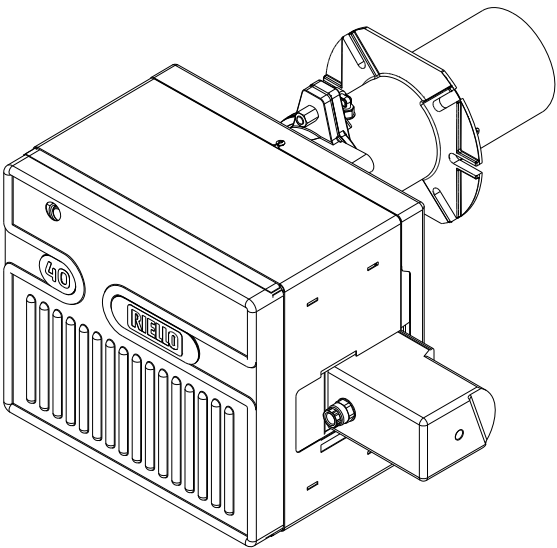


GB Forced draught gas burners

Two stage progressive or modulating operation



CODE	MODEL	TYPE
3755556	R40 GS10/M	729T50
3755756	R40 GS20/M	730T50



Translation of the original instructions

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1 Information and general warnings

1.1 Information about the instruction manual

1.1.1 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 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.

Symbols used in the manual

In some parts of the manual you will see triangular DANGER signs. Pay great attention to these, as they indicate a situation of potential danger.

1.1.2 General dangers

The **dangers** can be of **3 levels**, as indicated below.



Maximum danger level!

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



This symbol indicates operations which, if not carried out correctly, may cause serious injury, death or long-term health risks.



This symbol indicates operations which, if not carried out correctly, may cause damage to the machine and/or injury to people.

1.1.3 Other symbols



DANGER: LIVE COMPONENTS

This symbol indicates operations which, if not carried out correctly, lead to electric shocks with lethal consequences.



DANGER: FLAMMABLE MATERIAL

This symbol indicates the presence of flammable materials.



DANGER: BURNING

This symbol indicates the risks of burns due to high temperatures.



DANGER: CRUSHING OF LIMBS

This symbol indicates the presence of moving parts: danger of crushing of limbs.



WARNING: MOVING PARTS

This symbol indicates that you must keep limbs away from moving mechanical parts; danger of crushing.



DANGER: EXPLOSION

This symbol signals places where an explosive atmosphere may be present. An explosive atmosphere is defined as a mixture - under atmospheric conditions - of air and flammable substances in the form of gases, vapours, mist or dust in which, after ignition has occurred, combustion spreads to the entire unburned mixture.



PERSONAL PROTECTION EQUIPMENT

These symbols indicate the equipment that must be worn and kept by the operator for protection against threats against safety and/or health while at work.



OBLIGATION TO ASSEMBLE THE COVER AND ALL THE SAFETY AND PROTECTION DEVICES

This symbol signals the obligation to reassemble the cover and all the safety and protection devices of the burner after any maintenance, cleaning or checking operations.



ENVIRONMENTAL PROTECTION

This symbol gives indications for the use of the machine with respect for the environment.



IMPORTANT INFORMATION

This symbol indicates important information that you must bear in mind.



This symbol indicates a list.

Abbreviations used

Ch.	Chapter
Fig.	Figure
Pag.	Page
Sec.	Section
Tab.	Table

1.1.4 Delivery of the system and the instruction manual

When the system is delivered, it is important that:

- the instruction manual is delivered 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 must carefully inform the user about:
 - the use of the system;
 - any further tests that may be required before activating the system;
 - maintenance, and the need to have the system checked at least once a year by a representative of the manufacturer or another specialised technician. To ensure a periodic check, the manufacturer recommends the drawing up of a Maintenance Contract.

1.2 Guarantee and responsibility

The manufacturer guarantees its new products from the date of installation, in accordance with the regulations in force and/or the sales contract. At the moment of the first start-up, check that the burner is integral and complete.



ATTENTION

Failure to observe the information given in this manual, operating negligence, incorrect installation and carrying out of non authorised modifications will result in the annulment by the manufacturer of the guarantee that it supplies with the burner.

In particular, the rights to the guarantee and the responsibility will no longer be valid, in the event of damage to things or injury to people, if such damage/injury was due to any of the following causes:

- incorrect installation, start-up, use and maintenance of the burner;
- improper, incorrect or unreasonable use of the burner;
- intervention of unqualified personnel;
- carrying out of unauthorised modifications on the equipment;
- use of the burner with safety devices that are faulty, incorrectly applied and/or not working;
- installation of untested supplementary components on the burner;
- powering of the burner with unsuitable fuels;
- faults in the fuel supply system;
- continuation of use of the burner when a fault has occurred;
- repairs and/or overhauls incorrectly carried out;
- modification of the combustion chamber with inserts that prevent the regular development of the structurally established flame;
- insufficient and inappropriate surveillance and care of those burner components most likely to be subject to wear and tear;
- use of non-original components, including spare parts, kits, accessories and optional;
- force majeure.

The manufacturer furthermore declines any and every responsibility for the failure to observe the contents of this manual.

2 Safety and prevention

2.1 Introduction

The burners have been designed and built in compliance with current regulations and directives, applying the known technical rules of safety and envisaging all the potential danger situations.

It is necessary, however, to bear in mind that the imprudent and clumsy use of the equipment may lead to situations of death risk for the user or third parties, as well as the damaging of the burner or other items. Inattention, thoughtlessness and excessive confidence often cause accidents; the same applies to tiredness and sleepiness.

It is a good idea to remember the following:

- The burner must only be used as expressly described. Any other use should be considered improper and therefore dangerous.

In particular:

it can be applied to boilers operating with water, steam, diathermic oil, and to other uses expressly foreseen by the manufacturer; the type and pressure of the fuel, the voltage and frequency of the electrical power supply, the minimum and maximum deliveries for which the burner has been regulated, the pressurisation of the combustion chamber, the dimensions of the combustion chamber and the room temperature must all be within the values indicated in the instruction manual.

- Modification of the burner to alter its performance and destinations is not allowed.
- The burner must be used in exemplary technical safety conditions. Any disturbances that could compromise safety must be quickly eliminated.
- Opening or tampering with the burner components is not allowed, apart from the parts requiring maintenance.
- Only those parts envisaged by the manufacturer can be replaced.



The manufacturer guarantees safety and proper functioning only if all burner components are intact and positioned correctly.

2.2 Personnel training

The user is the person, body or company that has acquired the machine and intends to use it for the specific purpose. He is responsible for the machine and for the training of the people working around it.

The user:

- undertakes to entrust the machine exclusively to suitably trained and qualified personnel;
- undertakes to inform his personnel in a suitable way about the application and observance of the safety instructions. With that aim, he undertakes to ensure that everyone knows the use and safety instructions for his own duties.
- Personnel must observe all the danger and caution indications shown on the machine.
- Personnel must not carry out, on their own initiative, operations or interventions that are not within their province.
- Personnel must inform their superiors of every problem or dangerous situation that may arise.
- The assembly of parts of other makes, or any modifications, can alter the characteristics of the machine and hence compromise operating safety. The manufacturer therefore declines any and every responsibility for any damage that may be caused by the use of non-original parts.

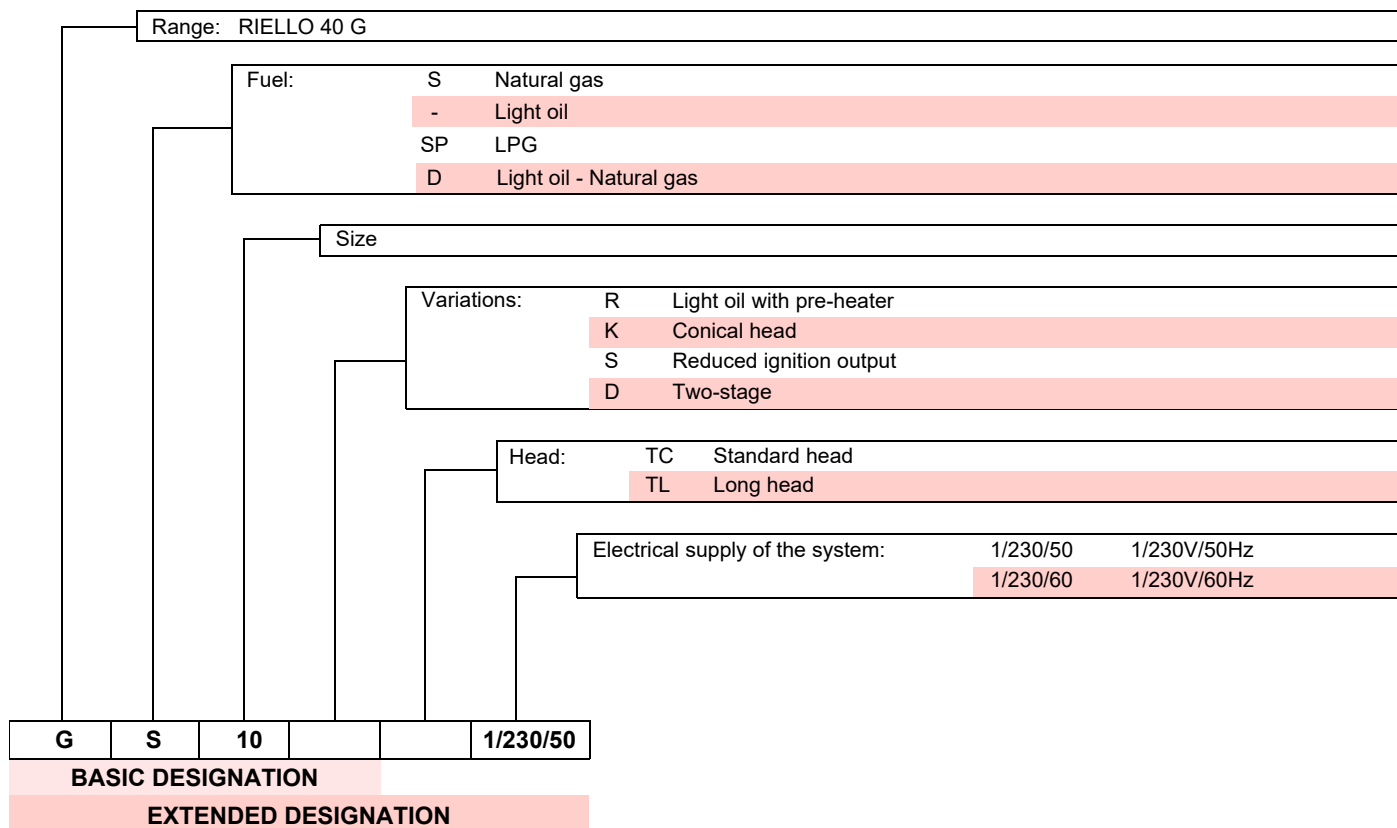
In addition:



- must take all the measures necessary to prevent unauthorised people gaining access to the machine;
- the user must inform the manufacturer if faults or malfunctioning of the accident prevention systems are noticed, along with any presumed danger situation;
- personnel must always use the personal protective equipment envisaged by legislation and follow the indications given in this manual.

3 Technical description of the burner

3.1 Burner designation



3.2 Models available

Designation	Voltage	Code
R40 GS10/M - HEATER	1/230/50	3755556
R40 GS20/M - HEATER	1/230/50	3755756

Tab. A

3.3 Burner categories - Countries of destination

Country of destination	Gas category
SE - FI - AT - GR - DK - ES - GB - IT - IE - PT - IS - CH - NO	I _{2H}
DE	I _{2ELL}
NL	I _{2L} - I _{2E} - I ₂ (43,46 ÷ 45,3 MJ/m ³ (0°C))
FR	I _{2Er}
BE	I _{2E(R)B}
LU - PL	I _{2E}

Tab. B

3.4 Technical data

Model			R40 GS10/M	R40 GS20/M
Type			729T50	730T50
Heat output (Hi) ⁽¹⁾	min - max	kW kcal/h	22/42 ÷ 105 18.900/36.100 ÷ 90.300	43/82 ÷ 194 37.000/70.520 ÷ 166.840
Fuel		Family 2	NCV 10 kWh/m ³	
			Pressure: min. 10 mbar – max. 360 mbar	
Operation			Intermittent (FS1)	
Use			Boilers: water and diathermic oil	
Ambient temperature		°C	0 - 50	
Combustion air temperature		°C max	60	
Weight		kg	16	17
Noise levels ⁽²⁾	Sound pressure	dB(A)	63	67
	Sound power		74	78
CE		N.	0476DR4272	

Tab. C

- (1) Reference conditions: Room temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m a.s.l.
 (2) Sound pressure measured in manufacturer's combustion laboratory, with burner operating on test boiler and at maximum rated output. The sound power is measured with the "Free Field" method, as per EN 15036, and according to an "Accuracy: Category 3" measuring accuracy, as set out in EN ISO 3746.

3.5 Electrical data

Model		R40 GS10/M	R40 GS20/M
Electrical supply		1/230V/50Hz	
Absorbed electrical power	kW	0.13	0.25
Protection level		IP40	

Tab. D

3.6 Maximum dimensions

The maximum dimensions of the flange and burner are given in Fig. 1 and Fig. 2.

R40 GS10/M

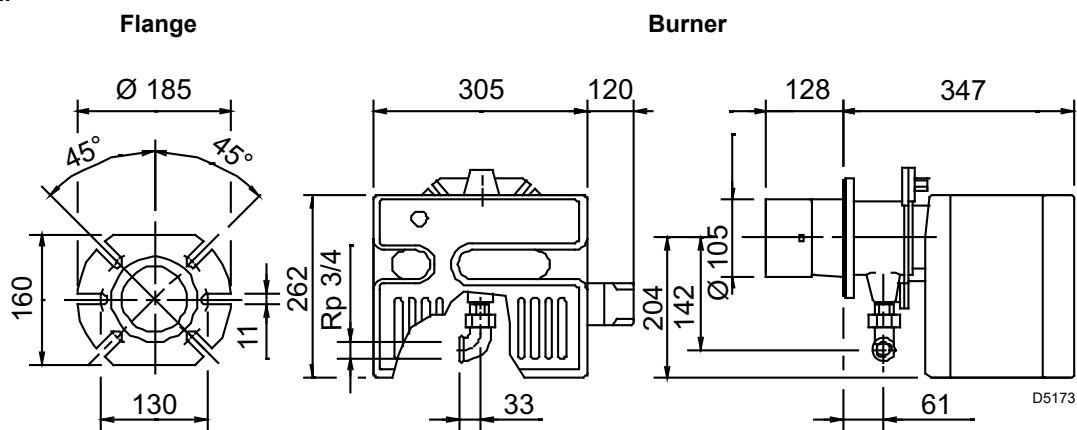


Fig. 1

R40 GS20/M

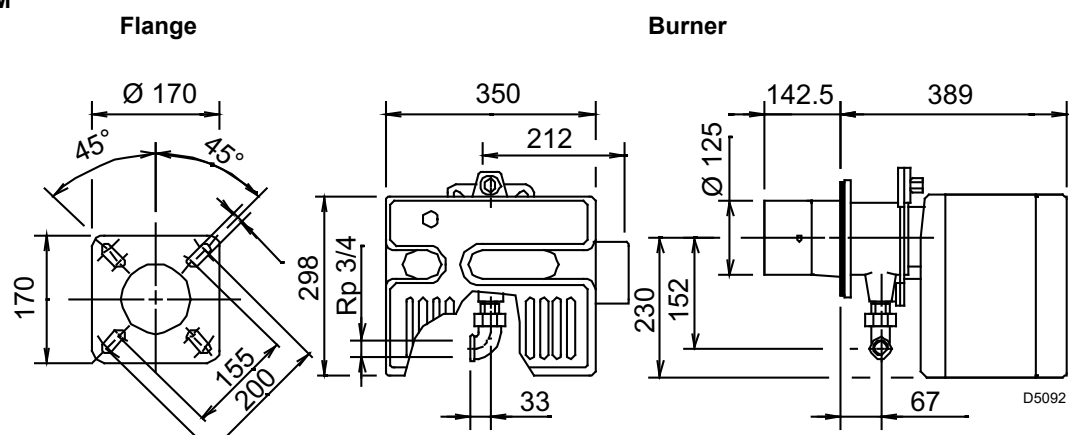


Fig. 2

3.7 Firing rate

The burner output is chosen from within the diagram area Fig. 3 and Fig. 4.



The firing rate value Fig. 3 and Fig. 4 has been obtained considering an ambient temperature of 20°C, an atmospheric pressure of 1013 mbar (approx. 0m above sea level), and with the combustion head adjusted as shown on page 17.

R40 GS10/M

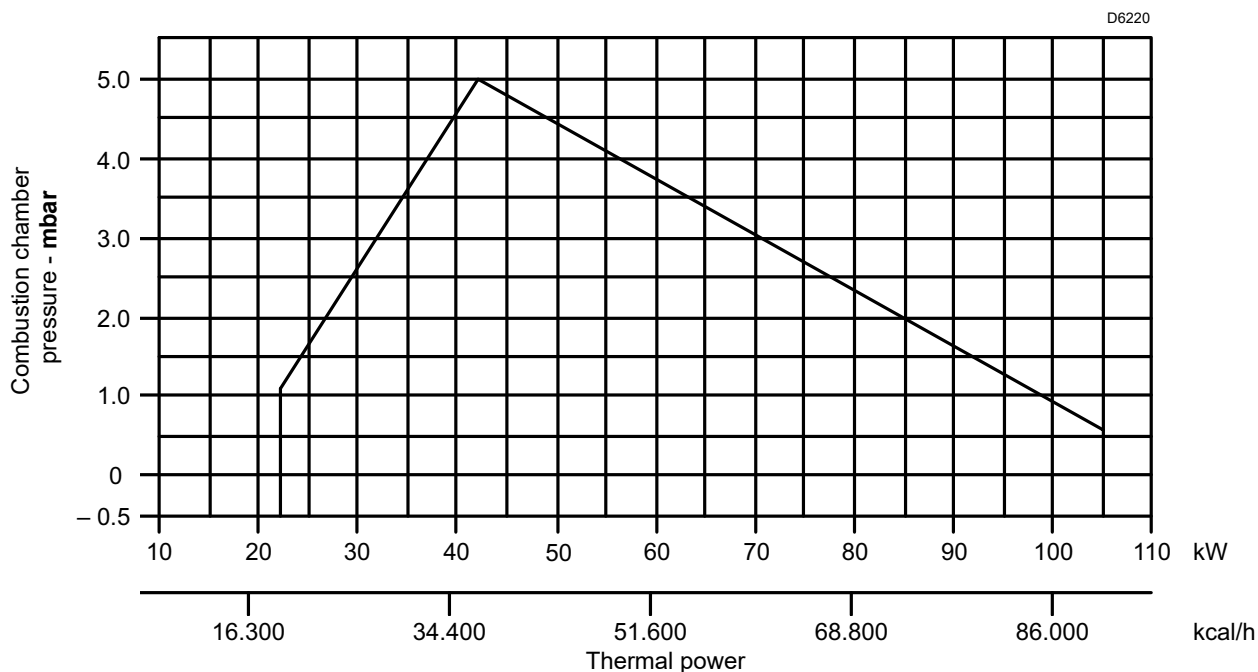


Fig. 3

R40 GS20/M

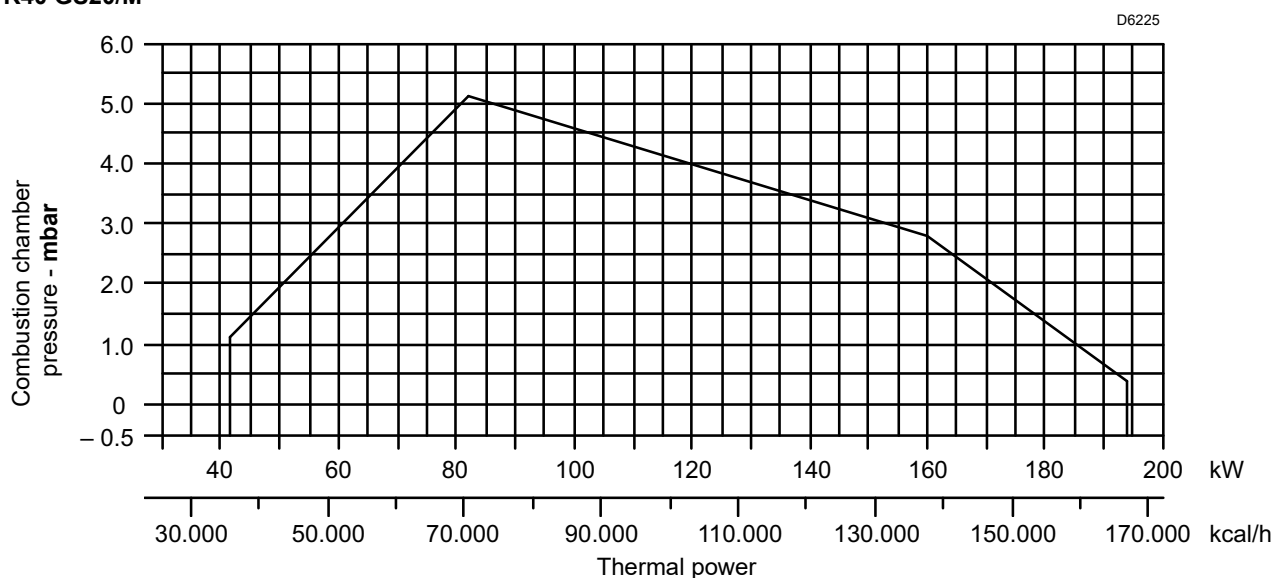


Fig. 4

3.7.1 Test boiler

The firing rate has been defined according to EN 676 standard.

3.7.2 Commercial boilers

The burner-boiler matching is assured if the boiler conforms to EN 303 and the combustion chamber dimensions are similar to those shown in the diagram EN 676.

For applications where the boiler does not conform to EN 303, or where the combustion chamber is much smaller than the dimensions given in EN 676, please consult the manufacturers.

3.8 Correlation between gas pressure and burner output

To obtain the maximum output (Fig. 5 and Fig. 6), it is necessary to have 4.6 mbar, relative to the type 729 T50 burner, measured on the pipe coupling, with the combustion chamber at 0 mbar and gas G20 - NCV = 10 kWh/Nm³ (8.570 kcal/Nm³).

R40 GS10/M

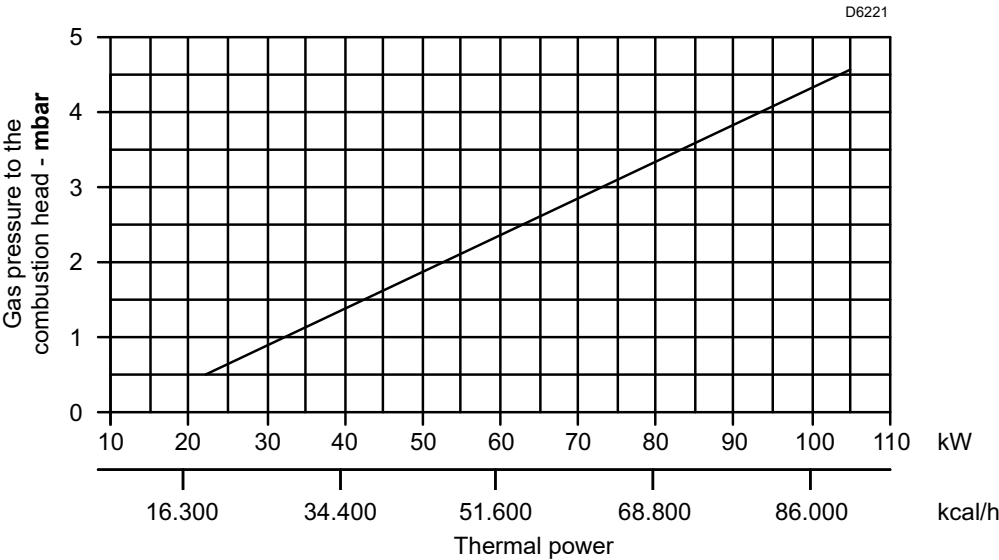


Fig. 5

R40 GS20/M

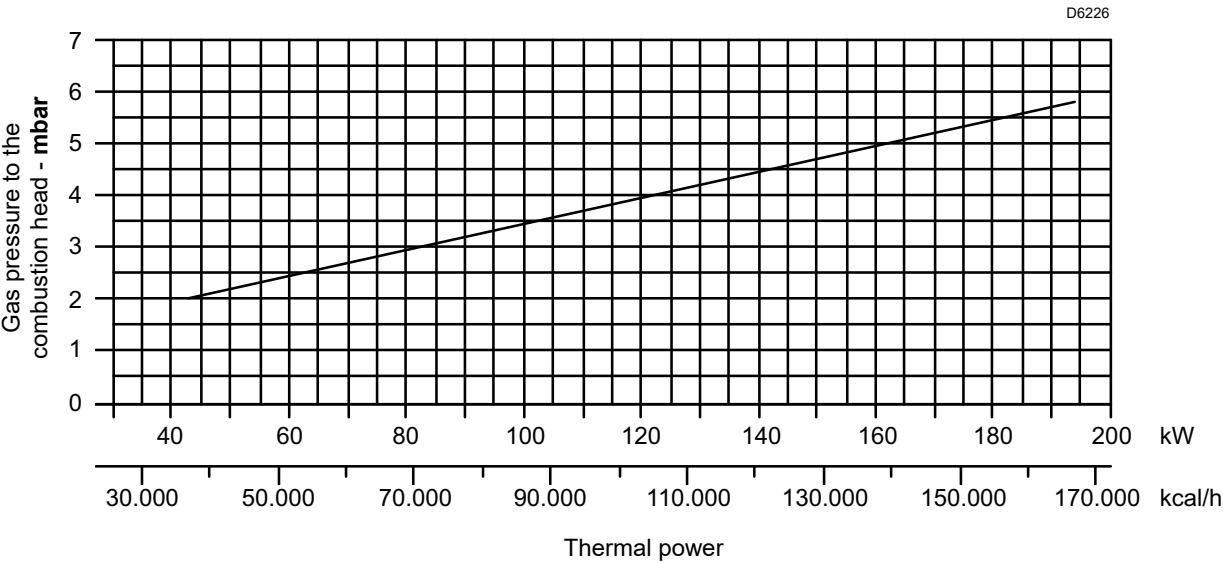


Fig. 6

3.9 Burner description

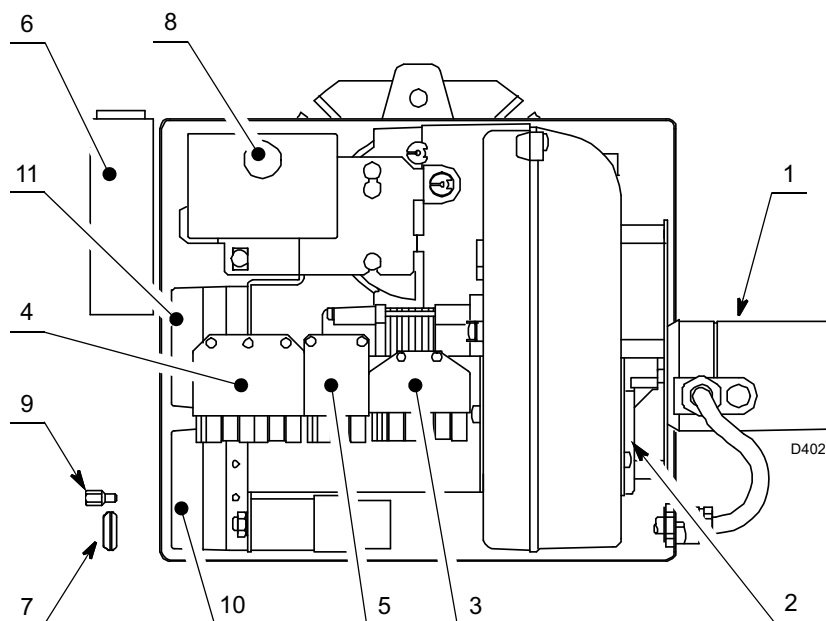


Fig. 7

- 1 Air damper servomotor
- 2 Air-damper
- 3 6 pole socket for gas-train
- 4 7 pole socket for electrical controls
- 5 4 pole socket for high-low power
- 6 Power regulator of RWF50
- 7 Grommet
- 8 Lock-out lamp and reset button
- 9 Screw for fixing the cover
- 10 Min. air pressure switch
- 11 Max. air pressure switch



The supplied grommet 7) and the cover 9) fixing screw should be assembled on the same side as the gas train.

3.10 Burner equipment

Flange with insulating gasket	No. 1
Screws and nuts for flange to be fixed to boiler	No. 4
Screw and nut for flange	No. 1
7-pin plug	No. 1
Hinge	No. 1
4-pin plug	No. 1
Screw for fixing the cover	No. 1
6-pin plug	No. 1
Cable grommet.	No. 1
M12 connector	No. 1
Pipe	No. 1
G1/8 union elbow	No. 1
Instructions	No. 1
Spare parts list	No. 1

3.11 Flame control (LME)

Warnings



To avoid accidents, material or environmental damage, observe the following instructions!

The flame control is a safety device! Avoid opening or modifying it, or forcing its operation. Riello S.p.A. cannot assume any responsibility for damage resulting from unauthorised interventions!

- All interventions (assembly and installation operations, assistance, etc.) must be carried out by qualified personnel.
- Before modifying the wiring in the flame control connection area, fully disconnect the system from the power supply (omnipolar separation).
- Protection against electrocution from the flame control and all connected electric components is obtained with the correct assembly.
- Before any intervention (assembly and installation operations, assistance, etc.), ensure the wiring is in order and that the parameters are correctly set, then make the safety checks.
- Falls and collisions can negatively affect the safety functions. In this case, the flame control must not be operated, even if it displays no evident damage.

For safety and reliability, comply with the following instructions:

- avoid conditions that can favour the development of condensate and humidity. Otherwise, before switching on again, make sure the flame control is perfectly dry.
- Static charges must be avoided since they can damage the flame control's electronic components when touched.

Use

The flame control is a control and supervision system of medium and large capacity forced draught burners, for intermittent operation (at least one controlled shutdown every 24 hours).

Installation notes

- Check the electric wiring inside the boiler complies with the national and local safety regulations.
- Install switches, fuses, earth connection etc. in compliance with local regulations.
- Do not confuse the powered conductors with the neutral ones.
- Ensure that spliced wires cannot get into contact with neighbouring terminals. Use adequate ferrules.
- Arrange the H.V. ignition cables separately, as far as possible from the flame control and the other cables.
- When wiring the unit, make sure the 230V AC mains voltage cables are run strictly separate from extra low-voltage cables, to avoid the risk of electrocution.



Fig. 8

Electrical wiring of the flame detector

It is important for signal transmission to be almost totally free of any disturbances or loss:

- Always separate the detector cables from the other cables:
 - the line capacity reduces the magnitude of the flame signal;
 - use a separate cable.
- The cable length must not exceed 1 m.
- Respect the polarity
- Insulation resistance:
 - must be at least 50 MΩ between the ionisation probe and the earth;
 - a dirty detector reduces the insulation resistance, fostering leakage currents.
- The ionisation probe is not protected against the risk of electrocution. When connected to the electricity supply, the ionisation probe must be protected against any accidental contact.
- Position the ionisation probe so that the ignition spark cannot form an arc on the probe (risk of electric overcharge).

Technical data

Mains voltage	AC 230V -15% / +10%
Mains frequency	50/60 Hz ±6%
Built-in fuse	T6.3H 250V
Energy consumption	12 VA
Weight	approx. 160 g
Protection level	IP40
Safety class	I
Tightening torque of M4 screw	Max. 0,8 Nm
Allowed cable length	
Thermostat	max. 20 m at 100 pF/m
Air pressure switch	max. 1 m at 100 pF/m
CPI	max. 1 m at 100 pF/m
Gas pressure switch	max. 20 m at 100 pF/m
Flame detector	max. 1 m
Remote reset	max. 20 m at 100 pF/m
Environmental conditions	
Storage	DIN EN 60721-3-1
Climatic conditions	Class 1K3
Mechanical conditions	Class 1M2
Temperature range	-20...+60°C
Humidity	< 95% RH

Tab. E

3.12 Actuator

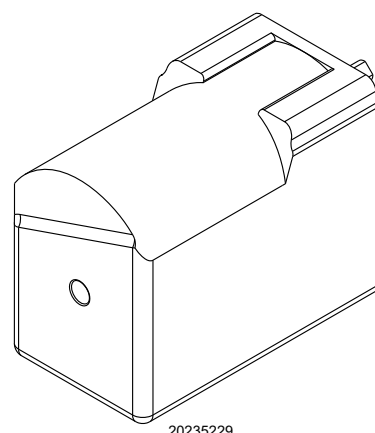
Warnings



To avoid accidents, material or environmental damage, observe the following instructions!

Avoid opening, modifying or forcing the actuators.

- All interventions (assembly and installation operations, assistance, etc.) must be carried out by qualified personnel.
- Before modifying the wiring in the connection area or the actuator, fully disconnect the burner control device from the power supply (omnipolar separation).
- To avoid the risk of electrocution, protect the connection terminals in a suitable manner and correctly fix the cover.
- Check the wiring is in order.
- Falls and collisions can negatively affect the safety functions. In this case, the servomotor must not be operated, even if it displays no evident damage.
- Check the relevant national safety standards are respected.



20235229

Fig. 9

Technical characteristics

Voltage and frequency	230V(+10%;-15%) - 50Hz
Operating temperature	70 °C
Working times: rotation	90°/30sec.
Protection level	IP40

4 Installation

4.1 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.



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



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.



Combustion air inside the boiler must be free from hazardous mixes (e.g.: chloride, fluoride, halogen); if present, it is highly recommended to carry out cleaning and maintenance more frequently.

4.2 Instructions to avoid burnout or bad combustion of the burner

- 1 The burner can not be installed outside as it is suitable for operation in closed rooms only.
- 2 The premises the burner operates in must have openings for the air need for the combustion. To be sure about this, you have to control CO₂ and CO in the exhaust gases with all the windows and doors closed.
- 3 If there are air extractors in the premises the burner works, make sure that there are openings for air to be taken in that are big enough to ensure the required air change; In any case, check that when the burner stops the extractors do not draw hot fumes from pipes through the burner.
- 4 When the burner is stopped, the smoke pipe must be kept open and a natural draft created 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.

4.3 Handling

The transport weight is given in chapter Technical data on page 7.

Observe the permissible ambient temperatures for storage and transport: -20 + 70 °C, with max. relative humidity. 80%.



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.



The operator must use the required equipment during installation.

4.4 Preliminary checks

4.4.1 Control of the supply



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 (cardboard box, 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.



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.



The figure of the label (Fig. 10) is indicative. Some of the data may be arranged in a different position.

4.4.2 Control of burner characteristics

Check the identification label of the burner (Fig. 10), showing:

- A the burner model and code;
 - B the burner type;
 - C the cryptographic year of manufacture;
 - D the serial number;
 - E the data for electrical supply and the protection level;
 - F the electrical power consumption;
 - G the data of the burner's minimum and maximum output possibilities (see Firing rate).
- Warning.** The burner output must be within the boiler's firing rate.
- H The minimum and maximum gas pressure.

R.B.I.		A			CL.COD.
		D	C	TYP. B	
		E			F
GAS-KAASU	☒ FAM.2	H			G kW
GAZ-AEPIO	☐ FAM.3	mbar			kW
		II2H3B/P AT, BG, CH, CZ, DK, EE, FI, GR, HU, IS, IT, LT, NO, RO, SE, SK, SI, TR			Peso-Weight Kg
		II2E3B/P LU, PL			II2H3P ES, GB, IE, PT
		II2E(R) 13P BE			II2EK3B/P NL
		II2ELL3B/P DE			II2B/P CY, MT
		II2E3P FR			II2H LV
		RIELLO S.p.A. I-37045 Legnago (VR)			EN 676
					UK CA
					CE 0476-KK
					CE-0085BM0453

20235231

Fig. 10

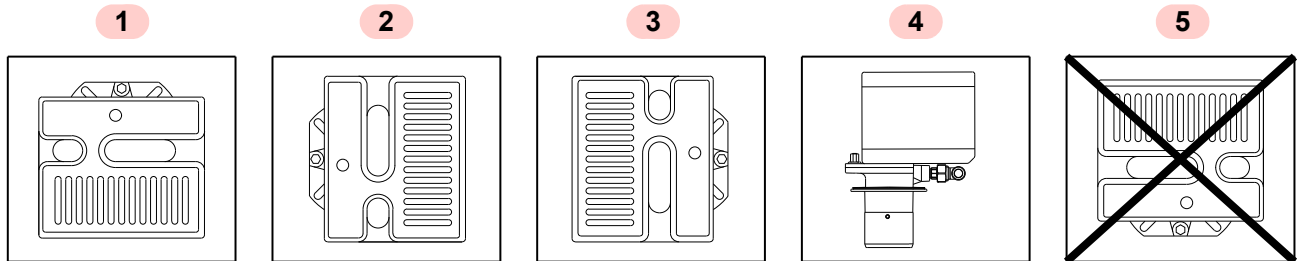
4.5 Operating position



- The burner is designed to operate only in positions 1, 2, 3 and 4 (Fig. 11).
- Installation 1 is preferable, as it is the only one that allows the maintenance operations as described in this manual.
- Installations 2, 3 and 4 permit operation but make maintenance and inspection of the combustion head more difficult.



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



20065196

Fig. 11

4.6 Securing the burner to the boiler



Provide an adequate lifting system of the burner.

- Separate the combustion head assembly from the burner body by removing nut 1) and removing the group **A**)(Fig. 13).
- Fix the group **B**)(Fig. 13) to the boiler plate 2), inserting the supplied insulating gasket 3).

4.6.1 Hinge installation

Install the hinge 4), supplied as standard, as shown in Fig. 12.

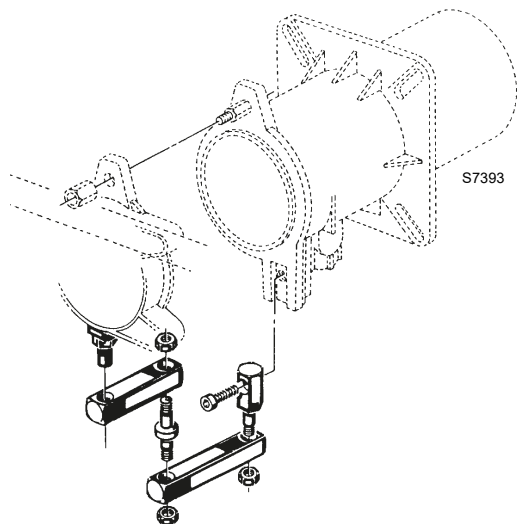


Fig. 12



The seal between burner and boiler must be airtight.

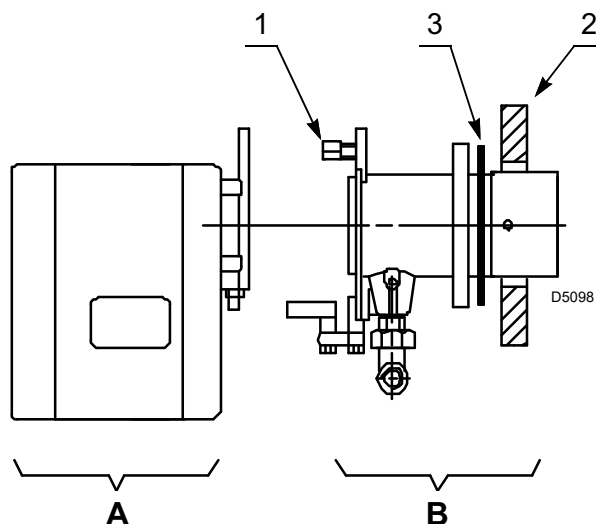


Fig. 13

4.7 Positioning the probe - electrode



ATTENTION

Do not turn the ignition electrode but leave it as shown in Fig. 14.

if the ignition electrode is put near the ionisation probe, the flame control amplifier might be damaged.

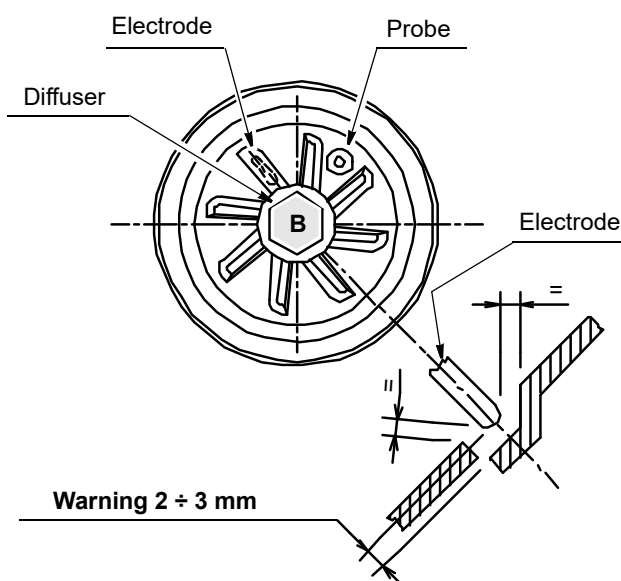
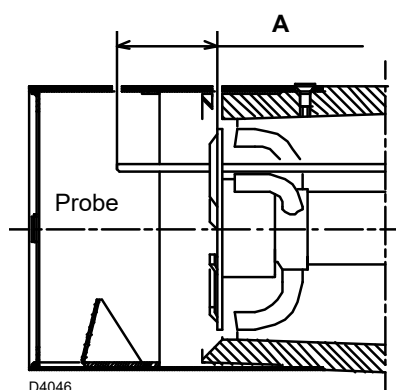


Fig. 14

4.8 Combustion head adjustment

To adjust, proceed as follows:

- loosen the screw A) (Fig. 15), move the elbow B) so that the rear plate of the coupling (C) coincides with the set point;
- tighten the screw A).

Example:

The burner R40 GS10/M is installed in a 77 kW boiler.

Considering efficiency of 90% the burner must supply around 85 kW.

The diagram (Fig. 16) shows that for this output the adjustment must be made on notch 4.

NOTA:

The diagram is to be used only for initial settings. To ensure good performance of the burner, it is recommended to adjust the head according to the needs required by the type of boiler.

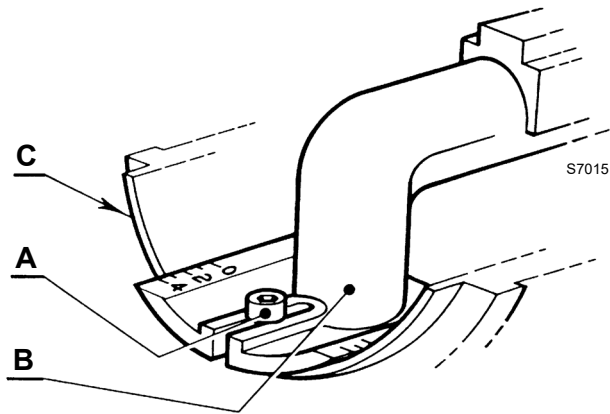


Fig. 15

R40 GS10/M

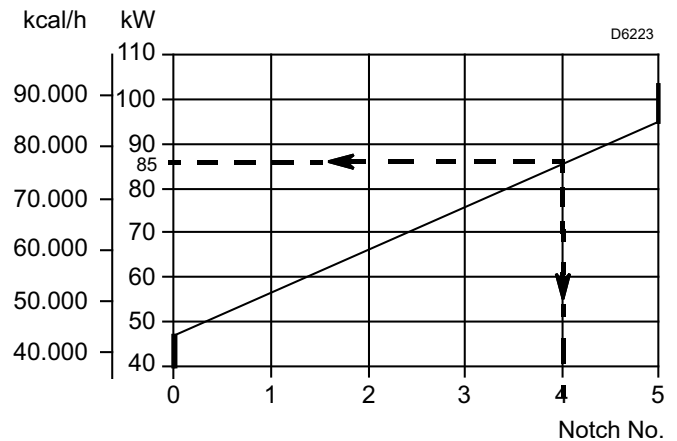


Fig. 16

R40 GS20/M

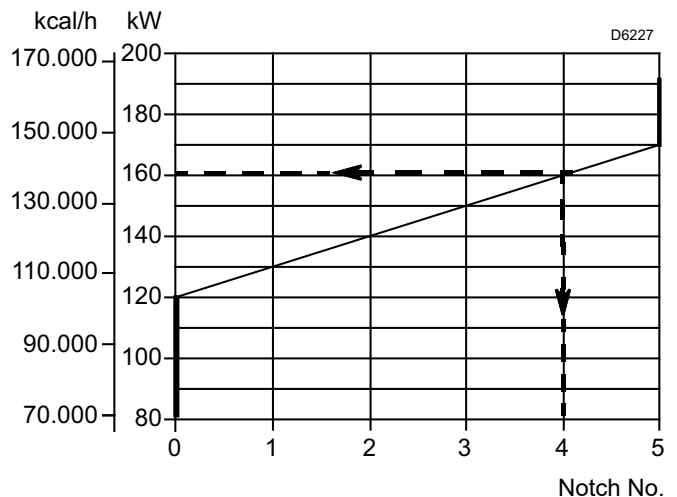


Fig. 17

4.9 Setting of the air damper servomotor

Stand-by Cam II (Blue)

Cam II assures the fully closed position of the air damper, when the burner is shut down (stand by). It is adjusted by the factory at 0°. **DO NOT ALTER.**

1° Stage Cam III (Orange)

Cam III adjusts the air damper for the ignition and for the minimum output. It is set at 20° by the factory. Do not decrease that value; it can be increased a little, following the need of the application.

2° Stage Cam I (Red)

Cam I limits the rotation at the maximum output. It is adjusted at 90° by the factory. **DO NOT INCREASE THAT VALUE:** the burner can be damaged.

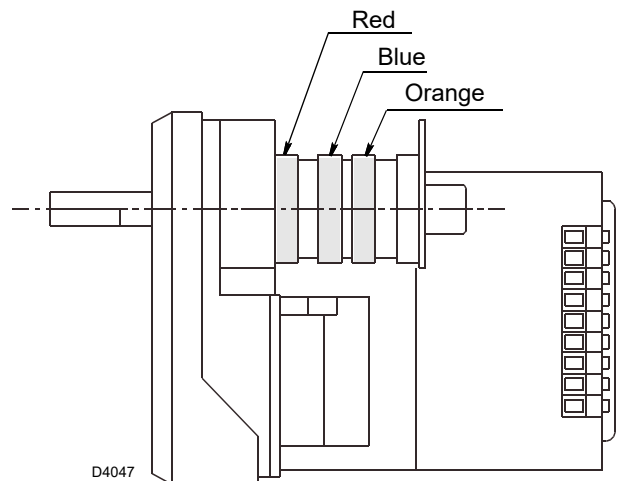


Fig. 18

NOTA:

The servomotor is equipped with two micrometric screws for a careful setting of Cam II (Blue) and Cam III (Orange).

4.10 Gas feeding



Explosion danger due to fuel leaks in the presence of a flammable source.

Precautions: avoid knocking, attrition, sparks and heat.

Make sure the fuel interception tap is closed before performing any operation on the burner.



ATTENTION

The fuel supply line must be installed by qualified personnel, in compliance with current standards and laws.

4.10.1 Gas feeding line

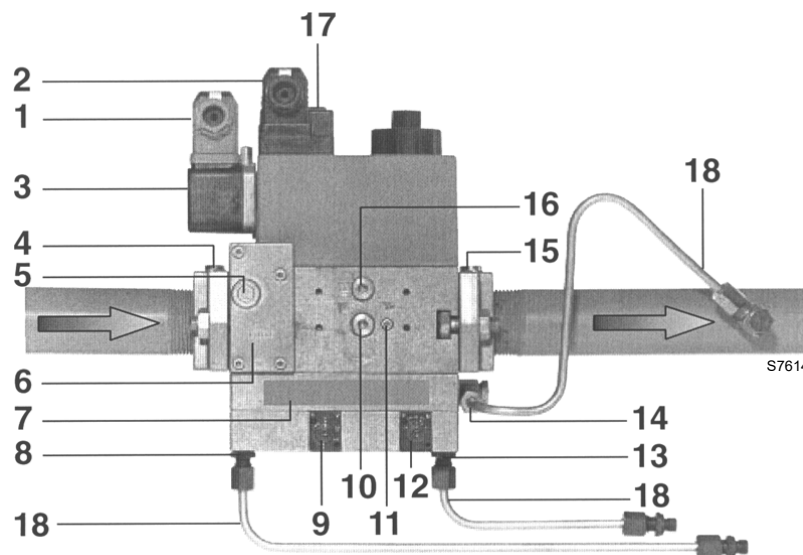


Fig. 19

Key (Fig. 19)

- 1 Electrical connection for pressure switch
- 2 Electrical connection for valves
- 3 Pressure switch
- 4 Inlet flange
- 5 Test point connection upstream of filter
- 6 Filter
- 7 Type plate
- 8 Pressure connection (air)
- 9 Setting screw, ratio **V**
- 10 Test point connection
- 11 Test point connection
- 12 Setting screw, zero point adjustment **N**
- 13 Pressure connection for furnace pressure
- 14 Pressure connection (gas)
- 15 Flange
- 16 Test point connection
- 17 Operation indicator LED
- 18 Impulse line

4.10.2 Gas train

Approved according to standard EN 676 and provided separately from the burner. Supplied separately for its adjustment, see the enclosed instructions.

The train-burner combination is indicated in Tab. F.

GAS TRAIN		MATCHED BURNER	CONNECTIONS		USE
Model	Code		Inlet	Outlet	
MB-VEF 407 B01	3970535	GS10-20/M	Rp 3/4	Rp 3/4	Natural gas and LPG
MB-VEF 412 B01	3970536	GS20/M	Rp 3/4	Rp 3/4	Natural gas high capacity ≥ 120 kW

Tab. F

4.10.3 Gas train installation



Disconnect the electrical power using the main switch.



Check that there are no gas leaks.



Pay attention when handling the train: danger of crushing of limbs.



Make sure that the gas train is properly installed by checking for any fuel leaks.

4.10.4 Connection of pressure taps to gas train

Connect proceeding as follows:

- Secure the three G1/8 connectors (one supplied with the burner and two with the train) at points **A**, **P_f** and **P_l**.
- Secure the M12 connector at point **B**.
- Cut the pipe supplied with the burner into equal halves.
- Connect boiler tap **A** with valve tap **P_f** and sleeve tap **B** with valve tap **P_l** using the previously cut pipes.



Once installation is complete, you must check for fuel leaks and make sure the gas train is working properly.

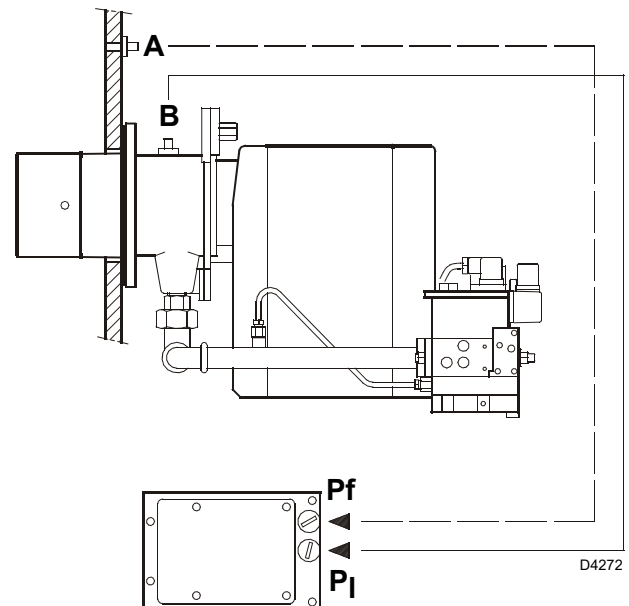


Fig. 20

4.10.5 Gas pressure

Tab. G indicates the pressure drops of the combustion head and gas butterfly valve, on the basis of the burner operating output.

The values shown in Tab. G refer to:

- Natural gas G 20 NCV 9.45 kWh/Sm³ (8.2 Mcal/Sm³)
- Natural gas G 25 NCV 8.13 kWh/Sm³ (7.0 Mcal/Sm³)

Column 1

Combustion head pressure drop.

Gas pressure measured at test point 1)(Fig. 21), with:

- combustion chamber at 0 mbar;
- burner working at maximum output

To calculate the approximate output at which the burner operates:

- subtract the pressure in the combustion chamber from the pressure of the gas at test point 1)(Fig. 21).
- Find, in Tab. G related to the burner concerned, the pressure value closest to the result of the subtraction.
- Read the corresponding output on the left.

Example with G 20 natural gas for GS10/M:

Maximum output operation

$$\begin{aligned} \text{Gas pressure at test point 1)(Fig. 21)} &= 7 \text{ mbar} \\ \text{Pressure in combustion chamber} &= 2.2 \text{ mbar} \\ 7 - 2.2 &= 4.8 \text{ mbar} \end{aligned}$$

A pressure of 4.8 mbar, column 1, corresponds in Tab. G to an output of 91 kW.

This value serves as a rough guide; the effective output must be measured at the gas meter.

Example with G 20 natural gas for GS10/M:

Operating at the desired maximum output: 91 kW

$$\text{Gas pressure at an output of 91 kW} = 4.8 \text{ mbar}$$

$$\text{Pressure in combustion chamber} = 2.2 \text{ mbar}$$

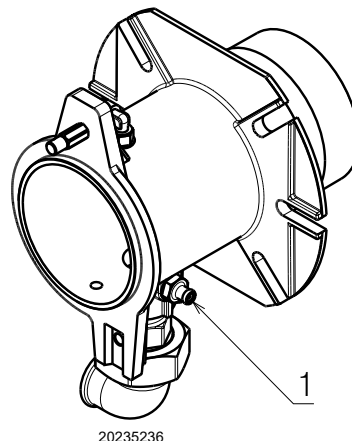
$$4.8 + 2.2 = 7 \text{ mbar}$$

pressure required at the test point 1)(Fig. 21).



ATTENTION

The data of thermal output and combustion head gas pressure are related to full open (90°) gas butterfly valve.



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Fig. 21

		Δp (mbar)	
		G 20	G 25
R40 GS 10/M	kW	22	0.5
	32	0.9	1.4
	42	1.4	2.2
	52	2.0	3.0
	62	2.6	3.9
	71	3.2	4.8
	81	4.0	5.9
	91	4.8	7.1
	101	5.6	8.4
	111	6.6	9.8
R40 GS 20/M	43	2.0	3.1
	60	2.4	3.6
	77	2.8	4.2
	93	3.2	4.8
	110	3.6	5.3
	127	4.0	5.9
	144	4.3	6.5
	160	4.7	7.0
	177	5.1	7.6
	194	5.5	8.2

Tab. G

To calculate the required gas pressure at test point 1)(Fig. 21), set the maximum modulating output required from the burner operation:

- find the nearest output value in Tab. G for the burner in question.
- In column 1, on the right, read the pressure at the test point 1)(Fig. 21).
- Add this value to the estimated pressure in the combustion chamber.

4.11 Electrical wiring

4.11.1 Notes on safety for the electrical wiring



- The electrical wiring must be carried out with the electrical supply disconnected.
- Electrical wiring must be made in accordance with the regulations currently in force in the country of destination and by qualified personnel. Refer to the wiring diagrams.
- The manufacturer declines all responsibility for modifications or connections different from those shown in the wiring diagrams.
- Check that the electrical supply of the burner corresponds to that shown on the identification label and in this manual.
- The burner has been type-approved for intermittent use. In the event of continuous operation, a cycle arrest must be ensured within 24 hours with the use of a time switch positioned in series with the thermostatic line. 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. Do not use the gas tubes as an earthing system for electrical devices.
- The electrical system must be suitable for the maximum power absorption of the device, as indicated on the label and in the manual, checking in particular that the section of the cables is suitable for that level of power absorption.
- For the main power supply of the device from the electricity mains:
 - do not use adapters, multiple sockets or extensions;
 - use a multiple pole switch with at least a 3mm gap between the contacts (overvoltage category III), as envisaged by the present 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.



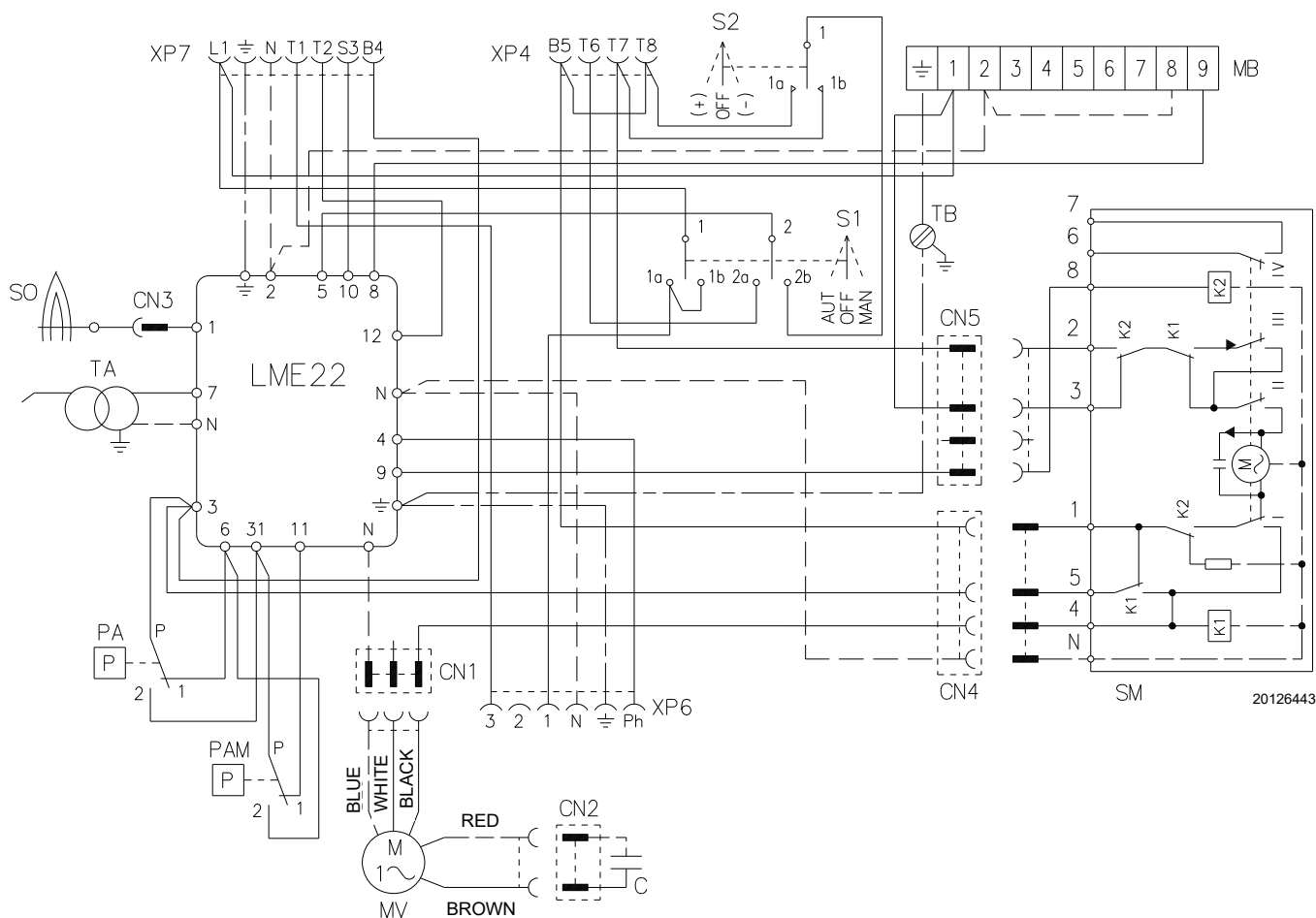
Turn off the fuel interception tap.



Avoid condensate, ice and water leaks from forming.

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

4.11.2 Electrical system (carried out by the factory)



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Fig. 22

Key (Fig. 22)

XP7	7 pole socket
XP4	4 pole socket
XP6	6 pole socket
MB	Auxiliary terminal block
S1	Switch for: MAN= manual operation AUT= automatic operation OFF= stand by
S2	Button for: - = power reduction + = power increase
TB	Burner-earth
SO	Ionisation probe
CN...	Connectors
TA	Ignition transformer
PA	Min. air pressure switch.
PAM	Max. air pressure switch
C	Motor capacitor
SM	Servomotor



ATTENTION

- Do not invert the neutral with the phase in the electrical supply line.
- Check that the electrical supply of the burner corresponds to that shown on the identification label and in this manual.
- The section of the conductors must be at least 1mm². (Unless requested otherwise by local standards and legislation).



ATTENTION

Check the burner stops by opening the thermostats and check it locks out by opening the connector (CN3)(Fig. 22) inserted in the probe's red wire, located on the outside of the flame control.



CAUTION

If the cover is still on, remove it and proceed with the electric wiring following the wiring diagrams. Use flexible cables in compliance with EN 60 335-1 standards.

NOTA:

The burners have been type-approved for intermittent operation. This means they must stop at least once every 24 hours in order to allow the flame control to check its efficiency on start-up. The boiler limit thermostat (TL) normally ensures the burner halts.

If this does not happen a time switch halting the burner at least once every 24 hours must be applied in series to limit thermostat (TL).

4.11.3 Electrical wiring (to be carried out by the installer)



If the boiler is fitted with a 7-pin plug, it has to be replaced with the one supplied with the burner.

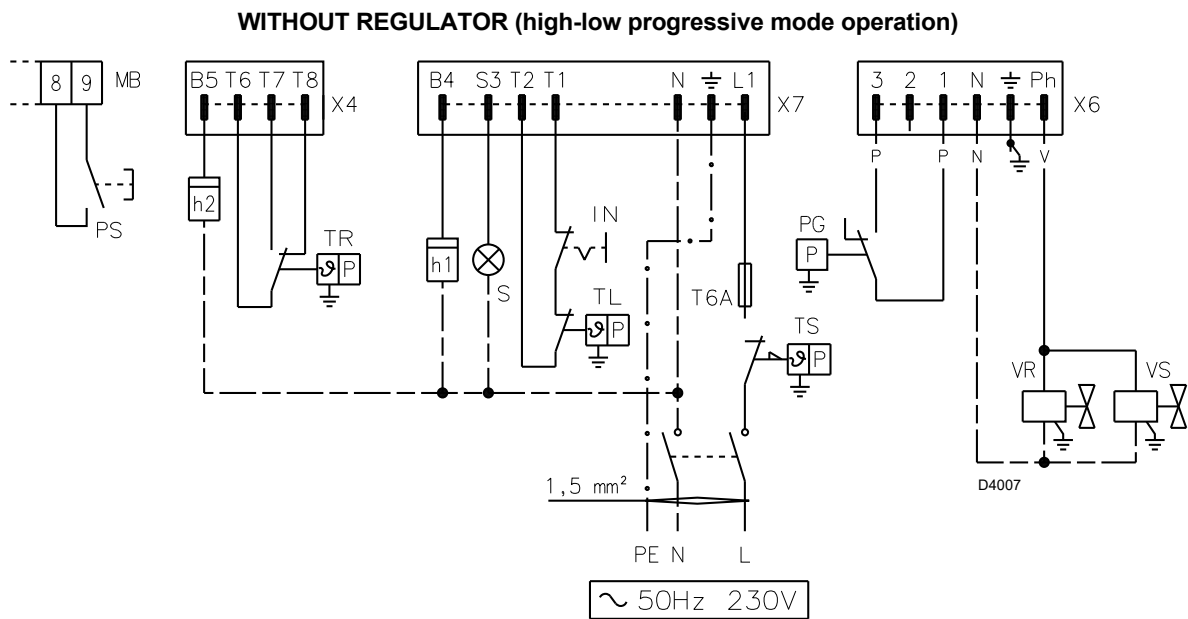


Fig. 23

Key (Fig. 23)

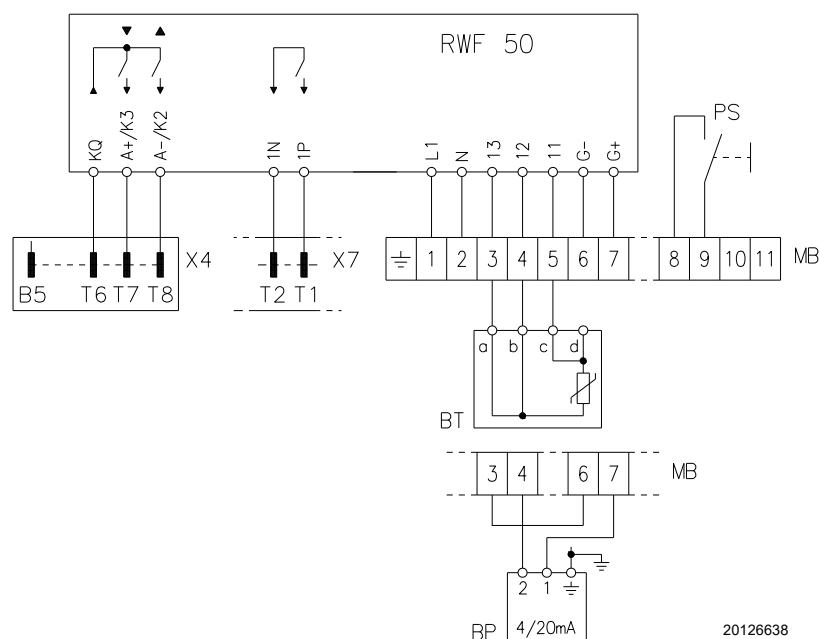
- PS Remote manual reset
- MB Burner terminal block
- X7 7 pin plug
- X4 4 pin plug
- X6 6 pin plug
- h2 2nd stage hourcounter
- TR High-low mode control device system
- h1 1st stage hourcounter
- S Remote lock-out signal
- IN Manual burner stop switch
- TL Limit control device system
- T6A Fuse
- TS Safety control device system
- PG Min. gas pressure switch
- VR Adjustment valve
- VS Safety valve

4.11.4 With output power regulator (modulating operation)



ATTENTION

Do not connect any contact between **T6** and **T8** at the 4 pin plug and between **T1** and **T2** at the 7 pin plug, in order to avoid interference with the regulator.



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Fig. 24

Key (Fig. 24)

- PS Remote manual reset
- MB Burner terminal block
- X4 4 pin plug
- X7 7 pin plug
- BT Temperature probe
- BP Pressure probe

4.11.5 Commissioning

After completing both the electrical and gas valve connections, set the minimum air and the gas pressure switches at minimum value; the maximum air pressure switch must be first set at maximum value. These will be adjusted only at the end of commissioning procedure.

Connect a manometer to the gas pressure test point situated on the burner.

1 For guidance the following table shows:

- the capacity required by the application;
- the minimum firing rate achieved for each capacity;
- approximate gas pressure measured at the combustion head, depending on the maximum capacity required;
- the setting for the air damper.

TYPE	Thermal power	Min. output	Gas pressure on combustion head	Air damper adjustment
	kW	kW	mbar (●)	Set point
R40 GS 10/M	42	22	1.4	4
	60	26	2.4	5
	81	30	3.2	6
	106	35	3.7	8
R40 GS 20/M	81	43	3.2	5.25
	159	47.8	4.6	7
	170.3	48.9	5.1	max

Tab. H

(●) These values refer to a combustion chamber with 0 [mbar] back pressure at maximum output.

- 2 For the maximum capacity required, first set the head and then the air damper as shown in the Tab. H.
- 3 Select the manual (**MAN**) mode operation, and switch **ON** the burner.
- 4 When the burner is alight, press the **(+)** button to manually drive the servomotor to the high fire position and check that the gas pressure also increases.
- 5 Check the gas flow rate at high fire. To set the correct flow rate use the screw adjustments **V** and **N** on the valve body (mainly **V**). Increasing the setting of either **V** or **N** increases the gas flow.
- 6 Adjust the manual air damper to give the required CO₂ level in the flue products. If adjusting the air damper alters the gas flow rate then adjust **V** accordingly.
- 7 Decrease the servomotor position to low fire by pushing the **(-)** button. Check the gas flow rate and adjust if necessary, with screw **N** only, to give the required CO₂ level in the flue products.
- 8 If the low fire output is then more or less than required, adjust CAM III (Orange) accordingly. Any adjustment of screw **N** will affect the high fire gas rate.
- 9 Return the servomotor to the high fire position. Re-adjust the high fire gas rate using only screw **V**.
- 10 Again return the servomotor to the low fire position and re-adjust the low fire gas rate using only screw **N**.
- 11 Repeat steps (9) and (10) two or three times until no re-adjustment of screws **V** and **N** is necessary.
- 12 Finally return the selector switch to the automatic (**AUT**) mode position.

4.12 Operation sequence of the burner

4.12.1 Burner start-up

- 0s TL thermostat/pressure switch closes.
- 5s Flame control program starts up. Servomotor starts: rotate 130° to the right, until the contact intervenes on cam I (Fig. 18 on page 17).
- 35s The air damper reaches the MAX output position. The fan motor starts up. Start of the pre-purging phase.
- 75s The servomotor rotates towards the left as far as the angle set on cam III (Fig. 18 on page 17) for the MIN output.
- 95s The air damper and gas butterfly valve assume the MIN output position (with cam III at 65°)(Fig. 18 on page 17).
- 105s The ignition electrode strikes a spark. The safety valve VS opens, along with the adjustment valve VR, quick opening. The flame ignites with a small output - point A. The output gradually increases, and the VR valve slowly opens, until MIN output is reached - point B.
- 108s The spark goes out.
- 115s The starting cycle comes to an end.

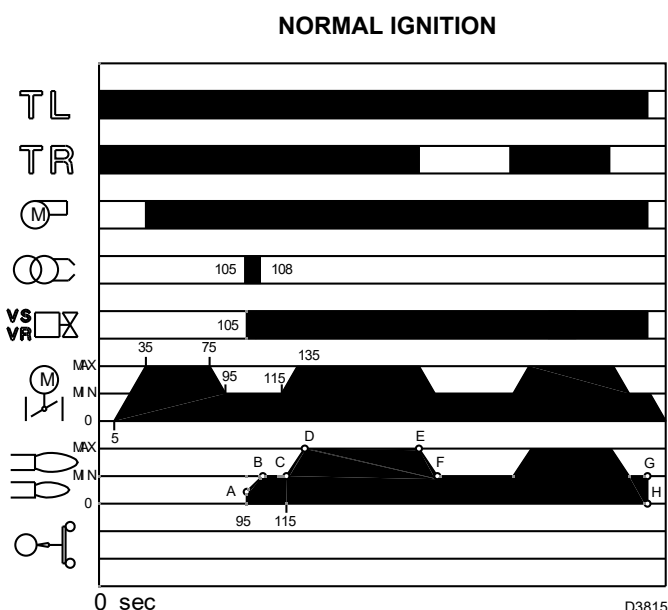


Fig. 25

4.12.2 Operation

Burner without modulating operation kit

Once the starting cycle is terminated, the servomotor command passes to the TR that controls the pressure or the temperature in the boiler - point C. (The flame control still checks the presence of the flame and the correct position of the air and maximum gas pressure switches).

- If the temperature or pressure is low (so the TR is closed), the burner progressively increases the output up to the MAX value (tract C-D).
- If the temperature or pressure then increases until the TR opens, the burner progressively decreases its output to the MIN value (section E-F). The sequence repeats endlessly.
- The burner stops when the heat request is less than the heat supplied by the burner at MIN. output (tract G-H). The TL opens, and the servomotor returns to angle 0°. The air damper closes completely to reduce heat losses to a minimum.

Burner with modulating operation kit

See manual enclosed with the adjuster.

4.12.3 Ignition failure

If the burner does not switch on, there is a lockout within 3s of the electrical supply reaching the gas valve.

It may be that the gas does not arrive at the combustion head within the safety time of 3s. In this case increase gas ignition delivery.

The arrival of gas to the pipe coupling is shown by the pressure gauge.

4.13 Stopping of the burner

The burner can be stopped by:

- intervening on the disconnecting switch of the electrical supply line, located on the boiler panel;
- removing the hood and intervening on the "AUT/MAN".

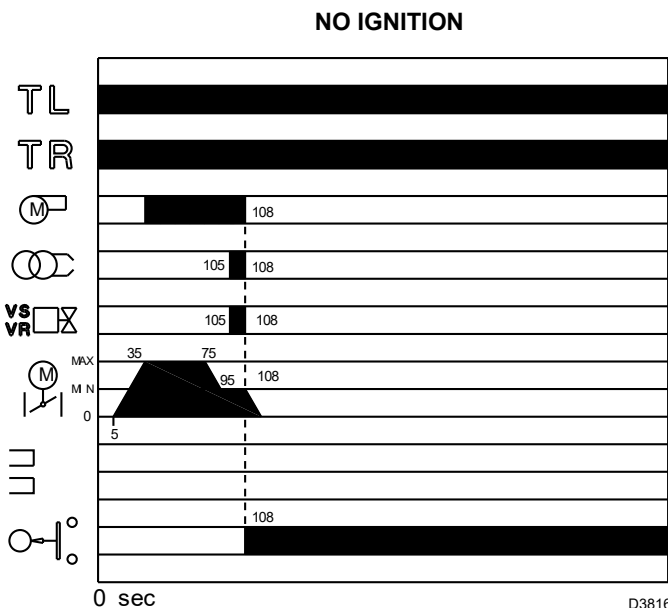


Fig. 26

4.12.4 Burner flame goes out during operation

If the flame should accidentally go out during operation, the burner will lock out within 1s.



Carry out all the operations, then reassemble the hood and all the burner safety and protection devices.

4.14 Table of times

Symbol	Description
t1	Pre-purging time
t1'	Purging time
t3	Pre-ignition time
t3n	Post-ignition time
t4	Interval between TSA safety time, Off and the opening of V2
t10	Specified time for the air pressure signal
t11	Programmed opening time for SA actuator
t12	Programmed closing time for SA actuator
t22	2nd safety time
TSA	Safety time for ignition
tw	Standby time

Tab. I

4.14.1 External lockout signal (S3)

The burner is equipped with an external locking signal function, i.e. to signal (together with the integrated reset button) a burner locking alarm. The flame control provides a command of an external lamp using the S3 output (230Vac-0.5Amp max).

4.14.2 Hour counter functioning (B4)

The burner has an hour counter function that is active as long as the 1st stage oil valve is open and therefore as long as fuel is being consumed.

The flame control provides an external meter through the Hour_Counter output (230V AC-0.1Amp max.) of the flame control connected to pin B4 of the 7-pole socket coming from the boiler power supply connection at the burner.

4.14.3 Ionisation current

The recommended minimum for operating the burner is 2 μ A, 1.5 μ A, recommended 3 μ A.

In any event, if you want to measure the ionisation current, you need to open the connector (CN3)(Fig. 27) on the red wire and insert a microammeter.

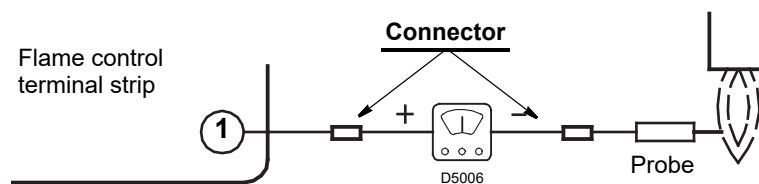


Fig. 27

4.14.4 Admissible lengths of the external connections to the burner

Outlet cables of the burner	Identification	Maximum length permitted (metres)
Mains electric power supply	L1 (L), N	20
GAS pressure switch	PG	1
Heat request thermostat	TL (T1,T2)	20
Hour counter	B4	3
External lockout indicator	S3	20
Remote reset	R (RS)	20

Tab. J



In the event of burner applications with remote control commands greater than those indicated in Tab. J, insert the relay command devices (230Vac) with contacts placed near or not more than the maximum indicated lengths.

4.15 Operation status indication

Colour code table for multi-colour (LED) indicator light

Description	Colour code	Code
Standby time (tw), other intermediate statuses	○	No light
Air pressure switch standby pause, pre-purging	●	Yellow
Ignition phase, controlled ignition	○●○●○●○●○●○●○	Flashing yellow
Operation, flame OK	■	Green
Operation, flame not OK	○■○■○■○■○■○■○	Flashing green
Extraneous light at burner start-up	■▲■▲■▲■▲■▲■▲■▲	Green – Red
Undervoltage	●▲●▲●▲●▲●▲●▲●▲	Yellow – Red
Fault, alarm	▲	Red
Error code (see Error Codes table)	○▲○▲○▲○▲○▲○▲○▲	Flashing red
Interface diagnostics	▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲	Fast flashing red

Tab. K

- Key
- Steady on
 - No light
 - ▲ Red
 - Yellow
 - Green

5 Start-up, calibration and operation of the burner

5.1 Notes on safety for the first start-up



The first start-up 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.



Check the correct working of the adjustment, command and safety devices.



Refer to paragraph "Safety test - with gas ball valve closed" on page 31 before the first start-up.

5.2 Adjustments prior to ignition

- Check the adjustment of the head as shown in page 17.
- Check the adjustment of the air damper as shown in page 18.
- Slowly open the manual valves situated upstream from the gas train.
- Adjust the air pressure switch (Fig. 28) to the start of the scale.

- Purge the air from the gas line. We recommend using a plastic tube routed outside the building and to purge air until gas is smelt.



Before starting up the burner, it is good practice to adjust the gas train so that ignition takes place in conditions of maximum safety, i.e. with gas delivery at the minimum.

5.3 Combustion adjustment

In conformity with EN 676 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.

It is advisable to set the burner according to the type of gas used and following the indications in Tab. L.

EN 676		Air excess: max. output. $\lambda \leq 1.2$ – min. output $\lambda \leq 1.3$			
GAS	Theoretical max CO ₂ 0 % O ₂	Setting CO ₂ %		CO mg/kWh	NO _x mg/kWh
		$\lambda = 1.2$	$\lambda = 1.3$		
G 20	11.7	9.7	9.0	≤ 100	≤ 170
G 25	11.5	9.5	8.8	≤ 100	≤ 170
G 30	14.0	11.6	10.7	≤ 100	≤ 230
G 31	13.7	11.4	10.5	≤ 100	≤ 230

Tab. L

5.4 Air pressure switch

5.4.1 Min. air pressure switch

Adjust the air pressure switch (Fig. 28) after performing all other burner adjustments with the air pressure switch set to the start of the scale. With the burner function at the required output, turn the knob slowly in a clockwise direction until burner lockout.

Then turn the knob anticlockwise to an extent that is around 20% of the adjusted value and then check that the burner starts up properly.

If the burner locks out again turn the knob slightly in an anticlockwise direction.

5.4.2 Max. air pressure switch

The over pressure switch must be set after all other adjustments have been made. Its purpose is to cause the burner to shut down if the combustion chamber pressure increases above normal operational values.

Begin with the switch at the highest setting, with the burner working at the maximum output, adjust the dial anti-clockwise, decreasing its value until the burner shuts down. Now increase the value by one set point and re-start the burner. If the burner shuts down due to the pressure surge in the combustion chamber caused by the ignition gas, check that the start gas rate is less than 25% of the main gas rate. If it is, increase the value on the over pressure switch by a further half a set point and repeat the test.

NOTA:

To comply with the Appliance Standard Pr EN 1020, the CO value must not exceed 0.1% under normal operational conditions.



ATTENTION

In conformity with the standard, the air pressure switch must prevent the air pressure falling below 80% of the adjusted value and the CO in the flue gases exceeding 1% (10,000 ppm).

To check this, insert a combustion analyser in the flue, slowly reduce the burner air setting (for example with a piece of cardboard) and verify that the burner locks out before the CO value in the flue gases exceeds 1%.

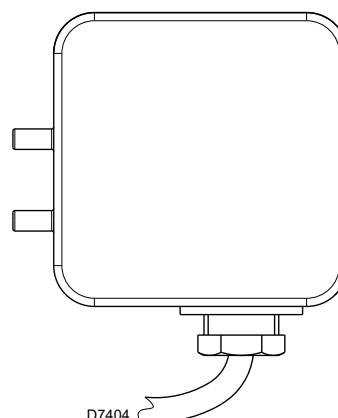


Fig. 28

6 Maintenance

6.1 Notes on safety for the maintenance

The periodic maintenance is essential for the good operation, safety, yield and duration of the burner.

It allows you to reduce consumption and polluting emissions and to keep the product in a reliable state over time.



The maintenance interventions and the calibration of the burner must only be carried out by qualified, authorised personnel, in accordance with the contents of this manual and in compliance with the standards and regulations of current laws.

Before carrying out any maintenance, cleaning or checking operations:



Disconnect the electrical supply from the burner by means of the main system switch.



Turn off the fuel interception tap.



Wait for the components in contact with heat sources to cool down completely.

6.2 The basic checks

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:

- Content of CO₂
- Content of CO (ppm)
- Flue gas temperature.

6.3 Maintenance programme

6.3.1 Maintenance frequency



The gas combustion system should be checked at least once a year by a representative of the manufacturer or another specialised technician.



IF THE ELECTRICAL SUPPLY OF THE GAS VALVES OCCURS AT UNEXPECTED TIMES, DO NOT OPEN MANUAL GAS BALL VALVE, SWITCH OFF POWER LINE; CHECK THE WIRES; CORRECT THE ERRORS AND REPEAT THE COMPLETE TEST.

6.3.2 Safety test - with gas ball valve closed

It is fundamental to ensure the correct execution of the electrical connections between the gas solenoid valves and the burner to perform safely the commissioning.

For this purpose, after checking that the connections have been carried out in accordance with the burner's electrical diagrams, an ignition cycle with closed gas ball valve -dry test- must be performed.

- 1 The manual ball gas valve must be closed
- 2 The electrical contacts of the burner limit switch need to be closed
- 3 Ensures closed the contact of the low gas pressure switch
- 4 Make a trial for burner ignition.

The start-up cycle must be as follows:

- Starting the fan for pre-ventilation
- Performing the gas valve seal control, if provided
- Completion of pre-ventilation
- Arrival of the ignition point
- Power supply of the ignition transformer
- Electrical Supply of solenoid gas valves

Since the manual gas ball valve is closed, the burner will not light up and its flame control will go to a safety lockout condition.

The actual electrical supply of the solenoid gas valves can be verified by inserting a tester. Some valves are equipped with light signals (or close/open position indicator) that turn on at the same time as their power supply.

6.3.3 Checking and cleaning



The operator must use the required equipment during maintenance.

Combustion

Check there are no occlusions or obstructions in the fuel supply or return lines, in the air suction areas, and in the combustion product waste pipe.

Carry out an analysis of the combustion flue gases.

Significant differences with respect to the previous measurements indicate the points where most care should be exercised during maintenance.

Combustion head

Check that the positioning of the combustion head is correct and that it is properly fixed to the boiler.

Open the burner and make sure that all components of the combustion head are in good condition, not deformed by the high temperatures, free of impurities from the surroundings and correctly positioned.

Burner

Check that there are not excess wear or loosen screws.

Clean the outside of the burner.

Fan

Check that the air damper is positioned correctly.

Check to make sure that no dust has accumulated inside the fan or on its blades, as this condition will cause a reduction in the air flow rate and provoke polluting combustion.

Boiler

Clean the boiler as indicated in its accompanying instructions in order to maintain all the original combustion characteristics intact, especially the flue gas temperature and combustion chamber pressure.

Gas train

Check that the gas train is suited to the burner capacity, the type of gas used and the mains gas pressure.

Electrode-probe

Checking the proper positioning of the ionisation probe and electrode as shown in Fig. 14 on page 16.

Pressure switches

Check that the air pressure switch and the gas pressure switch are set correctly.

Gas leaks

Make sure that there are no gas leaks on the pipe between the gas meter and the burner.

Gas filter

Change the gas filter when it is dirty.

Combustion

If the combustion values measured before starting maintenance do not comply with applicable legislation or do not indicate efficient combustion, consult the Tab. L on page 29 or contact our

Technical Support Service to implement the necessary adjustments.

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:

- Percentage of CO₂ (%)
- CO content (ppm)
- NOx content (ppm)
- Ionisation current (μA)
- Smoke temperature at the flue

6.3.4 Safety components

The safety components must be replaced at the end of their life cycle indicated in . The specified life cycles do not refer to the warranty terms indicated in the delivery or payment conditions.

Safety component	Life cycle
Flame control	10 years or 250,000 operation cycles
Flame sensor	10 years or 250,000 operation cycles
Gas valves (solenoid)	10 years or 250,000 operation cycles
Pressure switches	10 years or 250,000 operation cycles
Pressure adjuster	15 years
Servomotor (electronic cam) (if present)	10 years or 250,000 operation cycles
Oil valve (solenoid) (if present)	10 years or 250,000 operation cycles
Oil regulator (if present)	10 years or 250,000 operation cycles
Oil pipes/ couplings (metallic) (if present)	10 years
Fan impeller	10 years or 500,000 start-ups

Tab. M

6.4 Opening the burner



Disconnect the electrical supply from the burner by means of the main system switch.



Turn off the fuel interception tap.



Wait for the components in contact with heat sources to cool down completely.

For accessing to the interior of the burner, loosen the screws that secure the cover and proceed with the maintenance operation.



Operating safety hazards

Repairs to the following components may only be carried out by the respective manufacturers or by personnel instructed by them:

- fan motor
- actuator
- air damper servomotor
- electromagnetic valves
- burner programmer

Check the operation

- Start-up of the burner with a sequence of functions (see chapter Operation sequence of the burner on page 26).
- Ignition device
- Air pressure switch
- Flame monitoring
- Tightness test of components to the passage of fuel



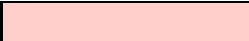
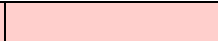
After carrying out maintenance, cleaning or checking operations, reassemble the cover and all the safety and protection devices of the burner.

7 Faults - Possible causes - Solutions

The flame control has a self-diagnostic system, which allows the operating malfunctions to be easily identified.

To use this function, wait at least ten seconds from the safety lock out, and then press the reset button for a minimum of 3 seconds.

When the button is released, the RED LED starts to blink, as shown in the following table.

RED LED lit wait for at least 10s	Press reset for > 3s.	Signal	3s.	Signal
				

Tab. N

The pulses of the LED constitute a signal spaced by approximately 3 seconds. The number of pulses will provide information about the possible faults, according to the following key.

Signal	Possible Causes
2 	No stable flame signal is detected within the safety time: – faulty ionisation probe; – faulty gas valve; – phase/neutral connections inverted; – burner not regulated.
3 	Minimum air pressure switch fails to close: – faulty air pressure switch; – air pressure switch not adjusted; – the fan motor is not working; – intervention of maximum air pressure switch.
4 	Light present in the chamber during pre-purging, or else flame control faulty.
5 	Minimum air pressure switch fails to switch: – faulty air pressure switch; – air pressure switch not adjusted.
6 	Not in use.
7 	Loss of flame during operation: – burner not regulated; – faulty gas valve; – short-circuit between the ionisation probe and the earth.
8 	Not in use.
9 	Not in use.
10 	Flame control faulty.
14 	CPI contact open during tw: – the external fault indication remains disabled. – Remote alarm signal not enabled with this fault. – Error in external connections, recheck external connections. – Flame control internal fault, replace the control. To close troubleshooting and restart the burner, it is necessary to unlock it by pressing the unlock button for approx. 1 sec. (<3 seconds).

Tab. O

7.1 Operating faults

Fault	Possible Causes	Solution
The burner locks out during operation.	Earth probe.	Check the right position and if necessary set it according to the instructions of this manual. Clean or replace the ionisation probe.
	The flame disappears 4 times.	Check the gas pressure in the network and/or adjust the solenoid valve according to the instructions of this manual.
	Air pressure switch opening.	The air pressure is too low, (the head is bad adjusted). The air pressure switch is faulty: change it.
Burner shutdown.	Gas pressure switch opening.	Check the pressure in the network and/or adjust the solenoid valve according to the instructions of this manual.

Tab. P

A Appendix - Accessories**Long head kit**

Burner	Standard length (mm)	Long head length (mm)	Code
R40 GS10/M	128	170	3001064
R40 GS20/M	142	280	3000873

Kit for modulating operation

With the modulating operation, the burner automatically adapts the output delivered between its maximum and minimum values, keeping the parameter, temperature or pressure to be controlled constant.

Two components should be ordered:

- a probe to be installed on the boiler
- an output regulator to be installed on the burner

Type of probe	Adjustment field	Code
PT 100 temperature	-100...+500°C	3010110
Pressure 4 - 20 mA	0...2.5 bar	3010213
Pressure 4 - 20 mA	0...16 bar	3010214

Regulator	Code
RWF50.2	20105193
RWF55.5	20105274

LPG Kit

Burner	Code
R40 GS10/M	3000884
R40 GS20/M	3000886

Differential circuit breaker kit

Burner	Code
All models	3001180

7 pin plug kit

Burner	Code
All models	3000945

Gas trains in compliance with EN 676

Please refer to manual.



WARNING

The installer is responsible for the addition of any safety device not foreseen in this manual.

The logo consists of the word "RIELLO" in a bold, red, sans-serif typeface.

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