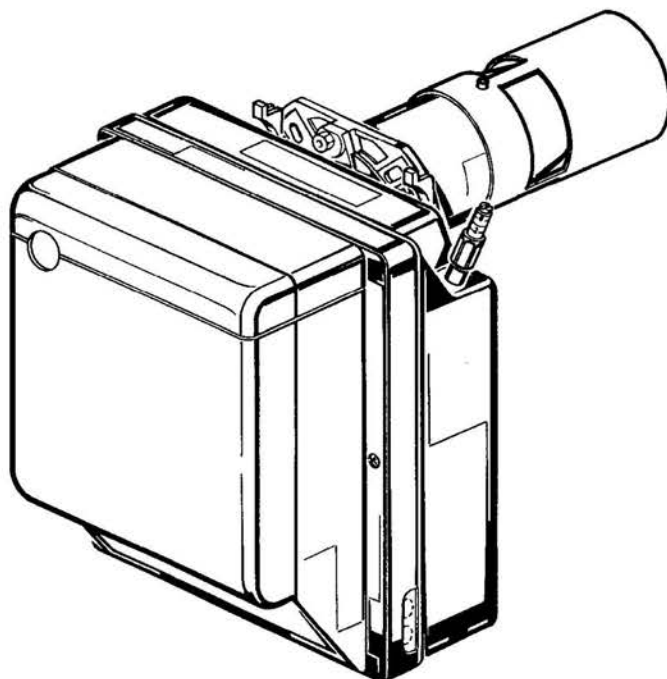


- I** Bruciatore di gasolio
- D** Öl-Gebläsebrenner
- F** Brûleur fioul
- GB** Oil burner



Funzionamento monostadio
Einstufiger Betrieb
Fonctionnement à 1 allure
One stage operation



Gulliver
BLU

CODICE CODE	MODELLO - MODELL MODELE - MODEL	TIPO - TYP TYPE
3737511	BGK0.1	357 T1

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1. BURNER DESCRIPTION

One stage gas oil burner with low pollutant emissions (Nitric Oxide NOx, Carbon monoxide CO and unburnt Hydrocarbons), in conformity with the environmental mark "Blauer Engel" RAL-UZ9, Edition February 2001.

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

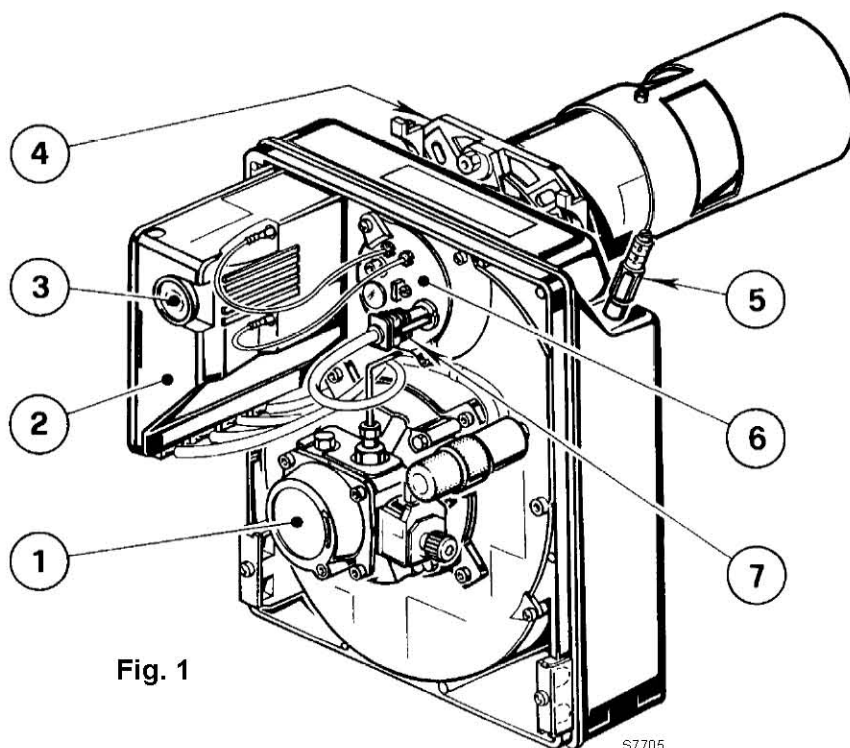


Fig. 1

- CE Certification No.: **0036 0329/02** 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
Recirculating pipe No. 1

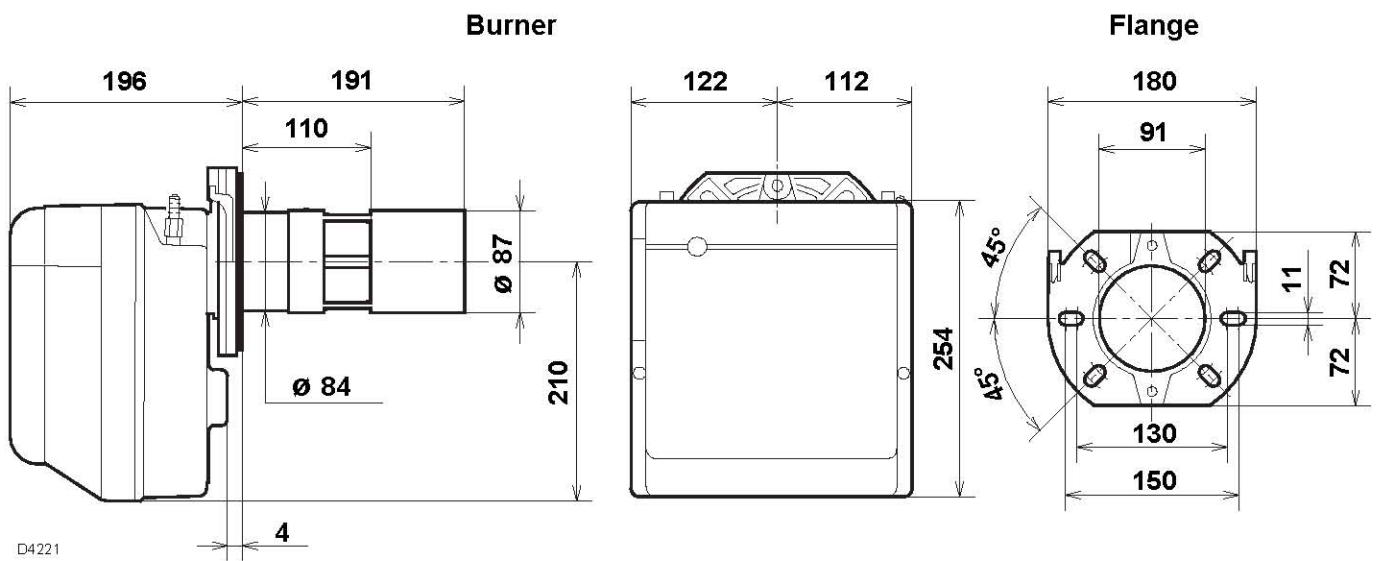
Screw and nuts for flange to be fixed to boiler No. 4
Flexible oil pipes with nipples No. 2

2. TECHNICAL DATA

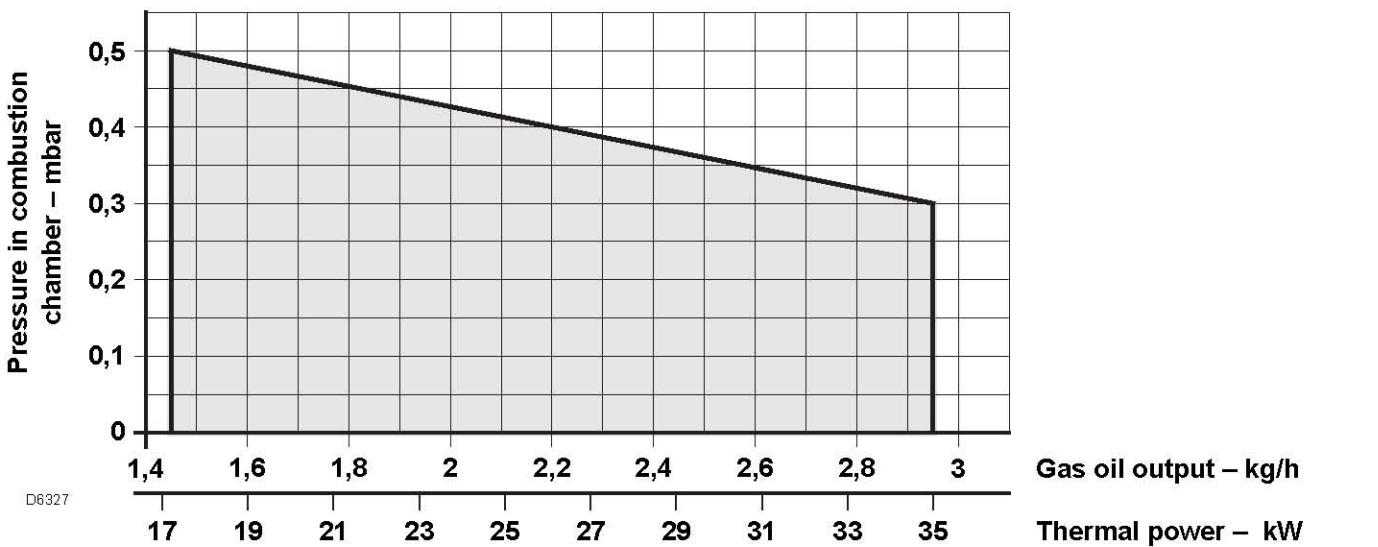
2.1 TECHNICAL DATA

TYPE	357 T1
Output - Thermal power	1.45 – 2.95 kg/h - 17 – 35 kW (H _i = 11.86 kWh/kg)
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	0.22 kW

2.2 OVERALL DIMENSIONS



2.3 WORKING FIELD (as EN 267)



3. INSTALLATION

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

3.1 BOILER FIXING

- Insert the recirculating pipe (1) on the burner blast tube (2) and fix it with the screw (3), (see fig. 2).
Attention: respect the dimensions, as described in chapter "2.2 OVERALL DIMENSIONS" at page 2.
- Put on the flange (4) the screw and two nuts, (see fig. 4).
- Widen, if necessary, the insulating gasket holes (5), (see fig. 5).
- Fix the flange (4) to the boiler door (6) using screws (7) and (if necessary) the nuts (8) interposing the insulating gasket (5), (see fig. 3).

Fig. 2

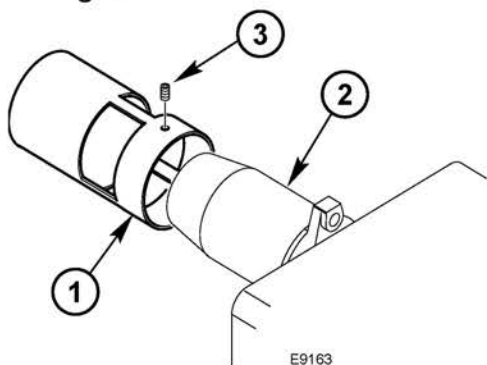


Fig. 3

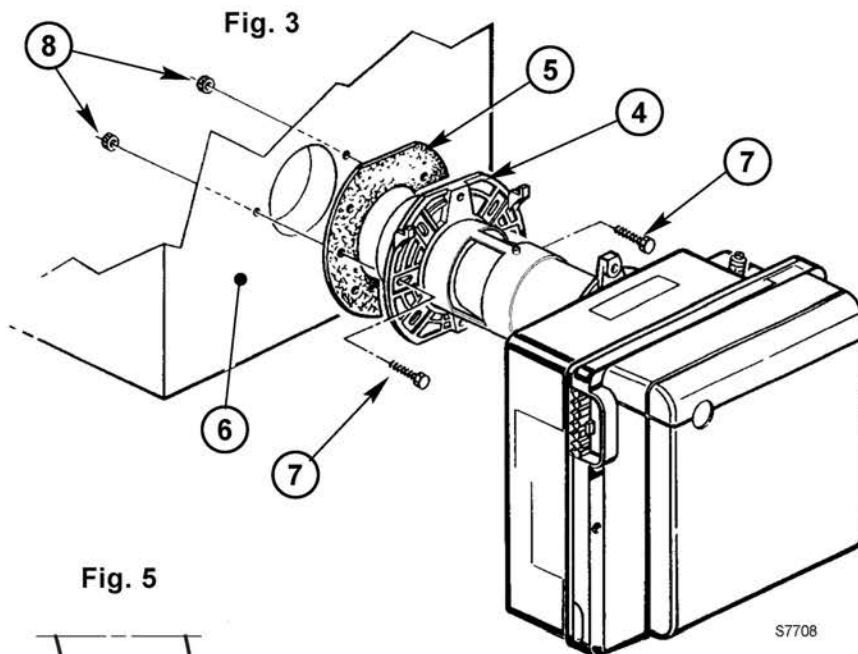


Fig. 4

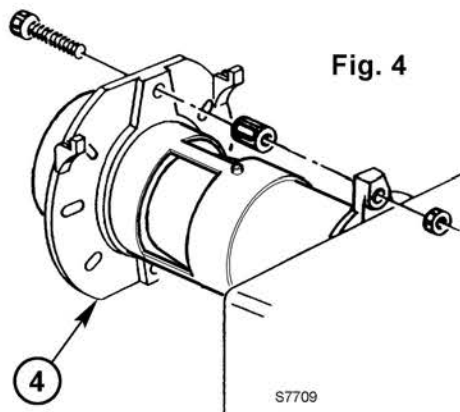
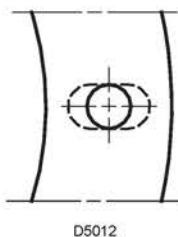


Fig. 5



IMPORTANT

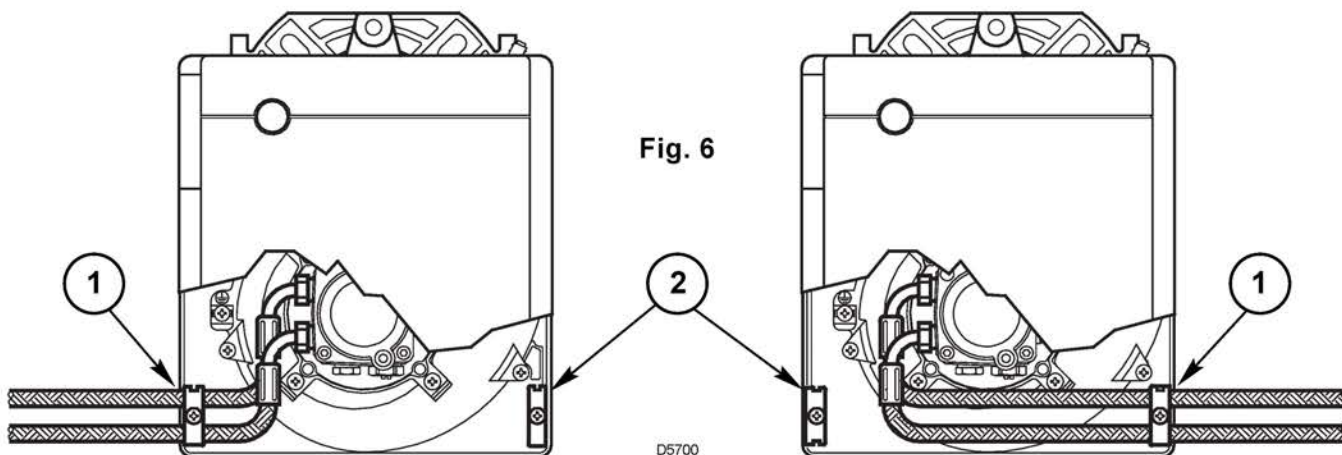
Boiler door must have a max. thickness of 80 mm, refractory lining included.

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. 6).

Fig. 6

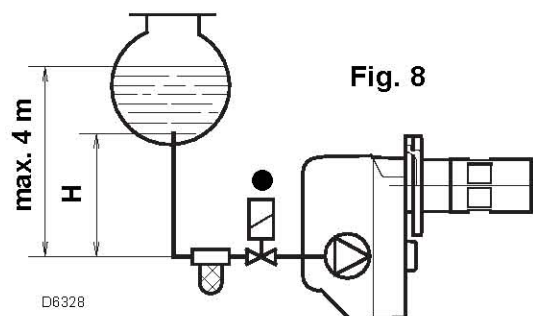
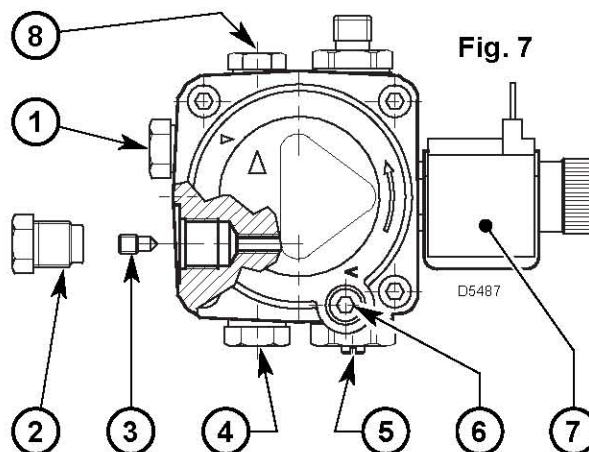


3.3 HYDRAULIC SYSTEMS

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. 7).
- It is necessary to install a filter on the fuel supply line.
- 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**



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 - Gauge connection
5 - Pressure adjuster
6 - Suction gauge connection
7 - Valve
8 - Auxiliary pressure test point

PRIMING PUMP:

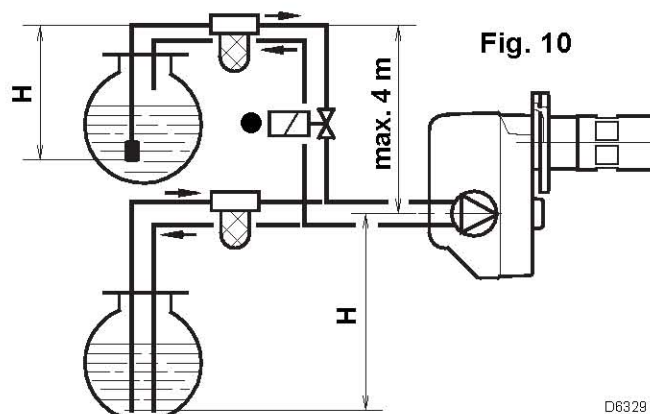
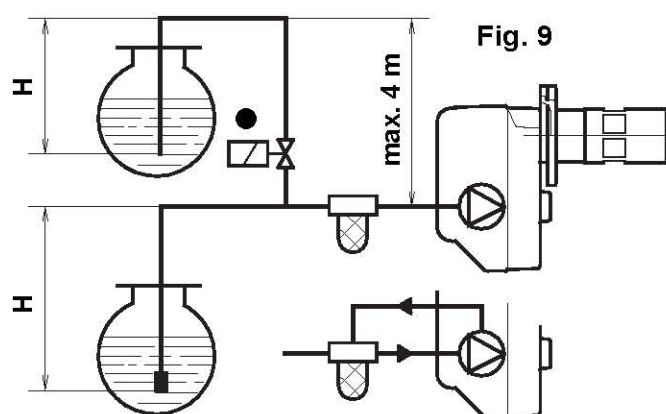
On the system in fig. 8 it is sufficient to loosen the suction gaugeconnection (6, fig. 7) and wait until oil flows out.

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 (fig. 10) 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



● **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

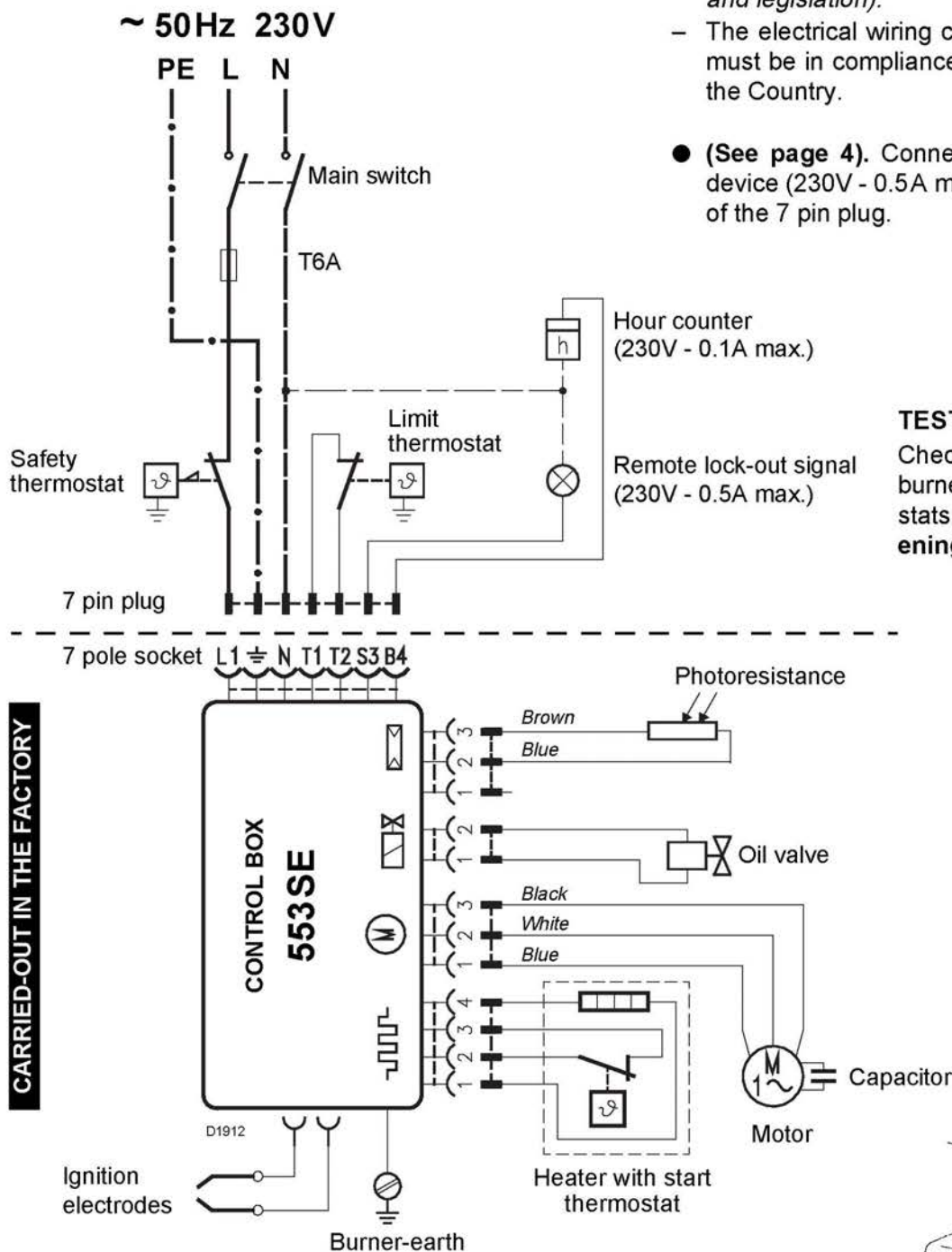
NOTES:

- Wires of 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.

- (See page 4). Connect the automatic shut-off device (230V - 0.5A max.) to the clamps N - B4 of the 7 pin plug.

TESTING

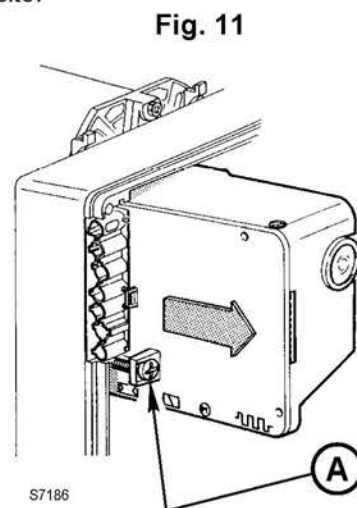
Check the shut-down of the burner by opening the thermostats and the lock-out by **darkening** the photoresistance.



CONTROL BOX

To remove the control-box from the burner, loosen screw (A, fig. 11) and pull to the arrow direction, 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.



S7186

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 13% CO₂ and to sea level.

Nozzle 1		Pump pressure 2	Burner output	Combustion head adjustment 3	Air damper adjustment 4	The combustion values according to RAL-UZ9, edition February 2001 (environmental mark - GERMANY), have been obtained with the indicated nozzles: Delavan 0.40 GPH - 80° XA Fluidix 0.40 GPH - 80° HF Hago 0.75 GPH - 60° S-S
GPH	Angle	bar	kg/h ± 4%	Set-point	Set-point	
0.40	80°	10	1.45	1	1	
0.50	80°	12	1.9	1.9	4	
0.55	60°	12	2.1	2.2	4	
0.60	60°	12	2.3	2.5	5	
0.65	60°	12	2.5	3	5	
0.75	60°	12.5	2.95	3.5	6	

1 RECOMMENDED NOZZLES: Danfoss type H; Delavan type W; Delavan type B (*only 80°*); Hago type H; Steinen type H.

MAINTENANCE POSITION

ACCESSIBILITY TO THE COMBUSTION HEAD, THE DIFFUSER DISC-HOLDER ASSEMBLY, ELECTRODES AND NOZZLE, (see fig. 12):

- Remove the burner out of the boiler, after loosing the fixing nut to the flange.
- Hook the burner to the flange (7), by removing the blast tube assembly (4) after loosing the fixing screws (5).
- Remove the small cables (2) from the electrodes; loosen the screw (4, fig. 15, page 7) and then slide the optic fibre (8) out from the diffuser disc-holder assembly (3); and the diffuser disc-holder assembly (3) from the diffuser nozzle-holder assembly (1) after loosing its fixing screw (6, fig. 15, page 7).
- Screw the nozzle (6) correctly and tighten it as shown in the figure.

WARNING

In the event of maintenance made to the diffuser disc-holder assembly, screw the nut (A) as shown in the figure 13.

Fig. 13

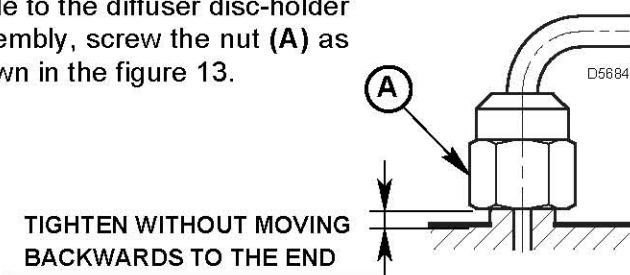
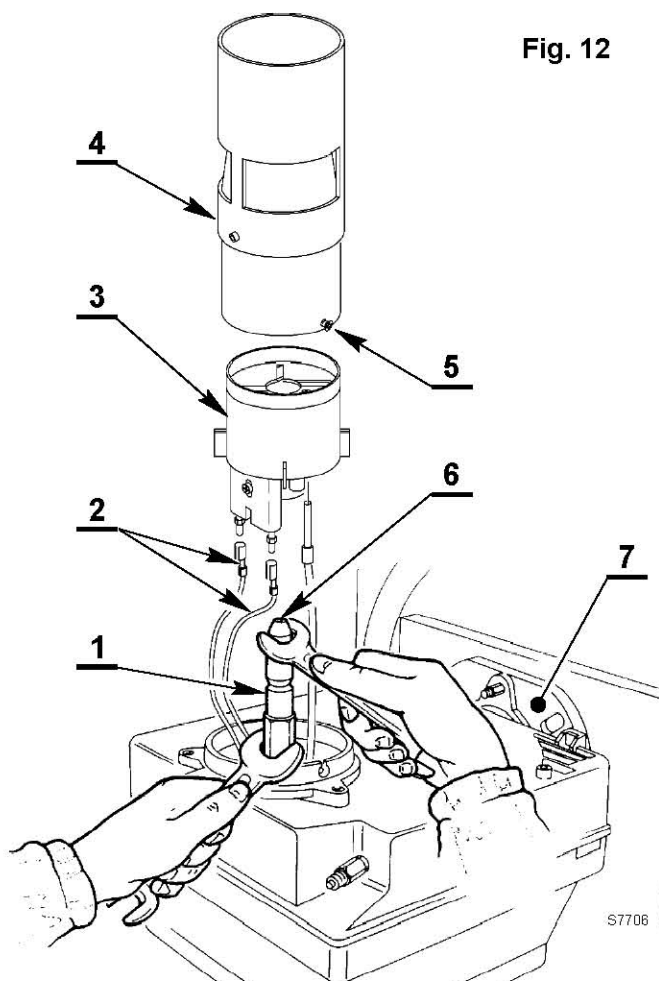


Fig. 12



2 PUMP PRESSURE

The pump leaves the factory set at 12 bar.

To change it act on pump pressure adjust screw (5, fig. 7, page 4).

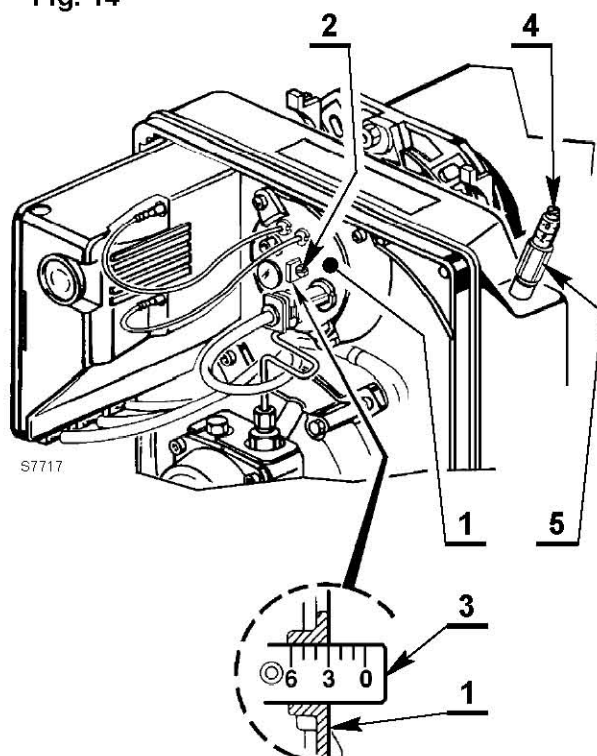
3 COMBUSTION HEAD SETTING (see fig. 14)

It depends on the output of the burner and is carried out by rotating clockwise or counterclockwise the setting screw (2) until the set-point marked on the regulating rod (3) is level with the outside plane of the diffuser nozzle-holder assembly (1).

– In the sketch the combustion head is set for an output of 0.65 GPH at 12 bar.

The set-point 3 of the regulating rod (3) is at the same level with the outside plane of the nozzle-holder assembly (1) as shown in the schedule.

Fig. 14



4.2 POSITIONING OF THE FIBRE OPTIC

Install the fibre optic (1) as shown in the fig. 15.

Attention:

The optic fibre must be inserted until it knocks against the diffuser disc-holder assembly (3). Fix it, tightening the screw (4).

4.3 ELECTRODES ADJUSTMENT (see fig. 15)

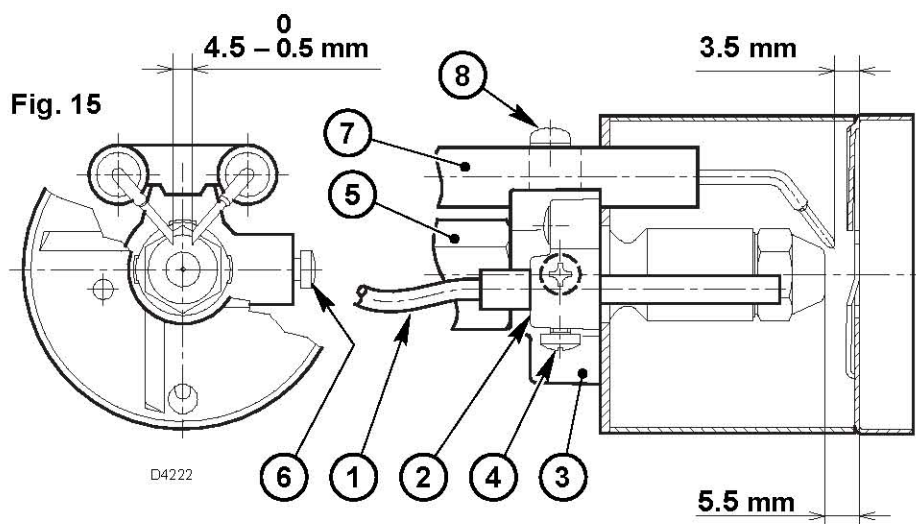
WARNING

MEASURES MUST BE RESPECTED.

Lean the diffuser disc-holder assembly (3) on the nozzle-holder (5) and lock it by screw (6).

For prospective adjustments of the electrodes assembly (7), loosen screw (8).

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



4 AIR DAMPER ADJUSTMENT (see fig. 14)

To vary the setting adjust the screw (4) after loosening the nut (5).

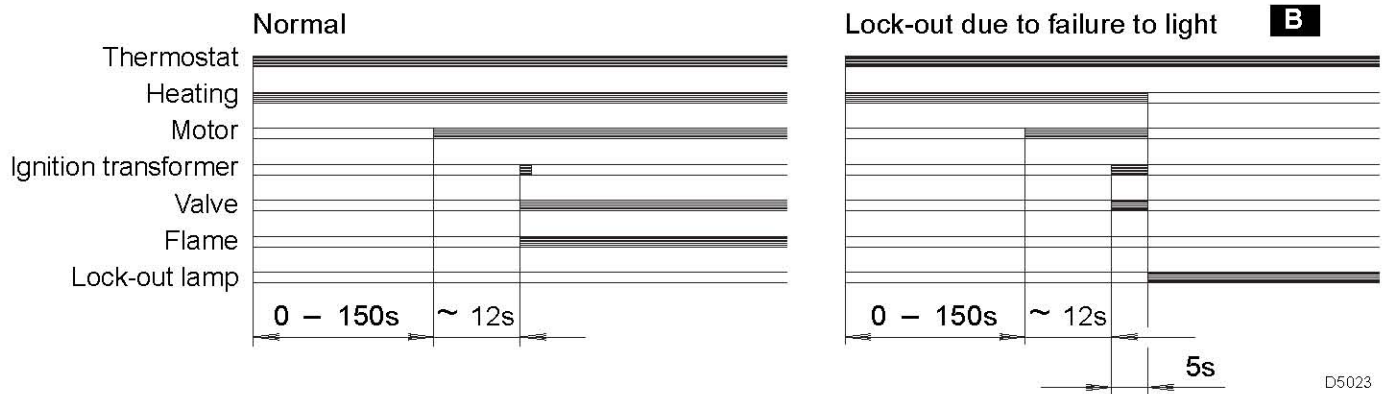
When burner shuts down the air damper automatically closes till a max. chimney depressure of 0.5 mbar.

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

4.5 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, (7, fig. 1, page 1).
- Check for correct fuel consumption.
- Replace the nozzle (see fig. 12, page 6) and check the correct position of electrodes (fig. 15, page 7).
- Clean the combustion head in the fuel exit area, on the diffuser disc and the extremities of the fibre optic (1, fig. 15, page 7).
- 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 and NO_x;
 - 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 the safety thermostat is not lock out.
	The photoresistance sees false light.	Eliminate the light.
	Heater 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.	Clear it.
	The photoresistance is defective.	Change it.
	The fibre optic is dirty.	Clear it.
	The fibre optic is not in line with the hole of the diffuser disc-holder assembly	Check the line-up.
	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.