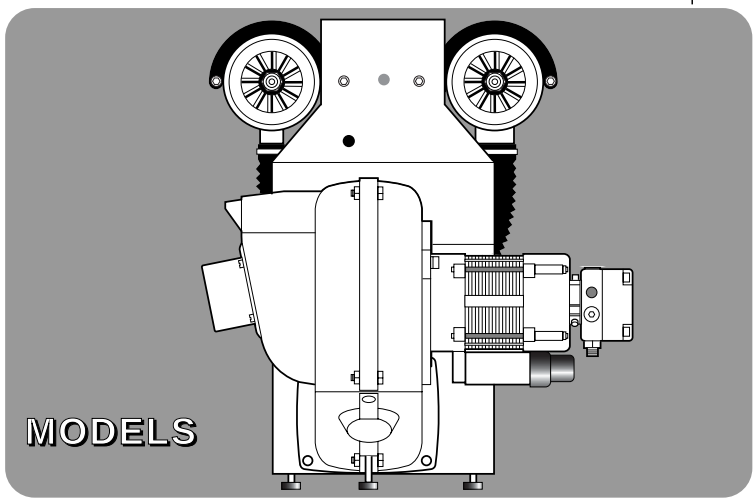
OIL BURNERS

Ecoflam

techniques for energy saving

ISO 9001
registered by
GASTEC



AGA RAYBURN Twin-Head 460 K
AGA RAYBURN Twin-Head 480 K
AGA RAYBURN Twin-Head 499 K

Cooker - Boiler
230V - 50Hz

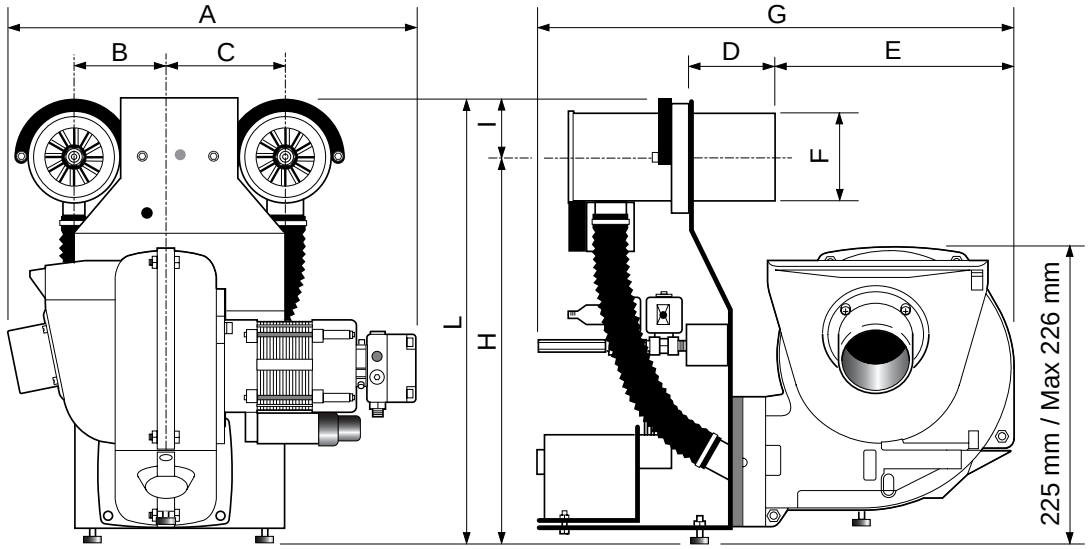
LB 878

17.07.2003

TECHNICAL DATA

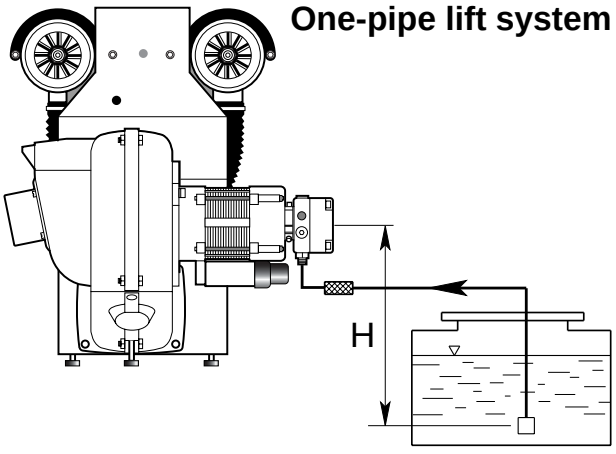
MODELS AGA TWIN-HEAD		460	480	499
Voltage single phase 50 Hz	V	240	240	240
Motor	W	130	130	130
Rpm	Nº	2800	2800	2800
Capacitor	µF	3	3	3
Ignition transformer	kV/mA	15/40	15/40	15/40
Control box	SATRONIC	DKO 970	DKO 970	DKO 970
Fuel :Kerosene	Mj/kg		43.3	

OVERALL DIMENSIONS



MODEL (mm.)	A	B	C	D	E	F	G	H	I	L
AGA Twin-Head	360	90	120	60	200	89	370	340	60	400

MAXIMUM LENGTH OF SUCTION LINES FOR TWO-PIPE SYSTEM



Head H on the pump (m)	Copper pipe	
	∅ 8 mm	∅ 10 mm
0,5	23	55
1	21	50
1,5	19	45
2	17	40
2,5	14	34
3	9	28
3,5	4	22

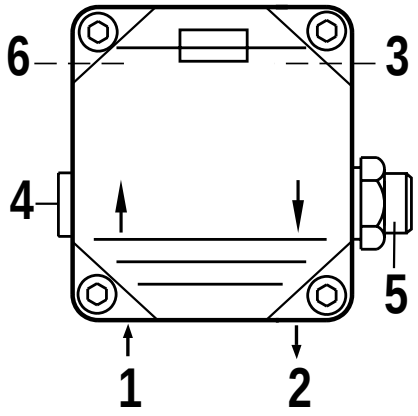
The correct length of pipes is calculated by summing up the length of all vertical and horizontal right sections and bends. The static suction head will be the distance between the non-return valve and the burner's pump axle. The depression must not be greater than 0.45 bar; should it be higher, some damage could occur to the pump, with consequent increase in mechanical noises and ,eventually, a failure.

NOZZLE OUTPUT

Models: AGA Twin-Head	NOZZLE		PUMP PRESSURE
	GPH	SPRY	PSI
460 cooker	0.40	80°EH	145
460 boiler	0.55	80°EH	145
480 cooker	0.40	80°EH	145
480 boiler	0.65	80°EH	145
499 cooker	0.40	80°EH	145
499 boiler	0.85	80°EH	145

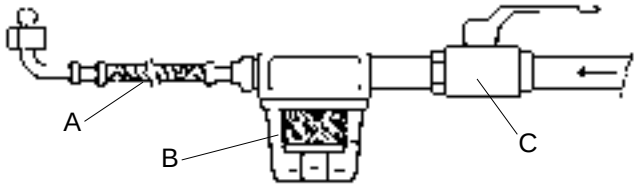
PRIMING AND ADJUSTMENT OF THE PUMP

DANFOSS
BFP 10 R3



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

A - HOSE
B - OIL FILTER
C - OIL COCK



The pump is adjusted during testing and inspection to 145 PSI.

The pump setting indicated by client is carried out in the factory during testing.
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..

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;

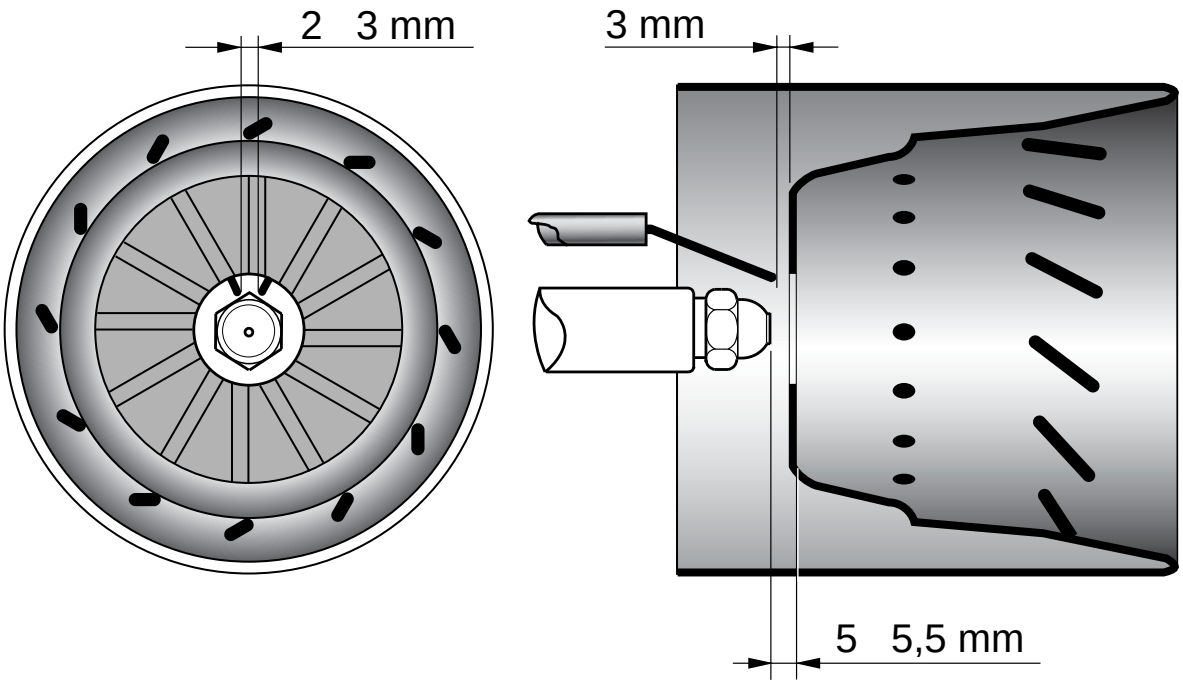
The pump pressure is set at a value of 145 PSI during the testing of burners.
Before starting the burner, bleed the air in the pump through the gauge port.
Fill the piping with light-oil to facilitate the pump priming.
Start the burner and check the pump feeding pressure.
In case the pump priming does not take place during the first prepurging, with a consequent, subse-

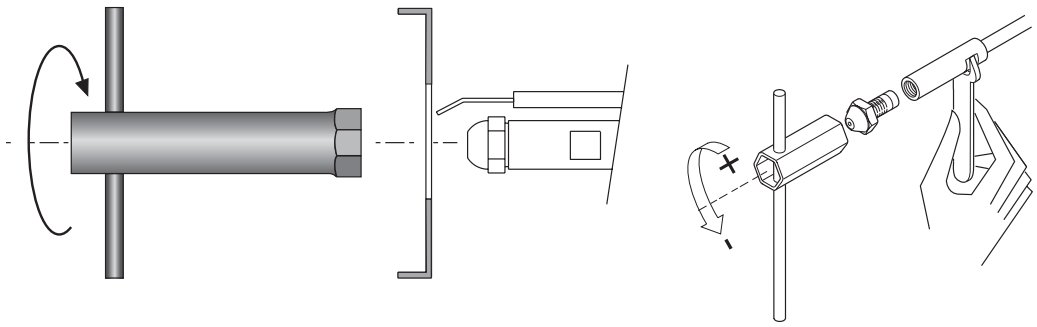
quent lock-out of the burner, rearm the burner's lock-out to restart, by pushing the button on the control box.
If, after a successful pump priming, the burner locks-out after the prepurging, due to a fuel pressure drop in the pump, rearm the burner's lock-out to restart the burner.
Do not allow the pump to work 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.

NOZZLE REPLACEMENT

Remove the nozzle carefully taking great care not to damage the electrodes.
Fit the new nozzle with the same care.
NOTICE : Always check the position of the electrodes after replacing the nozzle(see plan).





BURNER START-UP

* Once connected the hoses to the oil pipes make sure that there are no leakages.
* Air bleed the pipe through the pump operating on the gauge connection (see fig.).
* Install the suitable nozzle for the needed capacity.
* Turn thermostat to the desired temperature.
* The burner will purge for about 13 sec..
* At this point the oil valve opens and the transformer ignites.
* Control the pressure on the pump. (see fig.).
* Adjust the needed quantity of air, operating on the air regulator.
* In case of no ignition the burner goes to lock-out within 5 sec.(DKO 970).

SATRONIC DKO 970 CONTROL INFORMATION SYSTEM

The Satronic DKO 970 control is a micro-processor control which provides information about the current operation of the burner and the cause of any faults. The information is available by reading the “flash code” at the red LED within the lockout reset button as detailed below. By the use of additional monitoring equipment a short history of recorded faults is also available. There are two types of additional monitoring devices available from Satronic Ltd. The “satropen” is a small pocket reader designed to give a visual read out of status, flame current and supply voltage. Computer software is available to allow access to the current information and stored data.

FAULT DISPLAY MESSAGES

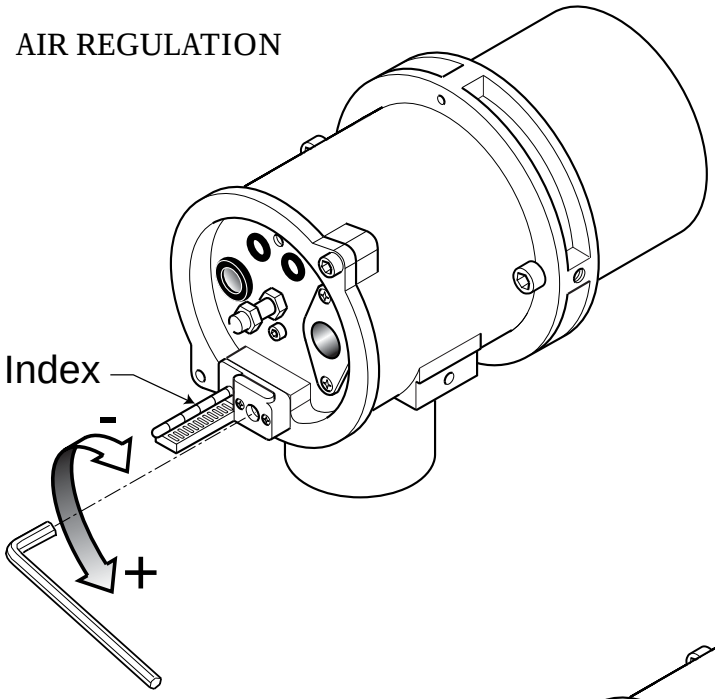
On burner failure the red LED is permanently illuminated for a period of approximately 10 seconds, followed by a brief “dark phase”, then one of the folowing flash codes will indicate the cause of the fault. This indication will repeate as long as the lockout reset button is not reset.

Message	Flash-Code
pre-ignition tv1	I I I I .
safety time ts post ignition tn	▌I .
delay time to valve V2 tv2	▌I I .
running	I _
low mains voltage	I ▌▌ _

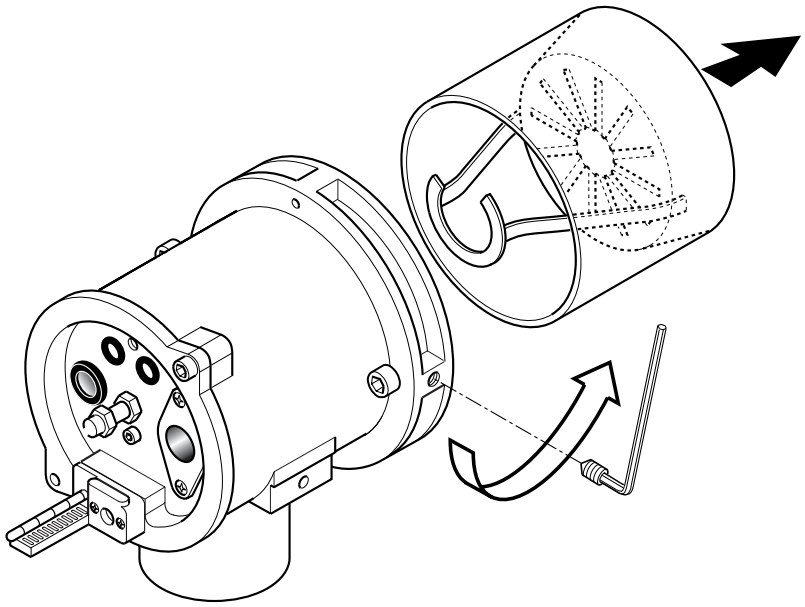
Flash-Code Key	
short pulse	I
long pulse	▌
short pause	.
long pause	_

Error diagnosis		
Error message	Flash-Code	Possible fault
lockout	I ▌▌▌▌	within lock out safety time no flame establishment
stray light	I I ▌▌▌	stray light during monitored phase, detector may be faulty
Flash-Code for manual lock out		
manual/external lock out	I I ▌▌▌ _ ▌▌▌▌▌	

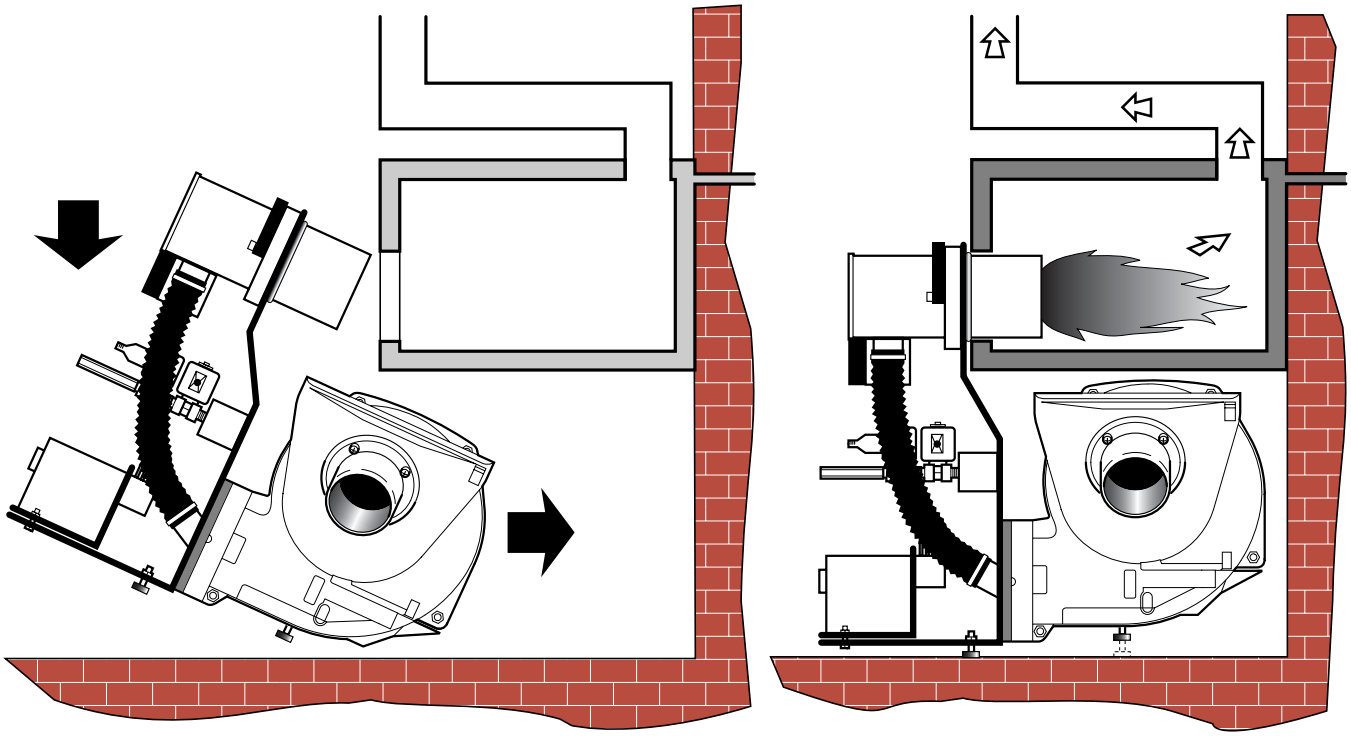
AIR REGULATION



BLAST TUBE DISASSEMBLY

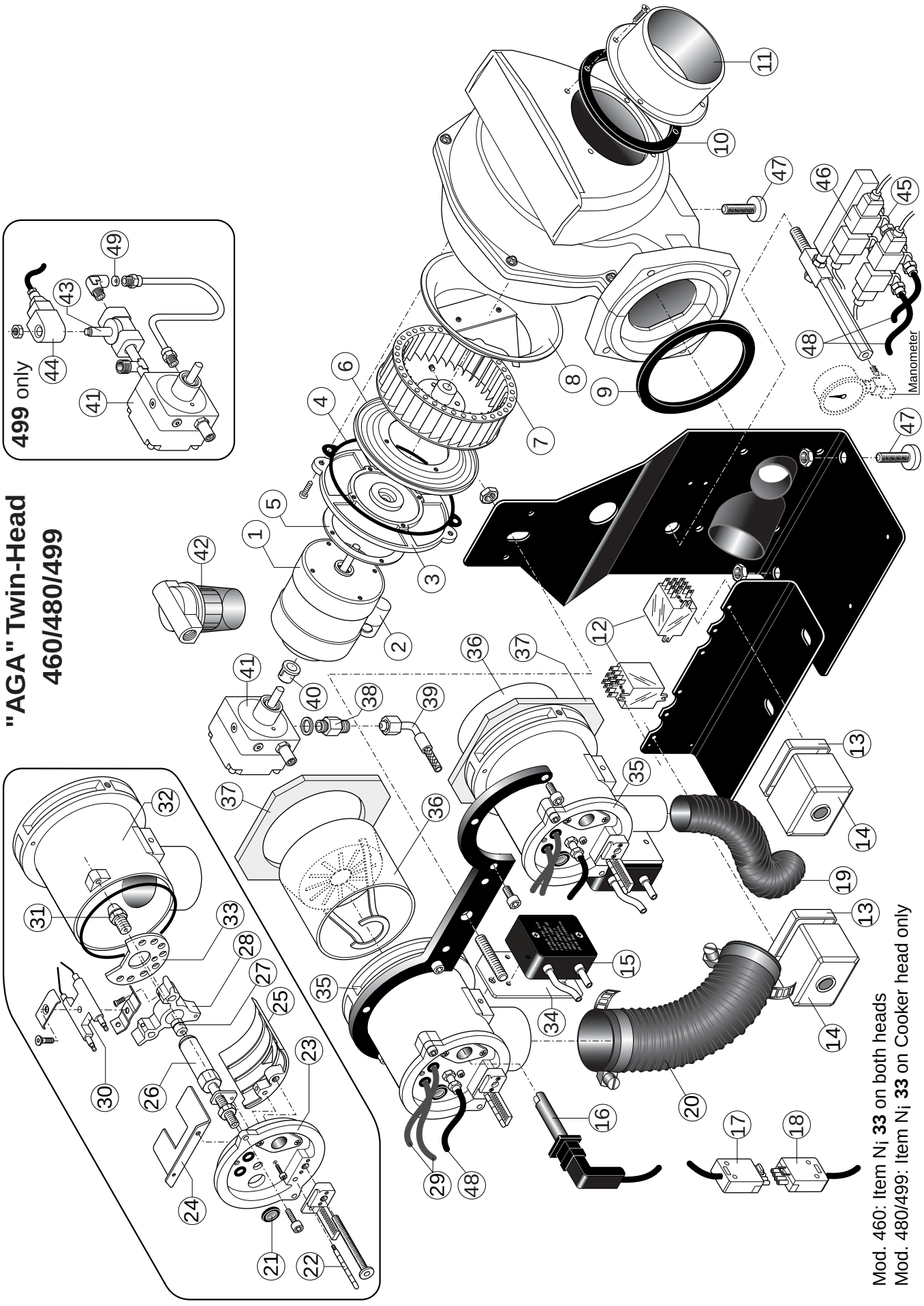


POSITIONING OF THE BURNER INSIDE THE COOKER

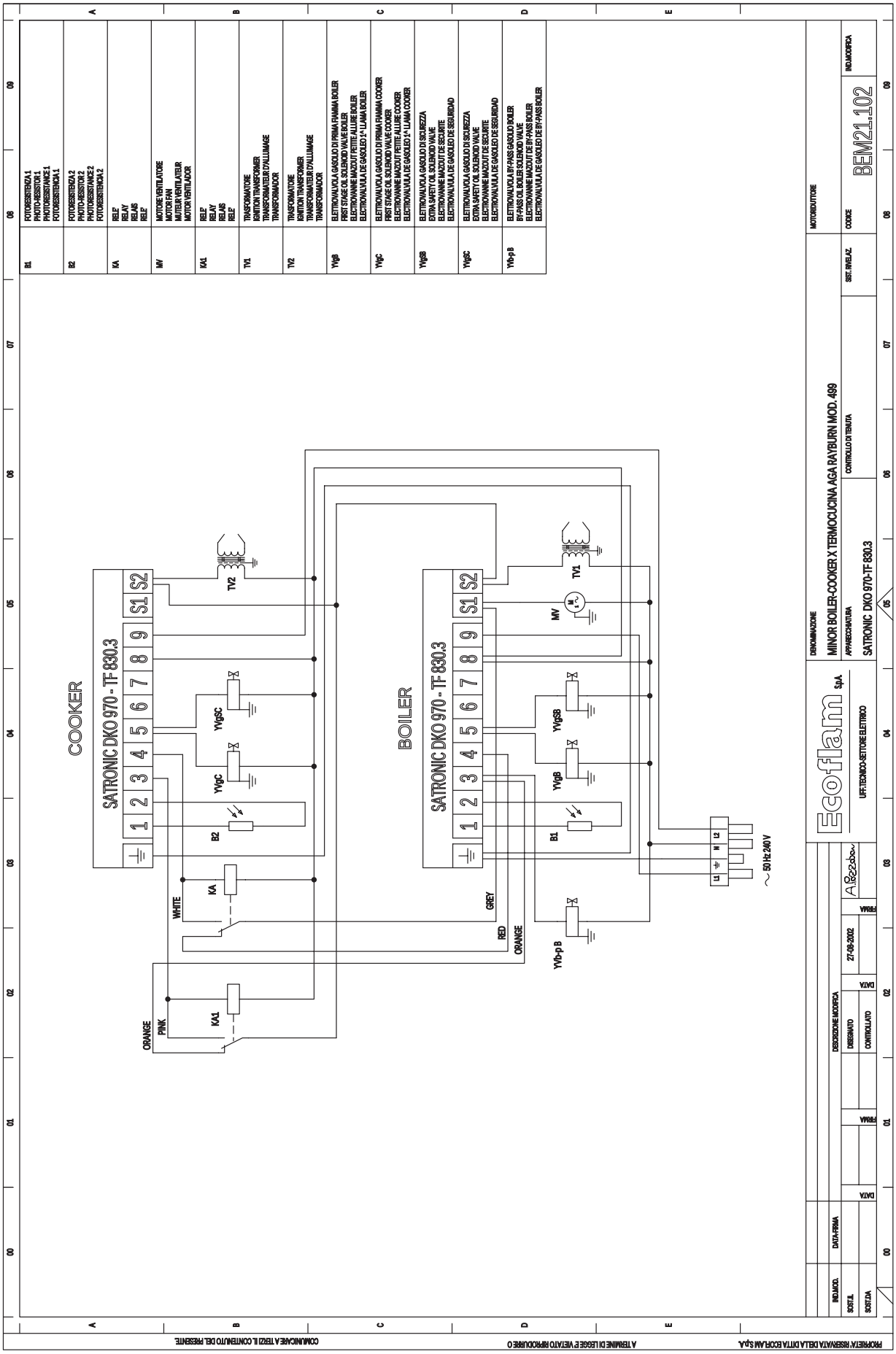


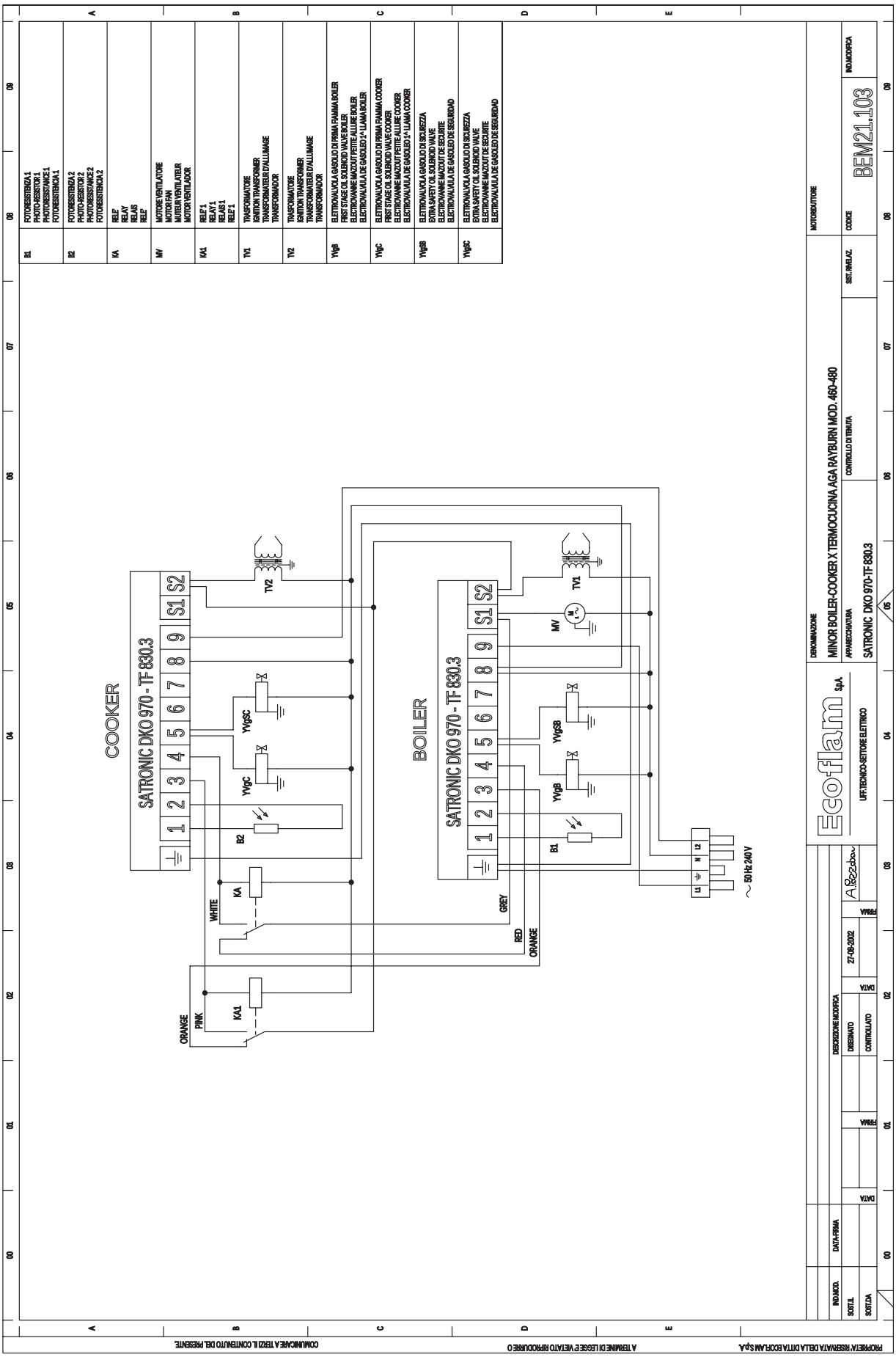
FAULT FINDING

Burner does not start up	- Mains switch not on. - Blown fuse. - Boiler thermostats not made. - Fault in control box.
Burner pre-purges and stops	- Fault in control box.
Burner does not ignite during cycle and stops	- Fault in control box. - Fault in photo-resistor.
Burner does not ignite	- Dirty ignition electrodes. - Fault at electrodes. - Electrodes installed wrongly. - Fault ignition transformer. - Blocked nozzle. - Nozzle needs replacing. - Oil pressure too low. - Blocked oil filter. - Excessive combustion air for nozzle capacity. - Fault in control box.
Burner ignites and then stops	- 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.


"AGA" Twin-Head
460/480/499
499 only
Manometer
Mod. 460: Item Nj **33** on both heads
Mod. 480/499: Item Nj **33** on Cooker head only

N°	DESCRIPTION: AGA Twin-Head Boiler/Cooker		460 code	480 code	499 code
1	MOTOR	130 W	M181/32	M181/32	M181/32
2	CAPACITOR	3 µF	C107/9	C107/9	C107/9
3	FLANGE		L181/16	L181/16	L181/16
4	BLACK O-RING		BFG01025	BFG01025	BFG01025
5	GASKET AIR CONVEYOR TO MOTOR		BFG01005/3	BFG01005/3	BFG01005/3
6	AIR CONVEYOR TO MOTOR		BFC08403/001	BFC08403/001	BFC08403/001
7	FAN	Ø 145 x 30	W117/2	-	-
		Ø 145 x 50	-	W117	W117
8	FAN SCOOP AIR CONVEYOR		BFC08401/001	BFC08401/001	BFC08401/001
9	GASKET		BFT11510	BFT11510	BFT11510
10	GASKET		CFG01010	CFG01010	CFG01010
11	FLANGED EXTERNAL AIR INTAKE		CFA02009/001	CFA02009/001	CFA02009/001
12	MOTOR THERMAL RELAY	FINDER	R733/2	R733/2	R733/2
13	CONTROL BOX BASE	SATRONIC	A416	A416	A416
14	CONTROL BOX	SATRONIC DKO 970	A156	A156	A156
15	IGNITION TRANSFORMER	15/40	T130	T130	T130
16	PHOTORESISTOR	SATRONIC	A214	A214	A214
17	WIELAND PLUG	4 POLES	E222	E222	E222
18	WIELAND SOCKET	4 POLES	E223	E223	E223
19	COOKER CORRUGATED HOSE	Ø 40	S951/3	S951/3	S951/3
20	BOILER CORRUGATED HOSE	Ø 60	S951/4	S951/4	S951/4
21	GLASS ASSEMBLY		GRV1S001	GRV1S001	GRV1S001
22	INDEX		BFT11509	BFT11509	BFT11509
23	HEAD HOLDER DISC		BFT11518	BFT11518	BFT11518
24	FLAP		BFT11504/001	BFT11504/001	BFT11504/001
25	AIR DAMPER		BFT11519/2	BFT11519/2	BFT11519/2
26	NOZZLE HOLDER		BFT11507/151	BFT11507/151	BFT11507/151
27	CUT-OFF VALVE	DANFOSS	V195	V195	V195
28	NOZZLE HOLDER SUPPORT		BFT11514	BFT11514	BFT11514
29	IGNITION CABLES		BFE01401/7	BFE01401/7	BFE01401/7
30	IGNITION ELECTRODES SET		BFE01102	BFE01102	BFE01102
31	BOILER NOZZLE	DANFOSS	U1055/80EH	U1065/80EH	U1085/80EH
	COOKER NOZZLE	DANFOSS	U1040/80EH	U1040/80EH	U1040/80EH
32	BOILER HEAD HOLDER PIPE		BFT11522/2	BFT11522/2	BFT11522/2
	COOKER HEAD HOLDER PIPE		BFT11522/1	BFT11522/1	BFT11522/1
33	BOILER REAR DISC		BFD01012/001	-	-
	COOKER REAR DISC		BFD01012/001	BFD01012/001	BFD01012/001
34	SUPPORT IGNITION TRANSFORMER		BFT11521/001	BFT11521/001	BFT11521/001
35	BOILER INNER ASSEMBLY		GRTT0100/905	GRTT0100/910	GRTT0100/910
	COOKER INNER ASSEMBLY		GRTT0100/900	GRTT0100/900	GRTT0100/900
36	BOILER BLAST TUBE		BFB01014/051	BFB01014/051	BFB01053/3
	COOKER BLAST TUBE		BFB01009/2	BFB01009/2	BFB01009/2
37	GASKET		Y105	Y105	Y105
38	NIPPLE		BFR01103/001	BFR01103/001	BFR01103/001
39	HOSES		S952/13	S952/13	S952/13
40	COUPLING		MP504	MP504	MP504
41	PUMP MOTOR	DANFOSS BFP10R3	P121/8	P121/8	P121/8
42	OIL FILTER		S117/8	S117/8	S117/8
43	OIL VALVE	PARKER VE131 IN	-	-	V175/8
44	COIL	PARKER	-	-	V516/4
45	OIL VALVE	PARKER VE131 IN	V175/8	V175/8	V175/8
46	COIL	PARKER	V516/4	V516/4	V516/4
47	ANTIVIBRATION DAMPER		E538/2	E538/2	E538/2
48	HOSES		S951/5	S951/5	S951/5
49	OIL OREFICE		-	-	P121/81


B1 FOTORESISTENZA 1 PHOTO-RESISTOR 1 PHOTORESISTANCE 1 FOTOWIDERSTAND 1
B2 FOTORESISTENZA 2 PHOTO-RESISTOR 2 PHOTORESISTANCE 2 FOTOWIDERSTAND 2
KA RELE' RELAY RELAIS RELE'
MV MOTORE VENTILATORE MOTOR FAN MOTEUR VENTILATEUR MOTOR VENTILADOR
KA1 RELE' RELAY RELAIS RELE'
TV1 TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR D'ALLUMAGE TRANSFORMADOR
TV2 TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR D'ALLUMAGE TRANSFORMADOR
YVgB ELETTROVALVOLA GASOLIO DI PRIMA FIAMMA BOILER FIRST STAGE OIL SOLENOID VALVE BOILER ELECTROVANNE MAZOUT PETITE ALLURE BOILER ELECTROVALVULA DE GASOLEO 1ª LLAMA BOILER
YVgC ELETTROVALVOLA GASOLIO DI PRIMA FIAMMA COCKER FIRST STAGE OIL SOLENOID VALVE COOKER ELECTROVANNE MAZOUT PETITE ALLURE COOKER ELECTROVALVULA DE GASOLEO 1ª LLAMA COCKER
YVgSB ELETTROVALVOLA GASOLIO DI SICUREZZA EXTRA SAFETY OIL SOLENOID VALVE ELECTROVANNE MAZOUT DE SECURITE ELECTROVALVULA DE GASOLEO DE SEGURIDAD
YVgSC ELETTROVALVOLA GASOLIO DI SICUREZZA EXTRA SAFETY OIL SOLENOID VALVE ELECTROVANNE MAZOUT DE SECURITE ELECTROVALVULA DE GASOLEO DE SEGURIDAD
YVb-p B ELETTROVALVOLA BY-PASS GASOLIO BOILER BY-PASS OIL BOILER SOLENOID VALVE ELECTROVANNE MAZOUT DE BY-PASS BOILER ELECTROVALVULA DE GASOLEO DE BY-PASS BOILER
COOKER
SATRONIC DKO 970 - TF 830.3
1 2 3 4 5 6 7 8 9 S1 S2
BOILER
SATRONIC DKO 970 - TF 830.3
1 2 3 4 5 6 7 8 9 S1 S2
TV2
TV1
MV
YVgSC
YVgC
YVgSB
YVgB
YVb-p B
B2
B1
KA
KA1
WHITE
GREY
RED
ORANGE
PINK
ORANGE
L1 N L2
~ 50 Hz 240 V
DENOMINAZIONE
MINOR BOILER-COOKER X TERMOCUCINA AGA RAYBURN MOD. 499
APPARECCHIATURA
SATRONIC DKO 970-TF 830.3
CONTROLLO DI TENUTA
SIST. RIVELAZ.
MOTOREDUTTORE
CODICE
BEM21.102
INDMODIFICA
Ecoflam SpA
UFF. TECNICO-SETTORE ELETTRICO
DESCRIZIONE MODIFICA
DISEGNATO
CONTROLLATO
DATA
27-09-2002
FIRMA
IND.MOD.
SOST.EL.
SOST.DA
DATA-FIRMA
PROPRIETA' RISERVATA DELLA DITTA ECOFLAM S.P.A.
A TERMINE DI LEGGE E' VIETATO RIPRODURRE O
COMUNICARE A TERZI IL CONTENUTO DEL PRESENTE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COOKER
SATRONIC DKO 970 - TF 830.3
1 2 3 4 5 6 7 8 9 S1 S2
BOILER
SATRONIC DKO 970 - TF 830.3
1 2 3 4 5 6 7 8 9 S1 S2
TV2
TV1
MV
YVgSC
YVgC
YVgB
YVgB
B2
B1
KA
KA1
WHITE
ORANGE
PINK
GREY
RED
ORANGE
L3 N L2
~ 50 Hz 240 V
DENOMINAZIONE
MINOR BOILER-COOKER X TERMOCUCINA AGA RAYBURN MOD. 460-480
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CONTROLLO DI TENUTA
SIST. INVIELAZ.
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DESIGN AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Ecoflam (UK) Limited
12 Goodwood Road , Keytec 7 Business Park, Wyre Road, Pershore, Worcestershire, WR10 2JL England
Tel: 01386 556092 - Fax: 01386 553789

Ecoflam S.p.A.
via Roma, 64 - 31023 RESANA (TV) - Italy - tel. 0423/715345 r.a.
telefax 0423-715444 (Italy 480009 - Export 480873, 715538).
http://www.ecoflam.it - e-mail: ecoflam@ecoflam.it