GB

Forced draught gas burners

Two-stage progressive operation

CODE	MODEL	TYPE
3789310	RS 64 MZ	885 T
3789311	RS 64 MZ	885 T

ООО Промэлектроника
sales@prom-elec.com

➤ The burner **has EC marking** and conforms to the basic requisites of the following Directives:
– EC Reg. N.: **0085BR0558** in accordance with 2016/426/EU (Gas Appliances Regulation);
– Electromagnetic Compatibility Directive 2014/30/UE;
– Low voltage directive 2014/35/UE;
– Machine Directive 2006/42/EC;

➤ The burner meets protection level of IP 40 as EN 60529.

IDENTIFICATION

The Identification Plate on the product gives the serial number, model and main technical and performance data. If the Identification Plate is tampered with, removed or missing, the product cannot be clearly identified, thus making any installation or maintenance work potentially dangerous.

GENERAL WARNINGS

The dimension of the boiler's combustion chamber must respond to specific values, in order to guarantee a combustion with the lowest polluting emissions rate.
You are therefore advised to consult the Technical Assistance Department before choosing this type of burner for the combination with a boiler.
Qualified personnel are those with the professional and technical requirements indicated by Law no. 46 dated 5 March 1990. The commercial organisation has a widespread network of agencies and technical offices whose personnel participates periodically in instructional and refresher courses at the company training centre.
This burner must only be used for the application it was designed for.
The manufacturer cannot accept responsibility for any damage to persons, animals or property due to errors in installation or in the burner adjustment, or due to improper or unreasonable use or non-observance of the technical instructions enclosed with the burner, or due to the intervention of unqualified personnel.

USER INFORMATION

If faults arise in ignition or operations, the burner performs a "safety stop", which is signalled by the red burner lock out LED. To rearm start-up conditions, press the release button. When the burner starts up again, the red LED goes out.
This operation can be repeated for a maximum of 3 times. If the "safety stop" recurs, then the Technical Assistance Centre must be contacted.

BASIC SAFETY RULES

➤ Children or inexpert persons must not use the appliance.
➤ Under no circumstances must the intake grids, dissipation grids and ventilation vents in the installation room be covered up with cloths, paper or any other material.
➤ Unauthorised persons must not attempt to repair the appliance
➤ It is dangerous to pull or twist the electric leads.
➤ Cleaning operations must not be performed if the appliance is not disconnected from the main power supply.
➤ Do not clean the burner or its parts with inflammable substances (e.g. petrol, alcohol, etc.).
The cover must be cleaned with soapy water.
➤ Do not place anything on the burner.
➤ Do not leave containers and inflammable products in the installation room.

The following symbols are used in this manual:

⚠ **ATTENTION =** for actions requiring special care and adequate preparation.

⛔ **FORBIDDEN =** for actions **THAT MUST NOT** be performed.

GB CONTENTS

N.B.
Figures mentioned in the text are identified as follows:
1)(A) = part 1 of figure A, same page as text;
1)(A)p.8 = part 1 of figure A, page number 8.

TECHNICAL DATA

GB

MODEL			RS 64 MZ	
TYPE			885 T	
OUTPUT (1)	MAX.	kW Mcal/h	400 - 850 345 - 730	
	MIN.	kW Mcal/h	150 130	
FUEL			GAS NATURAL: G20 - G21 - G22 - G23 - G25	
			G20	G25
- Net calorific value		kWh/Sm^3 Mcal/Sm^3	9.45 8.2	8.13 7.0
- Absolute density		kg/Sm^3	0.71	0.78
- Max. delivery		Sm^3/h	90	104.5
- Pressure at max. delivery (2)		mbar	10.7	16.1
OPERATION			• On-Off (1 stop min each 24 hours). • Two-stage (high and low flame) and single-stage (all - nothing)	
STANDARD APPLICATIONS			Boilers: water, steam, diathermic oil	
AMBIENT TEMPERATUR		°C	0 - 40	
COMBUSTION AIR TEMPERATURE		°C max	60	
NOISE LEVELS (3) Sound pressure Sound power		dBA	76 87	

(1) Reference conditions: Ambient temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m s.l.m.
(2) Pressure at test point 7)(A)p.3, with zero pressure in the combustion chambre, an maximum burner output.
(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 accu racy, as set out in EN ISO 3746.

ELECTRICAL DATA

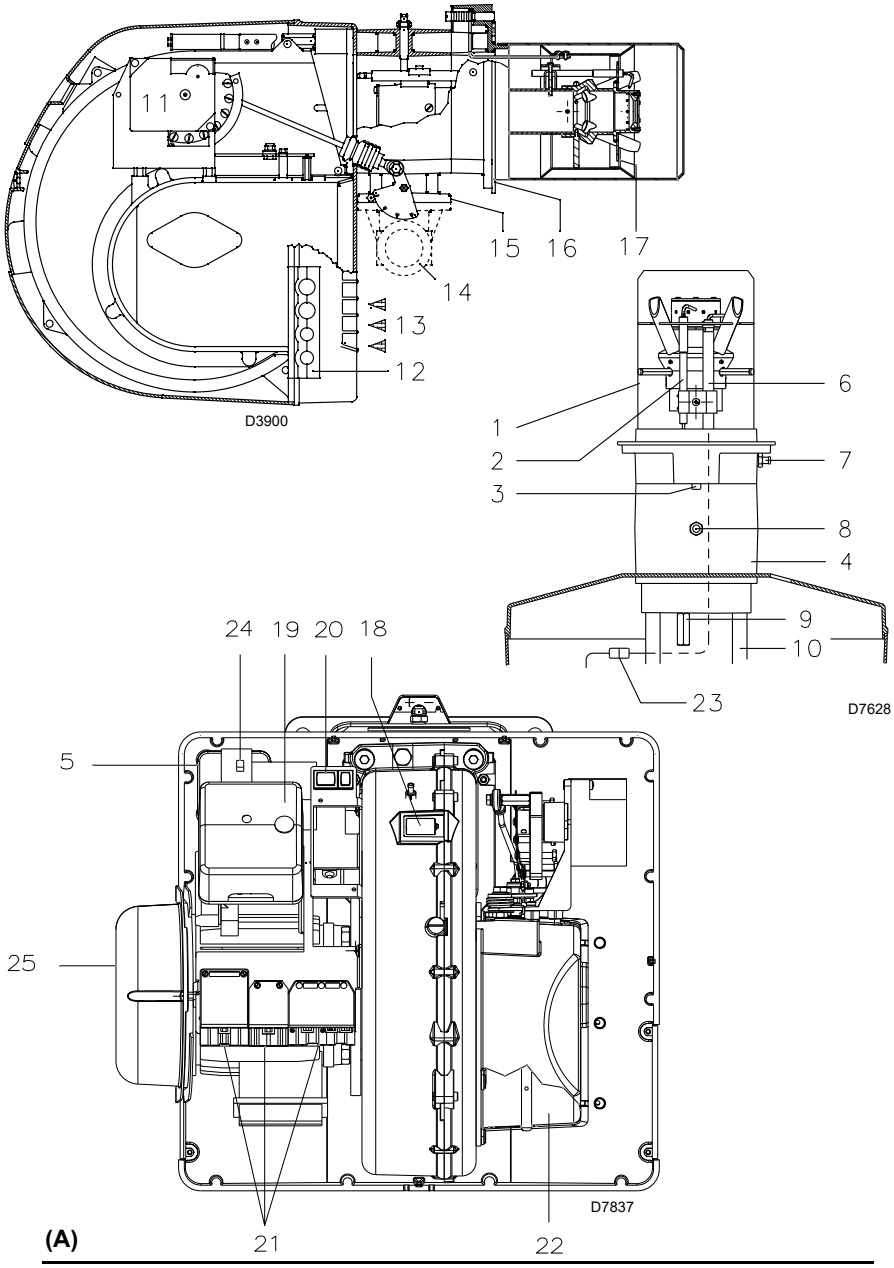
MODEL		RS 64 MZ
ELECTRICAL SUPPLY	V Hz	230 - 400 with neutral ~ +/-10% 50 - three-phase
ELECTRIC MOTOR IE3	rpm W V A	2880 1100 220-240 / 380-415 4,3 - 2,5
IGNITION TRANSFORMER	V1 - V2 I1 - I2	230 V - 1x15 kV 1 A - 25 mA
ELECTRICAL POWER CONSUMPTION	W max	1500
ELECTRICAL PROTECTION		IP 40

VARIANTS

Blast tube lenght mm	250 - 385

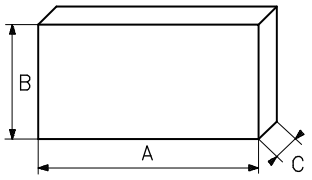
GAS CATEGORY

COUNTRY	CATEGORY
IT - AT - GR - DK - FI - SE	$II_{2H3B / P}$
ES - GB - IE - PT	II_{2H3P}
NL	I_{2E} - I_2 (43,46 ÷ 45,3 MJ/m^3 (0°C))
FR	II_{2Er3P}
DE	$II_{2ELL3B /P}$
BE	$I_{2E(R)B}$, I_{3P}
LU - PL	$II_{2E 3B/P}$



(A)

mm	A	B	C	kg
RS 64 MZ	1200	520	580	42



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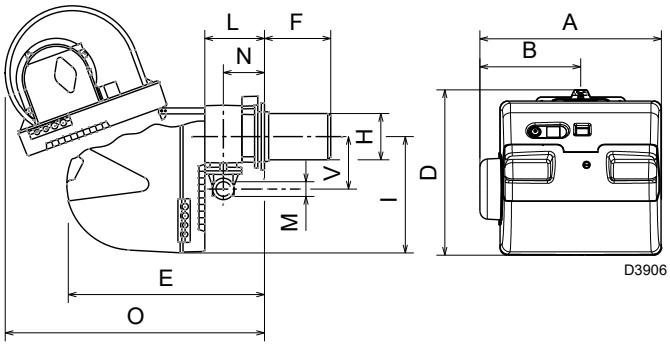


(C)

mm	A	B	D	E	F (1)	H	I	L	O	N	V	M
RS 64 MZ	533	300	490	640	250 - 385	179	352	222	870	134	221	2”

(1) Blast tube: short-long

DESCRIPTION (A)

1 Combustion head
2 Ignition electrode
3 Screw for combustion head adjustment
4 Sleeve
5 Minimum air pressure switch (differential operating type)
6 Flame sensor probe
7 Air pressure test point
8 Gas pressure test point and head fixing screw
9 Screw securing fan to sleeve
10 Slide bars for opening the burner and inspecting the combustion head
11 Servomotor controlling the gas butterfly valve and air gate valve (by means of a variable profile cam mechanism).
When the burner is stopped the air gate valve will be completely closed to reduce to a minimum heat loss due to the flue draught: the latter tends to draw air from the fan suction inlet.
12 Plate with 4 hole knock-outs for electrical cable routing
13 Air inlet to fan
14 Gas input pipework
15 Gas butterfly valve
16 Boiler mounting flange
17 Flame stability disk
18 Flame inspection window
19 Control box with lock-out pilot light and lock-out reset button
20 Power switch for different operations:
automatic - manual - off
Button for:
power increase - power reduction.
21 Plugs for electrical connections
22 Air gate valve
23 Plug-socket on ionisation probe cable
24 Motor contact maker and thermal cutout with reset button
25 Engine protection

Two types of burner failure may occur:

- **CONTROL BOX LOCK-OUT:**
  if the control box 19)(A) pushbutton lights up, it indicates that the burner is in lock-out.
  To reset, press the pushbutton.
- **MOTOR LOCKOUT:**
  three-phase electrical supply; to unblock, press the thermal cutout switch 24)(A).

PACKAGING - WEIGHT (B) - Approximate measurements

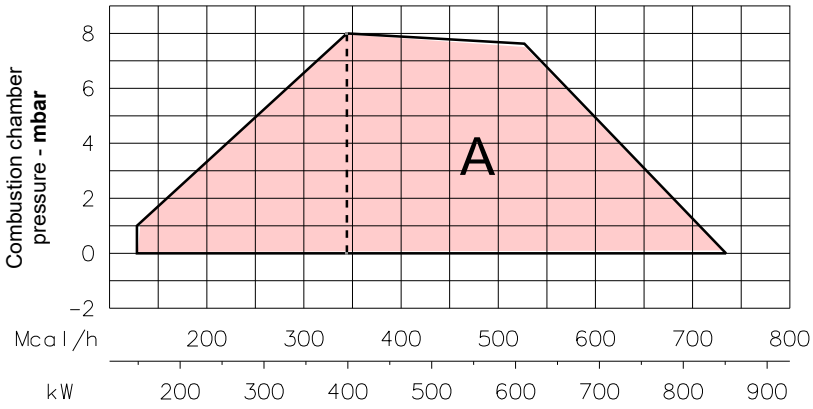
- The burners are shipped in cardboard boxes with the maximum dimensions shown in table (B).
- The weight of the burner complete with packaging is indicated in table (B).

MAX. DIMENSIONS (C) - Approximate measurements

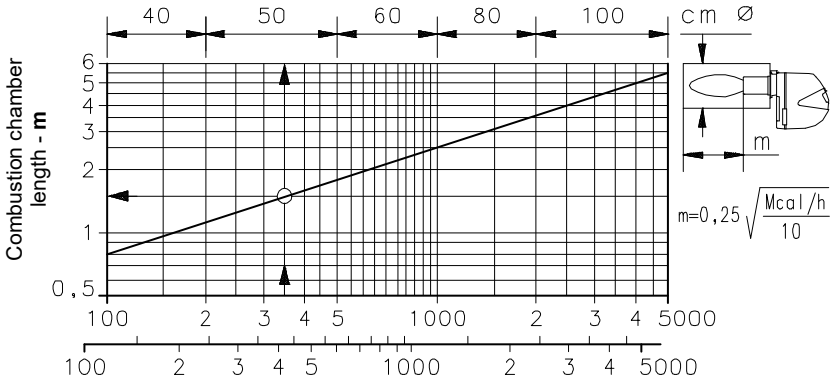
The maximum dimensions of the burner are given in (C).
Note that if you need to examine the combustion head, the burner must be pulled backward on the slide bars and turned upward.
The maximum dimension of the burner, without the cover, when open is give by measurement H.

STANDARD EQUIPMENT

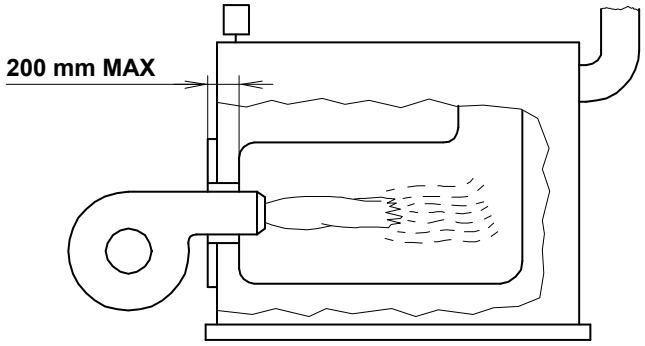
1 - Gas train flange
1 - Flange gasket
4 - Flange fixing screws M 10 x 35
1 - Thermal insulation screen
4 - Screws to secure the burner flange to the boiler: M 12 x 35
5 - Fairleads for electrical connections
1 - Engine protection (with fixing screws)
1 - Plugs unit
1 - Instruction booklet
1 - Spare parts list



(A) D3903



(B) D497



(C) D1079

FIRING RATE (A)

During operation, burner output varies between:

- a **MAXIMUM OUTPUT**, selected within area A,
- and a **MINIMUM OUTPUT**, which must not be lower than the minimum limit in the diagram.

Important
the FIRING RATE area values have been obtained considering a surrounding temperature of 20 °C, and an atmospheric pressure of 1013 mbar (approx. 0 m above sea level) and with the combustion head adjusted as shown on page 7.

TEST BOILER (B)

The firing rates were set in relation to special test boilers, according to EN 676 regulations.
Figure (B) indicates the diameter and length of the test combustion chamber.

Example
Output 350 Mcal/h:
diameter = 50 cm, length = 1.5 m.

COMMERCIAL BOILERS (C)

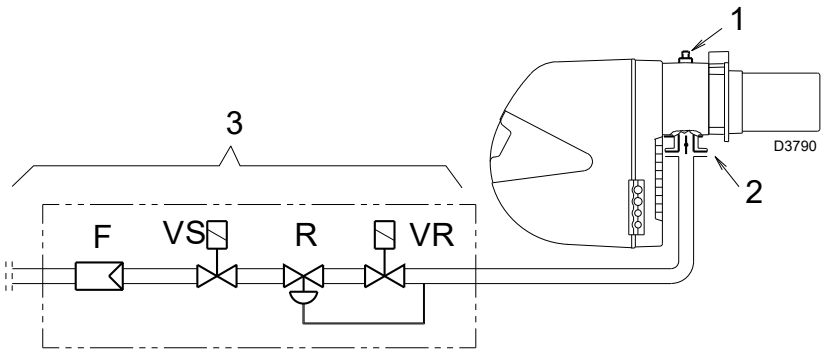
The burner/boiler combination does not pose any problems if the boiler is CE approved and its combustion chamber dimensions are similar to those indicated in diagram (B).
If the burner must be combined with a commercial boiler that has not been CE approved and/or its combustion chamber dimensions are clearly smaller than those indicated in diagram (B), consult the manufacturer.
In addition, for inversion boilers you are advised to check the length of the combustion head, as indicated by the boiler manufacturer.

The maximum thickness of the boiler's front door must not exceed 200 mm (see fig. C).

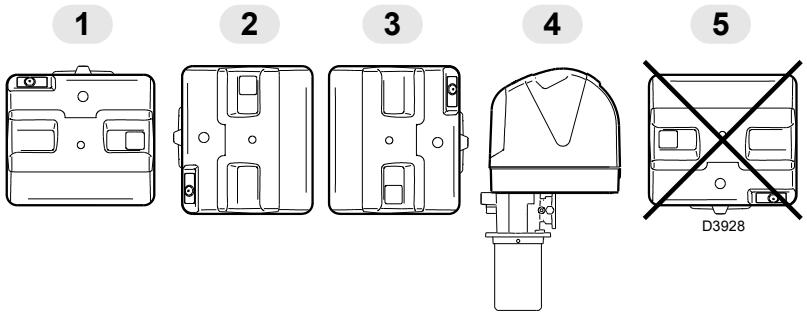
RS 64 MZ Δp (mbar)

kW	1	2	3			
			3970144 3970197	3970180 3970198	3970181 3970182	3970221 3970225
400	2.0	0.3	14.1	7.4	5.2	3.8
450	2.8	0.4	17.0	8.8	6.1	4.0
475	3.3	0.5	18.4	9.4	6.6	4.1
500	3.7	0.5	19.9	10.1	7.0	4.2
550	4.5	0.6	23.2	11.6	8.2	4.4
600	5.4	0.7	26.7	13.2	9.5	4.6
625	5.8	0.8	28.5	13.9	10.1	4.7
650	6.3	0.9	30.3	14.7	10.8	4.9
700	7.4	1.0	34.0	16.4	12.1	5.1
750	8.5	1.2	37.7	18.0	13.4	5.4
800	9.6	1.3	41.5	19.9	14.8	5.8
850	10.7	1.5	45.3	21.8	16.3	6.2

(A)



(B)



(C)

GAS PRESSURE

The adjacent tables show minimum pressure losses along the gas supply line depending on the maximum burner output operation.

Column 1

Pressure loss at combustion head.

Gas pressure measured at test point 1)(B), with: combustion chamber at 0 mbar.

Column 2

Pressure loss at gas butterfly valve 2)(B) with maximum opening: 90°.

Column 3

Pressure loss of gas train 3)(B) includes: adjustment valve VR, safety valve VS (both fully open), pressure governor R, filter F.

The values shown in the various tables refer to:

natural gas G 20 PCI 9.45 kWh/Sm^3 (8.2 Mcal/Sm^3)

With:

natural gas G 25 PCI 8.13 kWh/Sm^3 (7.0 Mcal/Sm^3)

multiply tabulated values:

- column 1 - 2: by 1.5
- column 3:by 1.35

Calculate the approximate maximum output of the burner thus:

- subtract the combustion chamber pressure from the gas pressure measured at test point 1)(B).
- Find the nearest pressure value to your result in column 1 of the table for the burner.
- Read off the corresponding output on the left.

Example:

- Maximum output operation
- Natural gas G 20 PCI 9.45 kWh/Sm^3
- Gas pressure at test point 1)(B) =6.7 mbar
- Pressure in combustion chamber = 3 mbar

6.7 - 3 =3.7 mbar

A maximum output of 500 kW shown in Table RS 64 MZ corresponds to 5 mbar pressure, column 1.

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

To calculate the required gas pressure at test point 1)(B), set the maximim output required from the burner operation:

- find the nearest output value in the table for the burner in question.
- Read off the pressure at test point 1)(B) on the right in column 1.
- Add this value to the estimated pressure in the combustion chamber.

Example:

- Required burner maximum output operation: 500 kW
- Natural gas G 20 PCI 9.45 kWh/Sm^3
- Gas pressure at burner output of 500 kW, taken from table RS 64 MZ, column 1 = 3.7 mbar
- Pressure in combustion chamber = 3 mbar

3.7 + 3= 6.7 mbar

pressure required at test point 1)(B).

Data of head thermal power and gas pressure refer to operation with gas butterfly valve fully open (90°).

INSTALLATION

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

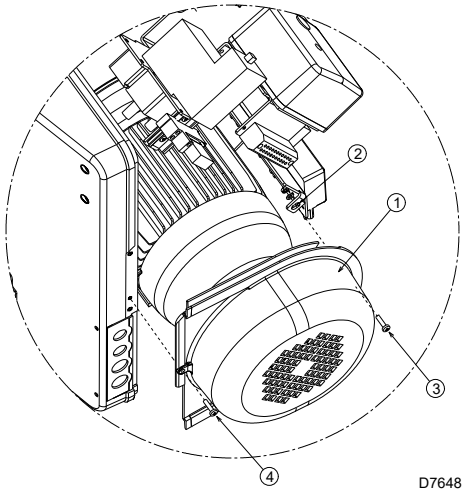
WORKING POSITION (C)

The burner is designed to work only in the positions **1**, **2**, **3 and 4**.

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** allow the working, but make the operations of maintenance and checking of the combustion head more difficult page 14.

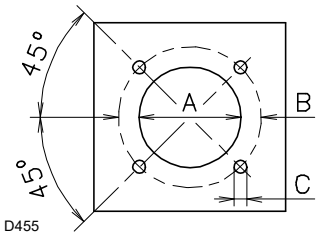
Any other position could compromise the correct working of the appliance.

Installation **5** is forbidden, for safety reasons.



(A)

mm	A	B	C
RS 64 MZ	185	275 - 325	M 12



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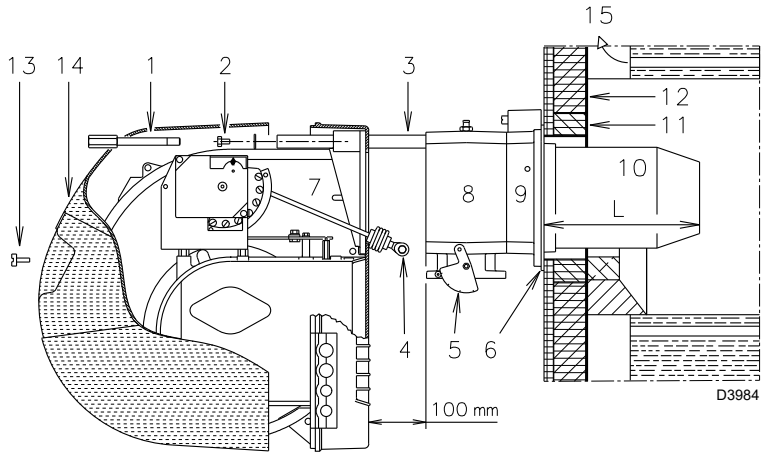

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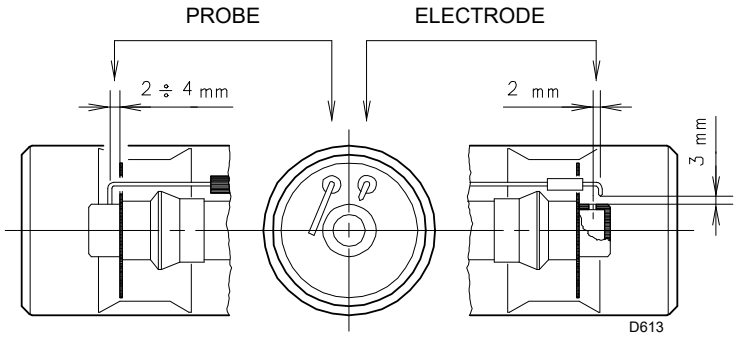
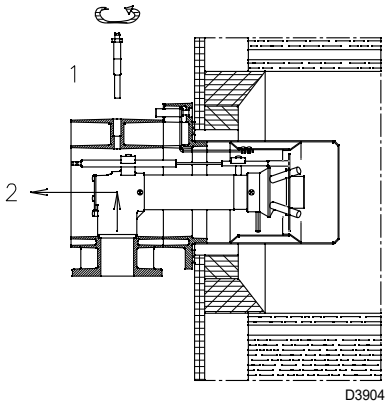


(D)



(E)

BEFORE ASSEMBLING THE CASING, IT IS NECESSARY TO FIX THE ENGINE PROTECTION SUPPLIED (1)(A) ONTO THE BRACKET (2)(A), USING THE APPROPRIATE SCREWS (3)(A) WITH A NUT AND A WASHER. FIX THE BRACKET TO THE FRONT SHIELD OF THE BURNER, USING THE SCREWS (4)(A).

BOILER PLATE (B)

Drill the combustion chamber locking plate as shown in (B). The position of the threaded holes can be marked using the thermal screen supplied with the burner.

BLAST TUBE LENGTH (C)

The length of the blast tube must be greater than the thickness of the boiler door complete with its fettling. The lengths, L (mm), are:

Blast tube 10):
- short 250
- long 385

For boilers with front flue passes 15) or flame inversion chambers, protective fettling in refractory material 11), must be inserted between the boiler fettling 12) and the blast tube 10).
This protective fettling must not compromise the extraction of the blast tube.
For boilers having a water-cooled front the refractory fettling 11)-12) is not required unless it is expressly requested by the boiler manufacturer.

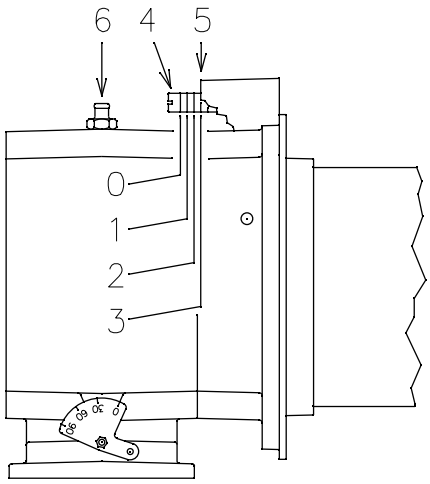
SECURING THE BURNER TO THE BOILER (D)

Before securing the burner to the boiler, check through the blast tube opening to make sure that the flame sensor probe and the ignition electrode are correctly set in position, as shown in (D).

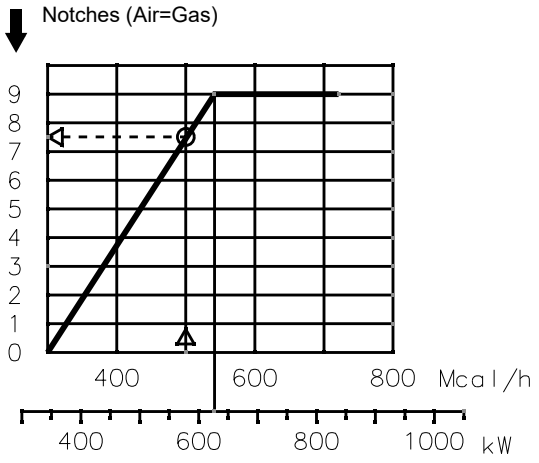
Now detach the combustion head from the burner, fig. (C):
- Remove screw 13) and withdraw the cover 14).
- Disengage the articulated coupling 4) from the graduated sector 5).
- Remove the screws 2) from the slide bars 3).
- Remove screw 1) and pull the burner back on slide bars 3) by about 100 mm.
- Disconnect the wires from the probe and the electrode and then pull the burner completely off the slide bars, after removing the split pin from the slide bar 3).

Secure the flange 9)(C) to the boiler plate, interposing the thermal insulating screen 6)(C) supplied with the burner. Use the 4 screws, also supplied with the unit, after first protecting the thread with an anti-locking product.
The seal between burner and boiler must be airtight.

If you noticed any irregularities in the positions of the probe or ignition electrode during the check mentioned above, remove screw 1)(E), extract the internal part 2)(E) of the head and proceed to set up the two components correctly.
Do not attempt to turn the probe. Leave it in the position shown in (D) since if it is located too close to the ignition electrode the control box amplifier may be damaged.

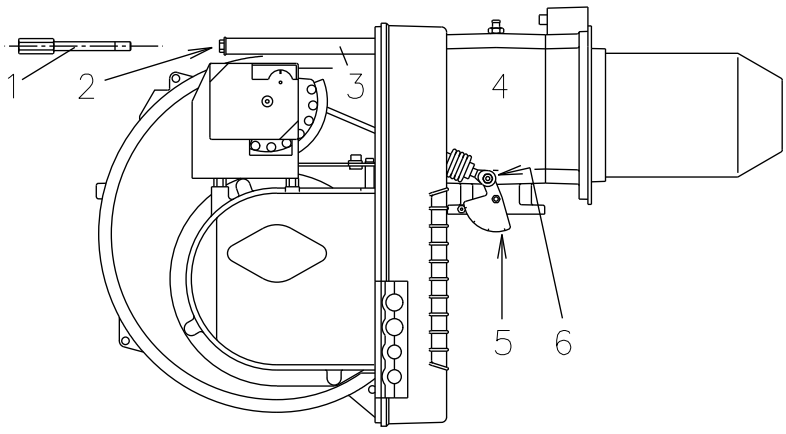


(A) D3905



Max burner output

(B) D3909



(C) D3985

COMBUSTION HEAD SETTING

Installation operations are now at the stage where the blast tube and sleeve are secured to the boiler as shown in fig. (A). It is now a very simple matter to set up the combustion head, as this depends solely on the MAX output developed by the burner.
It is therefore essential to establish this value before proceeding to set up the combustion head.
Adjustment of the head on the air side is required.

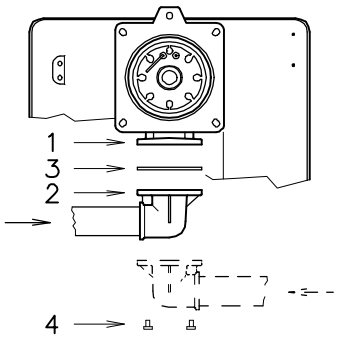
In diagram (B) find the notch to use for adjusting the air and the gas, and then proceed as follows:

Air adjustment (A)
Turn screw 4)(A) until the notch identified is aligned with the front surface 5)(A) of the flange.

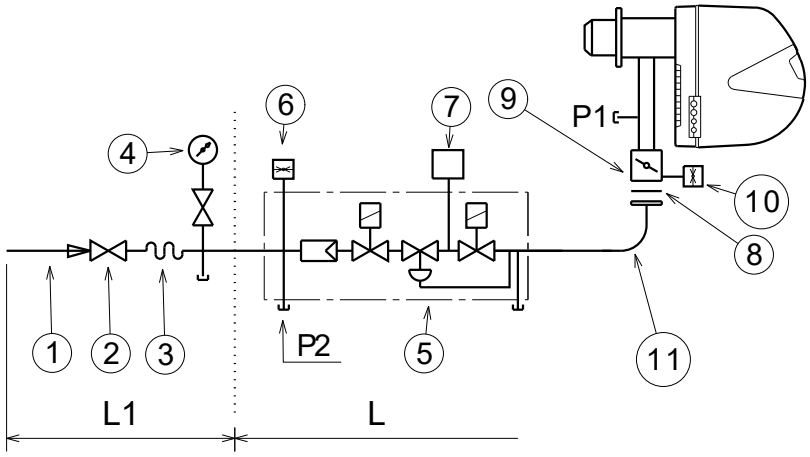
Example
MAX output = 500 Mcal/h.
If we consult diagram (B) we find that for this output, air must be adjusted using notch 7.5, as shown in fig. (A).

Once you have finished setting up the head, refit the burner to the slide bars 3)(C) at approximately 100 mm from the sleeve 4)(C) - burner positioned as shown in fig. (C)p.6 - insert the flame detection probe cable and the ignition electrode cable and then slide the burner up to the sleeve so that it is positioned as shown in fig. (C).
Refit screws 2) on slide bars 3).
Secure the burner to the sleeve by tightening screw 1).
Reconnect the articulation 6) to the graduated sector 5).

Important
When fitting the burner on the two slide bars, it is advisable to gently draw out the high tension cable and flame detection probe cable until they are slightly stretched.



(A) D505



(B) D3791

BURNERS AND RELEVANT GAS TRAINS APPROVED ACCORDING TO EN 676

GAS TRAINS L				7	11
Code	Model	Ø	C.T.	Code	Code
3970144	MB-DLE 412	1”1/4”	-	3010123	3000843
3970197	MB-DLE 412 CT	1”1/4”	♦	3010123	3000843
3970180	MB-DLE 415	1”1/2	-	3010123	3000843
3970198	MB-DLE 415 CT	1”1/2	♦	3010123	3000843
3970181	MB-DLE 420	2”	-	3010123	-
3970182	MB-DLE 420 CT	2”	♦	-	-
3970221	MBC-1200-SE-50	2”	-	3010123	-
3970225	MBC-1200-SE-50 CT	2”	♦	-	-

(C)

GAS LINE

- The gas train must be connected to the gas attachment 1)(A), using flange 2), gasket 3) and screws 4) supplied with the burner.
- The gas train can enter the burner from the right or left side, depending on which is the most convenient, see fig. (A).
- Gas solenoids must be as close as possible to the burner to ensure gas reaches the combustion head within the safety time range of 3s.
- Make sure that the pressure governor calibration range (colour of the spring) comprises the pressure required by the burner.

GAS TRAIN (B)

It is type-approved according to EN 676 Standards and is supplied separately from the burner with the code indicated in table (C).

KEY (B)

1 - Gas input pipe
2 - Manual valve
3 - Vibration damping joint
4 - Pressure gauge with pushbutton cock
5 - Multibloc, including:
- filter (replaceable)
- working valve
- pressure adjuster

6 - Minimum gas pressure switch
7 - Valve seal checking device.
In accordance with the standard EN 676, gas valve leak detection control devices are compulsory for burners with maximum outputs of more than 1200 kW.
8 - Gasket
9 - Gas adjustment butterfly valve
10 - Max gas pressure switch (accessory)
11 - Gas train/burner adaptor

P1 - Pressure at combustion head
P2 - Up-line pressure of valves/adjuster

L - Gas train supplied separately with the code indicated in table (C)
L1 - The responsibility of the installer

KEY TO TABLE (C)

C.T. = Gas valves leak detection control devices:
- = Gas train without gas valve leak detection control device; device that can be ordered separately and assembled subsequently (see Column 7).
♦ = Gas train with assembled VPS valve leak detection control device.

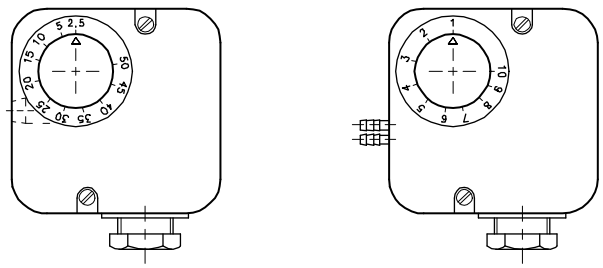
7 = VPS valve leak detection control device. Supplied separately from gas train on request.

11 = Gas train/burner adaptor. Supplied separately from gas train on request.

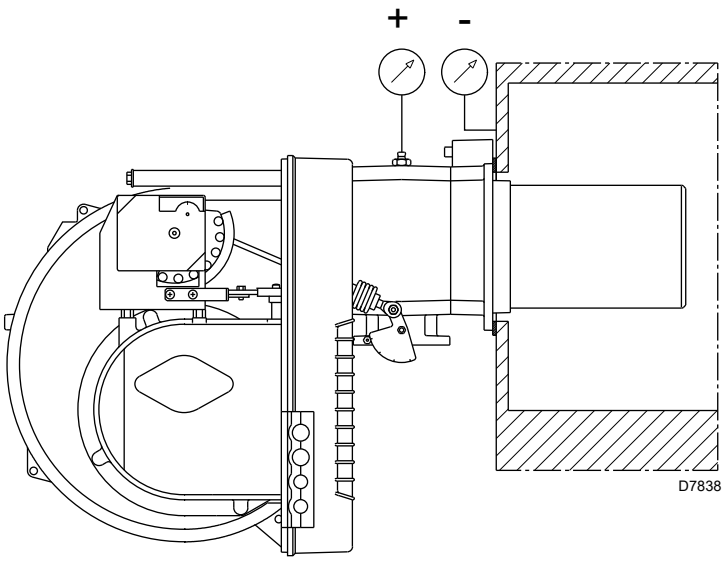
Note

See the accompanying instructions for the adjustment of the gas train.

MIN GAS PRESSURE SWITCH AIR PRESSURE SWITCH



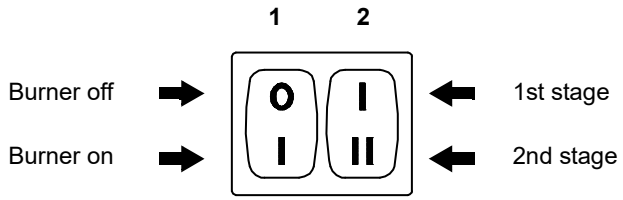
D897 **(A)** **(B)**



(C)

SERVOMOTOR

(D) D517



(E) D469

ADJUSTMENTS PRIOR TO IGNITION

WARNING

THE FIRST IGNITION MUST BE CARRIED OUT BY QUALIFIED PERSONNEL WITH THE RIGHT INSTRUMENTS.

Adjustment of the combustion head, and air and gas deliveries has been illustrated on page 7.
In addition, the following adjustments must also be made:

- open manual valves up-line from the gas train.
- Adjust the minimum gas pressure switch to the start of the scale (A).
- Adjust the air pressure switch to the zero position of the scale (B).
- Purge the air from the gas line.
  Continue to purge the air (we recommend using a plastic tube routed outside the building) until gas is smelt.
- Fit a manometer (C) to the gas pressure test point on the sleeve.
  The manometer readings are used to calculate the 2nd stage operation burner power using the tables on page 5.
- Connect two lamps or testers to the two gas line solenoid valves VR and VS to check the exact moment at which voltage is supplied.
  This operation is unnecessary if each of the two solenoid valves is equipped with a pilot light that signals voltage passing through.

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.

SERVOMOTOR (D)

The servomotor provides simultaneous adjustment of the air gate valve, by means of the variable profile cam, and the gas butterfly valve.
The angle of rotation of the servomotor is equal to the angle on the graduated sector controlling the gas butterfly valve. The servomotor rotates through 90 degrees in 12 seconds.
Do not alter the factory setting for the 4 cams; simply check that they are set as indicated below:

Cam St2 **: 90°**
Limits rotation toward maximum position. When the burner is in 2nd stage operation the gas butterfly valve must be fully open: 90°.
Cam St0 **: 0°**
Limits rotation toward the minimum position. When the burner is shut down the air gate valve and the gas butterfly valve must be closed: 0°.
Cam St1 **: 15°**
Adjusts the ignition position and the output in 1st stage operation.
Cam MV **:** not used

BURNER STARTING

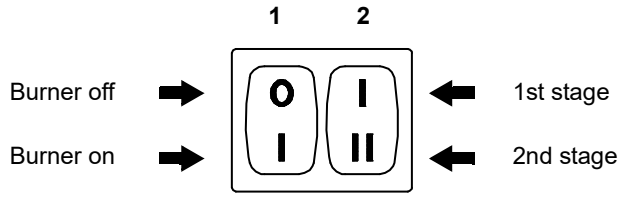
Close the control devices and set:

- switch 1)(E) to "Burner ON" position
- switch 2)(E) to "1st STAGE" position.

As soon as the burner starts check the direction of rotation of the fan blade, looking through the flame inspection window 18)(A)p.3.
Make sure that the lamps or testers connected to the solenoids, or pilot lights on the solenoids themselves, indicate that no voltage is present. If voltage is present, then **immediately** stop the burner and check electrical connections.

BURNER FIRING

Having completed the checks indicated in the previous heading, the burner should fire. If the motor starts but the flame does not appear and the control box goes into lock-out, reset and wait for a new firing attempt.
If firing is still not achieved, it may be that gas is not reaching the combustion head within the safety time period of 3 seconds.
In this case increase gas firing delivery.
The arrival of gas at the sleeve is indicated by the manometer (C). Once the burner has fired, now proceed with global calibration operations.



(A) D469

BURNER CALIBRATION

The optimum calibration of the burner requires an analysis of the flue gases at the boiler outlet.
Adjust successively:
1 - firing output
2 - 2nd stage burner output
3 - 1st stage burner output
4 - Intermediate outputs between 1st and 2nd stage
5 - Air pressure switch
6 - Minimum gas pressure switch

Refer to paragraph "Safety test - with gas ball valve closed" before the first start-up, page 15.

1 - FIRING OUTPUT

According to EN 676 Regulations:
Burners with max. output up to 120 kW
Firing can be performed at the maximum operation output level. Example:
- Max. operation output : 120 kW
- Max. firing output : 120 kW

Burners with max. output above 120 kW
Firing must be performed at a lower output than the max. operation output. If the firing output does not exceed 120 kW, no calculations are required. If firing output exceeds 120 kW, the regulations prescribe that the value be defined according to the control box safety time "ts":
- for "ts" = 2s, firing output must be equal to or lower than 1/2 of max. operation output.
- For "ts" = 3s, firing output must be equal to or lower than 1/3 of max. operation output.

Example
MAX operation output of 600 kW.
Firing output must be equal to or lower than:
- 300 kW with ts = 2s
- 200 kW with ts = 3s

In order to measure the firing output:
- disconnect the plug-socket 23)(A)p.3 on the ionization probe cable (the burner will fire and then go into lock-out after the safety time has elapsed).
- Perform 10 firings with consecutive lock-outs.
- On the meter read the quantity of gas burned. This quantity must be equal to or lower than the quantity given by the formula, for ts = 3s:

$$\mathbf{Vg = Qa}\ (\text{max. burner output})\ \mathbf{x\ n\ x\ ts} \over \mathbf{3600}$$

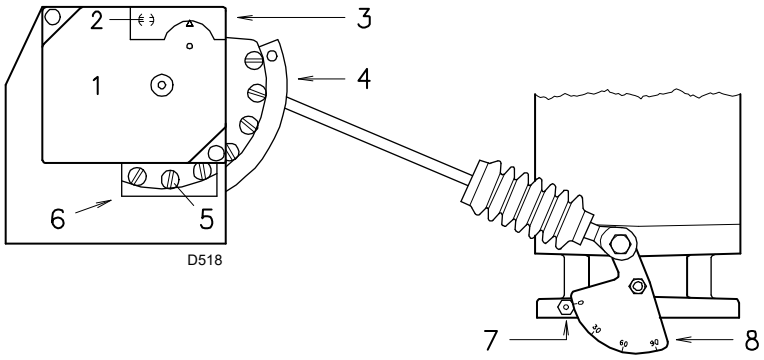
Vg: volume supplied upon ignitions carried out (Sm^3)
Qa: ignition output (Sm^3/h)
n: number of ignitions (10)
ts: safety time (sec)

Example: for gas G 20 (9.45 kWh/Sm^3):
ignition output 400 kW
corresponding to 47.6 Sm^3/h.
After 10 firings with lock-outs, the delivery read on the meter must be equal to or lower than::

$$\mathbf{Vg = 47.6\ x\ 10\ x\ 3 = 0.397\ Sm^3} \over \mathbf{3600}$$

2 - 2ND STAGE OUTPUT

2nd stage output of the burner must be set within the firing rate range shown on page 4.
In the above instructions we left the burner running in 1st stage operation. Now set switch 2)(A) to the 2nd stage position: the servomotor will open, simultaneously, the air gate valve and the gas butterfly valve to 90°.
Gas calibration
Measure the gas delivery at the meter.
A guideline indication can be calculated from the tables on page 5, simply read off the gas pressure on manometer, see fig.(C) on page 9, and follow the instructions on page 5.
- If delivery needs to be reduced, diminish outlet gas pressure and, if it is already very low, slightly close adjustment valve VR.
- If delivery needs to be increased, increase outlet gas pressure.



1 Servomotor

2 Cam 4 engaged ⊖ /disengages ◐

3 Cam cover

4 Adjustable profile cam

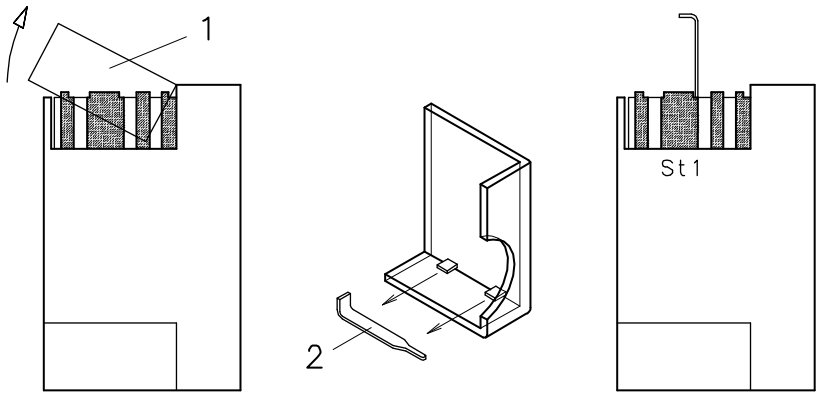
5 Cam profile adjustment screws

6 Opening for access to screws 5

7 Index for graduated sector 8

8 Graduated sector for gas butterfly valve

(A)



(B)

Adjusting air delivery

Progressively adjust the end profile of cam 4)(A) by turning the cam adjustment screws as they appear through the access opening 6)(A).

- Turn the screws clockwise to increase air delivery.
- Turn the screws counter-clockwise to reduce air delivery.

3 - 1ST STAGE OUTPUT

Burner power in 1st stage operation must be selected within the firing rate range shown on page 4.

Set the switch 2)(A)p.10 to the 1st stage position: the servomotor 1)(A) will close the air gate valve and, at the same time, closes the gas butterfly valve down to 15°, i.e. down to the original factory setting.

Adjusting gas delivery

Measure the delivery of gas from the gas meter.

- If this value is to be reduced, decrease the angle of cam St1 (B) slightly by proceeding a little at a time until the angle is changed from 15° to 13° or 11°....
- If it is necessary to increase the mains pressure, move to 2nd stage operation by altering the setting of switch 2)(A)p.10 and increase the angle of cam St1, proceeding a little at a time until the angle is changed from 15° to 17° - 19°....

  At this point return to 1st stage operation and measure gas delivery.

Note

The servomotor follows the adjustment of cam St1 only when the angle is reduced. If, however the angle must be increased, switch to 2nd stage operation, increase the angle and then return to 1st stage operation to check the effect of the adjustment.

If you increase the angle of St1 while the burner is operating in 1st stage, lock-out will result.

In order to adjust cam St1, remove press-fit cover 1), as shown in fig.(B), extract the relevant key 2) from inside, and fit it into the keyway in cam St1.

Adjustment of air delivery

Progressively adjust the starting profile of cam 4)(A) by turning the screws working throught the access hole 6)(A). It is preferable not to turn the first screw since this is used to set the air gate valve to its fully-closed position.

4 - INTERMEDIATE OUTPUTS

Adjustment of gas delivery

No adjustment of gas delivery is required.

Adjustment of air delivery

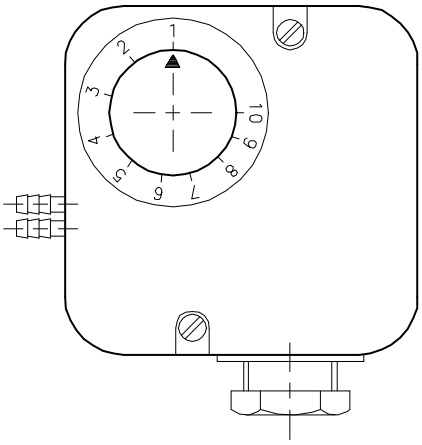
Switch off the burner using switch 1)(A)p.10, disengage the variable profile cam, set the servomotor shaft slot 2)(A) to a vertical position and turn the central screws of the cam so that the cam offers a progressive gradient. Try turning the cam back and forth by hand a few times until the movement is completely smooth with no signs of sticking.

Do not alter the position of the screws at each end of the cam track, which have already been adjusted for 1st and 2nd stage air gate valve control.

Note

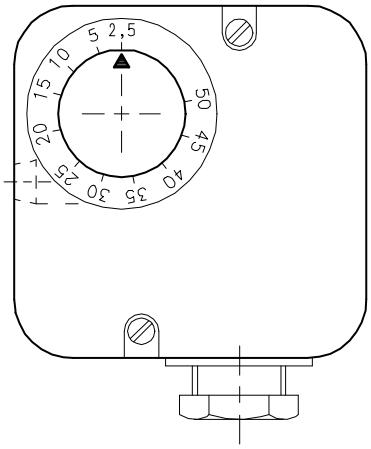
Once you have finished adjusting 2nd stage - 1st stage - intermediate outputs, check ignition once again: noise emission at this stage must be identical to the following stage of operation. If you notice any sign of pulsations, reduce the ignition stage delivery.

AIR PRESSURE SWITCH 5)(A)p.3

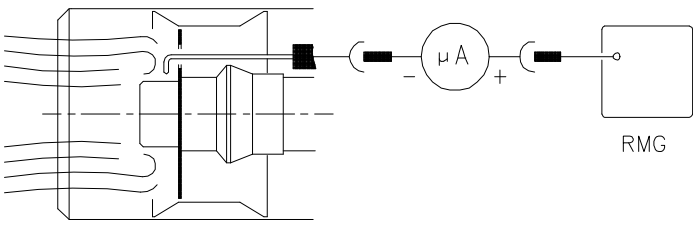


(A) D521

MIN GAS PRESSURE SWITCH 6)(B)p.8



(B) D896



(C) D3023

5 - AIR PRESSURE SWITCH (A)

Adjust the air pressure switch after having performed all other burner adjustments with the air pressure switch set to the start of the scale (A).
With the burner operating in 1st stage, increase adjustment pressure by slowly turning the relative knob clockwise until the burner locks out.
Then turn the knob anti-clockwise by about 20% of the set point and repeat burner starting to ensure it is correct.
If the burner locks out again, turn the knob anti-clockwise a little bit more.

Attention

As a rule, the air pressure switch must limit the CO in the fumes to less than 1% (10,000 ppm).
To check this, insert a combustion analyser into the chimney, slowly close the fan suction inlet (for example with cardboard) and check that the burner locks out, before the CO in the fumes exceeds 1%.

The air pressure switch may operate in "differential" operation in two pipe system. If a negative pressure in the combustion chamber during pre-purging prevents the air pressure switch from switching, switching may be obtained by fitting a second pipe between the air pressure switch and the suction inlet of the fan. In such a manner the air pressure switch operates as differenzial pressure switch.

Warning

The use of the air pressure switch with differential operation is allowed only in industrial applications and where rules enable the air pressure switch to control only fan operation without any reference to CO limit.

6 - MINIMUM GAS PRESSURE SWITCH (B)

Adjust the minimum gas pressure switch (B) after having adjusted the burner, the gas valves and the gas train stabiliser. With the burner operating at maximum output:

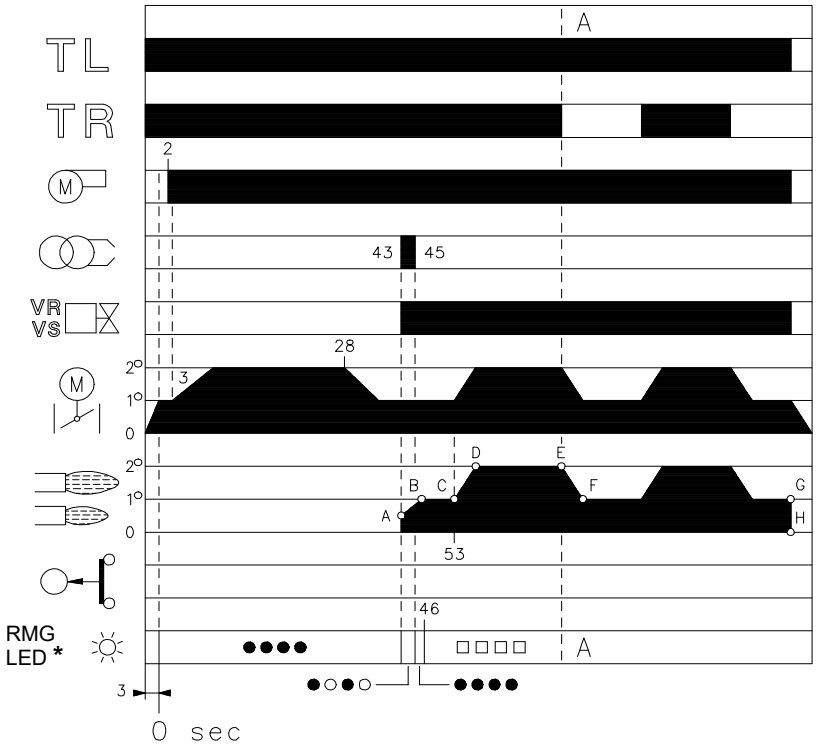
– install a pressure gauge downstream of the gas train stabiliser (for example at the gas pressure test point on the burner combustion head);
– choke slowly the manual gas cock until the pressure gauge detects a decrease in the pressure read of about 0.1 kPa (1 mbar). In this phase, verify the CO value which must always be less than 100 mg/kWh (93 ppm).
– Increase the adjustment of the gas pressure switch until it intervenes, causing the burner shutdown;
– remove the pressure gauge and close the cock of the gas pressure test point used for the measurement;
– open completely the manual gas cock.

WARNING 1 kPa = 10 mbar

FLAME PRESENT CHECK (C)

The burner is fitted with an ionisation system which ensures that a flame is present. The minimum current for plant operation is 5 µA.
The burner provides a much higher current, so that controls are not normally required. However, if it is necessary to measure the ionisation current, disconnect the plug-socket 23)(A)p.3 on the ionisation probe cable and insert a direct current microamperometer with a base scale of 100 µA.
Carefully check polarities!

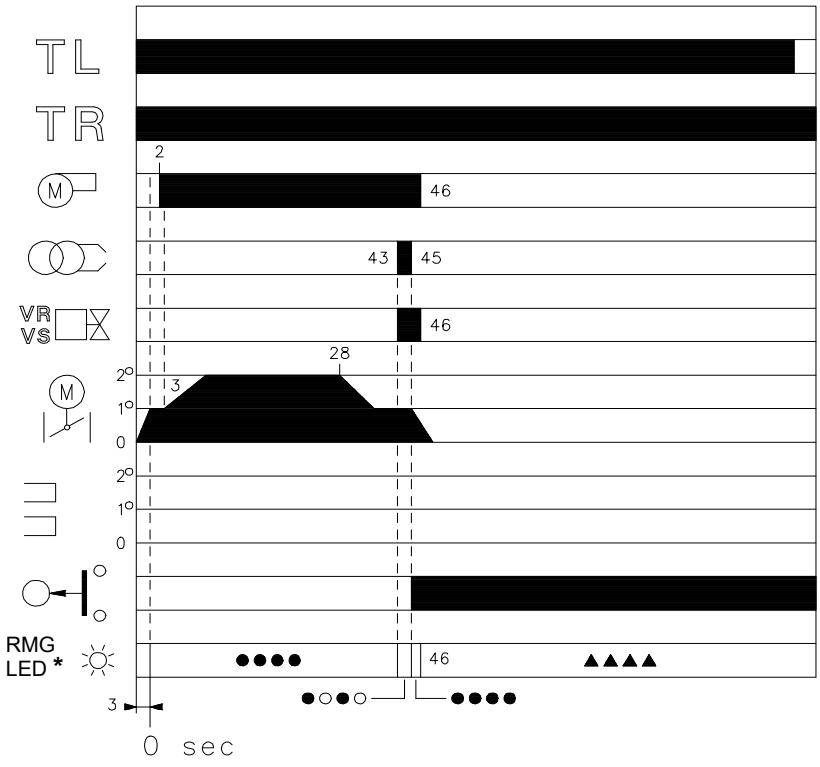
NORMAL FIRING
(n° = seconds from instant 0)



* ○ Off ● Yellow □ Green ▲ Red
For further details see page 16.

(A) D3028

NO FIRING



* ○ Off ● Yellow ▲ Red
For further details see page 16.

(B) D3029

BURNER OPERATION

BURNER STARTING (A)

- : Control device TL closes.
  Servomotor starts: it rotates during opening up to the angle set on cam St1.
  After about 3s:
- 0 s : The control box starting cycle begins.
- 2 s : Fan motor starts.
- 3 s : Servomotor starts: it rotates during opening until contact on cam St2 is tripped.
  The air gate valve is positioned to 2nd stage output.
  Pre-purge stage with air delivery at 2nd stage output.
  Duration 25 seconds.
- 28 s : Servomotor starts: it rotates during closing up to the angle set on cam St1.
- 43 s : The air gate valve and the gas butterfly are positioned to 1st stage output.
  Ignition electrode strikes a spark.
  Safety valve VS and adjustment valve VR (rapid opening) open. The flame is ignited at a low output level, point A. Output is then progressively increased, with the valve opening slowly up to 1st stage output, point B.
- 45 s : The spark goes out.
- 53 s : If remote control device TR is closed or if it has been replaced by a jumper, the servomotor will continue to turn until the cam St2 come into operation, setting the air gate valve and the gas butterfly valve to the 2nd stage operation position, section C-D.
  The control box starting cycle ends.

STEADY STATE OPERATION (A)

System equipped with one control device TR.
Once the starting cycle has come to an end, control of the servomotor passes on to the control device TR that controls boiler temperature or pressure, point D.
(The control box will continue, however, to monitor flame presence and the correct position of the air pressure switch).

- When the temperature or the pressure increases until the control device TR opens, the servomotor closes the gas butterfly valve and the air gate valve and the burner passes from the 2nd to the 1st stage of operation, section E-F.
- When the temperature or pressure decreases until the control device TR closes, the servomotor opens the gas butterfly valve and the air gate valve and the burner passes from the 1st to the 2nd stage of operation, and so on.
- The burner stops when the demand for heat is less than the amount of heat delivered by the burner in the 1st stage, section G-H. Control device TL now opens, the servomotor returns toward the 0° position, limited in this movement by cam St0. The air gate valve closes completely to reduce heat losses to a minimum.

Systems not equipped with control device TR (jumper wire installed)
The burner is fired as described in the case above. If the temperature or pressure increase until control device TL opens, the burner shuts down (Section A-A in the diagram).

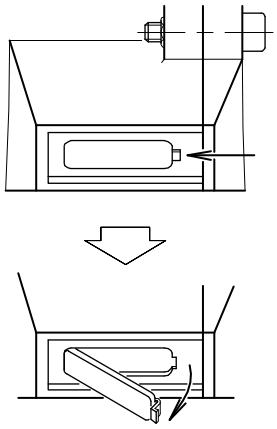
FIRING FAILURE (B)

If the burner does not fire, it goes into lock-out within 3s of the opening of the gas solenoid valve and 49s after the closing of control device TL. The control box red pilot light will light up.

BURNER FLAME GOES OUT DURING OPERATION

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

FLAME INSPECTION WINDOW



(A) D484

FINAL CHECKS (with burner running)

- Disconnect one of the wires on the minimum gas pressure switch.
- Open remote control device TL.
- Open remote control device TS:

the burner must stop.

- Detach the air feed pipe to the pressure switch.
- Disconnect the ionisation probe lead:

the burner must lock out.

- Make sure that the mechanical locking systems on the various adjustment devices are fully tightened.

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 switch off the electrical supply to the burner, using the main switch of the system.

Combustion
The optimum calibration of the burner requires an analysis of the flue gases. Significant differences with respect to the previous measurements indicate the points where more care should be exercised during maintenance.

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

Gas filter
Change the gas filter when it is dirty.

Flame inspection window
Clean the flame inspection window (A).

Combustion head
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. If in doubt, disassemble the elbow fitting.

Servomotor
Disengage the cam 4)(A)p.11 from servomotor, by turning slot 2)(A)p.11 through 90° and turn it backward and forward by hand to make sure it is free moving. Now engage cam 4)(A)p.11 again.

Burner
Check for excess wear or loose screws in the mechanisms controlling the air gate valve and the gas butterfly valve. Also make sure that the screws securing the electrical leads in the burner terminal strip are fully tightened.
Clean the outside of the burner, taking special care with the transmission joints and cam 4)(A)p.11.

Combustion
Adjust the burner if the combustion values found at the beginning of the operation do not comply with the regulations in force, or at any rate, do not correspond to good combustion. Use the appropriate card to record the new combustion values; they will be useful for subsequent controls.

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
Flexible hoses (if present)	5 years or 30,000 pressurised cycles
Fan impeller	10 years or 500,000 start-ups

(A)

SAFETY TEST - WITH GAS SUPPLY CLOSED

For a safe start up it is very important to check that the electrical wiring between the gas valves and the burner has been carried out correctly.

To this end, after checking that the wiring has been carried out in conformity with the burner's wiring diagrams, a starting cycle must be carried out with the gas tap closed (dry test).

1 The manual gas valve should be closed with the locking/releasing device ("lock-out / tag out" procedure).
2 Make sure the limit electric contacts of the burner close
3 Make sure that the minimum gas pressure switch contact closes
4 Proceed with a burner start up attempt.

The starting cycle should take place with the following phases:

- Starting of the fan motor for the pre-purging
- Control of the gas valve leak detection, if applicable.
- Completion of the pre-purging
- Attainment of the ignition point
- Power supply to the ignition transformer
- Power supply to the gas valves.

Since the gas is closed, the burner will not be able to start and its control box will stop or safely lockout.

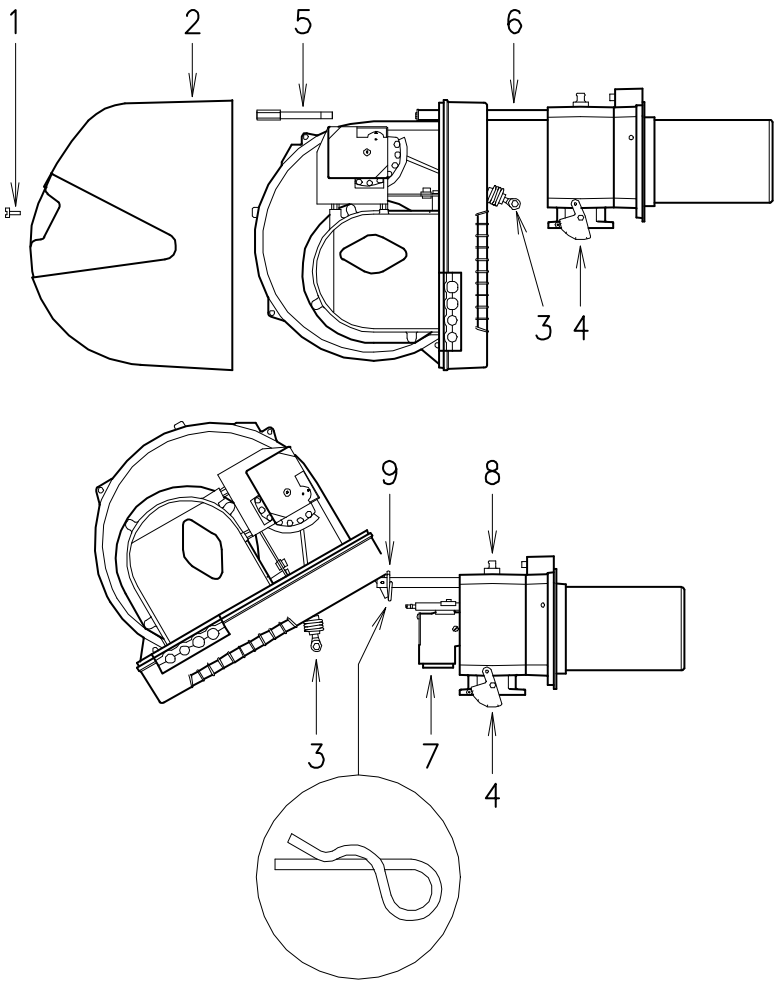
The effective powering of the gas valves can be verified with the insertion of a tester; some valves have indicator lights (or opening/closing position indicators) that are activated when they are powered.

IF THE ELECTRICAL SUPPLY TO THE GAS VALVES OCCURS AT UNEXPECTED TIMES, DO NOT OPEN THE MANUAL VALVE, DISABLE THE ELECTRICAL SUPPLY, CHECK THE WIRING; CORRECT THE ERRORS AND CARRY OUT THE ENTIRE TEST AGAIN.

SAFETY COMPONENTS

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

OPENING THE BURNER



(A) D535

TO OPEN THE BURNER (A):

- switch off the electrical power.
- Remove screw 1) and withdraw cover 2).
- Disengage the articulated coupling 3) from the graduated sector 4).
- Remove screw 5), the split pin 9) and pull the burner back by about 100 mm on the slide bars 6). Disconnect the probe and electrode leads and then pull the burner fully back.
- Turn the burner as shown in the figure and fit the split pin 9) into one of the slide bar holes so that the burner remains in position.

Now extract the gas distributor 7) after having removed the screw 8).

TO CLOSE THE BURNER (A):

- remove the split pin 9) push the burner until it is about 100 mm from the sleeve.
- Re-connect the leads and slide in the burner until it comes to a stop.
- Refit screw 5), the split pin 9) and pull the probe and electrode leads gently out until they are slightly stretched.
- Re-couple the articulated coupling 3) to the graduated sector 4).

BURNER START-UP CYCLE DIAGNOSTICS

During start-up, indication is according to the followin table:

COLOUR CODE TABLE	
Sequences	**Colour code**
Pre-purging	●●●●●●●●●
Ignition phase	●○●○●○●○●
Operation, flame ok	□□□□□□□□□
Operating with weak flame signal	□○□○□○□○□
Electrical supply lower than ~ 170V	●▲●▲●▲●▲●
Lock-out	▲▲▲▲▲▲▲▲▲
Extraneous light	▲□▲□▲□▲□▲
Key: ○ Off ● Yellow □ Green ▲ Red	

WARNING

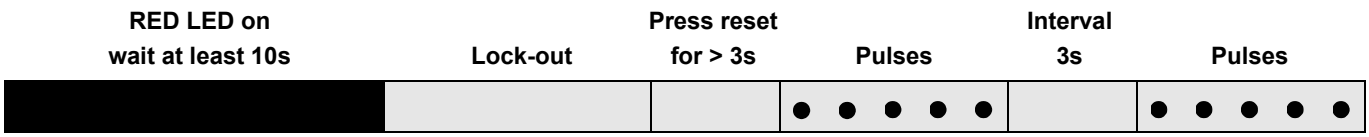
In the event of a burner lockout, more than two consecutive burner reset operations could cause damage to the installation. On the third lockout, contact the After-sales Service.

DANGER

If further lockouts or burner faults occur, interventions must only be made by qualified, authorised personnel (as indicated in this manual, and in compliance with the laws and regulations currently in force).

RESETTING THE CONTROL BOX AND USING DIAGNOSTICS

The control box features a diagnostics function through which any causes of malfunctioning are easily identified (indicator: **RED LED**).
To use this function, you must wait at least 10 seconds once it has entered the safety condition (**lock-out**), and then press the reset button.
The control box generates a sequence of pulses (1 second apart), which is repeated at constant 3-second intervals.
Once you have seen how many times the light pulses and identified the possible cause, the system must be reset by holding the button down for between 1 and 3 seconds.



The methods that can be used to reset the control box and use diagnostics are given below.

RESETTING THE CONTROL BOX

To reset the control box, proceed as follows:
- Hold the button down for between 1 and 3 seconds.
  The burner restarts after a 2-second pause once the button is released.
  If the burner does not restart, you must make sure the limit thermostat is closed.

VISUAL DIAGNOSTICS

Indicates the type of burner malfunction causing lock-out.
To view diagnostics, proceed as follows:
- Hold the button down for more than 3 seconds once the red LED (burner lock-out) remains steadily lit.
  A yellow light pulses to tell you the operation is done.
  Release the button once the light pulses. The number of times it pulses tells you the cause of the malfunction, according to the coding system indicated in the table on page 18.

SOFTWARE DIAGNOSTICS

Reports burner life by means of an optical link with the PC, indicating hours of operation, number and type of lock-outs, serial number of control box etc ...
To view diagnostics, proceed as follows:
- Hold the button down for more than 3 seconds once the red LED (burner lock-out) remains steadily lit.
  A yellow light pulses to tell you the operation is done.
  Release the button for 1 second and then press again for over 3 seconds until the yellow light pulses again.
  Once the button is released, the red LED will flash intermittently with a higher frequency: only now can the optical link be activated.

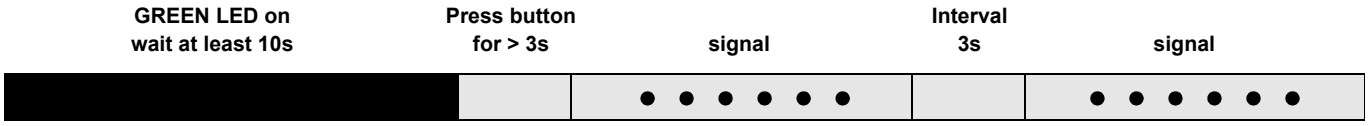
Once the operations are done, the control box's initial state must be restored using the resetting procedure described above.

BUTTON PRESSED FOR	CONTROL BOX
Between 1 and 3 seconds	Control box reset without viewing visual diagnostics.
More than 3 seconds	Visual diagnostics of lock-out condition: (LED pulses at 1-second intervals).
More than 3 seconds starting from the visual diagnostics condition	Software diagnostics by means of optical interface and PC (hours of operation, malfunctions etc. can be viewed)

The sequence of pulses issued by the control box identifies the possible types of malfunction, which are listed in the table on page 18.

Signal	Problem	Possible cause	Recommended remedy
2 blinks ● ●	Once the pre-purging phase and safety time have passed, the burner goes into lockout without the appearance of the flame	1 - The operation solenoid lets little gas through	Increase
		2 - One of the two solenoid valves does not open.	Replace
		3 - Gas pressure too low	Increase pressure at governor
		4 - Ignition electrode incorrectly adjusted	Adjust, see fig. (D) page 6
		5 - Electrode grounded due to broken insulation	Replace
		6 - High voltage cable defective	Replace
		7 - High voltage cable deformed by high temperature	Replace and protect
		8 - Ignition transformer defective.	Replace
		9 - Incorrect valve or transformer electrical wiring	Check
		10 - Defective control box	Replace
		11 - A closed valve upline the gas train	Open
		12 - Air in pipework	Bleed air
		13 - Gas valves unconnected or with interrupted coil	Check connections or replace coil
3 blinks ● ● ●	The burner does not switch on, and the lockout appears	14 - Air pressure switch in operating position	Adjust or replace
	The burner switches on, but then stops in lockout	- Air pressure switch inoperative due to insufficient air pressure:	
		15 - Air pressure switch incorrectly adjusted.	Adjust or replace
		16 - Pressure switch pressure test point pipe blocked	Clean
		17 - Poorly adjusted head	Adjust
		18 - High pressure in the furnace	Connect air pressure switch to fan suction line
	Lockout during pre-purging phase	19 - Defective motor control contactor (only three-phase version)	Replace
		20 - Defective electrical motor.	Replace
		21 - Motor lockout (defective electrical motor)	Replace
4 pulses ● ● ● ●	The burner switches on, but then stops in lockout	22 - Flame simulation	Replace the control box
	Lockout when burner stops	23 - Permanent flame in the combustion head or flame simulation	Eliminate persistence of flame or replace control box
6 blinks ● ● ● ● ● ●	The burner switches on, but then stops in lockout	24 - Defective or incorrectly adjusted servomotor.	Adjust or replace
7 blinks ● ● ● ● ● ● ●	The burner goes into lockout immediately following the appearance of the flame	25 - The operation solenoid lets little gas through	Increase
		26 - Ionisation probe incorrectly adjusted	Adjust, see fig. (D) page 6
		27 - Insufficient ionisation (less than 5 A)	Check probe position
		28 - Earth probe	Withdraw or replace cable
		29 - Burner poorly grounded	Check grounding
		30 - Phase and neutral connections inverted	Invert them
		31 - Defective flame detection circuit	Replace the control box
	Burner lockout moving between 1st and 2nd stages, or between 2nd and 1st stages	32 - Too much air or too little gas	Adjust air and gas
	Burner goes into lockout during operation	33 - Probe or ionisation cable grounded	Replace worn parts
10 blinks ● ● ● ● ● ● ● ● ● ●	The burner does not switch on, and the lockout appears	34 - Incorrect electrical wiring	Check
	The burner goes into lockout	35 - Defective control box	Replace
		36 - Presence of electromagnetic disturbances in the thermostat lines	Filter or eliminate
		37 - Presence of electromagnetic disturbance	Use the radio disturbance protection kit
No blink	The burner does not start	38 - No electrical power supply	Close all switches - Check connections
		39 - A limiter or safety control device is open	Adjust or replace
		40 - Line fuse blocked	Replace
		41 - Defective control box	Replace
		42 - No gas supply	Open the manual valves between contactor and train
		43 - Mains gas pressure insufficient	Contact your GAS COMPANY
		44 - Minimum gas pressure switch fails to close.	Adjust or replace
		45 - Servomotor fails to move to min. ignition position	Replace
	The burner continues to repeat the start-up cycle, without lockout	46 - The gas pressure in the gas mains lies very close to the value to which the minimum gas pressure switch has been set. The sudden drop in pressure after valve opening causes temporary opening of the pressure switch itself, the valve immediately closes and the burner comes to a halt. Pressure increases again, the pressure switch closes again and the ignition cycle is repeated. And so on	Reduce the minimum gas pressure switch intervention pressure. Replace the gas filter cartridge.
	Ignition with pulsations	47 - Poorly adjusted head	Adjust. See page 7
		48 - Ignition electrode incorrectly adjusted	Adjust, see fig. (D) page 6
		49 - Incorrectly adjusted fan air damper: too much air	Adjust
		50 - Output during ignition phase is too high.	Reduce
	The burner does not move into the 2nd stage	51 - Remote control device TR fails to close.	Adjust or replace
		52 - Defective control box	Replace
		53 - Defective servomotor	Replace
	Burner stops with air damper open	54 - Defective servomotor	Replace

NORMAL OPERATION / FLAME DETECTION TIME
The control box has a further function to guarantee the correct burner operation (signal: **GREEN LED** permanently on).
To use this function, wait at least ten seconds from the burner ignition and then press the control box button for a minimum of 3 seconds.
After releasing the button, the GREEN LED starts flashing as shown in the figure below.



The pulses of the LED constitute a signal spaced by approximately 3 seconds.
The number of pulses will measure the probe DETECTION TIME since the opening of gas valves, according to the following table:

SIGNAL	FLAME DETECTION TIME
1 blink ●	0.4s
2 blinks ● ●	0.8s
6 blinks ● ● ● ● ● ●	2.8s

This is updated in every burner start-up.
Once read, the burner repeats the start-up cycle by briefly pressing the control box button.
WARNING
If the result is > 2s, ignition will be retarded.
Check the adjustment of the hydraulic brake of the gas valve, the air damper and the combustion head adjustment.

ACCESSORIES (optional):

• RADIO DISTURBANCEPROTECTION KIT
If the burner is installed in places particularly subject to radio disturbance (emission of signals exceeding 10 V/m) owing to the presence of an INVERTER, or in applications where the length of the thermostat connections exceeds 20 metres, a protection kit is available as an interface between the control box and the burner.

BURNER	**RS 64 MZ**
	Code **3010386**

• **KIT FOR LPG OPERATION:** The kit allows the RS 64 MZ burner to operate on LPG.

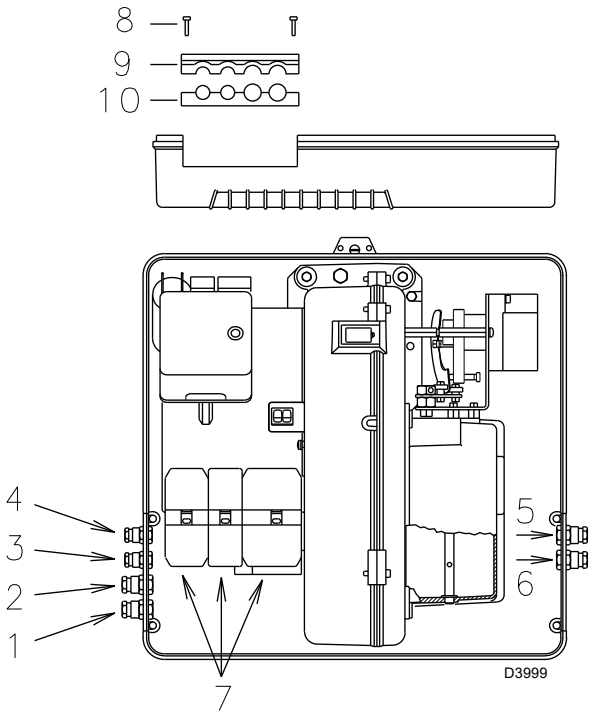
Output kW	400 - 920	
Blast tube lenght mm	250	385
	Code **3010434**	Code **3010435**

• KIT LONG HEAD	Code **3010427**
• CLEAN CONTACTS KIT	Code **3010419**
• GROUND FAULT INTERRUPTER	Code **3010321**
• KIT INTERFACE ADAPTER RMG TO PC	Code **3002719**

• **GAS TRAINS TO COUPLE WITH THE BURNER, ACCORDING TO REGULATION EN 676 (with valves, pressure governor and filter):** see page 8.

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

APPENDIX



Electrical connections

NOTES

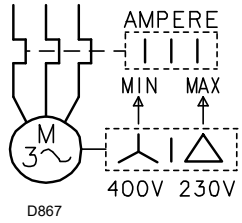
The electrical wirings must be carried out in conformity with the regulations in force in the countries of destination, and by qualified personnel.
Riello S.p.A. cannot accept any responsibility for modifications or connections other than those shown in these diagrams.

Use flexible cables, in accordance with the regulation EN 60 335-1.

All the cables to be connected to the burner must pass through cable grommets.

The use of cable grommets can take various forms; the following way is just one possible solution:

1- Pg 11	Three-phase power supply
2- Pg 11	Single-phase power supply
3- Pg 9	Remote control device TL
4- Pg 9	Remote control device TR or probe (RWF40)
5- Pg 11	Gas valves
6- Pg 11	Gas pressure switch or gas valve leak detection control device



ADJUSTMENT OF THERMAL CUTOUT

Used to avoid the burning of the motor owing to a strong increase in the absorption, caused by the lack of a phase.

- If the motor is star-driven, **400V**, the cursor must be positioned on “MIN”.
- If it is delta-driven, **230V**, the cursor is positioned on “MAX”.

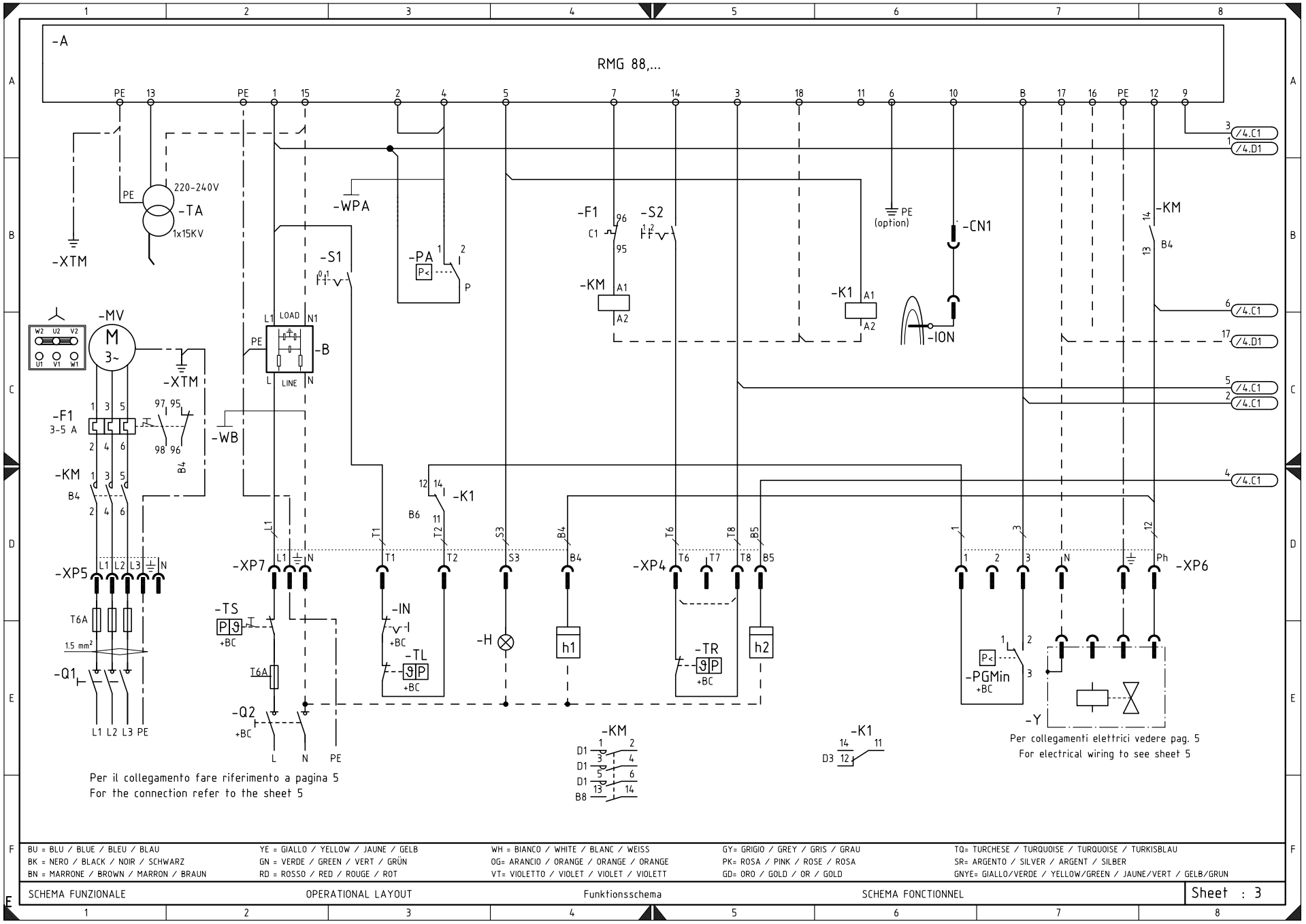
If the scale of the thermal cutout does not include the absorption of rating of the motor at 400V, the protection is guaranteed anyway.

NOTES

- The model RS 64 MZ three-phase leaves the factory with an electrical supply setting of **400V**. If **230V** power supply is used, change the motor connection from star to delta and change the setting of the thermal cutout as well.
- The burners RS 64 MZ have been approved for intermittent operation. This means they should be compulsorily stopped at least once every 24 hours to enable the control box to perform a check of its own efficiency at start-up.

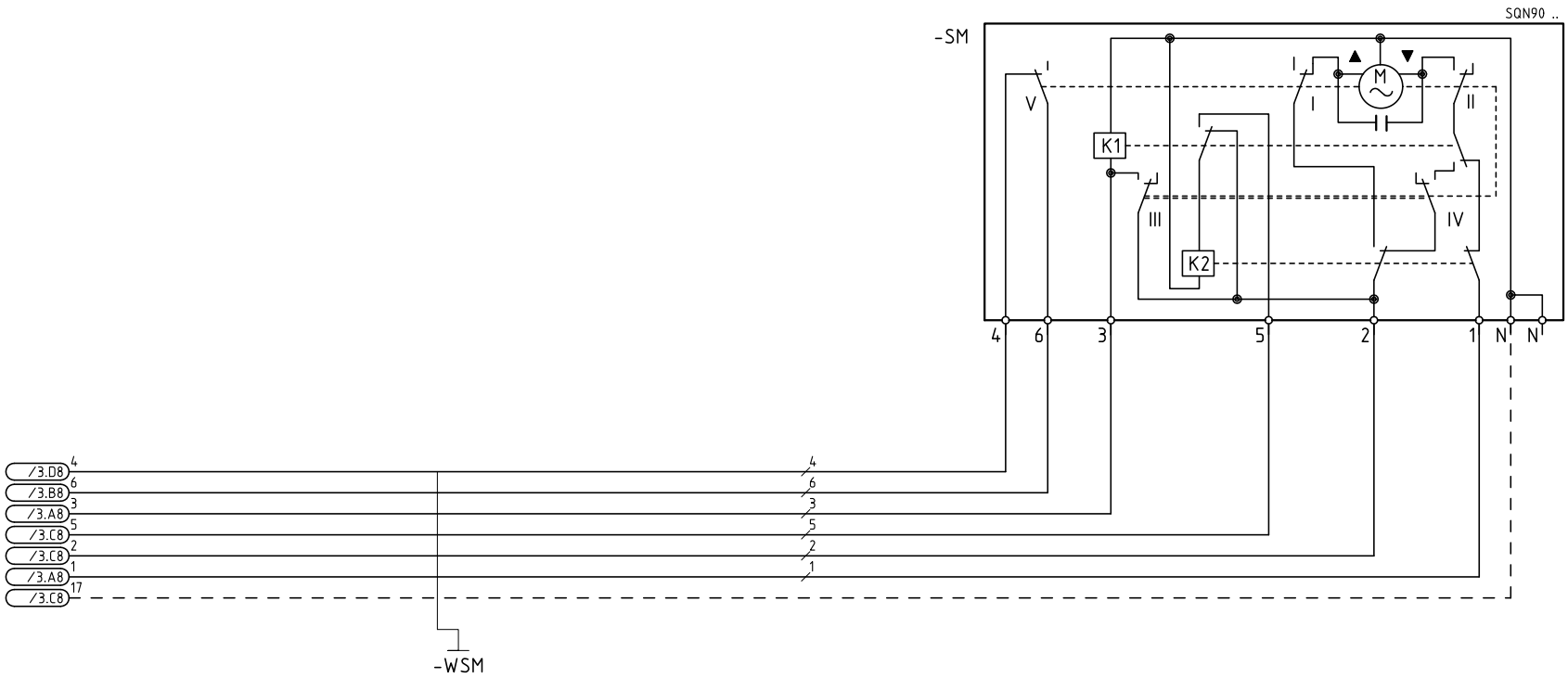
  Normally, the stopping of the burner is guaranteed by the boiler's thermostat/pressure switch. If this is not the case, a time switch should be fitted in series to IN to provide for burner shut-down at least once every 24 hours.
- The burners RS 64 MZ leave the factory set for two-phase operation, so the thermostat/pressure switch TR must be connected.
  If you want the burner to work with single-phase operation, insert (in place of the thermostat/pressure switch TR) a bridge between the terminals T6 - T8 of the plug X4.

ATTENTION:
- Do not invert the neutral with the phase in the electrical supply line. An inversion would lead to lockout due to ignition failure.
- Replace the components only with original spare parts.



BU = BLU / BLUE / BLEU / BLAU	YE = GIALLO / YELLOW / JAUNE / GELB	WH = BIANCO / WHITE / BLANC / WEISS	GY= GRIGIO / GREY / GRIS / GRAU	TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
BK = NERO / BLACK / NOIR / SCHWARZ	GN = VERDE / GREEN / VERT / GRÜN	OG= ARANCIO / ORANGE / ORANGE / ORANGE	PK= ROSA / PINK / ROSE / ROSA	SR= ARGENTO / SILVER / ARGENT / SILBER
BN = MARRONE / BROWN / MARRON / BRAUN	RD = ROSSO / RED / ROUGE / ROT	VT= VIOLETTO / VIOLET / VIOLET / VIOLETT	GD= ORO / GOLD / OR / GOLD	GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN

SCHEMA FUNZIONALE | OPERATIONAL LAYOUT | Funktionsschema | SCHEMA FONCTIONNEL | Sheet : 3



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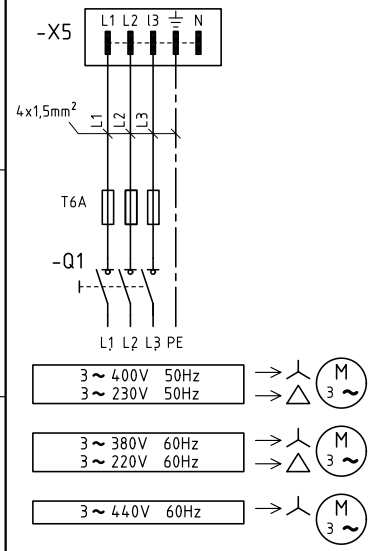
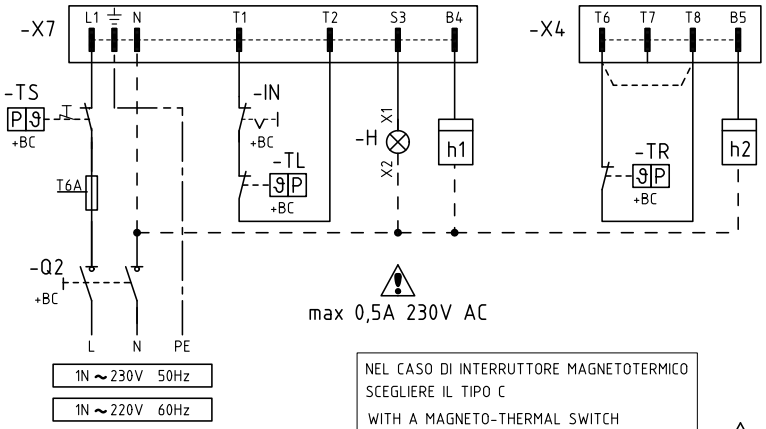
SCHEMA FUNZIONALE | OPERATIONAL LAYOUT | Funktionsschema | SCHEMA FONCTIONNEL | Sheet : 4





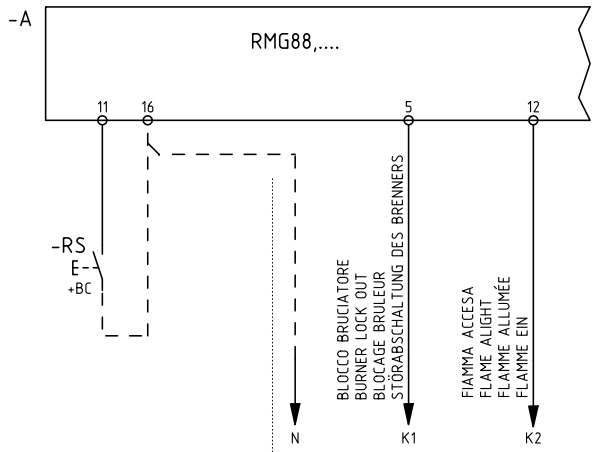
NEL CASO DI INTERRUTTORE MAGNETOTERMICO SCEGLIERE IL TIPO C

WITH A MAGNETO-THERMAL SWITCH CHOOSE TYPE C

EN CAS D' INTERRUPTEUR MAGNÉTOTHERMIQUE CHOISIR LE TYPE C

IM FALLE EINES MAGNETOTHERMISCHEN SCHALTERS TYP C WÄHLEN

KITS

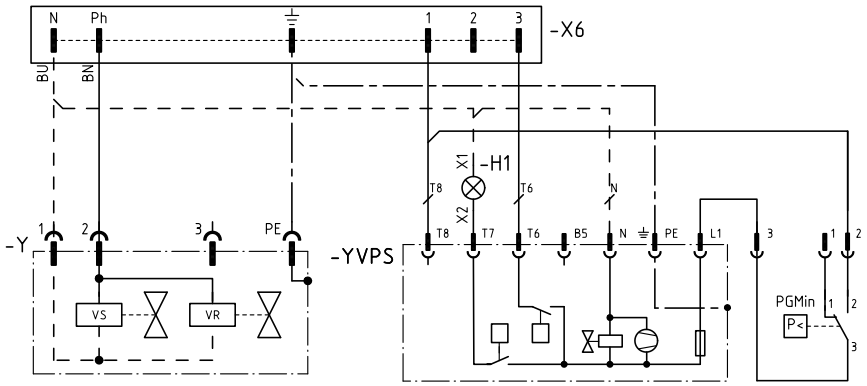


PULSANTE DI SBLOCCO A DISTANZA
REMOTE RESET BUTTON
BOUTON DE DEPLOCAGE A DISTANCE
FERNETSTORUNGSTASTE

USCITA PER KIT RELE' CONTATTI PULITI
OUTPUT FOR VOLTAGE FREE CONTACTS KIT
SORTIE POUR KIT RELAIS CONTACTS PROPRES
AUSGANG FÜR REINKONTAKTE-KIT

max 10A AC1 230V AC
max 2A AC15 230V AC

CONTROLLO TENUTA VPS 504 - VPS 504 GAS LEAKAGE DETECTOR
VPS 504 CONTROLE D' ETANCHEITE GAZ - VPS 504 DICHTHEITSKONTROLLE



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COLLEGAMENTI ELETTRICI A CURA DELL' INSTALLATORE ELECTRICAL CONNECTIONS SET BY INSTALLER ELEKTROANSCHLÜSSE VOM INSTALLATEUR AUSZUFÜHREN RACCORDEMENTS ÉLECTRIQUE EFFECTUÉ PAR L' INSTALLATEUR

Sheet : 5

KEY TO ELECTRICAL LAYOUT

A – Electrical control box
B – Radio noise filter
+BB – Components on burners
+BC – Components on boiler
CN1 – Ionisation probe connector
F1 – Fan motor thermal relay
H – Remote lockout signalling
H1 – Lockout YVPS
IN – Manual burner stop switch
ION – Ionisation probe
h1 – Hour counter
h2 – Second stage hour counter
K1 – Relay
KM – Motor contact maker
MV – Fan motor
PA – Air pressure switch
PGMin – Low gas pressure switch
Q1 – Three phase knife switch
Q2 – Single–phase knife switch
RS – Remote reset button
SM – Servomotor
S1 – Switch: burner off - on
S2 – Switch: 1st - 2nd stage operation
TA – Ignition transformer
TL – Limit thermostat/pressure switch
TR – Adjustment thermostat/pressure switch
TS – Safety thermostat/pressure switch
Y – Gas regulation valve + gas safety valve
YVPS – Gas valve leak detection control device
XP4 – 4-pole socket
XP5 – 5-pole socket
XP6 – 6-pole socket
XP7 – 7-pole socket
XTM – Shelf earth
X4 – 4-pin plug
X5 – 5-pin plug
X6 – 6-pin plug
X7 – 7-pin plug