

BRUCIATORI DI OLIO DENSO / HEAVY OIL BURNERS
BRULEURS A FIOUL LOURD/QUEMADORES DE FUEL PESADO
ЖИДКОТОПЛИВНЫЕ ГОРЕЛКИ МАЗУТ

Ecoflam



MAXFLAM D 10

MAXFLAM D 20



420010404000

420010404000

06.06.2011

Index**1 - Technical data**

- Technical datap.15
- Working fieldsp.15
- Overall dimensionsp.16

2 - Installation

- Burner installationp.16
- Heavy oil feedingp.16
- Pump's pressure/oil temperature diagramp.17
- Pumpp.17,18
- Heavy oil feed systemp.19
- Nozzle outputp.20

3 - Starter and regulations

- Verificationsp.21
- Working of the burnerp.21,22
- Regulationsp.23
- Hydraulic systemp.24

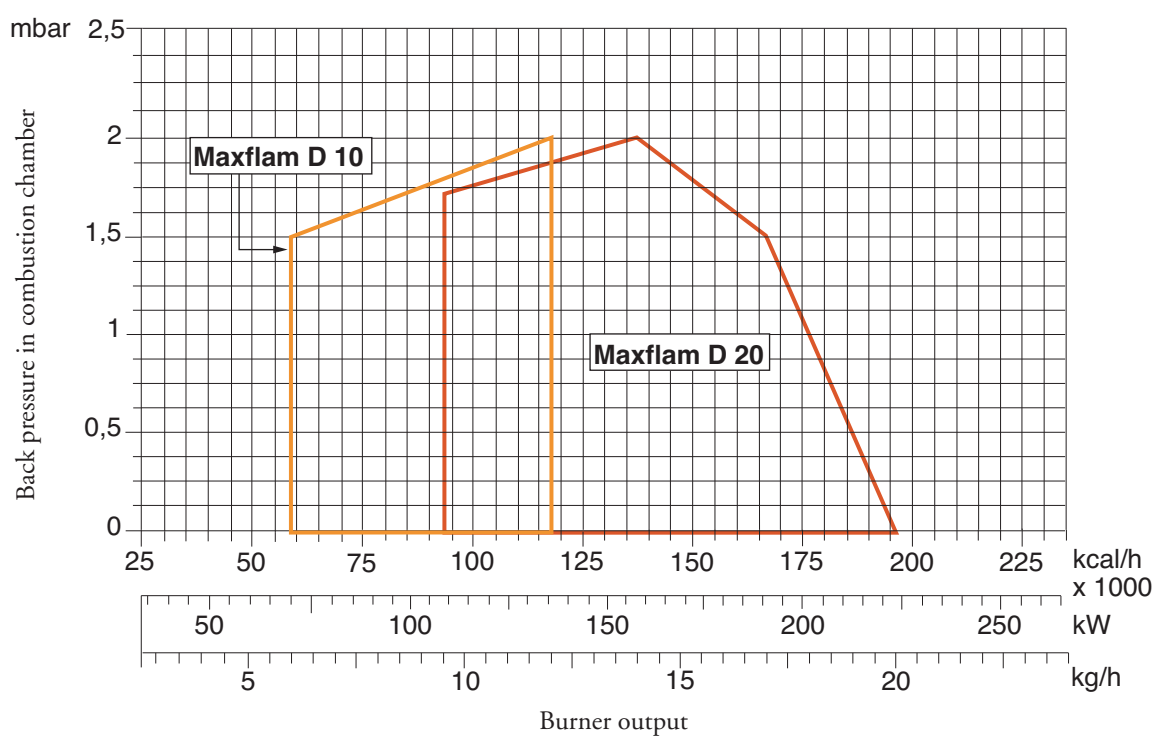
4 - Use and maintenance

- Cleaning and maintenancep.25
- Troubleshootingp.26

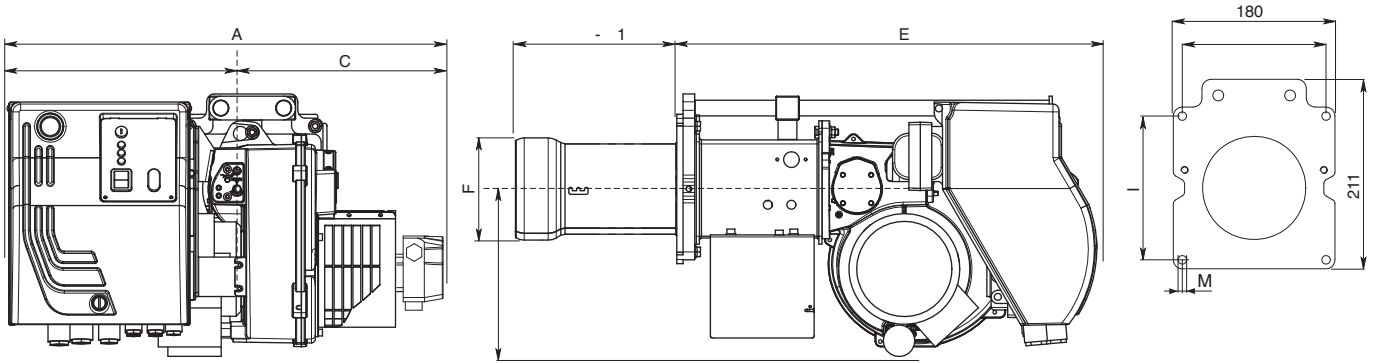
TECHNICAL DATA

MODELS		Maxflam D 10	Maxflam D 20
Thermal power max.	kcal/h	117.600	196.000
	kW	136,4	227
Thermal power min.	kcal/h	58.800	93.100
	kW	68	108
Max. oil flow rate	kg/h	12	20
Min. oil flow rate	kg/h	6	9,5
Max. viscosity		50°E a 50° C	50°E a 50° C
Feeding power	50 Hz V	230	230
Motor power	W	450	450
Rpm	N°	2.800	2.800
Ignition transformer	kV/mA	10/30	10/30
Main resistances	W	2 x 650	3 x 650
Control box	LANDIS	LMO14.111B2	LMO14.111B2
Fuel : heavy oil	kcal/kg	9.800	9.800

WORKING FIELDS



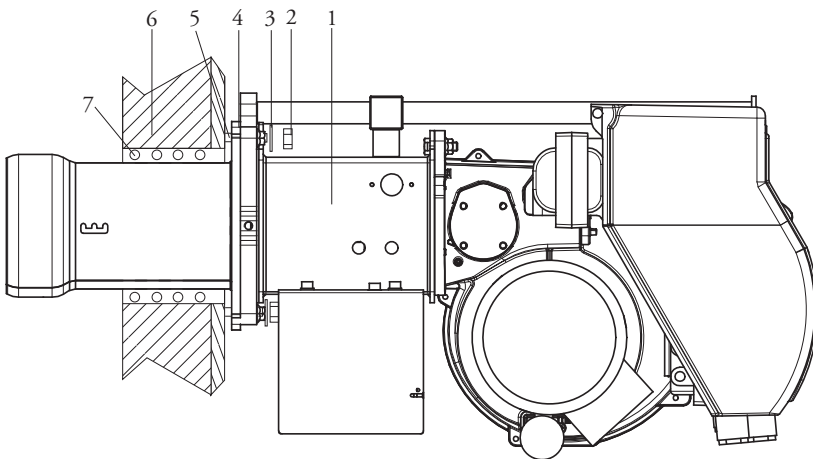
OVERALL DIMENSIONS (mm)



MODEL	A	B	C	D	D1	E	F	G	I	L	M
Maxflam D 10/20	520	290	230	205	325	535	130	201	160	160	M8

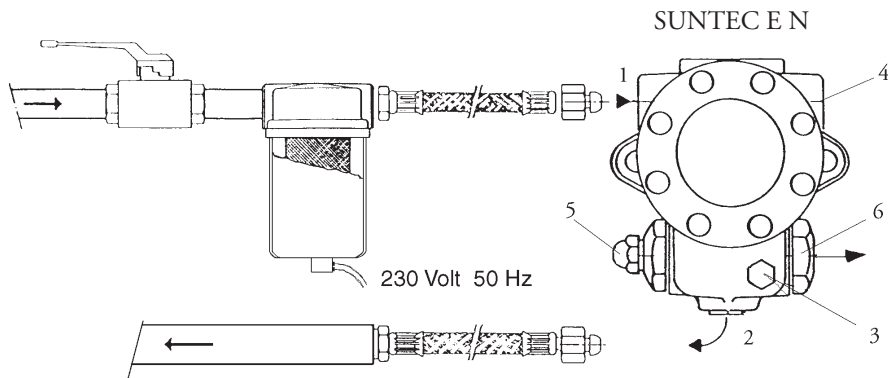
D = short head D1 = long head

BURNER INSTALLATION



- 1 - Burner
- 2 - Nut
- 3 - Washer
- 4 - Gasket
- 5 - Bolt
- 6 - Boiler
- 7 - Gasket

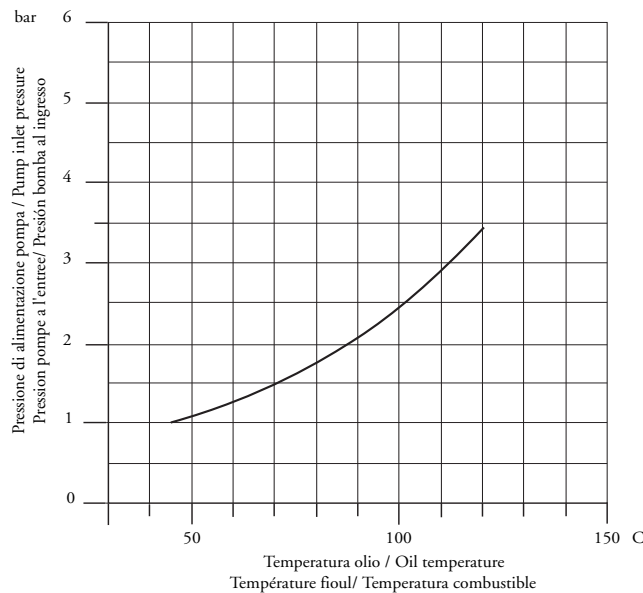
HEAVY OIL FEEDING



- 1 - Suction
- 2 - Retour
- 3 - Bleed and pressure gauge port
- 4 - Vacuum gauge port
- 5 - Pressure adjustment
- 6 - Nozzle outlet

PUMP'S PRESSURE / OIL TEMPERATURE DIAGRAM

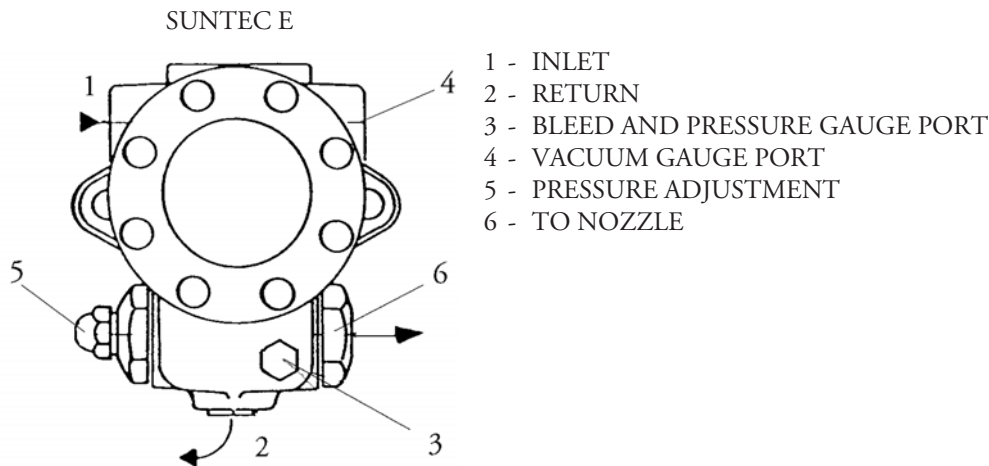
The gasification of volatile fractions in preheated heavy oil seems to be the main cause of premature fuel pump wear. To avoid such a problem, adjust pump pressure according to the diagram hereinafter.



WARNING: For a correct working of the pump, verify what follows:

Pump :	SUNTEC E4NC 1069
Oil temperature at the pump:	Max. 120 °C
Maximum allowable pressures:	Max. 3,5 bar on inlet.

PRIMING AND ADJUSTMENT OF OIL PUMP



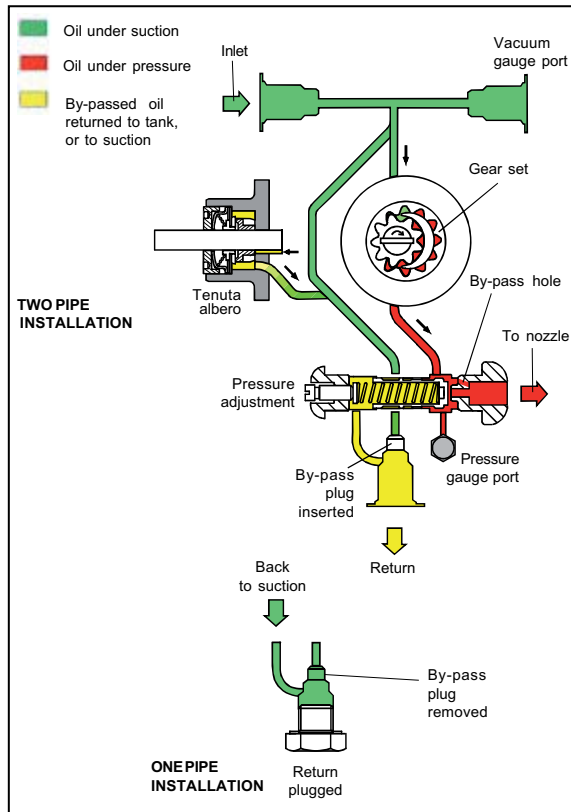
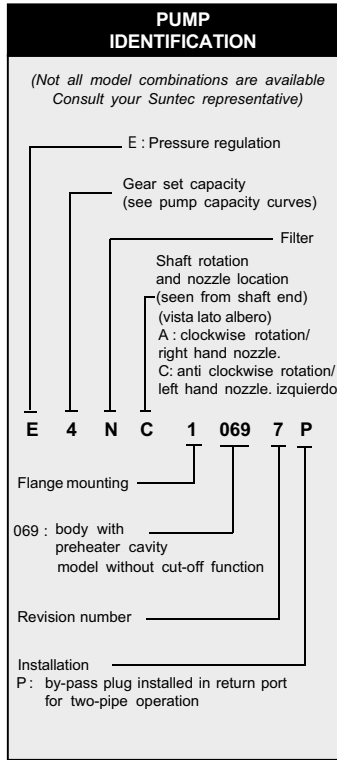
VERIFY: - That piping system is perfectly sealed;

- 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 23 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.

PUMP SUNTEC E TECHNICAL DATA



TECHNICAL DATA

General

Mounting	Flange mounting according to EN 225.
Connection threads	Cylindrical according to ISO 228/1
Inlet and return	G 1/2"
Nozzle outlet	G 1/4"
Pressure gauge port	G 1/8"
Vacuum gauge port	G 1/2"
Valve function	Pressure regulating - no cut-off
Filter	Open area: 45 cm Opening size : 550 µm
Shaft	Ø 11mm according to EN 225.
By-pass plug	Inserted in return port for 2 pipe system; to be removed with a 3/16" Allen key for 1 pipe system.
Weight	4 kg

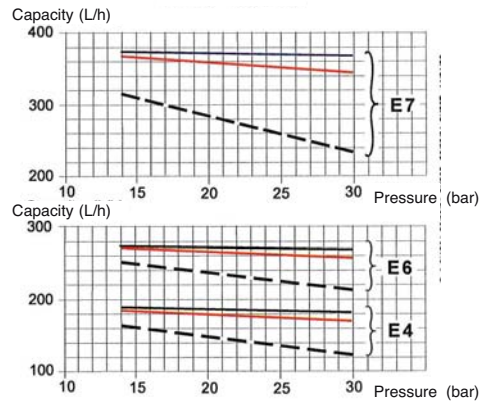
Hydraulic data

Nozzle pressure range	14 - 30 bar
Delivery pressure setting	20 bar
Operating viscosity	3 - 75 cSt
Oil temperature	0 - 130°C max. nella pompa
Inlet pressure	installation to light oil : 0,45 bars max. vacuum to prevent air separation from oil.
Return pressure	installation to heavy oil : 3,5 bar max. installation to light oil : 3,5 bar max. installation to heavy oil : 3,5 bar max.
Rated speed	3600 gpm max.
Torque (to 40 gpm)	0,3 N.m

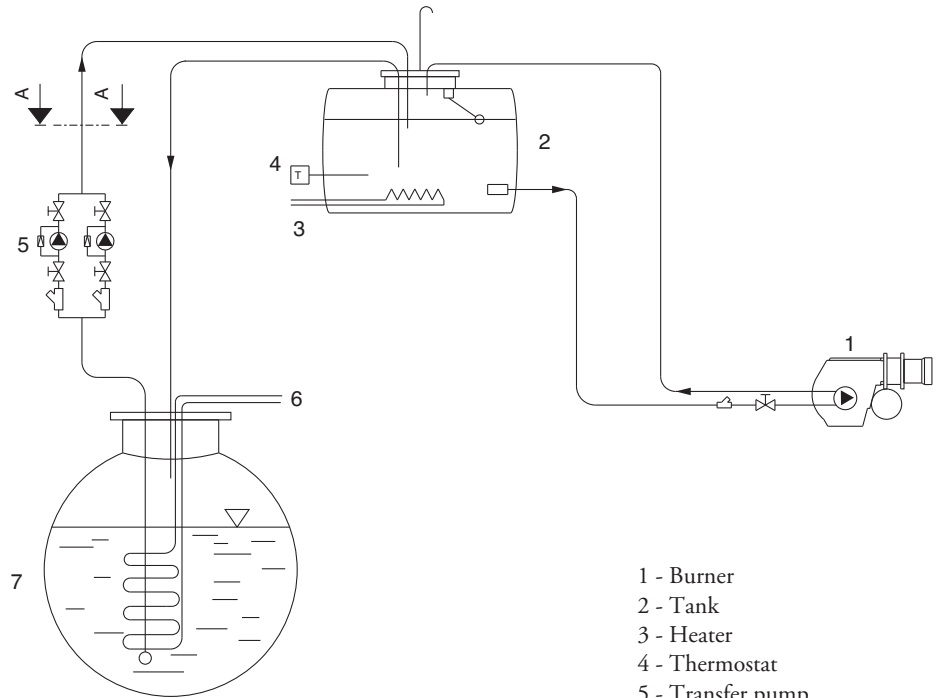
Choice of heater

Crtridge	Ø 12 mm
Fitting	in accordo con EN 50262
Rating	50-80 W

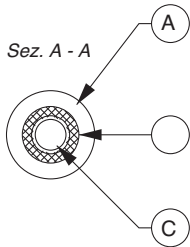
Pump capacity



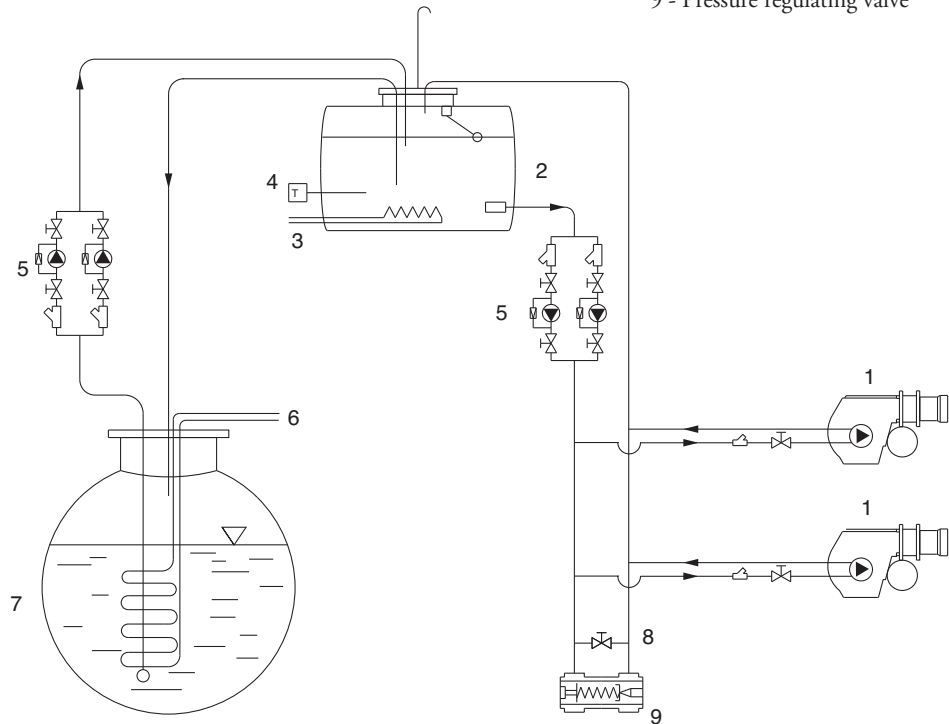
HEAVY OIL FEED SYSTEM



- 1 - Burner
- 2 - Tank
- 3 - Heater
- 4 - Thermostat
- 5 - Transfer pump
- 6 - Header
- 7 - Tank
- 8 - By-pass
- 9 - Pressure regulating valve



- A - Isolation gasket
- B - Heater
- C - Pipe heavy oil



IMPORTANT: All fuel pipings are heated (see section A-A of the picture)

NOZZLE OUTPUT FOR HEAVY OIL

Pump pressure (bar)

GPH	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0,60	2,6	2,7	2,9	3,0	3,1	3,2	3,3	3,4	3,4	3,4	3,5	3,6	3,7	3,8	3,9	4,0	4,0	4,1	4,2	4,3	4,3
0,65	2,7	2,8	3,0	3,1	3,2	3,3	3,4	3,5	3,6	3,7	3,8	3,9	4,0	4,1	4,2	4,3	4,4	4,4	4,5	4,6	4,7
0,75	3,1	3,3	3,4	3,5	3,7	3,8	3,9	4,0	4,2	4,3	4,4	4,5	4,6	4,7	4,8	4,9	5,0	5,1	5,2	5,3	5,4
0,85	3,5	3,7	3,8	4,0	4,1	4,3	4,4	4,6	4,7	4,8	4,9	5,1	5,2	5,3	5,4	5,5	5,6	5,8	5,9	6,0	6,1
1,00	4,2	4,4	4,6	4,8	5,0	5,1	5,3	5,5	5,6	5,8	5,9	6,1	6,2	6,4	6,5	6,6	6,8	6,9	7,0	7,2	7,3
1,10	4,6	4,8	5,0	5,2	5,4	5,6	5,8	6,0	6,2	6,3	6,5	6,7	6,8	7,0	7,1	7,3	7,4	7,6	7,7	7,8	8,0
1,20	5,0	5,2	5,5	5,7	5,9	6,1	6,3	6,5	6,7	6,9	7,1	7,2	7,4	7,6	7,7	7,9	8,1	8,2	8,4	8,5	8,7
1,25	5,2	5,5	5,7	5,9	6,2	6,4	6,6	6,8	7,0	7,2	7,4	7,5	7,7	7,9	8,1	8,2	8,4	8,5	8,7	8,9	9,0
1,35	5,6	5,9	6,1	6,4	6,6	6,9	7,1	7,3	7,5	7,7	7,9	8,1	8,3	8,5	8,7	8,9	9,0	9,2	9,4	9,5	9,7
1,50	6,2	6,5	6,8	7,1	7,3	7,6	7,8	8,1	8,3	8,5	8,8	9,0	9,2	9,4	9,6	9,8	10,0	10,2	10,4	10,6	10,7
1,65	6,9	7,2	7,6	7,9	8,2	8,5	8,7	9,0	9,3	9,5	9,8	10,0	10,2	10,5	10,7	10,9	11,1	11,3	11,5	11,8	12,0
1,75	7,3	7,7	8,0	8,3	8,6	8,9	9,2	9,5	9,8	10,1	10,3	10,6	10,8	11,1	11,3	11,5	11,8	12,0	12,2	12,4	12,6
2,00	8,3	8,7	9,1	9,5	9,8	10,2	10,5	10,8	11,1	11,4	11,7	12,0	12,3	12,6	12,9	13,1	13,4	13,6	13,9	14,1	14,4
2,25	9,4	9,9	10,3	10,7	11,1	11,5	11,9	12,3	12,6	13,0	13,3	13,6	13,9	14,3	14,6	14,9	15,2	15,4	15,7	16,0	16,3
2,50	10,4	10,9	11,4	11,9	12,3	12,7	13,2	13,6	14,0	14,3	14,7	15,1	15,4	15,8	16,1	16,4	16,8	17,1	17,4	17,7	18,0
3,00	12,5	13,1	13,7	14,3	14,8	15,3	15,8	16,3	16,8	17,2	17,7	18,1	18,5	19,0	19,4	19,8	20,2	20,5	20,9	21,3	21,7
3,50	14,6	15,3	16,0	16,6	17,3	17,9	18,5	19,0	19,6	20,1	20,6	21,2	21,7	22,1	22,6	23,1	23,5	24,0	24,4	24,9	25,3
4,00	16,6	17,4	18,2	18,9	19,6	20,3	21,0	21,6	22,3	22,9	23,5	24,1	24,6	25,2	25,7	26,2	26,8	27,3	27,8	28,3	28,8
4,50	18,7	19,6	20,5	21,3	22,1	22,9	23,7	24,4	25,1	25,8	26,4	27,1	27,7	28,4	29,0	29,6	30,2	30,7	31,3	31,8	32,4
5,00	20,8	21,8	22,8	23,7	24,6	25,5	26,3	27,1	27,9	28,7	29,4	30,1	30,9	31,5	32,2	32,9	33,5	34,2	34,8	35,4	36,0
5,50	22,9	24,0	25,1	26,1	27,1	28,0	29,0	29,9	30,7	31,6	32,4	33,2	34,0	34,7	35,5	36,2	36,9	37,6	38,3	39,0	39,7
6,00	25,0	26,2	27,4	28,5	29,6	30,6	31,6	32,6	33,5	34,5	35,4	36,2	37,1	37,9	38,7	39,5	40,3	41,1	41,8	42,6	43,3
6,50	27,1	28,4	29,7	30,9	32,1	33,2	34,3	35,3	36,4	37,4	38,3	39,3	40,2	41,1	42,0	42,8	43,7	44,5	45,3	46,1	46,9
7,00	29,1	30,5	31,9	33,2	34,4	35,6	36,8	37,9	39,0	40,1	41,2	42,2	43,2	44,1	45,1	46,0	46,9	47,8	48,7	49,6	50,4
7,50	31,2	32,7	34,2	35,6	36,9	38,2	39,5	40,7	41,9	43,0	44,1	45,2	46,3	47,3	48,3	49,3	50,3	51,3	52,2	53,1	54,0
8,30	34,5	36,2	37,8	39,3	40,8	42,3	43,6	45,0	46,3	47,6	48,8	50,0	51,2	52,3	53,4	54,5	55,6	56,7	57,7	58,8	59,8
9,50	39,5	41,4	43,3	45,0	46,7	48,4	50,0	51,5	53,0	54,4	55,9	57,2	58,6	59,9	61,2	62,5	63,7	64,9	66,1	67,3	68,4
10,50	43,7	45,8	47,9	49,8	51,7	53,5	55,3	57,0	58,6	60,2	61,8	63,3	64,8	66,3	67,7	69,1	70,5	71,8	73,1	74,4	75,7
12,00	49,9	52,3	54,7	56,9	59,0	61,1	63,1	65,1	66,9	68,8	70,6	72,3	74,0	75,7	77,3	78,9	80,5	82,0	83,5	85,0	86,4
13,80	57,4	60,2	62,9	65,4	67,9	70,3	72,6	74,8	77,0	79,1	81,2	83,2	85,1	87,1	88,9	90,8	92,6	94,3	96,0	97,7	99,4
15,30	63,7	66,8	69,8	72,6	75,4	78,0	80,6	83,1	85,5	87,8	90,1	92,3	94,5	96,6	98,7	100,7	102,7	104,7	106,6	108,5	110,3
17,50	72,8	76,4	79,7	83,0	86,1	89,2	92,1	94,9	97,7	100,3	103,0	105,5	108,0	110,4	112,8	115,1	117,4	119,6	121,8	124,0	126,1
19,50	81,2	85,2	89,0	92,6	96,1	99,4	102,7	105,9	108,9	111,9	114,8	117,7	120,4	123,1	125,8	128,4	130,9	133,4	135,9	138,3	140,6
21,50	89,5	93,9	98,0	102,0	105,9	109,6	113,2	116,7	120,1	123,4	126,6	129,7	132,7	135,7	138,7	141,5	144,3	147,1	149,8	152,4	155,0
24,00	99,9	104,8	109,4	113,9	118,2	122,4	126,4	130,3	134,0	137,7	141,3	144,8	148,2	151,5	154,8	158,0	161,1	164,2	167,2	170,1	173,0
28,00	116,5	122,2	127,6	132,8	137,8	142,7	147,4	151,9	156,3	160,6	164,8	168,8	172,8	176,7	180,5	184,2	187,9	191,4	194,9	198,4	201,8
30,00	124,9	131,0	136,8	142,4	147,8	153,0	158,0	162,8	167,6	172,2	176,6	181,0	185,3	189,4	193,5	197,5	201,4	205,2	209,0	212,7	216,3

Burner output (kg/h)

CHECKS TO BE MADE TO ENSURE A PROPER INSTALLATION:

Before proceeding with the filling of the fuel system and subsequent burner start up, it is advisable to carry out the following checks:

- Power line must be adequate to system's adsorbed load
- Fuses must be adequate to the system's load
- Boiler's thermostats must have been properly connected
- Voltage and frequency must be within the specified limits
- Fuel type must be the one specified by the burner manufacturer
- Feed piping section must be adequate to the requested fuel flow rate
- Filters, cocks as well as fittings must have been properly installed
- Blast tube length must be the one specified by the boiler manufacturer
- Nozzle's flow rate of the burner must be adequate to boiler's output

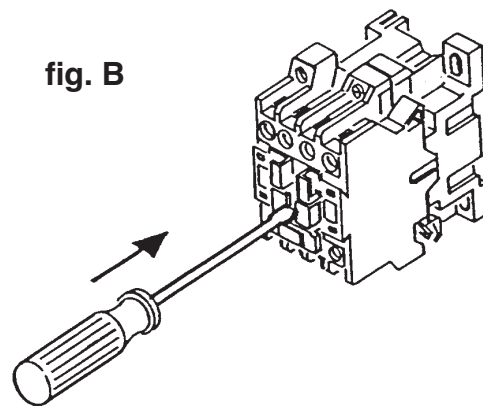
**BEFORE PROCEEDING WITH THE FILLING OF THE OIL SYSTEM,
CHECK THE FOLLOWING POINTS**

- Motor's direction of rotation (with 3phase version)
- There must be fuel in the tank.
- Fuel cocks must be open.
- Fuel return piping must be free from obstructions.

After having checked all the above items, proceed as follows:

- Connect a fuel pressure gauge.
- Disconnect the resistors power cable from the motor's remote control switch, and insulate it temporarily
- Unplug the safety box
- To press manually with a screwdriver on the pump motor's remote control switch, until the oil system is filled up(fig.B).

Note: the oil system can be considered filled when pressure gauge will show a constant reading. When done, restore initial conditions.

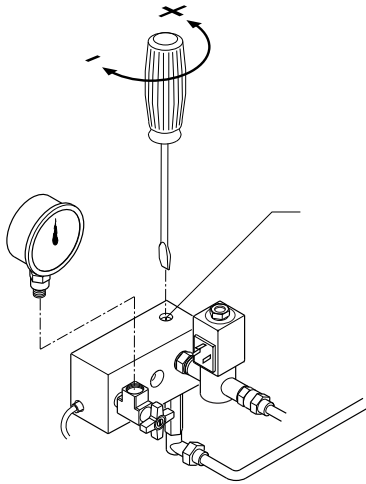
**WORKING OF THE BURNER**

When all the controls, as shown in previous paragraphs, have been accomplished, it will be possible to proceed with the burner start up.

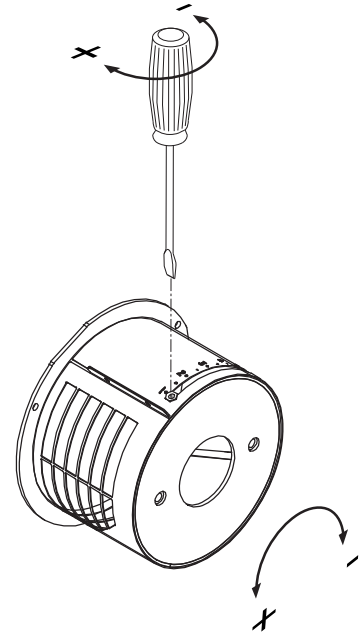
- Switch-on the burner. When reaching the preset temperature on the working thermostat, and with boiler's thermostat closed, the control box starts the fan, the fuel pump and the ignition transformer. At the same time, the balancing resistors are activated, to keep fuel temperature into the heater at a constant value.
- It begins, in this way, the combustion chamber prepurging, as well as the fuel circulation in the whole circuit, so as to obtain an uniformity of temperature which allows a correct flowing of the same. The fuel pressure, during prepurging, shall be around 16÷18 bar. If not, adjust the pressure to the specified value through the regulator "D", purposely installed on the heating circuit (see figure).

- At the end of the prepurging, the control box shut off the solenoid valve “O” while opening the 1st stage valve (for example valve “A”), allowing the burner ignition in Low Flame.
- In order to have a correct combustion, adjust the combustion air flow (see figure).
- The fuel pressure during burner’s working shall be set to 23 bars.

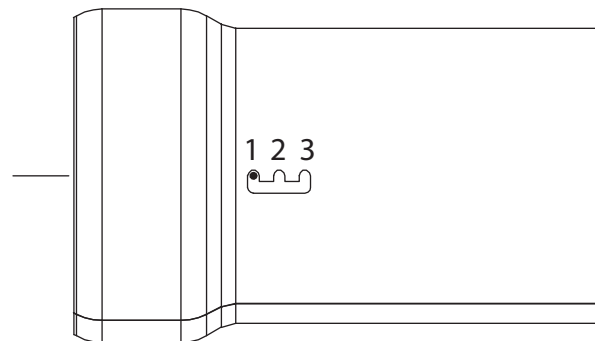
ADJUSTEMENT OF PRESSURE IN PREPURGING PHASE



AIR REGULATION SUCTION SIDE

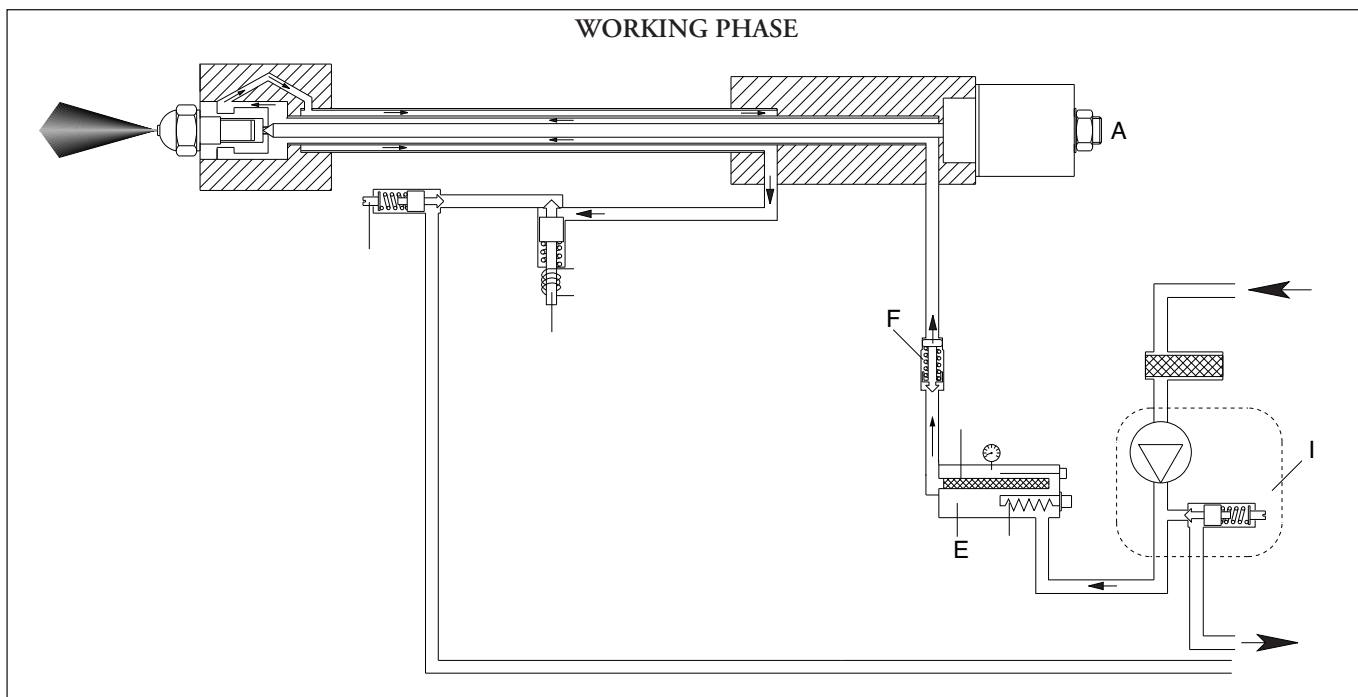
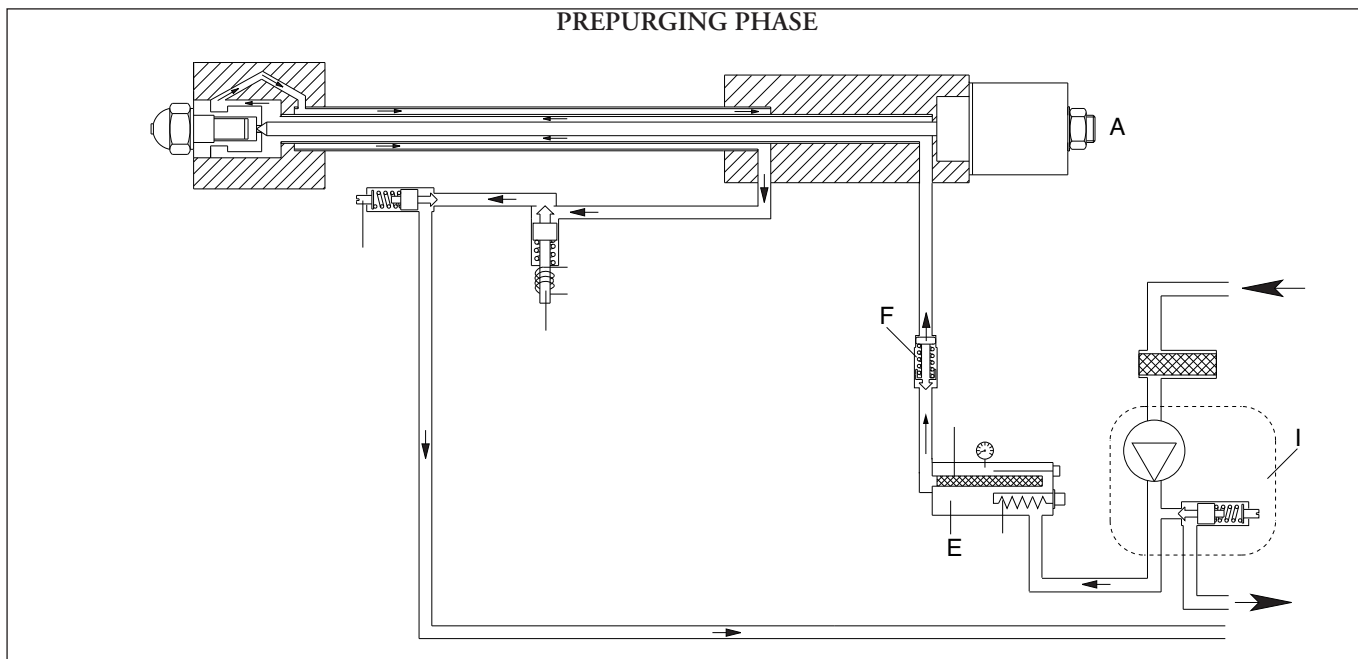


FIRING HEAD SETTING



ADJUSTMENT DATA

	NOZZLE		PUMP bar	OUTPUT kg/h	FIRING HEAD SETTING Pos.	AIR DAMPER ADJUSTMENT Pos.
	gph	spry				
Maxflam D 10	1.00	60°HO	23	6	1	2,20
	1.25	60°HO	23	8	1	2,80
	1.50	60°HO	23	9,5	1	3,50
	2.00	60°HO	21	12	2	4,50
Maxflam D 20	1.50	60°HO	23	9,5	1	3,50
	2.00	60°HO	23	12,50	2	4,50
	2.50	60°HO	23	15,80	2	5,50
	3.00	60°HO	23	20	3	8



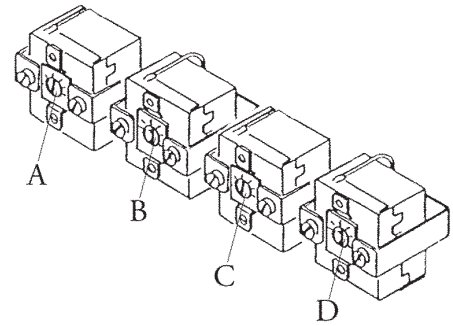
Legend :

- A. Solenoid valve (N.C.)
 - D. Fuel flow adjuster in prepurging.
 - E. Tank
 - F. Anti-gas valve
 - G. Heater
 - H. Filter
 - I. Fuel pump
 - O. Solenoid valve (N.O.)
- N.C. = Norm. closed
 N.O. = Norm. open

ADJUSTMENT OF FUEL THERMOSTATS

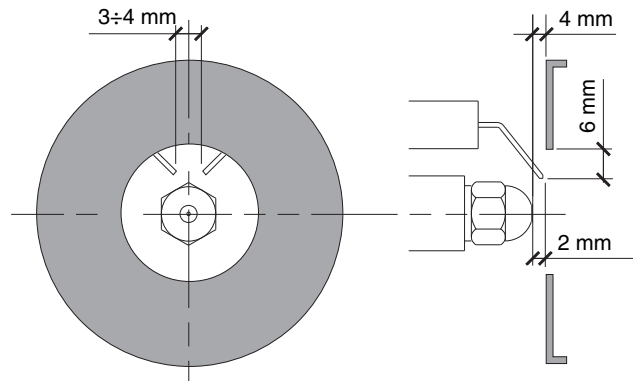
The working resistor thermostat must be set to 120 °C, while the safety one to 180 °C. Said adjustments can be slightly modified following the type of fuel and particular uses.

- A - Safety thermostat (180° C).
- B - Working thermostat (100°/120° C).
- C - Stand-by thermostat (150° C).
- D - Fiding head thermostat (120° C).



POSITION OF IGNITION ELECTRODES

For a correct burner ignition, carefully respect the dimensions shown by the picture.



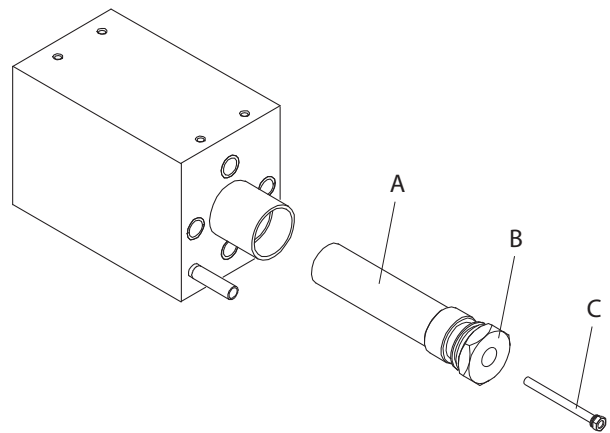
CLEANING AND MAINTENANCE OF FILTERS MOUNTED ON THE PREHEATER

REMOVING OF THE FILTER

- 1 - Switch-off the burner and make cold to leave.
- 2 - Take off oil thermometer bulb C.
- 3 - Loosen screw B and drain part of the fuel from the heater, until the fuel level drop below the filter.
- 4 - Unscrew and pull out the stem filter A from its seat.
- 5 - Clean the filter and reassemble the parts as shown by the picture, then fit it in its own seat.

It is advisable to replace all filter and valve gaskets whenever they are removed.

Note that when the burner is working the heater has a pressure of abt. 23 bar, and that it becomes very dangerous to carry out said operations with the burner running.



TROUBLESHOOTING

- 1 - **The burner does not start**
 - Power switch in OFF position
 - Fuses burnt
 - Boiler's thermostats open
 - Resistors failure
 - Heater thermostats open

- 2 - **The resistors heat but the burner does not start**
 - Thermostats failure
 - Power switch in OFF position
 - Heater thermostats open
 - Control box failure

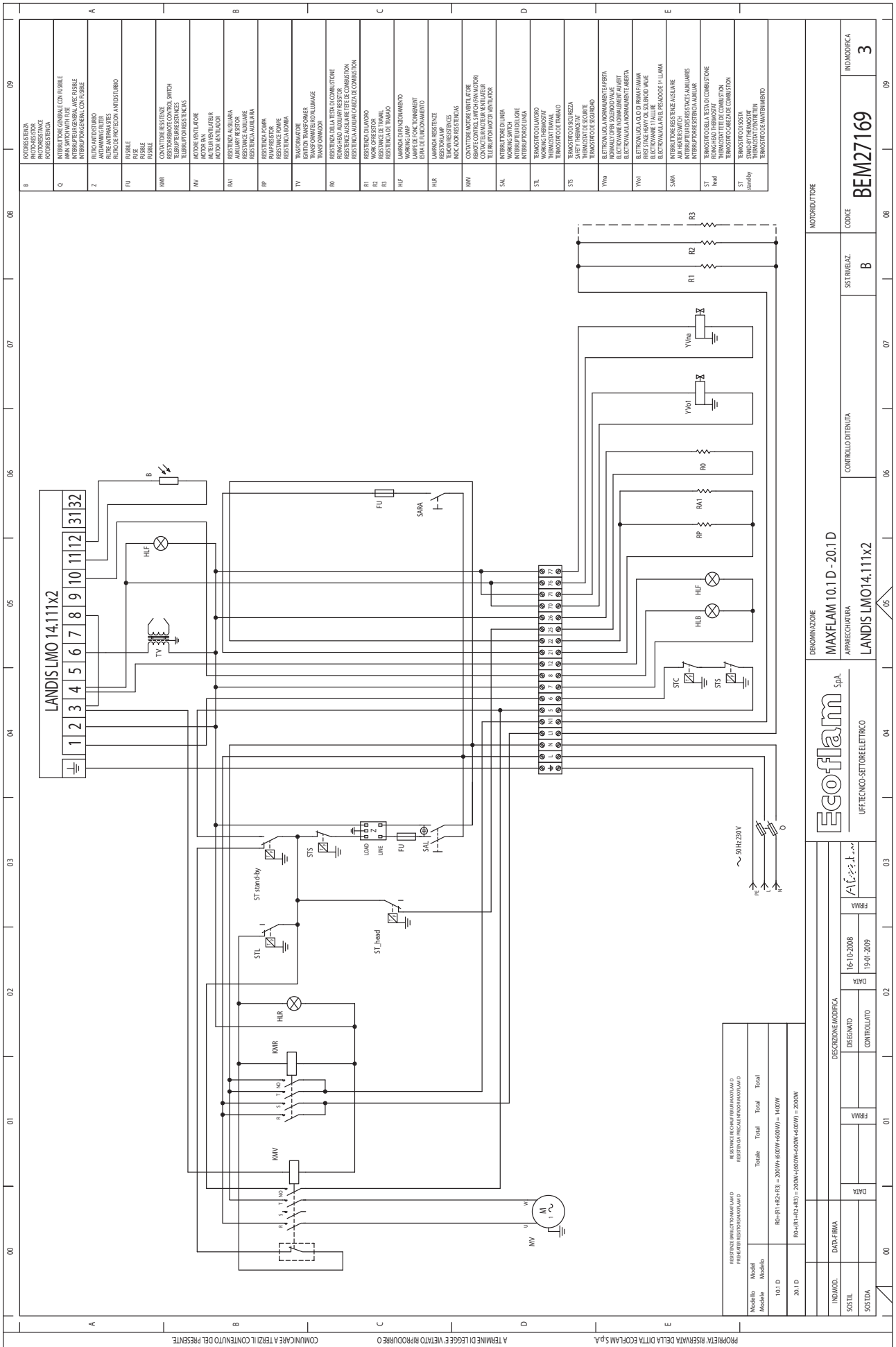
- 3 - **The burners runs the prepurging and switches to lock out**
 - Power switch in OFF position
 - Control box failure
 - Photoresistor failure
 - Premature ignition due to oil leakage from solenoid valve

- 4 - **The burner does not ignite during cycle and switches to lock out**
 - Control box failure

- 5 - **The burner does not ignite**
 - Ignition electrodes dirty
 - Electrodes failure
 - Electrodes installed in wrong position
 - Ignition transformer's failure
 - 1st Stage valve's failure
 - Nozzles clogged
 - Eccles of combustion air related to nozzles flow rate
 - Control box failure

- 6 - **The burner ignite but switches to lock out**
 - The oil temperature is too low (flame jumps)
 - Nozzles are too worn
 - The photoresistor does not detect the flame
 - The oil pressure during prepurging is too low
 - Eccles of combustion air related to nozzles flow rate
 - Control box failure
 - Oil pressure too low
 - Filters clogged

- 7 - **Oil pressure too low or irregular**
 - Pump and/or heater filters clogged
 - The norm. open valve does not close
 - Irregular oil feed
 - Pump failure

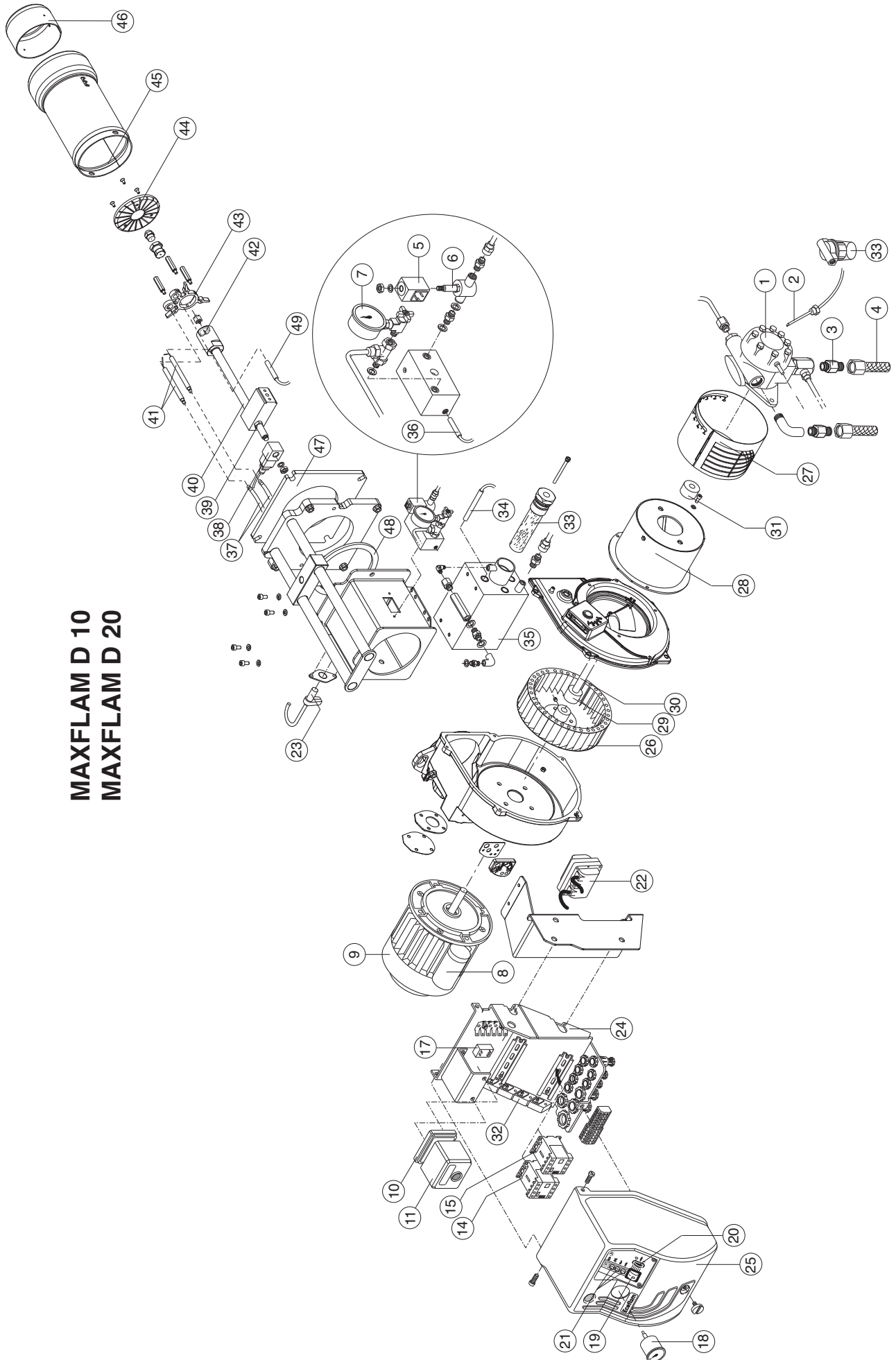


08	09	08	09
07	08	07	08
06	07	06	07
05	06	05	06
04	05	04	05
03	04	03	04
02	03	02	03
01	02	01	02
00	01	00	01

08	09	08	09
07	08	07	08
06	07	06	07
05	06	05	06
04	05	04	05
03	04	03	04
02	03	02	03
01	02	01	02
00	01	00	01

PROPRIETÀ, RISERVA DELLA DITTA ECOFLAM S.P.A.		A TERMINE DI LEGGE È VIETATO RIPRODURRE O		COMMUNICARE A TERZI IL CONTENUTO DEL PRESENTE.	
Modello	Modello	Totale	Totale	DESCRIZIONE MODIFICA	
10.1 D	20.1 D	Re: R11-H2-H3 = 200W-600W-600W = 1400W		DATA-FRMA	DESEGNIATO
		Re: R11-H2-H3 = 200W-600W-600W = 200W		16-10-2008	19-01-2009
IND.MOD.	DATA-FRMA	DESCRIZIONE MODIFICA		DESEGNIATO	DESEGNIATO
SOSTIT.	DATA-FRMA	DESCRIZIONE MODIFICA		CONTROLLATO	CONTROLLATO
SOSTA	DATA-FRMA	DESCRIZIONE MODIFICA		FRMA	FRMA
DENOMINAZIONE		MAXFLAM 10.1 D-20.1 D		CONTROLLO DIBBITA	
APPARECCHIATURA		LANDIS LMO14.111x2		SIST.VEGLIAZ.	
UFF. TECNICO-SETTORE ELETTRICO		Ecoflam S.p.A.		CODICE	
		BEM27169		IND. MODIFICA	
		3			

**MAXFLAM D 10
MAXFLAM D 20**



N°	DESCRIPTION		MAXFLAM D 10	MAXFLAM D 20
			code	code
1	PUMP	SUNTEC E 4NC 10695	65322954	65322954
2	HEATING ELEMENT PUMP	50 W	65323072	65324208
3	NIPPLE		-	-
4	HOSES	TN 18X1500	65323182	65323182
5	COIL	Parker JB 18	65323781	65323781
6	VALVE	Parker SCEM 120 8AR JB 18	65323628	65323628
7	MANOMETER	CEWAL R1/4 D	65324105	65324105
8	CAPACITOR	16 µF x 550 W	65321858	65321858
9	MOTOR	450 W	65324202	65324202
10	CONTROL BOX BASE	LANDIS	65320092	65320092
11	CONTROL BOX	LANDIS LMO14.111B2	65320023	65320023
12	RELAY BASE		-	-
13	RELAY		-	-
14	REMOTE CONTROL SWITCH	AEG LS05.10	65323132	65323132
15	REMOTE CONTROL SWITCH MOTOR	AEG LS05.10	65323132	65323132
16	MOTOR THERMAL RELAY		-	-
17	ANTI-JAMMING FILTER		65323170	65323170
18	THERMOMETER	IMIT 0-200	65323093	65323093
19	MAIN SWITCH	cod.4010011509	65323064	65323064
20	HIGH-LOW FLAME SWITCH	cod.360000001	65323065	65323065
21	LAMP	EL/N-SC4 Elettrospring	65322053	65322053
22	IGNITION TRANSFORMER	COFI 1030 CM	65323235	65323235
23	PHOTORESISTOR	LANDIS QRB1A-A050B70A2	65320076	65320076
24	BOX SUPPORT		65320478	65320478
25	BOX		65320477	65320477
26	FAN	160X62	65323820	65323820
27	AIR WAISTBAND		65324191	65324191
28	COVER AIR INLET		65324190	65324190
29	COUPLING (FAN)		65324205	65324205
30	COUPLING		65324200	65324200
31	COUPLING (PUMP)		65324204	65324204
32	THERMOSTAT	IMIT TR2 40/200	65323147	65323147
33	FILTER	70104-03	65324806	65324806
34	HEATER		65324206	65324206
35	OIL TANK		65324197	65324197
36	HEATING	50 W	65323072	65323072
37	CABLE		65324194	65324194
38	COIL	Parker JB 18	65323781	65323781
39	OIL VALVE	Parker SCEM 120 8AR JB	65323629	65323629
40	FIRING HEAD	TC	65324198	65324198
		TL	65325244	65325244
41	ELECTRODES		65320952	65320952
42	ROD NOZZLE HOLDER	TC		
		TL		
43	DIFFUSER HOLDER		65324192	65324192
44	DIFFUSER		65324193	65324193
45	BLAST TUBE	TC	65324188	65324188
		TL	65325245	65325245
46	BLAST TUBE WAISTBAND		65324189	65324189
47	GASKET		65324195	65324195
48	GASKET		65324196	65324196
49	FIRING HEAD HEATER	200 W	65324208	65324208

TC = SHORT HEAD TL = LONG HEAD

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Ecoflam

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