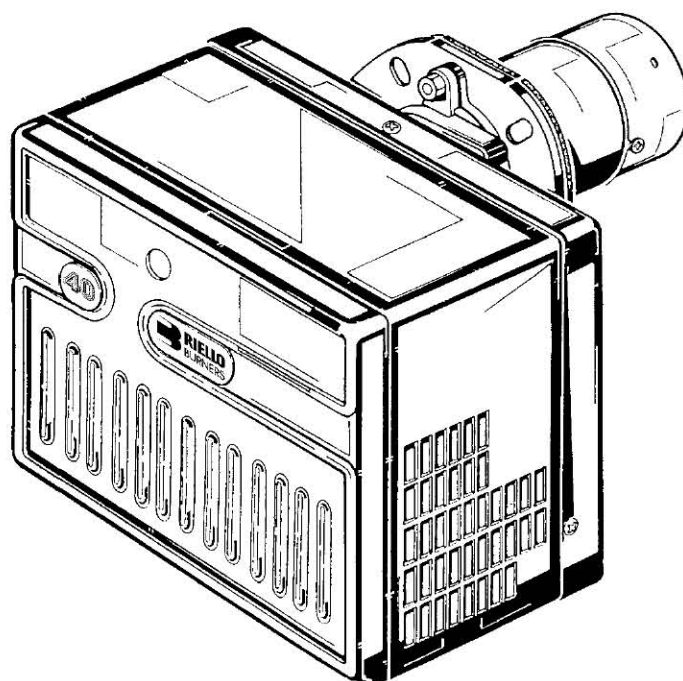


## Oil burners

One stage operation



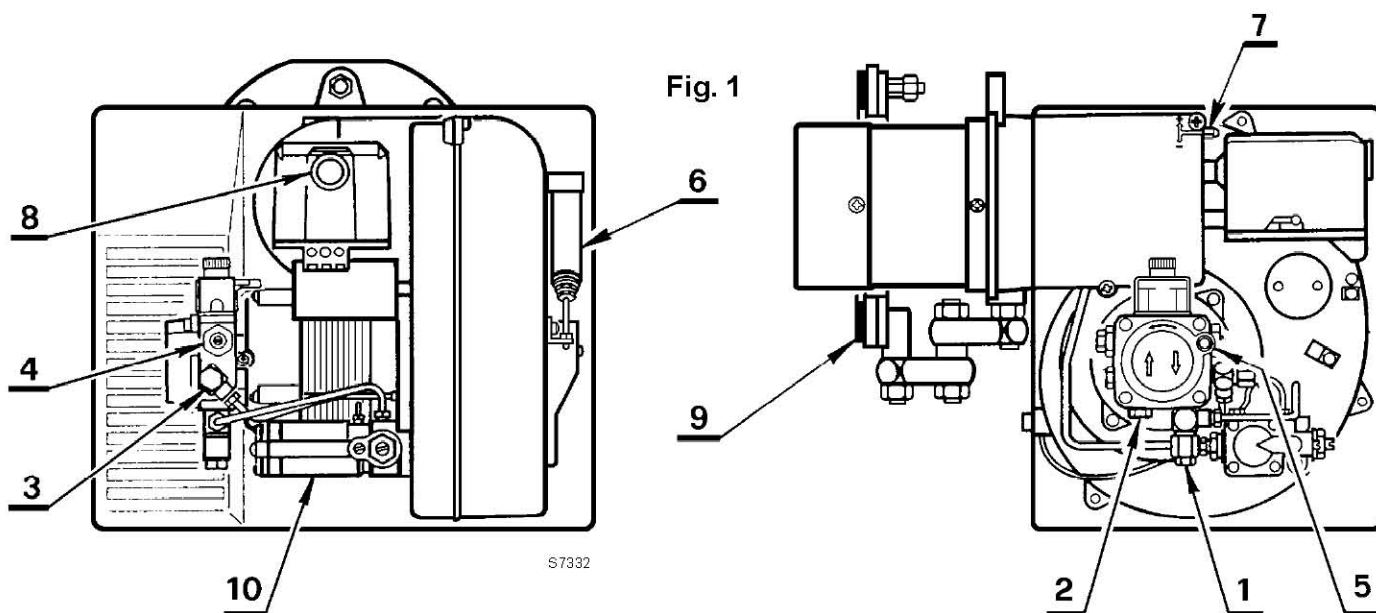
**RIELLO 40**

| CODE    | MODEL | TYPE    |
|---------|-------|---------|
| 3748251 | G20S  | 482 T50 |
| 3748252 | G20S  | 482 T50 |

## TECHNICAL FEATURES

| TYPE                      | 482 T50                                                         |
|---------------------------|-----------------------------------------------------------------|
| Thermal power – output    | 95 – 240 kW – 8 – 20 kg/h                                       |
| Fuel                      | Gas oil, max. viscosity at 20 °C: 6 mm <sup>2</sup> /s (1.5 °E) |
| Electrical supply         | Single phase, 230V ± 10% ~ 50Hz                                 |
| Motor                     | Run current 1.5 A – 2750 rpm – 288 rad/s                        |
| Capacitor                 | 5 µF                                                            |
| Ignition transformer      | Secondary 8 kV – 16 mA                                          |
| Pump                      | Maximum pressure 14 bar (203 psi)                               |
| Absorbed electrical power | 0.33 kW                                                         |

- Burner with CE marking in conformity with EEC directives: EMC89/336/EEC, Low Voltage 73/23/EEC, Machines 98/37/EEC and Efficiency 92/42/EEC
- The burner meets protection level of IP 40, EN 60529.

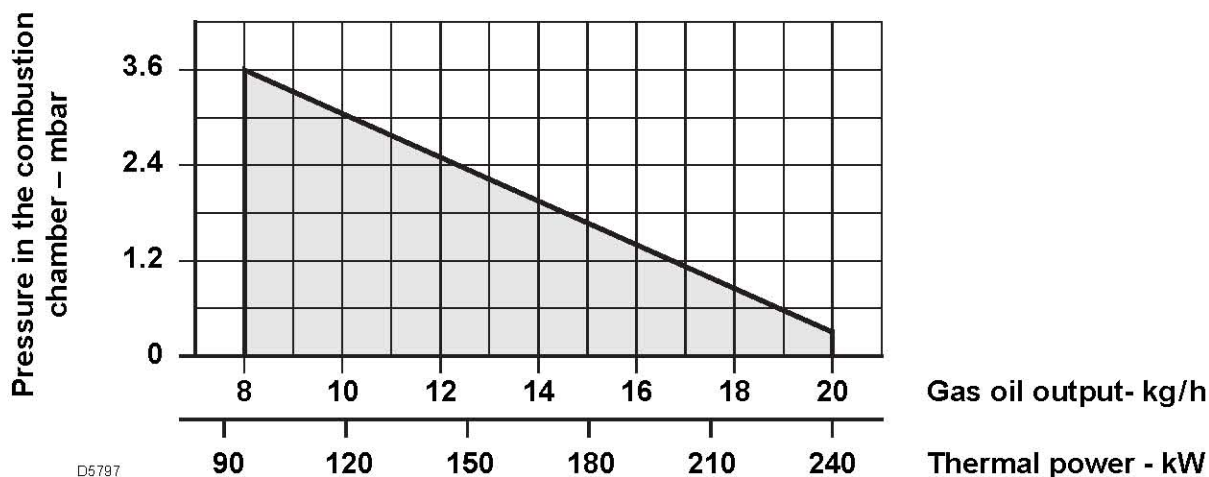


- 1 – Return line
- 2 – Suction line
- 3 – Gauge connection
- 4 – Pump pressure regulator
- 5 – Vacuum gauge connection
- 6 – Hydraulic jack with air-damper
- 7 – Combustion head adjustment screw
- 8 – Lock-out lamp and reset button
- 9 – Flange with insulating gasket
- 10 – Start delaying device

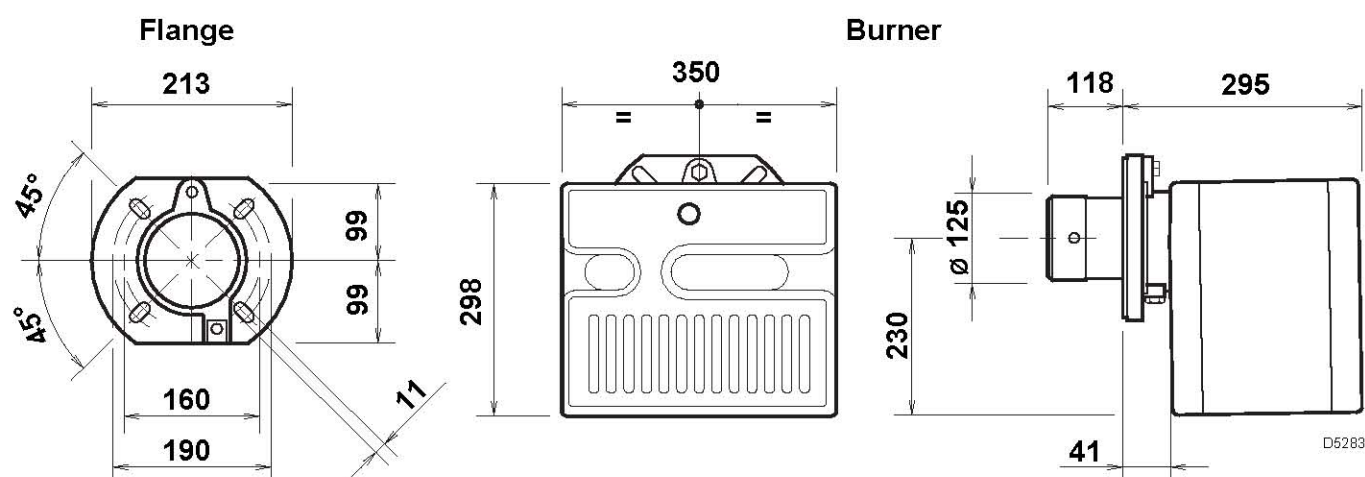
## EQUIPMENT

| Quantity | Description                    |
|----------|--------------------------------|
| 1        | Flexible pipe with nipple      |
| 1        | Flange with insulating gasket  |
| 4        | Screws and nuts for flange     |
| 1        | Hinge                          |
| 1        | Screw of pump by-pass          |
| 1        | Grommet                        |
| 1        | Screw with two nuts for flange |

## WORKING RANGE



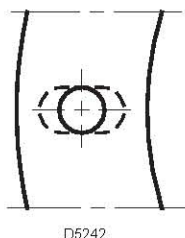
## DIMENSIONS



## MOUNTING THE BURNER

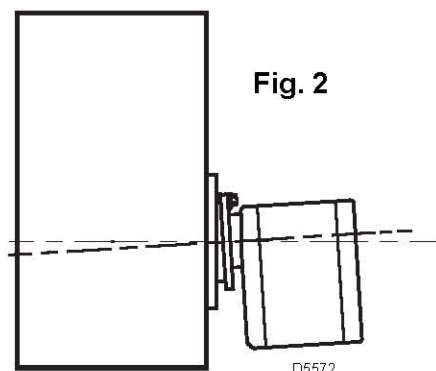
It is necessary that the insulating gasket (9, fig. 1) is placed between the boiler door and the burner flange.

This insulating gasket has four holes, which, if necessary, can be modified as shown on the drawing on the right.

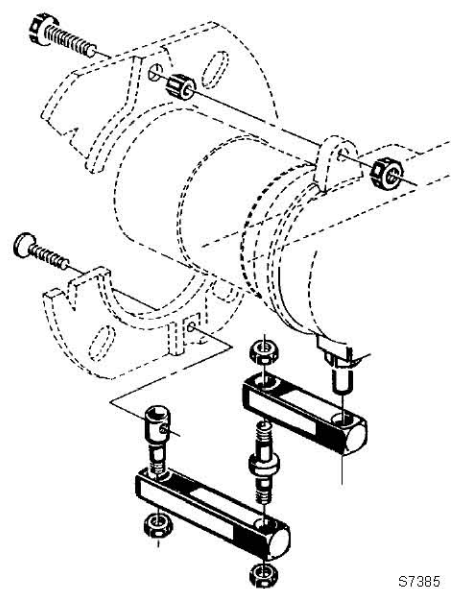


Verify that the installed burner is lightly leaned towards the button.  
(See figure 2).

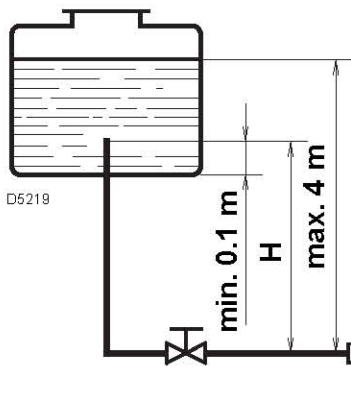
The burner is designed to allow entry of the flexible oil-lines on either side of the burner.



### BURNER FIXING AND HINGE ASSEMBLY



## OIL LINES



### PRIMING THE PUMP

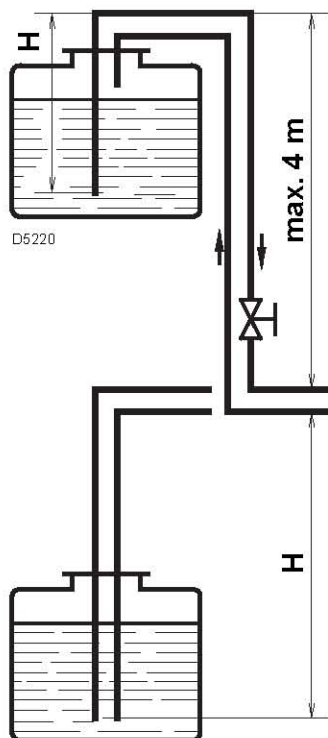
Loosen the plug of the vacuum gauge (5, fig. 1) and wait until the fuel flows out.

| H<br>meters | L meters      |                |
|-------------|---------------|----------------|
|             | I. D.<br>8 mm | I. D.<br>10 mm |
| 0.5         | 10            | 20             |
| 1           | 20            | 40             |
| 1.5         | 40            | 80             |
| 2           | 60            | 100            |

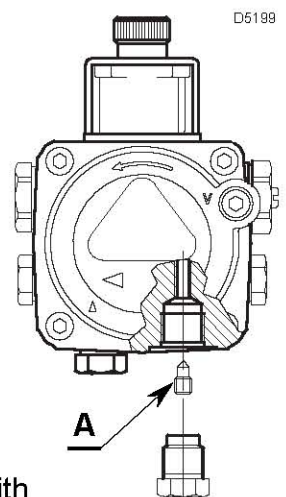
H = Difference of level.

L = Max. length of the suction line.

I.D. = Internal diameter of the oil pipes



| H<br>meters | L meters      |                |
|-------------|---------------|----------------|
|             | I. D.<br>8 mm | I. D.<br>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             |



### WARNING

The pump is supplied for use with a one pipe system. For use on a two pipe system, it is necessary to screw the by-pass screw (A) supplied as burner's accessory. (See figure).

The pump vacuum should not exceed a maximum of 0.4 bar (30 cm Hg). Beyond this limit gas is released from the oil.

**Oil lines must be completely airtight.**

**The return line should terminate in 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 arrives over the fuel level, the non-return valve is indispensable.

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

### PRIMING THE PUMP:

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:** before starting the burner make sure that the return pipe-line is not clogged: any obstruction would cause the pump seals to break.

### WARNING:

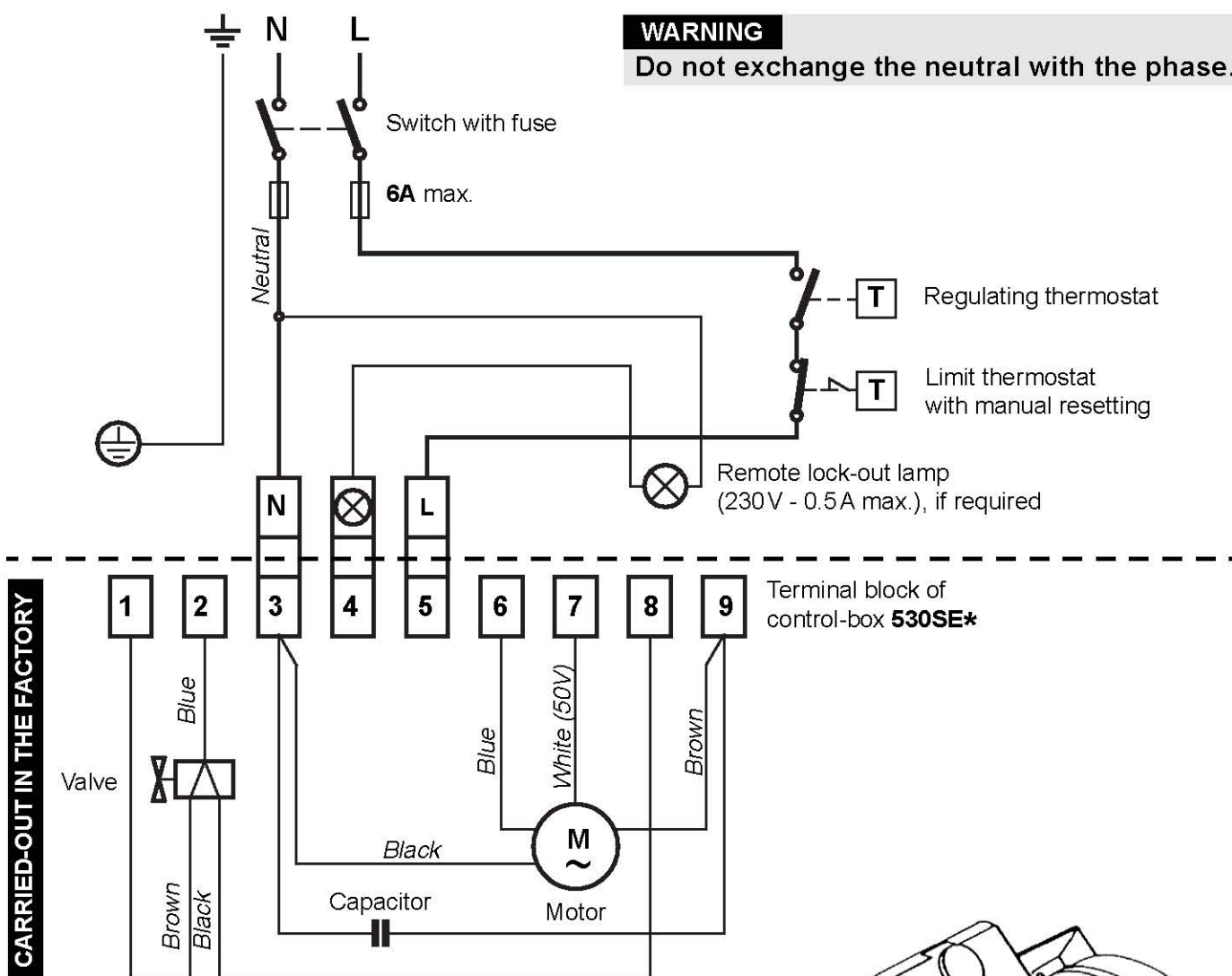
- Check periodically the flexible pipes conditions.
- A metal bowl filter with replaceable micronic filter must be fitted in the oil supply pipe.

# BURNER ELECTRICAL WIRING

230V ~ 50Hz

## WARNING

Do not exchange the neutral with the phase.



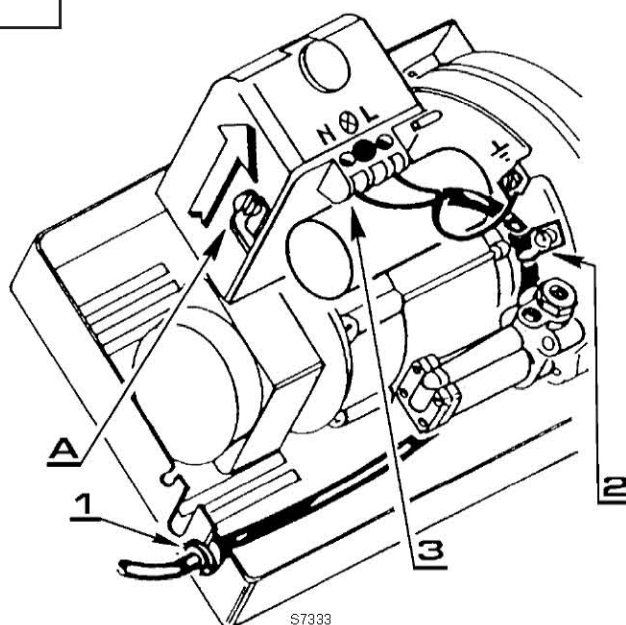
D5228

## NOTES

- Wires of 1 mm<sup>2</sup> section.
- The electrical wiring carried out by the installer must be in compliance with the rules in force in the Country.
- To remove the control-box from the burner, loosen screw (A) (see figure) and pull towards the arrow.
- The photoresistance is fitted directly into the control-box (underneath the ignition-transformer) on a plug-in support.

## TESTING

Check the shut-down of the burner by opening the thermostats.



## RUN OF THE ELECTRICAL CABLE

- |                    |                  |
|--------------------|------------------|
| 1 - Grommet        | N - Neutral      |
| 2 - Cable-clamp    | L - Phase        |
| 3 - Terminal block | ⏏ - Burner-earth |

## 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<sub>2</sub> 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 nozzle, the settings of the combustion head 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% CO<sub>2</sub> at sea level and with light oil and room temperature of 20 °C.

| Nozzle <b>1</b> |       | Pump pressure<br>bar | Burner output<br>kg/h ± 4% | Comb. head adjustment <b>2</b><br>Set-point | Air damper adjustment <b>3</b> |                         |
|-----------------|-------|----------------------|----------------------------|---------------------------------------------|--------------------------------|-------------------------|
| GPH             | Angle |                      |                            |                                             | Low-flame<br>Set-point         | High-flame<br>Set-point |
| 2.00            | 60°   | 12                   | 8.0                        | 1                                           | 2.2                            | 2.5                     |
| 2.25            | 60°   | 12                   | 9.0                        | 1.5                                         | 2.5                            | 2.9                     |
| 2.50            | 60°   | 12                   | 10.0                       | 2                                           | 2.7                            | 3.1                     |
| 3.00            | 60°   | 12                   | 12.0                       | 2.5                                         | 3.1                            | 3.7                     |
| 3.50            | 60°   | 12                   | 14.0                       | 3.5                                         | 3.5                            | 4.8                     |
| 4.00            | 60°   | 12                   | 16.1                       | 4                                           | 4                              | 6                       |
| 4.50            | 60°   | 12                   | 18.1                       | 5                                           | 4.5                            | 7                       |
| 4.50            | 60°   | 14                   | 19.5                       | 6                                           | 5                              | 8                       |

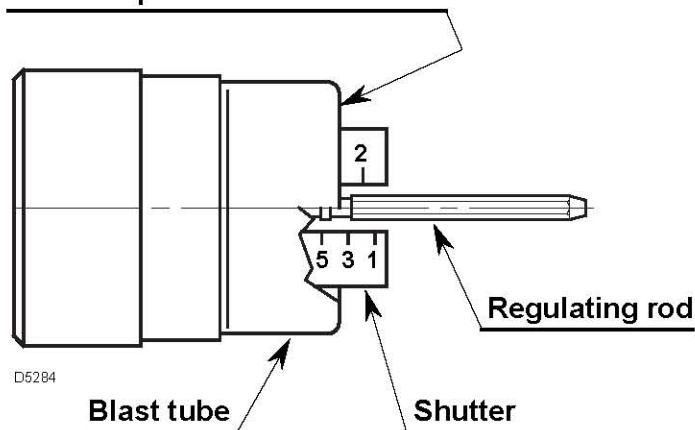
**1 NOZZLES RECOMMENDED:** Monarch type R - PLP  
Delavan type B - W  
Steinen type S - SS  
Danfoss type S

**Angle:** 60° : In most cases. Particularly suited to avoid flame-detachment during ignition.

For narrow and long combustion-chambers it is advisable to use full cone nozzles (e.g. 60° B).

**2 COMBUSTION HEAD SETTING:** This is done when fitting the nozzle, with the blast tube removed. It depends on the output of the burner and is carried out by rotating the regulating rod, till the terminal plane of the blast tube is level with the set-point, as indicated in the schedule.

Terminal plane of the blast tube

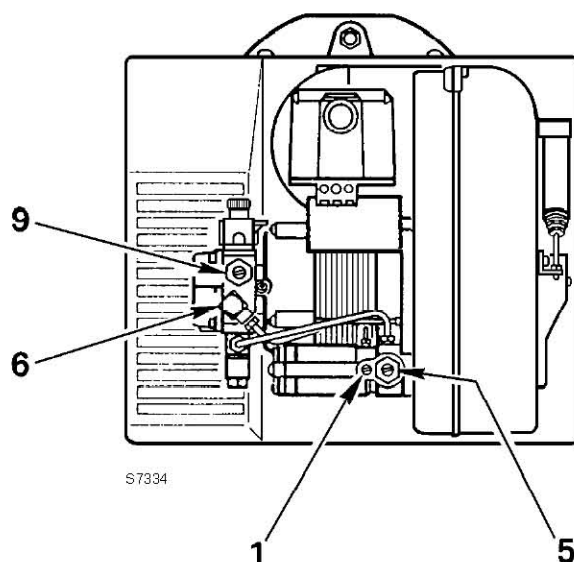
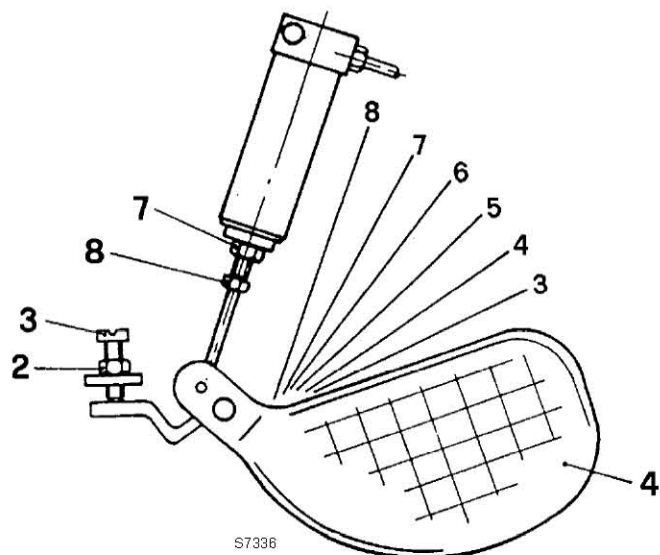


In the sketch on the left, the combustion head is set for an output of 3.50 GPH at 12 bar, while the shutter is level with set-point 3.5, as required by the above schedule.

## PUMP-PRESSURE AND AIR-FLOW

The burner, in order to guarantee good smooth starts, irrespective of the type of boiler, is fitted with a hydraulic device which, independently of the control-box, reduces the fuel- and air-flow.

At ignition, the pressure at the nozzle is 9 bar. After 4 - 6 seconds, it automatically increases to 12 bar. The air-flow, initially adjusted to the low setting, is, at the change-over of pressure, automatically brought to the air-flow required for the big flame.



## SETTING FOR THE LOW IGNITION-FLAME

**Air-damper adjustment :** Loosen the screw (1), by approximately one full turn; in this way, the burner remains permanently on low flame.

Loosen the nut (2), turn the screw (3), in order to set the air-damper (4) in the position required.

Then, lock the nut (2) and tighten the screw (1).

**Reducer-adjustment :** The pressure-reducer is factory set, at 9 bar.

The pressure-gauge should be mounted, in place of plug (6).

Should it be necessary to re-set or alter such pressure, this can be done, by adjusting screw (5) (*always, after having loosened screw (1) ).*

## HIGH-FLAME SETTING

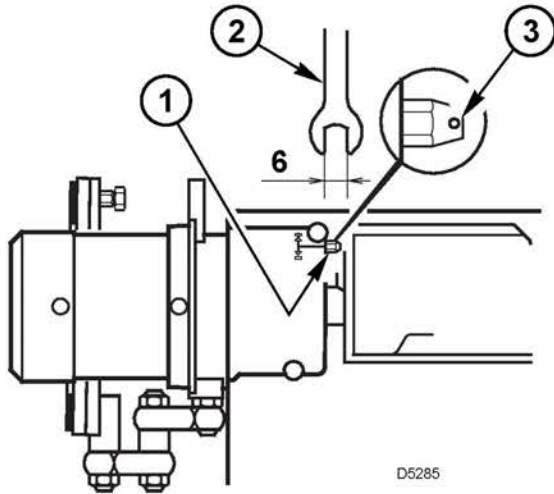
**Air-damper adjustment :** Loosen the nut (7), turn the screw (8), until the air-damper (4) is in the required position. Then, lock the nut (7).

**Pump-adjustment :** The pump-pressure is pre-set, during production, at 12 bar.

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

Combustion head settings indicated in the schedule are valid for most cases.

The setting of the fan output according to the installation should normally be done only through the air damper. Should one subsequently want to retouch also the setting of the combustion head, with the burner running, operate on the rod (1) with a 6 mm spanner (2) as follows:



#### TURN TO THE RIGHT: (sign +)

In order to increase the volume of air entering the combustion chamber and thus diminishing its pressure. There is a reduction of CO<sub>2</sub> and the adhesion of the flame to the air diffuser disc improves. *(Setting advisable for ignitions at low temperatures).*

#### TURN TO THE LEFT: (sign -)

In order to reduce the volume of air entering the combustion chamber and thus increasing its pressure. The CO<sub>2</sub> improves and the adhesion of the flame to the diffuser tends to reduce. *(This setting is not advisable for ignitions at low temperatures).*

In any case do not bring the combustion head setting more than one point away from that indicated in the schedule. One set-point corresponds to 3 turns of the rod; a hole (3) at its end facilitates counting the number of turns.

### 3 AIR DAMPER ADJUSTMENT:

The settings indicated in the schedule refer to the burner with its metal cover fitted and the combustion chamber with "zero" depression.

These regulations 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.

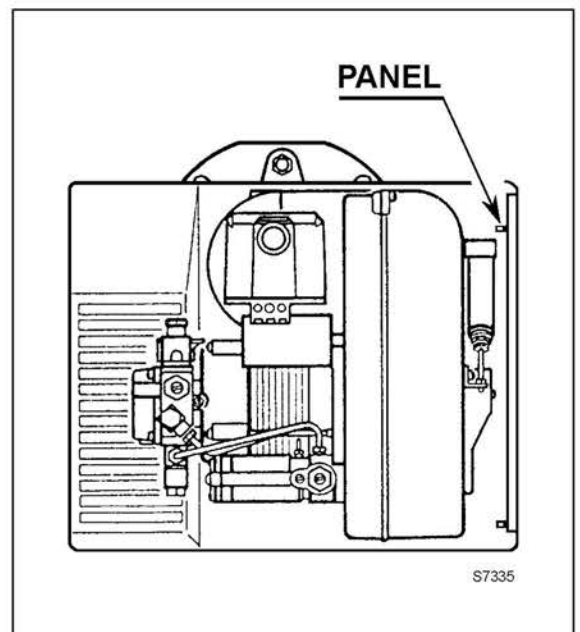
All these conditions may require a different air-damper setting.

**It is important to take account of the fact that the air output of the fan differs according to whether the burner has its metal cover fitted or not.**

Therefore we recommended to proceed as follows:

- adjust the air damper as indicated in the schedule (3);
- mount the cover, simply by means of the upper screw;
- check smoke number;
- should it become necessary to modify the air output, remove the cover by loosening the screw, adjust the air damper, remount the cover and finally recheck the smoke number.

**NOTE:** When the burner works at a firing rate higher than **18 kg/h** remove the panel fitted inside the metal cover. *(See figure).*

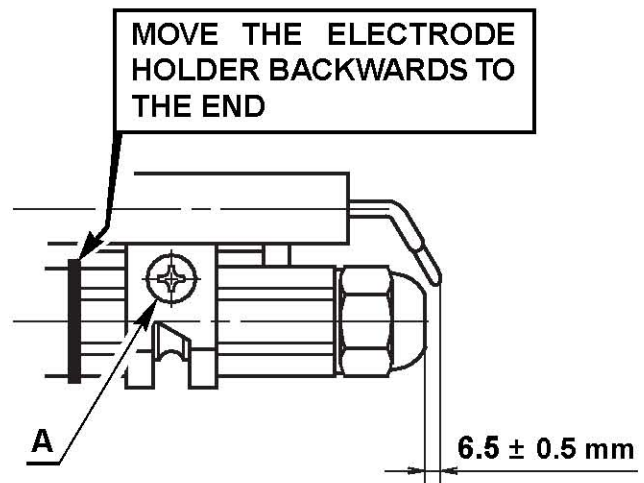
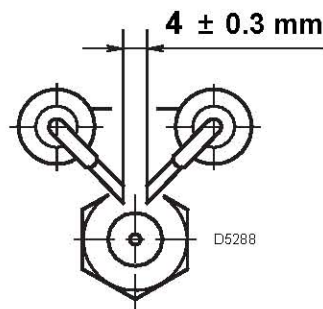


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## ELECTRODE SETTING

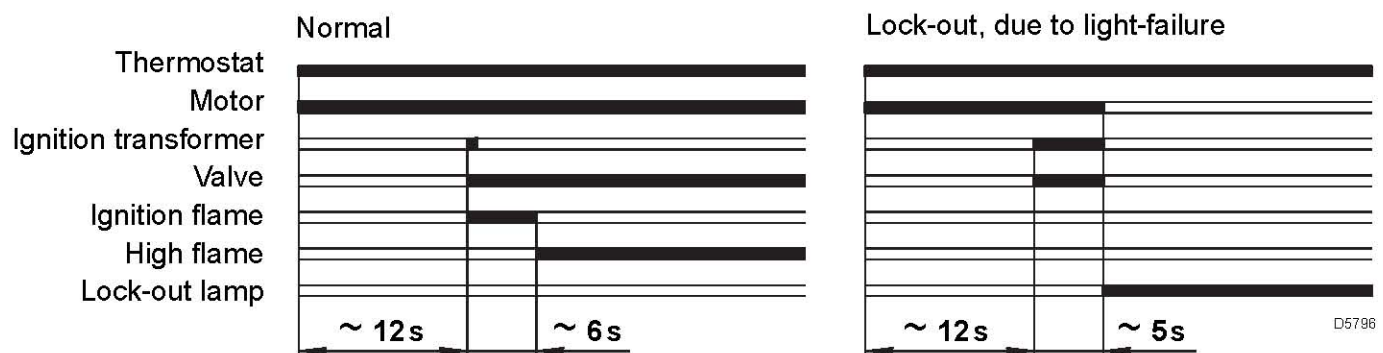
### Attention:

Before assembling or removing the nozzle, loosen the screw (A, fig. 2) and move the electrodes ahead



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## BURNER START-UP CYCLE



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## ADJUSTMENTS, TO AVOID FLAME - DETACHMENT, AT BURNER - IGNITION

1) CORRECT POSITIONING OF THE ELECTRODES: (see fig. 2 above)

2) NOZZLE: ATOMIZING ANGLE

Choose 60° nozzle

3) COMBUSTION-HEAD SETTING

Regulate the combustion-head one set-point further ahead than indicated in the instructions.

Example: *the instructions require to set the combustion-head on set-point 3.5.  
Instead, the setting is made on set-point 4.5.*

4) FAN - AIR DAMPER ADJUSTMENT

Adjust the air damper of the fan, such as to obtain a smoke-number not inferior to 1.  
(i.e. a combustion with the lowest possible excess-air).