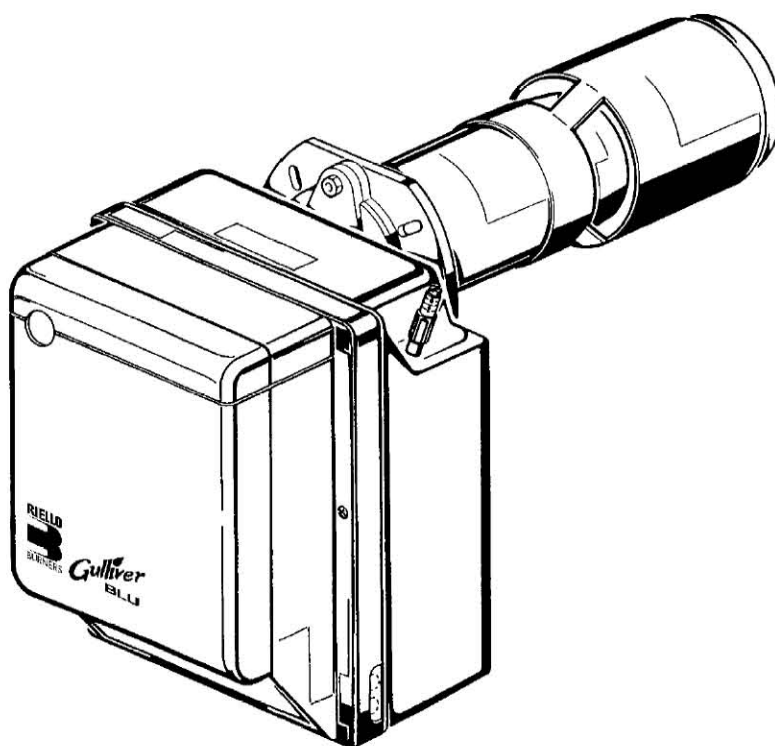


- I** Bruciatore di gasolio
- D** Öl-Gebläsebrenner
- F** Brûleur fioul
- GB** Oil burner

Funzionamento bistadio
Zweistufiger Betrieb
Fonctionnement à 2 allures
Two stage operation



Gulliver
BLU

CODICE CODE	MODELLO - MODELL MODELE - MODEL	TIPO - TYP TYPE
3739150	BG7D	391 T1

INDEX

1. BURNER DESCRIPTION	1	4. WORKING	6
1.1 Burner equipment	1	4.1 Combustion adjustment.....	6
2. TECHNICAL DATA	2	4.2 Electrodes adjustment.....	7
2.1 Technical data	2	4.3 Pump pressure and air output	8
2.2 Overall dimensions.....	2	4.4 Flame detector adjustment	8
2.3 Working field	2	4.5 Burner start-up cycle.....	9
3. INSTALLATION	3	5. MAINTENANCE	9
3.1 Boiler fixing	3	6. FAULTS / SOLUTIONS	10
3.2 Fuel supply	3		
3.3 Hydraulic systems	4		
3.4 Electrical wiring	5		

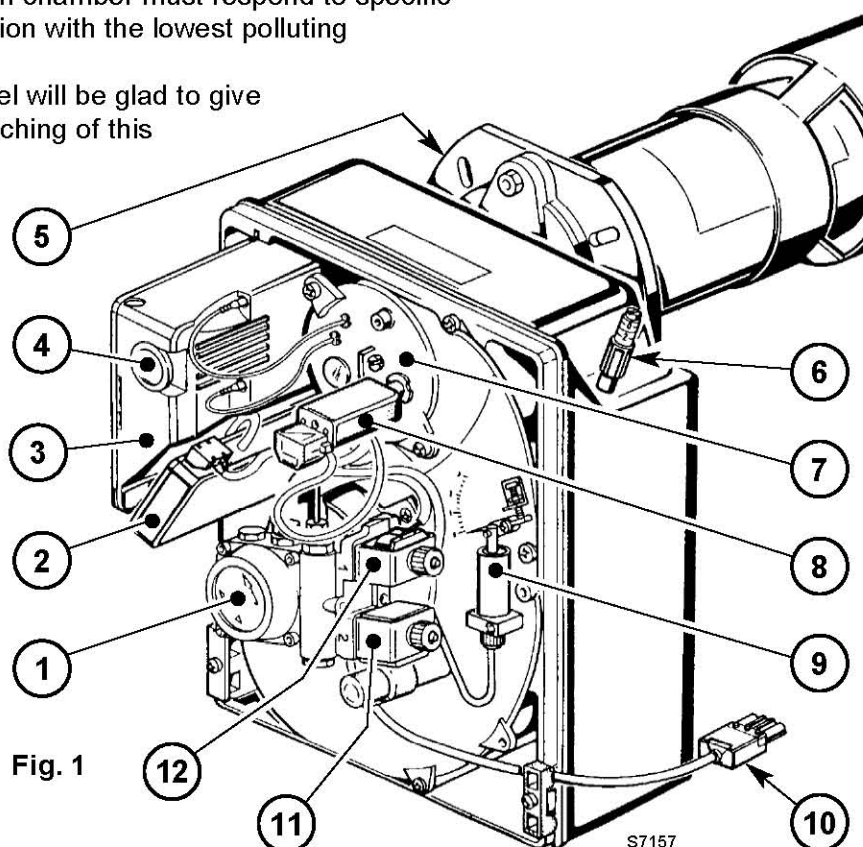
1. BURNER DESCRIPTION

Two stage light oil burner with low pollutant emissions (Nitric Oxide NOx, Carbon monoxide CO and unburnt Hydrocarbons).

The dimension of the boiler's combustion chamber must respond to specific values, in order to guarantee a combustion with the lowest polluting emissions rate.

The RIELLO Technical Service Personnel will be glad to give you all the information for a correct matching of this burner to the boiler.

- 1 – Pump with pressure reducer
- 2 – Electronic start delaying device
- 3 – Control-box
- 4 – Reset button with lock-out lamp
- 5 – Flange with insulating gasket
- 6 – 2nd stage air damper adjustment assembly
- 7 – Nozzle holder assembly
- 8 – Flame detector
- 9 – Hydraulic jack
- 10 – 4 pole socket
- 11 – 2nd stage valve
- 12 – 1st stage valve



- BUWAL approval No. 197012.
- CE Certification No.: 0036 0269/99 as 92/42/EEC.
- The burner meets protection level of IP 40, EN 60529.
- Burner with CE marking in conformity with EEC directives: EMC 89/336/EEC, Low Voltage 73/23/EEC, Machines 98/37/EEC and Efficiency 92/42/EEC.

1.1 BURNER EQUIPMENT

- Flange with insulating gasket . . . No. 1
- Screw and nuts for flange No. 1
- 4 pin plug No. 1

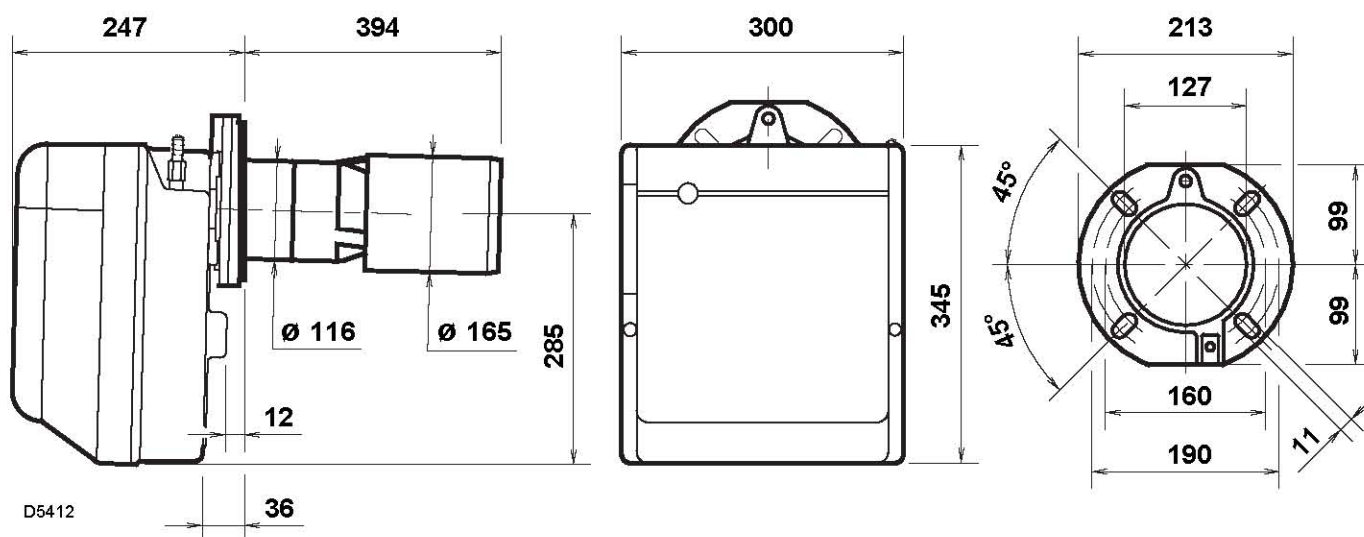
- Screw and nuts for flange to be fixed to boiler No. 4
- Flexible oil pipes with nipples No. 2

2. TECHNICAL DATA

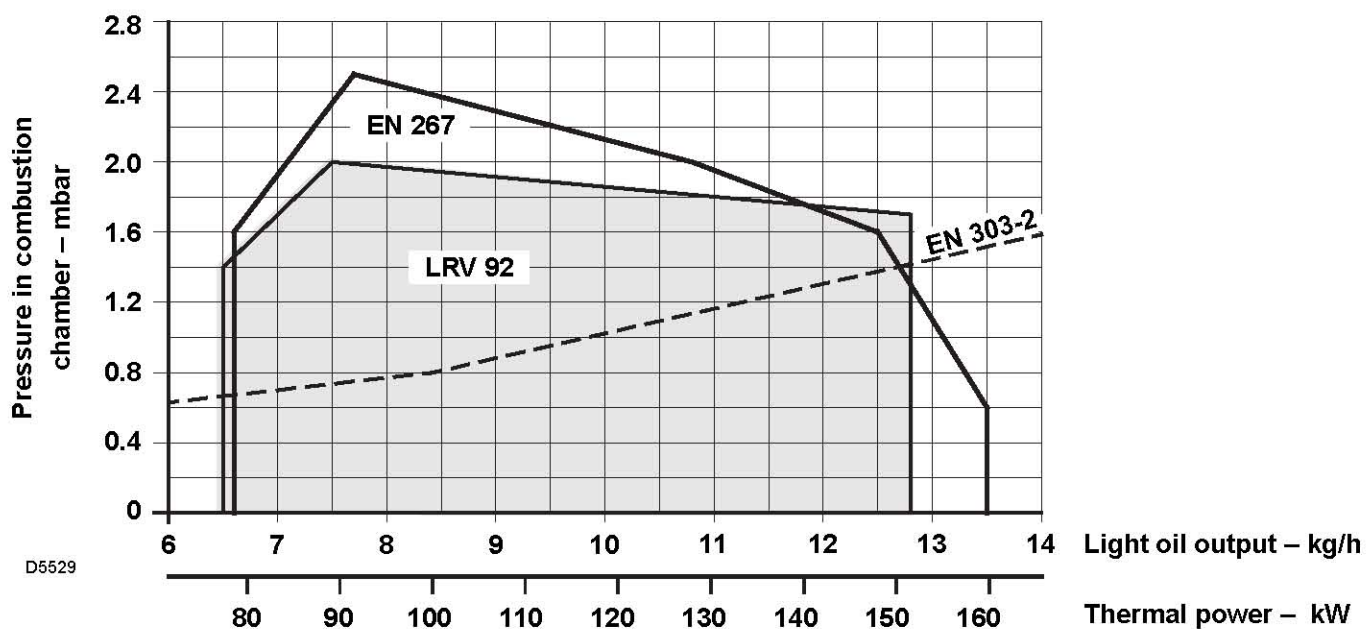
2.1 TECHNICAL DATA

Output - Thermal power	6.6 / 7.7 – 13.5 kg/h - 78 / 91 – 160 kW as EN 267
	6.5 / 7.5 – 12.8 kg/h - 76.7 / 88.5 – 151.7 kW as LRV92
Fuel	Light oil, max. viscosity at 20°C: 6 mm ² /s
Electrical supply	Single phase, 230V ± 10%~ 50Hz
Motor	Run current 2 A - 2730 rpm - 286 rad/s
Capacitor	8 µF
Ignition transformer	Secondary 8 kV - 16 mA
Pump	Pressure: 8 – 15 bar
Absorbed electrical power	0.47 kW

2.2 OVERALL DIMENSIONS



2.3 WORKING FIELD

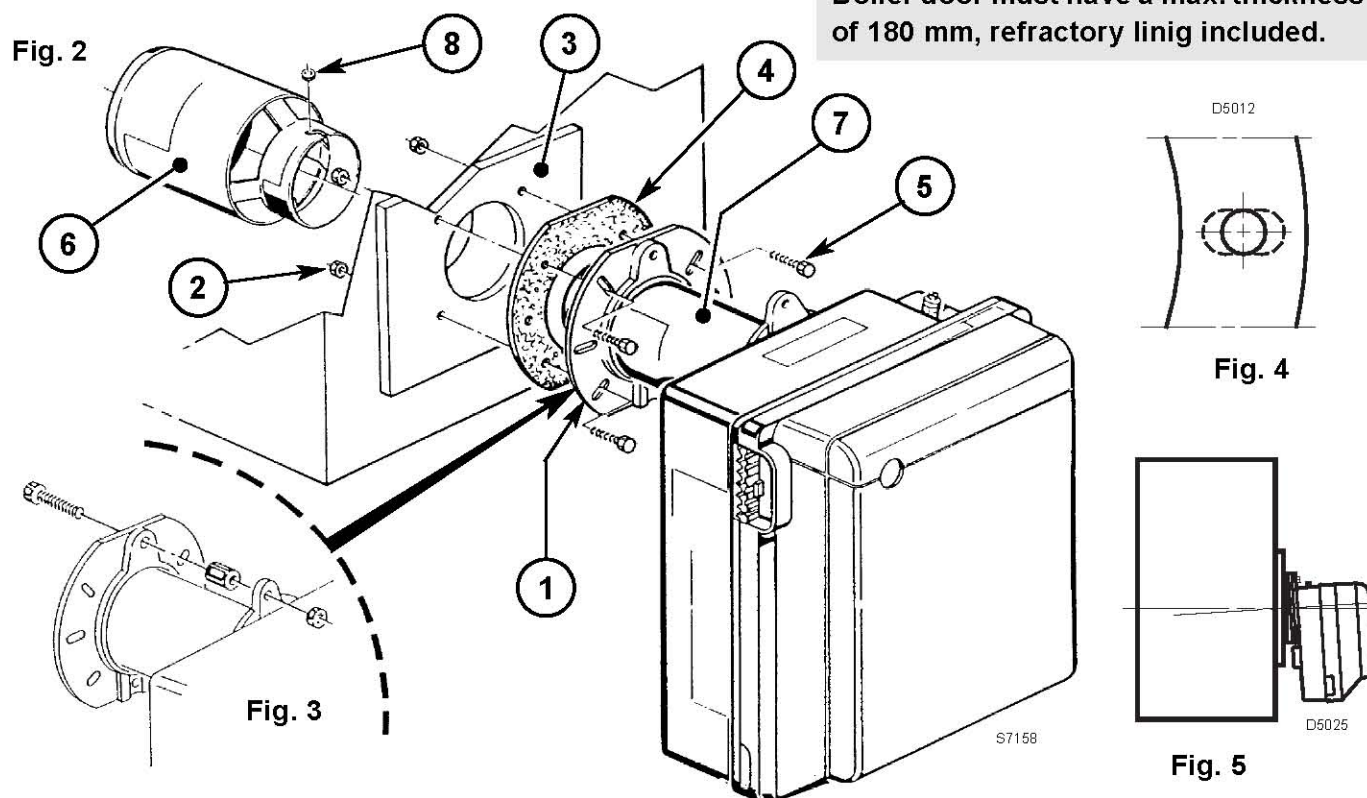


3. INSTALLATION

3.1 BOILER FIXING

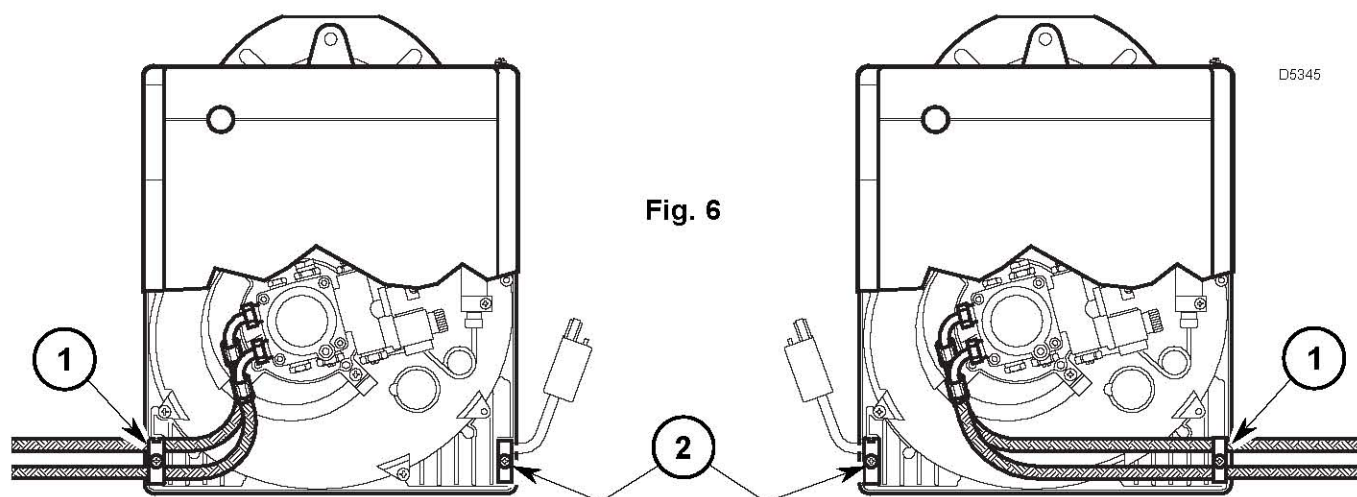
IMPORTANT

Boiler door must have a max. thickness of 180 mm, refractory lining included.



- Put on the flange (1) the screw and two nuts, (see fig. 3).
- Widen, if necessary, the insulating gasket holes (4), (see fig. 4).
- Fix the flange (1) to the boiler door (3) using screws (5) and (if necessary) the nuts (2) interposing the insulating gasket (4), (see fig. 2).
- Open the boiler door, insert the flame tube (6) on the burner blast tube (7) and fix it with the nut (8).
- After installation ensure that burner is lightly inclined as in fig. 5.

3.2 FUEL SUPPLY



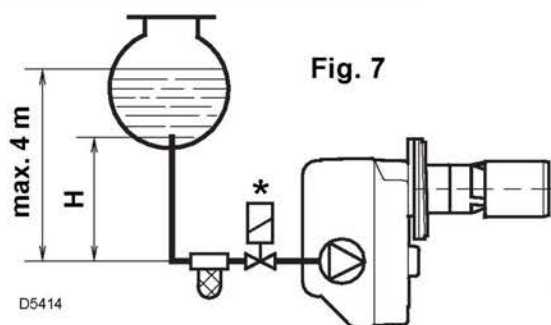
The burner is designed to allow entry of the oil supply pipes on either side. Depending on the oil supply pipes position (to the right or to the left hand side of the burner) the fixing plate (1) and cable clamp (2) should be reversed, (see fig. 6).

3.3 HYDRAULIC SYSTEMS

WARNING:

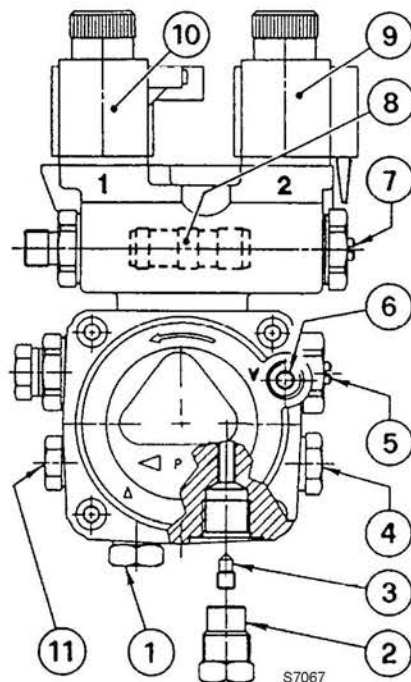
- Before starting the burner make sure that the return pipe-line is not clogged. An excessive back pressure would cause the damage of the pump seal.
- The pump is designed to allow working with two pipes. In order to obtain one pipe working it is necessary to unscrew the return nut (2), remove the by-pass screw (3) and then screw again the nut (2), (see fig. 8).

SYSTEM NOT PERMITTED IN GERMANY



H meters	L meters	
	ø i 8 mm	ø i 10 mm
0.5	10	20
1	20	40
1.5	40	80
2	60	100

- 1 - Suction line
2 - Return line
3 - By-pass screw
4 - Gauge connection
5 - 2nd stage pressure adjuster



- 6 - Suction gauge connection
7 - 1st stage pressure adjuster
8 - Pressure reducer piston
9 - 2nd stage valve
10 - 1st stage valve
11 - Auxiliary pressure gauge

PRIMING PUMP:

On the system in fig. 7 it is sufficient to loosen the suction gauge connection (6, fig. 8) and wait until oil flows out.

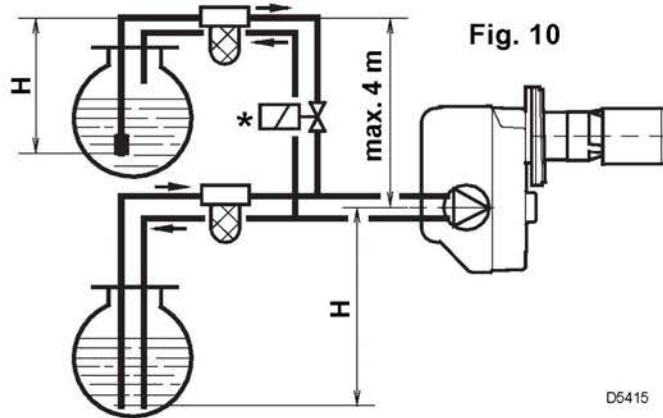
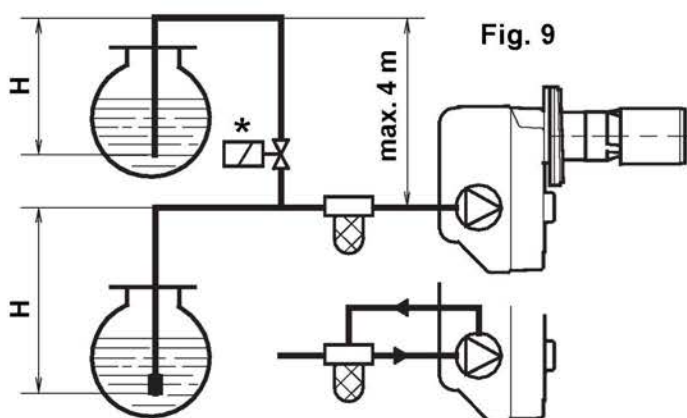
On the systems in fig. 9 and 10 start the burner and wait for the priming. Should lock-out occur prior to the arrival of the fuel, await at least 20 seconds before repeating the operation.

The pump suction should not exceed a maximum of 0.4 bar (30 cm Hg).

Beyond this limit gas is released from the oil. Oil pipes must be completely tight. In the vacuum systems the return line should terminate within the oil tank at the same level as the suction line. In this case a non-return valve is not required. Should however the return line arrive over the fuel level, a non-return valve is required.

This solution however is less safe than previous one, due to the possibility of leakage of the valve.

H meters	L meters	
	ø i 8 mm	ø i 10 mm
0	35	100
0.5	30	100
1	25	100
1.5	20	90
2	15	70
3	8	30
3.5	6	20



It is necessary to install a filter on the fuel supply line.

★ ONLY FOR ITALY: Automatic shut-off device as per Ministry of Internal Affairs' regulation no. 73 dated 7/29/71.

H = difference of level;

L = max. length of the suction line;

I. D. = internal diameter.

3.4 ELECTRICAL WIRING

WARNING

**DO NOT EXCHANGE
NEUTRAL WITH PHASE**

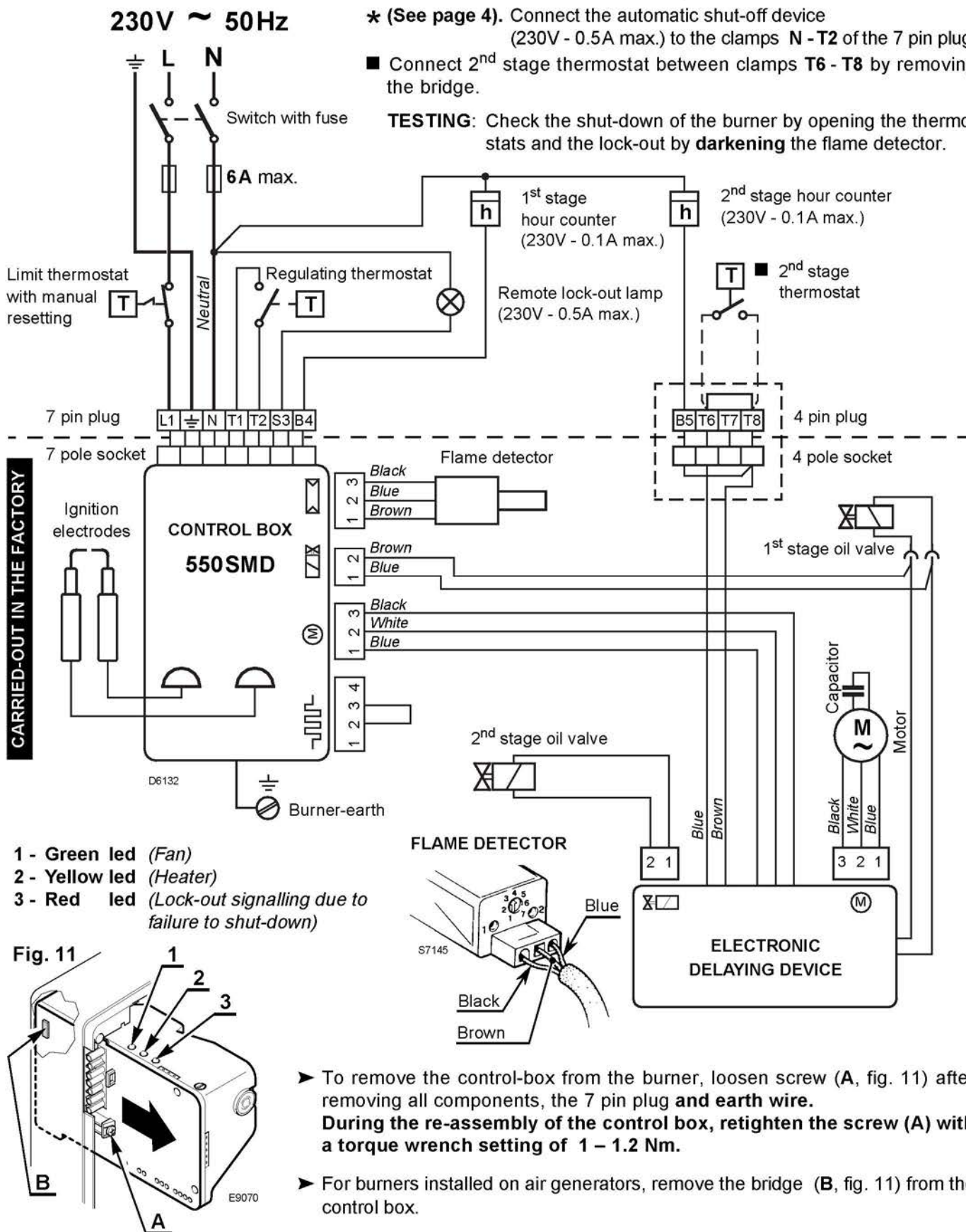
NOTES:

- Wires of 1 mm² section.
- The electrical wiring carried out by the installer must be in compliance with the rules in force in the Country.

*** (See page 4).** Connect the automatic shut-off device (230V - 0.5A max.) to the clamps **N - T2** of the 7 pin plug.

■ Connect 2nd stage thermostat between clamps T6 - T8 by removing the bridge.

TESTING: Check the shut-down of the burner by opening the thermostats and the lock-out by **darkening** the flame detector.



4. WORKING

4.1 COMBUSTION ADJUSTMENT

In conformity with Efficiency Directive 92/42/EEC the application of the burner on the boiler, adjustment and testing must be carried out observing the instruction manual of the boiler, including verification of the CO and CO₂ concentration in the flue gases, their temperatures and the average temperature of the water in the boiler.

To suit the required appliance output, choose the proper nozzle and adjust the pump pressure, the setting of the combustion head, and the air damper opening in accordance with the following schedule.

Values in the table refer to 12.5% CO₂ at sea level and to "zero" pressure in the combustion chamber.

Nozzle		Pump pressure		Burner output		Comb. head adjustment	Air damper adjustment	
1		bar		kg/h $\pm 4\%$		2	1st stage	2nd stage
GPH	Angle	1st stage	2nd stage	1st stage	2nd stage	Set-point	Set-point	Set-point
1.75	60°	10	14	6.6	7.7	2.0	0.2	2.0
2.00	60°	10	14	7.3	8.8	2.5	0.25	2.2
2.25	60°	10	14	8.3	10.0	4.0	0.25	2.2
2.50	60°	10	14	9.2	10.4	5.0	0.4	2.4
2.75	60°	10	14	10.4	12.5	6.0	0.6	3.5
3.00	60°	10	14	11.1	13.5	7.0	0.7	4.5

1 RECOMMENDED NOZZLES

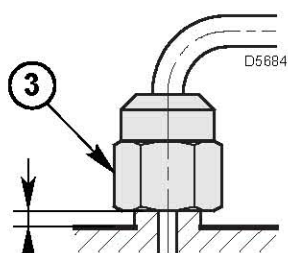
Steinen type H
Danfoss type H
Delavan type W

TO FIT NOZZLE CARRY OUT THE FOLLOWING ACTIONS (see fig. 12):

- Remove nozzle-holder assembly (1) after loosening screws (2) and nut (3), remove small cables (4) from the control box and the flame detector (5).
- Withdraw the small cables (4) from the electrodes, remove the diffuser disc-holder assembly (8) from the nozzle-holder assembly (1) after loosening screw (3, fig. 13, page 7).
- Screw the nozzle (9) correctly and tighten it as shown in figure.

ATTENTION

During the reassembly of the nozzle-holder assembly screw the nut (3) as shown in the figure below.



**TIGHTEN WITHOUT MOVING
BACKWARDS TO THE END**

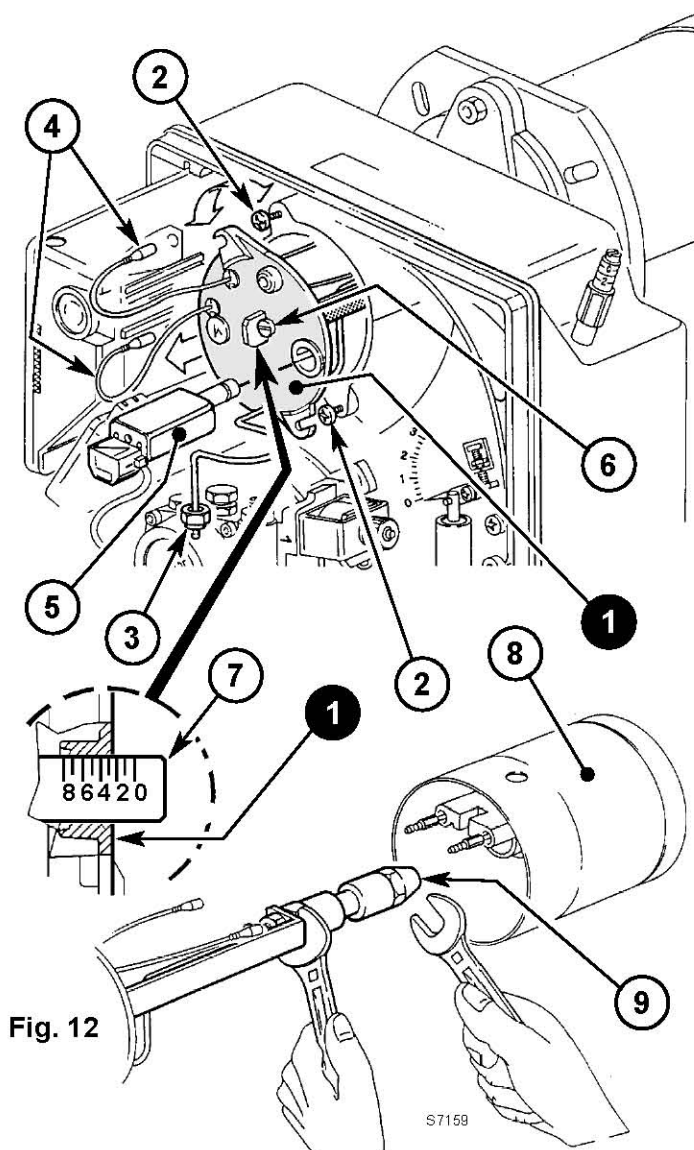


Fig. 12

S7159

2 COMBUSTION HEAD SETTING (see fig. 12, page 6)

It depends on the output of the burner and is carried out by rotating clockwise or counterclockwise the setting screw (6) until the set-point marked on the regulating rod (7) is level with the outside plane of the nozzle-holder assembly (1).

– In the sketch the combustion head is set for an output of 2.00 GPH at 14 bar.

The set-point **2.5** of the regulating rod is at the same level with the outside plane of the nozzle-holder assembly as shown in the schedule.

4.2 ELECTRODES ADJUSTMENT (see fig. 13)

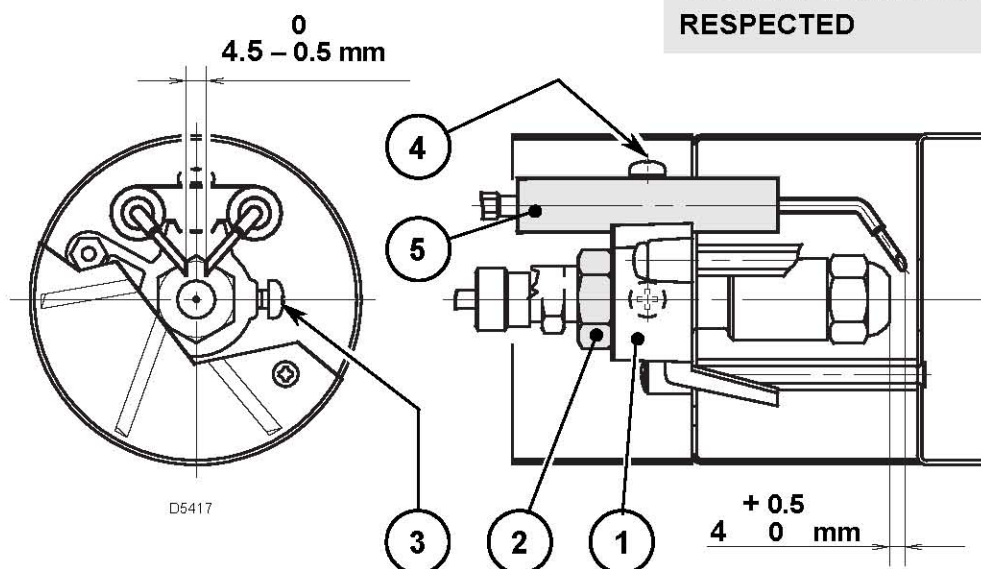
ATTENTION

Lean the diffuser disc-holder assembly (1) on the nozzle-holder (2) and lock it by screw (3).

For prospective adjustments loosen screw (4) and move the electrodes assembly (5).

To have access to the electrodes carry out operation as described in **chapter 4.1** (page 6) “**RECOMMENDED NOZZLES**”.

Fig. 13



4.3 PUMP PRESSURE AND AIR OUTPUT

■ 1st STAGE ADJUSTMENT

ADJUSTMENT OF AIR SHUTTER:

Unloosen the nut (1), turn the screw (2) until the indicator (3) reaches the position desired. Then lock the nut (1), (see fig. 14).

PRESSURE REGULATION:

This is set at 9 bar at the factory.

Should it be necessary to re-set or alter such pressure, this can be done, by adjusting screw (7).

The pressure gauge must be mounted in place of cap (8), (see fig. 15).

■ 2nd STAGE ADJUSTMENT

ADJUSTMENT OF AIR SHUTTER:

Unloosen the nut (4), turn the screw (5) until the indicator (3) reaches the position desired.

Then lock the nut (4), (see fig. 14).

PRESSURE REGULATION:

This is set at 15 bar at the factory.

Should it be necessary to re-set or alter such pressure, this can be done, by adjusting screw (9).

The pressure gauge must be mounted in place of cap (8), (see fig. 15).

When burner shuts down the air damper automatically closes till a **max. chimney depression of 0,5 mbar.**

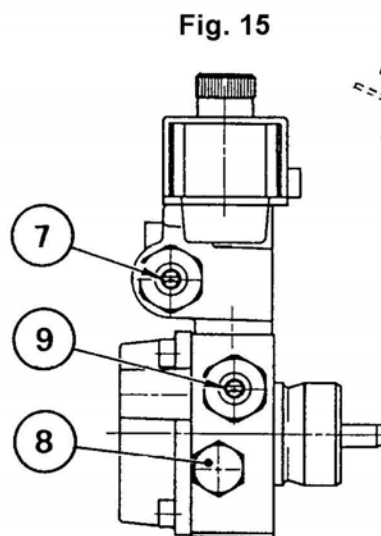


Fig. 15

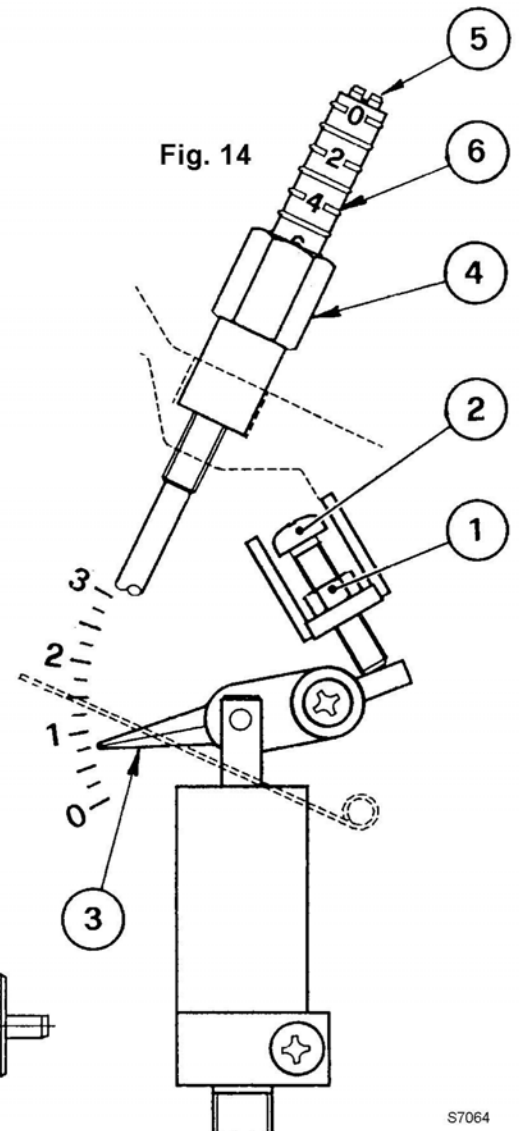


Fig. 14

4.4 FLAME DETECTOR ADJUSTMENT

(See fig. 16)

The sensitivity of the flame detector can be adjusted with a potentiometer (3). It is factory-set t in position 4.

Led (1) indicates the sensitivity.

Led (2) indicates the operation.

- During pre-ventilation **both leds are switched off.**
- Optimal sensitivity during stable operation is shown when **both leds are switched on.**
- If led (1) pulsates, turn the potentiometer until it switches on in a steady manner. Then, first turn the pointer counterclockwise until the led pulsates. Next, increase the sensitivity by turning the pointer clockwise one or two notches.
- **Wait at least 5 minutes, then make sure that the adjustment done as above allows a correct starting program of the burner.**

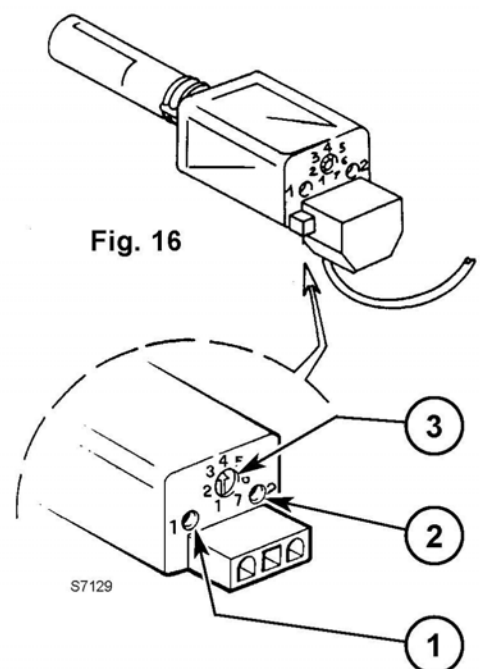
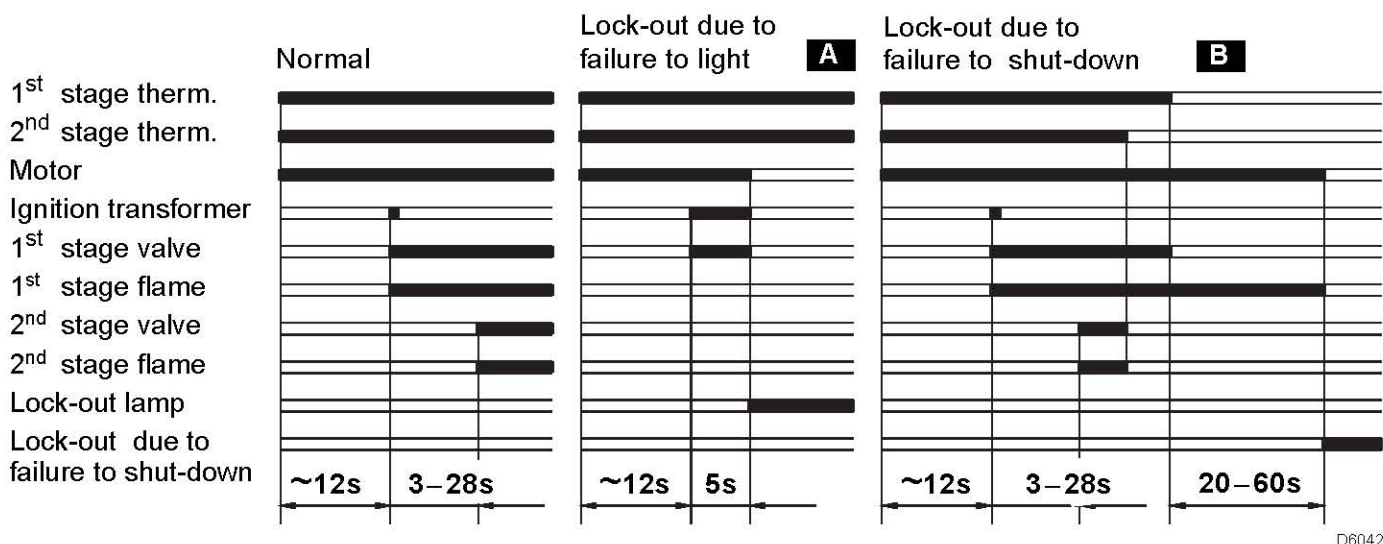


Fig. 16

4.5 BURNER START-UP CYCLE



A Lock out is indicated by a lamp on the control box (4, fig. 1, page 1).

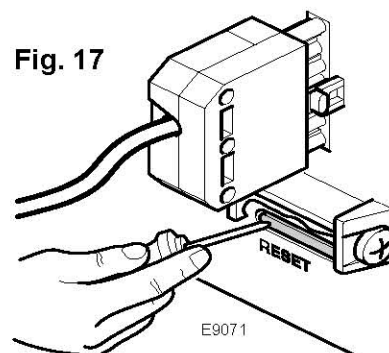
B In this case the burner will not reset because there is a serious fault.

CALL THE SERVICE AGENT

The authorized service agent must:

- Restore the working by moving backward the control box, **keeping it supplied** and acting on the reset tongue (see fig. 17).
- Check the efficiency of:
 - Flame detector (8, fig. 1, page 1).
 - 1st stage interception valve (12, fig. 1, page 1)
 - Pressure adjuster piston (8, fig. 8, page 4)

Fig. 17



5. MAINTENANCE

Burner requires a periodic maintenance carried out by a qualified and authorized technicians.

Maintenance is essential for the reliability of the burner, avoiding the excessive consumption of fuel and consequent pollution.

Before carrying out any cleaning or control always first switch off the electrical supply to the burner acting on the main switch of the system.

THE BASIC CHECKS ARE:

- Check that there are not obstructions or dents in the supply or return oil pipes.
- Clean the filter in the oil suction line and in the pump.
- Check for correct fuel consumption.
- Replace the nozzle.
- Clean the combustion head in the fuel exit area, on the diffuser disc.
- Leave the burner working without interruptions for 10 min. and check the right settings at 1st and 2nd stage of all components stated in this manual. **Then carry out a combustion check verifying:**
 - Smoke temperature at the chimney, – Content of CO₂ (%), – Content of CO (ppm),
 - Smoke value according to opacity smokes index according to Bacharach scale.

6. FAULTS / SOLUTIONS

Here below you can find some causes and the possible solutions for problems that could cause a failure to start or a bad working of the burner.

A fault usually makes the lock-out lamp light which is situated inside the reset button of the control box (4, fig. 1, page 1).

When lock out lamp lights the burner will attempt to light only after pushing the reset button. After this if the burner functions correctly, the lock-out can be attributed to a temporary fault.

If however the lock out continues the cause must be determined and the solution found.

FAULTS	POSSIBLE CAUSES	SOLUTION
The burner will not start when the adjustment thermostat closes.	Lack of electrical supply.	Check presence of voltage in the L1 - N clamps of the 7 pin plug.
		Check the conditions of the fuses.
		Check that thermostat limit is not lock out.
	Thermostats are faulty.	Replace them.
	The connections in the control box are wrongly inserted.	Check and connect completely all the plugs.
	Lock-out because of a failure to turn off (event B page 9).	Call technical assistance.
The burner remains in the pre-purge phase.	The flame detector sees strange light (Led 1 is switched on).	Eliminate the light.
Burner runs normally in the prepurge and ignition cycle and locks out after 5 seconds ca.	The flame detector is dirty.	Clear it.
	The flame detector is defective	Change it.
	Flame moves away or fails.	Check pressure and output of the fuel.
		Check air output.
		Change nozzle.
		Check the coil of solenoid valve 1st stage.
Yellow flame	Nozzle dirty or worn.	Replace it.
	Defect in the air output.	Adjust the air output.
	Pump pressure is not correctly set.	Verify the pressure and the output of the fuel and adjust them according to the instructions of this manual.
	Air suction inlet is clogged.	Clear it.
	Obstruction in the exhaust circuit.	Clear it.
Burner starts with an ignition delay.	The ignition electrodes are wrongly positioned.	Adjust them according to the instructions of this manual.
	Air output is too high.	Set the air output according to the instructions of this manual.
	Nozzle dirty or worn.	Replace it.

WARNING:

The manufacturer cannot accept responsibility for any damage to persons, animals or property due to error in installation or in the burner adjustment, or due to improper or unreasonable use or non observance of the technical instruction enclosed with the burner, or due to the intervention of unqualified personnel.