GB

Forced draught gas burner

Progressive two-stage or modulating operation

CODE	MODEL	TYPE
20102448	RS 50/EV	02448Y

20103897 (3) - 01/2016

Translation of the original instructions

1 Declarations

Declaration of Conformity in accordance with ISO / IEC 17050-1		
Manufacturer:	RIELLO S.p.A.	
Address:	Via Pilade Riello, 7 37045 Legnago (VR)	
Product:	Forced draught gas burners	
Model:	RS 50/EV	
These products are in compliance with the following Technical Standards:		
EN 676		
EN 12100		
and according to the European Directives:		
MD	2006/42/EC	Machine Directive
LVD	2014/35/UE	Low Voltage Directive
EMC	2014/30/UE	Electromagnetic Compatibility

The quality is guaranteed by a quality and management system certified in accordance with UNI EN ISO 9001.

Legnago, 01.12.2015

Executive General Manager
RIELLO S.p.A. - Burner Department
Mr. U. Ferretti

Research & Development Director
RIELLO S.p.A. - Burner Department
Mr. F. Comencini

2 Information and general warnings

2.1 Information about the instruction manual

2.1.1 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.

2.1.2 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.

2.1.3 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 important information that you must bear in mind.

➤ This symbol indicates a list.

Abbreviations used

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

2.1.4 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.

2.2 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.

WARNING

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.

3 Safety and prevention

3.1 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.

WARNING

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

3.2 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, the user undertakes to ensure that everyone knows the use and safety instructions for his own duties;

➤ Personnel must follow 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 are obliged to 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 manufacturing company therefore accepts no responsibility whatsoever for any which may result from the use of non-original parts.

In addition:

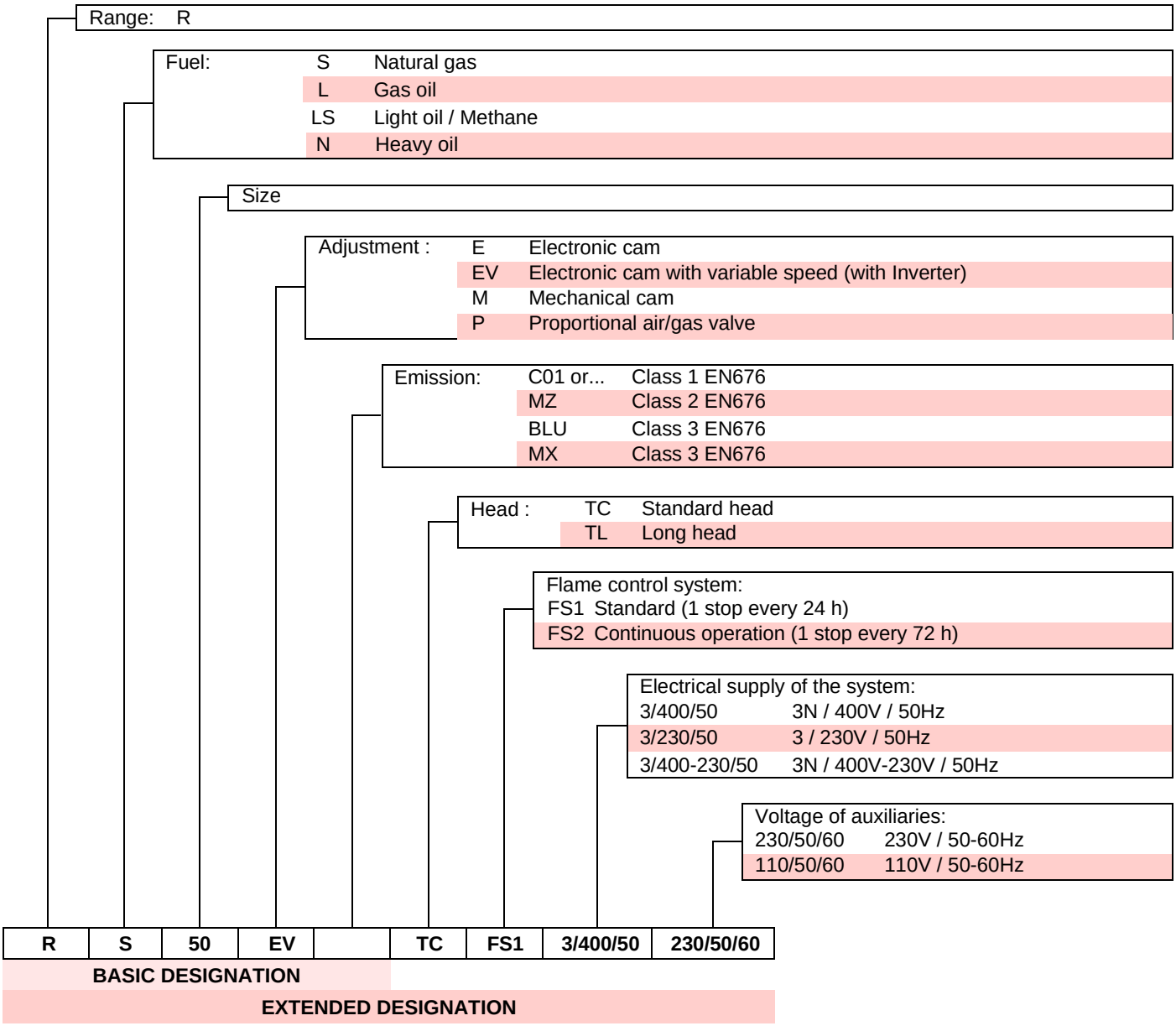
➤ must take all the measures necessary to prevent unauthorised people gaining access to the machine;

➤ 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.

4 Technical description of the burner

4.1 Burner designation



4.2 Models available

Designation		Power supply voltage	Start-up	Code
RS 50/EV	TC	3 ~ 400 / 230V - 50Hz	Direct/ Inverter	20102448

Tab. A

4.3 Burner categories

Country of destination	Gas category
BE	I2E(R)
LV	I2H
CY, MT	I3B/P
BE	I3P
LU, PL	II2E3B/P
DE	II2ELL3B/P
FR	II2Er3P
AT, CH, CZ, DK, EE, FI, GR, HU, IS, IT, LT, NO, SE, SI, SK	II2H3B/P
ES, GB, IE, PT	II2H3P
NL	II2L3B/P

Tab. B

4.4 Technical data

Model			**RS 50/EV**
Output (1)	Max.	kW Mcal/h	290 - 580 250 - 499
	Min.	kW Mcal/h	116 100
Fuel			BIOGAS(5)
Operation			– Intermittent (min. 1 stop in 24 hours) – Modulating
Standard applications			Boilers: water, steam, diathermic oil
Ambient temperature		°C	0 - 40
Combustion air temperature		°C max	60
Noise level (3)		dB(A)	72 83
Weight (4)		kg	45

Tab. C

(1) Reference conditions: Ambient temperature 20°C - Gas temperature 15°C - Barometric pressure 1,013 mbar - Altitude 0 m a.s.l.

(2) Gas pressure on the pipe coupling test point 20)(Fig. 5 on page 13) with 0 mbar in the combustion chamber and at maximum burner output.

(3) 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 accurate “Accuracy: Category 3” measurement, as described in EN ISO 3746.

(4) The burner is factory set for FS1 operation (1 stop every 24 hours); it can be converted to FS2 operation (continuous - 1 stop every 72 hours), by changing the parameters using the menu of the AZL Display.

(5) Biogas composition:

CH_4	65%
CO_2	33.5%
N_2	0.8%
O_2	0.4%
H_2S	0.3%
NH_3	0.005%

4.5 Electrical data

Model		RS 50/EV
Main electrical supply Auxiliary circuit electrical supply		3 ~ 400 / 230V +/-10% 50 Hz 1N 230V ~ +/-10% 50/60Hz
Fan motor	Hz rpm V kW A	50 2,800 220/240 - 380/415 0.65 3 - 1.7
Ignition transformer	V1 - V2 I1 - I2	230V - 1x8 kV 1A - 20 mA
Absorbed electrical power	kW max	1.09
Protection level		IP 44

Tab. D

4.6 Maximum dimensions

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

Bear in mind that inspection of the combustion head requires the burner to be opened and the rear part drawn back on the slide bars.

The dimensions of the open burner are indicated by position H.

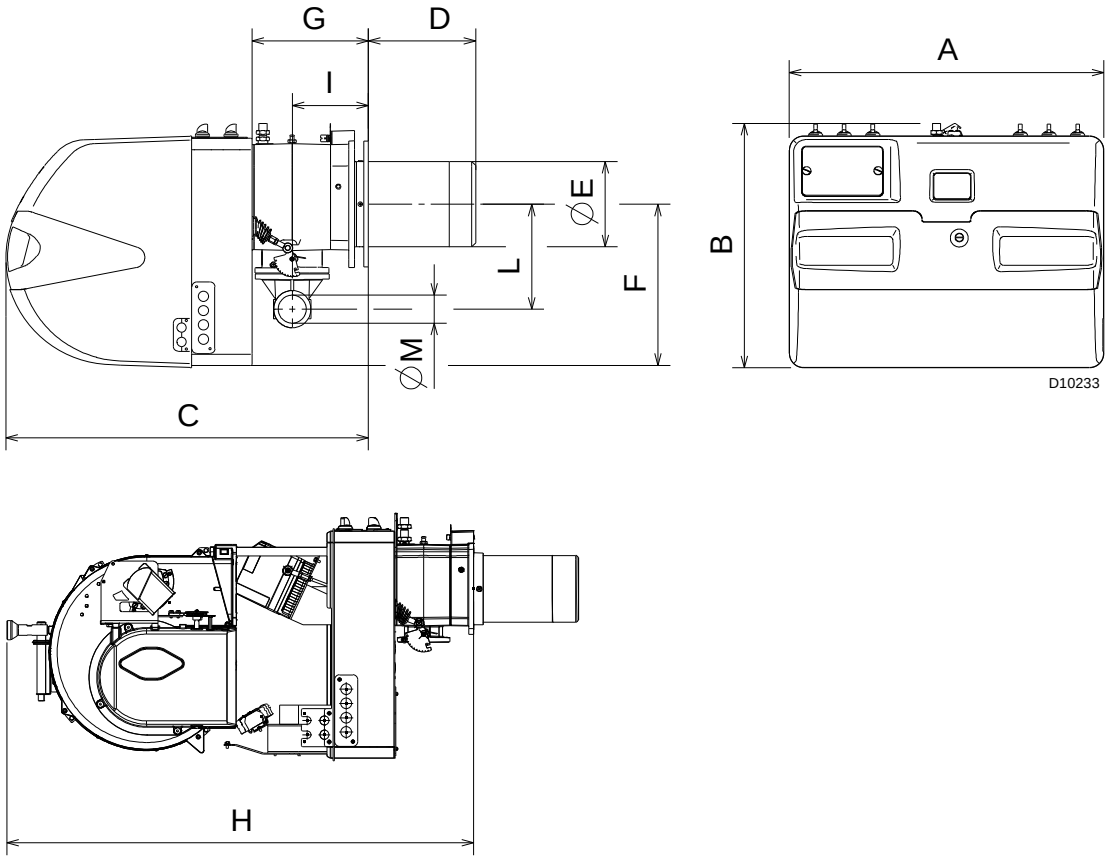


Fig. 1

mm	A	B	C	D	E	F	G	H	I	L	M
RS 50/EV	684	534	507	356	150	354	171	884	110	168	1”1/2

Tab. E

4.7 Firing rate

The maximum output is chosen within area A (Fig. 2).

The minimum output must not be lower than the minimum limit of the diagram.

WARNING

The firing rate value (Fig. 2) has been obtained considering an ambient temperature of 20 °C, an atmospheric pressure of 1,013 mbar (approx. 0 m a.s.l.), and with the combustion head adjusted as shown on pag. 21.

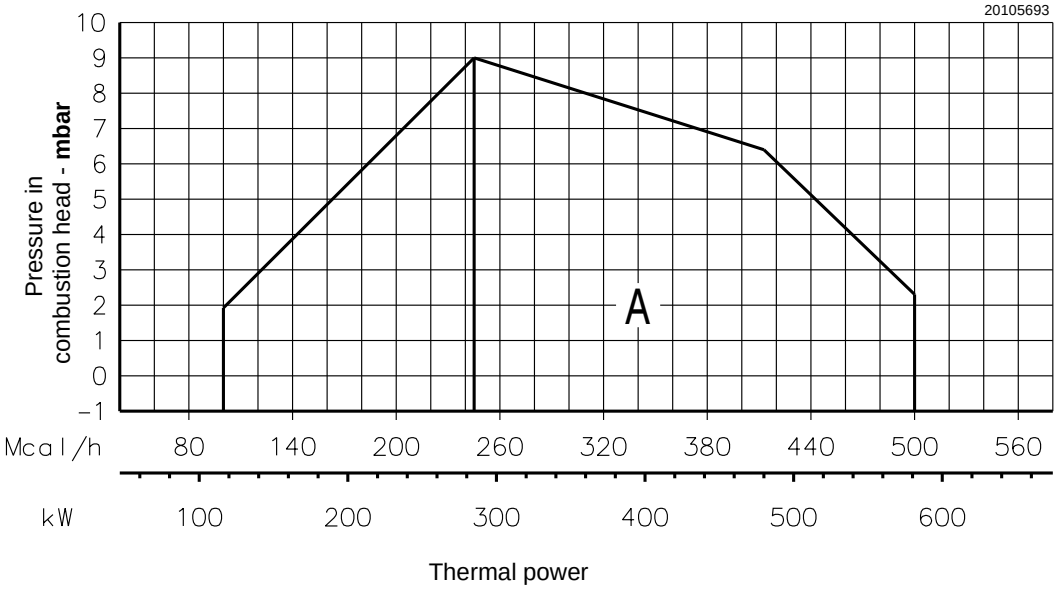


Fig. 2

4.7.1 Firing rate based on the air density

The firing rate of the burner indicated in the manual refers to an ambient temperature of 20°C and an altitude of 0 m. above sea level. (barometric pressure about 1013 mbar).

It may happen that a burner has to operate with combustion air at a higher temperature and/or higher altitudes.

The heating of the air and the increase in altitude produce the same effect: the expansion of the air volume (i.e. the reduction of its density).

The delivery of the burner fan remains essentially the same, but the oxygen per m3 of air, and the thrust (discharge head) of the fan are reduced.

It is therefore important to know if the maximum output requested from the burner at a determinate combustion chamber pressure remains within the firing rate of the burner even with the changed temperature and altitude conditions.

To check it, proceed as follows:

1 find the corrective factor F, relating to the air temperature and altitude of the system, inTab. F.

2 Divide the output Q required from the burner by F to obtain the equivalent output Qe:

Qe = Q : F (kW)

3 In the firing rate of the burner, mark the work point identified by:
Qe = equivalent output
H1 = pressure in combustion chamber
point A that must remain within the firing rate.

4 Trace a vertical line from point A) (Fig. 3), and find the maximum pressure H2 of the firing rate.

5 Multiply H2 by F to obtain the maximum lowered pressure H3 of the firing rate:

H3 = H2 x F
(mbar)

If H3 is greater than H1)(Fig. 3), the burner can supply the required output.

If H3 is less than H1, it is necessary to reduce the burner output. The reduction in output is accompanied by a reduction in combustion chamber pressure:
Qr = reduced output
H1r = reduced pressure

$$H1r = H1 \times \left(\frac{Qr}{Q}\right)^2$$

Example, 5% reduction in output:

Qr = Q x 0.95
H1r = H1 x (0.95)2

With the new values - Qr and H1r - repeat steps 2 - 5.

WARNING

The combustion head should be adjusted in relation to the equivalent output Qe.

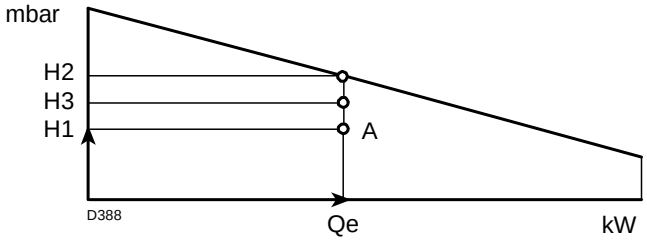


Fig. 3

Altitude	Average barometric pressure	F							
		Air temperature °C							
m. a.s.l.	mbar	0	5	10	15	20	25	30	40
0	1,013	1.087	1.068	1.049	1.031	1.013	0.996	0.980	0.948
100	1,000	1.073	1.054	1.035	1.017	1.000	0.983	0.967	0.936
200	989	1.061	1.042	1.024	1.006	0.989	0.972	0.956	0.926
300	978	1.050	1.031	1.013	0.995	0.978	0.962	0.946	0.916
400	966	1.037	1.018	1.000	0.983	0.966	0.950	0.934	0.904
500	955	1.025	1.007	0.989	0.972	0.955	0.939	0.923	0.894
600	944	1.013	0.995	0.977	0.960	0.944	0.928	0.913	0.884
700	932	1.000	0.982	0.965	0.948	0.932	0.916	0.901	0.872
800	921	0.988	0.971	0.954	0.937	0.921	0.906	0.891	0.862
900	910	0.977	0.959	0.942	0.926	0.910	0.895	0.880	0.852
1,000	898	0.964	0.946	0.930	0.914	0.898	0.883	0.868	0.841
1,200	878	0.942	0.925	0.909	0.893	0.878	0.863	0.849	0.822
1,400	856	0.919	0.902	0.886	0.871	0.856	0.842	0.828	0.801
1,600	836	0.897	0.881	0.866	0.851	0.836	0.822	0.808	0.783
1,800	815	0.875	0.859	0.844	0.829	0.815	0.801	0.788	0.763
2,000	794	0.852	0.837	0.822	0.808	0.794	0.781	0.768	0.743
2,400	755	0.810	0.796	0.782	0.768	0.755	0.742	0.730	0.707
2,800	714	0.766	0.753	0.739	0.726	0.714	0.702	0.690	0.668
3,200	675	0.724	0.711	0.699	0.687	0.675	0.664	0.653	0.632
3,600	635	0.682	0.669	0.657	0.646	0.635	0.624	0.614	0.594
4,000	616	0.661	0.649	0.638	0.627	0.616	0.606	0.596	0.577

Tab. F

4.8 Test boiler

The firing rates were set in relation to special test boilers, according to EN 676 regulations.

In Fig. 4 you can see the diameter and length of the test combustion chamber.

Example:
Output 407 kW (350 Mcal/h) - diameter 50 cm, length 1.5 m.

The coupling is ensured when the boiler is EC type-approved; for boilers or ovens with combustion chambers of very different dimensions compared to those shown in the diagram of (Fig. 4) preliminary checks are recommended.

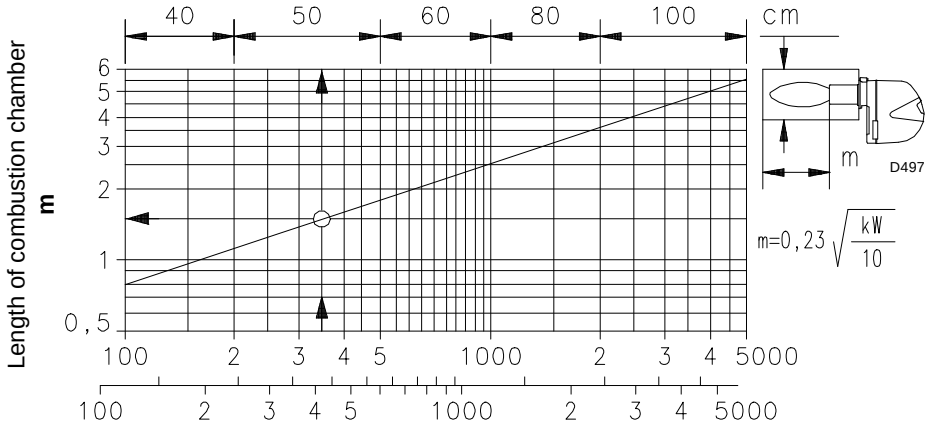


Fig. 4

4.9 Burner equipment

The burner is supplied complete with:

Gas train flange	No. 1
Gasket for gas train flange	No. 1
Thermal insulation screen	No. 1
Flange fixing screws M8 x 25	No. 4
M8 x 25 screws for fixing the burner flange to the boiler	No. 4
Cable grommets for electrical wiring	No. 4
CANBUS cable kit (10 mt.)	No. 1
Oxygen control kit	No. 1
Instructions	No. 1
Spare parts list	No. 1

4.10 Burner description

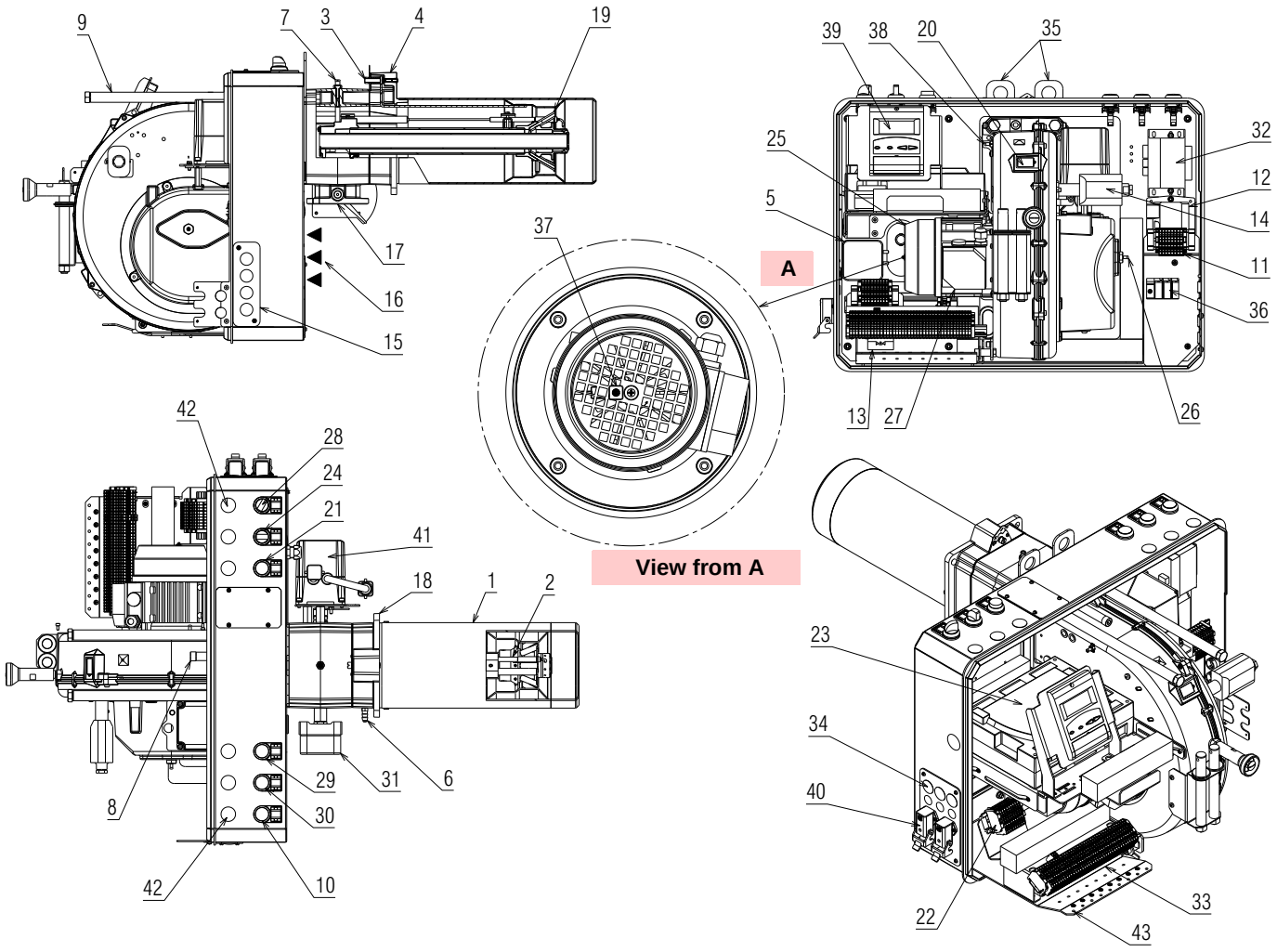


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Fig. 5

1 Combustion head
2 Ignition electrode
3 Screw for combustion head adjustment
4 Pipe coupling
5 Minimum air pressure switch (differential operating type)
6 Air pressure test point on the head
7 Gas pressure test point and head fixing screw
8 Screw securing fan to pipe coupling
9 Slide bars for opening the burner and inspecting the combustion head
10 Light signalling burner on
11 Terminal board X2
12 Ignition transformer
13 Filter to protect against radio disturbance
14 QRI probe
15 Holes for electrical wiring input
16 Fan air inlet
17 Gas input pipe
18 Boiler fixing flange
19 Flame stability disk
20 Flame inspection window
21 Luminous push-button for reset
22 XPLL terminal board
23 LMV control box
24 LOCAL-REMOTE selector
25 Fan motor
26 Air pressure test point “-”
27 Auxiliary fuse
28 ON/OFF selector
29 Light signalling of mains live state
30 Heat request indicator light
31 Maximum gas pressure switch
32 Transformer for control box
33 Terminal board for electrical wiring
34 Holes for electrical wiring input
35 Rings for lifting
36 Clean contact relay
37 Rpm sensor
38 Pressure test point "+"
39 Operator panel with LCD display
40 Gas servomotor plug/socket
41 gas servomotor
42 Holes for electrical wiring input
43 Earth screws

4.11 AZL Display...

Warnings

WARNING

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

The AZL... display 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!

The electronic cam is operated and programmed through the AZL5 interface... or with the aid of a PC.

The AZL5 has a backlit LCD display with clear reading of the menu text and diagnostics.

The Modbus function of the AZL display integrates the electronic cam LMV5 and through data management allows the diagnostic of the burner.

The display shows the operating status, the types of errors and lockouts. Used to parameterize and monitor data.

S9232

Fig. 6

Technical data

Operating voltage	AC 24 V - 15% / +10%
Power consumption	< 5W (typical)
Protection level of the container – Rear – Front	 IP00 according to IEC 529 IP54 according to IEC 529 (if installed)
Safety class	I with parts II and III according to DIN EN 60730-1
Battery - Manufacturer:	**Type reference:**
VARTA	CR 2430 (LF-1/2 W)
DURACELL	DL 2430
SANYO ELECTRIC, Osaka/ Japan	CR 2430 (LF-1/2 W)
RENATA AG, Itingen/CH	CR 2430

Tab. G

4.12 Control box for the air/fuel ratio (LMV52...)

Warnings

WARNING

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

The LMV52 control box... 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!

Risk of explosion!

An incorrect configuration can provoke fuel overcharging, with the consequential risk of explosion! Operators must be aware that incorrect settings made on the AZL5… display and operating unit and incorrect settings of the fuel and / or air actuator positions can lead to dangerous burner operating conditions.

➤ All interventions (assembly and installation operations, assistance, etc.) must be carried out by qualified personnel.

➤ Before modifying the wiring in the LMV52 control box connection area, fully disconnect the system from the power supply (omnipolar separation). Check the system is not powered and cannot be accidentally reconnected. Failure to do this will lead to the risk of electrocution.

➤ Protection against electrocution from the LMV5... control box and all connected electric components is obtained with 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 control box must not be operated, even if it displays no evident damage.

➤ In programming mode, the position check of actuators and VSD (checking electronic fuel / air ratio control) is different from the check during automatic operation.
As for automatic operation, the actuators are guided together to the positions requested and, if an actuator does not reach the position requested, adjustments are made until the position is actually reached. However, in contrast to automatic operation, there are no time limits to these corrective actions.
The other actuators maintain their positions until all actuators have reached the positions currently required.
This is absolutely important to set the fuel / air ratio control system.
During the time the fuel / air ratio curves are being programmed, the person making the plant settings must continuously monitor the quality of the combustion process (e.g. by means of a flue gas analyser).
Also, if combustion levels are poor, or in the event of dangerous situations, the commissioning engineer must take appropriate action (e.g. switching off manually).

To ensure the safety and reliability of the LMV5... system, the following instructions must also be followed:

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

D9301

Fig. 7

Mechanical structure

The LMV5... control box is a system to check the burners, based on a microprocessor and equipped with components to adjust and monitor medium and large capacity forced draught burners.
The base control box of the LMV5... system incorporates the following components:

- Burner adjustment device with system for checking the seal of the gas valves
- Electronic device to check the fuel/air ratio with a maximum of 6 actuators
- Optional PID temperature / pressure controller (load controller)
- Optional VSD module Mechanical design

Installation notes

- Check the electric wiring inside the boiler complies with the national and local safety regulations.
- Do not confuse the powered conductors with the neutral ones.
- Make sure the cable grommets of the connected cables comply with the relevant standards (e.g. DIN EN 60730 and DIN EN 60 335).
- 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 control box and the other cables.
- The burner manufacturer must protect unused AC 230V terminals with dummy plugs (refer to sections Suppliers of other accessory items).
- When wiring the unit, make sure that AC 230V mains voltage cables are run strictly separate from extra low-voltage cables to avoid risks of electrical shock hazard.

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:
  – Line capacitance reduces the magnitude of the flame signal.
  – Use a separate cable.
- Respect the allowed cable lengths.

Technical data

LMV52... base control box	Mains voltage	AC 230V -15% / +10%
	Mains frequency	50 / 60 Hz ±6%
	Power absorption	< 30W (normal)
	Safety class	I, with components in compliance with II and III, according to DIN EN 60730-1
Load on 'input' terminals	F1 unit fuse (internal)	6.3 AT
	Primary perm. mains fuse (external)	Max. 16 AT
	Undervoltage • Safety switch-off from operating position to mains voltage • Restart when mains voltage picks up	 < AC 186V > AC 188V
	Oil pump / magnetic clutch (nominal voltage) • Nominal current • Power factor	 2A cosφ > 0.4
	Air pressure switch test valve (nominal voltage) • Nominal current • Power factor	 0.5A cosφ > 0.4
Load on 'output' terminals	**Total load on the contacts:** • Mains voltage • Total unit input current (safety circuit) load on contacts due to: - Fan motor contactor - Ignition transformer - Valve - Oil pump / magnetic clutch	 AC 230V -15% / +10% Max. 5 A
	Single contact loading: Fan motor contactor (nominal voltage) • Nominal current • Power factor	 1A cosφ > 0.4
	Alarm output (nominal voltage) • Nominal current • Power factor	 1A cosφ > 0.4
	Ignition transformer (nominal voltage) • Nominal current • Power factor	 2A cosφ > 0.2
	Fuel gas valve (nominal voltage) • Nominal current • Power factor	 2A cosφ > 0.4
	Fuel oil valve (nominal voltage) • Nominal current • Power factor	 1A cosφ > 0.4
Cable length	Main line	Max. 100 m (100 pF / m)
Environmental conditions	Operation Climatic conditions Mechanical conditions Temperature range Humidity	DIN EN 60721-3-3 Class 3K3 Class 3M3 -20...+60°C < 95% RH

Tab. H

4.13 Servomotor

Warnings

WARNING

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 SQM4... system connection area, 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 unit must not be operated, even if it displays no evident damage.

Assembly notes

- Check the relevant national safety standards are respected.
- The connection between the actuator command shaft and the control element must be rigid, without any mechanical play.
- To avoid an excessive load on the bearings due to rigid hubs, the use of compensation clutches without any mechanical play is recommended (e.g. metal bellows-type clutches).

Installation notes

- Arrange the H.V. ignition cables separately, as far as possible from the control box and the other cables.
- To avoid the risk of electrocution, make sure that the 230V AC section of the SQM4... unit is fully separated from the functional low-voltage section.
- The static torque is reduced when the electrical supply of the actuator is switched off.
- The housing cover may only be removed for short periods of time for wiring or when making the addressing. In similar cases, make sure that dust or dirt does not penetrate inside the actuator.
- The actuator comprises a PCB with ESD-sensitive components.
- The top side of the board carries a cover which affords protection against direct contact. This protective cover must not be removed! The underside side of the board must not be touched.

WARNING

During the maintenance or replacement of the actuators, be careful not to invert the connectors.

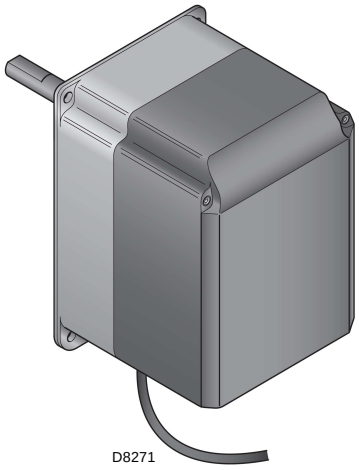

Fig. 8

Technical data

Operating voltage	AC 2 x 12V via bus cable from the base unit or via a separate transformer
Safety class	extra low-voltage with safe isolation from mains voltage
Power absorption – SQM45...	 9...15 VA
Degree of protection	to EN 60 529, IP 54, provided adequate cable entries are used
Cable connection	RAST3,5 connectors
Rotation direction	- Anticlockwise (standard) - Clockwise (inverted rotation)
Rated torque (max.) – SQM45...	 3 Nm
Static torque (max.) – SQM45...	 1.5 Nm
Running time (min.) for 90° – SQM45...	 10 s.
Weight – SQM45...	 approx. 1 kg
Environmental conditions:	
Operation	DIN EN 60 721-3-3
Climatic conditions	Class 3K3
Mechanical conditions	Class 3M3
Temperature range	-20...+60°C
Humidity	< 95% RH

Tab. I

WARNING

Condensation, the formation of ice and the entry of water are prohibited!

5 Installation

5.1 Notes on safety for the installation

After carefully cleaning all around the area where the burner is to be installed, and arranging for the environment to be illuminated correctly, proceed with the installation operations.

DANGER

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

WARNING

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.

DANGER

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.

5.2 Handling

The burner is shipped in cardboard packaging, so it is possible to move it when it is still packaged with a transpallet or fork lift truck.

WARNING

The handling operations for the burner can be highly dangerous if not carried out with the greatest attention: keep any unauthorised people at a distance; check the integrity and suitableness of the available means of handling.
Check also that the area in which you are working is empty and that there is an adequate escape area (i.e. a free, safe area to which you can quickly move if the burner should fall).
When handling, keep the load at not more than 20-25 cm from the ground.

After positioning the burner near the installation point, correctly dispose of all residual packaging, separating the various types of material.

CAUTION

Before proceeding with the installation operations, carefully clean all around the area where the burner will be installed.

5.3 Preliminary checks

Checking the consignment

CAUTION

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 (wooden cage or cardboard box, nails, 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.

Checking the characteristics of the burner

Check the burner identification label (Fig. 9), showing:

A the burner model
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 types of gas used and the relative supply pressures
H the data of the burner's possible minimum and maximum output (see Firing rate).
Warning: the burner output must be within the boiler's firing rate;
I the category of the appliance/countries of destination.

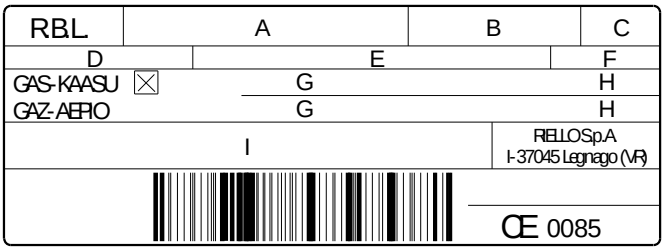

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Fig. 9

WARNING

A burner label, or any other component, that has been tampered with, removed or is missing, prevents the definite identification of the burner and makes any installation or maintenance work difficult

5.4 Operating position

WARNING

- The burner is designed to operate only in positions 1, 2, 3 and 4 (Fig. 10).
- 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 operations to be performed, but make maintenance and inspection of the combustion head more difficult.

DANGER

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

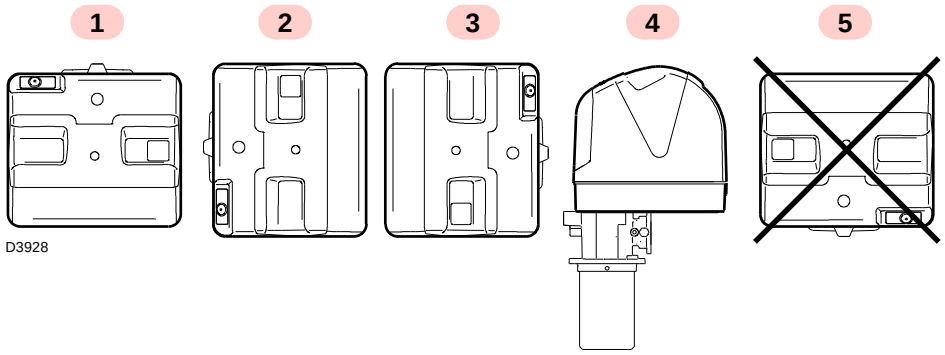

Fig. 10

5.5 Preparing the boiler

5.5.1 Boring the boiler plate

Pierce the closing plate of the combustion chamber, as in Fig. 11. The position of the threaded holes can be marked using the thermal insulation screen supplied with the burner.

5.5.2 Blast tube length

The length of the blast tube must be selected according to the indications provided by the manufacturer of the boiler, and in any case it must be greater than the thickness of the boiler door complete with its fettling.

The lengths L available are:

Blast tube	(mm)
RS 50/EV	351

Tab. J

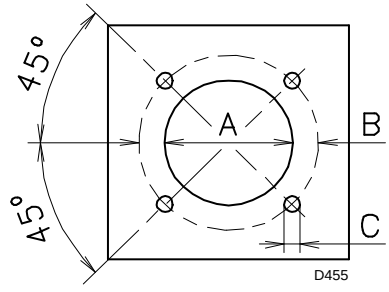

Fig. 11

mm	A	B	C
RS 50/EV	160	224	M 8

Tab. K

5.6 Electrode positioning

WARNING

Before fixing the burner to the boiler, check from the opening of the blast tube that the electrode is correctly positioned, as in Fig. 12.

If the probe or electrode is not correctly positioned, you must:

- remove the screw 1)(Fig. 14)
- take out the inner part 2)(Fig. 14) of the head, and then calibrate them.

WARNING

Respect the dimensions shown in Fig. 12.

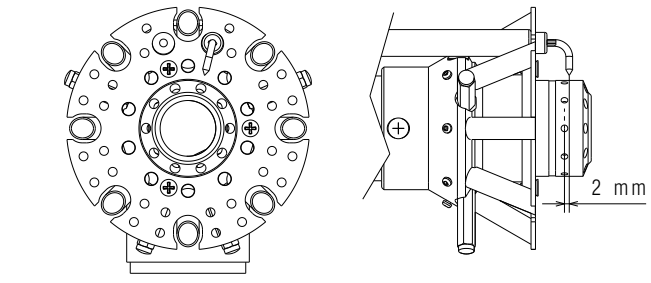

Fig. 12

5.7 Securing the burner to the boiler

5.7.1 Introduction

The RS 50/EV burner is suitable for operating on both flame inversion boilers* (in this case the long head model is recommended) and on boilers with a combustion chamber with bottom run-off (three flue gas circulations), from which the best results of low NOx emissions are obtained (Fig. 13).

The maximum thickness of the front door of the boiler (see position "**a**", Fig. 10), complete with refractory, should not exceed 200 mm.

For boilers with front flue passes 13)(Fig. 15), a protection in refractory material 11) must be inserted between the boiler refractory 12) and the blast tube 10).

This protective fettling must not compromise the extraction of the blast tube.

For boilers with a water-cooled front piece, a refractory lining 11)-12)(Fig. 15) is not necessary, unless expressly requested by the boiler manufacturer.

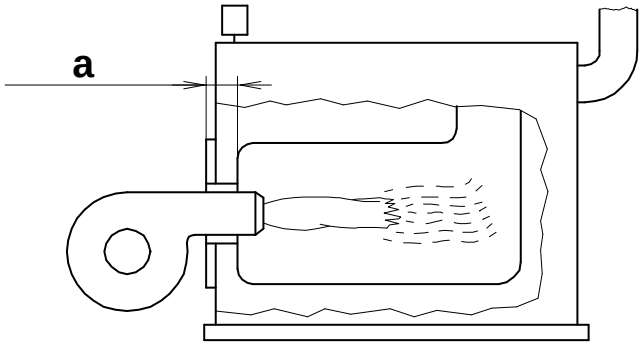

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Fig. 13

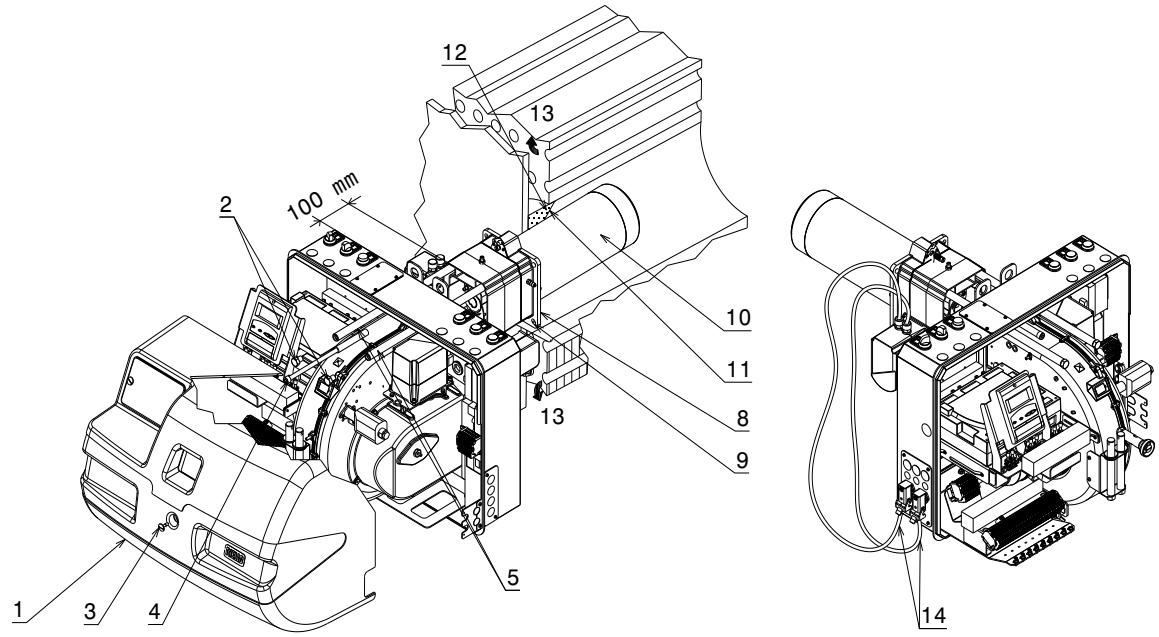

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Fig. 14

Provide an adequate lifting system of the burner.

Separate the combustion head from the rest of the burner, as shown in Fig. 14; proceed as follows:

- ➤ loosen the screw 3) and remove the hood 1);
- ➤ remove screws 2) from the two slide bars 5);
- ➤ disconnect the plugs 14);
- ➤ remove the screw 4);
- ➤ pull back the burner on the slide bars 5) by about 100 mm;
- ➤ disconnect the wires of the electrode and then pull the burner completely off the slide bars, after removing the split pin from the slide bar 5).
- ➤ fix the flange 9) to the boiler plate interposing the insulating gasket 8) that has been supplied.
- ➤ use the 4 screws supplied, with a tightening torque of 35 - 40 Nm, after protecting their thread with anti-seizing products.

WARNING

The burner-boiler seal should be airtight; after starting the burner check that there are no leaks of no flue gases.

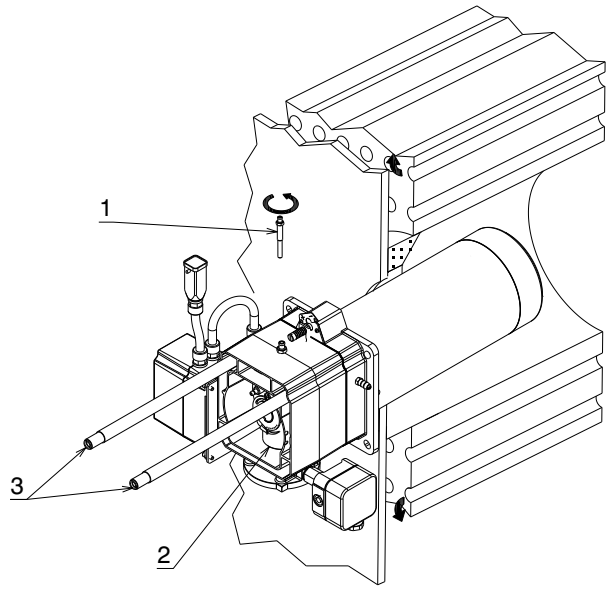

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Fig. 15

5.8 Combustion head adjustment

At this point of the installation, the combustion head is fixed to the boiler as shown in Fig. 14.

Adjusting the air or the gas of the combustion head is especially easy.

In the diagram (Fig. 16), based on the MAX output, find the notch for adjusting both the air and the gas.

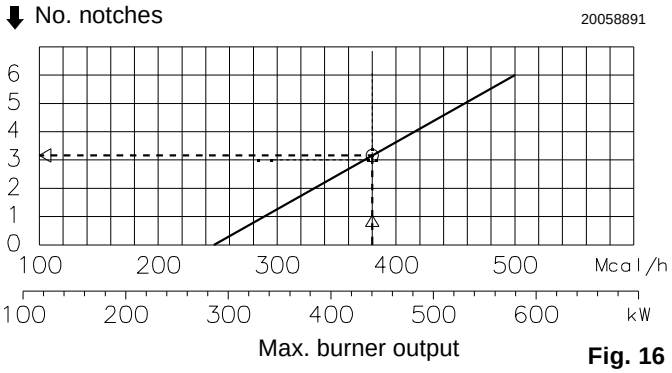

Fig. 16

Air adjustment

Turn the screw 4)(Fig. 17) until the notch found lines up with the front surface 5) of the flange.

WARNING

To facilitate the adjustment, loosen the screw 6) (Fig. 17), adjust, then block.

Central gas adjustment

In adjusting the central gas there are two possible cases:

1 the MINIMUM output of the burner is less than 130 kW

WARNING

When the MIN modulation output is between 116 - 129 kW, the ring nut 2)(Fig. 17) should be adjusted to 0, regardless of the MAX output of the burner.

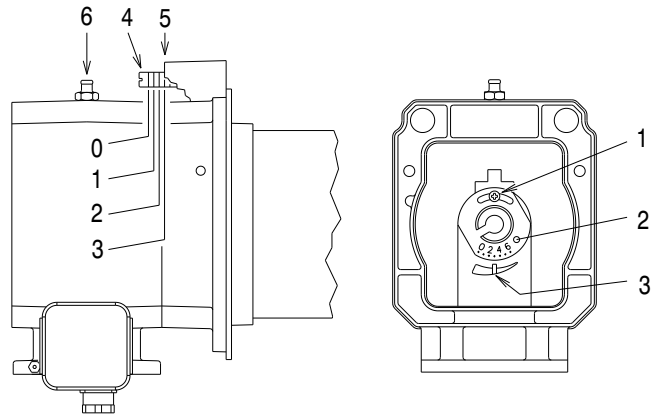

Fig. 17

2 The MINIMUM output of the burner is greater than 130 kW

Loosen the screw 1)(Fig. 17) and rotate the ring nut 2) until the notch you have found with the index 3), then lock the screw 1).

Example:
the burner varies its output between MIN = 130 and MAX = 460 kW. The gas and air adjustments are carried out on notch 3, as in Fig. 17. The loss of pressure in the combustion head is shown in column 1 Tab. L on page 25.

NOTE:

The diagram shows the ideal settings for the ring nut 2).

If the pressure in the power supply network is very low and does not allow the pressure indicated on pag. 25 to be reached at MAX output, and if the ring nut 2) is only partially opened, it is possible to further open the ring nut by 1-2 notches.

Continuing on from the previous example, on pag. 25 we can see that a burner with a 450 kW output requires about 10.5 mbar of pressure at test point 6).

If this pressure is not available, open the ring nut 2) to notch 4-5.

WARNING

Check that the combustion is satisfactory and without pulsations.

5.9 Closing the burner

Once the combustion head adjustment is completed:

- ➤ reassemble the burner on the guides 3) at about 100 mm from the pipe coupling 4), burner in the position shown in Fig. 15;
- ➤ insert the electrode cable, then slide the burner as far as the pipe coupling, with the burner in the position shown in Fig. 18;
- ➤ connect the servomotor plug 14)(Fig. 15) and tighten the cable grommet 15);
- ➤ refit the screws 2) and the split pin on the guides 3);
- ➤ fix the burner to the pipe coupling with the screw 1).

WARNING

On closing the burner on the two guides, it is advisable to gently pull the high voltage cable outwards until it is slightly taut.

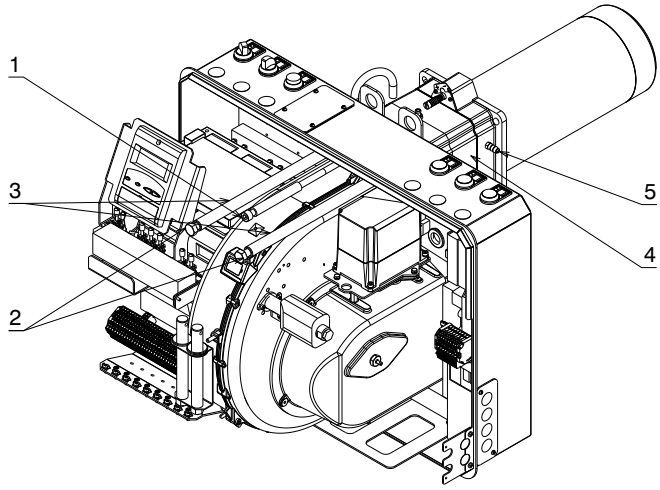

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Fig. 18

5.10 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.

WARNING

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

5.10.1 Gas feeding line

Key (Fig. 19 - Fig. 20 - Fig. 21 - Fig. 22)

1 Gas input pipe
2 Manual valve
3 Vibration damping joint
4 Pressure gauge with push-button cock
5 Filter
6A Includes:
– filter
– safety valve
– pressure adjuster
– working valve
6C Includes:
– safety valve
– working valve
6D Includes:
– safety valve
– working valve
6E Includes:
– safety valve
– operation valve with pressure adjuster
7 Minimum gas pressure switch
8 Leak detection control, provided as an accessory or integrated, based on the gas train code. In compliance with the EN 676 standard, gas valve leak detection control devices are compulsory for burners with maximum outputs over 1,200 kW.
9 Gasket, for "flanged" versions only
10 Pressure adjuster
11 Train-Burner adaptor, supplied separately
12 Pressure gas switch for leak detection control
P2 Upstream pressure of valves/adjuster
P3 Upstream pressure of the filter
L Gas train, supplied separately
L1 The responsibility of the installer

MB

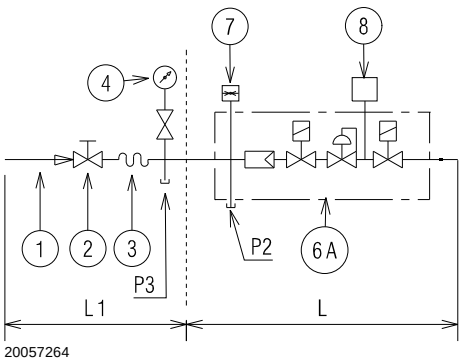

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Fig. 19

MBC

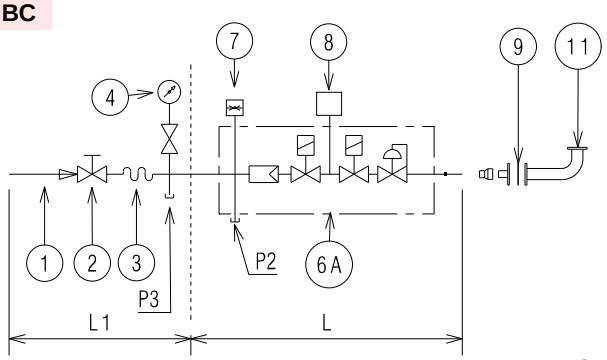

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Fig. 20

DMV

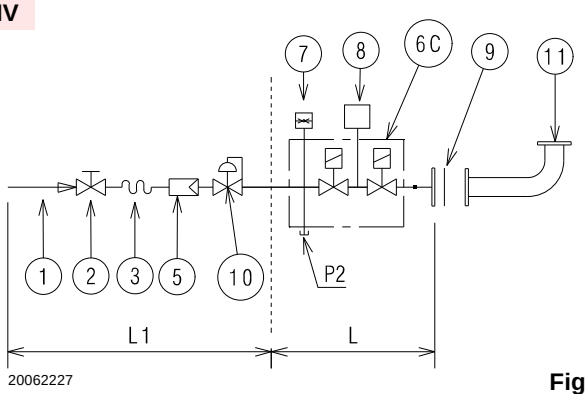

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Fig. 21

CB

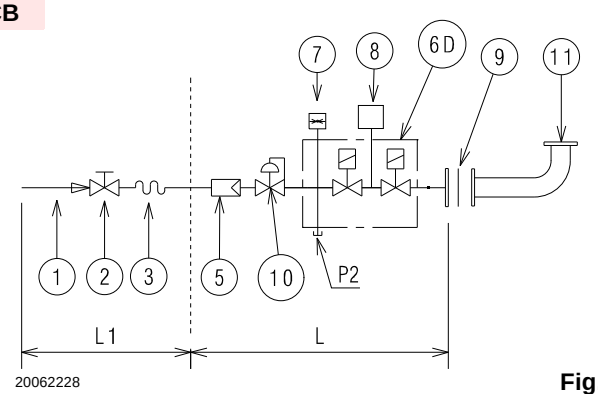

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Fig. 22

VRD

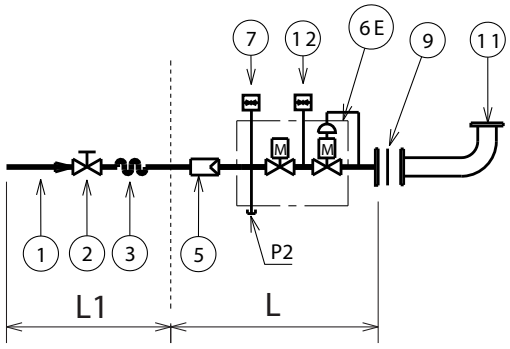

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Fig. 23

5.10.2 Burner layout

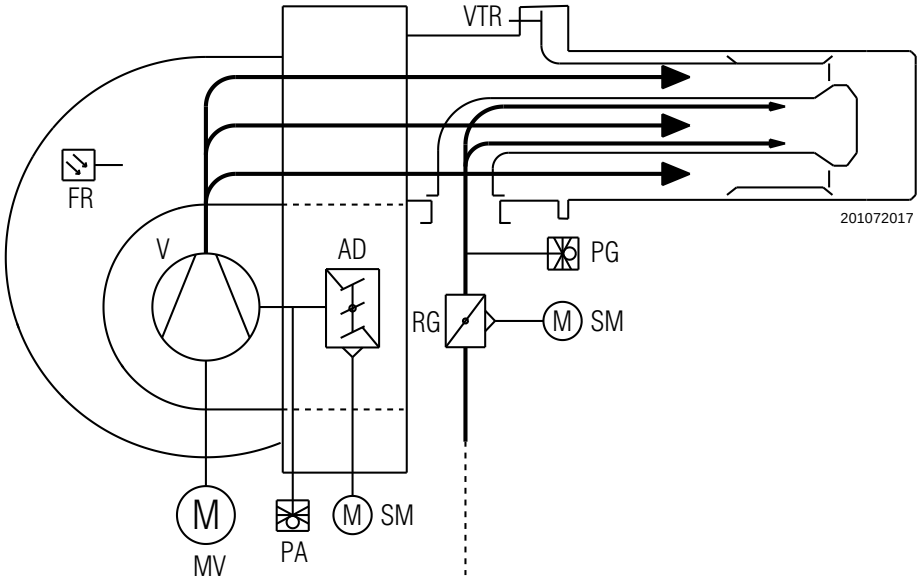

Fig. 24

Key (Fig. 24)

MV	Fan motor
M	Motor
SM	Servomotor
AD	Air damper
V	Fan
RG	Gas valve adjuster (butterfly)
VTR	Adjusting screw for combustion head
PA	Air pressure switch
PG	Max. gas pressure switch
FR	Photocell

5.10.3 Gas train

Approved according to standard EN 676 and provided separately from the burner.

To select the correct gas train model, refer to the supplied "Burner-gas train combination" manual.

DANGER

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.

The operator must use the required equipment during installation.

The train can enter the burner from the right or left side, depending on which is the most convenient, see Fig. 25.

The gas train must be connected to the gas connection 1)(Fig. 25), using the flange 2), the gasket 3) and the screws 4) supplied with the burner.

WARNING

The gas solenoids must be as close as possible to the burner to ensure that the gas reaches the combustion head within the safety time of 3s.

Ensure that the maximum pressure to the burner is within the calibration range of the pressure adjuster.

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

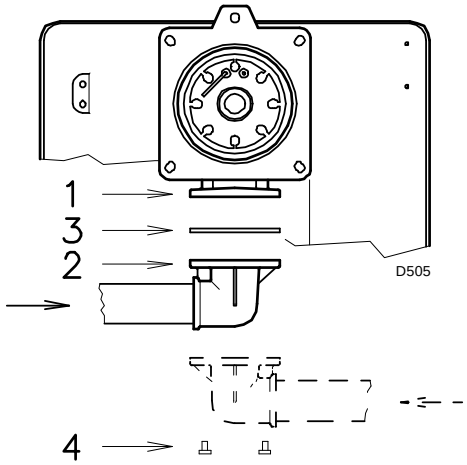

Fig. 25

5.10.4 Gas pressure

Tab. L indicates the pressure drop of the combustion head and the gas butterfly valve depending on the operating output of the burner.

kW	**1** Δp (mbar) Town gas		**2** Δp (mbar) Biogas	
290	4.6	1.3	4.4	1.2
330	6.1	1.7	5.8	1.6
370	7.5	2.2	7.1	2.1
410	9.0	2.6	8.6	2.5
450	10.5	3.0	10.0	2.9
490	11.7	3.9	11.1	3.7
530	13.2	4.3	12.5	4.1
580	15.1	5.2	14.3	4.9

Tab. L

The values shown in Tab. L refer to:
– Biogas 6.4 kWh/Sm^3 (5.5 Mcal/Sm^3)

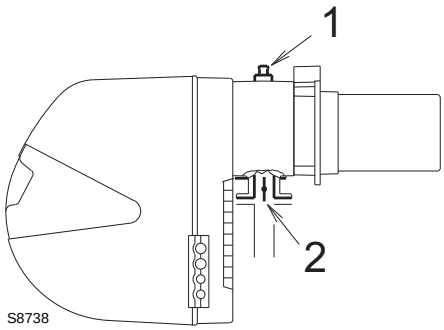

Fig. 26

Column 1

Combustion head pressure drop.
Gas pressure measured at test point 1)(Fig. 26), with:
- combustion chamber at 0 mbar;
- burner working at maximum output

Column 2

Pressure loss at gas butterfly valve 2)(Fig. 26) with maximum opening: 90°.

To calculate the approximate output at which the burner operates:
– subtract the pressure in combustion chamber from the gas pressure measured at test point 1)(Fig. 26).
– Find, in Tab. L related to the burner concerned, the pressure value closest to the result of the subtraction.
– Read off the corresponding output on the left.

Example:
Maximum output operation

Gas pressure at test point 1)(Fig. 26)	=	12 mbar
Pressure in combustion chamber	=	2 mbar
12 - 2	=	10 mbar

A pressure of 10 mbar, column 1, corresponds in Tab. L to an output of 450 kW.

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

To calculate the required gas pressure at test point 1)(Fig. 26), set the maximum modulating output required from the burner operation:
– find the nearest output value in Tab. L for the burner in question.
– read, on the right (column 1), the pressure at the test point 1) (Fig. 26).
– Add this value to the estimated pressure in combustion chamber.

Example:
Operating at the desired maximum output: 450 kW

Gas pressure at an output of 450 kW	=	10 mbar
Pressure in combustion chamber	=	2 mbar
10 + 2	=	12 mbar

pressure required at test point 1)(Fig. 26).

5.11 Electrical wiring

Notes on safety for the electrical wiring

DANGER

- 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.
  This means they should compulsorily be stopped at least once every 24 hours to enable the control box to perform checks of its own start-up efficiency. Normally, burner stopping is guaranteed by the boiler's thermostat/pressure switch.
- The burner is factory set for FS1 operation (1 stop every 24 hours); it can be converted to FS2 operation (continuous - 1 stop every 72 hours), by changing the parameters using the menu of the AZL Display.
- 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;
  – make provisions for an omnipolar switch with a gap between the contacts of at least 3 mm (over-voltage category III), as required by current safety regulations.
- 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:

DANGER

Turn off the burner's power supply using the main system switch.

DANGER

Turn off the fuel interception tap.

DANGER

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.

Use flexible cables in compliance with the EN 60 335-1 standard.

5.11.1 Supply cables and external connections passage

All the cables to be connected to the plugs 6) of the burner are made to pass from the cable grommets supplied to be inserted in the holes of the plate, left or right (Fig. 27).

The use of the cable grommets and the pre-blanked holes can be done in different manners; by way of example we indicate the following mode:

1 single-phase power supply
2 Inverter control signals cable
3 Inverter motor power cable
4 Thermostat/Pressure switch TR
5 Thermostat/Pressure switch TL
6 PLL signals kit
7 Gas valves
8 Minimum gas pressure switch
9 Leak detection control
10 Available

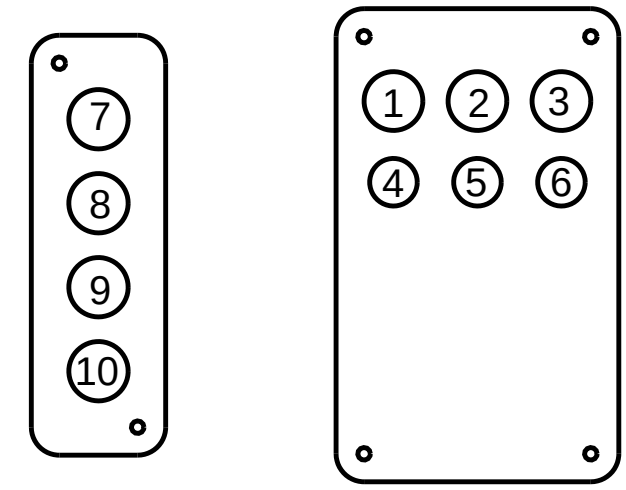

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Fig. 27

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

6 Start-up, calibration and operation of the burner

6.1 Notes on safety for the first start-up

WARNING

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.

WARNING

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

6.2 Adjustments prior to ignition

The adjustments to be carried out are:

- ➤ Ensure that the gas supply company has carried out the supply line vent operations, eliminating air or inert gases from the piping.
- ➤ Slowly open the manual valves situated upstream from the gas train.
- ➤ Adjust the minimum gas pressure switch (Fig. 32 on page 30) to the start of the scale.
- ➤ Adjust the maximum gas pressure switch (Fig. 31 on page 29) to the end of the scale.
- ➤ Adjust the air pressure switch (Fig. 30 on page 29) to the start of the scale.
- ➤ Adjust the pressure switch for the valve leak detection control device (PVP kit) (Fig. 33 on page 30) if present, according to the instructions supplied with the kit itself.
- ➤ Check the gas supply pressure by connecting a pressure gauge to the pressure test point 1) (Fig. 28) of the minimum gas pressure switch: it must be lower than the maximum allowed pressure of the gas train, as shown on the characteristics label.

Excessive gas pressure can damage the components of the gas train and lead to a risk of explosion.

- ➤ Bleed the air from the piping of the gas train, connecting a plastic tube to the pressure test point 1)(Fig. 28) of the minimum gas pressure switch.
  Take the vent tube outside the building so you can notice the smell of gas.
- ➤ Connect two lamps or testers to the two gas line solenoids to check the exact moment in 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.

CAUTION

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.

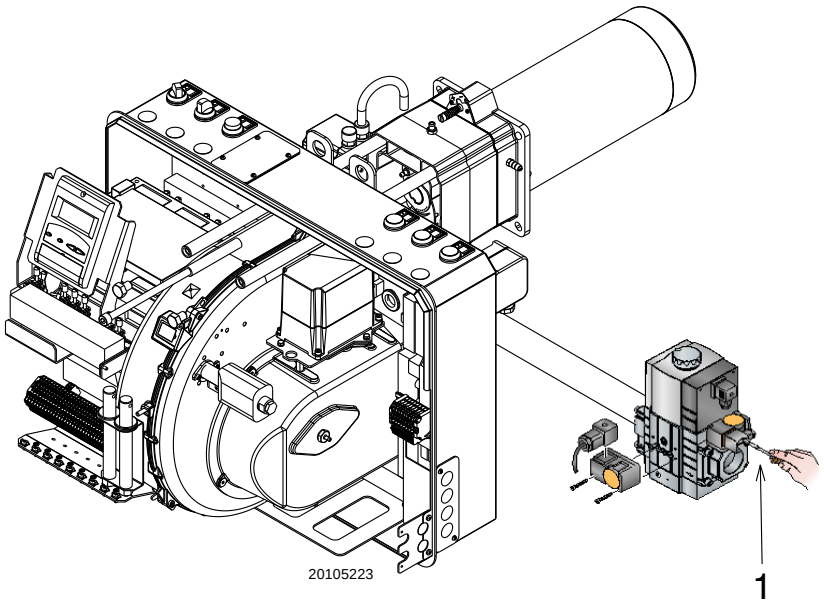


Fig. 28

6.3 Burner start-up

Feed electricity to the burner via the disconnecting switch on the boiler panel.

Close the thermostats/pressure switches and set the selector of Fig. 29 to "**ON**".

DANGER

Make sure that the lights or testers connected to the solenoids, or the pilot lights on the solenoids themselves, indicate that no voltage is present.

If voltage is present, stop the burner immediately and check the electrical connections.

As the burner is not fitted with a phase sequence control device, the motor rotation may be incorrect.

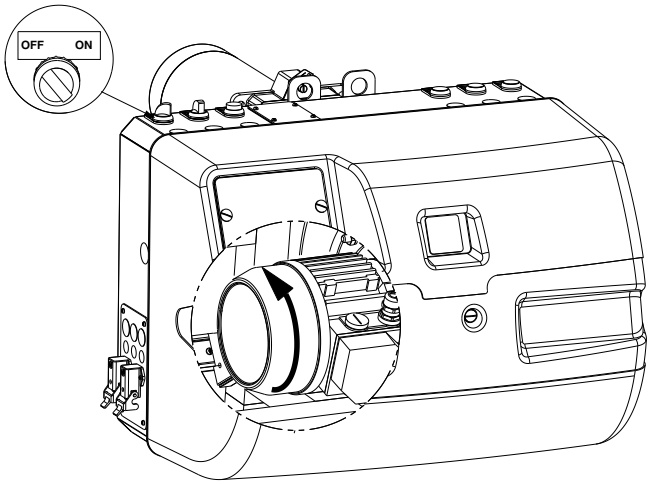
As soon as the burner starts up, go in front of the cooling fan of the fan motor and check it is rotating anticlockwise. See Fig. 29.

If this is not the case:

– place the switch of Fig. 29 in position **"0"** and wait for the control box to carry out the switch-off phase;
– disconnect the burner from the electrical supply;
– invert the phases on the three-phase power supply.

DANGER

This operation must be carried out with the electrical supply disconnected.



20104935

Fig. 29

6.4 Burner adjustment

6.4.1 Output upon ignition

According to EN 676.

Burners with MAX output up to 120 kW

Ignition can occur at the maximum operation output level.

Example:

– max. operation output: 120 kW
– max. ignition output: 120 kW

Burners with MAX output above 120 kW

Ignition must occur at a lower output than the max. operation output.

If ignition output does not exceed 120 kW, no calculations are required. If ignition output exceeds 120 kW, the regulatory standard sets that the value be defined according to the control box safety time "ts":

for "ts" = 3s, ignition output must be equal to, or lower than, 1/3 of max. operation output.

Example:

MAX operation output of 450 kW.

The ignition output must be equal to or less than 150 kW with ts = 3s

In order to measure the ignition output:

➤ remove the flame sensor from its housing 14)(Fig. 5 on page 13) (the burner comes on and goes into lockout after the safety time);
➤ perform 10 consecutive ignitions with lockouts;
➤ 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:

$$Vg = \frac{Qa \text{ (max. burner delivery)} \times n \times ts}{3{,}600}$$

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

Example for gas G20 (9.45 kWh/Sm^3):

ignition output 150 kW - corresponding to 15.87 Sm^3/h.

After 10 ignitions with their lockouts, the delivery indicated on the meter must be equal to or less than:

$$Vg = \frac{15.87 \times 10 \times 3}{3{,}600} = 0.132\ Sm^3$$

6.4.2 Maximum output

The MAX output must be set within the firing rate (Fig. 2 on page 10).

Adjustment of gas delivery

Measure the gas delivery on the gas meter.

As an indicative guide it can be taken from Tab. L on page 25, just read the gas pressure on the pressure gauge (shown in Fig. 37 on page 33) and follow the instructions given on pag. 25.

– If it is necessary to reduce it, lower the output gas pressure via the pressure adjuster located beneath the gas valve.
– If delivery needs to be increased, increase the adjuster outlet gas pressure.

Air adjustment

If necessary vary the degrees of the air servomotor.

6.4.3 Minimum output

The MIN output must be set within the firing rate (Fig. 2 on page 10).

6.5 Final adjustment of the pressure switches

6.5.1 Air pressure switch

Adjust the air pressure switch (Fig. 30) after performing all other burner adjustments with the air pressure switch set to the start of the scale.

With the burner operating at minimum output, insert a combustion analyser in the stack, slowly close the suction inlet of the fan (for example, with a piece of cardboard) until the CO value does not exceed 100 ppm.

Slowly turn the appropriate knob clockwise until the burner goes into lockout.

Check the indication of the arrow pointing upwards on the graduated scale. Turn the knob clockwise again, until the value shown on the graduated scale corresponds with the arrow pointing downwards, and so recovering the hysteresis of the pressure switch (shown by the white mark on a blue background, between the two arrows).

Now check the correct start-up of the burner. If the burner locks out again, turn the knob anti-clockwise a little bit more. During these operations it may be useful to measure the air pressure with a pressure gauge.

The connection of the pressure gauge is shown in Fig. 30. The standard configuration is that with the air pressure switch connected in absolute mode. Note the presence of a “T” connection, not supplied.

In certain applications in strong depression situations, the connection of the pressure switch does not allow it to change over.
In this case it is necessary to connect the pressure switch in differential mode, applying a second tube between the air pressure switch and the fan suction line mouth.
In this case also, the pressure gauge must be connected in differential mode, as shown in Fig. 30.

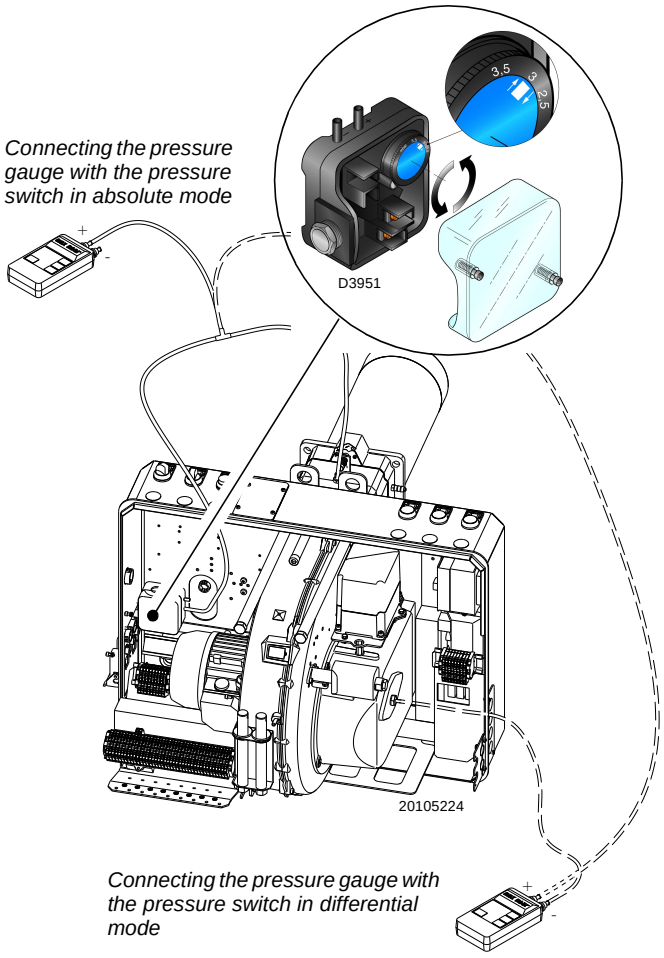


Fig. 30

6.5.2 Maximum gas pressure switch

Adjust the maximum gas pressure switch (Fig. 31) after performing all other burner adjustments with the maximum gas pressure switch set to the end of the scale.

With the burner operating at maximum output, lower the adjustment pressure by slowly turning the relative knob anticlockwise until the burner locks out.

Now turn the knob clockwise by 0,2 kPa (2 mbar) and repeat the start-up of the burner.

If the burner locks out again, turn the knob clockwise again by 0,1 kPa (1 mbar).

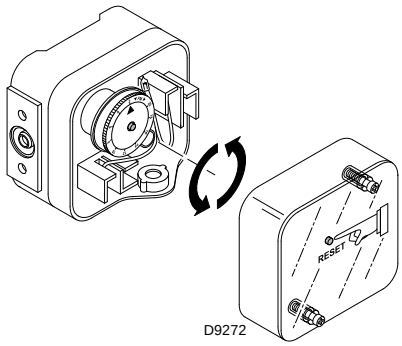


Fig. 31

6.5.3 Minimum gas pressure switch

Adjust the minimum gas pressure switch (Fig. 32) after performing all the other burner adjustments with the pressure switch set to the start of the scale.

With the burner operating at maximum output, increase adjustment pressure by slowly turning the relative knob clockwise until the burner stops.

Now turn the knob anticlockwise by 0,2 kPa (2 mbar) and repeat burner start-up to ensure it is uniform.

If the burner locks out again, turn the knob anticlockwise again by 0,1 kPa (1 mbar).

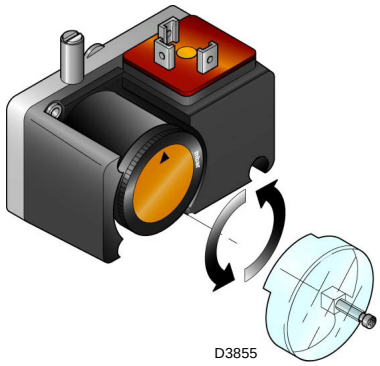


Fig. 32

6.5.4 PVP pressure switch kit

Adjust the pressure switch for the leak detection control (PVP kit) (Fig. 33) according to the instructions supplied with the kit.

WARNING

1 kPa = 10 mbar

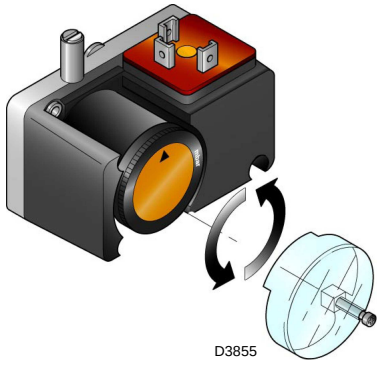


Fig. 33

6.6 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 flow rate. The arrival of gas to the pipe coupling is displayed on the pressure gauge, as shown in (Fig. 37 on page 33).

WARNING

In the event the burner stops, in order to prevent any damage to the installation, do not unblock the burner more than twice in a row.

If the burner locks out for a third time, contact the customer service.

DANGER

In the event there are further lockouts or faults with the burner, the maintenance interventions 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.

6.7 Burner flame goes out during operation

If the flame accidentally goes out during operation, the control box carries out a recycle (i.e. it repeats the start-up phase once, and makes a further ignition attempt).

If the flame is still absent, the control box goes into lockout.

6.8 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;
- ➤ setting the selector on OFF;
- ➤ using the operating panel;
- ➤ removing the transparent protection that covers the Operating Panel, after taking out the relative screws, it is possible to access the AZL display to work on the various parameters of the control box.

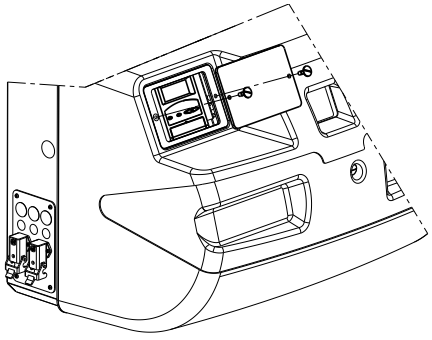


Fig. 34

6.9 Final checks (with burner operating)

➤ Open the thermostat/pressure switch TL ➤ Open the thermostat/pressure switch TS	⇨	The burner must stop
➤ Turn the gas maximum pressure switch knob to the minimum end of scale position ➤ Turn the air pressure switch to the maximum end of scale position	⇨	The burner must stop in lockout
➤ Turn off the burner and cut off the power ➤ Disconnect the minimum gas pressure switch connector	⇨	The burner must not start
➤ Remove the flame sensor from its housing	⇨	The burner must stop in lockout due to ignition failure

Tab. M

WARNING

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

7 Maintenance

7.1 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:

Turn off the burner's power supply using the main system switch.

Turn off the fuel interception tap.

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

7.2 Maintenance programme

7.2.1 Maintenance frequency

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

7.2.2 Checking and cleaning

The operator must use the required equipment during maintenance.

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 most care should be exercised during maintenance.

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 that the relative materials are not corroded and that they are correctly positioned.

Check the gas outlet holes for the ignition phase (in the distributor of the combustion head) are free of impurities or rust. If in doubt, disassemble the elbow (Fig. 39 on page 34).

Fan
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.

Burner
Clean the outside of the burner.

Flame inspection window
Clean the glass of the flame inspection window (Fig. 35).

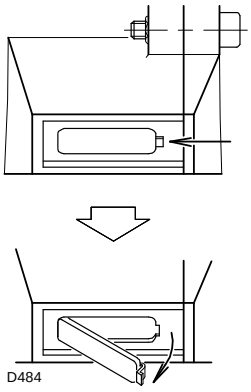


Fig. 35

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.

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.

Voltage on the QRI cell
Min value for a good work: 3.5V DC (value on AZL display at about 50%) (Fig. 36).
If the value is lower, it could be due to:
- cell not positioned correctly
- low voltage (less than 187 V)
- bad regulation of the burner

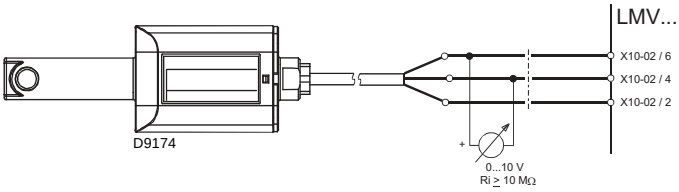


Fig. 36

Combustion

In case the combustion values found at the beginning of the intervention do not respect the standards in force or, in any case, do not correspond to a proper combustion, contact the Technical Assistance Service in order to carry out the necessary adjustments.

EN 676		Air excess		CO
		Max. output. $\lambda \leq 1.2$	Max. output. $\lambda \leq 1.3$	
GAS	Theoretical max CO_2 0 % O_2	CO_2 % Calibration		mg/kWh
		$\lambda = 1.2$	$\lambda = 1.3$	
G 20	11.7	9.7	9	≤ 1,000
G 25	11.5	9.5	8.8	≤ 1,000
G 30	14.0	11.6	10.7	≤ 1,000
G 31	13.7	11.4	10.5	≤ 1,000

Tab. N

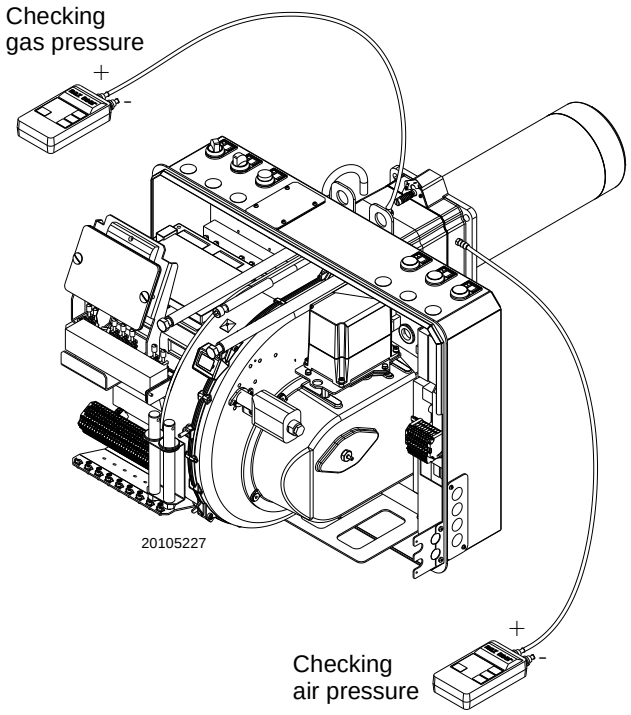


Fig. 37

7.2.3 Checking the air and gas pressure on the combustion head

To carry out this operation it is necessary to use a pressure gauge to measure the air and gas pressure at the combustion head, as shown in Fig. 37.

7.2.4 Moving backward of the control box

DANGER

Turn off the burner's power supply using the main system switch.

This system allows to move backward the cam of about 100 mm using the appropriate slide bars obtained in the holder.

- Loosen the locking screw 1) (Fig. 38);
- Through the handle 2), move backward the cam enough to reach the internal wiring harness. At the end of this operation, restore the starting position and tighten the locking screw.

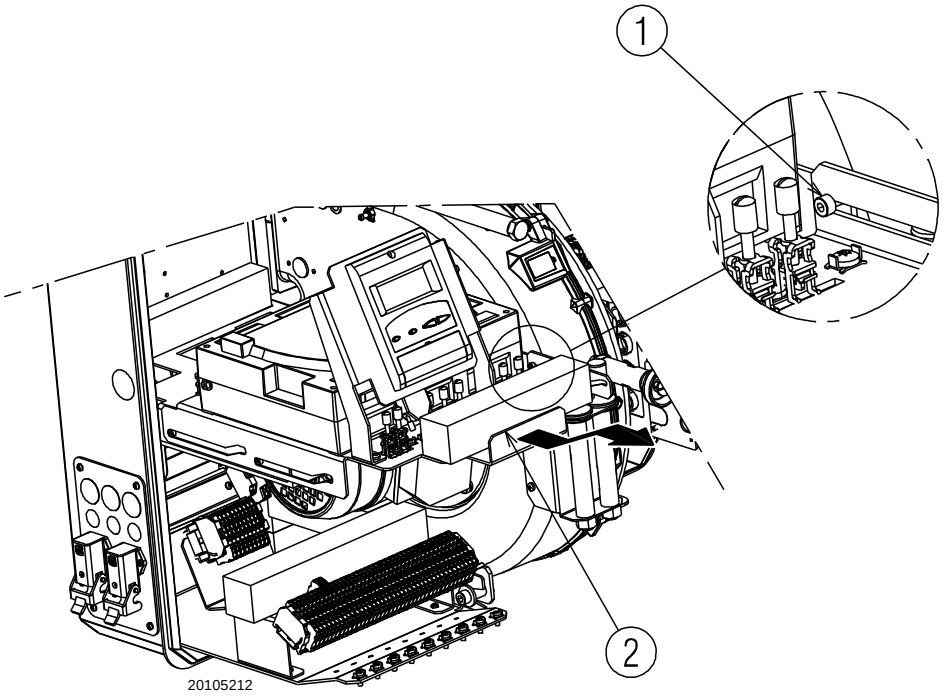


Fig. 38

7.3 Opening the burner

Turn off the burner's power supply using the main system switch.

Turn off the fuel interception tap.

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

➤ Loosen the screw 1)(Fig. 39) and remove the cover 2).
➤ Disconnect the plug of the gas servomotor.
➤ Remove screw 5)(Fig. 39) and pull the burner back of about 100 mm on the slide bars 6).
➤ Remove the electrode cable and then draw back the entire burner.
➤ At this point it is possible to extract the inner part 7) after having removed the screw 8).

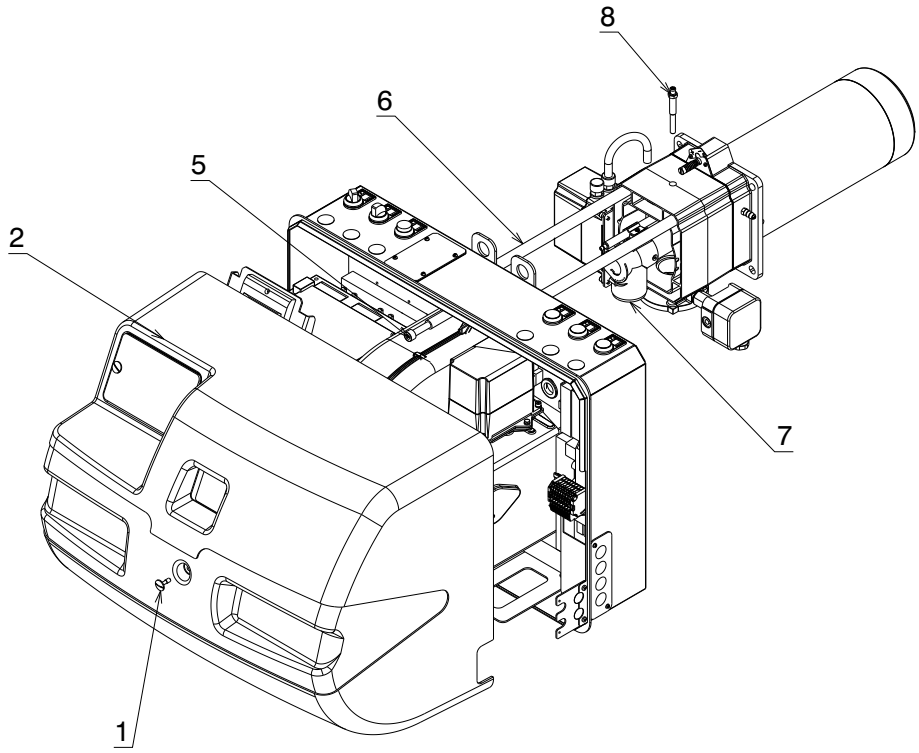


Fig. 39

7.4 Closing the burner

➤ Once carry out the maintenance, reassemble the internal part 7) by locking the screw 8).
➤ Push the burner until it is approx. 100 mm from the pipe coupling (Fig. 39).
➤ Reconnect the cables that were previously disconnected and slide in the burner until it comes to a stop.
➤ Connect the servomotor plug.
➤ Replace the screw 5)(Fig. 39) and carefully pull the electrode cable outwards until slightly taut.

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

8 Faults - Possible causes - Solutions

If faults arise in ignition or operations, the burner performs a "safety stop", which is signalled by the red burner lockout LED.

The display visualises alternately the lockout code and the relative diagnostic. To reset the start-up conditions, refer to the “Reset procedure” indicated in the control box manual supplied.

When the burner starts again, the red LED goes out and the control box is reset.

WARNING

In the event the burner stops, in order to prevent any damage to the installation, do not unblock the burner more than twice in a row. If the burner locks out for a third time, contact the customer service.

DANGER

In the event there are further lockouts or faults with the burner, the maintenance interventions 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.

A Appendix - Accessories

Spacer kit

Burner	Thickness (mm)	Code
RS 50/EV	100	3010095

Connection flange kit

Burner	Code
RS 50/EV	3010138

Kit for LPG operation

Burner	Output kW	Code
RS 50/EV	125/285 - 630	20008173

Town gas kit

Burner	Output kW	Code
RS 50/EV	116 - 290/581	3010285

Software interface kit

Burner	Code
RS 50/EV	3010388

Kit PVP (Pressure Valve Proving)

Burner	Gas train type	Code
RS 50/EV	MB - CB	3010344

Probe for checking temperature/pressure

Parameter to be checked		Probe	
	Adjustment field	Type	Code
Temperature	- 100...+ 500°C	PT 100	3010110
Pressure	0...2.5 bar 0...16 bar	Output probe 4....20 mA	3010213 3010214

Probe for checking the air/combustion fume temperature

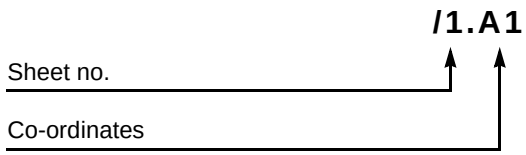
Parameter to be checked		Probe	
	Adjustment field	Type	Code
Temperature	- 100...+ 500°C	PT 1000/Ni1000	3010377

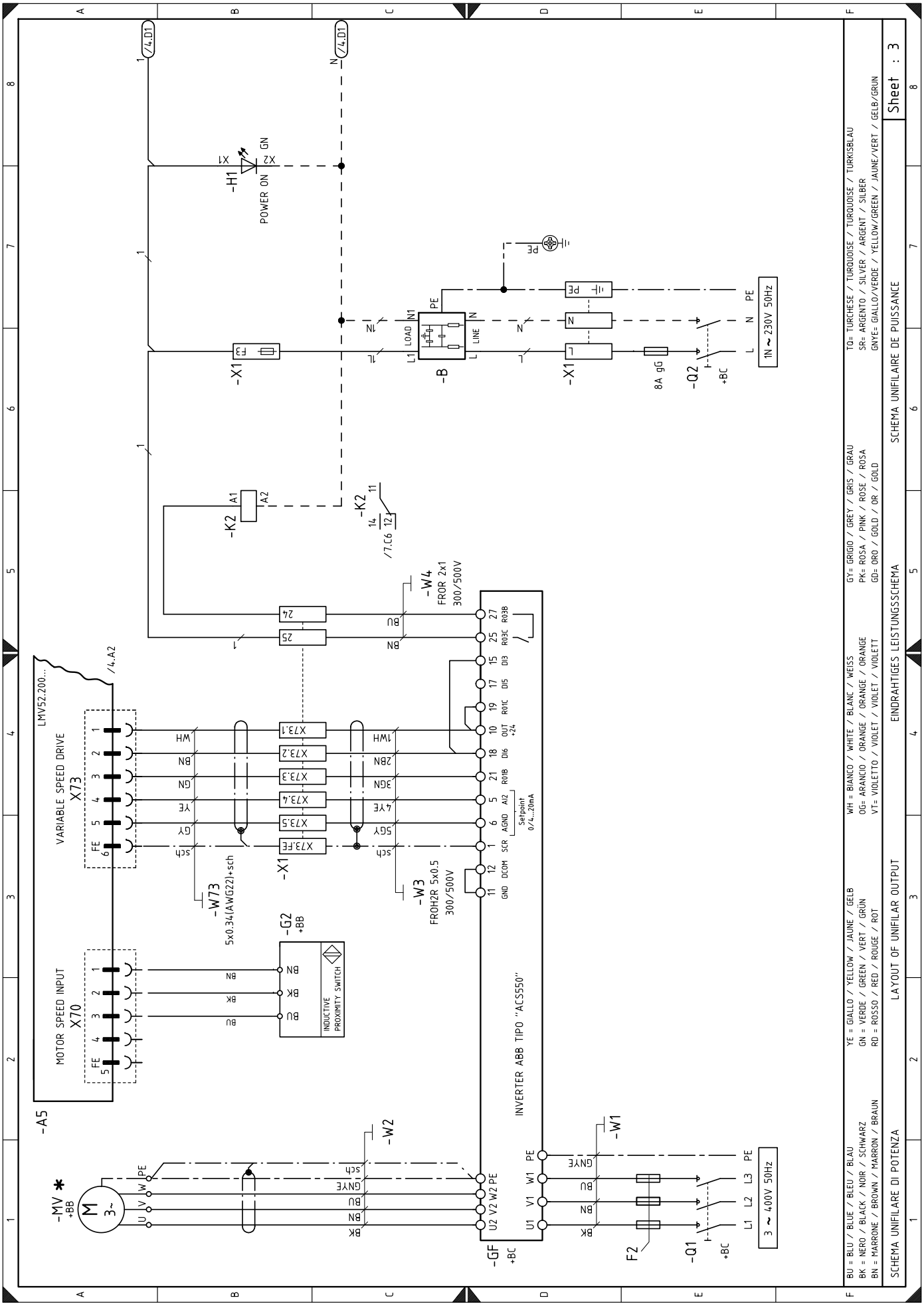
Gas trains in compliance with EN 676

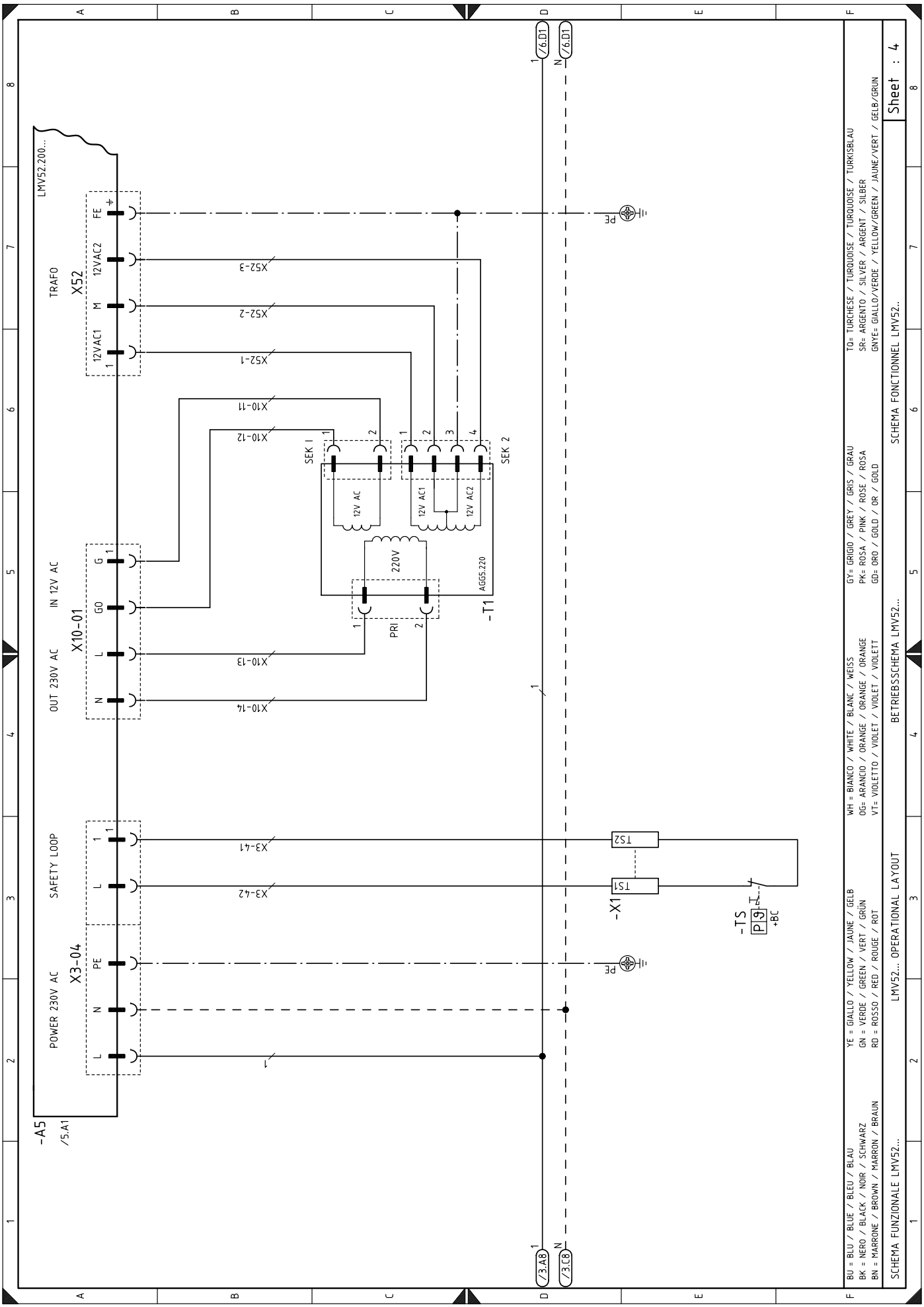
Please refer to manual.

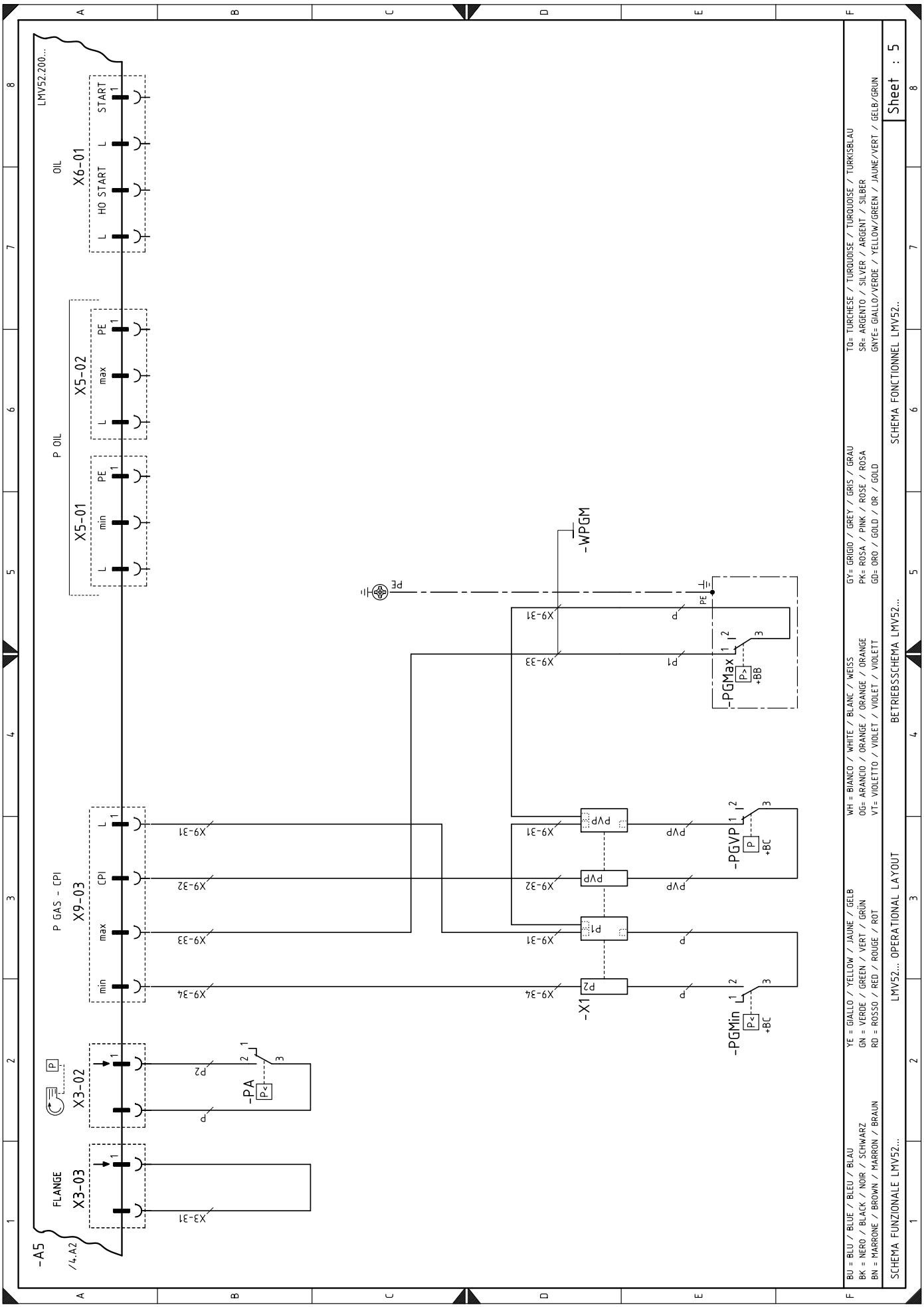
B Appendix - Electrical panel layout

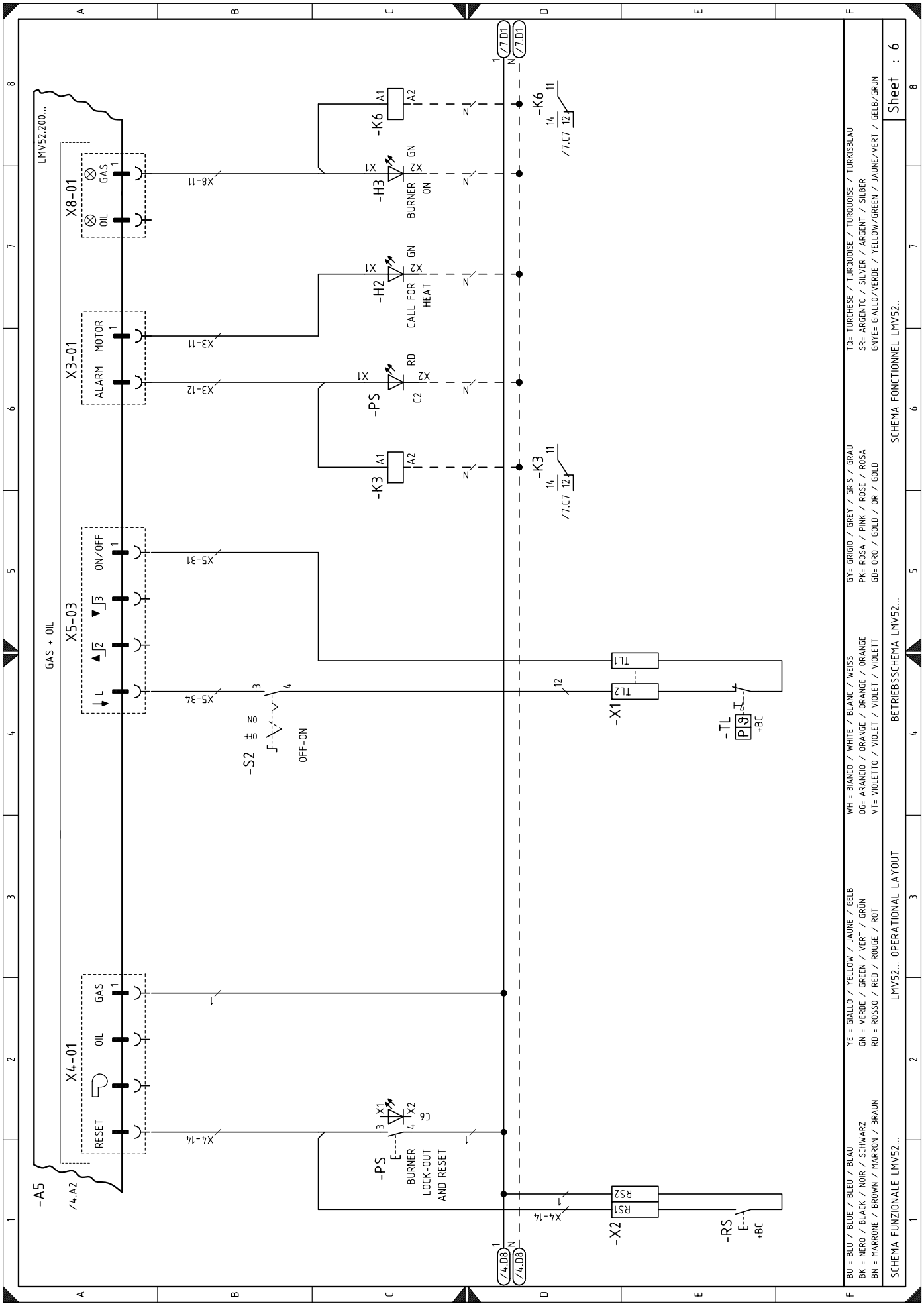
2 Indication of references




SCHEMA UNIFILARE DI POTENZA
LAYOUT OF UNIFILAR OUTPUT
EINDRAHTIGES LEISTUNGSSCHEMA
SCHEMA UNIFILAIRE DE PUISSANCE
Sheet : 3
3 ~ 400V 50Hz
1N ~ 230V 50Hz
-A5
-MV
-G2
-GF
-W1
-W2
-W3
-W4
-W73
-X1
-K2
-H1
-B
-Q1
-Q2
F2
8A gG
POWER ON
INVERTER ABB TIPO "ACS550"
VARIABLE SPEED DRIVE
MOTOR SPEED INPUT
INDUCTIVE PROXIMITY SWITCH
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRÜN
RD = ROSSO / RED / ROUGE / ROT
WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN


LMV52.200...
TRAFO
X52
12VAC1
M
12VAC2
FE
X52-3
X52-2
X52-1
X10-11
X10-12
SEK 1
SEK 2
12V AC
12V AC1
12V AC2
220V
AGG5.220
-T1
PRI
X10-01
OUT 230V AC
IN 12V AC
G
GO
L
N
X10-13
X10-14
SAFETY LOOP
X3-04
POWER 230V AC
PE
X3-41
X3-42
-A5
/5.A1
/6.D1
/3.A8
/3.C8
TS2
TS1
-X1
-TS
P
9
+BC
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRÜN
RD = ROSSO / RED / ROUGE / ROT
WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52..
Sheet : 4


LMV52.200...
-A5
/4.A2
FLANGE
X3-03
X3-02
P OIL
X5-01
X5-02
OIL
X6-01
P GAS - CPI
X9-03
-PA
-PGMin
-PGVP
-PGMax
-WPGM
-X1
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52...
Sheet : 5


LMV52.200...
GAS + OIL
-A5
/4.A2
X8-01
X3-01
X5-03
X4-01
GAS
OIL
RESET
MOTOR
ALARM
ON/OFF
-K6
-K3
-H3
-H2
-PS
-S2
-X1
-X2
-TL
-RS
BURNER ON
CALL FOR HEAT
BURNER LOCK-OUT AND RESET
OFF-ON
/7.D1
/4.D8
/7.C7
/4.C6
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRÜN
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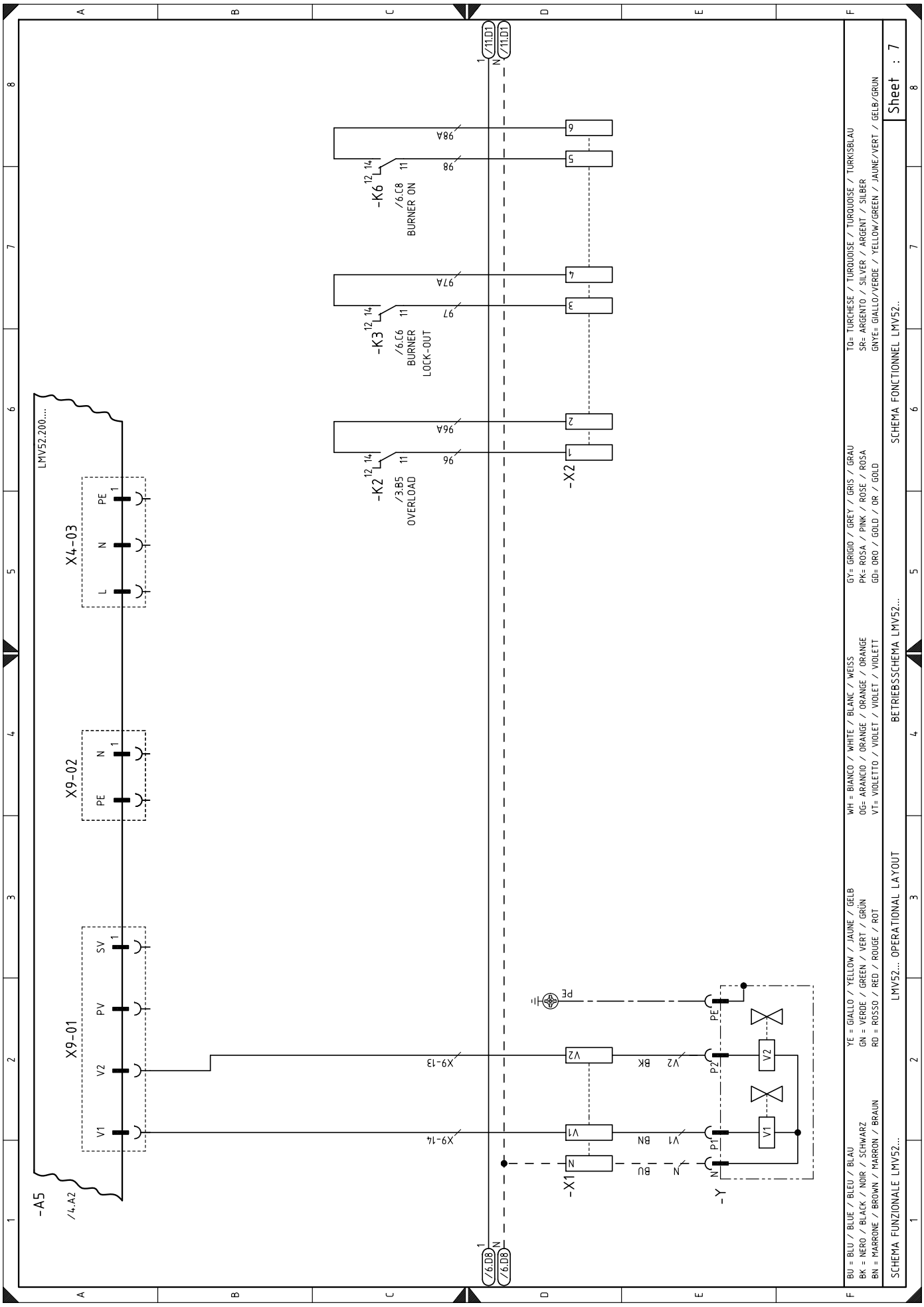
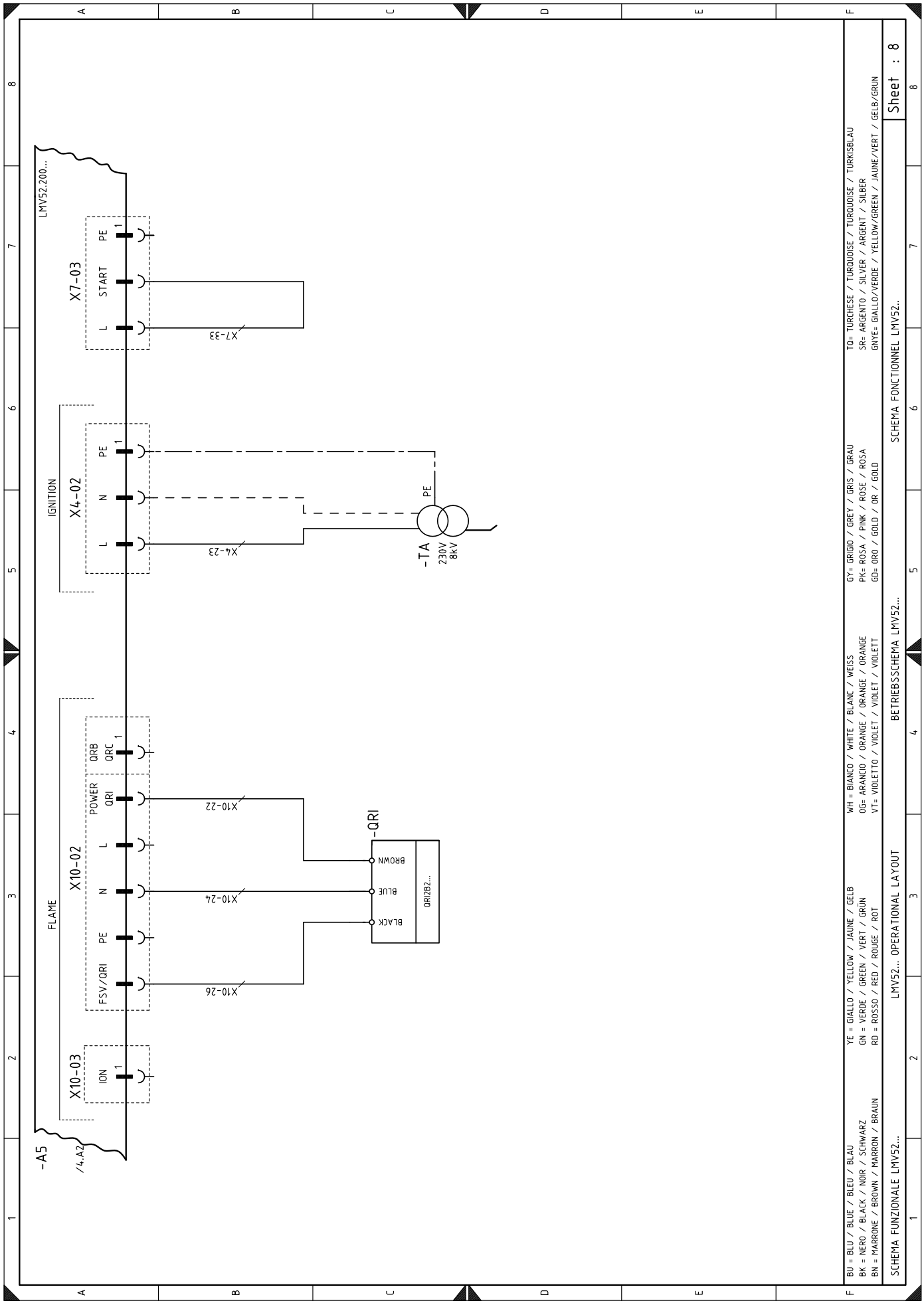
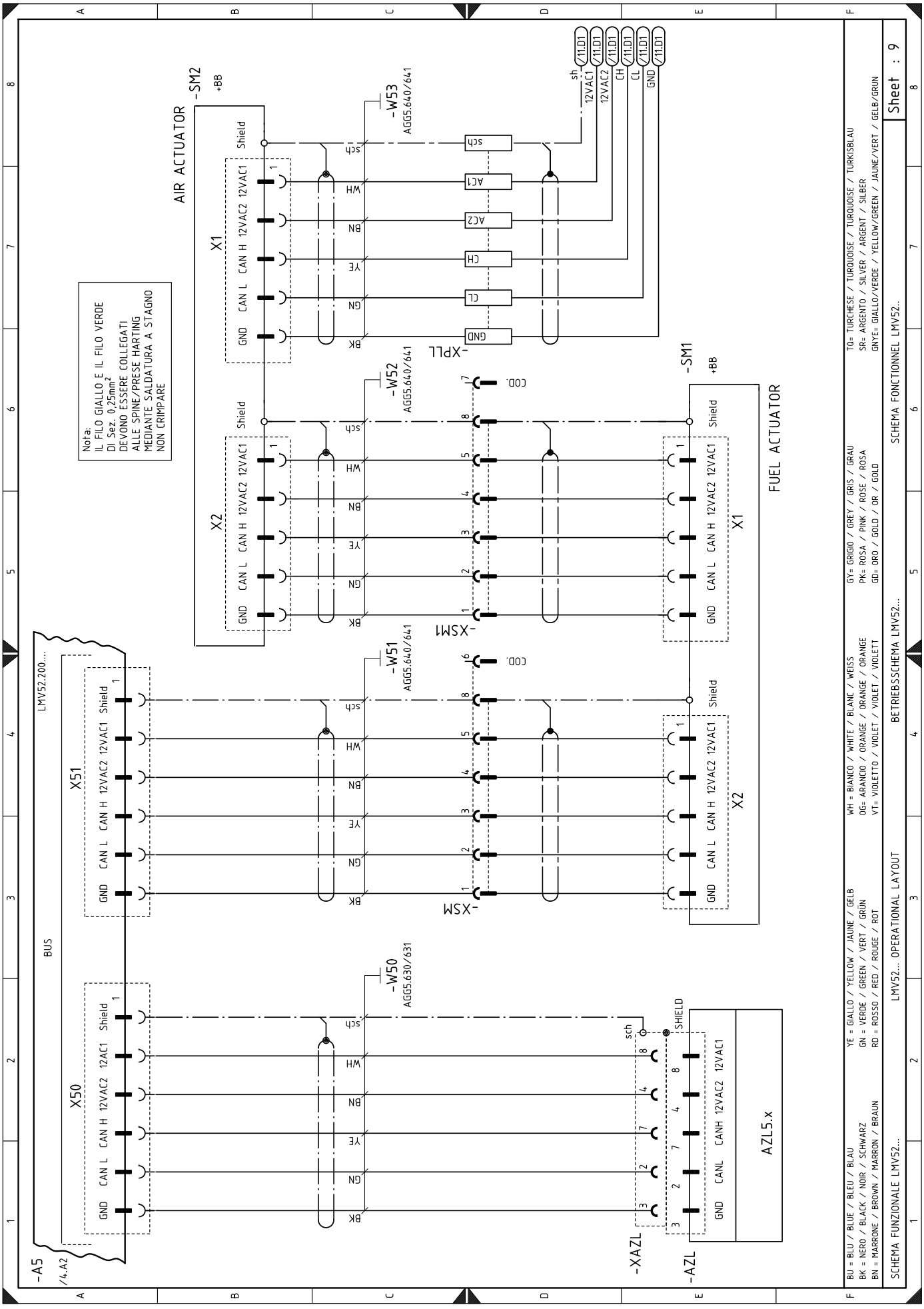
WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52..
Sheet : 6


-A5
/4.A2
LMV52.200....
X9-01
V1
V2
PV
SV
X9-02
PE
N
X4-03
L
N
PE
-K2
/3.B5
OVERLOAD
-K3
/6.C6
BURNER
LOCK-OUT
-K6
/6.C8
BURNER ON
-X2
-X1
-Y
/11.D1
/6.D8
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52..
Sheet : 7


LMV52.200...
X7-03
START
PE
L
X7-33
IGNITION
X4-02
PE
N
L
X4-23
-TA
230V
8kV
X10-02
POWER
QRB
QRC
QRI
L
N
PE
FSV/QRI
X10-22
X10-24
X10-26
-QRI
BROWN
BLUE
BLACK
QRI/B2...
FLAME
X10-03
ION
-A5
/4.A2
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
GN = VERDE / GREEN / VERT / GRÜN
RD = ROSSO / RED / ROUGE / ROT
WH = BIANCO / WHITE / BLANC / WEISS
OG= ARANCIO / ORANGE / ORANGE / ORANGE
VT= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
SCHEMA FUNZIONALE LMV52...
LMV52.. OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52..
Sheet : 8


AIR ACTUATOR
-SM2
+BB
X1
GND CAN L CAN H 12VAC2 12VAC1 Shield
-W53
AGG5.640/641
-XPLL
FUEL ACTUATOR
-SM1
X2
-W52
AGG5.640/641
-XSM1
-W51
AGG5.640/641
-XSM
LMV52.200....
BUS
X51
-W50
AGG5.630/631
X50
-A5
/4.A2
-XAZL
-AZL
AZL5.x
GND CANL CANH 12VAC2 12VAC1
SHIELD
sch
WH
BN
YE
GN
BK
COD.
CH
CL
GND
11.D1
Nota:
IL FILO GIALLO E IL FILO VERDE
DI Sez. 0,25mm²
DEVONO ESSERE COLLEGATI
ALLE SPINE/PRESE HARTING
MEDIANTE SALDATURA A STAGNO
NON CRIMPARE
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
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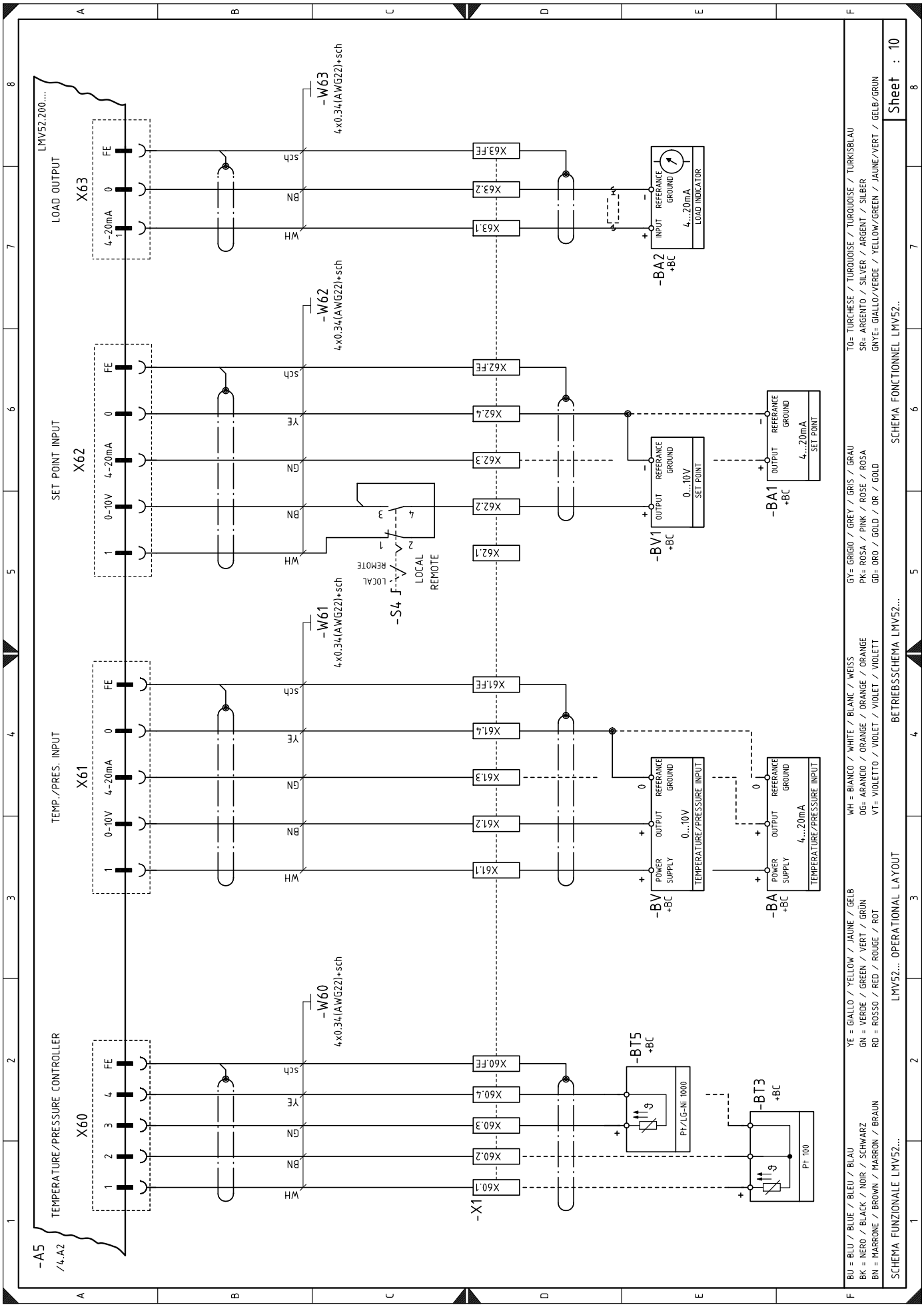
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52...
Sheet : 9


-A5
/4.A2
TEMPERATURE/PRESSURE CONTROLLER
X60
TEMP./PRES. INPUT
X61
SET POINT INPUT
X62
LOAD OUTPUT
X63
LMV52.200....
-W60
-W61
-W62
-W63
4x0.34(AWG22)+sch
-S4
LOCAL
REMOTE
-BT5
-BT3
Pt/LG-Ni 1000
Pt 100
-BV
-BA
-BV1
-BA1
-BA2
POWER SUPPLY
OUTPUT
REFERANCE
GROUND
0...10V
4...20mA
SET POINT
LOAD INDICATOR
TEMPERATURE/PRESSURE INPUT
-X1
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
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SR= ARGENTO / SILVER / ARGENT / SILBER
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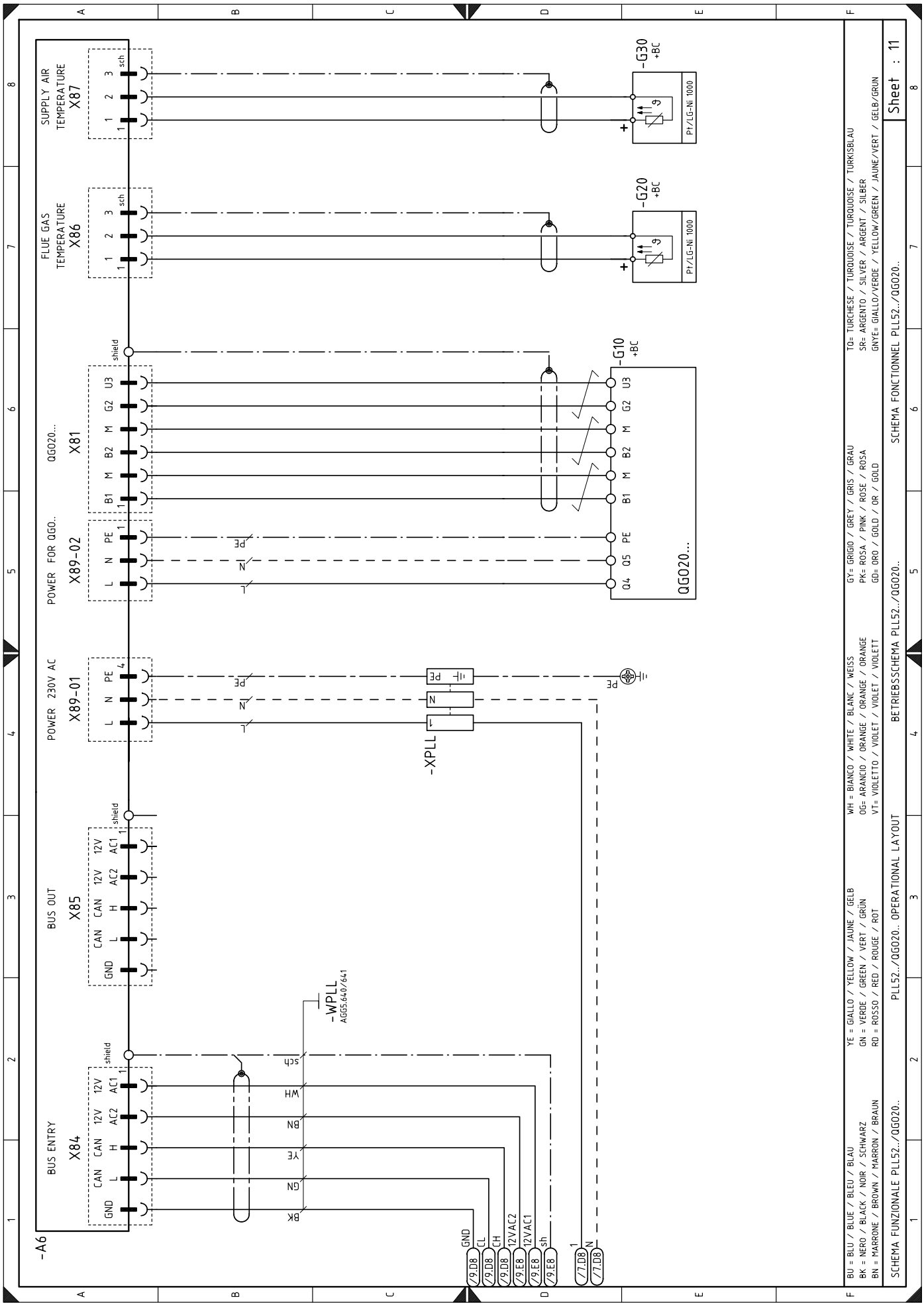
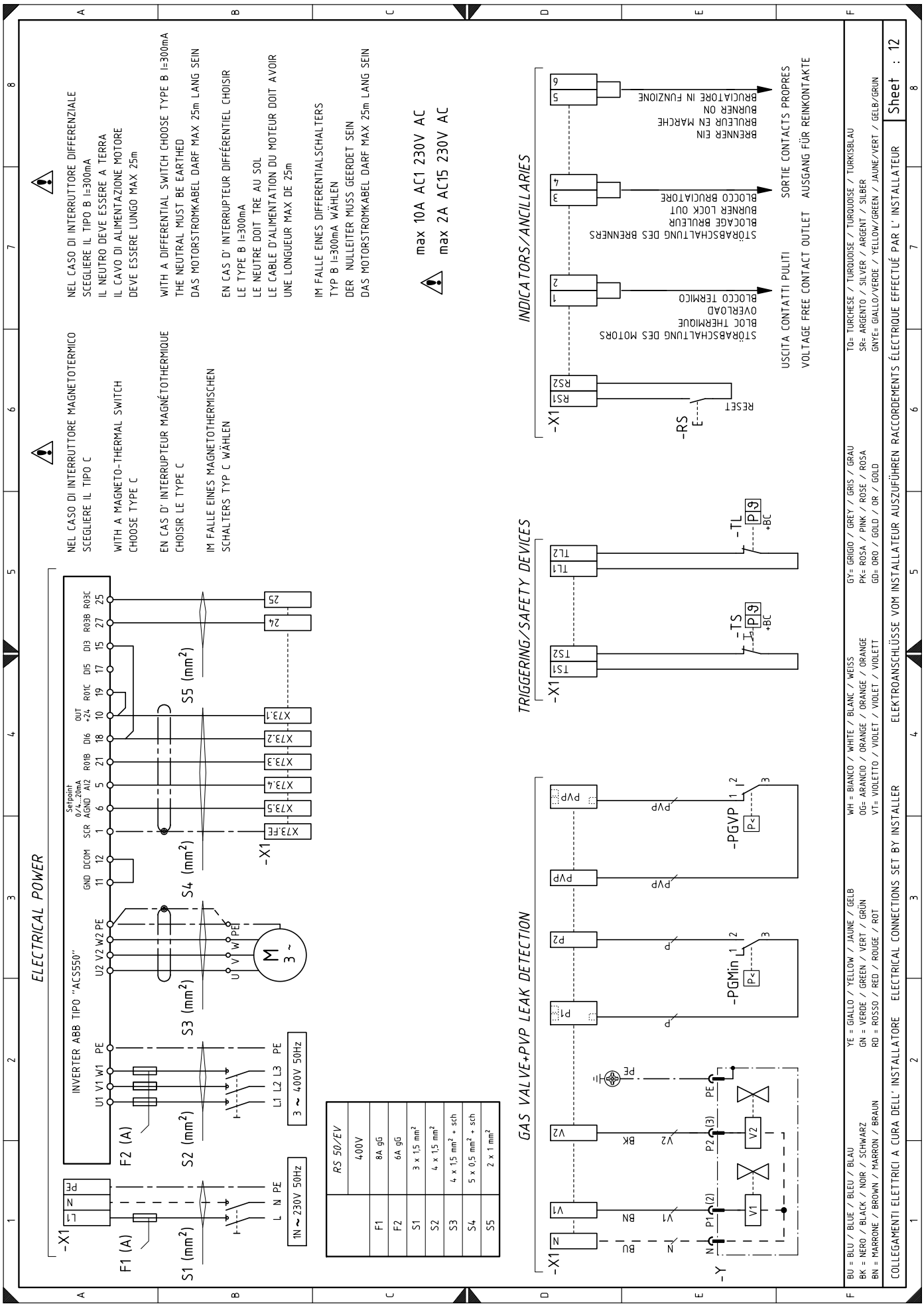
SCHEMA FUNZIONALE LMV52...
LMV52... OPERATIONAL LAYOUT
BETRIEBSSCHEMA LMV52...
SCHEMA FONCTIONNEL LMV52..
Sheet : 10


-A6
BUS ENTRY
X84
BUS OUT
X85
POWER 230V AC
X89-01
POWER FOR QGO...
X89-02
QGO20...
X81
FLUE GAS TEMPERATURE
X86
SUPPLY AIR TEMPERATURE
X87
-G30
-G20
-G10
-XPLL
-WPLL
AGG5.640/641
QGO20...
SCHEMA FUNZIONALE PLL52../QGO20.. OPERATIONAL LAYOUT
BETRIEBSSCHEMA PLL52../QGO20..
SCHEMA FONCTIONNEL PLL52../QGO20..
Sheet : 11


ELECTRICAL POWER
INVERTER ABB TIPO "ACS550"
-X1
F1 (A)
F2 (A)
S1 (mm²)
S2 (mm²)
S3 (mm²)
S4 (mm²)
S5 (mm²)
1N ~ 230V 50Hz
3 ~ 400V 50Hz
M 3 ~
-X1
RS 50/EV
400V
F1 8A gG
F2 6A gG
S1 3 x 1,5 mm²
S2 4 x 1,5 mm²
S3 4 x 1,5 mm² + sch
S4 5 x 0,5 mm² + sch
S5 2 x 1 mm²
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
NEL CASO DI INTERRUTTORE DIFFERENZIALE
SCEGLIERE IL TIPO B I=300mA
IL NEUTRO DEVE ESSERE A TERRA
IL CAVO DI ALIMENTAZIONE MOTORE
DEVE ESSERE LUNGO MAX 25m
WITH A DIFFERENTIAL SWITCH CHOOSE TYPE B I=300mA
THE NEUTRAL MUST BE EARTHED
DAS MOTORSTROMKABEL DARF MAX 25m LANG SEIN
EN CAS D' INTERRUPTEUR DIFFÉRENTIEL CHOISIR
LE TYPE B I=300mA
LE NEUTRE DOIT TRE AU SOL
LE CABLE D'ALIMENTATION DU MOTEUR DOIT AVOIR
UNE LONGUEUR MAX DE 25m
IM FALLE EINES DIFFERENTIALSCHALTERS
TYP B I=300mA WÄHLEN
DER NULLEITER MUSS GEERDET SEIN
DAS MOTORSTROMKABEL DARF MAX 25m LANG SEIN
max 10A AC1 230V AC
max 2A AC15 230V AC
INDICATORS/ANCILLARIES
STÖRABSCHALTUNG DES MOTORS
BLOC THERMIQUE
OVERLOAD
BLOCCO TERMICO
STÖRABSCHALTUNG DES BRENNERS
BLOCAGE BRULEUR
BURNER LOCK OUT
BLOCCO BRUCIATORE
BRENNER EIN
BRULEUR EN MARCHE
BURNER ON
BRUCIATORE IN FUNZIONE
USCITA CONTATTI PULITI
VOLTAGE FREE CONTACT OUTLET
SORTIE CONTACTS PROPRES
AUSGANG FÜR REINKONTAKTE
RESET
-RS
-X1
TRIGGERING/SAFETY DEVICES
-TL
-TS
GAS VALVE+PVP LEAK DETECTION
-PGMin
-PGVP
-Y
BU = BLU / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
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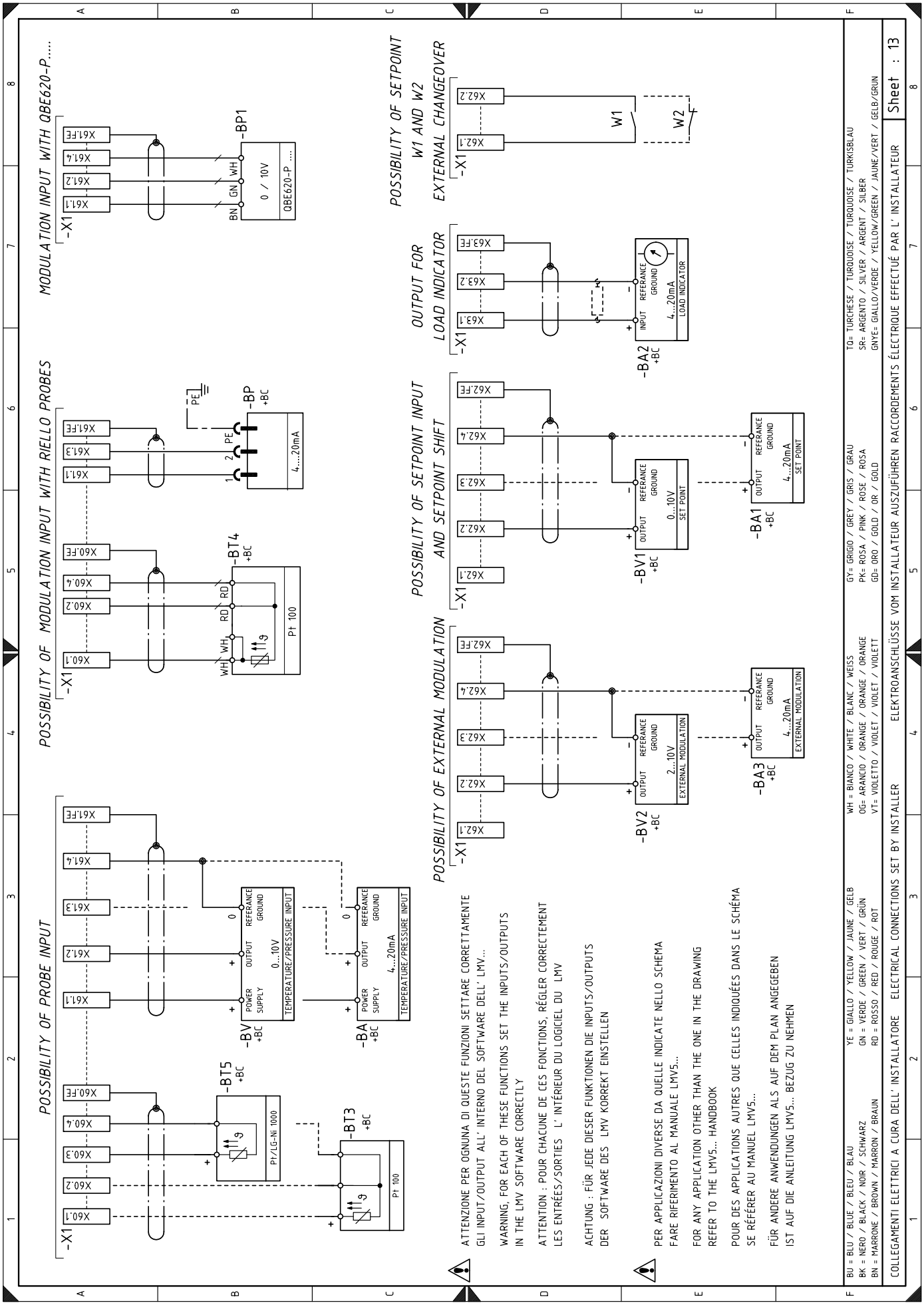
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
COLLEGAMENTI ELETTRICI A CURA DELL' INSTALLATORE
ELECTRICAL CONNECTIONS SET BY INSTALLER
ELEKTROANSCHLÜSSE VOM INSTALLATEUR AUSZUFÜHREN
RACCORDEMENTS ÉLECTRIQUE EFFECTUÉ PAR L' INSTALLATEUR
Sheet : 12


POSSIBILITY OF PROBE INPUT
POSSIBILITY OF MODULATION INPUT WITH RIELLO PROBES
MODULATION INPUT WITH QBE620-P.....
POSSIBILITY OF EXTERNAL MODULATION
POSSIBILITY OF SETPOINT INPUT AND SETPOINT SHIFT
OUTPUT FOR LOAD INDICATOR
POSSIBILITY OF SETPOINT W1 AND W2 EXTERNAL CHANGEOVER
-X1
-BV
-BA
-BT5
-BT3
-BT4
-BP
-BP1
-BV1
-BV2
-BA1
-BA2
-BA3
W1
W2
TEMPERATURE/PRESSURE INPUT
EXTERNAL MODULATION
LOAD INDICATOR
SET POINT
ATTENZIONE PER OGNUNA DI QUESTE FUNZIONI SETTARE CORRETTAMENTE GLI INPUT/OUTPUT ALL' INTERNO DEL SOFTWARE DELL' LMV...
WARNING, FOR EACH OF THESE FUNCTIONS SET THE INPUTS/OUTPUTS IN THE LMV SOFTWARE CORRECTLY
ATTENTION : POUR CHACUNE DE CES FONCTIONS, RÉGLER CORRECTEMENT LES ENTRÉES/SORTIES L' INTÉRIEUR DU LOGICIEL DU LMV
ACHTUNG : FÜR JEDE DIESER FUNKTIONEN DIE INPUTS/OUTPUTS DER SOFTWARE DES LMV KORREKT EINSTELLEN
PER APPLICAZIONI DIVERSE DA QUELLE INDICATE NELLO SCHEMA FARE RIFERIMENTO AL MANUALE LMV5...
FOR ANY APPLICATION OTHER THAN THE ONE IN THE DRAWING REFER TO THE LMV5... HANDBOOK
POUR DES APPLICATIONS AUTRES QUE CELLES INDIQUÉES DANS LE SCHÉMA SE RÉFÉRER AU MANUEL LMV5...
FÜR ANDERE ANWENDUNGEN ALS AUF DEM PLAN ANGEGEBEN IST AUF DIE ANLEITUNG LMV5... BEZUG ZU NEHMEN
BU = BLU / BLUE / BLEU / BLAU
BK = NERO / BLACK / NOIR / SCHWARZ
BN = MARRONE / BROWN / MARRON / BRAUN
YE = GIALLO / YELLOW / JAUNE / GELB
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VI= VIOLETTO / VIOLET / VIOLET / VIOLETT
GY= GRIGIO / GREY / GRIS / GRAU
PK= ROSA / PINK / ROSE / ROSA
GD= ORO / GOLD / OR / GOLD
TQ= TURCHESE / TURQUOISE / TURQUOISE / TURKISBLAU
SR= ARGENTO / SILVER / ARGENT / SILBER
GNYE= GIALLO/VERDE / YELLOW/GREEN / JAUNE/VERT / GELB/GRUN
COLLEGAMENTI ELETTRICI A CURA DELL' INSTALLATORE ELECTRICAL CONNECTIONS SET BY INSTALLER ELEKTROANSCHLÜSSE VOM INSTALLATEUR AUSZUFÜHREN RACCORDEMENTS ÉLECTRIQUE EFFECTUÉ PAR L' INSTALLATEUR
Sheet : 13

Wiring layout key

A5	Control box
B	Protection against radio interference
B1	Internal RWF50 output power regulator
B2	External RWF50 output power regulator
BA1	Output device in current to modify remote setpoint
BP	Pressure probe
BP1	Pressure probe
BR	Remote setpoint voltage divider
BT1	Thermocouple probe
BT2	Probe Pt100, 2 wires
BT3	Probe Pt100, 3 wires
BT4	Probe Pt100, 3 wires
BTEXT	External probe for the climatic compensation of the setpoint
BV	Output probe in voltage
BV1	Output device in voltage to modify remote setpoint
F2	Fuse for inverter power supply
F3	Auxiliary fuse
H1	Light signalling burner on
H2	Heat request lighting signal
H3	Burner working lighting signal
KL1	Direct start and star/delta starter line contactor
KT1	Star-powered/delta-powered starter /delta contactor
KS1	Star-powered/delta-powered starter /star-powered contactor
KST1	Star-powered/delta -powered starter timer
K2	Clean contacts output relay motor lockout
K3	Clean contacts output relay for burner lockout
K6	Clean contacts output relay burner switched on
IN	Switch for manual shut-off burner
MV	Fan motor
PA	Air pressure switch
PE	Burner earth
PGMax	Maximum gas pressure switch
PGMin	Minimum gas pressure switch
PGVP	Gas pressure switch for valve leak detection control device
RS	Remote burner reset button
S2	ON/OFF selector
S4	LOCAL-REMOTE selector
PS	Burner reset button and lock-out signal
SM	Servomotor
TA	Ignition transformer
TL	Limit thermostat/pressure switch
TS	Safety thermostat/pressure switch
TR	Control pressure switch/thermostat
UV	Flame sensor
YVPS	Gas valve leak detection control device
XAZL	Plug for on-board AZL
XPLL	Terminal board for PLL kit
XRWF	Terminal board for RWF50
XSM	Servomotor connector
XSM1	Servomotor connector (auxiliary)
X1	Main supply terminal board
X2	Secondary terminal board
Y	Gas adjustment valve + gas safety valve

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http:// www.riello.it
http:// www.riello.com