General warnings

General warnings

Guarantee and responsibility 1.1

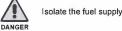
The rights to the guarantee and the responsibility will no longer be valid in the event of damage to things or injury to people, if such damage/injury was due to any of the following causes:

- intervention of ungualified personnel:
- > carrying out of unauthorised modifications on the equipment:
- > powering of the burner with unsuitable fuels;
- faults in the fuel supply system;
- repairs and/or overhauls incorrectly carried out:
- > use of non-original components, including spare parts, kits, accessories and optional:
- force maieure.

1.2 Installation safety notes



It is obligatory to carry out all installation, maintenance and disassembly operations with the electricity supply disconnected.





The installation must be carried out by gualified personnel, as indicated in this manual and in compliance with the standards and legal requisites in force

CAUTIO

1.3 Notes on safety for the electrical wiring

- > The electrical wiring must be carried out with the electrical supply disconnected.
- > Electrical wiring must be carried out by qualified personnel and in compliance with the regulations currently in force in the country of destination. Refer to the wiring diagrams.
- DANCER The manufacturer declines all responsibility for modifications or connections different from those shown in the wir-> ing diagrams.
 - > Do not invert the neutral with the phase in the electrical supply line.
 - > Check that the electrical supply of the burner corresponds to that shown on the identification label and in this man-ILLI
 - > The burners have been set for intermittent operation. 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 the boiler's thermostat/pressure switch ensures the stopping of the burner. If this is not the case, a time switch must be fitted in series to the L-N to stop the burner at least once every 24

hours. Refer to the wiring diagrams.

- > The electrical safety of the device is obtained only when it is correctly connected to an efficient earthing system, made according to current standards. It is necessary to check this fundamental safety requirement. In the event of doubt, have the electrical system checked by gualified personnel.
- > The electrical system must be suitable for the maximum output absorbed by the device (indicated in the manual): in particular, check that the cable section is suitable for the level of power absorbed by the device.
- > For the main power supply of the device from the electricity mains:
- do not use adapters, multiple-outlet sockets, or extensions;
- use an omnipolar switch (in compliance with the safety laws in force).
- > do not touch the device with wet or damp body parts and/or in bare feet
- > Do not pull the electric cables.

No condensation, water infiltration or ice formation is permitted.



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

- > Personnel must always use the personal protective equipment envisaged by legislation and follow the indications given in this manual.
- > Personnel must observe all the danger and caution indications shown on the machine.
- > Personnel must not carry out, on their own initiative, operations or interventions that are not within their province.
- > Personnel must inform their superiors of every problem or dangerous situation that may arise.

After removing all the packaging, check the integrity of the contents. If in doubt, do not use the spare part: contact the supplier.

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

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

Cable clamp No. 1 Fixing screws No. 3



The short-circuit socket must be installed on the control box (Fig. 5) only for burners not supplied with a light oil heater.

Key to layout (Fig. 1)

- N Neutral
- Line
- SB External lockout signalling
- PH/K Oil heater / Enabling switch thermostat for start up after preheating
- MV Fan motor
- V Oil valve
- RS Remote reset
- F Flame detector

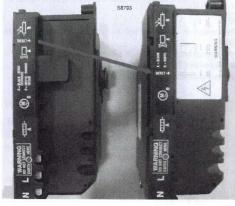
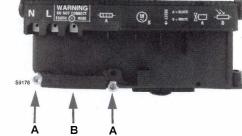


Fig. 1

SB PH/K MV RS v 1

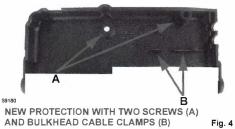


NEW VERSION WITH NEW CABLE CLAMP (B) AND SCREWS (A) Fig. 2



NEW CABLE CLAMP (B)

Fig. 3



Installation

2 Installation

- MKI (15000.01)

MKII (15000.02)

MKIII _

MKIII.1

MKIII 2

MKIII.3

MKIV

Equipment

The MO535-MR1SF-MKIV.1 digital control box replaces the pre-OLD VERSION vious versions.

It can be installed on one-stage burners with intermittent opera-

Control box No. 1

tion, fuel oil models (with or without pre-heating).

Installation



The control box can be used on burners with or without a heater.

If the heater is damaged, insert the jumper 7) (Fig. 5) in the control box so that the burner can work without the heater until the latter is replaced.

NOTE:

The control box is supplied with the jumper 7)(Fig. 5) already installed.

If the control box is installed on a burner with heater, it is necessary to remove the jumper 7) before replacing the cover. Connect the heater cables and thermostat as well.



All the installation, maintenance and dismantling operations should be performed voltage free. The replacement of the Control box must be per-

formed by qualified personnel, as indicated in this manual and in accordance with standards and regulations in force

- To remove the control box (Fig. 6), proceed as follows:
- loosen the screws 1) and open the guard 2) to remove all the components.
- Remove the coil 3).
- Loosen the two screws 4).
- > Move the control box slightly, then disconnect the electric cables of the electrodes.





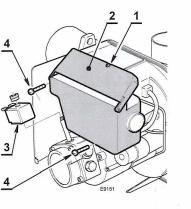
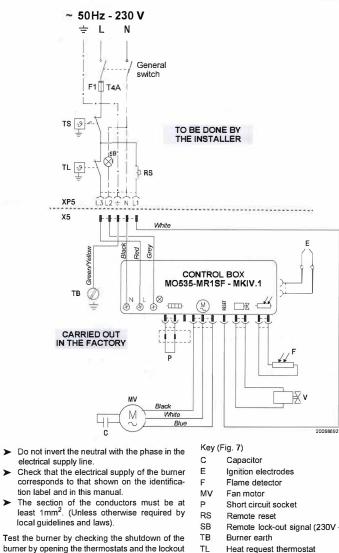


Fig. 6

Electrical system

Electrical system 3

3.1 Example of an electrical system without heater



- TL Heat request thermostat
- Safety thermostat TS
- XP5 5- pole socket
- X5 5 pin plug

5 GB

Fig. 7

- Remote lock-out signal (230V 0.5A max)

- V Oil valve

>

agrams.

335-1 standard.

by darkening the photoresistance.

If the hood is still present, remove it and proceed with the electrical wiring according to the wiring di-

Use flexible cables in compliance with the EN 60

WARNING

/!

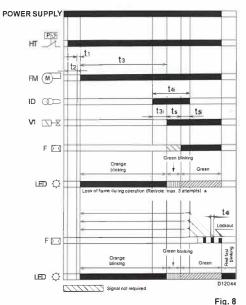
WARNING

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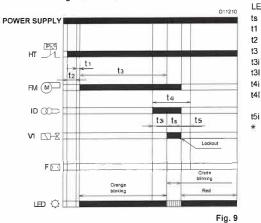
CAUTION

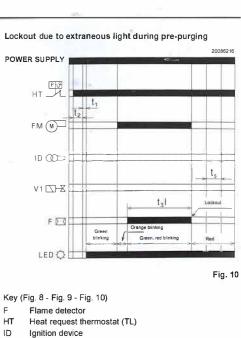
3.2 Operating programme without heater





Lockout due to ignition failure

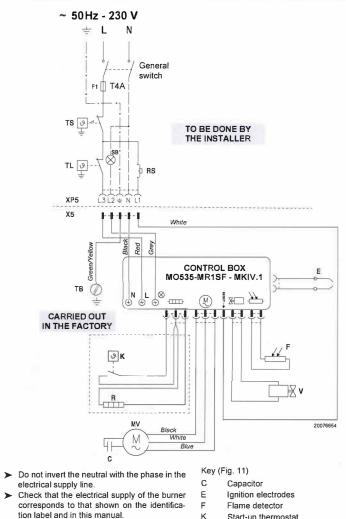




- ID
- MV Fan motor
- SB Remote lockout signal **V**1 Oil valve
- LED Reset push-button LED colour
- Safety time ts
- t1 Standby time
- t2 Initialisation check time
- t3 Pre-purge time
- t3i Pre-ignition time
- t3I Checks extraneous light during pre-purging
- Total spark ignition time t4i
- t41 Reaction time to achieve safety shutdown due to flame failure
 - Post- ignition time
 - Only 3 consecutive re-ignition attempts are permitted

Electrical system

3.3 Example of an electrical system with heater



- MV Fan motor R
 - Heater
- SB Burner earth
- TL
- TS Safety thermostat
- v Oil valve
- XP6 6- pole socket
- X6 6 pin plug

7 GB

- Start-up thermostat
- RS Remote reset
 - Remote lock-out signal (230V 0.5A max)
- TΒ
- Heat request thermostat

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

> The section of the conductors must be at

Test the burner by checking the shutdown of the

burner by opening the thermostats and the lockout

If the hood is still present, remove it and proceed

with the electrical wiring according to the wiring di-

local guidelines and laws).

by darkening the photoresistance.

least 1mm². (Unless otherwise required by

WARNING

/:

WARNING

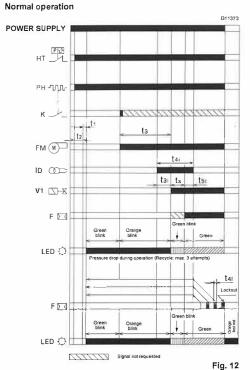
(i)

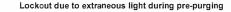
CAUTION

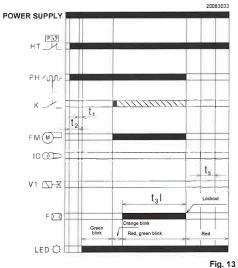
agrams.

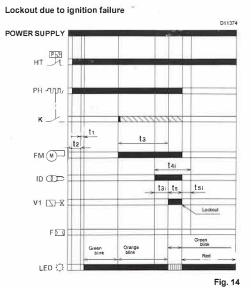
Fig. 11

3.4 Operating programme with heater









Key (Fig. 12 - Fig. 13 - Fig. 14)

- F Flame detector
- ΗT Heat request thermostat (TL)
- ID Ignition device
- κ Start-up thermostat MV
 - Fan motor Heater
- PH **V**1 Oil valve
- LED Reset push-button LED colour
- t1 Standby time
- t2 Initialisation check time
- t3 Pre-purge time
- t3i Pre-ignition time
- t3l Checks extraneous light during pre-purging
- t4i Total spark ignition time
- t41 Reaction time to achieve safety shutdown due to flame failure
- t5i Post- ignition time
- ts Safety time

Electrical system

3.5 Electrical characteristics

Description	Unit of measurement	Parameters
Rated power supply voltage (range), tolerance	VAC.	210230, + 10%, - 15%
Rated power supply frequency (range), tolerance	Hz	5060, + 5%, - 5%
Max power consumption (without load)	VA	15
Maximum and minimum operating temperature	°C	- 20+ 70
Maximum moistness (without condensation, water intake or ice formation)	R.H.	< 95% at 40°C
Maximum and minimum storage temperature	°C	-30+80
Protection level (with box protection)	IP	40
Internal protection	V	300 AC, D10
External protection fuse		T4A. 250V A.C.
Ignition discharge voltage	kV pk	18
ignition discharge voltage	mA rms	25
Maximum number of re-ignition	no./min	1
Maximum operating current.		
- output - Oil valve - excitation current (V)	mA awg	400
- output - Oil valve - maintenance current (V)	mA awg	70
- output - Fan motor (MV)	A	1.6 (cos φ ≥ 0.6 at 230V A.C.)
- output - Pre-heater (PH-K)	A	1 (resistive load at 230 V A.C.)
- output - Remote lockout signal (SB)	A	0.5 (resistive load at 230 VA.C.
Maximum length of input cables:		
of mains voltage L, N	m	20
of pre-heater PH, K	m	1
of flame detector F	m	1
of fan motor MV	m	1
- of remote lockout signal SB	m	10
of remote reset RS	m	3
of oil valve	m	
Classification		FMCLXN

3.6 Operating times

Description	Unit of measurement	Parameters
Waiting time for an input signal	\$	≤1
Initialisation standby time (after the power supply voltage has become stable)	S	3.5
Maximum pre-heating time	\$	max 600 *
Pre-purging time	S	15
Total spark ignition time	S	10
Spark pre-ignition time	S	2
Spark post-ignition time	S	3
Safety time:		
- during start up (safety time)	S	5
- during operation (in case of flame failure)	S	≤ 1
Lockout time in the case of an extraneous light or parasite flame signal dur- ing the initialisation standby time (or during the pre-heating time)	S	25
Lockout time in the case of an extraneous light or parasite flame signal dur- ing the pre-purging time	S	25
Reset hold time using integrated push-button	S	0.4
Reset hold time using remote reset	S	0.8

3.7 Flame sensor characteristics

Description	Unit of measurement	Parameters
Type of sensitive element		Photoconductive cell
Functioning principle		Detection of visible light
Sensitivity to the flame during the pre-purging	Lux	>1
Typical sensitivity to the flame during normal operation	Lux	> 3
Typical sensitivity to the flame failure	Lux	< 2
independent by flome control		

independent by flame control

3.8 Table of timings

Symbol	Description	Value (sec.)
tO	Standby: the burner is waiting for a heat request	5.00
t1	Standby time for an input signal: reaction time, control box remains in waiting status for t1	≤1
t2	Initialisation standby time: check time following the main power start-up	3.5
t2I	Checks extraneous light during t2: waiting mode for t2l, then lockout: the motor does not start	25
t2p	Oil pre-heating time : waiting mode for t2p, then there is a lockout (if there is a heater)	max 600*
t3	Pre-purge time: the fan motor is working	15
t3I	Checks extraneous light during pre-purging: control box goes into lockout at the end of t3!	25
t3i	Spark pre-ignition time	2
ts	Safety time	5
t4i	Total spark ignition time	10
t4I	Reaction time to achieve safety shutdown due to flame failure	≤1
t5i	Spark post-ignition time	3
- (a)	Minimum time to reset the control box using remote reset	0.4
	Minimum time to reset the control box using remote reset	0.8
tr	Re-cycles: Max. no. 3 repetitions of complete start-up sequence if there is a flame failure during operation; the final action at the last attempt following flame failure is a lock-out	3 re-cycles

* independent by flame control-box

3.8.1 Operations status indication

Reset push-button colour Second		onds	Golour code	
OFF	OFF			
Pre-heating time	GREEN flashing	0.5	2.5	
Pre-purge	ORANGE blinking	0.5	0.5	000000000
Safety time	GREEN blinking	0.5	0.5	
Normal operating position	GREEN*	-		Steady ON

3.8.2 Faults diagnosis - lockouts

Fault description	Reset push-button colour		onds	Colour code
Extraneous light or parasite flame signal	GREEN, RED blinking alternately	0.5	0.5	
Frequency main supply anomaly	ORANGE		•	Steady ON
Internal voltage fault	ORANGE, GREEN fast blinking alternately	0.2	0.2	•=•=•=•=•
Reset push-button / Remote reset anomaly	GREEN, RED fast blinking alternately	0.2	0.2	
Lockout for no flame after Ts	RED			Steady ON
Lockout due to extraneous light or parasite flame signal	RED	0.5	0.5	

	Dillikily			
Lockout for maximum number of recycles (flame failure during operation)	RED fast blinking	0.2	0.2	
Lockout after exceeding max. pre-heating time	RED flashing	0.5	2.5	
Lockout due to fan motor fault	RED, ORANGE flashing inverted	2.5	0.5	
Lockout due to malfunction in the internal control circuit that drives the oil valve	RED, GREEN flashing inverted	2.5	0.5	
Lockout due to eeprom fault	ORANGE, GREEN	0.5	0.5	

Key to layout

20039314

ON	OFF	Colour code
	Δ	RED
•	ō	ORANGE
		GREEN

* The blinking of the LED depends on the quality of flame signal.

Electrical system

3.8.3 Fuel pre-heating function (for burners equipped with heater)

If the burner is equipped with the fuel pre-heating function, in the presence of a start request from the heat request thermostat of the boiler, the burner awaits the closure of the start-up thermostat (or pre-heating, K) positioned on the nozzle holder.

If the start-up thermostat (or the pre-heating one) does not close within 600 seconds, the burner goes into lockout mode.

If the flame goes out during operation, the burner carries out recycling if the contact of the start-up thermostat (or the pre-heating one, K) is closed.

If the flame goes out during operation and the contact of the start up thermostat (or the pre-heating one, K) is open, the purging stops and the burner waiting for the closure of the contact of the start up thermostat (or the pre-heating one, K) to restart with the pre-purging time.

3.8.4 Shutdown test

If, during operations, the reset push-button is pressed for longer than 5 seconds and less than 10 seconds, (so as not to go to the next menu) the burner switches off, the oil valve closes, the flame is extinguished and the starting sequence restarts.

If the switch off test is enabled, the number of repetitions of the start up sequence (see section 3.8.7) and the number of possible resets (see section 3.8.11), are reset.

3.8.5 Diagnosis of the flame signal quality

The burner allows a light diagnosis of the flame during the burner run operation.

Flame quality	Number of green LED blinks
Acceptable	1 - 2 blinks
Good	3 - 4 blinks
Excellent	5 blinks, or always ON

NOTE:

If the detected signal is more than 6 times the minimum threshold value (approximately 3 lux), the green LED will be constant. Otherwise, the number of blinks will indicate the quantity of signal coming from the sensor (no. of blinks * approx. 3 lux). The detected signal depends on the sensitivity of the sensor used, and its tolerance; if the sensor is highly sensitive, the signal level will be high (for the same flame).

Flame detection	Parameters
Type of sensitive element	Photo-conductive cell
Functioning principle	Detection of visible light
Sensitivity to the flame during the pre-purging	> 1 Lux
Typical sensitivity to the flame during normal operation	> 3 Lux
Typical sensitivity to the flame failure	< 2 Lux

NOTE:

With 2 lux, the burner goes into lockout after 3 cycle repeats

3.8.6 Intermittent operation

After (at the most) 24 hours of continuous operation, the control box starts the automatic switch off sequence, followed by a restart, in order to check for a possible fault with the flame detector. It is possible to set up this automatic switch off to 1 hour, (see the section 3.10).

3.8.7 Recycle and limit of repetitions

The control box allows a recycle, i.e. complete repetition of the start-up sequence, making up to 3 attempts, in the event the flame failure during operation.

If the flame failure 4 times during operations, this will cause a burner lockout. If there is a new demand for heat during the recycle, the 3 attempts are reset when the limit thermostat (TL) switches.

NOTE:

After 510 seconds of continuous operation, a new attempt of possibility is added.

By disconnecting the power supply, when a new heat request occurs (power supply is applied to the burner) all possible attempts at re-ignition are reset (maximum 3).

3.8.8 Presence of an extraneous light or parasite flame

If when the fan motor starts, during the pre-purging, an extraneous light or parasite flame is detected the burner remains in purging until it disappears or the lockout condition is reached 25 seconds.

If the parasite flame or the extraneous light are detected during the pre-purging, the pre-purging time of 15 seconds is reset and the time for checking for the presence of a parasite flame or extraneous light begins (the motor continues to purge).

The function is cumulative and can be carried out a maximum of 2 times. If at the 24th second the parasite flame or the extraneous light disappears, the pre-purging time starts and if the parasite flame or the extraneous light reappear the pre-purging time is reset and the countdown of 25 seconds for checking for the presence of the parasite flame or the extraneous light restarts.

The third time that the parasite flame or the extraneous light appears the burner goes into lockout.

If during the recycle due to flame disappearance while operating and the consequent repetition of the start-up sequence the parasite flame or the extraneous light is detected, the countdown of 25 seconds starts for checking for the presence of the parasite flame or the extraneous light.

The presence of the parasite flame or extraneous light is also detected in the "t2" state (the burner does not start). The fault is indicated by way of the blinking LED (see section 3.8.2).

3.8.9 Pre and post spark ignition

In the pre-spark ignition time the ignition device starts 2 seconds before the oil valve opens.

In the post-spark ignition time, the ignition device stops 3 seconds after safety time.

The spark ignition is present during all safety time.

NOTE:

In case of continuous recycling or heat requests close to one another, the maximum permissible number of cycle repetitions of the ignition transformer is one attempt every minute.

3.8.10 Reset protection and remote reset

The system will only unlock after the button has been released.

The unit can also be reset via an external button (remote reset) which connects the L terminal (LINE) to the RESET terminal (refer to the wiring diagrams). Max length of external remote reset cable is 3 meters.

3.8.11 Reset push-button anomaly

if the reset push-button or the remote reset breaks or is kept pressed for more than 60 seconds, the fault is indicated by the blinking of the led (see section 3.8.2) as long as the fault is present.

This fault is merely a visualisation.

- If the fault is detected during pre-purging or safety time, the burner does not stop (the start-up sequence will continue).
- If the fault is detected during operation, the burner does stops and stays stopped with the fault signal active.
- If the fault is detected during a lockout, the fault is not signalled and the burner cannot be reset. When the fault disappears, the LED stops blinking.

3.8.12 External lockout indicator

The burner is equipped with an external locking signal function, i.e. to signal (together with the integrated reset push-button) a burner locking alarm.

The control box enables the command of an external lamp by way of the exit \otimes (230Vac-0.5Amp max).

3.8.13 Frequency main supply anomaly

The control-box automatically detects the value of the frequency of the main supply in the range of 50 - 60 Hz, in both cases working times are verified. The fault is indicated by way of the blinking LED (see section 3.8.2).

- If the anomaly is detected before heat demand the burner does not start.
- If the fault is detected during the pre-purging, the burner remains in purge condition and the fault is appropriately signalled.
- If the anomaly is detected during running position the burner remains in operation.
 When the anomaly disappears, the burner restarts.

3.8.14 Internal voltage anomaly

The control-box automatically detects if the internal voltage works correctly. The fault is indicated by way of the blinking LED (see section 3.8.2).

- If the anomaly is detected during the initialisation check time, the burner does not start.
- If the anomaly is detected after a lockout the burner does not start.
- If the anomaly is detected after a shutdown test the burner does not start.
- The fault is not detected during normal running, the burner remains in this state. When the fault disappears, the burner restarts.

3.8.15 Checking the fan motor

The control box automatically detects the presence of the fan motor and, in the event of a fault, it performs a lockout. The lockout is indicated by the blinking led (see section 3.8.2).

3.8.16 Checking the electronic circuit controlling the oil valve

The control box detects the presence of a fault inside the electronic circuit controlling the oil valve, the fault is indicated by the blinking led ("see section 3.8.2"):

- if the anomaly is detected during the initialisation, the burner goes into lockout.
- if the anomaly is detected during the pre-purging, the burner goes into lockout.
- During a recycling, if the fault is detected, the burner does not start and goes into lockout.
- If the anomaly is detected during running position the burner remains in operation.

The fault is not detected if the burner is in lockout.

3.8.17 EEprom check

The control-box automatically detects if EEprom memory of microcontroller has failed and will perform a lockout. The lockout is indicated by blinking led (see section 3.8.2).

Electrical system

3.9 Automatic pre-heating deactivation

It is possible to disable the pre-heater function in automatic mode by pressing the reset push-button of the control box or the remote reset.

Pre-heating deactivation sequence	Colour of the push-button led
Allow the disabling of the pre-heating only when there is no lockout or fault	
Allow the disabling of the pre-heating us- ing the reset push-button or the remote reset.	0.1
Supply the burner and simultaneously keep pressed the reset push-button or the remote reset for 3 seconds.	RED
Release the reset push-button or the re- mote reset within 3 seconds.	OFF
The burner will start disabling the pre- heating only if the reset push-button or the remotereset is released within 3 sec- onds.	
	Tab. A

When the pre-heating is disabled, the pre-heating remains off until:

- a lockout occurs
- the main supply voltage is interrupted
- there is a stop due to intermittent operation.

The deactivation of the automatic pre-heating function is not lost if the shut-down function is enabled.

one

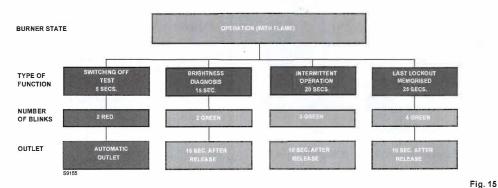
control-box will restart.

3.10 Programming menu

The programming menu can only be accessed via the reset pushbutton or the remote reset during OPERATION.

If in page menu the reset push-button is not pressed, after 10 seconds occur automatic exit and there is a green led blinking for the value set.

BLOCK DIAGRAM FOR ENTERING THE MENU



No. of Led Button release No. of pressings of the No. of Led Quitting the menu Function blinks per reset push-button blinks (areen) time menu page 2 blinks Automatic, at the Shutdown test 5s < t < 10send of the blinking RED none none 2 blinks 1 = enabled 1 blink 10 sec. after the release of Light diagnosis 15s ≤ t < 20s 2 = disabled (default)2 blink the button GREEN 1 = 0 disabled 1 blink 10 sec. after the release of Intermittent 20s≤t < 25s 3 blinks GREEN 2 = 1 hour 2 blink the button operation 3 = 24 hours (default) 3 blink Displaying the type 10 sec. after the release of Last lockout 25s ≤ t < 30s 4 blinks GREEN of lockout accordthe button memorised none ing to the table section 3.8.2

Tab, B

3.10.1 Shutdown test

Sequence for shutdown test

- Programming allowed in OPERATION.
- Press the button for 5 sec. ≤ t < 10 sec.</p>
 - The RED LED blinks twice (0.2 sec. ON; 0.2 sec. OFF)
- Release the button

≻

> The burner will initialise a shutdown followed by a restart

After shutdown, the burner restarts automatically and the number of recycling attempts is restored.

At the exit of shutdown test page menu there are no leds flashing.

3.10.2 Light diagnosis

Sequence for enable/disable

- Programming allowed in OPERATION.
- Press the button for 15 sec. ≤ t < 20 sec.</p> ➤ GREEN led flashing 2 times
- Release the button ➤ GREEN led OFF
- > Press push-button 1 time for enable or 2 times for disable function

If the number of pressures on the push-button exceeds the max-

imum allowable, the value in memory will remain the maximum

If the push-button or remote reset is pressed for more than 60

seconds, a failure of the push-button will be visualised and the

- ➤ GREEN led ON and OFF at every press and release
- > After 10 sec., the GREEN LED will blink for the number of times programmed (0.5 sec. ON: 0.5 sec. OFF).

3.10.3 Intermittent operation

Sequence for enable/disable

- Programming allowed in OPERATION.
- Press the button for 20 sec. ≤ t < 25 sec.</p>
- GREEN led flashing 3 times > Release the button
- ➤ GREEN led OFF
- Press push-button 1 time for disable function Press the button twice to enable a shutdown every 1 hour
- > Press the button 3 times to enable a shutdown every 24
- hours
- ► GREEN led ON and OFF at every press and release
- > After 10 sec., the GREEN LED will blink for the number of times programmed (0.5 sec. ON; 0.5 sec. OFF)

The modification of the intermittent operation setting parameter takes effect:

- after the activation of a switch-off test:
- after flame disappearance during operation;
- after disconnecting and reconnecting the electrical supply.

3.10.4 Display of the last lockout that occurred

The control box allows the last lockout that occurred and has been stored to be displayed, by accessing of "Programming menu" on page 14.

Access to this page is possible only Operating.

- Display sequence of the last lockout that occurred
- Keep the button pressed for 25 sec. = t < 30 sec.</p>
- The GREEN led blinks 4 times.
- Release the button.
- Display of the type of lockout stored for 10 sec.

The display time for the type of lockout can be extended by pressing the reset push-button during the display of the lockout (the display of the lockout continues for another 10s).

NOTE:

(*) Always wait 1 sec. with each pressing and release of the button to ensure the command is logged correctly.

Electrical system

3.11 Lockout types

Whenever a lockout occurs, the control box shows the reasons for the fault (and the reasons can be identified by the reset pushbutton colour). The sequence of pulses issued by the control box

Description	Lockout time	Led colour	Probable cause
Presence of extraneous light during standby	After 25 seconds		- presence of a false flame signal after heat demand
Pre-heating not terminated	After 600 seconds		 fault in the resistor of the oil pre-heater fault in the switch or start-up thermostat the short-circuit socket is not connected
Presence of extraneous light detected during pre-purging	After 25 seconds		 presence of false flame signal during pre-purging
Extraneous light detected during pre-heating	After 25 seconds		- presence of false flame signal during post-purging
The flame is not detected after the safety time	After 5 seconds from oil-valve starts	RED Steady ON	 flame detector defective or dirty oil valve defective or dirty faulty ignition transformer badly regulated burner oil fuel not present
Flame failure during opera- tion	After 3 recycles		 badly adjusted burner oil valve defective or dirty flame detector defective or dirty
Fan motor error	Immediate	A • A •	 faulty fan motor fan motor not connected
Malfunction in the internal control circuit of the oil valve	Immediate		 faulty oil valve internal control circuit of the oil valve faulty
Eeprom error	Immediate	OROR	- faulty internal memory

Tab. C

Blinking frequency of the reset push-button for status indication, "Faults diagnosis - lockouts" on page 10.



To reset the control box after visual diagnostics have been displayed, you must press the reset push-button or the remote reset.



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.



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. is not dangerous.

and the solution found.

When the lockout lamp comes on, the burner will only attempt to

start up after the reset push-button has been pressed. If ignition

is then normal, the stop can be attributed to a temporary fault that

If however the lock out continues the cause must be determined

Faults / Solutions

4

Here below you can find some causes and the possible solutions for some problems that could cause a failure to start or incorrect operation of the burner. A fault usually makes the lockout led signal which is situated in-

side the reset push-button of the control box.

Faults	Possible cause	Fault diagnostics	Solutions
The burner does not start when there is heat demand.	Lack of electrical supply.	OFF	Check presence of voltage in the L - N the pin plug.
			Check the conditions of the fuses.
			Check that safety thermostat is not lock out.
	The flame detector sees false light.		Eliminate the extraneous light
	The connections in the control box are wrongly inserted.	OFF	Check and connect all the plugs and sockets prop- erly.
	The heater is faulty or the P short-cir- cuit socket is not connected.		Replace them.
The burner goes into lockout mode before or during the pre-purging.	The flame detector sees extraneous light		Eliminate the extraneous light.
Burner runs normally in the pre-purge and igni- tion cycle and locks out after 5 seconds ca.	The flame detector is dirty.	RED Steady ON	Clear it.
	The flame detector is faulty.		Replace it.
	Flame moves away or fails.		Check pressure and output of the fuel.
			Check air output.
			Change nozzle.
			Check the coil of solenoid valve.
nition delay.	The ignition electrodes are wrongly positioned.	OFF	Adjust them according to the instructions of this manual.
	Air output is too high.		Set the air output according to the instructions of this manual.
	Nozzle dirty or worn.		Replace it.



The manufacturer cannot accept responsibility for any damage to persons, animals or property due to error in installation or in the burner adjustment, or due to improper or unreasonable use or non observance of the technical instruction enclosed with the burner, or due to the intervention of unqualified personnel. Tab. D