

GB Light oil burner

CN 轻油燃烧器

One stage operation
一段火运行



RIELLO 40

CODE - 编码	MODEL - 型号	TYPE - 类型
20013623	G5R MC	447T1

INFORMATION ABOUT THE INSTRUCTION MANUAL

INTRODUCTION

The instruction manual supplied with the burner:

- is an integral and essential part of the product and must not be separated from it; it must therefore be kept carefully for any necessary consultation and must accompany the burner even if it is transferred to another owner or user, or to another system. If the manual is lost or damaged, another copy must be requested from the Technical Assistance Service **RIELLO** of the area;
- is designed for use by qualified personnel;
- offers important indications and instructions relating to the installation safety, start-up, use and maintenance of the burner.

DELIVERY OF THE SYSTEM AND THE INSTRUCTION MANUAL

When the system is delivered, it is important that:

- The instruction manual is supplied to the user by the system manufacturer, with the recommendation to keep it in the room where the heat generator is to be installed.
- The instruction manual shows:

- the serial number of the burner;

.....

- the address and telephone number of the nearest Assistance Centre;

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

- The system supplier carefully informs the user about:
 - the use of the system,
 - any further tests that may be necessary before the system is started up,
 - maintenance and the need to have the system checked at least once a year by the manufacturer or another specialised technician.

To ensure a periodic check, **RIELLO** recommends the drawing up of a Maintenance Contract.

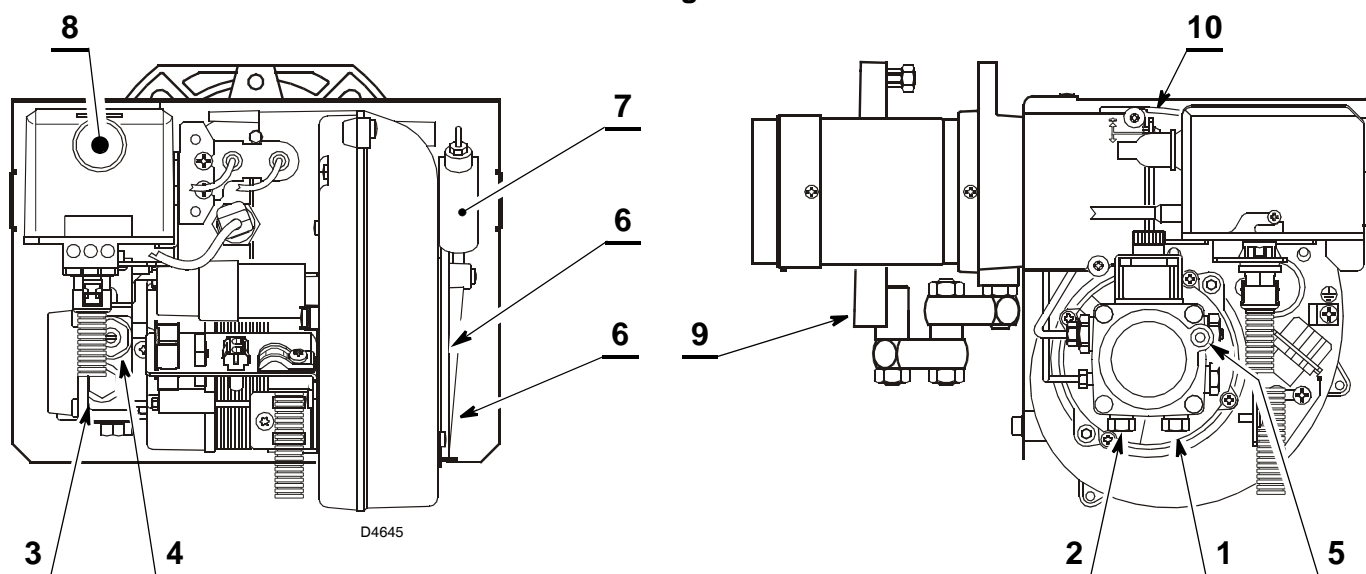
TECHNICAL DATA

TYPE	447T1
Thermal power – output	28 – 60 kW – 2.3 – 5 kg/h
Fuel	Light oil, viscosity 4 – 6 mm ² /s at 20 °C (H _i = 11.86 kWh/kg)
Electrical supply	Single phase, 230V ± 10% ~ 50Hz
Motor	Run current 0.75 A – 2800 rpm – 294 rad/s
Capacitor	4 µF
Ignition transformer	Secondary 8 kV – 16 mA
Pump	Pressure 7 – 15 bar
Absorbed electrical power	0.185 kW

BURNER DESCRIPTION

- Burner with CE marking in conformity with EEC Directives: EMC 2004/108/EC, Low Voltage 2006/95/EC, Machines 2006/42/EC.
- The burner meets protection level of IP 40, EN 60529.

Fig. 1



- 1 – Return line
- 2 – Suction line
- 3 – Gauge connection
- 4 – Pump pressure regulator
- 5 – Vacuum gauge connection

- 6 – Screws fixing air damper
- 7 – Hydraulic jack with air damper
- 8 – Lock-out lamp and reset button
- 9 – Flange with insulating gasket
- 10 – Combustion head adjustment screw

HYDRAULIC JACK OPERATION 7)(Fig. 1)



It is strongly recommended a periodic check of the pump pressure operation (annually or better every six months, if the burner operation is continuous).

If the value is lower than 1 bar, compared to that one of the initial setting, please check the cleaning of the pump and line filters.

In case the pressure setting was not restorable, please replace the pump, in order to guarantee that the pump pressure during the pre-purge time is at least 3.7 bar.

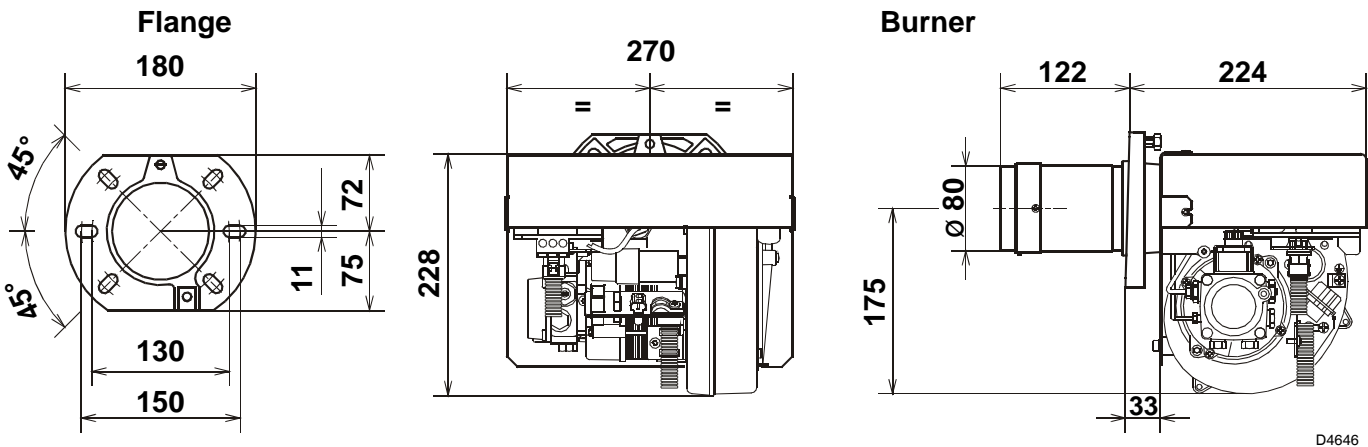
BURNER EQUIPMENT

Flexible pipes with nipples	No. 2	Cover	No. 1
Screws and nuts for flange	No. 4	Hinge	No. 1
Screw with two nuts for flange	No. 1	Insulating gasket	No. 3

FIRING RATE



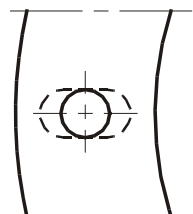
OVERALL DIMENSIONS



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 **six holes**, which, if necessary, can be modified as shown on the drawing on the right.



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Verify that the installed burner is lightly leaned towards the button.

(See figure 2).

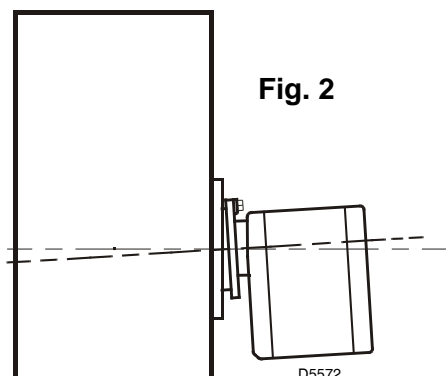
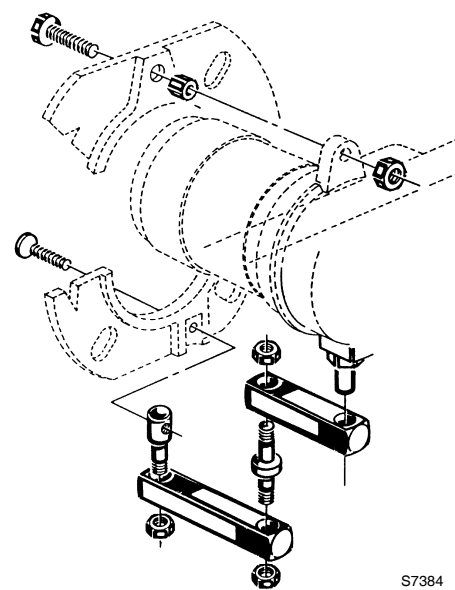


Fig. 2

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BURNER FIXING AND HINGE ASSEMBLY



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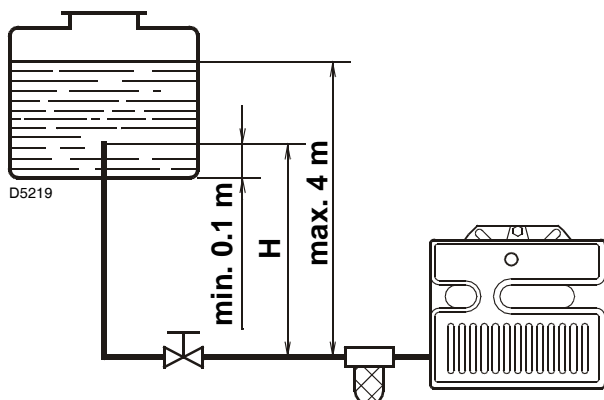
HYDRAULIC SYSTEMS

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

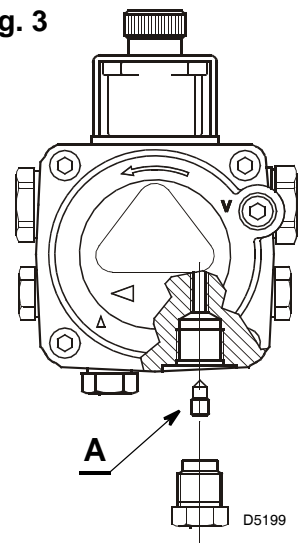
The pump is supplied for use with a two pipe system.

For use on a one pipe system, it is necessary to **remove the by-pass screw (A, fig. 3).**



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

Fig. 3



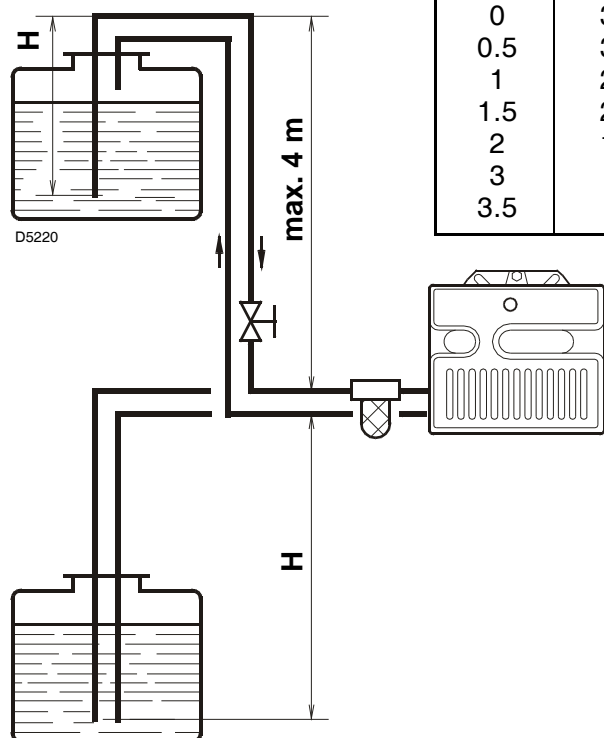
PRIMING THE PUMP

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

H = Difference of level.

L = Max. length of the suction line.

I.D. = Internal diameter of the oil pipes.



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

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.

When the return line arrives over the fuel level, a non-return valve must be used.

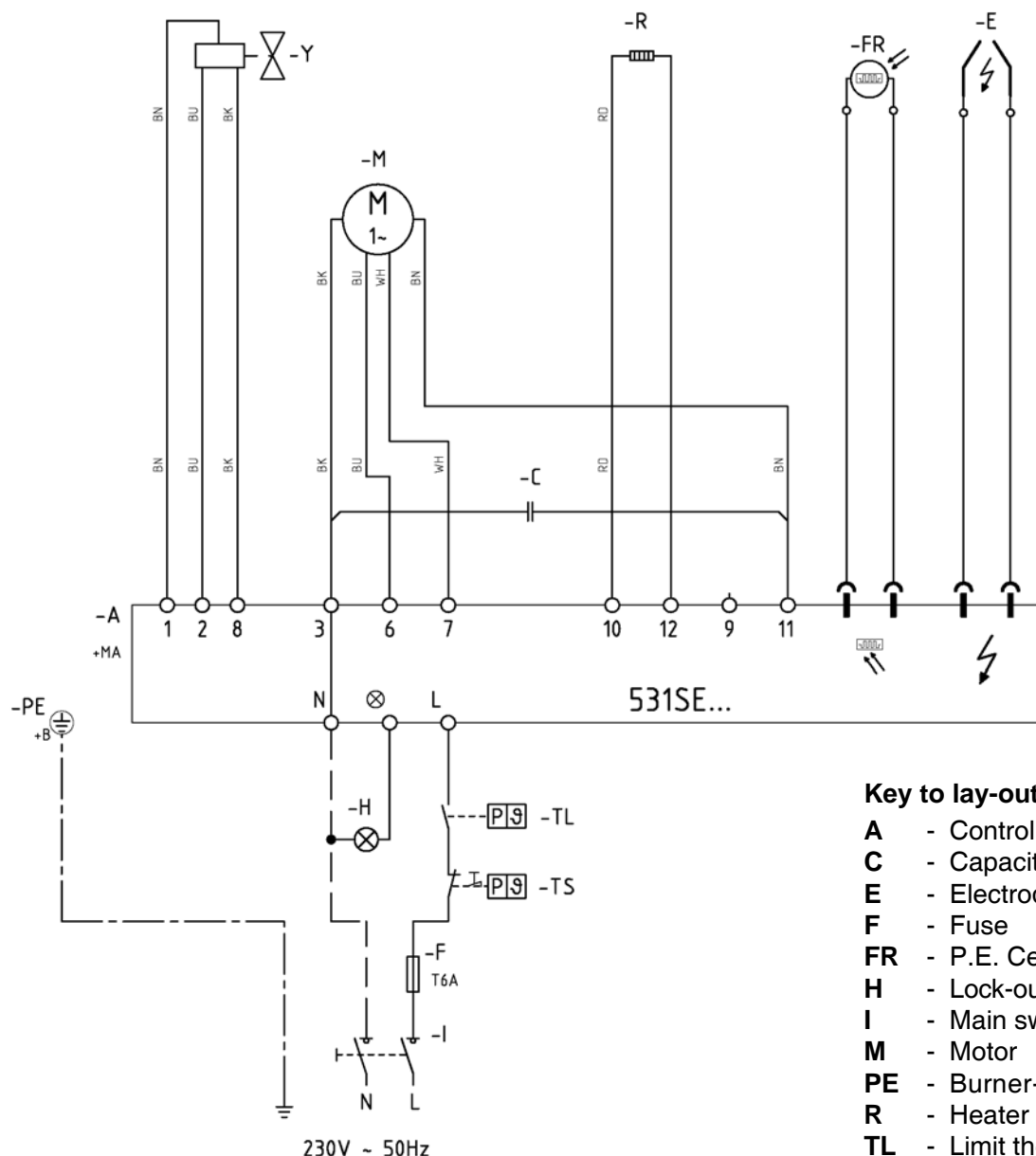
This solution however is less safe than previous one, due to the possibility of leakage of the valve.

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.

A filter must be installed on the suction fuel line.

ELECTRICAL WIRING



Key to lay-out

- A** - Control box 531SE
- C** - Capacitor
- E** - Electrode
- F** - Fuse
- FR** - P.E. Cell
- H** - Lock-out signal
- I** - Main switch
- M** - Motor
- PE** - Burner-earth
- R** - Heater
- TL** - Limit thermostat
- TS** - Safety thermostat
- Y** - Oil valve

ATTENTION:

- 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 1mm². (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.

CONTROL BOX, (see fig. 4)

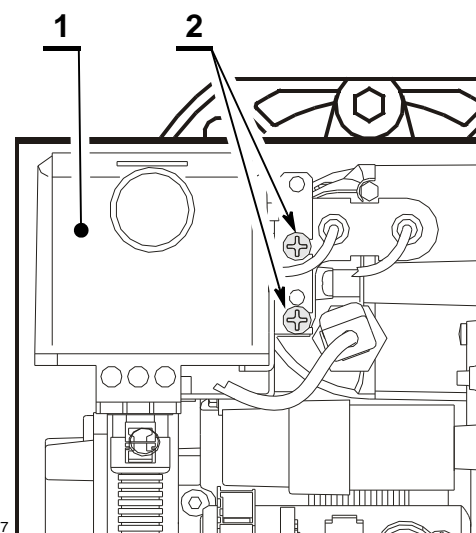
To remove the control box (1) from the burner:

- Unscrew the fissing screws on the burner cover and remove it.
- Unscrew the fissing screws (2) on the plate and remove the control box (1).
- Screw the two fissing screws (2) and reassemble the burner cover.
- Fix the control box (1) with plate far from the burner.

TESTING

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

Fig. 4



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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, fit the nozzle then adjust the pump pressure, the setting of the combustion head and the air damper opening in accordance with the following table.

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.

Nozzle		Pump pressure	Burner output	Comb. head adjustment	Air damper adjustment
1		2		3	4
GPH	Angle	bar	kg/h ± 4%	Set-point	Set-point
0.60	60°/80°	11	2.3	1.5	2
0.65	60°/80°	12	2.6	2	2.2
0.75	60°	12	3.0	2.5	2.5
0.85	60°	12	3.4	3	3
1.00	60°	12	4.0	4	4.5
1.10	60°	12	4.4	5	6
1.25	60°	12	5.0	6	7
SETTINGS CARRIED OUT IN THE FACTORY					
0.75	60° S	12	3.0	2.5	2.5

- 1 RECOMMENDED NOZZLES:** Monarch type R - NS; Delavan type W - A - E;
Steinen type H - Q; Danfoss type H.
- Angle:** 60° : in most cases.
80° : in case of flame detachment, during ignitions at low temperatures.

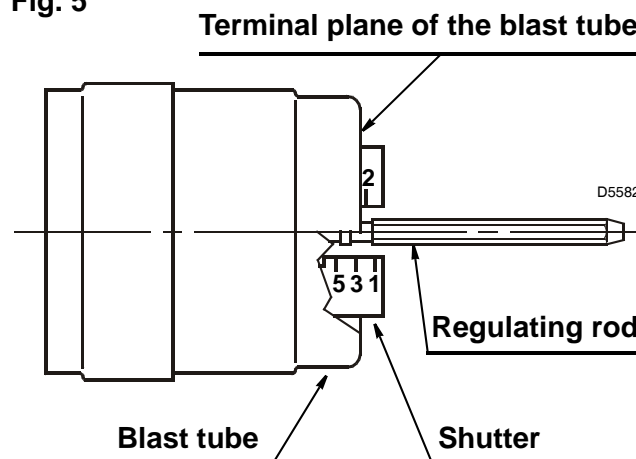
- 2 PUMP PRESSURE** 12 bar : the pump leaves the factory set at this value
14 bar : improves flame retention; it is therefore suitable for ignitions at low temperatures.

3 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 table.

In the figure 5, the combustion head is set for an output of 0.75 GPH at 12 bar, while the shutter is level with set-point 2.5, as required by the above table.

Fig. 5



Combustion head settings indicated in the table 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 (fig. 6), 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 CO₂ 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 CO₂ 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.

Fig. 6

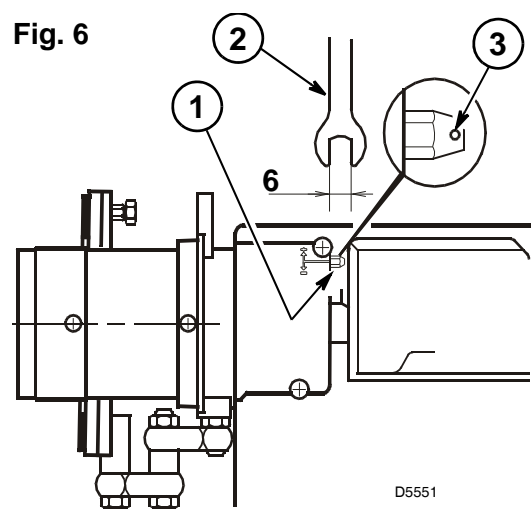
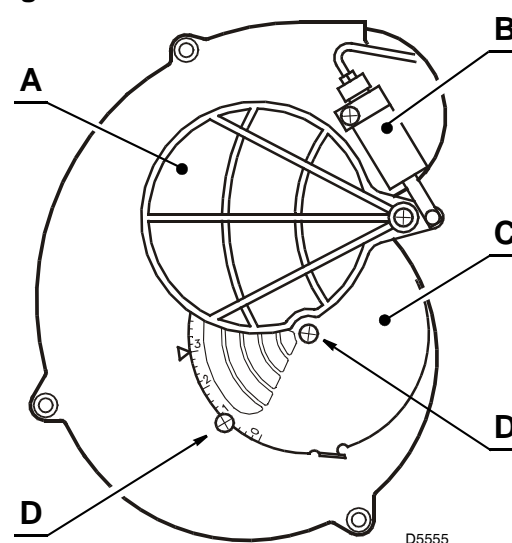


Fig. 7



4 AIR DAMPER ADJUSTMENT, (fig. 7)

The mobile air damper (A) operated by the jack (B) assures the complete opening of the air intake.

The regulation of the air-rate is made by adjusting the fixed air damper (C), after loosening the screws (D).

When the optimal regulation is reached, **screw tight the screws (D)** to assure a free movement of the mobile air damper (A).

The settings indicated in the table 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 table;
- 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.

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 gas 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 inserted and locks-out on the shut-down of the burner.

Attention


Should you want to cut off the electric resistance (on setting the burner or when the ambient temperature does not require it, etc. . .), take the plug off the panel of the control box and plug it into the “**Resistance OFF**”  (see fig. 8). In this case the burner starts up when the thermostats close.

NOTE


The warning light (**LED**) is **ON** but when the resistance works. It is **OFF** when the resistance is disconnected or broken.

FAILURE DETECTION ON HEATING DEVICE - Only for type 447T1

NORMAL OPERATION

The plug fitted in the panel is placed in the position corresponding to “**Resistance ON**”  (see fig. 8). When the remote control closes, the **LED** lights up and, after about two minutes, the burner starts up.

BURNER DOES NOT OPERATE

- 1) If the **LED** is **OFF**, the heating resistance placed in the nozzle-holder is off.
- 2) If the **LED** is **ON** and nevertheless the burner does not run, place the plug in the position corresponding to “**Resistance OFF**”  (see fig. 9). If the motor runs, the delaying device inside the control box is out of order.
- 3) If the motor does not run, it means that the failure is neither in the panel nor in the resistance, but elsewhere.

ELECTRODE SETTING, (see fig. 10)

IMPORTANT:
THESE DIMENSIONS MUST BE OBSERVED

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

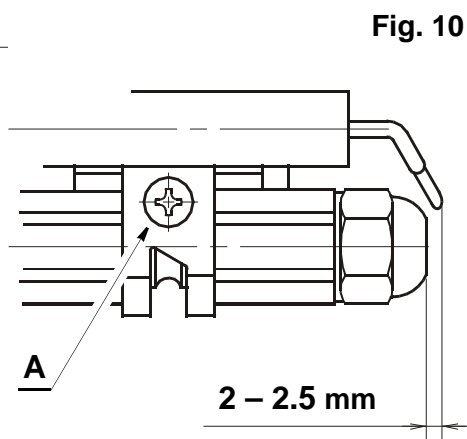
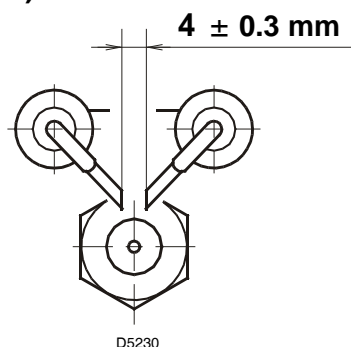


Fig. 8

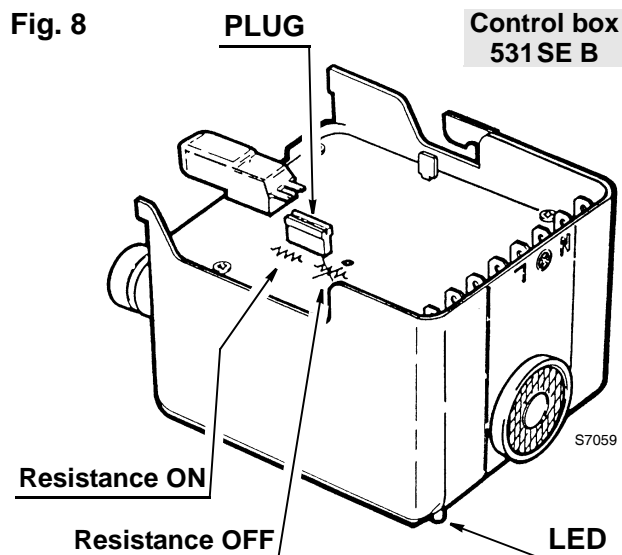
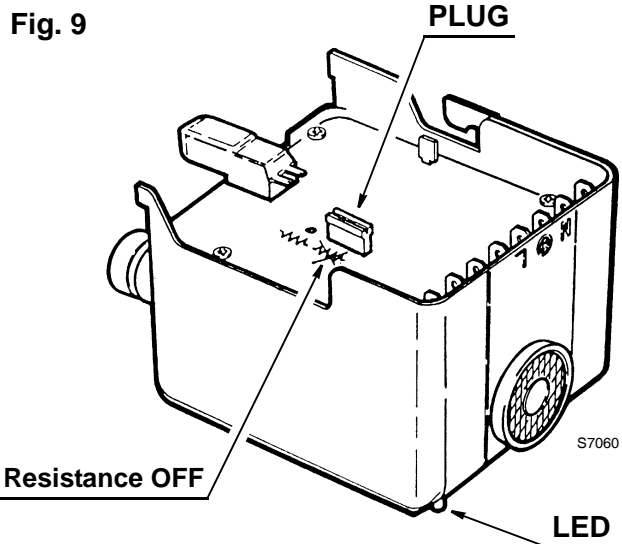
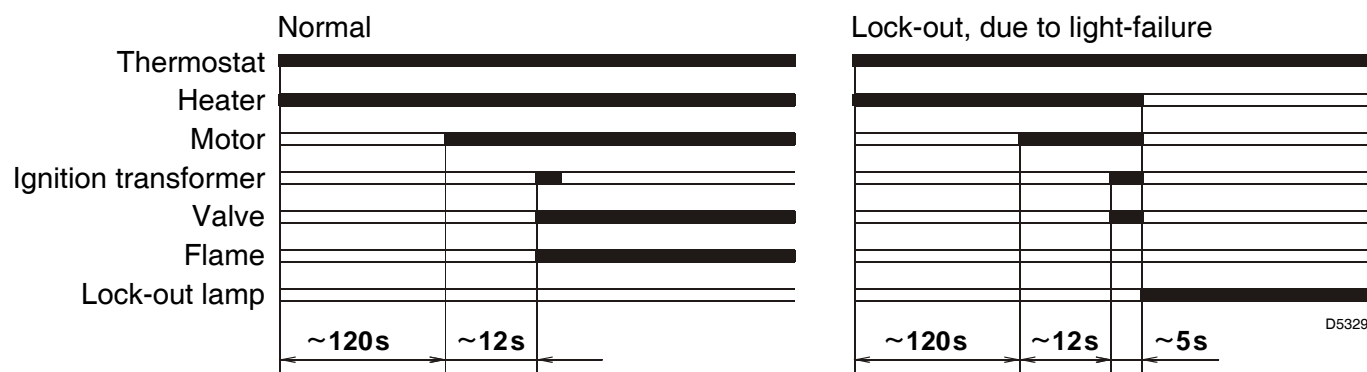


Fig. 9



BURNER START-UP CYCLE



WARNINGS TO AVOID BURNOUT OR BAD COMBUSTION OF THE BURNER

- When the burner is stopped, the smoke pipe must be opened and effect a natural draught in the combustion chamber. If the smoke pipe is closed, the burner must be drawn back till the extraction of blast tube from the furnace. Before operating in this way take the voltage off.
- The place, where the burner works, must have same openings suitable for the passage of air necessary for combustion. To be sure about this, you have to control the smoke number of exhaust gas with all the windows and doors closed.
- If in the place, where the burner works, there are air-breathings, check the existence of air-input openings with dimensions suitable for the necessary air-exchange. In any case check that, when the burner is stopped, the air-breathings do not draw warm smokes from pipes through the burner.

MAINTENANCE

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

Periodic 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 there are no occlusions or obstructions in the inlet or return pipes, in the air suction areas and in the combustion product waste pipe.
- Clean the filter in the oil suction line and in the pump.
- Check for correct fuel consumption.
- Check that the burner electrical connections are correct.
- Replace the nozzle and check the correct position of electrodes.
- Clean the combustion head in the fuel exit area.
- Check that the positioning of the combustion head is correct and that it is properly fixed to the boiler.
- Check that the air damper is positioned correctly.

Let the burner run at full capacity for about ten minutes, setting all the elements correctly as explained in this manual. **Then carry out the analysis of the combustion by checking:**

- | | | |
|---|-------------------------------------|---------------------|
| - Smoke index as per the Bacharach scale; | - CO ₂ percentage (%); | - CO content (ppm); |
| - NOx content (ppm); | - Smoke temperature at the chimney. | |

说明书的相关信息

引言

- 说明书随燃烧器一起提供：
- 它是产品不可或缺的组成部分，不得将其与产品分离；因此必须小心保存以便查阅，如果将燃烧器转给另一个用户或转移至另一个系统，则说明书必须跟随燃烧器一起转移。如果说明书损坏或丢失，则必须从您就近的 **RIELLO** Technical Assistance Centre（技术支持中心）索取说明书的复印件；
 - 说明书只能由有资格的人员使用；
 - 说明书提供了有关燃烧器安装、启动、使用和维护的重要指示和安全警告。

系统和说明书的交付

- 一旦交付系统：
- 系统制造商也必须将说明书交付给用户，并建议其将说明书保存在热发生器的安装区域附近。
 - 说明书上显示：
 - 燃烧器的序列号：

.....
 - 最近 Assistance Centre（支持中心）的地址和电话号码：

.....

.....

.....
 - 系统制造商必须告知用户有关以下内容的准确信息：
 - 系统的使用；
 - 启动系统前需要进行的测试；
 - 必需的维护和检查（每年必须由制造商代表或别的专业技术人员至少检查系统一次）。
- 要保证定期检查，**RIELLO** 建议遵照 Maintenance Contract（维护合同）的规定。

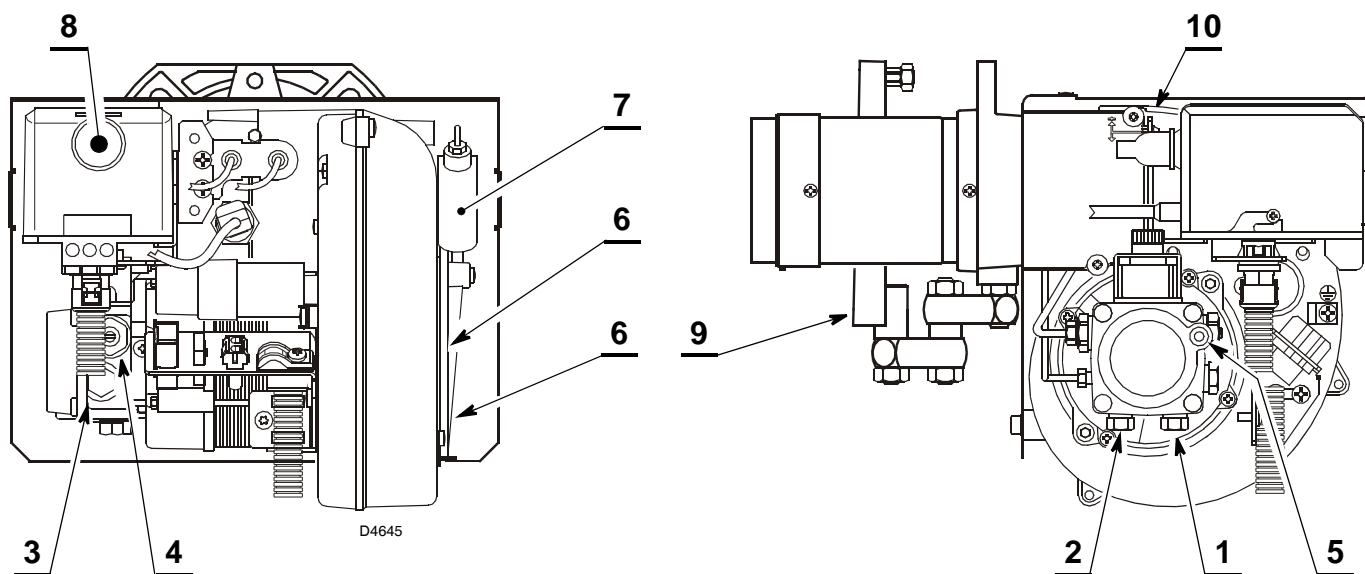
技术参数

型号	447T1
燃烧器出力	28 – 60 kW – 2.3 – 5 kg/h
燃料	轻油，20 °C 时的最大黏度 :4- 6 mm ² /s (1.5°E) ($H_i = 11.86 \text{ kWh/kg}$)
电源	单相，230V \pm 10% ~ 50Hz
电机	运行电流 0.75 A – 2800 rpm – 294 rad/s
电容	4 μ F
点火变压器	次级 8 kV – 16 mA
油泵	压力：7 – 15 bar
耗电量	0.185 kW

燃烧器说明

- 带 CE 标志的燃烧器满足如下 EEC 指令：EMC 2004/108/EC，低压 2006/95/EC，机械 2006/42/EC。
- 燃烧器符合 EN 60529 标准的 IP 40 保护等级。

图 . 1



- 1 – 回油管
- 2 – 进油管
- 3 – 压力表接口
- 4 – 油压调压器
- 5 – 真空表接口接口

- 6 – 固定风门挡板的螺栓
- 7 – 控制风门挡板的液压装置
- 8 – 复位按钮和锁定指示灯
- 9 – 法兰和隔热垫
- 10 – 燃烧头调整螺栓

液压千斤顶运作方式 7) (图 1)



强烈建议周期性地检查泵压力是否正常运作（每年一次，或者在燃烧器不断运行的情况下，建议检查的时间为六个月一次）。

如果压力值比初始设定值小 1 巴，检查泵和线路中的过滤器是否干净。

如果压力无法复位，请更换泵以便保证预吹扫过程中，压力至少为 3.7 巴。

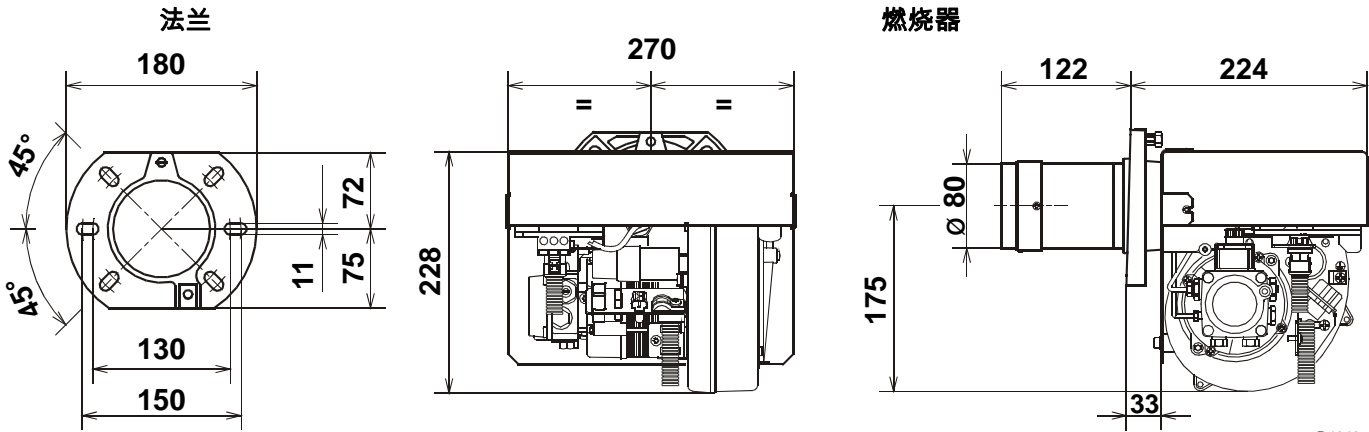
燃烧器附件

带接头的软油管	2 根	盖	1 个
螺栓并带 2 个螺帽	4 套	铰链	1 副
螺栓并带 2 个螺帽	1 套	隔热垫	3 个

负荷图



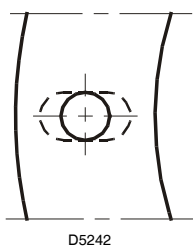
外观尺寸



安装燃烧器

在燃烧器法兰和锅炉炉门之间必须安装隔热垫 (9, 图 . 1)。

隔热垫有 6 个孔, 如有必要可按右图图示调节这 6 个孔。



检查安装好的燃烧器, 确保燃烧器如图示略微倾斜 (图 . 2)。

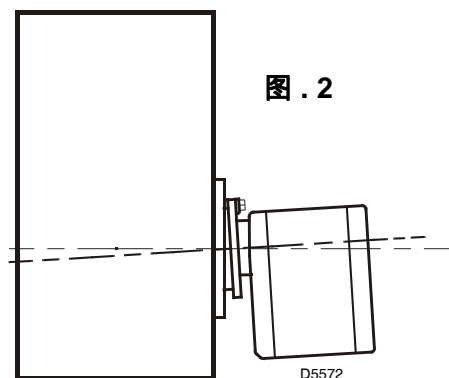
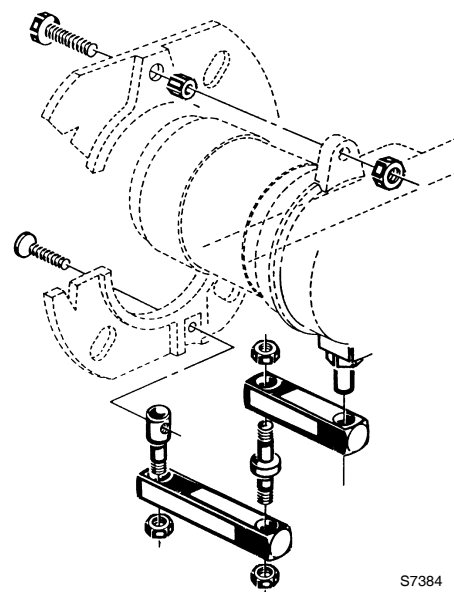


图 . 2

燃烧器固定和铰链组件

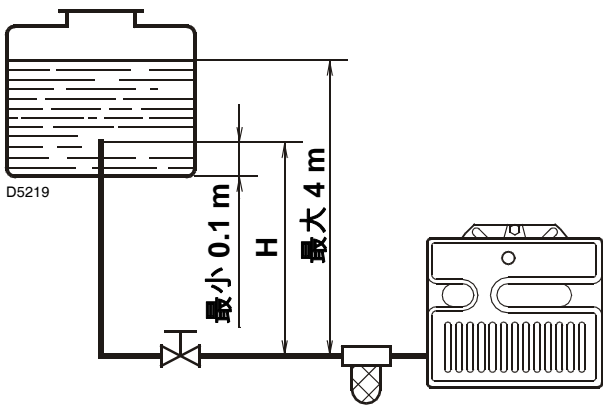


油路系统

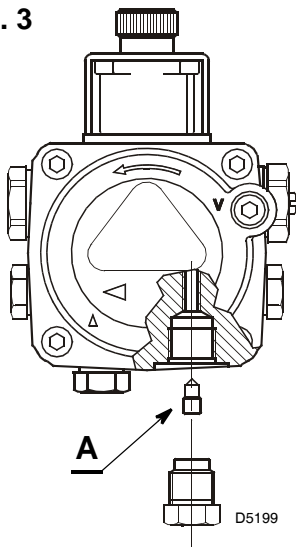
警告： 启动燃烧器前确保回油管路畅通：
回油管路堵塞可能造成油泵密封损坏。

警告
油泵用于双油管系统。如要单油管运行，必须拆卸掉旁路螺栓 (A，图 . 3)。

图 . 3



H 米	L 米	
	内径 8 mm	内径 10 mm
0.5	10	20
1	20	40
1.5	40	80
2	60	100

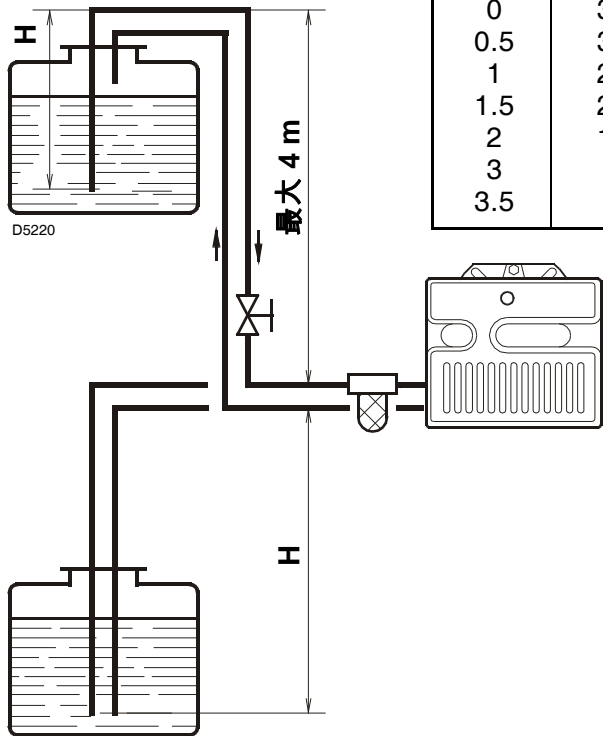


油泵首次启动

松开真空表接口上的螺栓 (5, 图 . 1, 第 1 页) 直到有油溢出。

H = 液面高度差。
L = 进油管最大长度。
I.D.= 油管内径。

H 米	L 米	
	内径 8 mm	内径 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



油泵真空度不能超过 0.4 bar (30 cm Hg)。超过此限值会导致油气分离。油管路必须密封不透气。

回油管必须插进油箱油面下，末端和进油管在同一水平面上。这种情况下可以不安装止回阀。

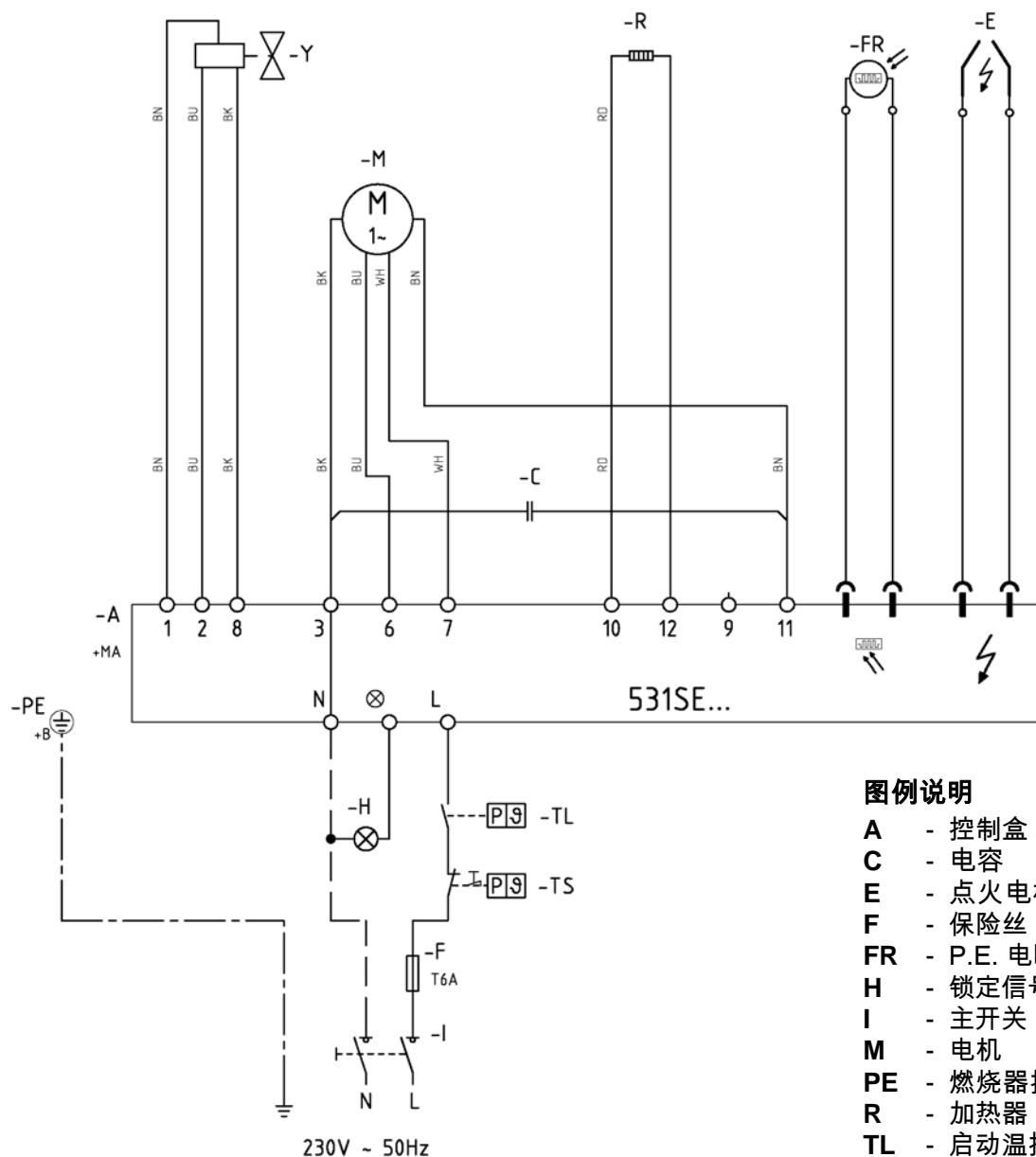
回油管末端高出油面时，必须安装止回阀。这种方法不如前一种安全，因为止回阀存在泄漏的可能。

油泵注油

启动燃烧器等待油泵注油。如果油注入油泵前发生锁定，至少等待 20 秒后再重复此操作。

进油管上必须安装过滤器。

电气接线图



图例说明

- A - 控制盒 531SE
- C - 电容
- E - 点火电极
- F - 保险丝
- FR - P.E. 电眼
- H - 锁定信号
- I - 主开关
- M - 电机
- PE - 燃烧器接地
- R - 加热器
- TL - 启动温控开关
- TS - 安全温控开关
- Y - 油阀

注意：

- 不要把火险和零线接反，按图仔细接线并保证接地良好。
- 使用横截面面积不小于 1mm² 的电缆。(除非根据本地法规或标准有其它要求)。
- 电气接线必须由有资格人员执行，必须遵守本国现行的法规和规范。

控制盒，(见图 . 4)

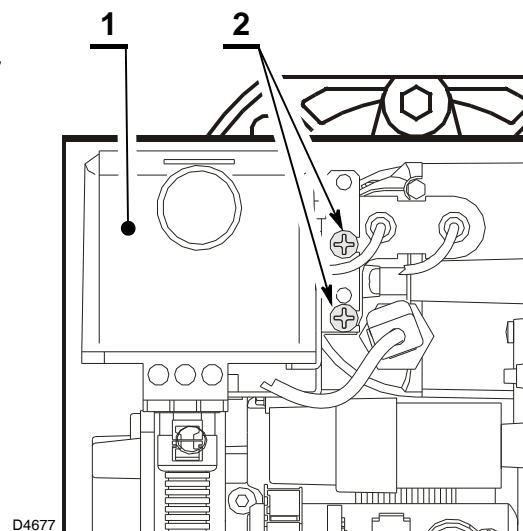
按如下步骤从燃烧器上拆卸控制盒 (1)：

- 松开燃烧器盖上的固定螺栓并拆下盖子。
- 松开固定控制盒的固定螺栓 (2) 并拆下控制盒 (1)。
- 拧紧两颗固定螺栓 (2) 并装回燃烧器机盖。
- 从燃烧器侧装回控制盒 (1)。

测试

断开温控开关检查燃烧器是否停机。

图 . 4



D4677

燃烧调整

根据效率指令 92/42/EEC 对于使用在锅炉上的燃烧器，调整和测试必须根据锅炉的使用说明书来执行，包括检验烟气中 CO 和 CO₂ 的含量，烟气温度和锅炉内热水的平均温度。

为使燃烧器达到额定的出力，首先安装好合适的喷嘴，然后根据下表对燃烧头的位置和风门挡板开度进行设置。

下表中的值在 CEN 锅炉上测试得到 (根据欧盟燃油燃烧器 EN 267 标准)。
测试条件为 CO₂ 浓度为 12.5%，海平面高度，轻油，室温 20°C。

喷嘴		油泵压力	燃烧器出力	燃烧头调整	风门挡板调整
1		2		3	4
GPH	雾化角	bar	kg/h ± 4%	设置点	设置点
0.60	60°/80°	11	2.3	1.5	2
0.65	60°/80°	12	2.6	2	2.2
0.75	60°	12	3.0	2.5	2.5
0.85	60°	12	3.4	3	3
1.00	60°	12	4.0	4	4.5
1.10	60°	12	4.4	5	6
1.25	60°	12	5.0	6	7
出厂设置值					
0.75	60° S	12	3.0	2.5	2.5

- 1

推荐的喷嘴

: Monarch R - NS 型 ;
Steinen H - Q 型 ;

Delavan W - A - E 型 ;
Danfoss H 型。
- 雾化角 :

60° : 适应于多数情况。
80° : 适应于火焰分离，或低温点火情况。

- 2

油泵压力

12 bar : 出厂时的设置值。
14 bar : 提高火焰稳定性；也适应于低温点火情况。

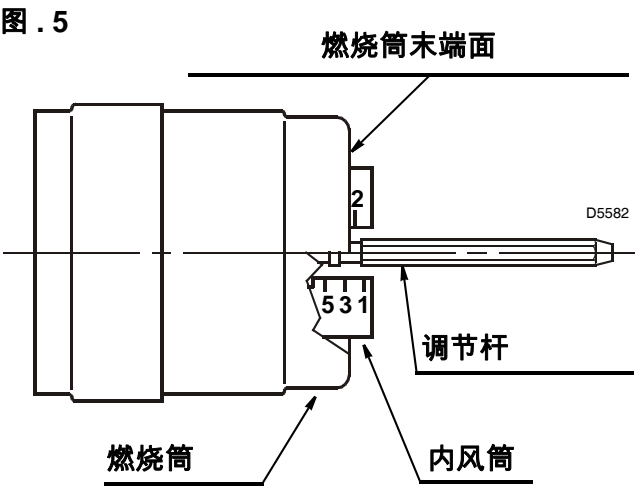
- 3

燃烧头的设置 :

安装喷嘴时设置，先拆下燃烧筒。

根据燃烧器最大出力来设置(如上表所示)，通过旋转调节杆来设置，直到燃烧筒的端面与设定 值刻度对齐。

图 5 中，燃烧头为 12bar 时 0.75 GPH 的出力而设置，按上表要求，此时内风筒应设置在 2.5。



上表所示燃烧头的设置针对多数情况有效。
通常只能通过风门挡板来调节风量大小。如果在燃烧头安装好后在燃烧器运行中还想调整燃烧头(图. 6)的设置,用6mm的扳手(2)来旋转调节杆(1),具体操作如下:

向右旋转:(标记+的方向)

可以增加进入燃烧室的助燃空气量,减小风压。烟气中CO₂含量减小并改善燃烧状况。
(本设置适用于较低温度点火)。

向左旋转:(标记-的方向)

可以减少进入燃烧室的助燃空气量,增加风压。烟气中CO₂含量增加但火焰贴盘现象减少。

(本设置不适用于较低温度点火)。
设置燃烧头时,实际设定值不要偏离上表中给出的参考值太大(不要超过一个刻度)。调节杆旋转3圈相当于调节1个刻度;调节杆末端的孔(3)可以帮助识别旋转圈数。

4 风门挡板调整,(图. 7)

活动风门挡板(A)被液压装置(B)带动确保进风口全开。

风量的调节是通过固定风门挡板(C)的调节来实现,松开螺栓(D),达到设置值后,拧紧螺栓(D)保证活动风门挡板(A)能自由活动。

上表中的设定值的参考条件是:
燃烧器外盖安装并且炉膛背压为“0”。这些规则仅供参考。
对于每个具体的燃烧器,由于具有各不相同的工作条件:
实际的喷嘴流量;炉膛内的正或负的风压,
以及不同的过量空气系数等等。从而对风门挡板的设置要求不同。

安装或不安装燃烧器的外盖,实际的风量会大不相同,认识到这点很重要。

因此建议按如下操作:

- 按照上表中设置风门挡板位置;
- 盖上外盖,只是简单拧上上面的螺栓;
- 检查烟气等级;

如果需要改变风量大小,先松开螺栓拆下外盖,调整风门挡板,然后重新盖上外盖后再检查烟气等级。直到烟气合格。

图. 6

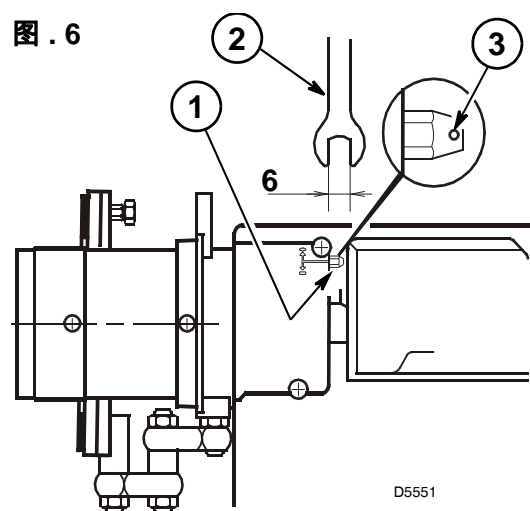
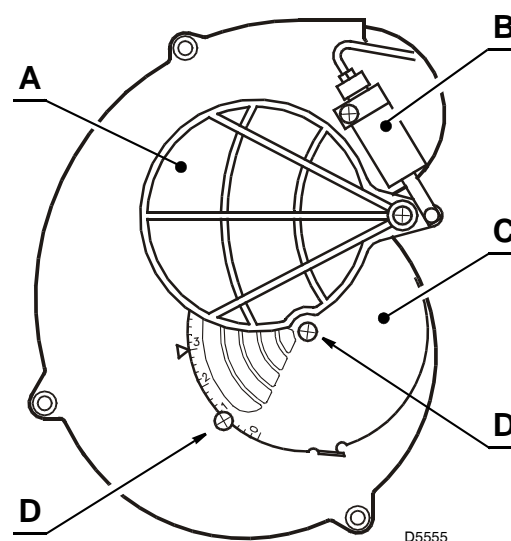



图. 7



燃料加热

为了保证燃烧器能顺利启动和整个出力范围内稳定运行，燃烧器配置了加热器，以便加热喷嘴座中的燃油。得到加热指令后电阻器通电加热，大约 2 分钟后（根据室温情况略有不同），风机电机开始转动。燃烧器停机状态下，加热电器处于嵌入和锁定状态。

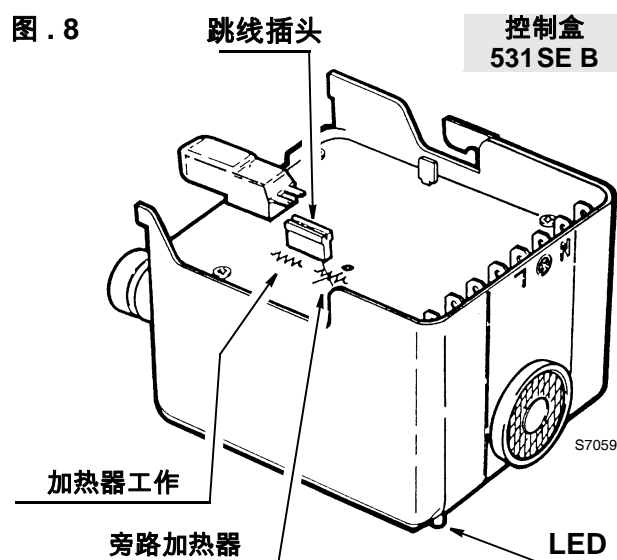
注意：

如果你想旁路该加热器（根据燃烧器设定或因为环境温度已经合适不需再加热，等等...），只需从控制盒上拔下跳线插头然后插到 “Resistance OFF” （加热器旁路）（见图 .8）。此时一旦温控开关闭合燃烧器立即启动。

注意：


加热器工作时，报警指示灯 (LED) 会亮。电阻丝旁路或损坏时指示灯不亮。

图 . 8



加热器故障检测 - 仅对 447T1 型号有效

正常运行

跳线插头插在 “Resistance ON”  位置（见图 .8）。得到启动指令后，LED 指示灯亮，大约两分钟后燃烧器启动。

燃烧器不运行


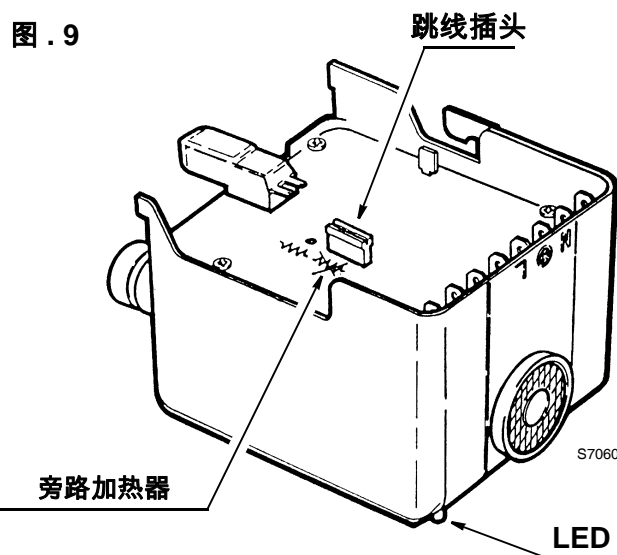
- 1) 如果 LED 指示灯不亮，喷嘴座中的加热电阻丝可能损坏。
- 2) 如果 LED 指示灯亮但是燃烧器不运行，将跳线插头插到旁路位置 “Resistance OFF” （见图 .9）。如果电机启动，表明控制盒中的延时装置损坏。
- 3) 如果电机不转动，那么故障既不在于控制盒，也不在加热器，而需要从其它方面找原因了。

图 . 9



电极调整, (见图 . 10)

重要：

这些尺寸必须得到满足。

拆卸或安装喷嘴时，必须松开螺栓 (A) 并拆卸点火电极头部。

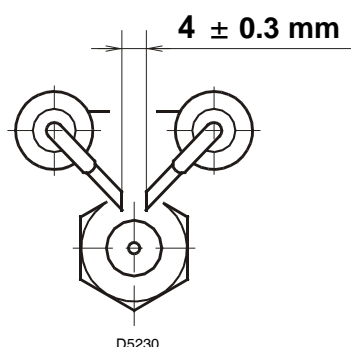
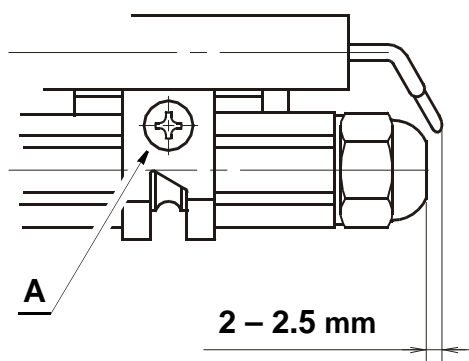
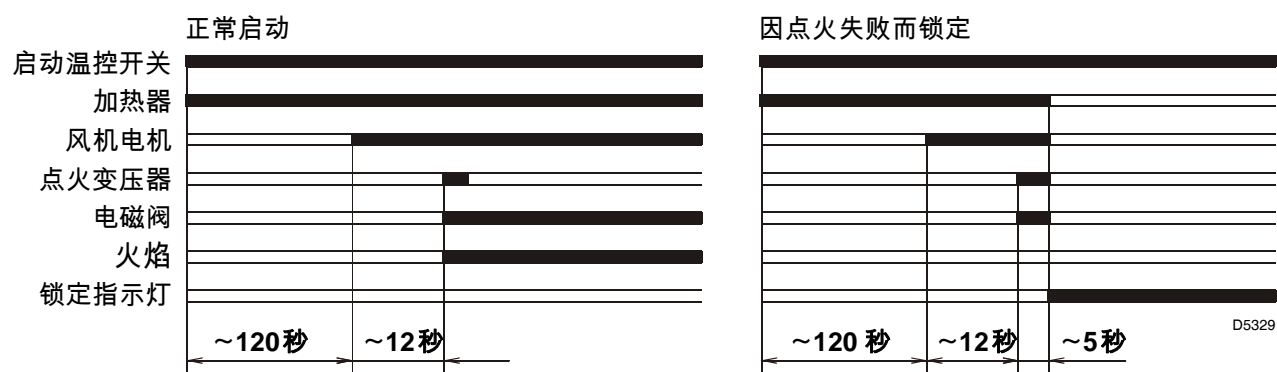


图 . 10



燃烧器启动周期



怎样避免燃烧器的损坏和燃烧效果变坏

- 燃烧器停机时，烟道必须畅通保证炉膛自然通风。如果烟道关闭了，燃烧器必须从炉膛里面退出来，退出来之前必须断电。
- 燃烧器安装和工作的场所，必须有足够的通风面积来保证燃烧所需的通风量。为了检验这一点，在门窗全部关闭的情况下检验烟气等级确保烟气合格。
- 如果在燃烧器工作的场所，有引风机的话，检查进风口的面积是否满足通风量的需要。不管如何检查，燃烧器停机时不要开引风机将炉膛中的烟气抽走造成热量损失。

维护

燃烧器必须定期维护，维护人员必须是有资格的并 通过相关法规和本地标准认证的人员。

定期维护可以保证燃烧器的可靠性，避免燃料浪费和污染物排放的增加。

清洁燃烧器前，切断燃烧器的主电源开关。

基本检查项目：

- 检查进油管和回油管，进风口和排烟口均没有遮挡或堵塞。
- 清洁油泵和进油管路上的过滤器。
- 检查燃料消耗是否正确。
- 检查燃烧器的电气接线是否正确。
- 更换喷嘴并检查点火电极位置是否正确。
- 清洁燃烧头。
- 检查燃烧头的位置是否正确，安装是否牢固。
- 检查风门挡板位置是否正确。

按本手册正确设定好燃烧器，让燃烧器在最大出力下运行十分钟。然后用烟气分析仪测量烟气：

- | | | |
|-----------------------------|-----------------------------|----------------|
| - 烟气黑度； | - CO ₂ 百分含量 (%)； | - CO 含量 (ppm)； |
| - NO _x 含量 (ppm)； | - 烟气温度。 | |



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