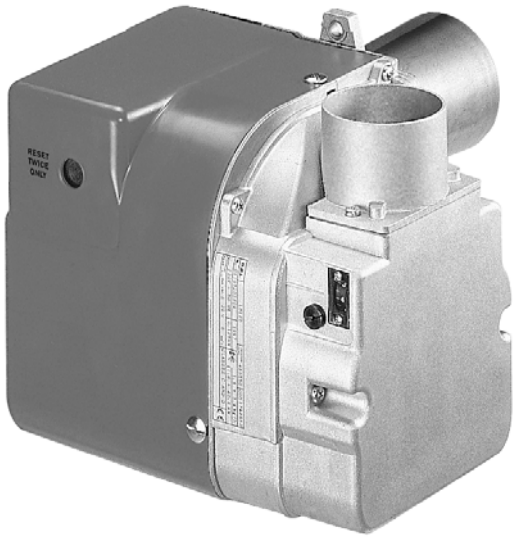
Light oil burner

One stage operation

CE



CODE	MODEL	TYPE
20040062	RDB1R GRANT MILTON 20 kW	501T1R

20040515 (2) - 07/2011

Contents

1 Declaration

Declaration of conformity in accordance with ISO / IEC 17050-1		
Manufacturer:	RIELLO S.p.A.	
Address:	Via Pilade Riello, 7 37045 Legnago (VR)	
Product:	Light oil burner	
Model:	RDB1R GRANT MILTON 20 kW	
These products are in compliance with the following Technical Standard:		
EN 12100		
EN 267		
and according to the European Directives:		
MD	2006/42/EC	Machine Directive
LVD	2006/95/EC	Low Voltage Directive
EMC	2004/108/EC	Electromagnetic Compatibility

The quality is guaranteed by a quality and management system certified in accordance with UNI EN ISO 9001.

Legnago, 30.07.2010

Mr. G. Conticini
Burners Division Department
RIELLO S.p.A.

2 Information and general warnings

2.1 Information about the instruction manual

2.1.1 Introduction

The instruction booklet is provided with the product:

- ➤ it is a fundamental part of the product and must never be separated from it; it must always be kept carefully so that it can be consulted as necessary and must remain with the product, in the case that it is transferred to another owner or user. If it is damaged or lost, ask for another copy at your local customer service centre;
- ➤ it was drafted to be used by trained personnel;
- ➤ it provides instructions and important information regarding safe installation, initial operation, use and maintenance of the burner.

Symbols used in the manual

In some parts of the manual there are triangular signals indicating DANGER. Be extremely careful because these indicate potentially dangerous situations.

2.1.2 General dangers

There are three levels of danger as indicated below.

Highest danger level!
This symbol indicates operations that can cause serious injury, death or long-term health risks, if they are not carried out correctly.

This symbol indicates operations that can cause serious injury, death or long-term health risks, if they are not carried out correctly.

This symbol indicates operations that can cause harm to people or damage the machine, if not carried out correctly.

2.1.3 Danger energised components

This symbol indicates operations that involve potentially deadly electric shocks.

Other symbols

ENVIRONMENTAL PROTECTION

This symbol provides instructions to use the machine while respecting the environment.

➤ This symbol denotes a list.

Abbreviations used

Chap.	Chapter
Fig.	Figure
P.	Page
Sect.	Section
Tab.	Table

Delivery of the appliance and instruction manual

Upon receiving the appliance it is necessary that;

- ➤ The technical instructions for installation and use be given to the user by the installer, with the recommendation to keep them in the room where the heat generator must be installed.
- ➤ In the instructions the following information is provided;
  - – the registration number of the burner;

    .....

  - – the address and telephone number of the customer service centre;

    .....
    .....
    .....

- ➤ The supplier of the appliance informs the user in details regarding;
  - – use of the appliance,
  - – any tests which may be necessary before the activation of the appliance,
  - – its maintenance and the need for the appliance to be checked at least once a year by a person entrusted by the manufacturer's technical station or by another specialist technician.
    To ensure a periodic inspection, it is recommended to purchase a maintenance contract.

2.2 Guarantee and responsibility

The manufacturer guarantees its new products starting from the date of the installation in accordance with current standards and/or in accordance with the sale contract. When performing the initial operation, it is essential to check that the burner is integrated and complete.

The burner warranty will be considered void by the manufacturer due to: non-compliance with instructions contained in the manual, operational negligence, improper installation, and the implementation of unauthorised changes.

And in particular, guarantee and liability rights are forfeited in case of harm to persons and/or things if the damage is due to one or more of the following;

- incorrect installation, initial operation, use or maintenance of the burner;
- improper, erroneous or unreasonable use of the burner;
- intervention by unauthorised personnel;
- unauthorised modifications to the appliance;
- use of the burner with safety devices which are defective, applied incorrectly and/or not working;
- installation of additional untested components simultaneously with the burner;
- supplying the burner with unsuitable fuel;
- defects in the fuel supply installation;
- use of the burner after having found an error and/or abnormality;
- repairs and/or services performed incorrectly;
- modification of the combustion chamber by introducing inserts that prevent the flame from spreading evenly as set at the time of construction;
- inappropriate or inadequate supervision and a lack of care of the burner components most prone to wear;
- use of non original parts, as well as spare parts, kits, accessories and optional components;
- causes of force majeure.

Furthermore, the manufacturer accepts no liability for failure to comply with that set forth in the manual.

3 Safety and prevention

3.1 Introduction

The burners have been designed and constructed according to the standards and guidelines in force, applying the acknowledged technical safety rules and foreseeing all potentially dangerous situations.

It is however necessary to take into account that clumsy or careless use of the appliance can lead to potentially life-threatening situations for the user or others, as well as damage to the burner or other property. Distraction, thoughtlessness and an excess of confidence are often the cause of accidents; as are tiredness and drowsiness.

It is necessary to take the following into consideration;

- The burner may only be used for the purpose for which it was designed. All other use is considered improper and therefore dangerous.

In particular;

the type and pressure of the fuel, the voltage and frequency of the electric power supply, the maximum and minimum output to which the burner is set, the pressurization of the combustion chamber, the dimensions of the combustion chamber, and the ambient temperature must be within the limit values specified in the instruction manual.

- It is forbidden to modify the burner to distort performance and destinations.
- The burner must be used in perfect condition of technical safety. Any disturbance which could compromise safety must be eliminated as quickly as possible.
- It is forbidden to open or modify the burner components without permission, except the parts indicated for maintenance.
- The only parts that can be replaced are those indicated by the manufacturer.

3.2 Personnel training

The user is the person or organisation or company that bought the machine with the intention to use it for the purpose for which it was designed. It is this person who bears responsibility for the machine and the training of those working on it.

The user;

- agrees not to entrust the machine to personnel who are unqualified or trained in its use;
- is obliged to take all necessary measures to prevent unauthorised people from accessing the machine;
- undertakes to appropriately oblige its staff to apply and observe all safety requirements. undertakes, to this end, that everyone knows the safety instructions and requirements;
- must inform the manufacturer of any defect or malfunction in the accident protection systems, as well as every probable dangerous situation.
- Staff must always use the legally required personal protective equipment and follow everything contained in this manual.
- Staff must follow all directions indicating danger and warnings indicated on the machine.
- The staff shall never perform upon its own initiative operations or interventions outside of its competence.
- Staff is required to notify the supervisor of all problems or dangerous situations which may arise.
- The assembly of parts of other brands or of any changes may cause differences in the machine characteristics and thus undermine operational safety. The manufacturer therefore declines any responsibility for any damage that may arise due to the use of non-original parts.

4 Technical description of the burner

4.1 Technical data

Model		501T1R
Output (1)		1.4 - 2.2 kg/h
Thermal power (1)		16.6 - 26 kW
Fuel		Light oil, viscosity 4 ÷ 6 mm^2/s at 20°C
Electrical supply		Single phase, ~ 50Hz, 230 V ± 10%
	Max power supply	1 A ~
	Short circuit current	4 A ~
Motor		Intensity 0.7 A Velocity 2700 tr/min. – 283 rad/s
Capacitor		4.5 µF
Ignition transformer		Secondary 8 kV – 16 mA
Pump		Pressure; 8 ÷ 15 bar
Absorbed electrical power		0.17 kW
Protection level		IP 40

(1) Conditions of reference; Ambient temperature 20 °C - Barometric pressure 1013 mbar - Altitude 0 m above sea level. (Hi = 11.86 kWh/kg).

Tab. A

4.2 Burner description

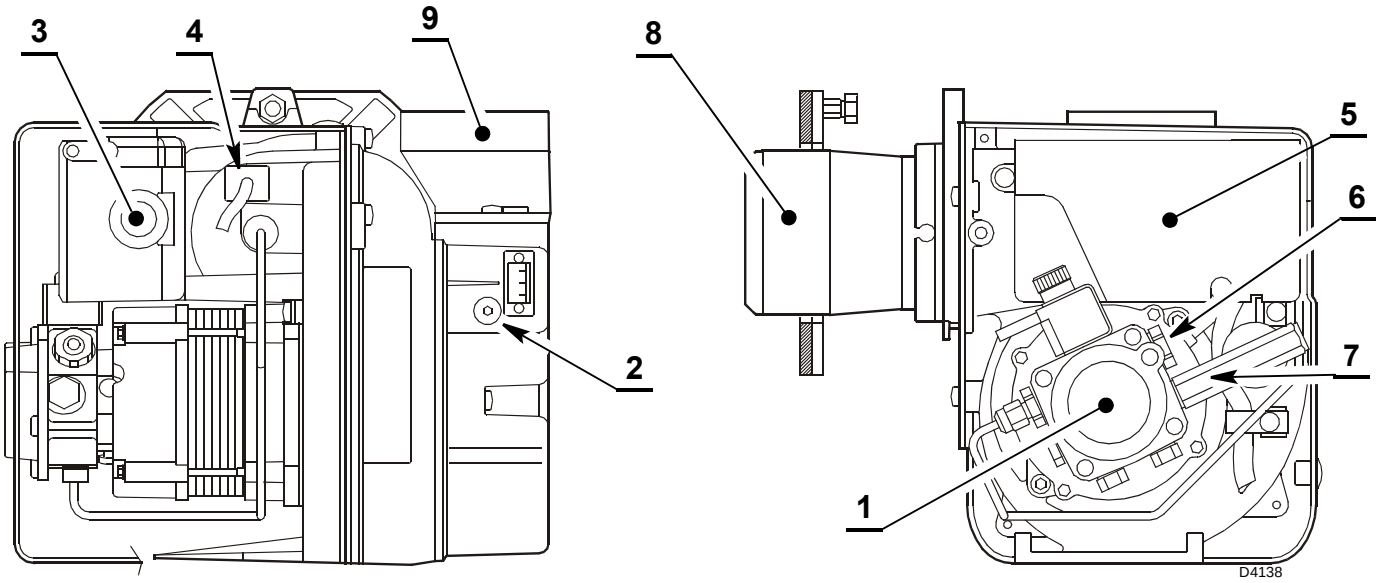


Fig. 1

1 Pump
2 Air damper adjustment screw
3 Reset button with lock-out lamp
4 Photoresistance
5 Control-box
6 Pump pressure adjustment screw
7 Pressure gauge port
8 Blast tube
9 Snorkel

4.3 Dimensions

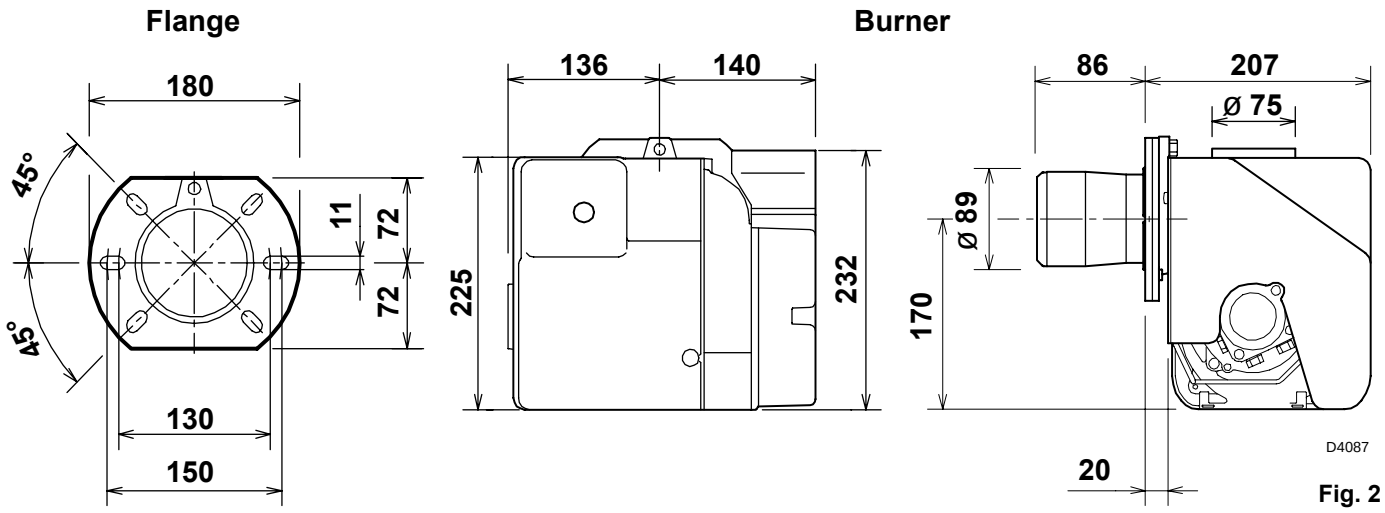
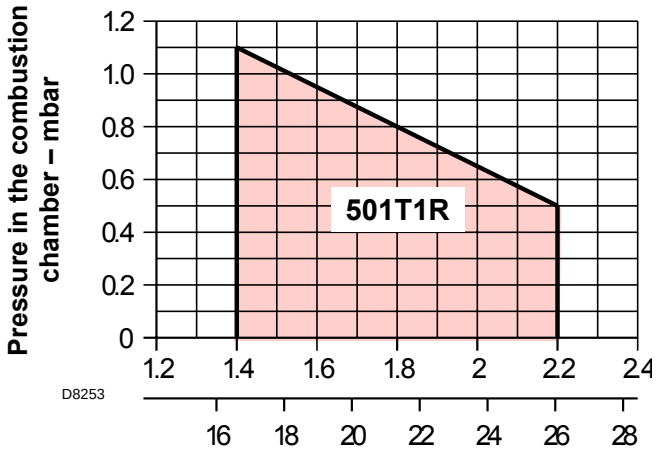


Fig. 2

4.4 Firing rates, (as EN 267)



Thermal power - kW

Fuel output - kg/h

Fig. 3

5 Installation

5.1 Notes on safety for the installation

After carefully cleaning all around the area where the burner will be installed, and arranging the correct lighting of the environment, proceed with the installation operations.

DANGER

All the installation, maintenance and disassembly operations must be carried out with the electricity supply disconnected.

WARNING

The installation of the burner must be carried out by qualified personnel, as indicated in this manual and in compliance with the standards and regulations of the laws in force.

5.2 Handling

The packaging of the burner includes a carton box, so it is possible to move the burner (still packaged) with a transpallet truck or fork lift truck.

WARNING

The handling operations for the burner can be highly dangerous if not carried out with the greatest attention: keep any unauthorised people at a distance; check the integrity and suitableness of the available means of handling.
Check also that the area in which you are working is empty and that there is an adequate escape area (i.e. a free, safe area to which you can quickly move if the burner should fall).
When handling, keep the load at not more than 20-25 cm from the ground.

CAUTION

After positioning the burner near the installation point, correctly dispose of all residual packaging, separating the various types of material.
Before proceeding with the installation operations, carefully clean all around the area where the burner will be installed.

5.3 Preliminary checks

Checking the consignment

CAUTION

After removing all the packaging, check the integrity of the contents. In the event of doubt, do not use the burner; contact the supplier.

The packaging elements (wooden cage or cardboard box, nails, clips, plastic bags, etc.) must not be abandoned as they are potential sources of danger and pollution; they should be collected and disposed of in the appropriate places.

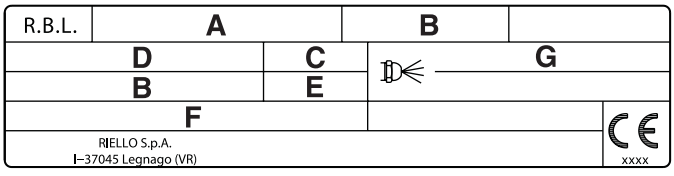


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Fig. 4

WARNING

The output of the burner must be within the boiler's firing rate;

WARNING

A burner label that has been tampered with, removed or is missing, along with anything else that prevents the definite identification of the burner makes any installation or maintenance work difficult.

Checking the characteristics of the burner

Check the identification label of the burner, showing:
- ➤ the model **A**)(Fig. 4) and type of burner **B**);
- ➤ the year of manufacture, in cryptographic form **C**);
- ➤ the serial number **D**);
- ➤ the electrical input power **E**);
- ➤ the types of fuel used and the relative supply pressures **F**);
- ➤ the data of the burner's minimum and maximum output possibilities **G**)(see Firing rate).

5.4 Working position

WARNING

The burner is designed to operate only in the positions **1**, and **3** (Fig. 5).
Installation **1** is preferable, as it is the only one that allows performing maintenance operations as described in this manual. Installations **2**, **3** and **4** allow working operations but not maintenance with hooking to the boiler.

DANGER

Any other position could compromise the correct operation of the appliance. Installation **5** is forbidden for safety reasons.

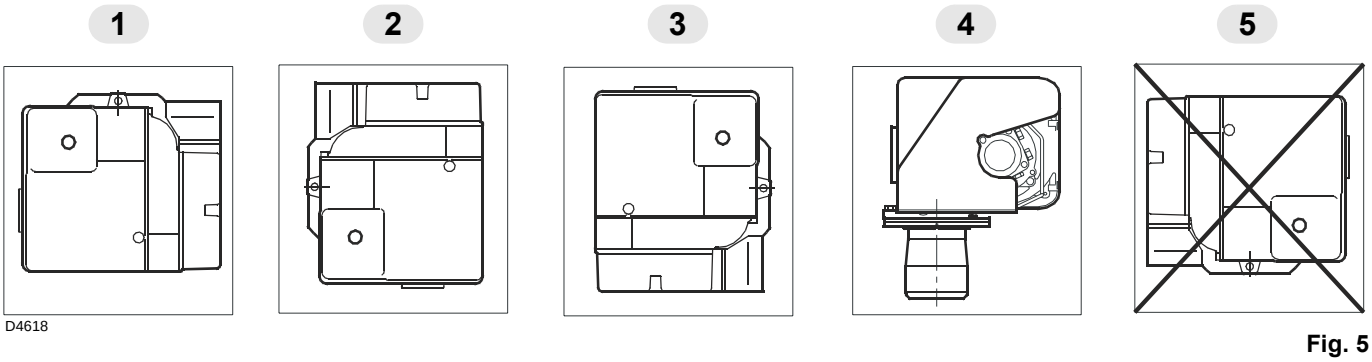

Fig. 5

5.5 Boiler fixing

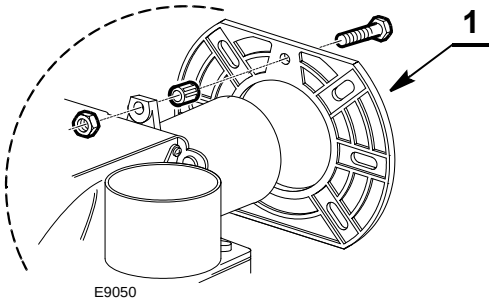

Fig. 6

➤ Put on the flange 1)(Fig. 6) the screw and two nuts.
➤ Fix the flange 1)(Fig. 7) to the boiler door 4) using screws 2) and (if necessary) the nuts 3) interposing the insulating gasket 5).

WARNING

The seal between burner and boiler must be airtight.

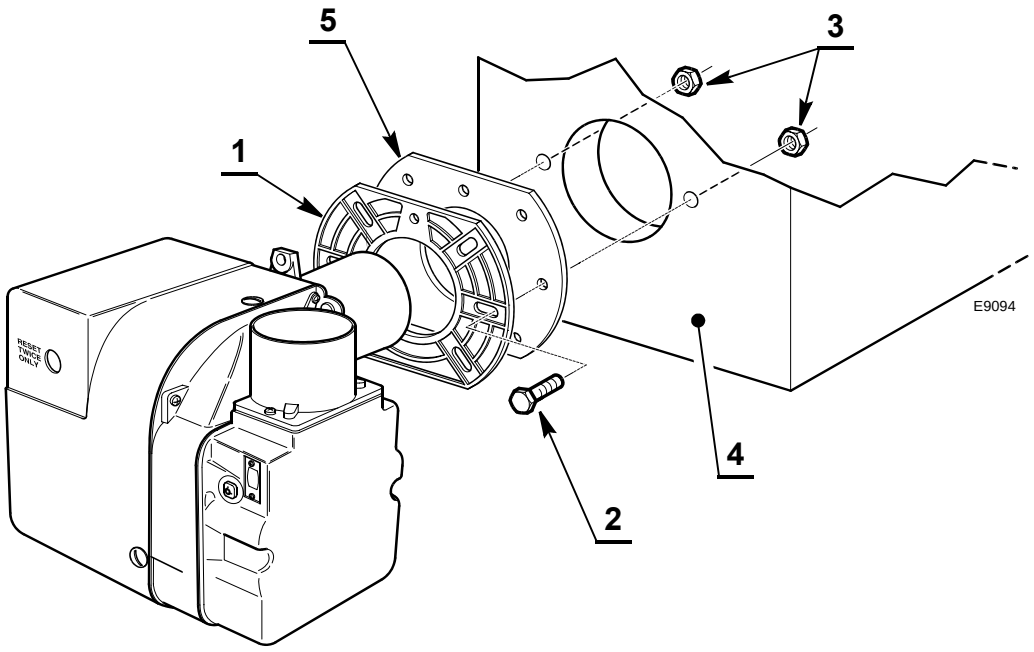

Fig. 7

5.6 Burner assembly

CF Application

In case of **CF** applications, the burner shall not operate without protection **(A)** of the suction inlet.

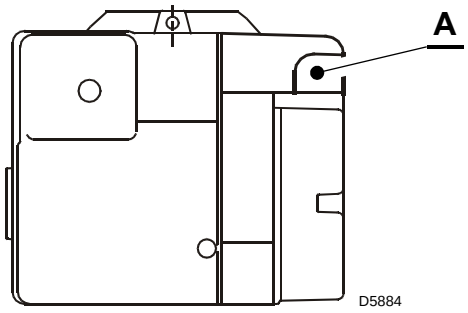

Fig. 8

BF Application

CAUTION

The temperature of the incoming air must not exceed 70 °C.

WARNING

For correct BF application, the burner must be installed on an appropriate BF boiler.

In case of **BF** applications an optional snorkel and gasket are available replacing **(A)** with **(B)**.
This item can be supplied separately.

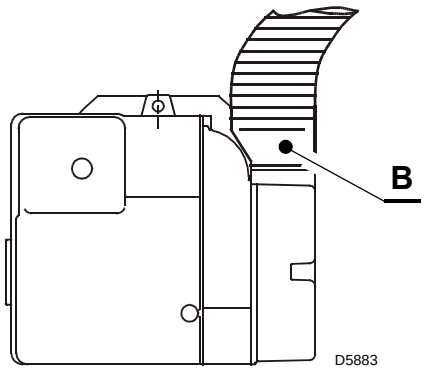

Fig. 9

The combustion air supply is through a flexible or rigid pipe connected to the air intake.

Consequently, you must comply with the following requirements and instructions:

➤ The combustion air intake tube must be:
- fastened securely to the burner;
- made of a suitable material, with temperature characteristics in the range - 30 °C to 80 °C;
- in compliance with all requirements of applicable regulations in force in the country of destination.

➤ The intake-tube / burner system must not allow a loss of over 2 m^3/h at 0.5 mbar:

for instance, the above requirements will be met if you use flues for pressure exhaust of flue gases (the condensation kind).

➤ Make sure the air intake tube's inlet is positioned so that it is not likely to be obstructed by foreign matter and, where necessary, use suitable screens.

➤ The inside diameter of the hose must be at least 80 mm.

➤ The intake tube can be up to 6 metres in length.

WARNING

Length is reduced if there are bends in the intake section.

For instance, using a tube with a smooth inside surface, you must allow for the following losses:
– for each 45° bend, tube length is reduced by 0.5 m;
– for each 90° bend, tube length is reduced by 0.8 m.

NOTE:

Burner installation must comply with one of the installations illustrated in the figures below.

WARNING

➤ Under no circumstances should the air's entry in the hose intake area be obstructed.

➤ The hose must not be blocked in any way or feature a shutting device (valves, membranes etc.).

➤ Coaxial tubes must not be installed for any reason.

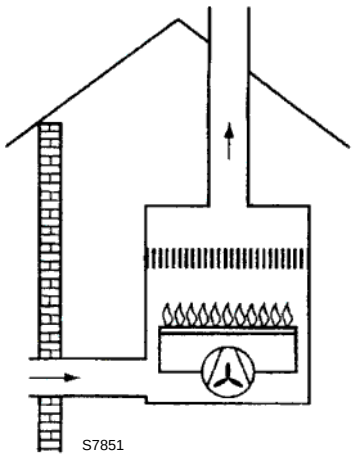

Fig. 10

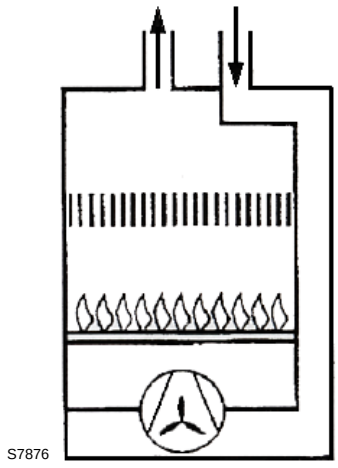

Fig. 11

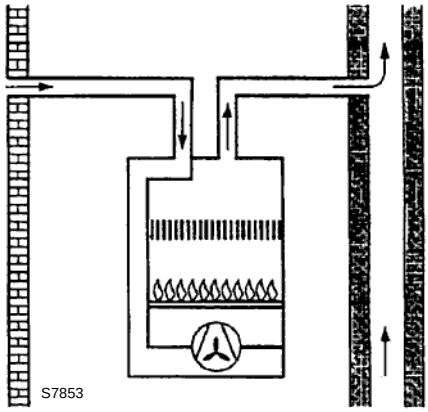

Fig. 12

5.7 Light oil supply

5.7.1 Pump

WARNING

Before activating the burner, ensure that the return line in the vat is not clogged.

The presence of any obstacle would cause the rupture of the seal device located on the pump shaft.

➤ The pump is designed to allow working level of filtration with two pipes. In order to obtain one pipe working it is necessary to unscrew the return plug (2), remove the by-pass screw (3) and then screw again the return flexible oil pipe (see Fig. 13).

WARNING

The suction plug (1) is made of plastic. Once removed, it must not be used again.

In single-pipe installations, the plug in the return line (2) must be totally in steel.

➤ In the two pipes systems, 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.

➤ Check periodically the flexible pipes conditions.

➤ A metal bowl filter (60 µm) with replaceable micronic filter must be fitted in the oil supply pipe.

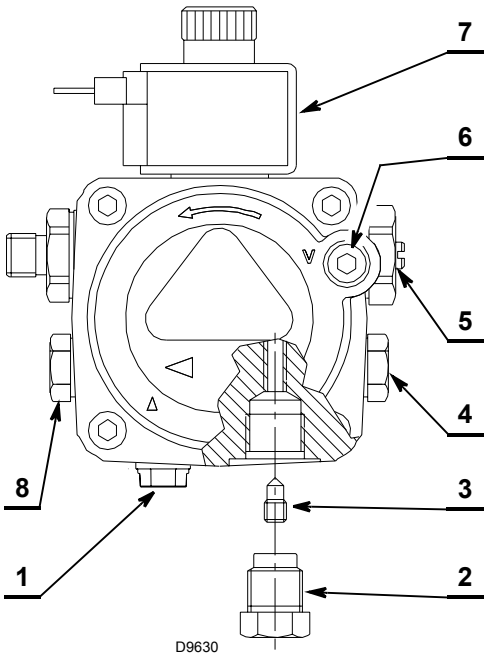

Fig. 13

Key (Fig. 13)

1	Suction line	6	Suction gauge connection
2	Return line	7	Valve
3	By-pass screw	8	Auxiliary pressure test point
4	Gauge connection		
5	Pressure adjuster		

WARNING

Periodically check the condition of the flexible hoses.

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

5.7.2 Priming pump

On the system in Fig. 14 it is sufficient to loosen the suction gauge connection (6, Fig. 13) and wait until oil flows out.

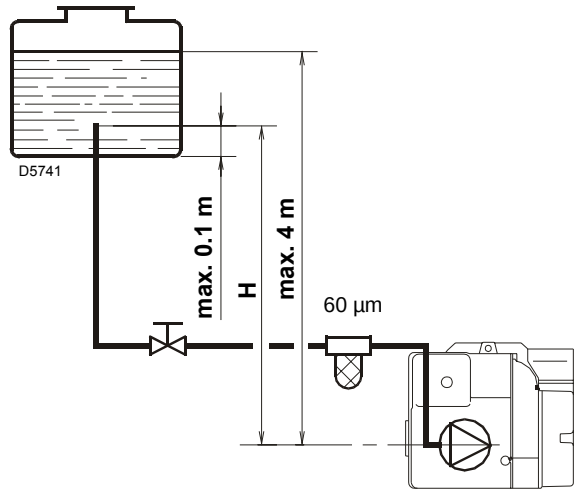

Fig. 14

H metres	L metres Ø (8 mm)	Ø (10 mm)
0.5	10	20
1	20	40
1.5	40	80
2	60	100

Tab. B

H difference of level
L max. lenght of the suction line
Ø interminal diameter of the oil pipes

On the systems in Fig. 15 and Fig. 16 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.

WARNING

In order to purging air from oil lines and filters repeat for max. 5 times the complete operation programme, to protect the pump.
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.

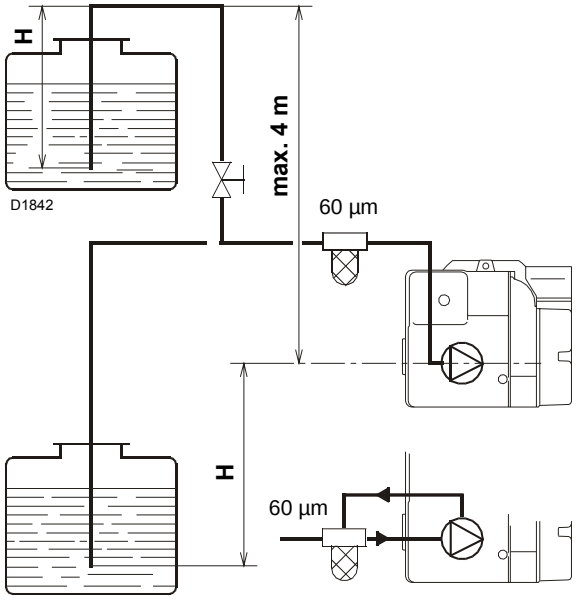

Fig. 15

H metres	L metres Ø (8 mm)	Ø (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

Tab. C

H difference of level
L max. lenght of the suction line
Ø interminal diameter of the oil pipes

In the vacuum systems (Fig. 16) 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.

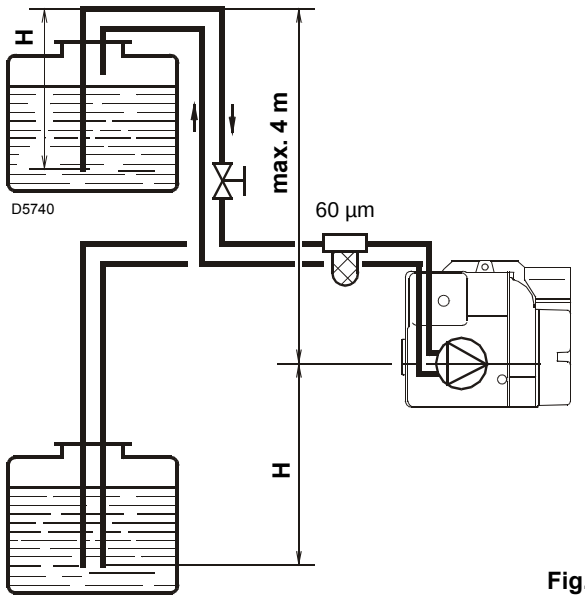

Fig. 16

NOTE:
In case of digital applications the priming pump is possible not only with the previous procedure but also with a specific function implemented into the digital coltrol box (see 4.7.9, page 10). In this case the priming pump time could be longer.

6 Operation

6.1 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 CO_2 concentration in the flue gases, their temperatures and the average temperature of the water in the boiler.

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

Adjustments made in the factory

The values in Tab. D refer to 12.50% CO_2, at sea level, with ambient temperature and light oil temperature of 20° C.

Model	Nozzle		Pump pressure	Burner output	Air damper adjustment	Combustion head adjustment
	GPH	Angle	bar	kg/h ± 4%	Set-point	Set-point
501T1R	0.40	80° S	14.5	1.7	3.5	Fixed

Tab. D

6.2 Recommended nozzles

The burner complies with the emission requirements set by the EN 267 standard.

To ensure continuity of emissions, it is necessary to use the recommended nozzles.

WARNING

It is advisable to replace the nozzles every year during routine maintenance.

CAUTION

The use of nozzles different to those prescribed by the manufacturer or incorrect periodic maintenance can cause emissions that exceed the limits foreseen by the standard in force, and in extreme cases cause harm to people or objects.
It is understood that the damage caused by failure to comply with the requirements contained in this manual are not in any way attributable to the manufacturer.

6.2.1 Nozzle choice

To adjust the flow range in which the nozzle must operate, adjust the minimum and maximum fuel pressure of on the back of the jet.

6.3 Pump pressure

The pump is factory set to the values indicated. Tab. D.

6.4 Air damper adjustment

The settings indicated in the schedule are purely indicative. Each installation however, has its own unpredictable working conditions: actual nozzle output; positive or negative pressure in the combustion-chamber, the need of excess air, etc. All these conditions may require a different air-damper setting.

6.5 Electrodes setting

Before removing or assembling the nozzle, loosen the screw B) (Fig. 17) and move the electrodes ahead.

WARNING

The measures in Fig. 17 must be respected.

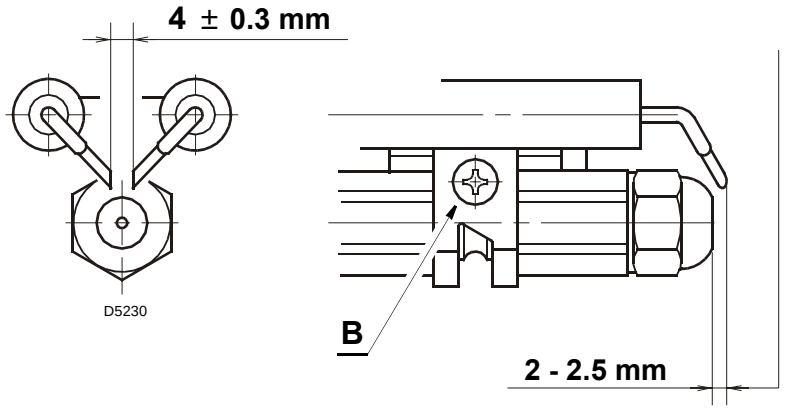

Fig. 17

6.6 Fuel heating

In order to obtain smooth starting and operation across its output range the burner is fitted with an electric resistance, which heats up the light oil in the nozzle line.

This resistance is energized when the thermostat calls for heat and after a delay of approximately two minutes depending on room temperature, the motor will start.

The resistance remains energised during working and cuts out when burner shuts-down.

7 Maintenance

7.1 Instructions regarding maintenance safety

Regular maintenance is essential for proper operation, security, performance and long operating life of the burner.

It can reduce consumption and pollution emissions, and allow the product to remain reliable over time.

Maintenance operations and adjustment of the burner must be performed by qualified personnel according to the instructions in this manual and in accordance with standards and regulations in force.

Before performing any maintenance operation, cleaning or check;

cut the electrical supply to the burner, by pressing the main equipment switch;

isolate the fuel stop tap.

7.2 Maintenance programme

7.2.1 Maintenance frequency

The fuel system must be checked at least once a year by a technical station approved by the manufacturer, or by a specialised technician.

7.2.2 Checking and cleaning

Fan cleaning

Make sure there is no dust accumulated inside the fan or its blades, as this could reduce the air output, causing polluting combustion.

Perform maintenance operations, being careful not to damage or disrupt the fan during cleaning.

Combustion

Perform an analysis of combustion gases.
Significant differences compared to the previous test indicate the points where the maintenance operation will need to be more thorough.

Combustion head

Open the burner and check that all parts of the combustion head are intact, are not distorted by the high temperatures, are free of environmental impurities, and are positioned correctly.

Boiler

Clean the boiler according to the instruction booklet, so as to be able to find the original combustion data, in particular; pressure in the combustion chamber and flue gas temperatures.

Pump

In case of unstable pressure or excessively noisy pump, remove the flexible hose from the line filter and suck up the fuel from a tank located near the burner. This operation can identify if it is the suction line which is responsible for the fault or the pump.
On the contrary, if the cause of anomalies is related to the suction line, check that there is no clogged filter on the line or air intake on the line.

Filters

Check the line filters and the nozzle present in the system. If necessary, clean or replace them.

If you notice rust or other impurities inside the burner, suck up any water and impurities deposited at the bottom of the vat with a separate pump.

Nozzles

It is advisable to replace the nozzles every year during routine maintenance.
Avoid cleaning the nozzle openings.

Flexible hoses

Check that they are in good condition.

Vat

Every 5 years, or as needed, remove water or impurities that have been deposited at the bottom of the tank, using a separate pump.

Combustion

If combustion values recorded at the start of the intervention do not meet the standards in force or do not allow for good combustion, see the table below and contact the after-sales service so that any necessary adjustments can be made.

Allow the burner to work at full speed for about 10 minutes, checking all the parameters specified in this manual.
Then perform a combustion analysis by checking;

- Flue gases temperature.
- CO2 percentage;
- CO content (ppm);
- The smoke index on the Bacharach scale.

8 Electrical system

8.1 Notes on safety for the electrical wiring

- ➤ The electrical wiring must be carried out with the electrical supply disconnected.
- ➤ Electrical wiring must be carried out by qualified personnel and in compliance with the regulations currently in force in the country of destination. Refer to the wiring diagrams.
- ➤ The manufacturer declines all responsibility for modifications or connections different from those shown in the wiring diagrams.
- ➤ Do not invert the neutral with the phase in the electrical supply line. Any inversion would cause a lockout due to firing failure.
- ➤ Check that the electrical supply of the burner corresponds to that shown on the identification label and in this manual.
- ➤ The burners have been set for intermittent operation. This means they should compulsorily be stopped at least once every 24 hours to enable the control box to perform checks of its own start-up efficiency. Normally the boiler's thermostat/pressure switch ensures the stopping of the burner.
  If this is not the case, it is necessary to apply in series with IN a timer switch that turns off the burner at least once every twenty-four hours. Refer to the wiring diagrams.
- ➤ The electrical safety of the device is obtained only when it is correctly connected to an efficient earthing system, made according to current standards. It is necessary to check this fundamental safety requirement. In the event of doubt, have the electrical system checked by qualified personnel.
- ➤ The electrical system must be suitable for the maximum input power of the device, as indicated on the label and in the manual, checking in particular that the section of the cables is suitable for the input power of the device.
- ➤ For the main power supply of the device from the electricity mains:
  do not use adapters, multiple sockets or extensions;
  use an omnipolar switch, as indicated by the current safety standards.
- ➤ Do not touch the device with wet or damp body parts and/or in bare feet.
- ➤ Do not pull the electric cables.

Before carrying out any maintenance, cleaning or checking operations:

disconnect the electrical supply from the burner by means of the main system switch;

isolate the fuel supply

If the cover is still present, remove it and proceed with the electrical wiring according to the wiring diagrams.

Use flexible cables in compliance with the EN 60 335-1 standard.

Condensation, water infiltration and formation of ice are not permitted!

8.2 Control box

WARNING

All the installation, maintenance and dismantling operations should be performed voltage free.

The replacement of the Control box must be performed by qualified personnel, as indicated in this manual and in accordance with standards and regulations in force.

To remove the active block, follow these instructions;

- ➤ Loosen the screw (1), open the protection (2) and remove all components.
- ➤ Remove the coil (3).
- ➤ Loosen the two screws (4).

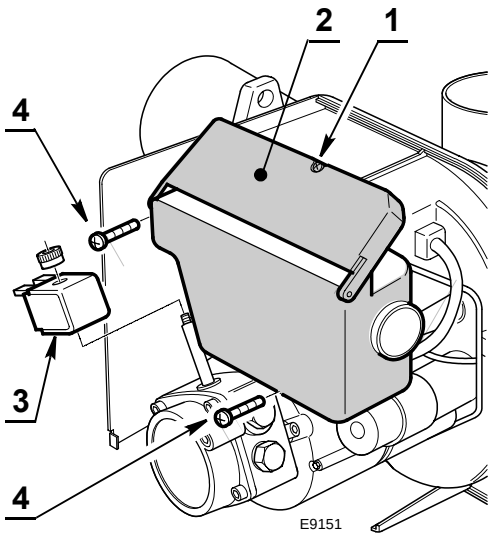

Fig. 18

WARNING

- ➤ The safety housing can be used on the burners with or without the heater.
- ➤ If the heater is damaged, introduce the bridge 7) (Fig. 19) into the safety housing so that the burner can operate without the heater until the heater is replaced.

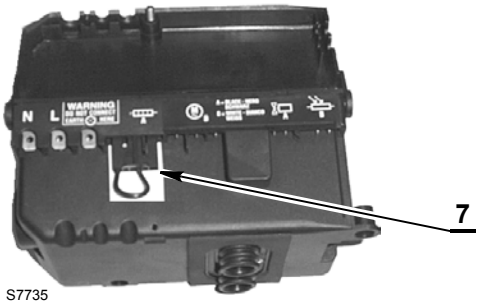

Fig. 19

NOTE:

As a spare part, the housing is delivered with the bridge 7) (Fig. 19) in place.

If you replace a housing and if the heater is in operating state, you must remove the bridge 7) before putting the cabinet in place.

The resistor cables and thermostat must also be connected.

8.3 Electrical diagram

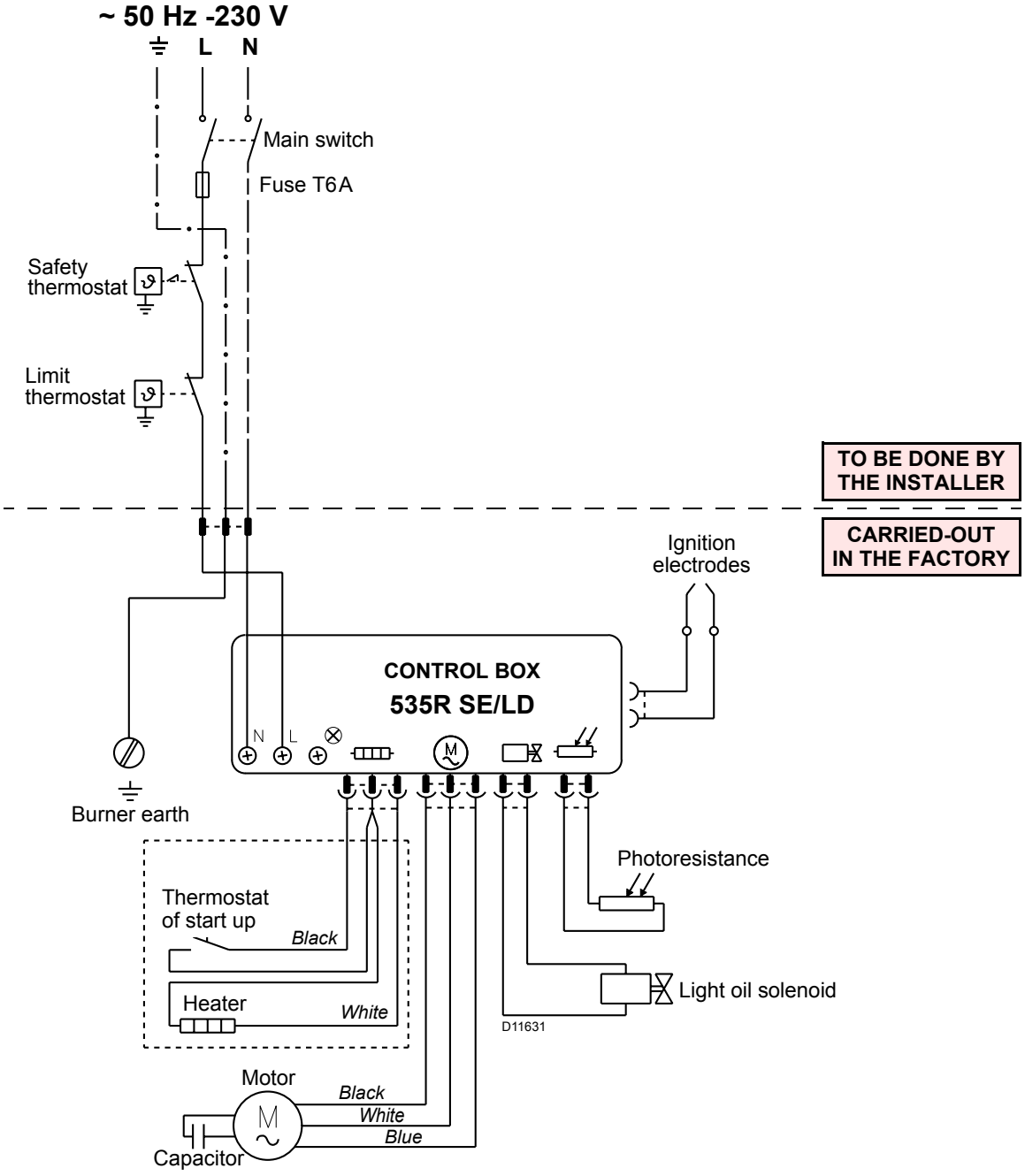

Fig. 20

WARNING

- **Do not swap neutral and phase over, follow the diagram shown carefully and carry out a good earth connection.**
- The section of the conductors must be at least 1 mm^2.
  (Unless requested otherwise by local standards and legislation).
- The electrical wiring carried out by the installer must be in compliance with the rules in force in the country.

Testing:

Check the shut-down of the burner by opening the thermostats and the lock-out by darkening the photoresistance.

8.4 Operation programme

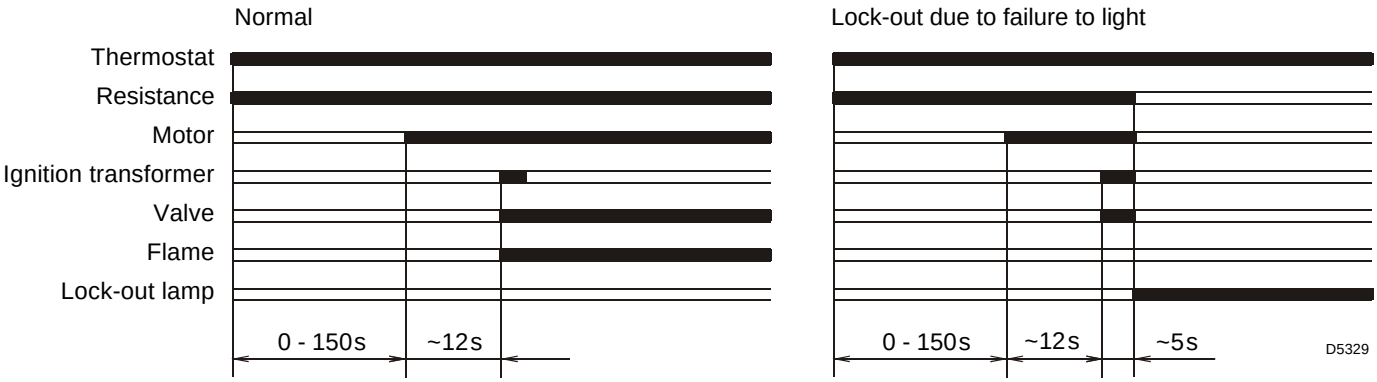

Fig. 21

WARNING

Lock out is indicated by a lamp on the control box
5) Fig. 1 to page 6

9 Faults / Solutions

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

A fault usually makes the lock-out led signal which is situated inside the reset push-button of the control box (5, Fig. 1 to page 6).

When lock out lamp lights the burner will attempt to light only after pushing the reset push-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 limit thermostat closes.	Lack of electrical supply.	Check presence of voltage in the L - N clamps of the control box.
		Check the conditions of the fuses.
		Check that safety thermostat limit is not lock out.
	The photoresistance sees false light.	Eliminate the light.
	Resistance or start thermostats are faulty.	Replace them.
	The connections in the control box are wrongly inserted.	Check and connect completely all the plugs.
Burner runs normally in the prepurge and ignition cycle and locks out after 5 seconds ca.	The photoresistance is dirty.	Clean it.
	The photoresistance 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.
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.
	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.

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