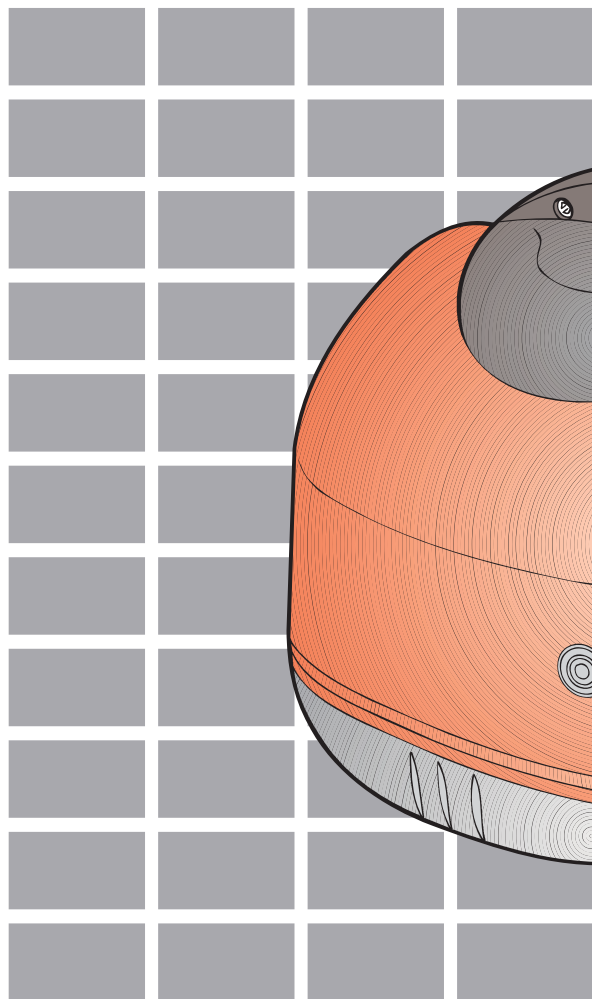


**INSTALLATION, USE AND
MAINTENANCE
INSTRUCTIONS**

**INSTRUCTIONS POUR
L'INSTALLATION
L'UTILISATION ET
L'ENTRETIEN**



SUN

**HEATING OIL
BURNER**

**BRULEUR
FUEL**



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GENERAL INFORMATION

Ferrolì is proud to present this series of heating oil burners for domestic boilers, with thermal power ratings of between 13,3 and 58,1 kW. A compact and attractive design make these burners fit for use with the majority of the boilers currently available on the market.

Use of modern technologies has enabled Ferrolì to produce these new appliances able to optimize the air-fuel mixing function. This achieves high efficiency, low degrees of CO and NOx together with a very silent flame.

Here are the more important technical features:

- Fine adjustment of the position of the combustion head in relation to the nozzle by means of a micrometric screw.
- Accurate air adjustment on the intake.
- Air lock with gravity closing when the burner stops. This notably limits heat dispersions when the boiler is on hold.
- Burner is complete with a preheater on the nozzle line. This improves combustion and ensures prompt ignition after lengthy periods at a standstill during the colder season and when paraffinic heating oil is used.
- The inspection and servicing operations are very convenient for all models.

TECHNICAL AND DIMENSIONAL FEATURES

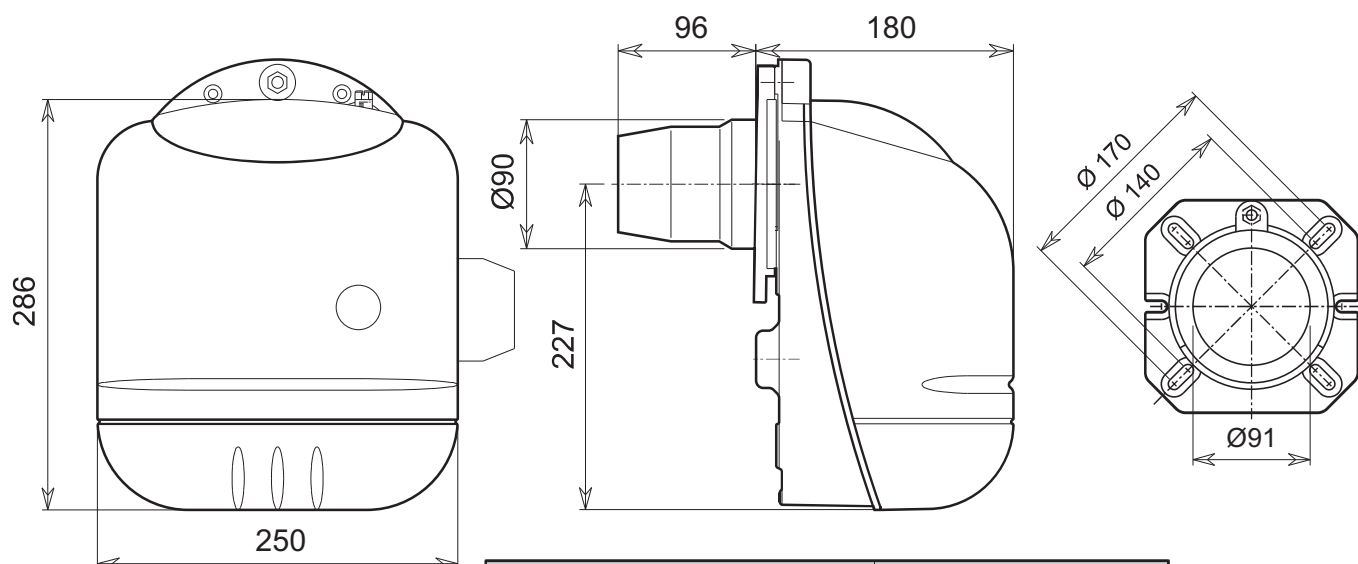


Fig. 1

Type		SUN		
		G.6 R	G.6	
Fuel Flow Rate	kg/h	<i>min.</i>	1,12	1,8
		<i>max.</i>	4,90	4,9
Thermal Power Rating	kW	<i>min.</i>	13,3	21,3
		<i>max.</i>	58,1	58,1
Fan		146-48 rsx 40 pale		
Preheater		110 W	/	
Fuel Nozzle		Øe 64 - Øi 16 nr. 6 tagli		
Ignition transformer		2x7 kV 40 mA		
Motor		70W 0.6A 2735 g/min		
Fuel		Heating oil max 20 °C 1.5 E		
El. Power Supply		220 - 240V 50Hz		
Input		220 W	170 W	
Prot. Class		IP40		

MAIN PARTS

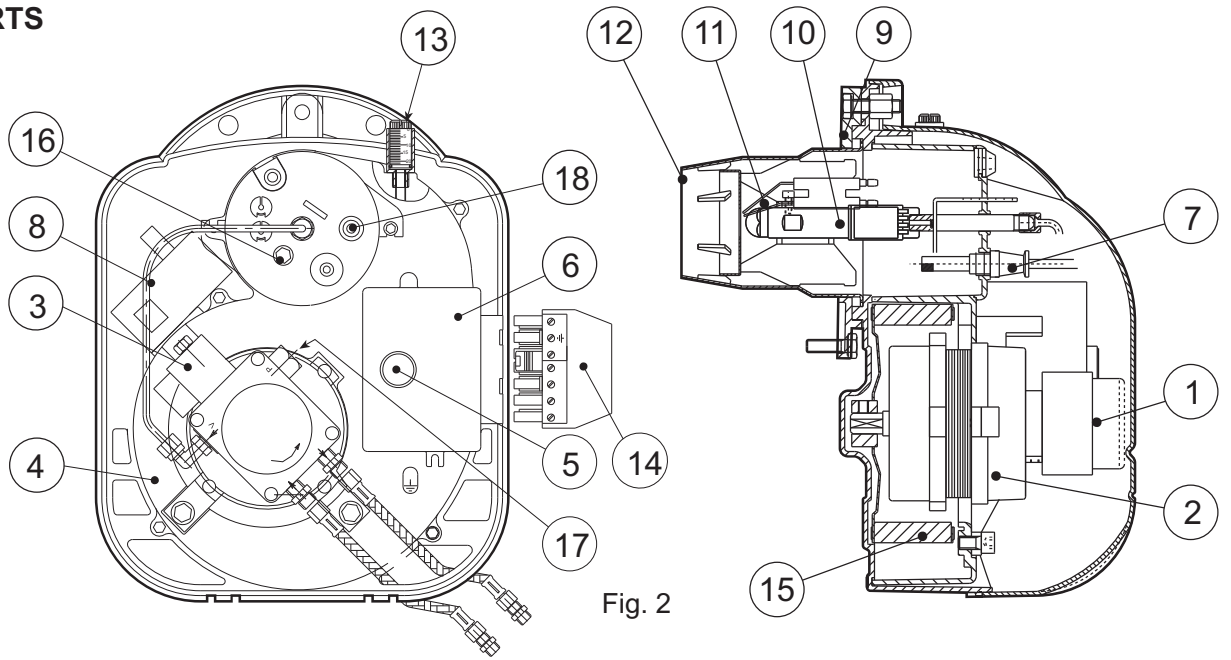


Fig. 2

Key

1 Heating oil pump	10 Injector line with preheater
2 Motor	11 Ignition electrodes
3 Electromagnetic valve	12 Nozzle
4 Burner unit	13 Air lock adjuster screw
5 Release button	14 Spina allacciamento elettrico
6 Mechanism	15 Fan
7 Photoresistance	16 Combustion head adjustment
8 Ignition transformer	17 Pump pressure adjustment
9 Burner coupling flange	18 Pressure tap

OPERATIVE RANGE OF THE BURNER

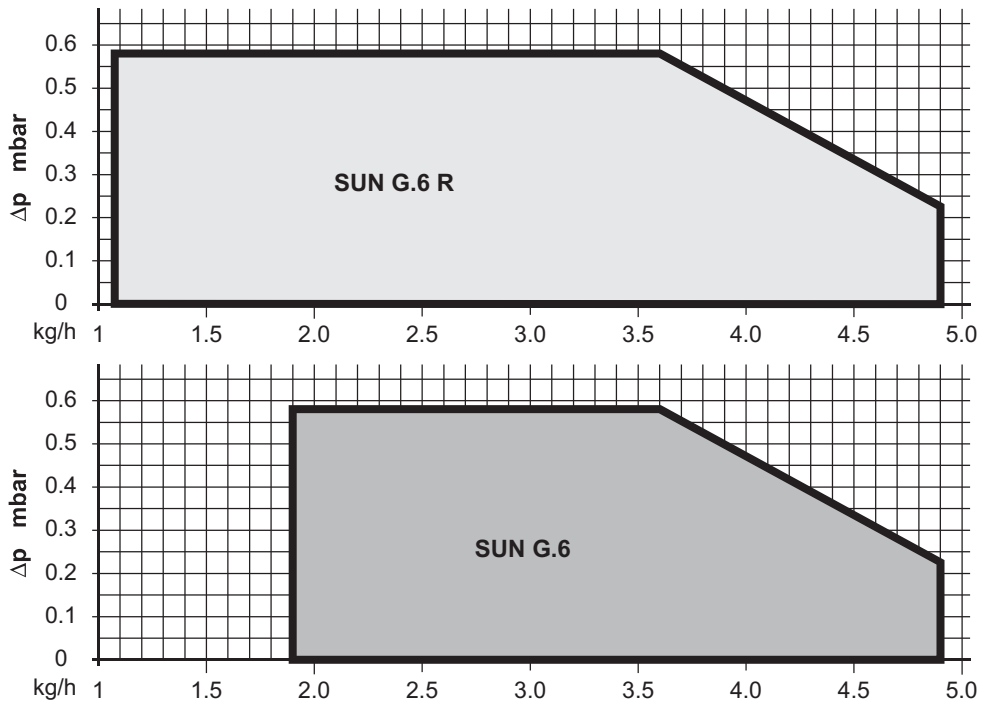


Fig. 3

Pressure in combustion chamber Δp mbar
 Heating oil flow rate Kg/h

ELECTRICAL CONNECTIONS

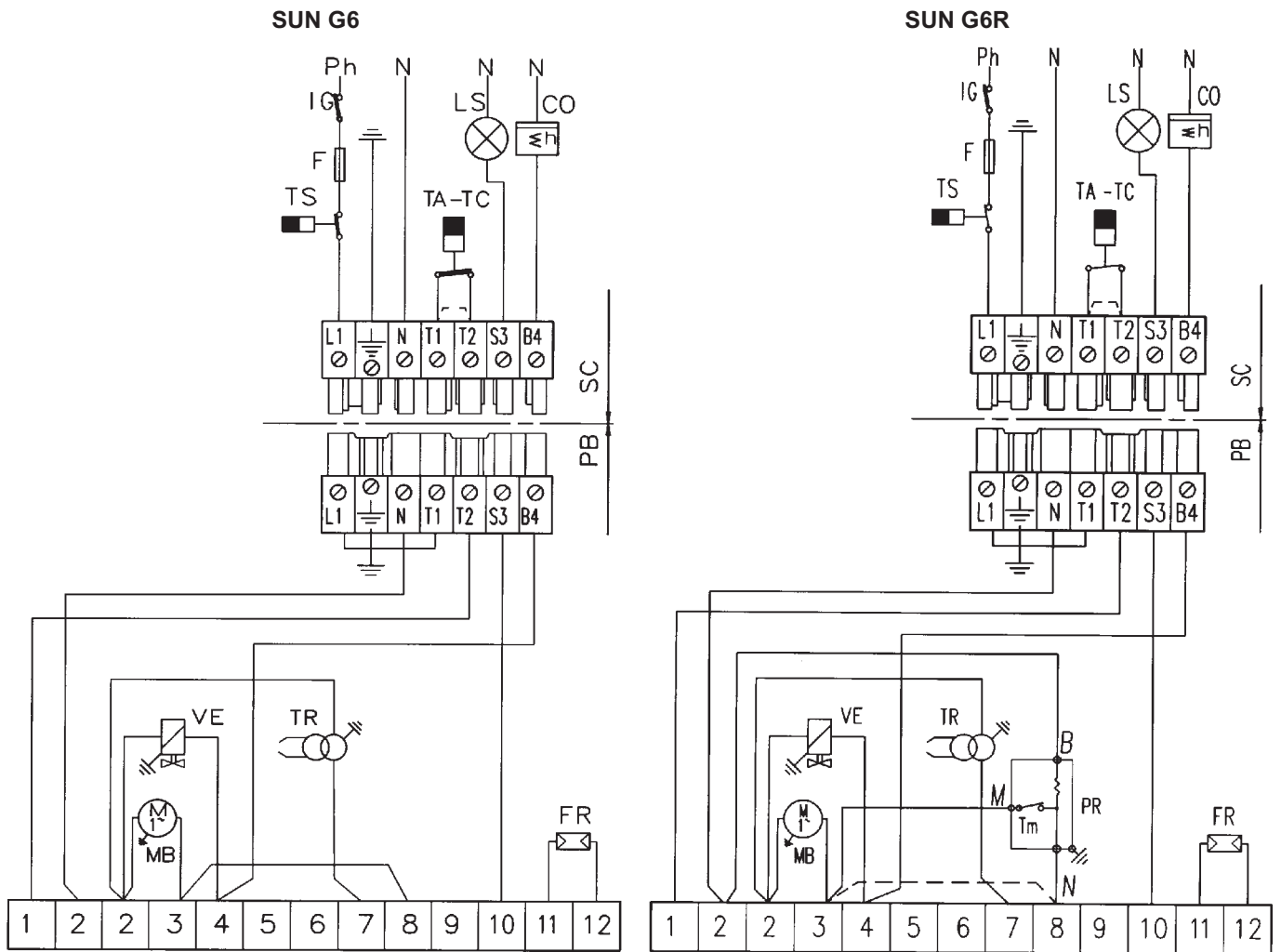


Fig. 4

Key

CO	Hour counter
F	Fuse
FR	Photoelectric resistance
IG	Main switch
LS	Safety light
MB	Burner motor
PB	Burner tap
SC	Plug
TA-TC	Boiler - room thermostat
TR	Ignition transformer
TS	Safety thermostat
Tm	Minimum rating thermostat
VE	Electromagnetic valve
PR	Preheater

The following electrical connections are at the installer's charge:

- power supply line
- thermostat line
- possible shutdown indicator light and/or hour meter

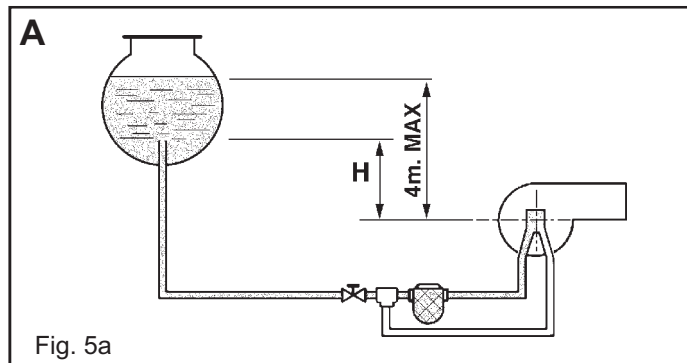
Attention

- do not switch the neutral and phase wires
- always install a good ground connection

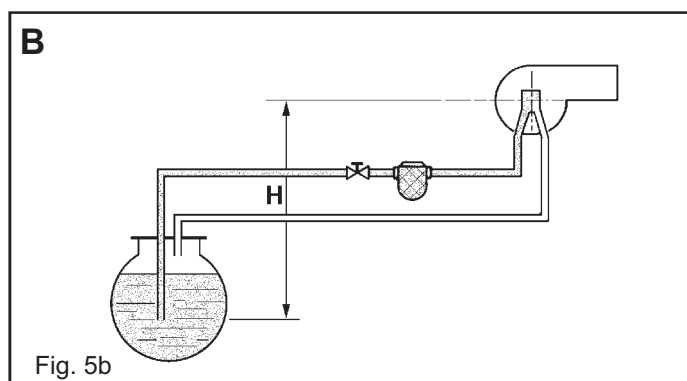
HEATING OIL FUELLING LINE

Attention: Before starting the burner, check that the fuel return pipe is not clogged. Excessive over-pressure would break the pump retaining component.

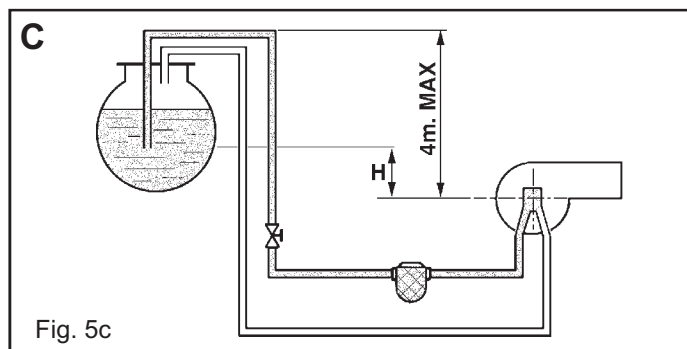
Install a filter on the fuel supply line.



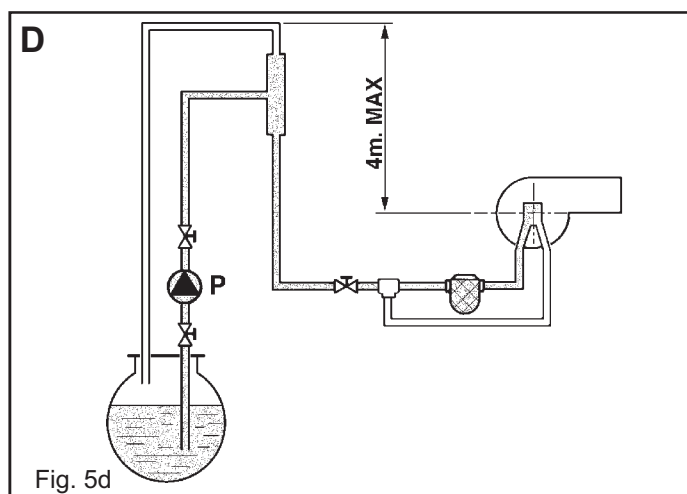
H (m)	L (m)	
	Øi 8 mm.	Øi 10 mm.
0.5	10	20
1.0	20	40
1.5	40	80
2.0	60	100



H (m)	L (m)	
	Øi 8 mm.	Øi 10 mm.
0.0	25	60
0.5	21	50
1.0	18	44
1.5	15	38
2.0	12	32
2.5	10	26
3.0	8	20
3.5	6	16



H (m)	L (m)	
	Øi 8 mm.	Øi 10 mm.
0.0	25	60
0.5	21	50
1.0	18	44
1.5	15	38
2.0	12	32
2.5	10	26
3.0	8	20
3.5	6	16



HYDRAULIC CIRCUITS

- A** Gravity supply
- B** Suction supply
- C** Siphoned supply
- D** Ring supply

Nota: Add 0.25 meters to the pipe length for each elbow or gate valve (load losses).

- L** Total length of intake pipe including vertical sections
- H** Difference in level
- Øi** Inner pipe diameter

BOILER ASSEMBLY

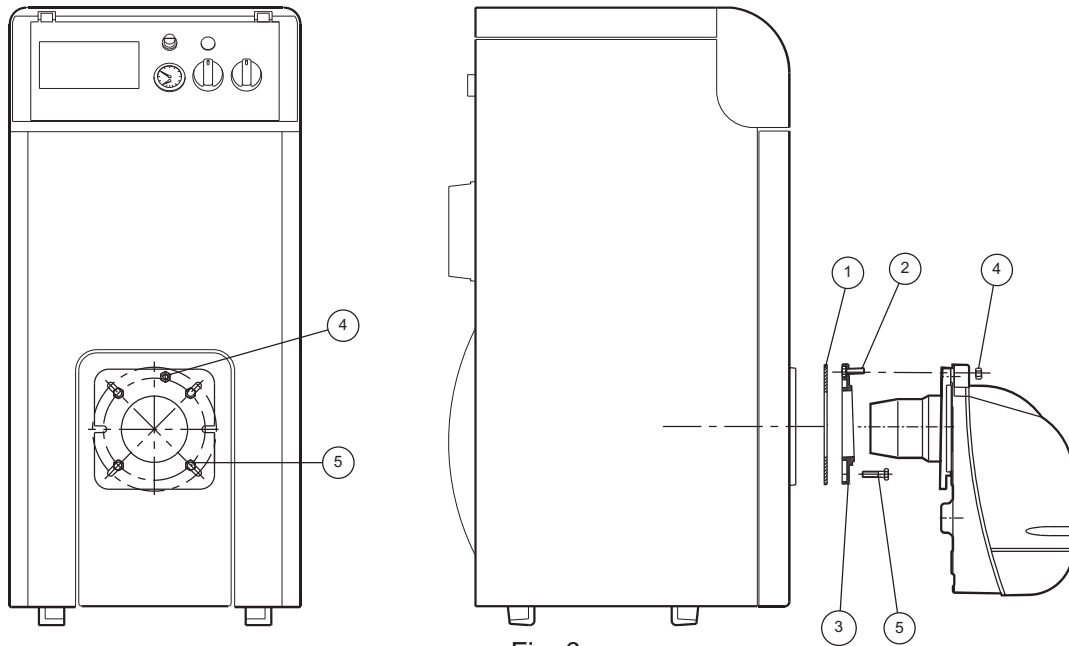


Fig. 6

- Insert screw 2 (m8x25) into flange 3
- Insert flange 3 into the boiler using the 5 screws (NR. 4 M8x30) with insulating seal 1 in between.
- Insert the burner into the boiler flange and fix it to screw 2 with nut 4.

PUMP PRESSURE REGULATION

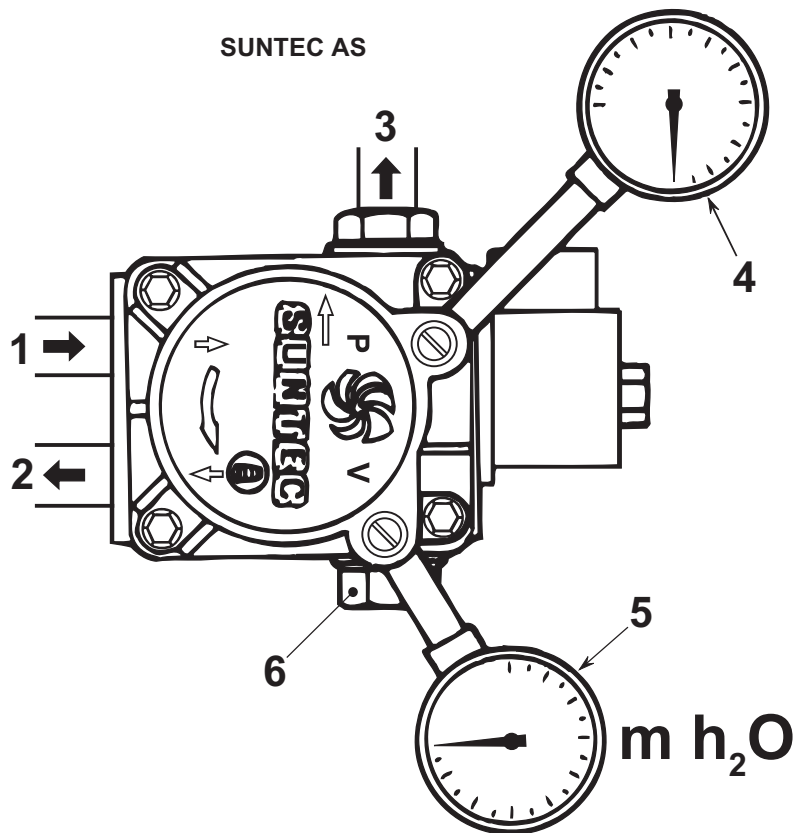


Fig. 7

CHOOSING THE INJECTOR

The injector must be chosen according to the power rating of the boiler flue, remembering that heating oil has a heat value (N.H.V.) of 10200 kcal/Kg. The chart gives the flow rate or consumption in Kg/h and kW of heating oil according to the size of the injector (in GPH) and the pump pressure (in bar). When the burner has a preheater, the effective capacity will be about 10% lower than the values in the chart.

Injector G.P.H.	Pump pressure kg/cm ²											
	6	7	8	9	10	11	12	13	14	15	16	17
0,40	1,18	1,27	1,36	1,44	1,52	1,59	1,67	1,73	1,80	1,86	1,92	1,98
0,50	1,47	1,59	1,70	1,80	1,90	1,99	2,08	2,17	2,25	2,33	2,40	2,48
0,60	1,77	1,91	2,04	2,16	2,28	2,39	2,50	2,60	2,70	2,79	2,88	2,97
0,65	1,91	2,07	2,21	2,34	2,47	2,59	2,71	2,82	2,92	3,03	3,12	3,22
0,75	2,2	2,38	2,55	2,70	2,85	2,99	3,12	3,25	3,37	3,49	3,61	3,72
0,85	2,5	2,70	2,89	3,06	3,23	3,39	3,54	3,68	3,82	3,96	4,09	4,21
1,00	2,94	3,18	3,40	3,61	3,80	3,99	4,16	4,33	4,50	4,65	4,81	4,96
1,10	3,24	3,50	3,74	3,97	4,18	4,38	4,58	4,77	4,95	5,12	5,29	5,45
1,20	3,53	3,82	4,08	4,33	4,56	4,78	5,00	5,20	5,40	5,59	5,77	5,95
1,25	3,68	3,97	4,25	4,50	4,75	5,00	5,20	5,40	5,60	5,80	6,00	6,20
1,35	3,97	4,29	4,59	4,87	5,13	5,38	5,62	5,85	6,07	6,28	6,49	6,69
1,50	4,42	4,77	5,10	5,41	5,70	5,90	6,24	6,50	6,75	6,98	7,21	7,43
1,65	4,86	5,25	5,61	5,95	6,27	6,58	6,87	7,15	7,42	7,68	7,93	8,18
1,75	5,15	5,56	5,95	6,31	6,65	6,98	7,29	7,58	7,87	8,15	8,41	8,67
2,00	5,89	6,30	6,80	7,21	7,60	7,97	8,33	8,67	8,99	9,31	9,61	9,91
2,25	6,62	7,15	7,65	8,15	8,55	8,97	9,37	9,75	10,12	10,47	10,85	11,15
2,50	7,36	7,95	8,50	9,01	9,50	9,97	10,41	10,83	11,24	11,64	12,02	12,39
3,00	8,83	9,54	10,20	10,82	11,40	11,96	12,49	13,00	13,49	13,96	14,42	14,87
Flow rate at injector outlet kg/h												

COMBUSTION HEAD AND AIR DAMPER ADJUSTMENT (Fig. 8)

The combustion head is adjusted according to burner flow rate. To adjust, rotate the adjustment screw (B) clockwise or anticlockwise until the notch on the rod "A" coincides with the indicator.

This modifies the position of the deflector in relation to the draught tube and consequently the passage of air.

The air flow rate is adjusted via screw "C". When the burner shuts down, the air damper closes automatically.

EXAMPLE OF COMBUSTION REGULATION

The injector, pump pressure, combustion head adjustment and air flow rate regulation must be established according to the flow rate required by the boiler, as indicated in the following chart check combustion.

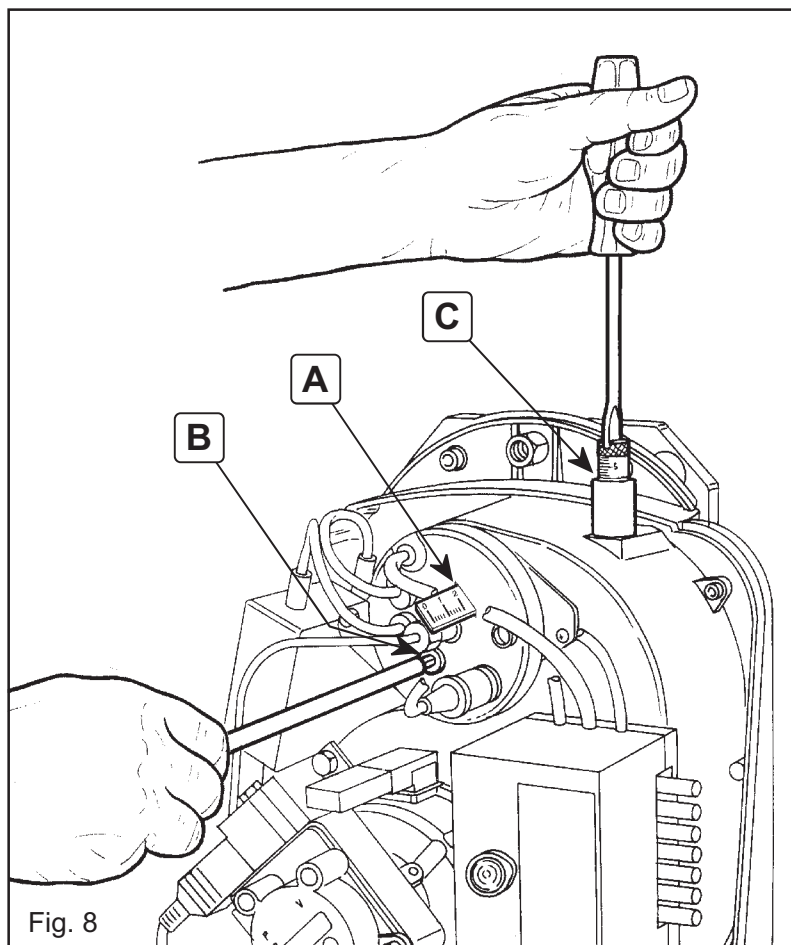


Fig. 8

MODEL BOILER	Delivered heat output		Heat rate		Burner flow rate Kg/h	US Gall/h	Injector		Pump pressure Bar	Head adjustment		Air regulation Tacca
	kW	kcal/h	kW	kcal/h			Angle	Code		Tacca	L	
02 el.	23,3	20.000	25,8	22.200	2,176	0,6	60°	3560154/0	12	6	18	5
03 el.	34,9	30.000	38,7	33.200	3,25	0,85	60°	3560134/0	12	10	22	10
04 el.	46,5	40.000	51,6	44.400	4,35	1,1	60°	3560128/0	12	15	27	15
						* 1,0	* 60°	* 3560127/0	* 12	* 18	* 31	* 15

* Regulations for without preheater burner version

POSITION OF ELECTRODES - BAFFLE (Fig. 9)

After having mounted the injector, check that the electrodes and baffle are correctly positioned according to the above listed measurements.

Always check the measurements whenever operations are carried out on the head.

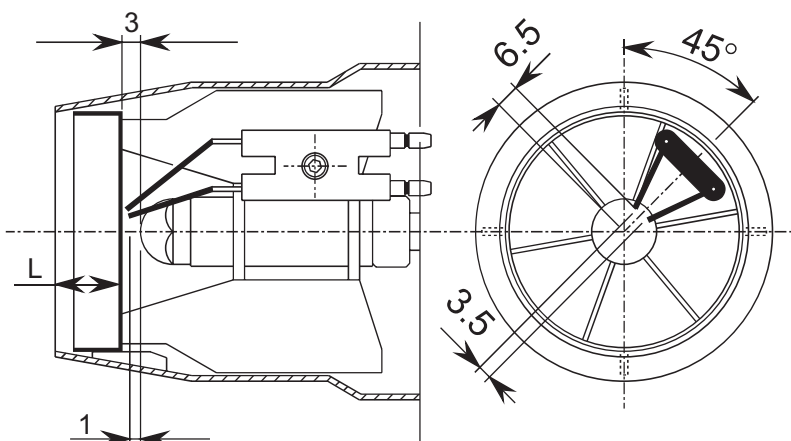


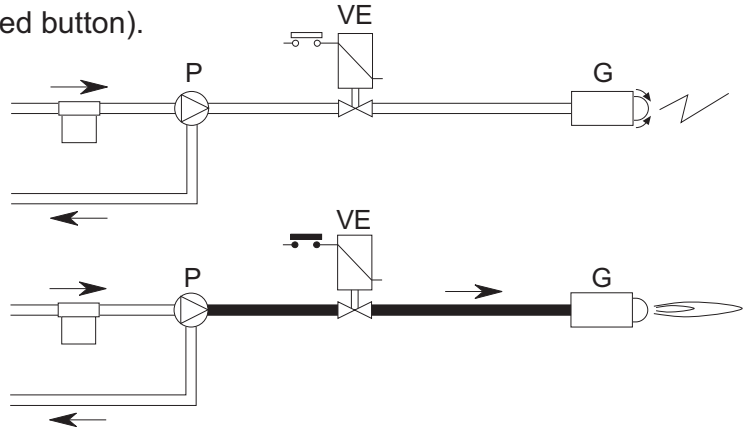
Fig. 9

SETTING AT WORK

1) Preliminary operations

- mount the pressure gauge and vacuumeter on the pump (remove after start-up)
- open the gate valves along the heating oil pipe
- power the equipment by means of the main switch
- close the thermostat line (boiler/room)
- release the appliance (by depressing the red button).

2) Start-up



a) Once the thermostatic line has been closed, the burner motor will start operating together with the pump the intaken heating oil will be totally conveyed towards the return side. The burner fan and ignition transformer will also be operating and the appliance will proceed with the following phases:

- flue pre-ventilation
- pre-flushing of part of the heating oil circuit
- pre-ignition, with discharge between the tips of the electrodes.

b) At the end of the pre-flushing phase, the electromagnetic valve will open and the heating oil will reach the injector from which it will be finely atomized.

Contact with the spark between the electrode tips will form the flame. The safety time will now start.

WORK CYCLE

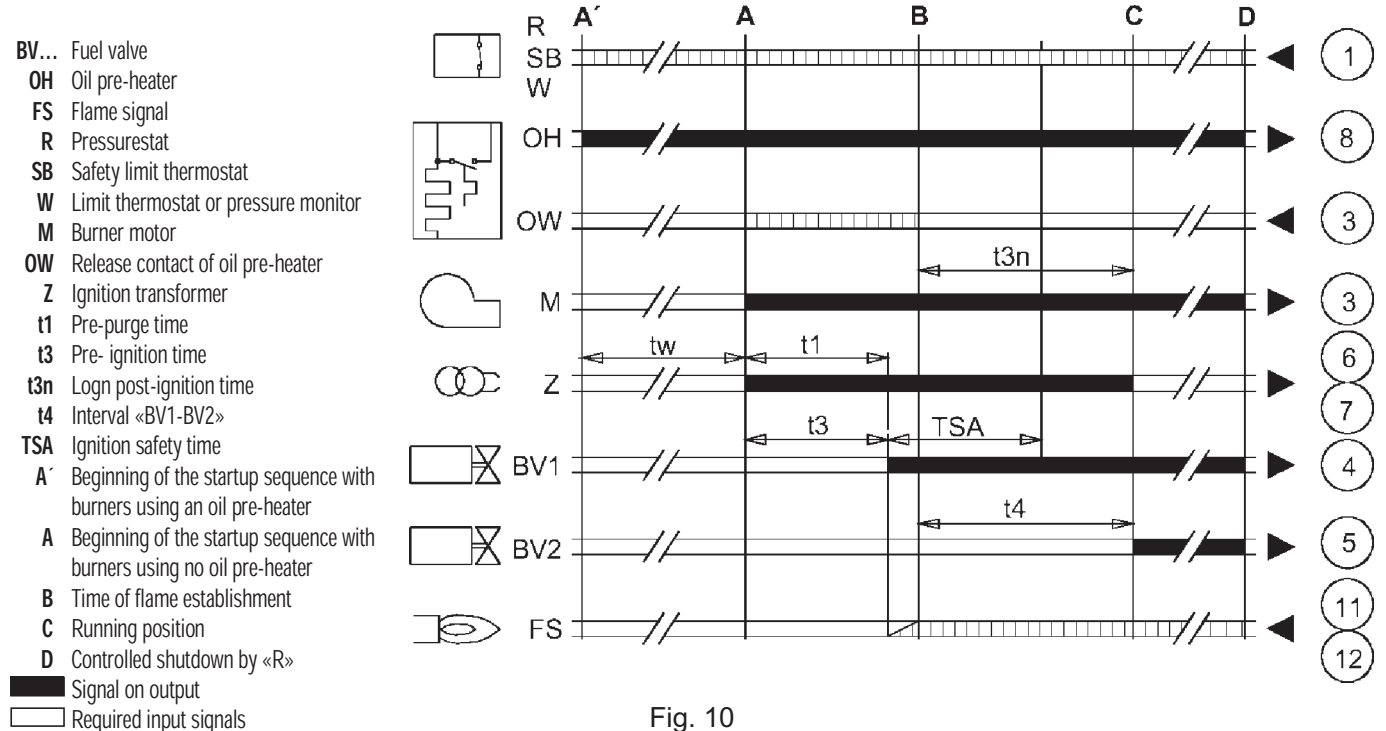


Fig. 10

MAINTENANCE

The burner requires routine maintenance that must be carried out by qualified personnel. Maintenance becomes essential for correct burner operation, thus preventing excessive fuel consumptions and reducing the polluting effect.

Before cleaning or inspecting the burner in any way, always switch off the electricity supply by means of the main switch.

Most of the parts can be inspected by removing the casing.

The basic operations are the following:

- Check that there are no clogged or dented fuel supply or return pipes.
- Clean the filter on the fuel intake line.
- Check that fuel consumption is correct.
- Clean the combustion head around the fuel outlet area, on the swirl disk.
- All the burner to run at top rate for about ten minutes, then examine combustion by checking:
 - That all the parts described in this handbook are correctly calibrated
 - The temperatures of the stack fumes
 - The percentage of CO₂ in the fumes
 - The percentage of CO (ppm)
 - The opacity index of the fumes, according to Bacharach's scale.

DEMOUNTING AND SERVICING THE BURNER (Fig. 11)

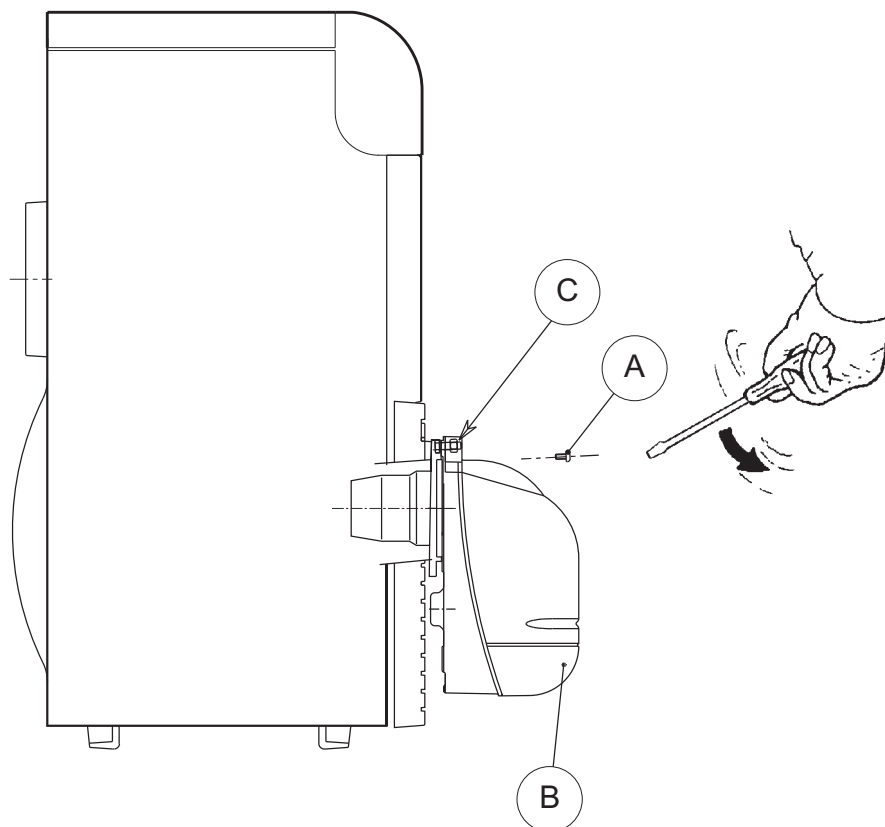


Fig. 11

- Remove the casing (B) by slackening screw (A) for access to all the parts.
- Slacken nut (C) and position the burner in order to reach the injector fixed in screw.

TROUBLESHOOTING

FAULTS	PROBABLE CAUSES	REMEDIES
The motor fails to operate	No electricity	a) Check the fuses b) Check the thermostats (room, boiler, safety)
The motor operates but the flame fails to ignite, thus blocking the appliance	a) No discharge from from the electrodes b) Clogged injector c) No fuel supplied	a) check that the plugs are in the correct position and clean them b) Clean or replace the injector c) Check the level of the heating fuel in the cistern. Check that no gate valves are closed along the heating oil line. Check that the line and pump filters are clean
The burner starts, the flame ignites but the appliance blocks	a) Dirty photoelectric resistance b) Badly atomizing injector	a) Clean the photoelectric resistance b) Clean or replace the injector
The flame is irregular and short, with sparks	a) Badly atomizing injector b) Pump pressure too low c) Water in the heating fuel	a) Clean or replace the injector b) Check and raise the pressure c) Remove water from the cistern and clean the filters
Smoky flame	a) Badly atomizing injector b) Insufficient combustion air	a) Clean or replace the injector b) Check that the air lock opens regularly. Check that the fan is not dirty

COMPONENTS

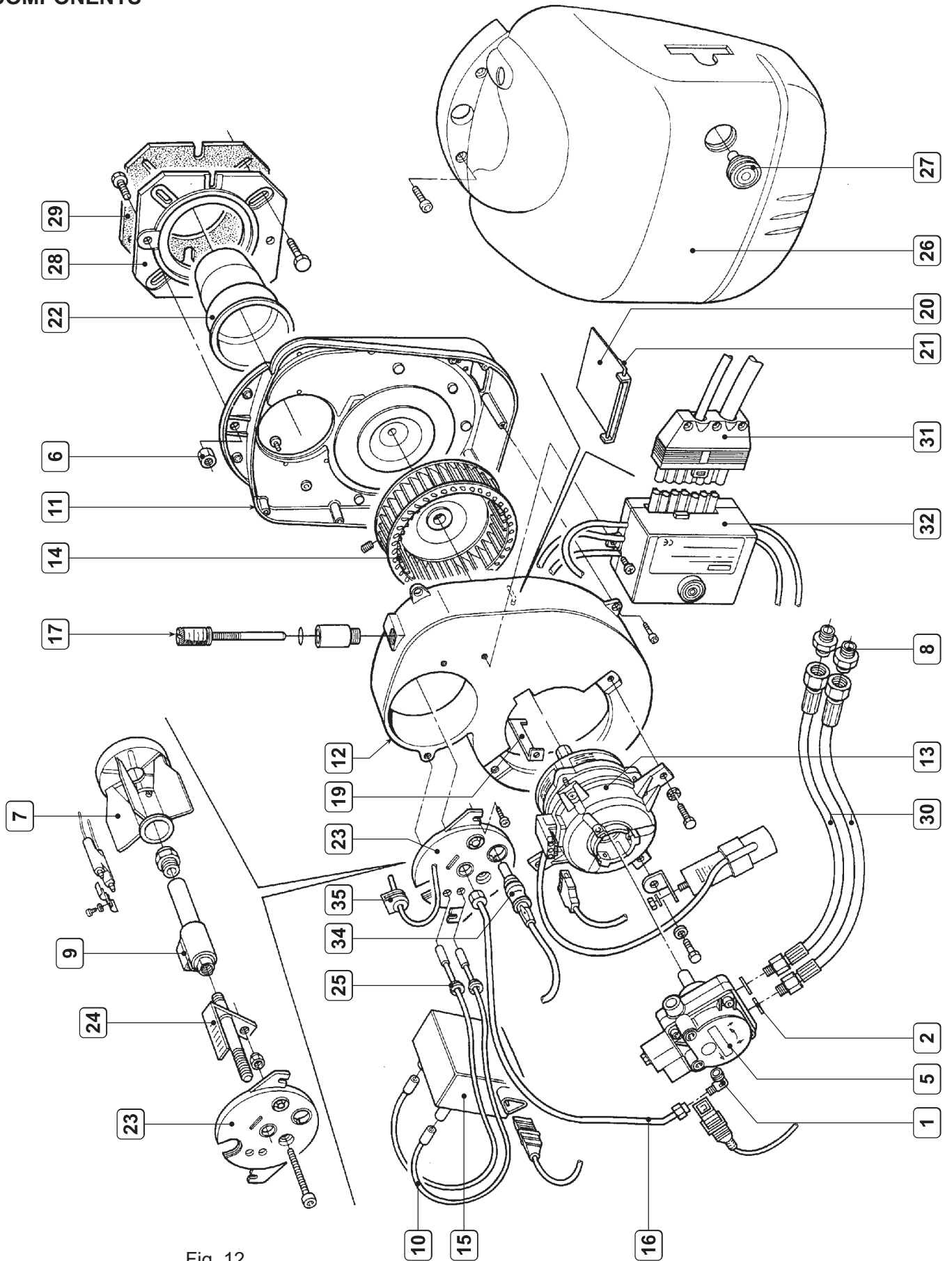


Fig. 12

LIST COMPONENTS

Pos.	Code	Description
1	3340089/0	Elbow, 1/8 M, 4 diam. coupling
2	3370093/0	Washer, int. diam. 13.5, ext. diam. 18 x 2
3		
4		
5	3560092/0	Pump, model AS47A 1564 IP 0500
6	3560100/0	Nut, M8
7	3560217/0	Deflector, art. 94040 Meku
8	3560156/0	Nipple, 3/8" - 1/4"
9a	3560086/0	Preheater (for G6R only)
9b	3560207/0	Nozzle holder (for G6 version)
10	3560162/1	Cable, length 330 with resistance
11	3560167/0	Burner shield
12	3560168/0	Burner screw stoker
13	3560169/0	Motor, clockwise rotation, 70W
14	3560170/0	Burner fan, 146 x 49 F. 12.7 LHR
15	3560171/0	Transformer, Brahma art. TP2STPAF 55 VA
16	3560172/0	Oil feed pipe
17	3890000/0	Air regulation shaft
18		
19	3560176/0	Air deflector
20	3560177/0	Air regulation
21	3560178/0	Air damper pin
22	3560179/0	Draught tube art. 98008 Meku
23	3560180/0	Stoker screw cover
24	3560181/0	Spray nozzle shaft
25	3560182/0	Grommet for electrodes
26	3560183/2	Burner casing
27	3560227/0	Reset button
28	3560185/0	Flange
29	3560186/0	Flange gasket
30	3560204/0	Flexible hose ST6 1/4" FC - 1/4" MG, length 900
31	3650360/0	Connector M. 7P art. S7P - M - STD - T14
32a	3890042/0	Control unit assembly (G6)
32b	3890112/0	Control unit assembly (G6R)
34	3560173/0	Photoelectric cell
35	3560208/0	Preheater bridge burner Sun G6