

D **Öl-Gebläsebrenner**

F **Brûleurs fioul**

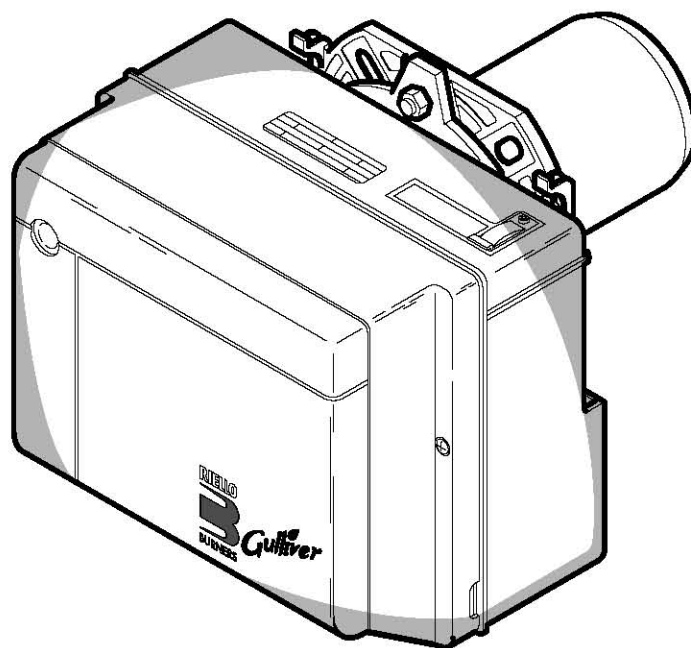
GB **Oil burners**

NL **Stookoliebranders**

Einstufiger Betrieb
Fonctionnement à 1 allure
One stage operation
Eentrapsbranders



Gulliver



CODE	MODELL - MODELE - MODEL	TYP - TYPE
3736547	RG0.R	367 T1
3736550	RG0.R	367 T1
3736747	RG0.1R	368 T1
3736750	RG0.1R	368 T1

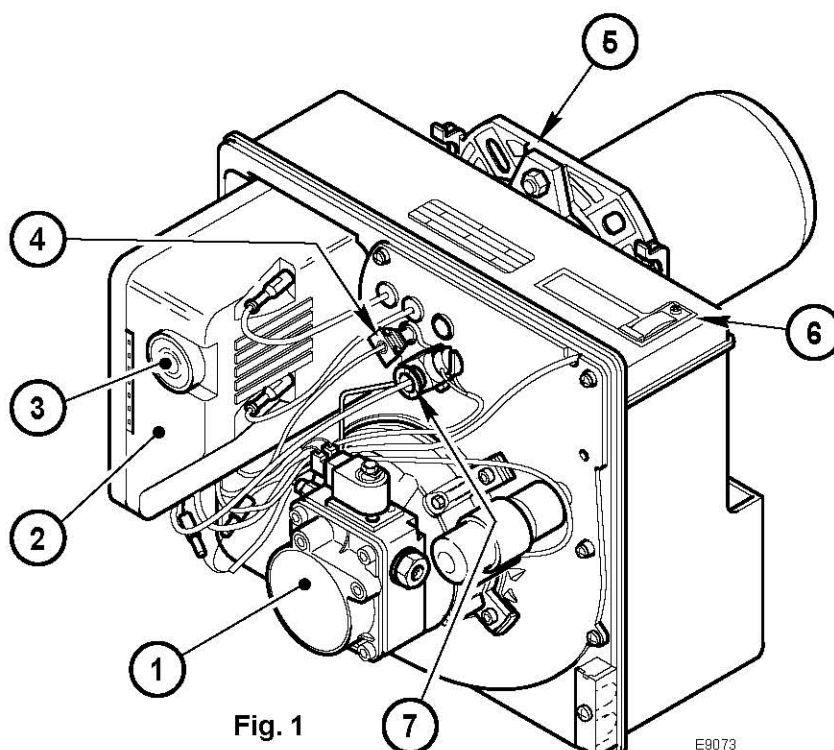
INDEX

1. BURNER DESCRIPTION	1	4. WORKING	6
1.1 Burner equipment	1	4.1 Combustion adjustment.....	6
2. TECHNICAL DATA	2	4.2 Recommended nozzles.....	6
2.1 Technical data	2	4.3 Setting of electrodes	7
2.2 Overall dimensions.....	2	4.4 Pump pressure	7
2.3 Working fields	2	4.5 Air damper adjustment	7
3. INSTALLATION	3	4.6 Fuel heating	8
3.1 Boiler fixing	3	4.7 Burner start-up cycle.....	8
3.2 Fuel supply	3	5. MAINTENANCE	8
3.3 Hydraulic systems	4	6. FAULTS / SOLUTIONS	9
3.4 Electrical wiring	5		

1. BURNER DESCRIPTION

One stage gas oil burner.

- 1 – Oil pump
- 2 – Control-box
- 3 – Reset button with lock-out lamp
- 4 – Photoresistance
- 5 – Flange with insulating gasket
- 6 – Air damper adjustment assembly
- 7 – Nozzle holder assembly



- CE Certification No. : 0036 0272/99 (367T1) - 0036 0273/99 (368T1), 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

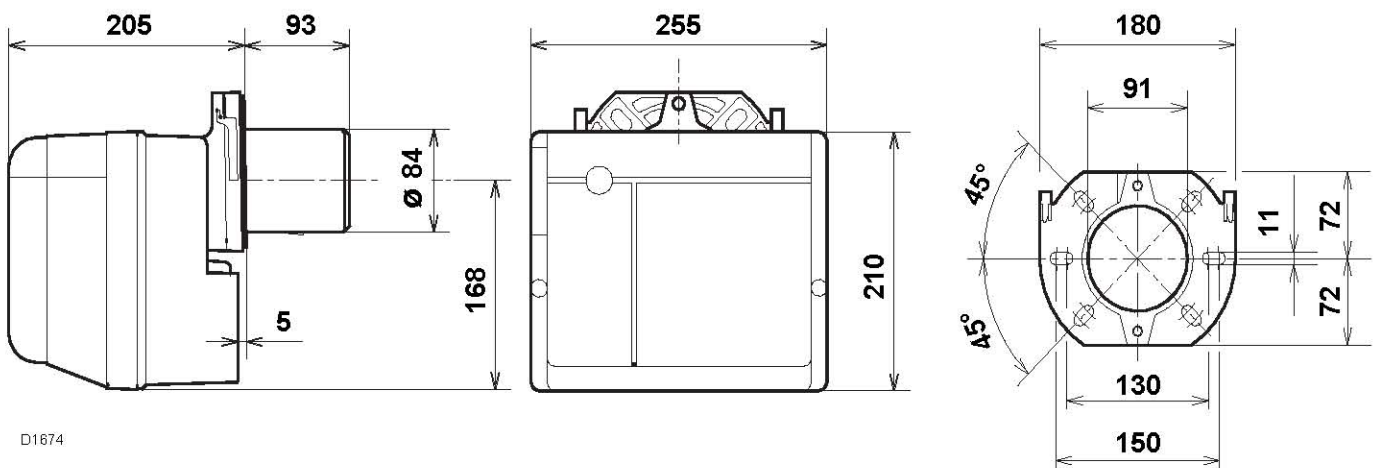
Flange with insulating gasket . . .	No. 1	Screw and nuts for flange to be fixed to boiler . .	No. 4
Screw and nuts for flange	No. 1	Flexible oil pipes with nipples	No. 2
7 pin plug	No. 1		

2. TECHNICAL DATA

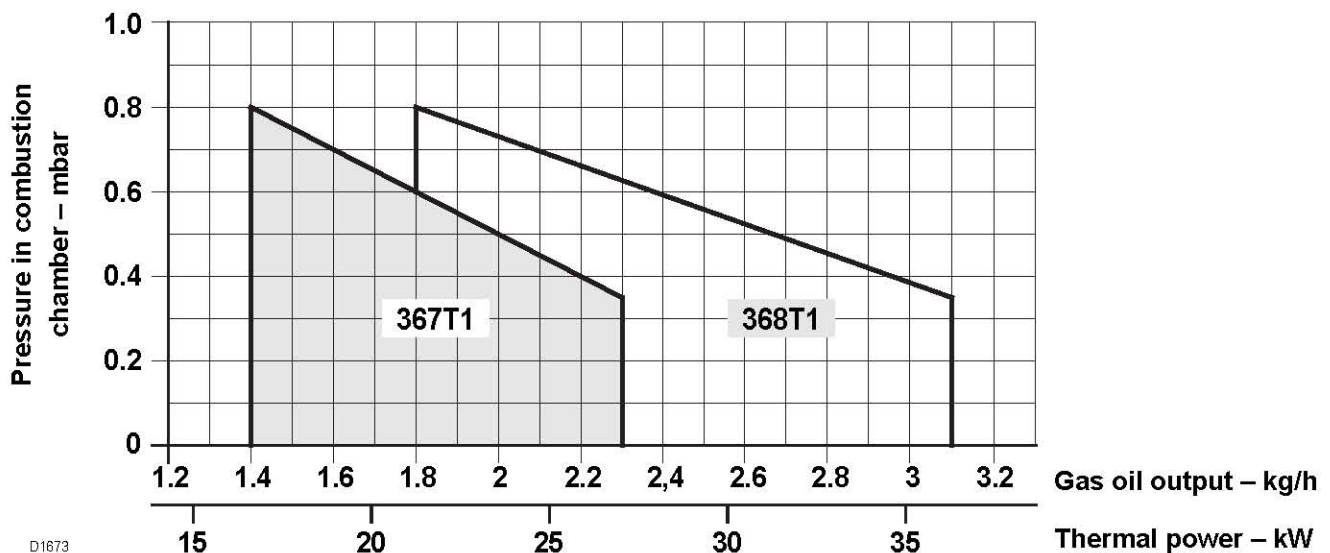
2.1 TECHNICAL DATA

TYPE		367 T1	368 T1
Output - Thermal power	kg/h	1.4 – 2.3	1.8 – 3.1
	kW	16.6 – 27.3	21.3 – 36.7
Fuel		Gas oil, viscosity 4 – 6 mm ² /s at 20 °C	
Electrical supply		Single phase, ~50Hz 230V ± 10%	
Motor		Run current 0.85A – 2750 rpm – 289 rad/s	
Capacitor		4 µF	
Ignition transformer		Secondary 8 kV – 16 mA	
Pump		Pressure: 8 – 15 bar	
Absorbed electrical power		0.29 kW	

2.2 OVERALL DIMENSIONS



2.3 WORKING FIELDS (as EN 267)

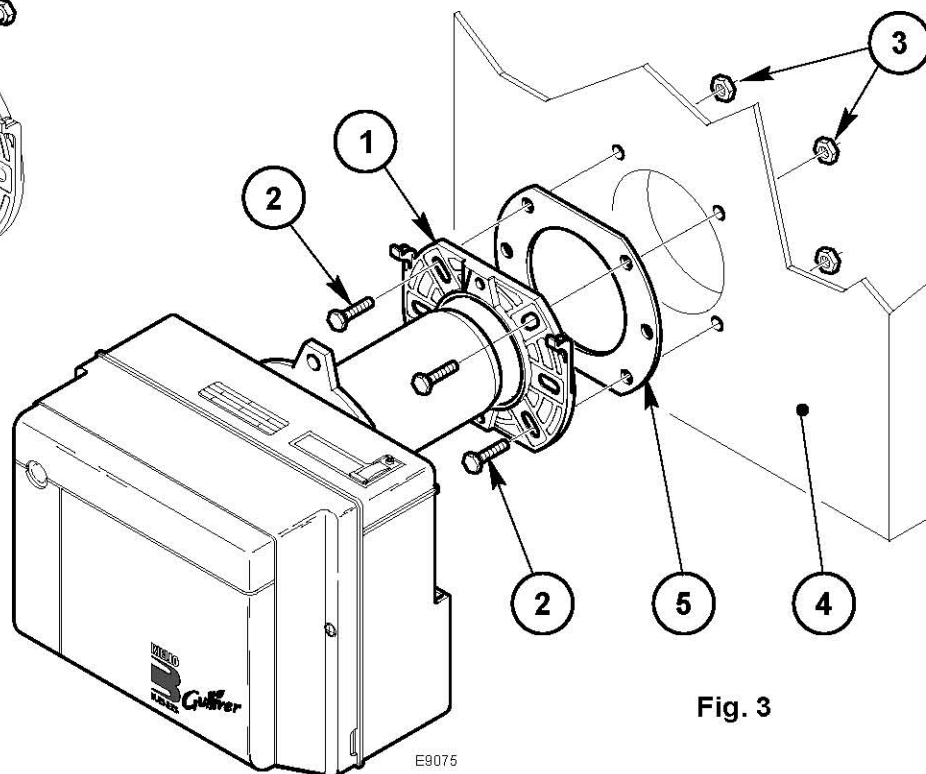
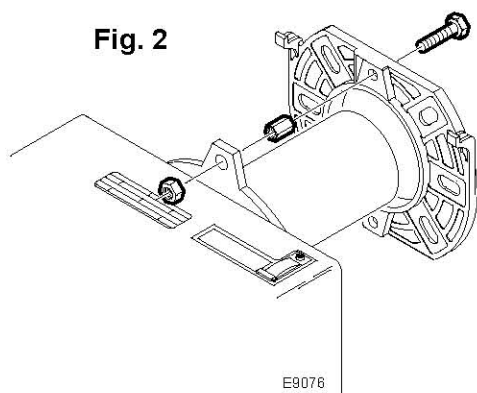


3. INSTALLATION

THE BURNER MUST BE INSTALLED IN CONFORMITY WITH LEGISLATION AND LOCAL STANDARDS.

3.1 BOILER FIXING

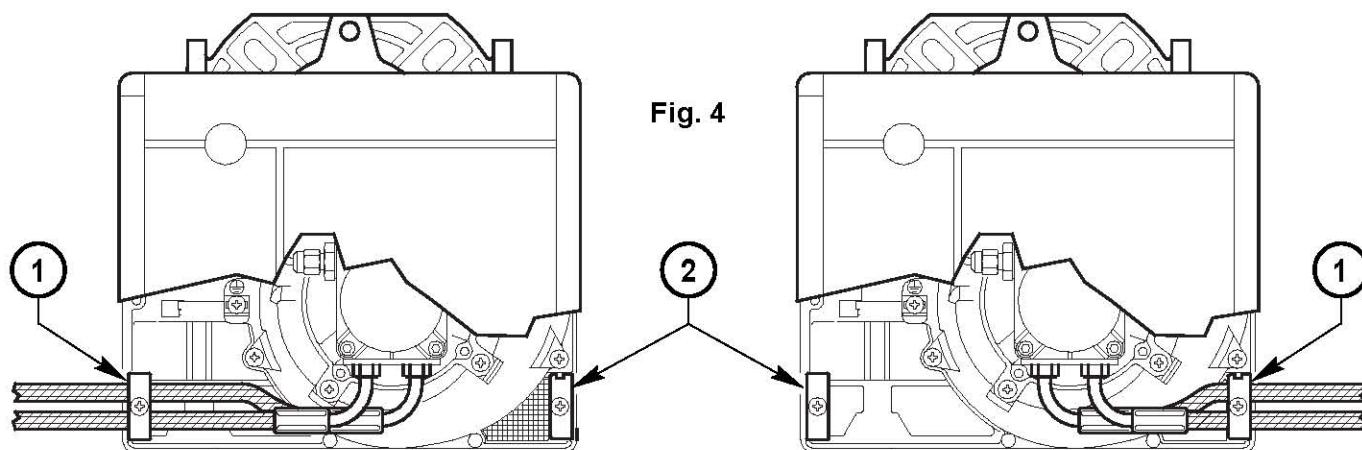
- Put on the flange (1) the screw and two nuts, (see fig. 2).
- Widen, if necessary, the insulating gasket holes (5).
- Fix the flange (1) to the boiler door (4) using screws (2) and (if necessary) the nuts (3) interposing the insulating gasket (5), (see fig. 3).



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 closing plate (2) should be reversed, (see fig. 4).



3.3 HYDRAULIC SYSTEMS

WARNING:

- The pump is designed to allow working 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 plug (2). (See fig. 5).
- 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.

**SYSTEM NOT PERMITTED
IN GERMANY**

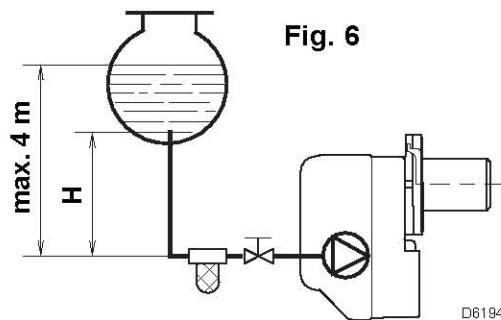
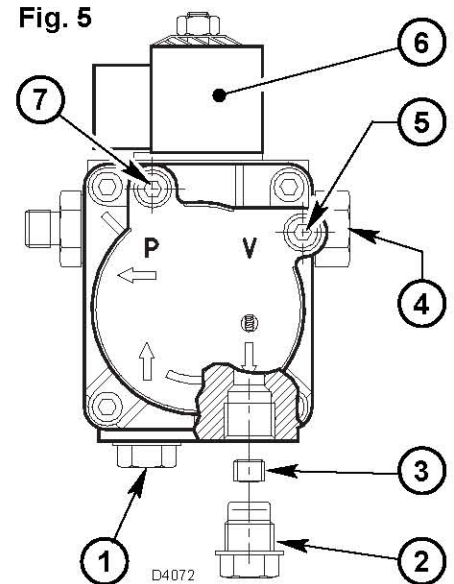


Fig. 6

H meters	L meters	
	I. D. 8 mm	I. D. 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 - Pressure adjuster
5 - Suction gauge connection
6 - Valve
7 - Gauge connection

PRIMING PUMP:

On the system in fig. 6 it is sufficient to loosen the suction gauge connection (5, fig. 5) and wait until oil flows out.

On the systems in fig. 7 and 8 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 (fig. 8) 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	
	I. D. 8 mm	I. D. 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

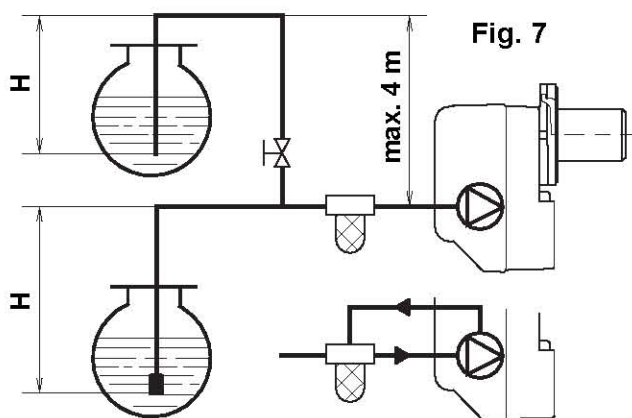


Fig. 7

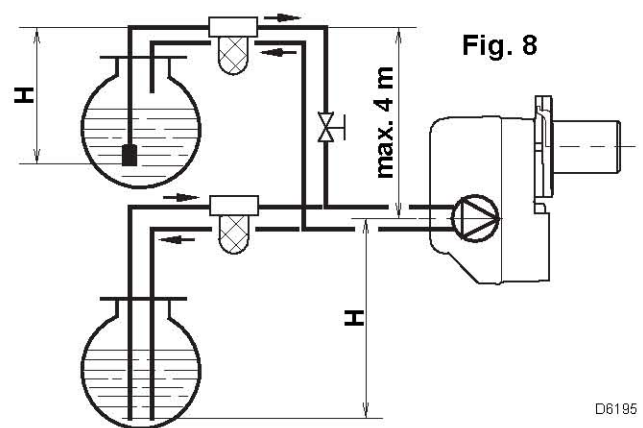


Fig. 8

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

H = difference of level; L = max. length of the suction line; I. D. = internal diameter of the oil pipes.

3.4 ELECTRICAL WIRING

WARNING

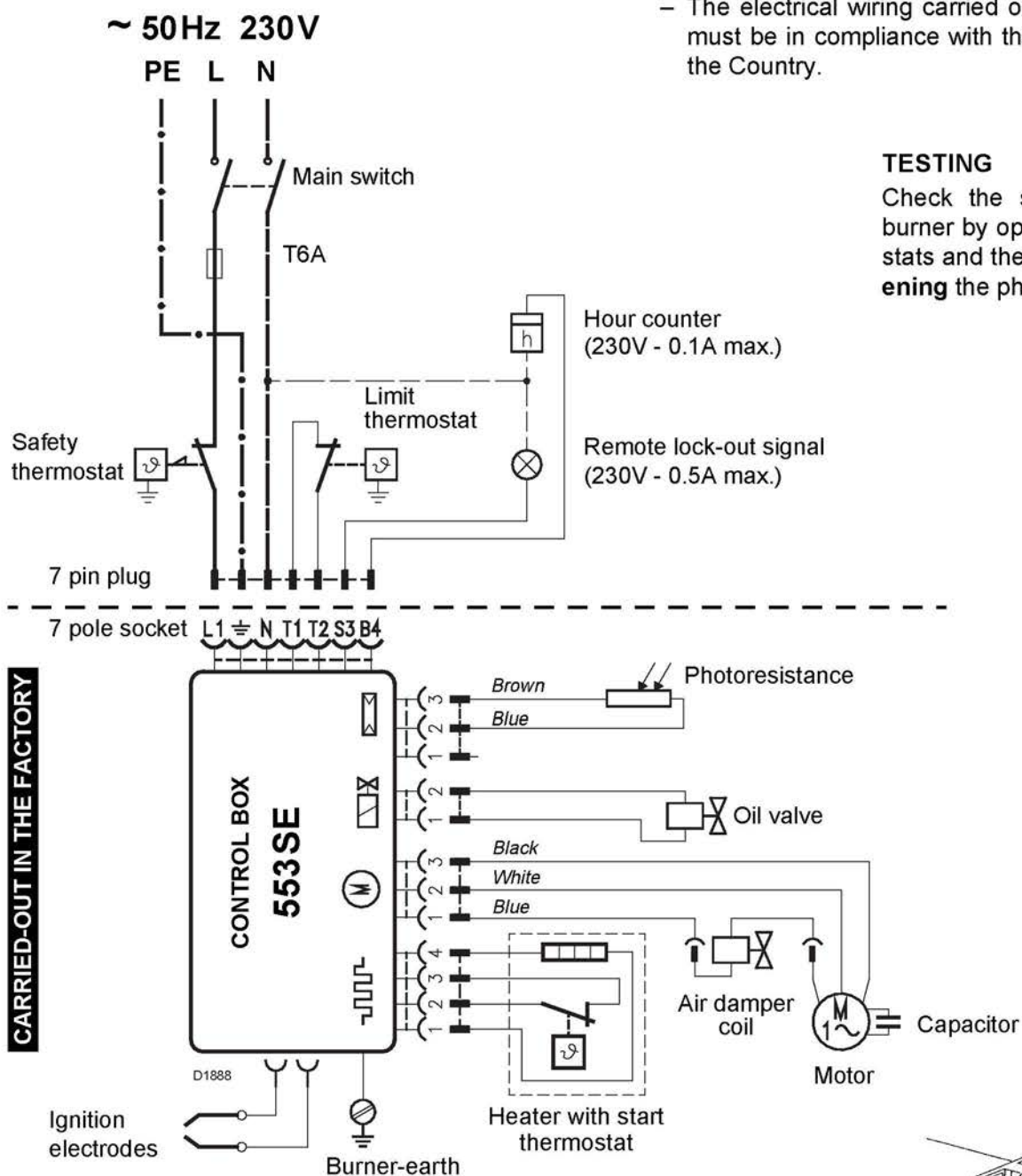
DO NOT EXCHANGE NEUTRAL WITH PHASE

NOTES:

- Wires of min. 1 mm² section. (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

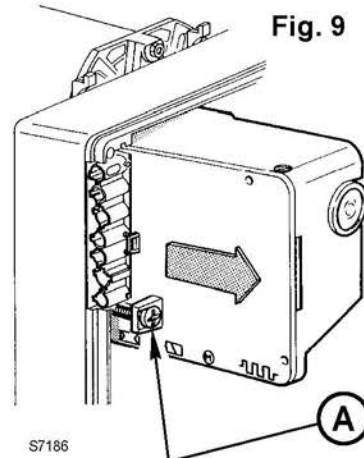
Check the shut-down of the burner by opening the thermostats and the lock-out by **darkening** the photoresistance.



CONTROL BOX

To remove the control-box from the burner, loosen screw (A, fig. 9) after removing all components, the 7 pin plug and earth wire.

In case of disassembly of the control box, retighten the screw (A) with a torque wrench setting of 1 – 1.2 Nm.



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, adjust the pump pressure and the air damper opening in accordance with the following schedule.

The values shown in the table are measured on a CEN boiler (as per EN 267).

They refer to 12.5% CO₂ at sea level and with light oil and room temperature of 20 °C.

TYPE	Nozzle		Pump pressure	Burner output	Air damper adjustment
	GPH	Angle	bar	kg/h $\pm$ 4%	Set-point
367T1	0.40	60°	11	1.4	1.0
	0.50	60°	12	1.9	1.8
	0.60	60°	12	2.3	2.8
368T1	0.50	60°	12	1.9	1.5
	0.60	60°	12	2.3	2.2
	0.65	60°	12	2.5	2.7
	0.75	60°	13	3.0	3.9

4.2 RECOMMENDED NOZZLES: Delavan type W - B ; Danfoss type S - B ;
Monarch type R ; Steinen type S - Q.

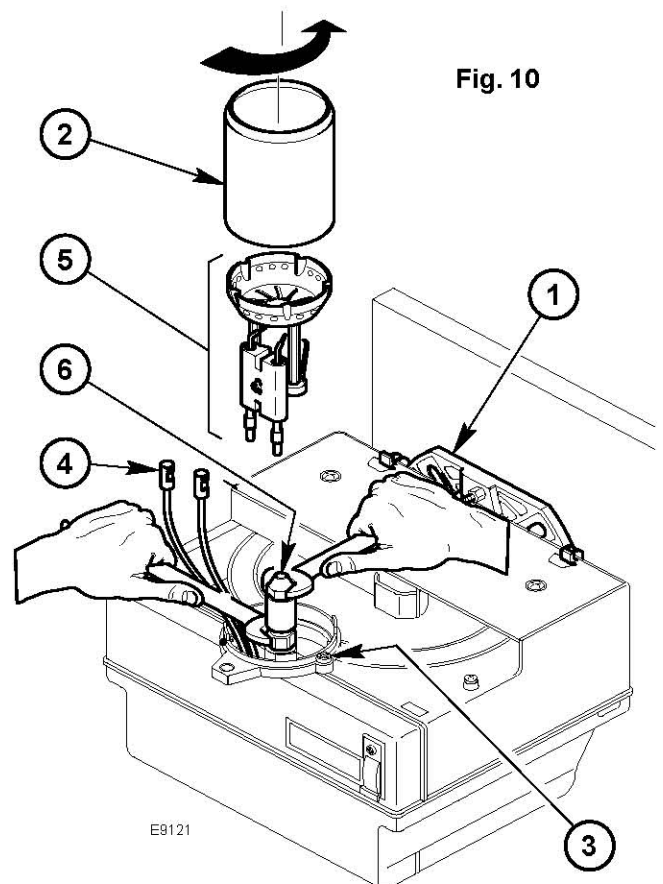
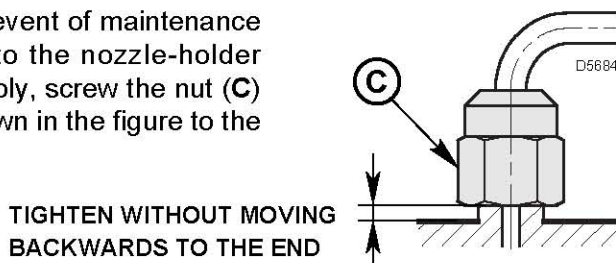
MAINTENANCE POSITION

ACCESSIBILITY TO THE NOZZLE, THE DIFFUSER DISC AND THE ELECTRODES, (see fig. 10)

- Remove the burner from the boiler after loosening the flange anchor nut.
- Hook the burner onto the flange (1), loosen the bolts (3) and remove the blast tube (2) by rotating (the fitting is bayonet type)
- Remove the small cables (4) from the electrodes and the diffuser disc-holder assembly (5) from the nozzle-holder assembly after loosening its fixing screw (3, fig. 11, page 7).
- Screw the nozzle (6) and tighten it as shown in the figure.

WARNING

In the event of maintenance made to the nozzle-holder assembly, screw the nut (C) as shown in the figure to the right.

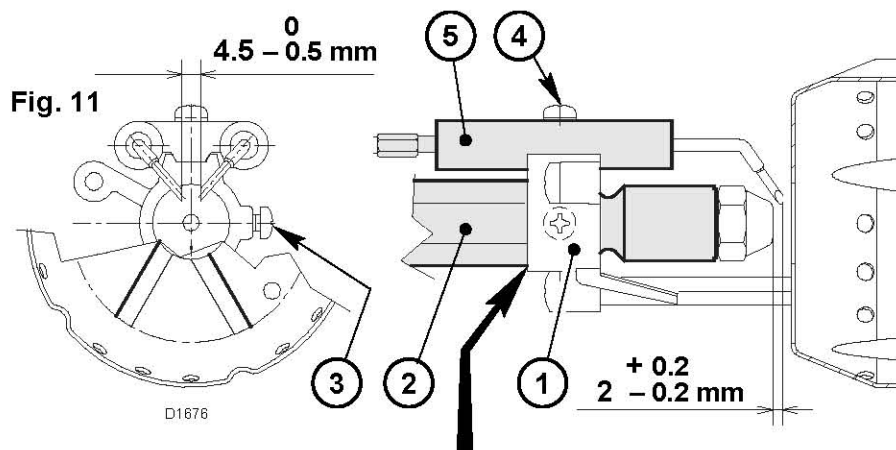


4.3 SETTING OF ELECTRODES, (see fig. 11)

To have access to the electrodes carry out operation as described in chapter “4.2 RECOMMENDED NOZZLES” (page 6).

WARNING

MEASURES MUST BE RESPECTED

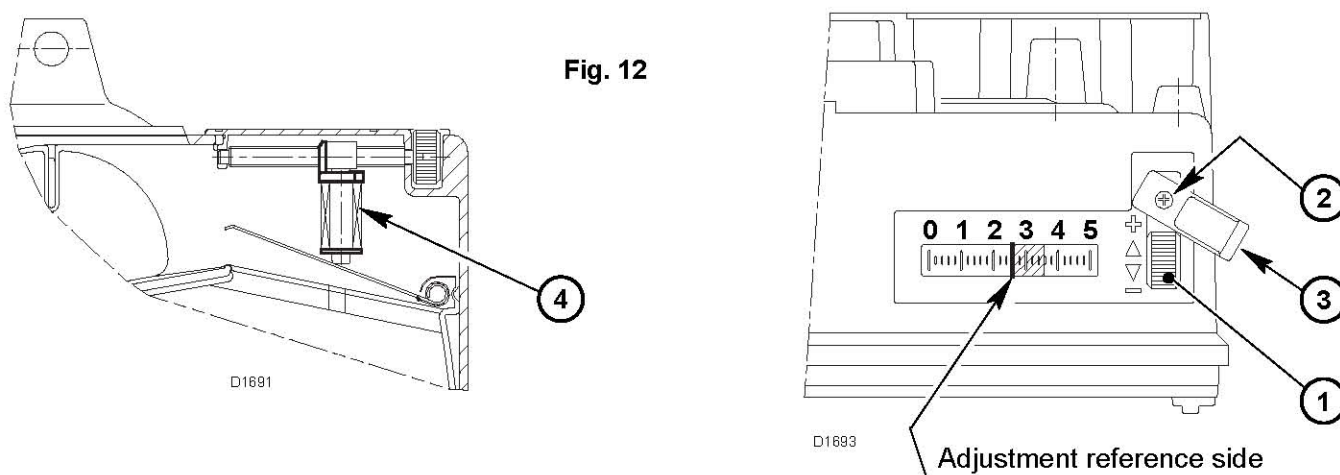


PLACE THE DIFFUSER DISC-HOLDER ASSEMBLY (1) ON THE NOZZLE-HOLDER (2) AND TIGHTEN THE SCREW (3). For any adjustments, loosen the screw (4) and move the electrodes (5).

- 4.4 PUMP PRESSURE:**
- The pump leaves the factory set at 12 bar.
 - To change it act on pump pressure adjust screw (4, fig. 5, page 4).

4.5 AIR DAMPER ADJUSTMENT, (see fig. 12)

- Use the knob (1) to make adjustments after slightly loosening the screw (2) and swinging out the protective covering (3).
- Once adjustments have been made, place the protective covering (3) in its correct position and tighten the screw (2).
- Fig. 12 shows adjustment of the air damper to a flow rate of 2.1 kg/h (notch 2.6).
- When burner shuts down the air damper automatically closes to a **max flue draw of 0.5 mbar**.
- The burner is also fitted with an electromagnetic device (4) which prevents any slamming of the air damper on burner starting, even in the presence of high boiler counter-pressure.



NOTE

In the event that the electromagnetic damper anti-slamming device (4, fig. 12) fails, the burner will not start as the device is connected to the motor in series (see diagram page 5), and as such takes on a role of safety device.

In the event of an anomaly, the burner may even be started without the device as it is connected to the circuit via special connectors which allow it to be cut out. The male and female connectors on the device wire must be disconnected and the motor connectors must be connected between them.

When resorting to this temporary solution, it is fundamental that an alternative adjustment of the air damper is carried out.

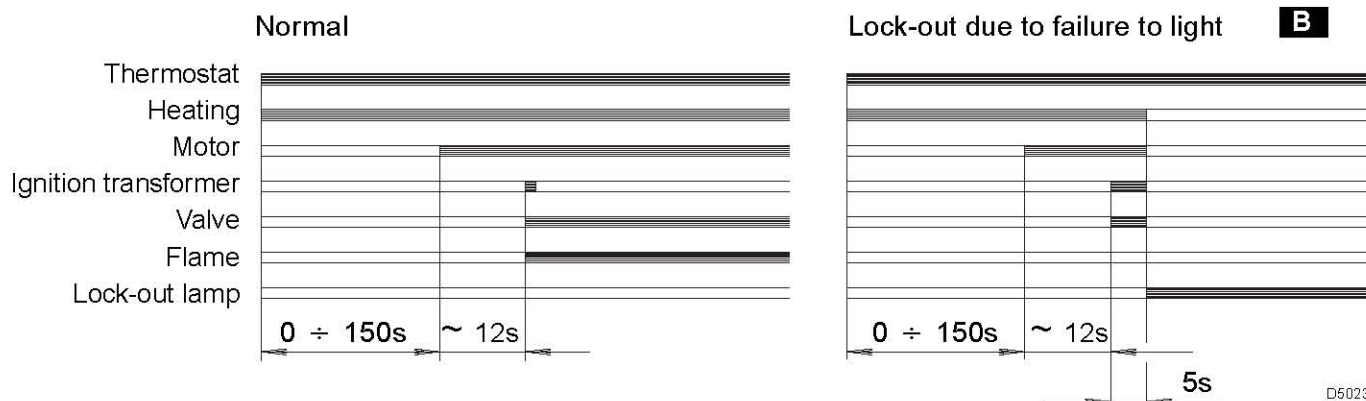
4.6 FUEL HEATING

In order to assure regular ignition and working also at low temperature the burner has an oil pre-heater fitted in combustion head. The pre-heater starts when thermostats close.

When the required temperature for ignition is reached the thermostat fitted on the nozzle holder starts the burner (delay time: 0 to 150 seconds).

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

4.7 BURNER START-UP CYCLE



B Lock out is indicated by a lamp on the control box (3, fig. 1, page 1).

5. MAINTENANCE

The burner requires periodic maintenance carried out by a qualified and authorised technician **in conformity with legislation and local standards**.

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.
- Clean the photoresistance, (4, fig. 1, page 1).
- Check for correct fuel consumption.
- Replace the nozzle (see fig. 10, page 6) and check the correct position of electrodes (fig. 11, page 7).
- Clean the combustion head in the fuel exit area, on the diffuser disc.
- Leave the burner working without interruptions for 10 min. and set rightly all the 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 some 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 (3, 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 doesn't start when the limit 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 safety thermostat is not lock out.
	The photoresistance sees false light.	Eliminate the light.
	Heater or start thermostat are faulty.	Replace them.
	The connections in the control box are wrongly inserted.	Check and connect completely all the plugs.
	Air damper coil interrupted.	See note page 7.
Burner runs normally in the prepurge and ignition cycle and locks out after 5 seconds ca.	The photoresistance is dirty.	Clear 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 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.