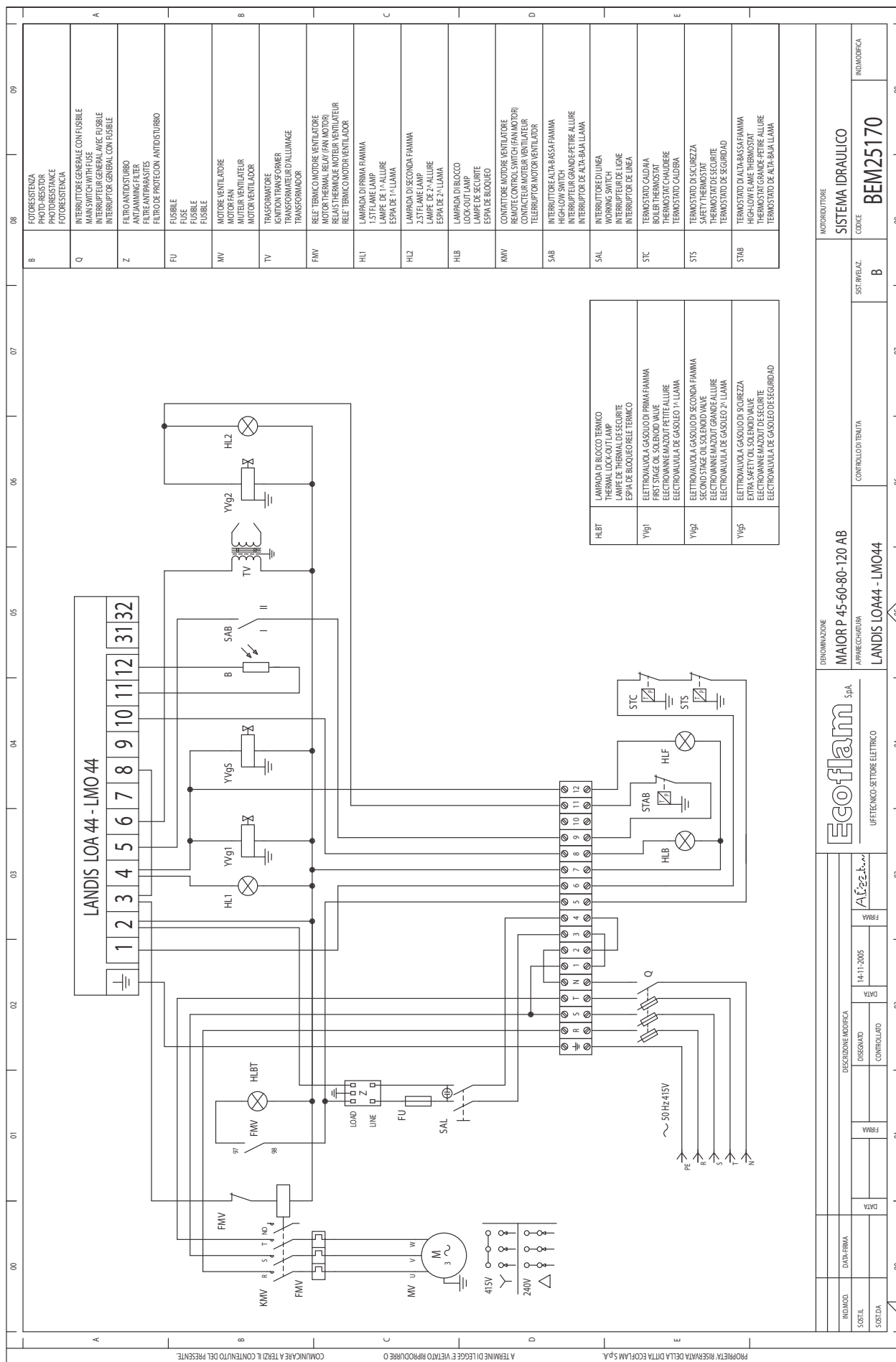
WARNING: due to the presence of oil under pressure in the hydraulic jack when the burner is working in High flame condition, the air flow rate adjustment is to be made with the use of an adjusting ring nut 1 with the burner running in Low flame condition. The combustion checks are to be done once the burner is turned to High flame condition again.

- 1) - Loosen clamping ring nut 2
- 2) - Increase or decrease the air flow rate through the adjusting ring nut 1 (Clockwise to increase, counterclockwise to decrease).
- 3) - Tighten clamping ring nut 2.
- 4) - Switch manually from Low flame to High flame and check the combustion values.

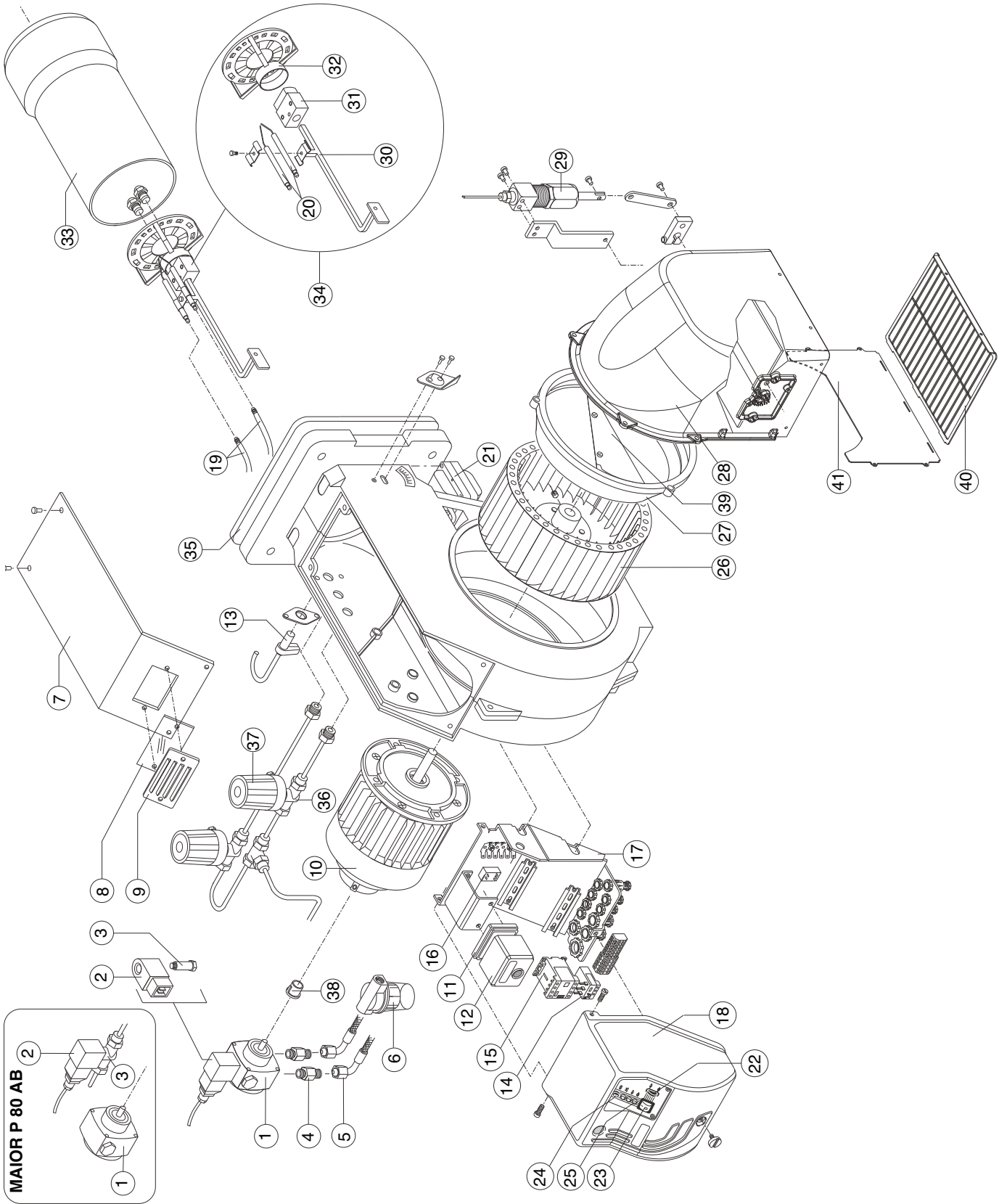
ELECTRICAL CONNECTIONS

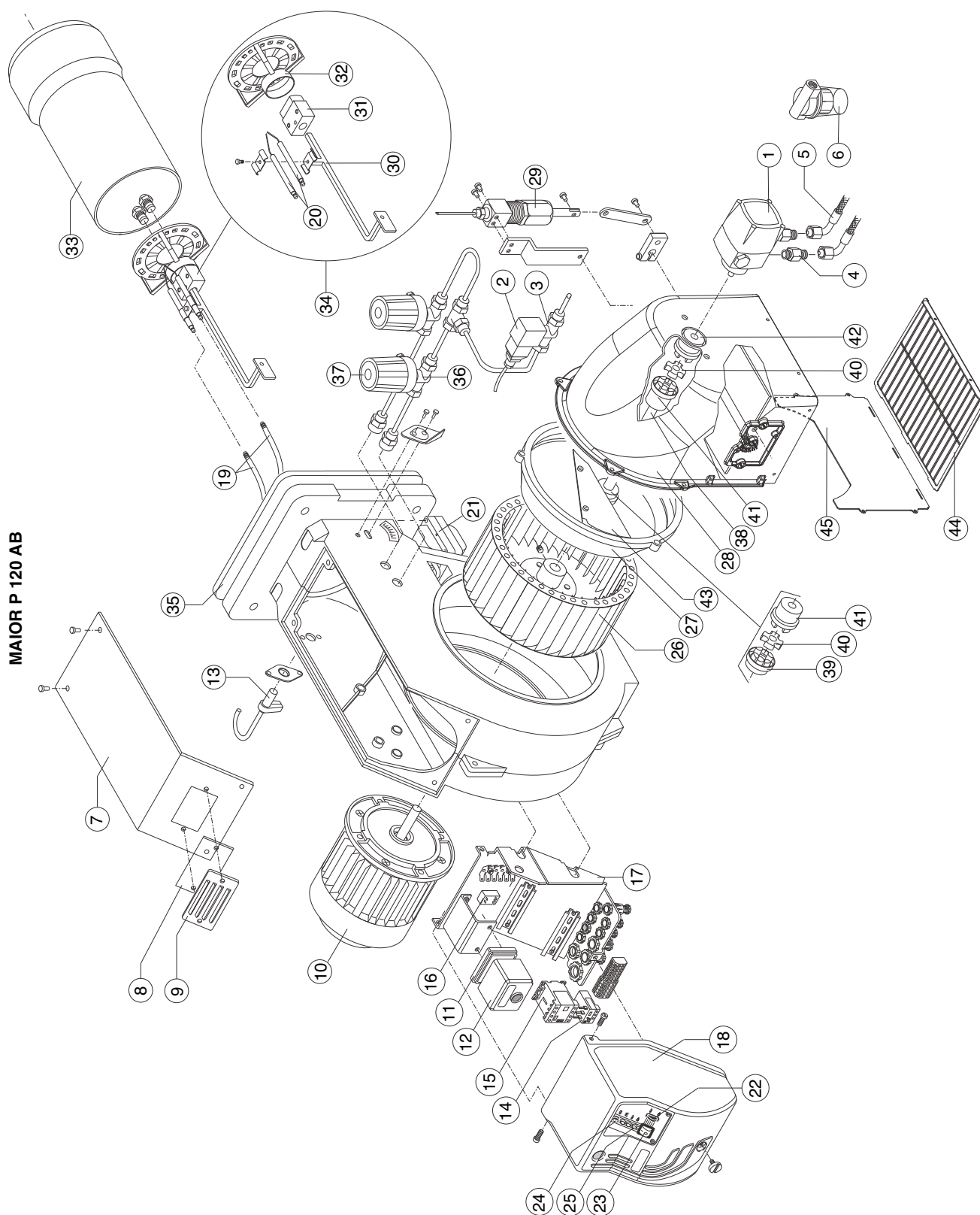
All burners are factory tested at 415 V - 50 Hz 3-phase for motors, and 240 V - 50 Hz single phase with neutral for auxiliary equipments. Should it be necessary to power the burner with 240 V - 50 Hz, modify the connections on motor and the terminal board as shown in the picture. Protect the burner supply line with suitable fuses and/or other safety devices as required by the local regulations on the matter.





MAIOR P 60-80 AB





			MAIOR P 60 AB
N°	DESCRIPTION		code
1	OIL PUMP	SUNTEC AS 67 B	65322960
2	COIL	SUNTEC	65323767
3	OIL VALVE	SUNTEC	65323744
4	NIPPLE	TN 10X1200 F/3	65323188
5	HOSES	TN 14X1200 3/8-A	65323184
6	FILTER	ART.70301-01P	3142089
7	COVER		65324052
8	GLASS		65320487
9	VIEWING WINDOW		65320488
10	MOTOR	1100 W	65325406
11	CONTROL BOX BASE	LANDIS	65320092
12	CONTROL BOX	LANDIS LMO44.255A2	65320024
13	PHOTORESISTOR	LANDIS	65320076
14	MOTOR THERMAL RELAY	AEG 3-4,7A	65323116
15	REMOTE CONTROL SWITCH	AEG LS05.10	65323132
16	ANTI JAMMING FILTER		65323170
17	BOX SUPPORT		65320478
18	BOX		65320477
19	CABLE	TC	65320940
		TL	65320942
20	ELECTRODES		65322315
21	IGNITION TRANSFORMER	COFI 1020 CM 240/50	65323238
22	HIGH-LOW FLAME SWITCH	cod.360000001	65323065
23	MAIN SWITCH	cod.4010011509	65323064
24	FUSE HOLDER	Fusit FH-B528	65322181
25	LAMP	EL/N-SC4 Elettrospring	65322053
26	FAN	250 x 84	65321777
27	AIR CONVEYOR		65320639
28	COVER AIR INLET		65324054
29	HYDRAULIC SYSTEM		65322333
30	ROD	TC	65320236
		TL	65320237
31	NOZZLE HOLDER		65320712
32	DIFFUSER		65320779
33	BLAST TUBE	TC	65320408
		TL	65320409
34	INNER ASSEMBLY	TC	65322418
		TL	65322417
35	GASKET		65321116
36	OIL VALVE	Parker SCEM VE131IV	65323627
		BRAHMA	65323737
37	COIL	PARKER	65323782
		BRAHMA	65323762
38	COUPLING		65322918
39	FAN SCOOP		65324360
40	PROTECTION		65324049
41	SHEET CLOSING		65324050

TC = SHORT HEAD TL = LONG HEAD

			MAIOR P 80 AB
N°	DESCRIPTION		code
1	OIL PUMP	SUNTEC AN 77 A	65322953
2	COIL	DELTA	65323765
3	OIL VALVE	DELTA 1/8 F.F.F84	65323754
4	NIPPLE	TN 10X1200 F/3	65323188
5	HOSES	TN 14X1200 3/8-A	65323184
6	FILTER	ART.70301-01P	3142089
7	COVER		65324052
8	GLASS		65320487
9	VIEWING WINDOW		65320488
10	MOTOR	1100 W	65322799
11	CONTROL BOX BASE	LANDIS	65320092
12	CONTROL BOX	LANDIS LMO44.255A2	65320024
13	PHOTORESISTOR	LANDIS	65320076
14	MOTOR THERMAL RELAY	AEG 3-4,7A	65323116
15	REMOTE CONTROL SWITCH	AEG LS05.10	65323132
16	ANTI JAMMING FILTER		65323170
17	BOX SUPPORT		65320478
18	BOX		65320477
19	CABLE	TC	65320940
		TL	65320942
20	ELECTRODES		65322315
21	IGNITION TRANSFORMER	COFI 1020 CM 240/50	65323238
22	HIGH-LOW FLAME SWITCH	cod.360000001	65323065
23	MAIN SWITCH	cod.40100I1509	65323064
24	FUSE HOLDER	Fusit FH-B528	65322181
25	LAMP	EL/N-SC4 Elettrospring	65322053
26	FAN	260 x 98	65321776
27	AIR CONVEYOR		65320639
28	COVER AIR INLET		65324054
29	HYDRAULIC SYSTEM		65322333
30	ROD	TC	65320236
		TL	65320237
31	NOZZLE HOLDER		65320712
32	DIFFUSER		65320779
33	BLAST TUBE	TC	65320408
		TL	65320409
34	INNER ASSEMBLY	TC	65322418
		TL	65322417
35	GASKET		65321117
36	OIL VALVE	Parker SCEM VE131IV	65323627
37	COIL	PARKER	65323782
38	COUPLING		65322918
39	FAN SCOOP		65324360
40	PROTECTION		65324049
41	SHEET CLOSING		65324050

TC = SHORT HEAD TL = LONG HEAD

			MAIOR P 120 AB
N°	DESCRIPTION		code
1	OIL PUMP	SUNTEC AJ 6CC 1000	65322950
2	COIL	DELTA	65323765
3	OIL VALVE	DELTA 1/8 F.F.F84	65323754
4	NIPPLE	TN 10X1200 F/3	65323188
5	HOSES	TN 14X1200 3/8-A	65323184
6	FILTER	ATT. 3/4 70207	3142084
7	COVER		65324052
8	GLASS		65320487
9	VIEWING WINDOW		65320488
10	MOTOR	2200 W	65322841
11	CONTROL BOX BASE	LANDIS	65320092
12	CONTROL BOX	LANDIS LMO44.255A2	65320024
13	PHOTORESISTOR	LANDIS	65320076
14	MOTOR THERMAL RELAY	AEG 4-6,3A	65323117
15	REMOTE CONTROL SWITCH	AEG LS4K.10	65323133
16	ANTIJAMMING FILTER		65323170
17	BOX SUPPORT		65320478
18	BOX		65320477
19	CABLE	TC	65320940
		TL	65320942
20	ELECTRODES		65322315
21	IGNITION TRANSFORMER	COFI 1020 CM 240/50	65323238
22	HIGH-LOW FLAME SWITCH	cod.360000001	65323065
23	MAIN SWITCH	cod.40100I1509	65323064
24	FUSE SUPPORT	Fusit FH-B528	65322181
25	LAMP	EL/N-SC4 Elettrospring	65322053
26	FAN	260 x 110	65321775
27	AIR CONVEYOR		65320639
28	COVER AIR INLET		65324277
29	HYDRAULIC SYSTEM		65322333
30	ROD	TC	65320234
		TL	65320235
31	NOZZLE HOLDER		65320712
32	DIFFUSER		65320771
33	BLAST TUBE	TC	65320404
		TL	65320405
34	INNER ASSEMBLY	TC	65322420
		TL	65322419
35	GASKET		65321117
36	OIL VALVE	Parker SCEM VE131IV	65323627
37	COIL	PARKER	65323782
38	ROD		65324358
39	COUPLING (FAN)		65321785
40	UNION		65321786
41	COUPLING		65321782
42	COUPLING (PUMP)		65324165
43	FAN SCOOP		65320623
44	PROTECTION		65324049
45	SHEET CLOSING		65324050

TC = SHORT HEAD TL = LONG HEAD

FAULT FINDING

<u>Burner does not start up</u>	- Mains switch not on. - Blown fuse. - Boiler thermostats not made. - Fault in control box.
<u>Burner pre-purges and stops</u>	- Fault in control box.
<u>Burner does not ignite during cycle and stops</u>	- Fault in control box. - Fault in photo-resistor.
<u>Burner does not ignite</u>	- Dirty ignition electrodes. - Fault at electrodes. - Electrodes installed wrongly. - Faulty ignition transformer. - Blocked nozzle. - Nozzle needs replacing. - Oil pressure too low. - Blocked oil filter. - Excessive combustion air for nozzle capacity. - Fault in control box.
<u>Burner ignites and then stops</u>	- Faulty nozzle. - Photo-resistor does not "see" flame. - Excessive combustion air for nozzle capacity. - Fault in control box. - Oil pressure too low. - Blocked oil filter.
<u>No high flame at burner (2nd stage)</u>	- 2nd stage valve coil faulty. - Oil pressure too low - Dirty filter - 2nd stage nozzle dirty faulty - Fault in control box.