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Guida rapida Apparecchiatura automatica di controllo a modulazione pneumatica MPA22 Istruzioni di esercizio

Operating instructions Automatic burner control system MPA22

Guide rapide Appareillage automatique de contrôle à modulation pneumatique MPA22 Instructions d'exercice

Descrizione
L'MPA22 è comandato da microprocessore per esercizio a intermittenza, per il comando e la sorveglianza di bruciatori a soffiante per gas a modulazione pneumatica con un motorino di regolazione.
Nell'esercizio come bruciatore automatico e'integrato il controllo di tenutadelle valvole.

Technical description
The MPA22 is a microprocessor-controlled, automatic burner control system with intermittent duty for controlling and monitoring pneumatic modulating blower burners with a servomotor in combination with an electronic control unit. With integrated valve proving system for operation as automatic gas burner control system.

Description
Le MPA22 est commandé par un microprocesseur pour l'exercice intermittent, la commande et la surveillance des brûleurs à souffleur pour gaz à modulation pneumatique dotés de moteur de réglage.
Le contrôle d'étanchéité des vannes est intégré dans l'exercice comme brûleur automatique.

Approvazione apparecchio per gas
Certificato di collaudo di modello d'utilità secondo le direttive CE per apparecchiature per gas
MPA22 CE-0085AU316

Approvals for gas types
EU type test approval as per EU Gas Appliance Directive.
MPA22 CE-0085AU316

Approbation appareil pour gaz
Certificat d'essai du modèle en question conformément aux directives CE pour les appareils à gaz
MPA22 CE-0085AU316

COD. 0006081263_200705

Switching times	Seconds
Preventilation period	36
Pre-ignition period	2
Safety period, gas operation	3
Post-ventilation period	0
Test time, valve Y2	25
Test time, valve Y3	25
Wait time	0
Controller enable time	10

Configuration
Gas firing, pneumatic modulation

Servomotor air plugged in.
Coding plug gas plugged in instead of servomotor.

Functional sequence
Gas firing, pneumatic modulation

The internal self-tests are performed when the regulator issues a heating request.
The servomotor air locates its reference point and then the servomotor air moves to pre-purge position P9.
The idle position of the air pressure switch is checked and the flame monitoring device is checked for flame simulation. If these checks are passed, the blower is energised.
When the air pressure switch is closed, the preset pre-purge period elapses and the remaining pre-purge period is displayed. Pre-purging is monitored by LGW.
If the monitoring function is active, the LGW is completely monitored also in operating mode; otherwise, the input of the LGW is not taken into account.
If a valve test has still not been performed after a power failure or fault shut-down and the valve proving function is selected, a valve test and restart are performed after the pre-purge period has expired.

Otherwise, the external valve Y1 (liquid gas) opens and the servomotor air moves to ignition point P0 after the pre-purge period has expired. After the servomotor air has reached the ignition point P0, the ignition is turned on for the preset pre-purge period (with pre-ignition period = 2 s).
Valve Y2 is opened two seconds before the startup safety period commences (the ignition is also turned on if pre-ignition period = 1s). The gas pressure switch GW_min must indicate the presence of gas pressure within this period of time. Otherwise, a safety shut-down will be triggered and the gas fail-safe program executed.
If gas pressure is present after 2 seconds, the ignition is turned on (if pre-ignition period = 0) and valve Y3 is opened. The ignition is turned off at the end of the safety period and, provided that a flame is present, the servomotor remains in the ignition position for the preset stabilising time. After the stabilising time has expired, the servomotor runs to position P1.
The burner controller dwells at point P1 for the preset controller enable time. On expiration of the controller enable time, the automatic burner control system is in the operating position.
If the MPA22 has already been in service for 24 hours, a controlled shut-down is executed automatically.
If the heating request is cancelled, a controlled shut-down takes place. If the leakage check is not activated, valves Y2, Y3 and the external valve Y1 close and the blower runs on for the preset postventilation period. If the leakage check function is activated, a leakage check is performed on gas valves Y2 and Y3 by means of GW_VPS which is fitted in between valves Y2 and Y3. The postventilation period elapses in parallel with the leakage check. After the blower has been switched off, the servomotor air moves to the preset standby position. A restart lockout time (the time is displayed) now elapses (if set) or the automatic burner control enters standby mode (readout on display = OFF).

Response to faults
Gas firing, pneumatic modulation

If no flame is present after the startup safety period has elapsed, a safety shut-down takes place and executes a RESTART (if permitted). A fault lockout is triggered otherwise.
If the presence of a flame is not indicated after a restart attempt, a fault shut-down takes place and the burner enters the non-variable fault state.
If flame failure occurs while the burner is operating, the burner is restarted (if set in the EEPROM). Otherwise, a fault shut-down takes place and the burner enters the non-variable fault state.
In the event of a fault shut-down, all valves are closed and the blower and ignition are turned off.
If the presence of a flame is signalled before the gas is enabled, the automatic burner control enters the non-variable fault state.
If a malfunction occurs during the start-up phase or operating phase, a safety shut-down will be triggered. Depending upon the nature of the fault, the burner either enters the non-variable fault state or the start-up attempt is repeated.
After 5 failed attempts, the automatic burner control enters the non-variable.

Gas pressure switching
Gas fail-safe program for gas burners with pneumatic modulation

Gas pressure switch GW_min is fitted upstream of the two gas valves of the Ratio control.
If a pressure sufficient to actuate gas pressure switch GW_min does not build up one second before the startup safety period commences, burner start-up is interrupted. The valves are closed and the blower is switched off. The automatic burner control waits for 2 minutes before repeating the start-up attempt.
If there is a still a shortage of gas after this 2-minute wait, the start-up attempt is repeated a third time after waiting another 2 minutes.
After the third failed start-up attempt, the burner waits for an hour before attempting another restart.
This function does not give rise to a fault lockout in the event of a gas shortage and reduces the frequency of start-up attempts if a gas shortage exists over a lengthy period of time.

Examples of a display during the wait period: 18 1-23 (= 1 minute 23 s remaining waiting time)

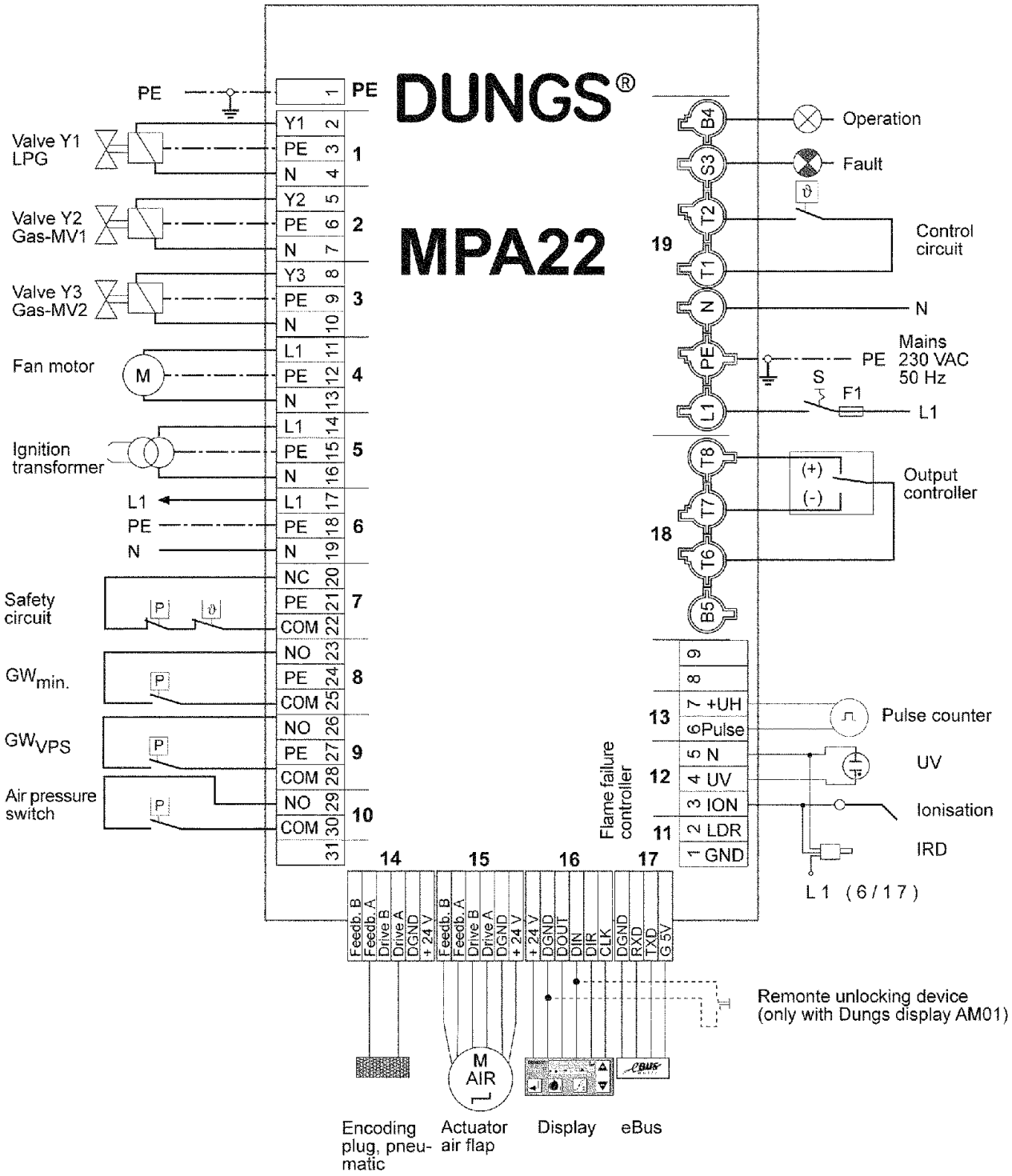
The waiting time can only be reset by disconnecting the voltage supply to the device (turn main switch OFF or disconnect the 7-pole connector).

Modulation delay

You have the option of delaying the modulation speed. Make the setting using the EEPROM parameter "Modulation delay". If the value is set to 0, modulation occurs at maximum speed. Values between 1 and 15 reduce the speed. The higher the value, the slower the modulation.
An exact speed cannot be set since the speed is dependent on the position of the setpoints.

Coding plug
Gas firing, pneumatic modulation

Coding plug "gas pneumatic" plugged in instead of "servomotor gas".
Make sure you comply with the burner manufacturer's specifications.



Valve test, gas burner

The valve proving function can be enabled or disabled in parameterisation mode.

After a power supply failure or a fault interlock deactivation, the system carries out gas valve proving before the burner is restarted. Otherwise, the valves are proved after a controlled burner shut-down.

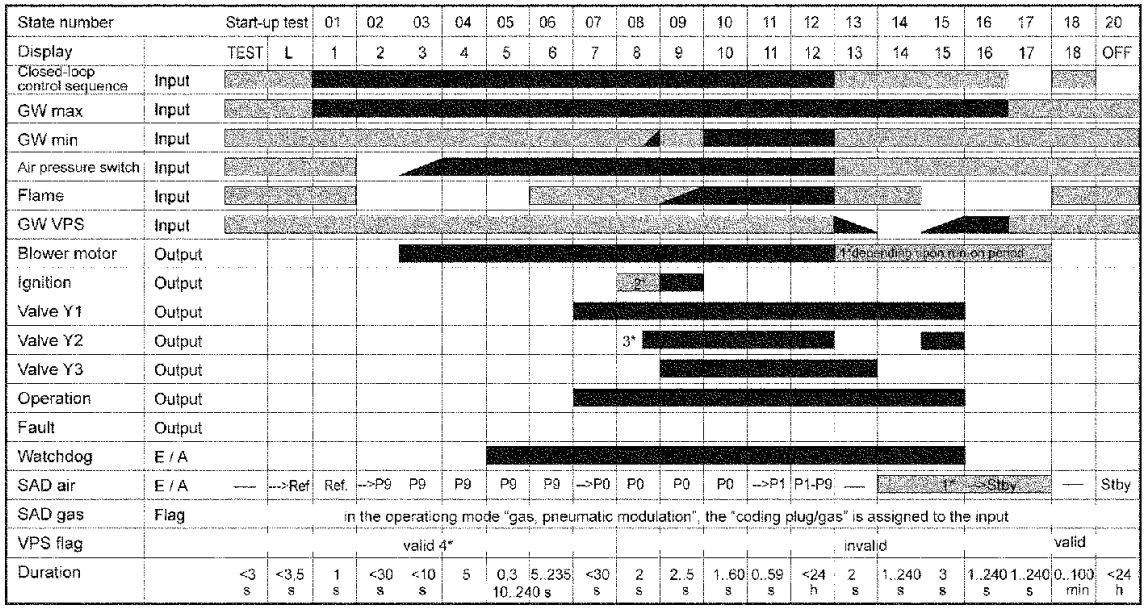
Gas burner, electronic modulation

Only a gas pressure switch is used to check the gas valves for leaks and monitor the minimum gas pressure. The gas pressure switch must be connected in the circuit between valve Y2 and valve Y3. A leakage check can thus be performed without the need for additional devices.

Functional sequence

After a controlled shut-down, valve Y3 is closed after a 2-second delay. The external valve remains open. The test section is thus rendered pressureless. The gas pressure switch must have switched off (open). Test period t_{V1} for the first valve (Y2) on the gas side now commences.
During the test period, a pressure sufficient to activate the gas pressure switch must not build up inside the test section, otherwise a fault shut-down will take place and the fault code for "valve 1 leaky" displayed.
At the end of proving time t_{V1}, valve Y2 opened for 3 s. The gas pressure switch must switch over within this period of time and indicate the presence of gas pressure, otherwise all valves are closed and the gas fail-safe program is executed.
Once the period of time has elapsed, valve Y2 and the external pilot valve are closed. During the test period for valve Y3, a pressure drop below the operating point of the preset minimum gas pressure must not occur, otherwise a fault shut-down will take place and the fault code for "valve 2 leaky" displayed.

Start and controlled shut-down with flame and valve proving system active
Test performed during previous controlled shut-down



Definitions of individual states

Start-up tests	Processor and program memory test/move servomotor to reference point
State 01	Start-up decision (heating request issued)
State 02	Idle state check, blower
State 03	Blower start-up
State 04	Pre-ventilation
State 05	Pre-ventilation / energize and test watchdog
State 06	Pre-ventilation
State 07	Move servomotor air to ignition position
State 08	Pre-ignition (depending upon parameters)
State 09	Start-up safety period
State 10	Stabilising time
State 11	Move servomotor from ignition point to operating characteristic, controller enable time
State 12	Operation
State 13	Evacuate VPS valve space / (postventilation)
State 14	Test time Y2 / (remaining postventilation time)
State 15	Fill VPS valve space / (remaining postventilation time)
State 16	Test time Y3 / (remaining postventilation time)
State 17	Remaining postventilation time
State 18	Restart lockout time / wait time loop for gas fail-safe function
State 20	Start-up wait state (standby)

Footnotes:

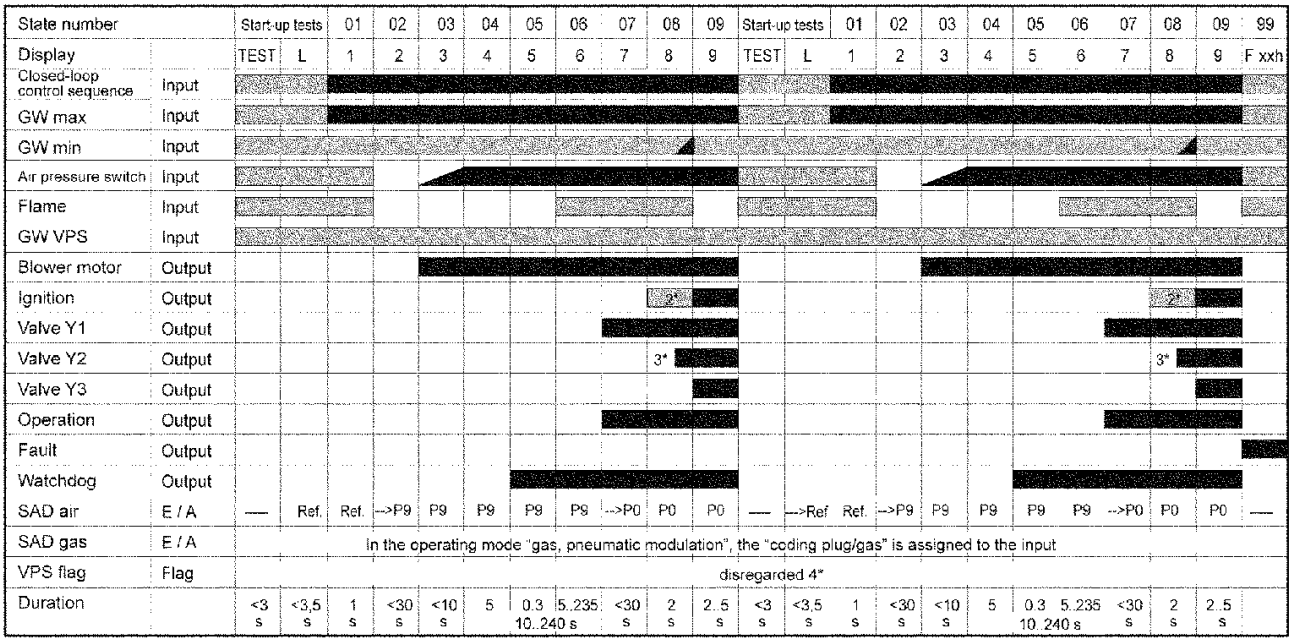
1* The blower runs during the leakage test until the postventilation period elapses. The servomotor air then enters standby state.

2* The pre-ignition cycle is started 0, 1 or 2 s before the start-up safety period commences, depending on the setting in the EEPROM.

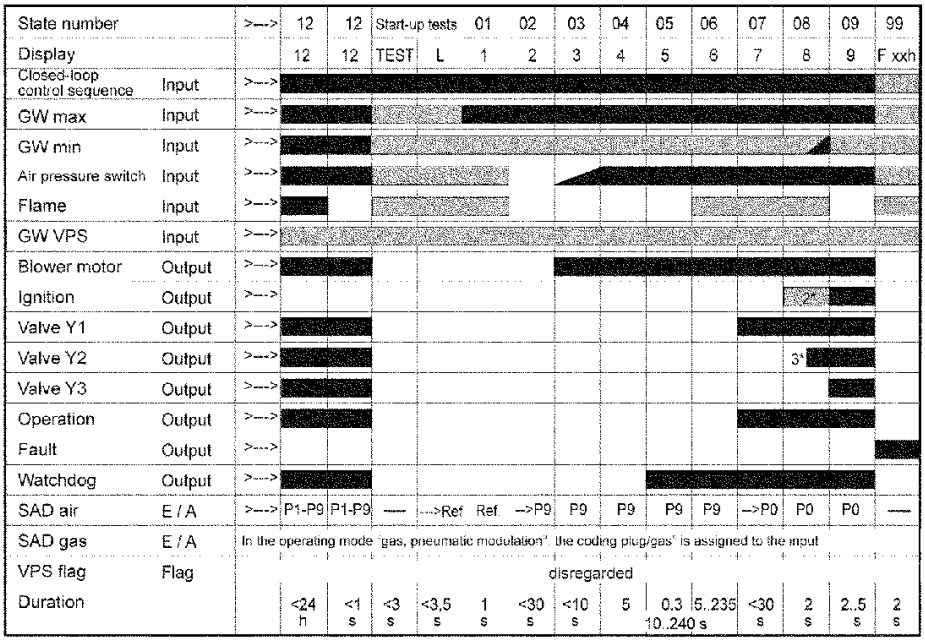
3* Valve Y2 (SV) always opens 2s before the start-up safety period commences so the GWmin can detect the presence of gas pressure.

4* After a controlled shut-down a leakage test is performed on the valves, provided the VPS is active. The VPS flag is then set to „valid". If the VPS flag is invalid, e.g. after a power outage or safety shut-down in state 08 to 16, the leakage test is performed before the main valves are opened.

Start without flame after start-up safety period
1 restart permitted, valve proving system inactive



Flame failure during operation
1 restart permitted, valve proving system inactive



No imput signal / Output disabled

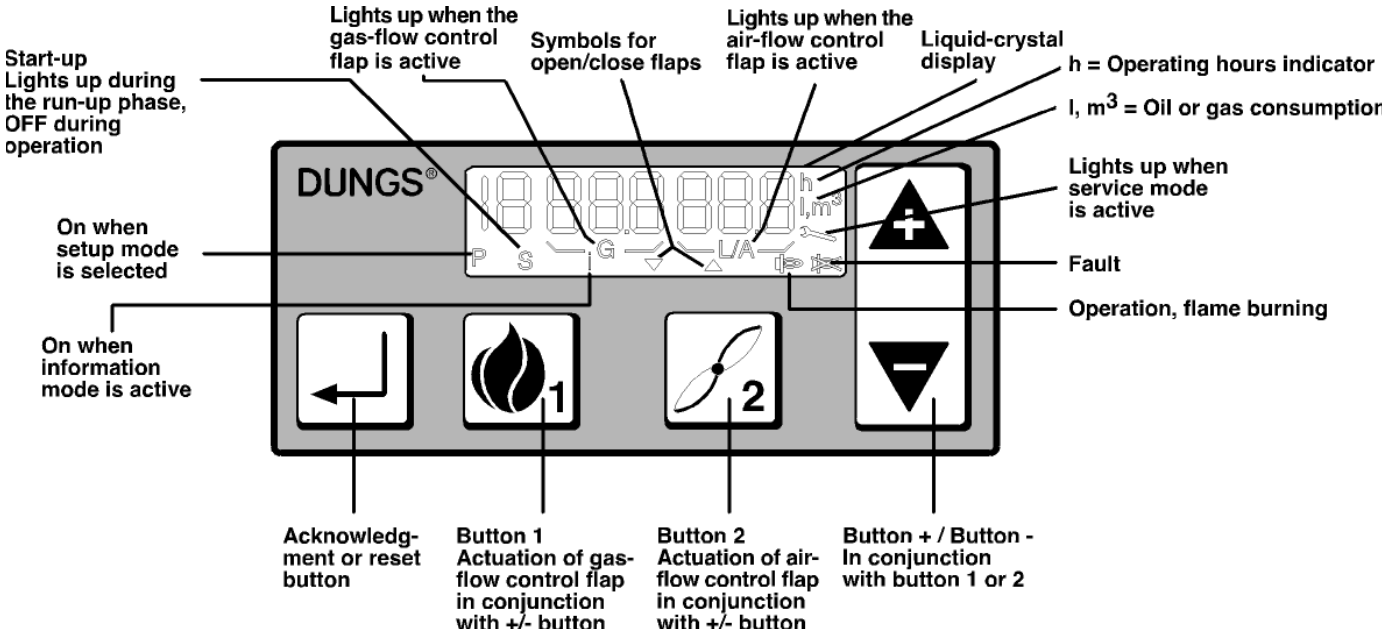
Imput signal undefined or ignored

Imput signal present / Output enabled

X* Output status depends on configuration

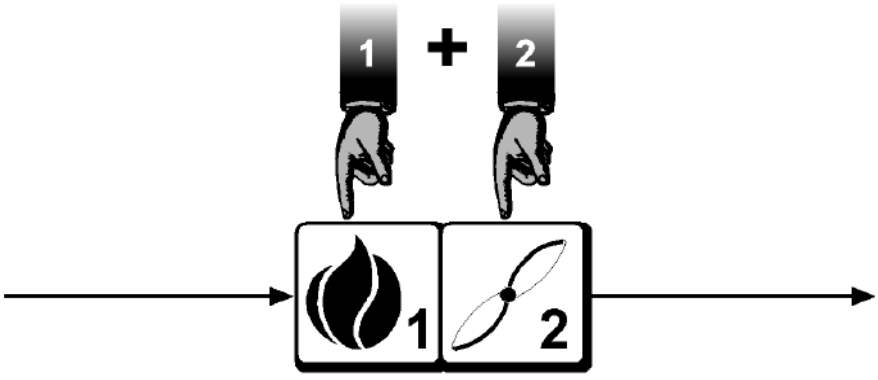
Display elements

The MPA22 is controlled by means of 5 buttons on the touch-sensitive display.
The individual parameters are displayed on the liquid-crystal display.



Using the buttons

⚠ Combinations of two or three buttons: always press the buttons simul-taneously. Note the direction of progress (arrows).



Setup mode	Gas, pneumatic modulation
Display functions	Operating mode Information mode Service mode
Parameterisation mode	Parameterisation mode is password-protected.
Error indication	System error messages Error messages

Display during standby

The automatic burner-control system is on standby following a controlled shut-down. No pending request for heat.

The automatic burner-control system is on standby because line voltage is too low.

The automatic burner-control system is on standby because the safety circuit is interrupted.

The automatic burner-control system is on standby because the signal for start prevention is applied via the eBUS.

Display when a password is entered in parameter-sation or setup mode

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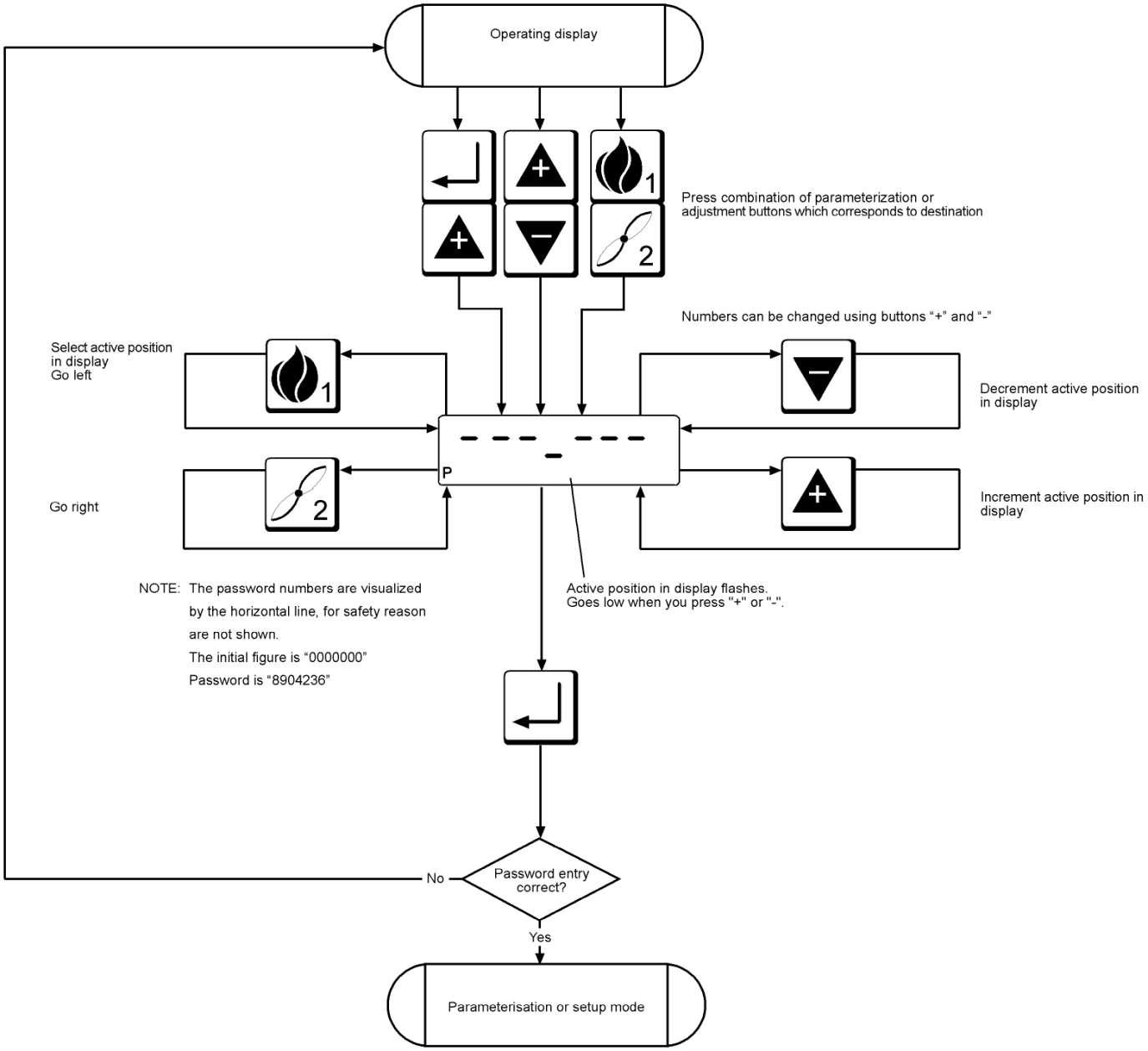


Main parameters for gas, pneumatic modulation: sequence

⚠ **Only the servomotor for air can be parameterised.**

Main parameter	Minimum	Maximum
P9 = Maximum power point	00.0°	90.0°
P1 = Minimum power point	00.0°	P9
P0 = Ignition point	00.0°	90.0°

The first setting

Press the "+" button

Change the setting Air servomotor

Press button "2" (air servomotor) and either "+" or "-".
Parameterisable within the defined limits.

Ready to start

GAS Pn **Setup mode: gas, pneumatic modulation Ready to start**

The burner starts when the control chain is closed; a "P" appears in the display indicating that the automatic burner-control system is in setup mode and that the timeout function is therefore active.
Following a successful start with flame stabilization, the burner settles to ignition setting P0, irrespective of the operating mode. You can now set the ignition point.

⚠ **If the start is not followed by flame stabilization, try another start with different values for the ignition point.**

Setup modeGas firing, pneumatic modulation

The burner must be in standby status, otherwise you cannot access the setup mode

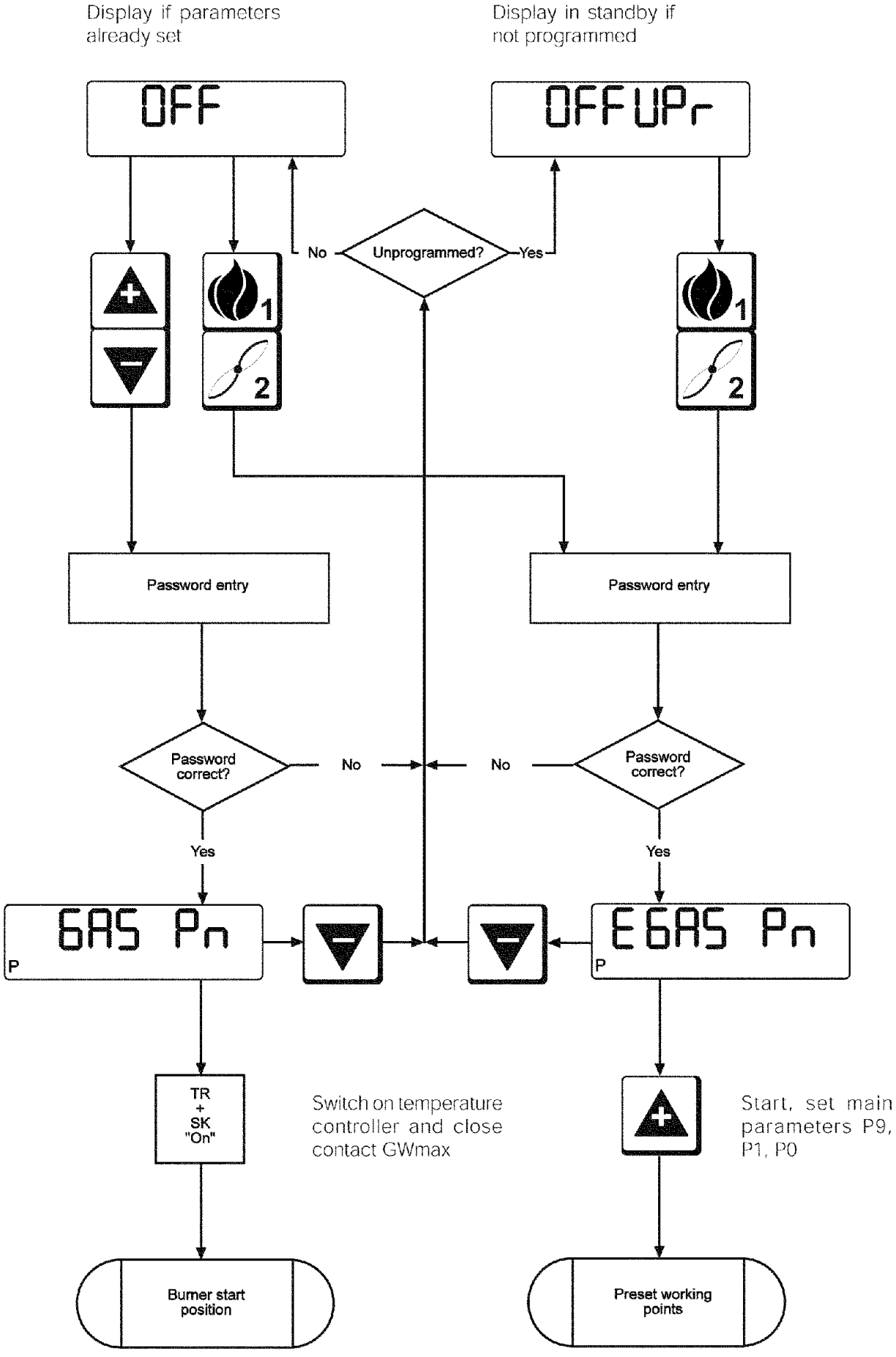
The controller automatically goes to standby status if the automatic burner-control system has not been programmed. In the unprogrammed state, the automatic burner-control system remains on standby. Unprogrammed means that the working point has not been fully programmed.
Once valid working points have been programmed and the automatic burner-control system detects the presence of the corresponding components when it starts up, the burner starts as soon as the control chain and GWmax are closed.

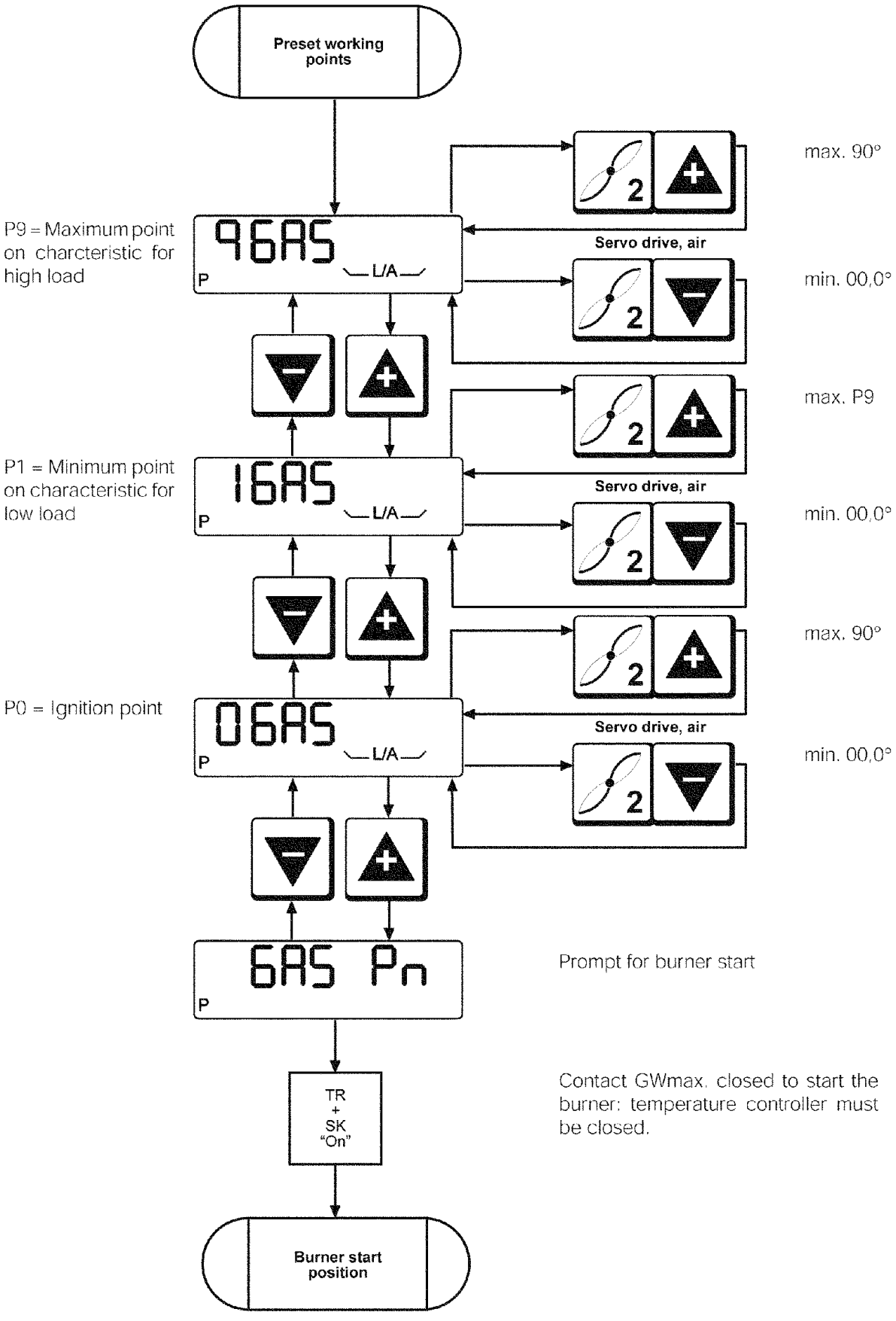
Changing points defined beforehand

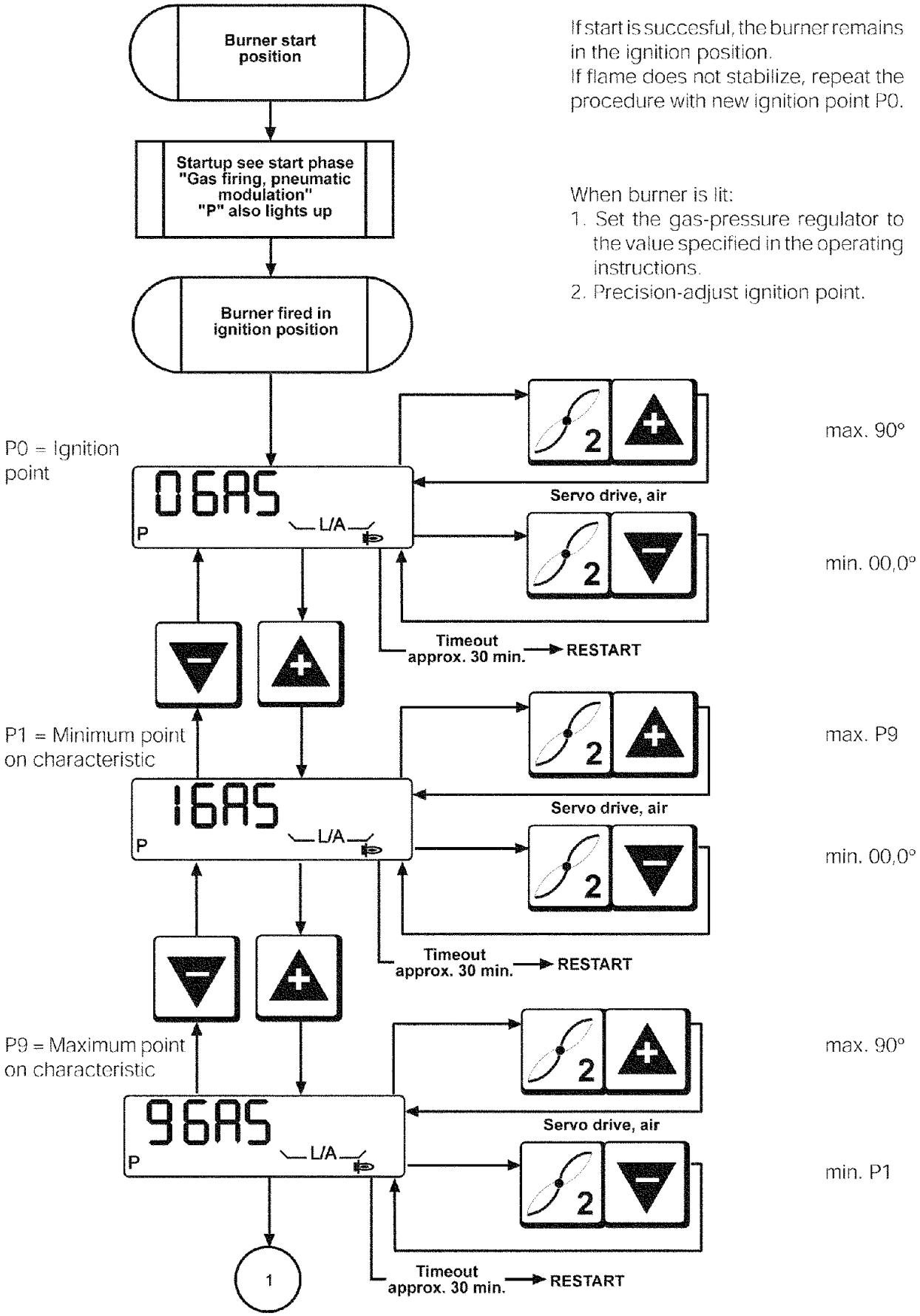
If progamming has been completed and you want to correct points such as the ignition load P0, low load P1 or high load P9 in operation, press the "+" and "-" buttons simultaneously to access setup mode.

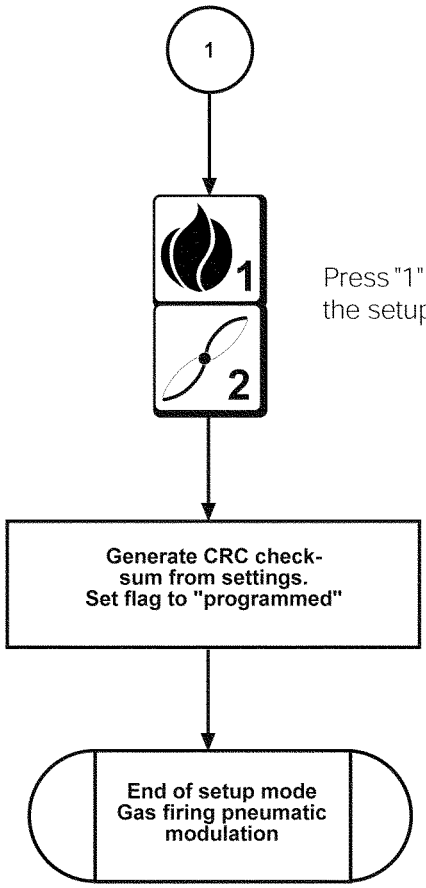
Accessing setup mode

Simultaneously press the "1" and "2" buttons if you want to enter the full setup mode. The "P" symbol always appears in the display to indicate that setup mode is activated. If you do not press a button in setup mode before the timeout expires, setup mode is exited automatically and a RESTART is performed.


Display if parameters already set
Display in standby if not programmed
OFF
OFFUPr
No
Unprogrammed?
Yes
1
2
Password entry
Password entry
Password correct?
No
No
Password correct?
Yes
Yes
GAS Pn
P
EGAS Pn
P
TR + SK "On"
Switch on temperature controller and close contact GWmax
Start, set main parameters P9, P1, P0
Burner start position
Preset working points

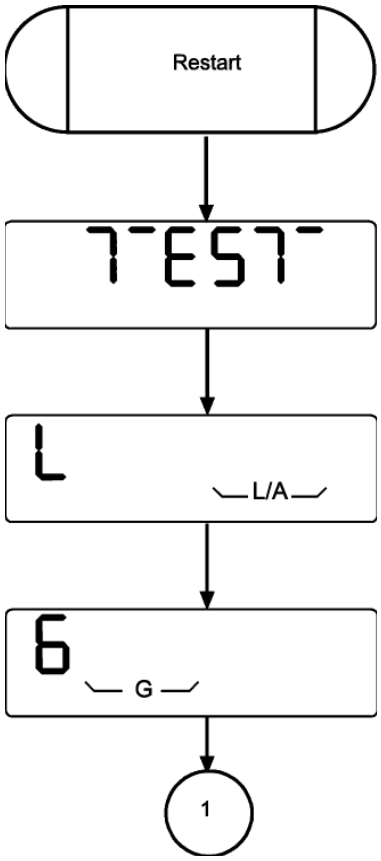

Preset working points
P9 = Maximum point on charcteristic for high load
96AS
P
L/A
Servo drive, air
max. 90°
min. 00,0°
max. P9
P1 = Minimum point on characteristic for low load
16AS
P
L/A
Servo drive, air
min. 00,0°
max. 90°
P0 = Ignition point
06AS
P
L/A
Servo drive, air
min. 00,0°
6AS Pn
P
Prompt for burner start
TR
+
SK
"On"
Contact GWmax. closed to start the burner: temperature controller must be closed.
Burner start position


Burner start position
Startup see start phase "Gas firing, pneumatic modulation" "P" also lights up
Burner fired in ignition position
If start is succesful, the burner remains in the ignition position.
If flame does not stabilize, repeat the procedure with new ignition point P0.
When burner is lit:
1. Set the gas-pressure regulator to the value specified in the operating instructions.
2. Precision-adjust ignition point.
P0 = Ignition point
06AS
P
L/A
Servo drive, air
max. 90°
min. 00,0°
Timeout approx. 30 min.
RESTART
P1 = Minimum point on characteristic
16AS
max. P9
min. 00,0°
P9 = Maximum point on characteristic
96AS
max. 90°
min. P1
1



Press "1" and "2" simultaneously to exit the setup mode.

Display in operating mode, gas firing with electronic modulation and gas firing with pneumatic modulation.
If setup mode is activated, the “P” symbol also appears in the start phase.

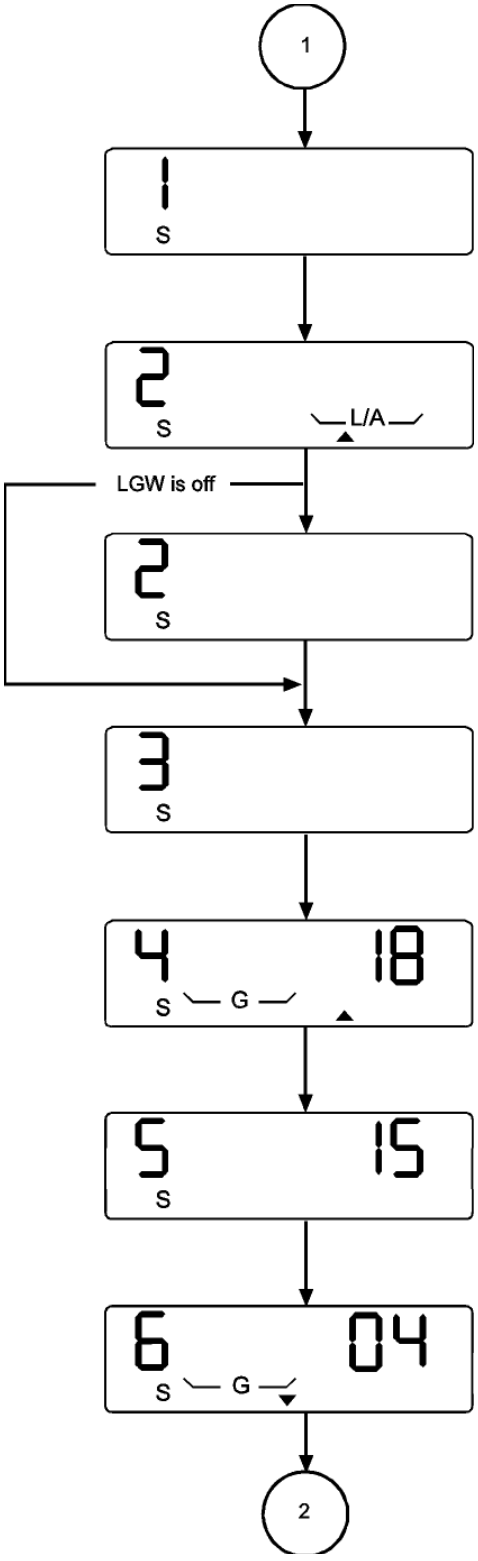


Start after request for heat.

Internal tests such as ROM test, CPU test, RAM test, etc.

Check servo drive for air and go to reference point.

Check servo drive for gas and go to reference point.



Move servo drive for air to character-istic point P9. Idle-position check of air-pressure monitor.

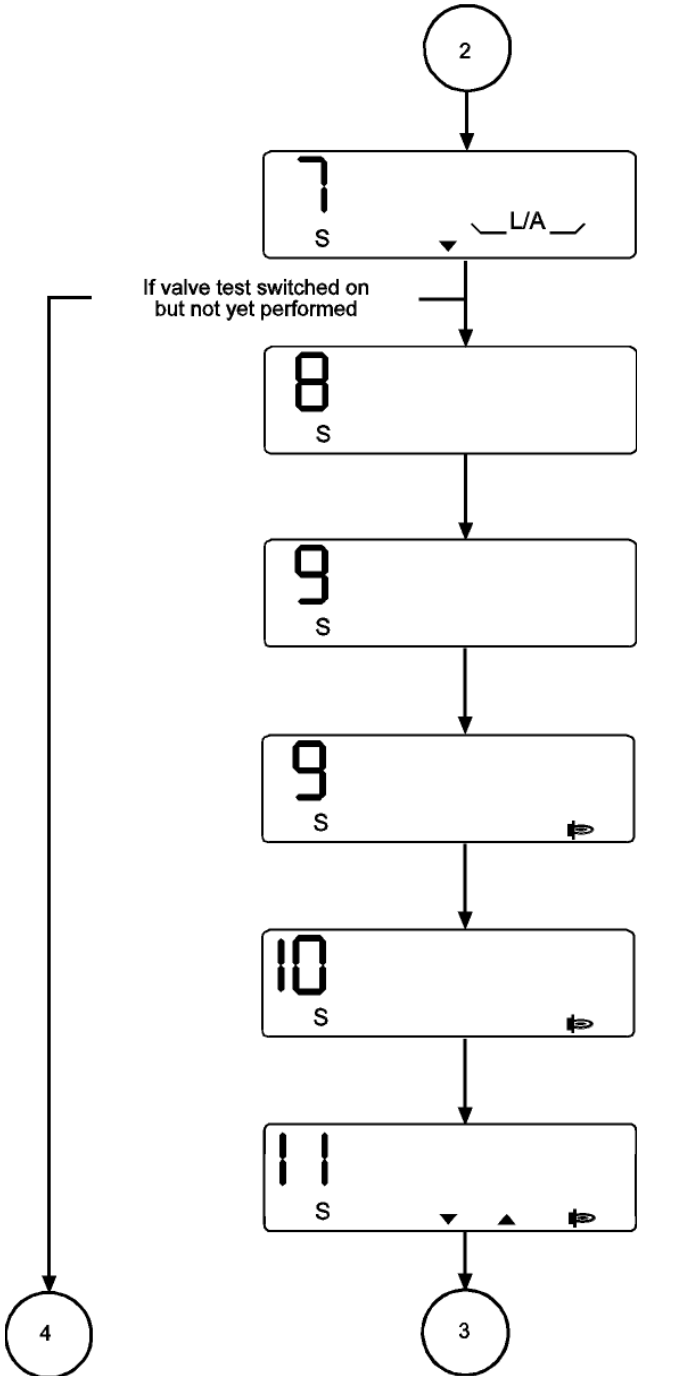
If "2" remains on display, it means that the air-pressure monitor is not in idle position.

Fan motor insertion. Air-pressure monitor not yet closed.

Purging time countdown in seconds.

Purging time countdown in seconds.

While pre-venting is in progress, servo drive for gas goes to ignition point P0
Purging time countdown in seconds.



Move servo drive for air to ignition point P0.

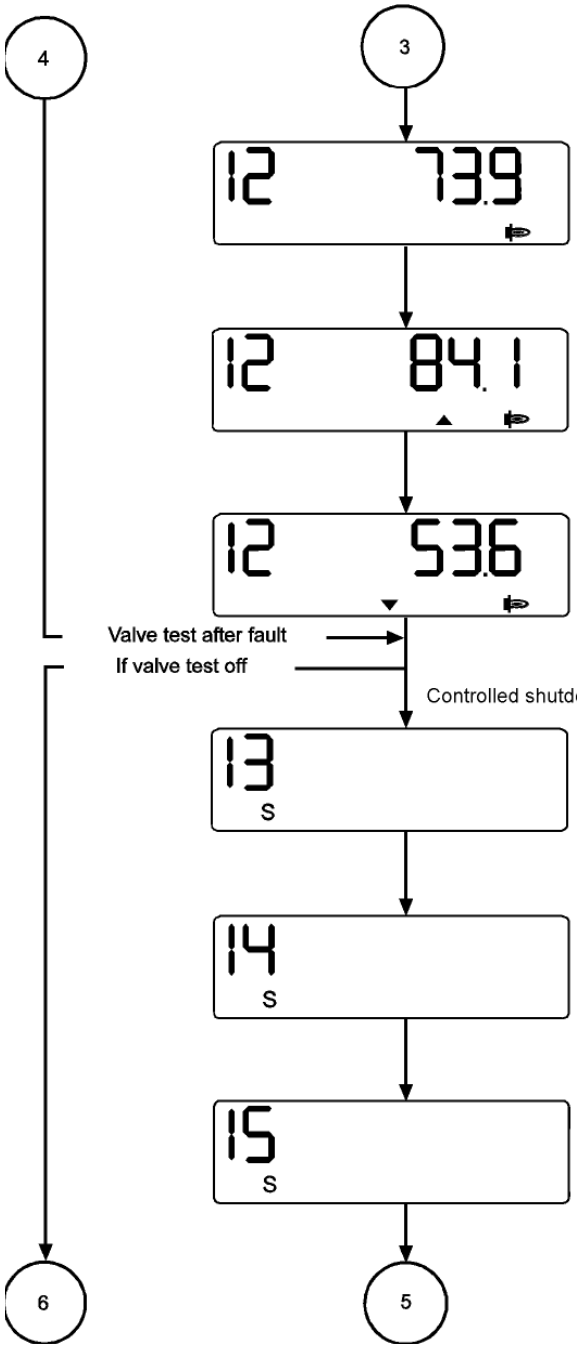
Pre-ignition

Safety period without flame message

Safety period with flame message

Stabilization time
At ignition point P0

Go to characteristic point P1 from ignition point P0:
Up arrow or Down arrow lights up accordingly.
Controller enable time expires.



Operating position.
Shows position of the servo drive for air in degrees.

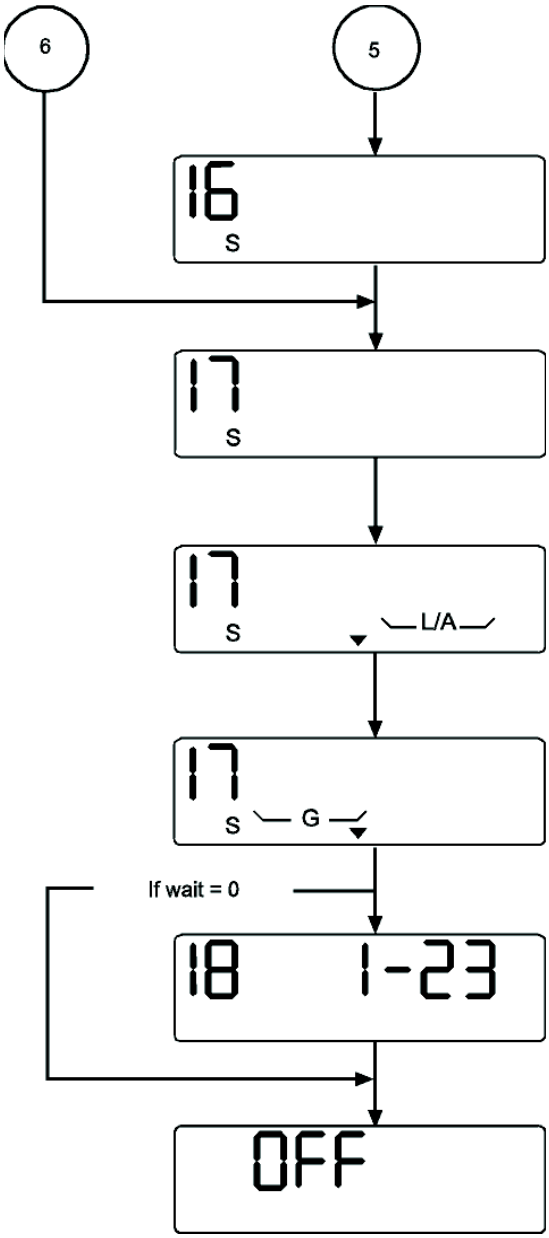
Operating position.
Increase output or go to minimum out-put point.

Operating position.
Reduce output.

Valve test, phase 1 (emptying).
The "Flame" symbol might also light up. If no post-purging time has been set, the brackets G or brackets L/A symbols and the Down arrow might also light.

Valve test, phase 2 (test time V1).
When the post-purging time expires, the brackets G or brackets L/A symbols and the Down arrow might also light up while the servo drive for air is moving to the standby position.

Valve test, phase 3.
When the post-purging time expires, the brackets G or brackets L/A symbols and the Down arrow might also light up while the servo drive for air is moving to the standby position.



Valve test, phase 4 (test time V2).
When the post-purging time expires, the brackets G or brackets L/A symbols and the Down arrow might also light up while the servo drive for air is moving to the standby position.

Post-venting with fan in operation.

Post-venting ended. The fan is off. The servo drive for air goes to the standby position.

With electronic modulation in gas firing mode only. Post-ventilation terminated. The fan is OFF. Gas servomotor is moved into idling position.

If a wait is programmed or if low gas supply is detected during the start phase, the wait is counted down. Minutes on the left, seconds on the right.

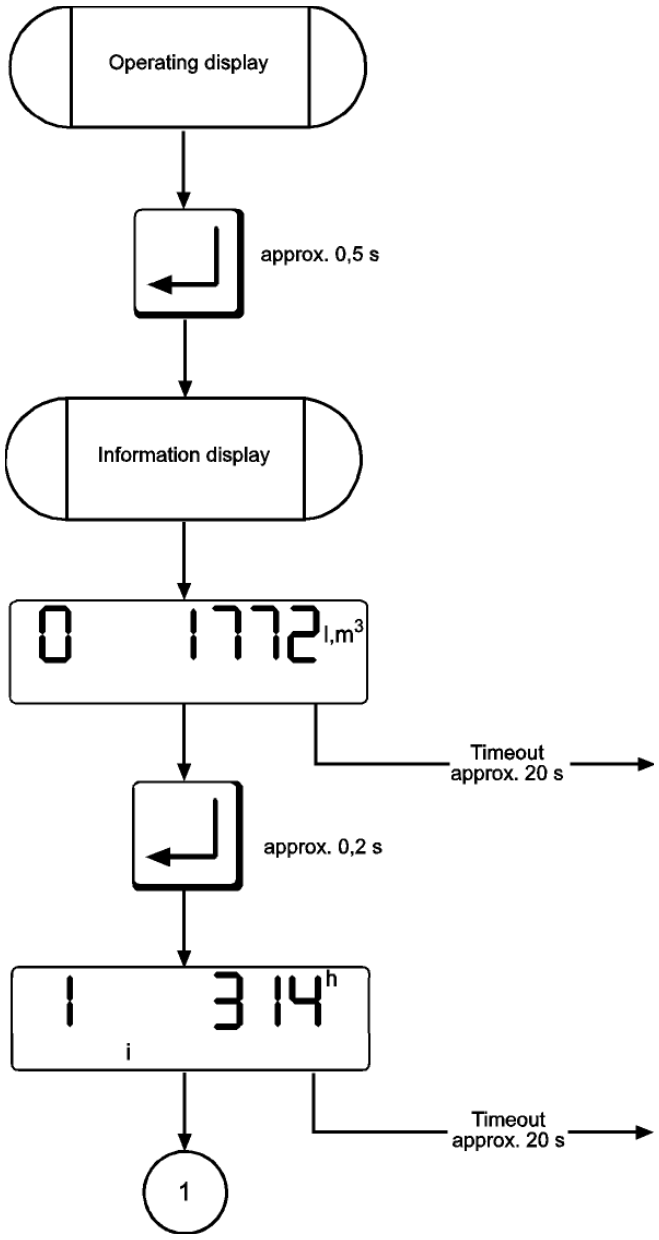
Standby, wait for request for heat. Setup mode and parameterisation mode can be activated. See setup mode, "Gas firing, electronic modula-tion", and "Display in parameterisation mode".

The information-mode display can be accessed only from the operating-mode display. It can be called up irrespective of burner status and provides infor-mation on:

Current counts for
- Fuel quantities
- Operating hours
- Starts

Information about:
- Software status
- Date of production
- Machine serial number

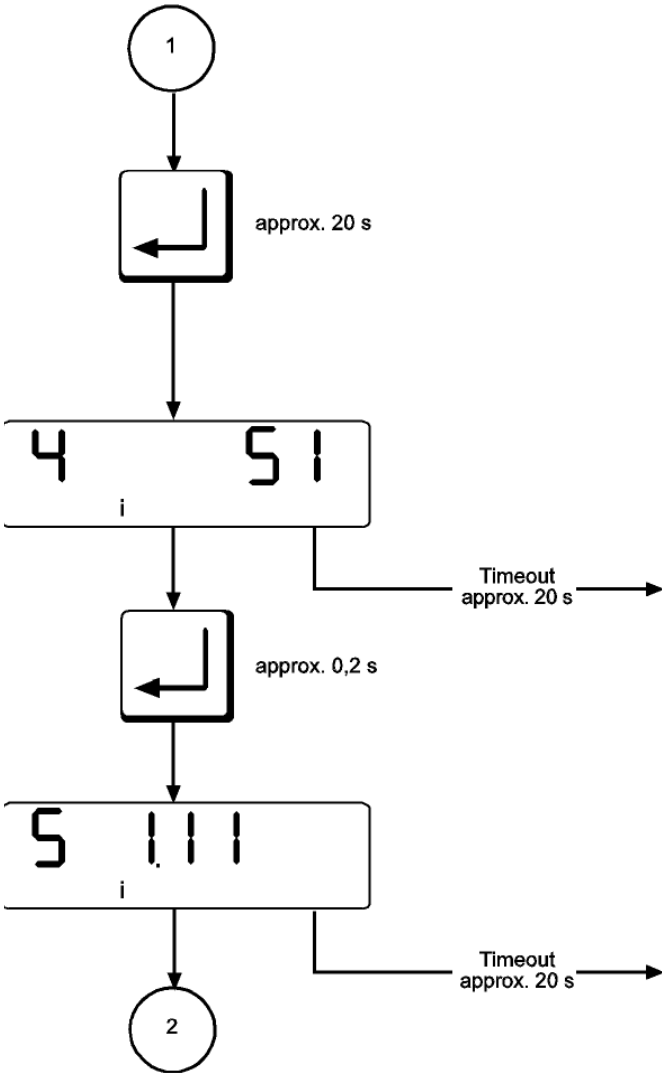
This display mode is exited after a 20-second timeout or if the readout is scrolled past the last item.



Press for approx. 0.5 s until the "i" symbol is displayed.
Release button.

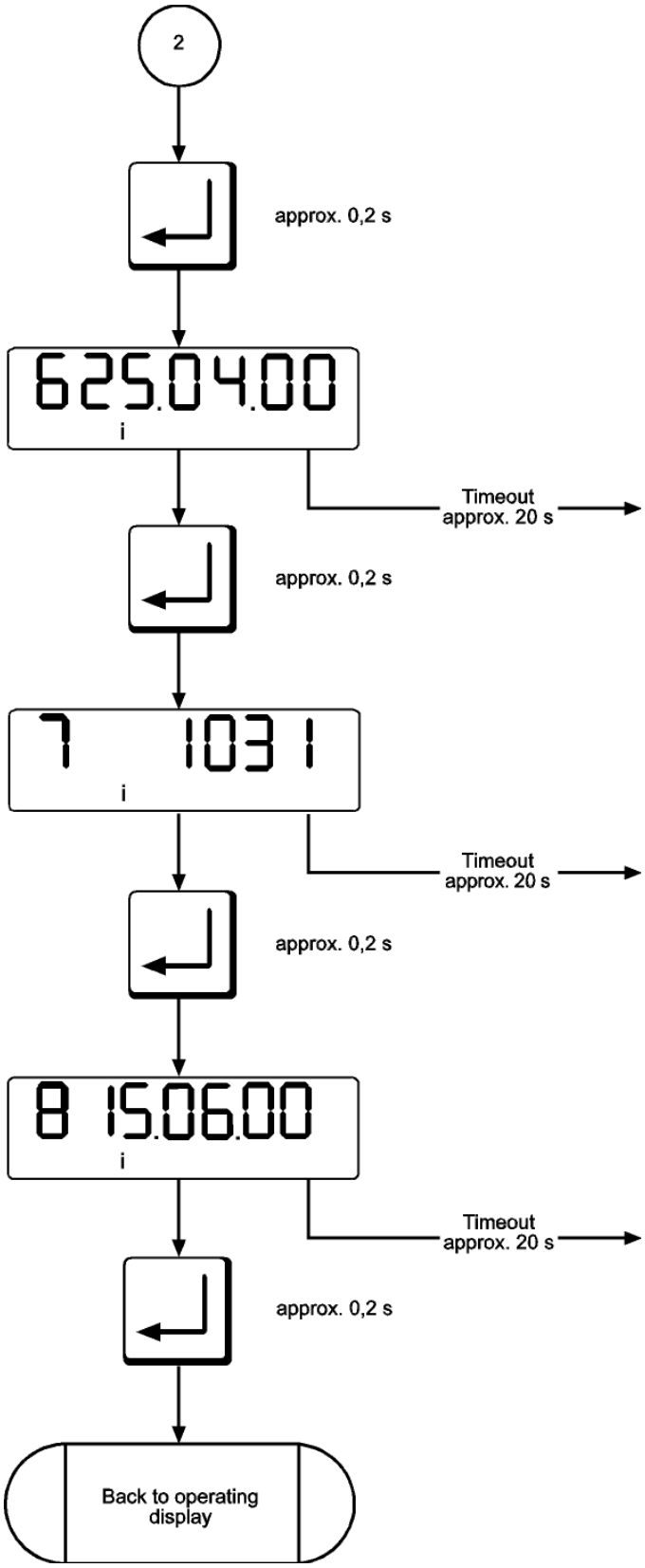
Total fuel consumption in liters of oil or cubic meters of gas (only if a fuel gauge is connected).

Total operating hours for gas-fired burners.



Number of successful starts, in other words flame detected after safety period expires.

The version number of the software running in the automatic controller.



Date of compilation of the software.

Automatic controller's serial number.

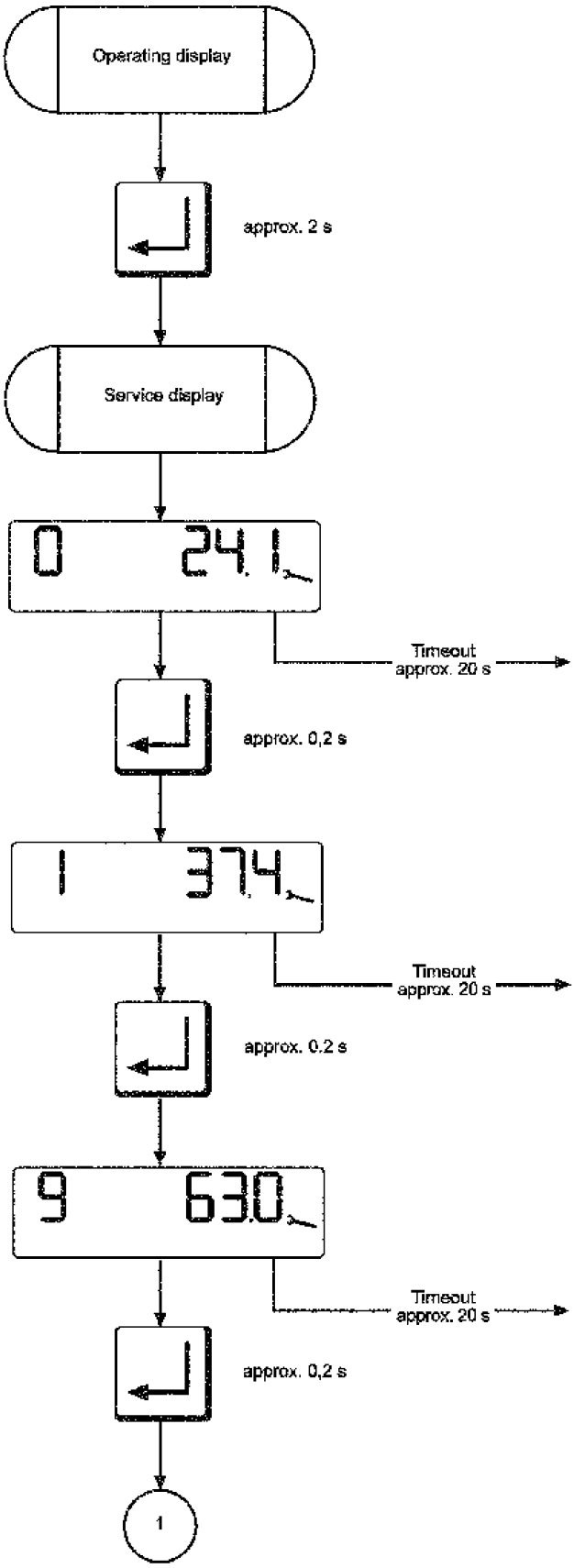
Automatic controller's date of production (date of works testing).

The service-mode display can be accessed only from the operating-mode display.

The service display can be called irrespective of the burner status and provides information on the characteristic stored in the EEPROM. The following data are displayed:

- The characteristic points P0 - P9
- The last 6 error messages
- The test times of the valve testing system
- Flame quality
- The e-BUS address
- The switch position of the valve testing system
- The limits of the modulation range
- Controller address
- The controller enable time

This display mode is exited after a 20-second timeout or if the readout is scrolled past the last item.

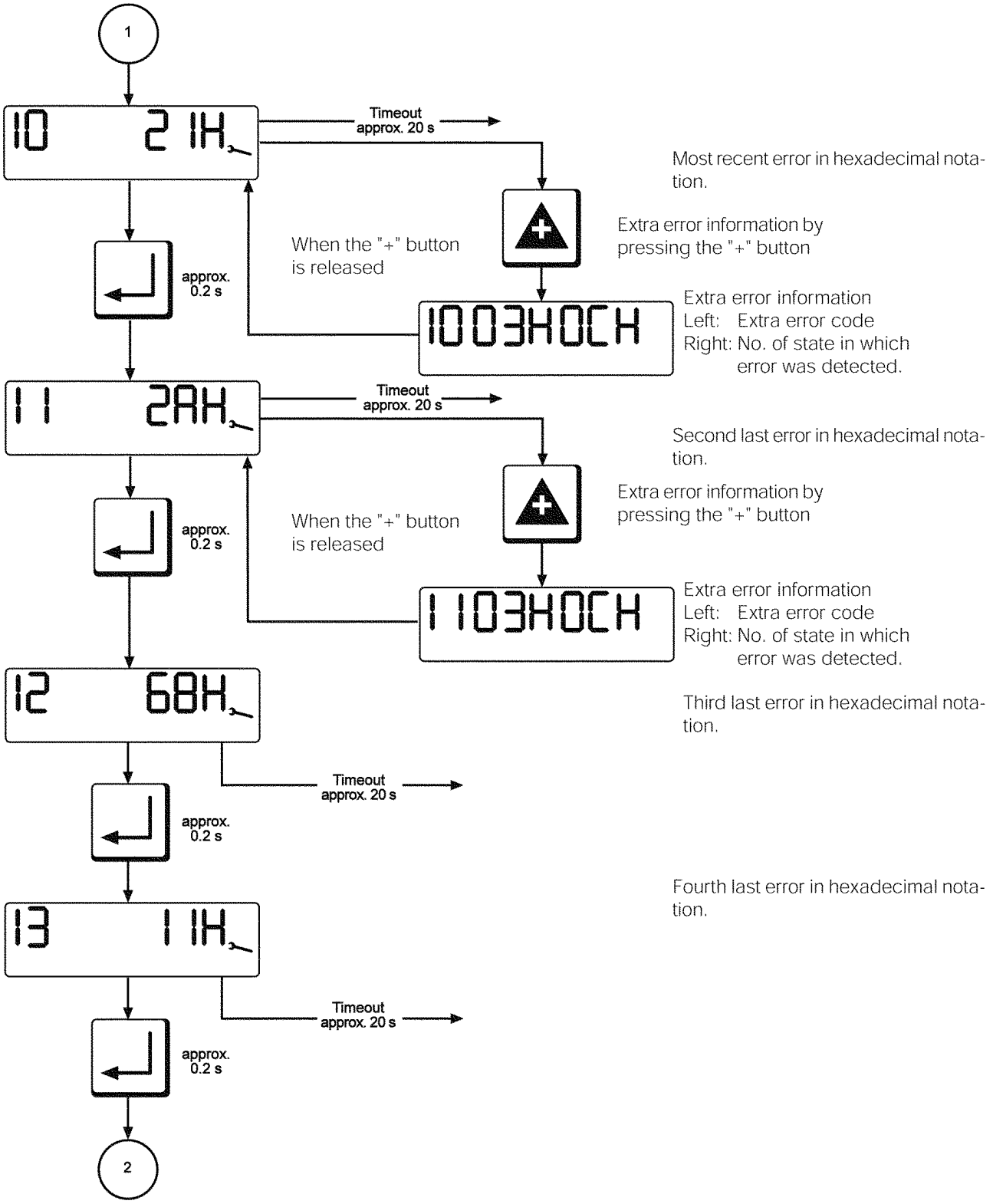


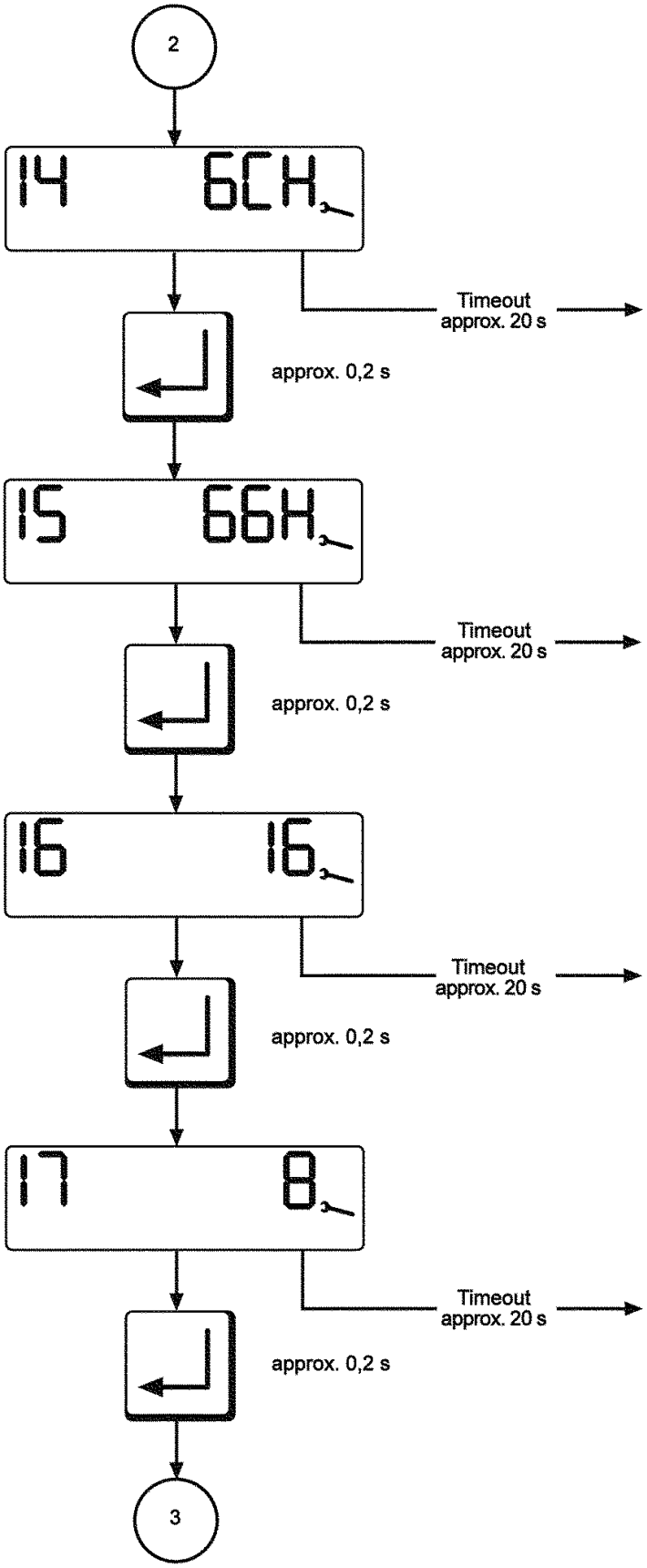
Press for approx. 2 s until the "Wrench" symbol is displayed.
Release button. The "i" symbol is displayed for approx. 1.5 s beforehand.

Value of ignition point P0 for gas burner with pneumatic modulation.

Minimum point (P1) of the characteristic for gas burner with pneumatic modulation.

Value of the maximum point (P9) of the characteristic for gas burner with pneumatic modulation.


1
10 21H
Timeout approx. 20 s
Most recent error in hexadecimal notation.
Extra error information by pressing the "+" button
When the "+" button is released
approx. 0.2 s
1003H0CH
Extra error information
Left: Extra error code
Right: No. of state in which error was detected.
11 2AH
Timeout approx. 20 s
Second last error in hexadecimal notation.
Extra error information by pressing the "+" button
When the "+" button is released
approx. 0.2 s
1103H0CH
Extra error information
Left: Extra error code
Right: No. of state in which error was detected.
12 68H
Third last error in hexadecimal notation.
Timeout approx. 20 s
approx. 0.2 s
13 11H
Fourth last error in hexadecimal notation.
Timeout approx. 20 s
approx. 0.2 s
2

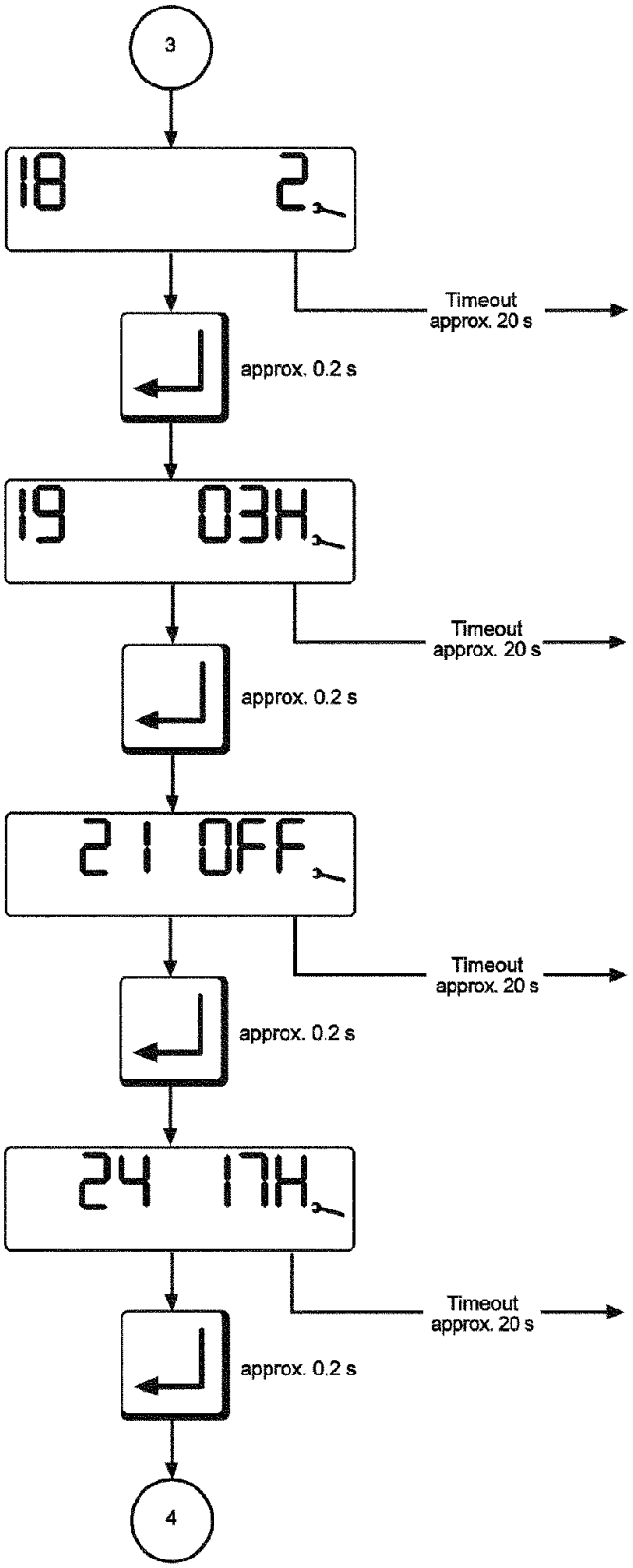


Fifth last error in hexadecimal notation.

Sixth last error in hexadecimal notation.

Testing time, valve Y2

Testing time, valve Y3

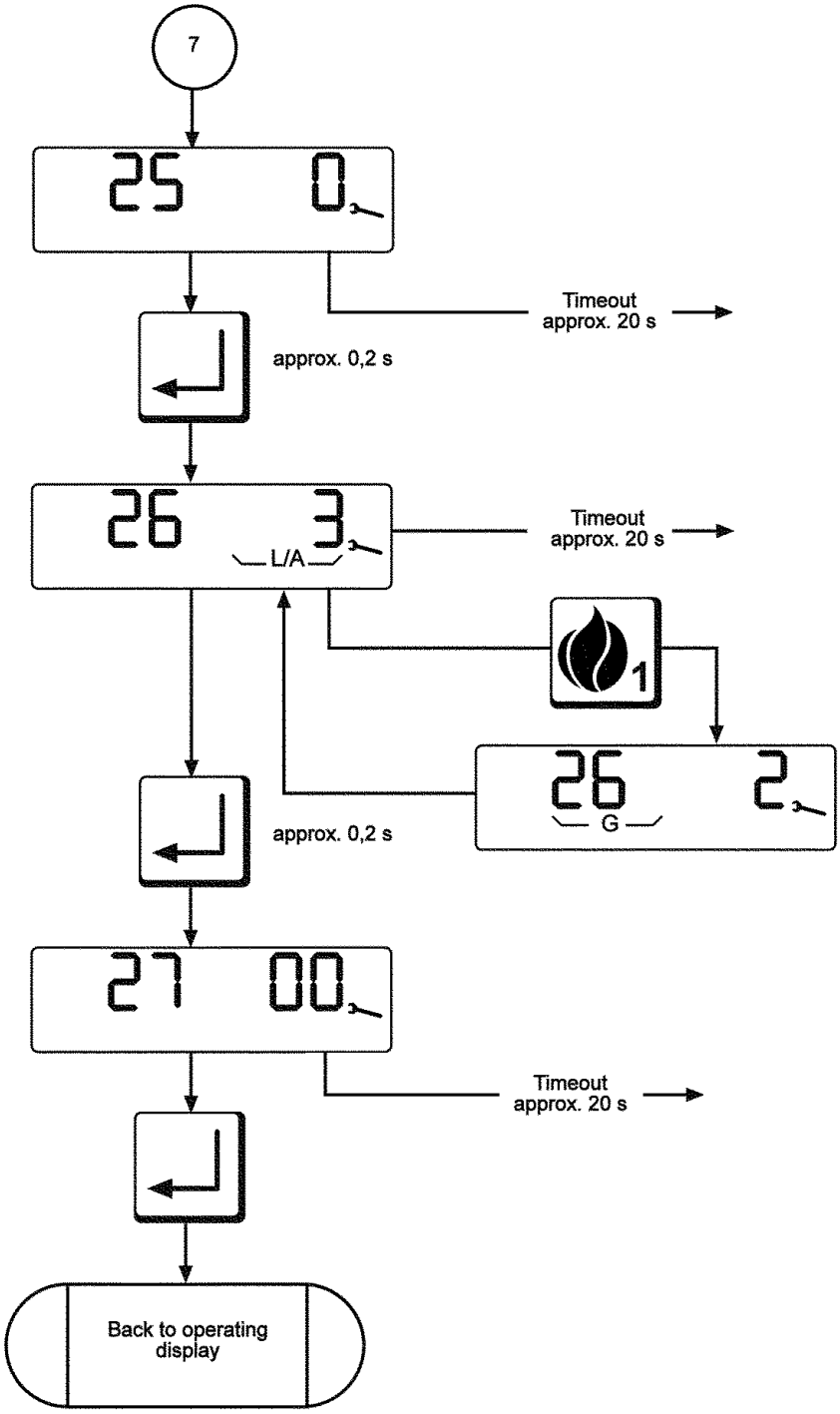


Flame quality indication 0 - 4
0 = no flame

The eBUS address of this automatic controller

Mode indicator: integrated valve testing system is ON or OFF.

Controller address of this automatic controller
In the OFF position, no controller address is assigned



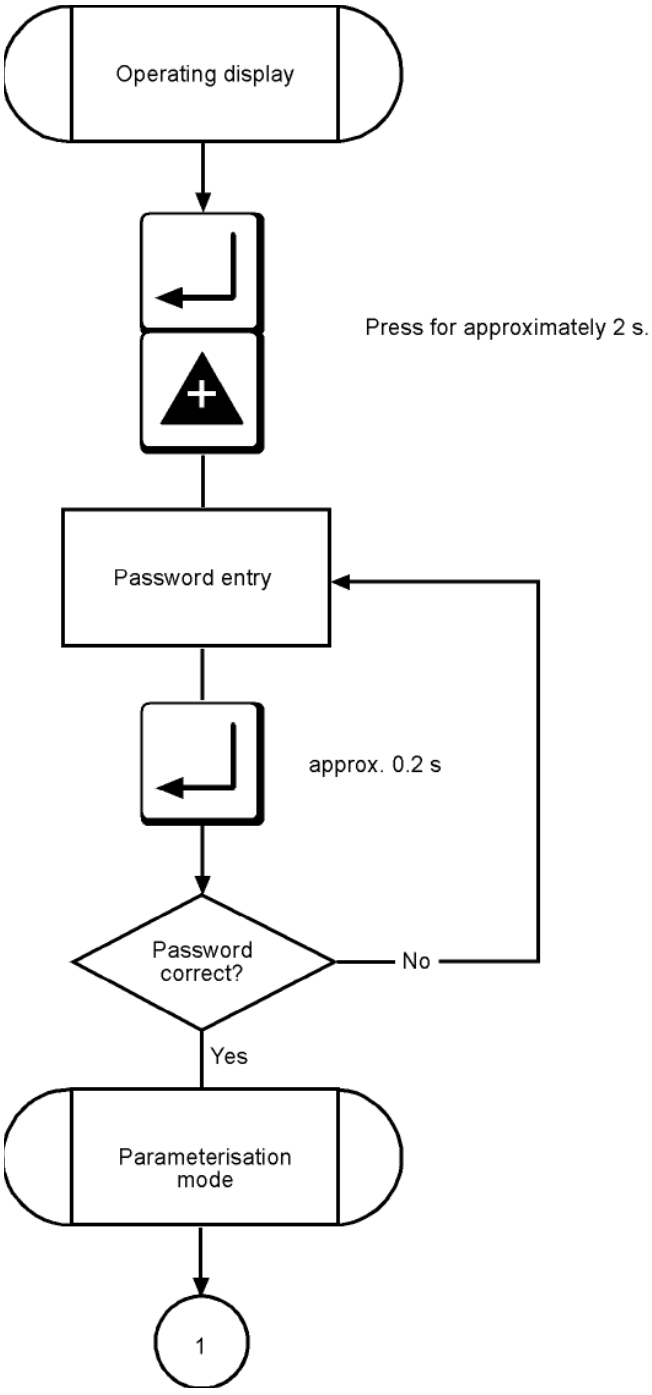
Display modulation delay 0-15
0 = no delay
15 = maximum delay

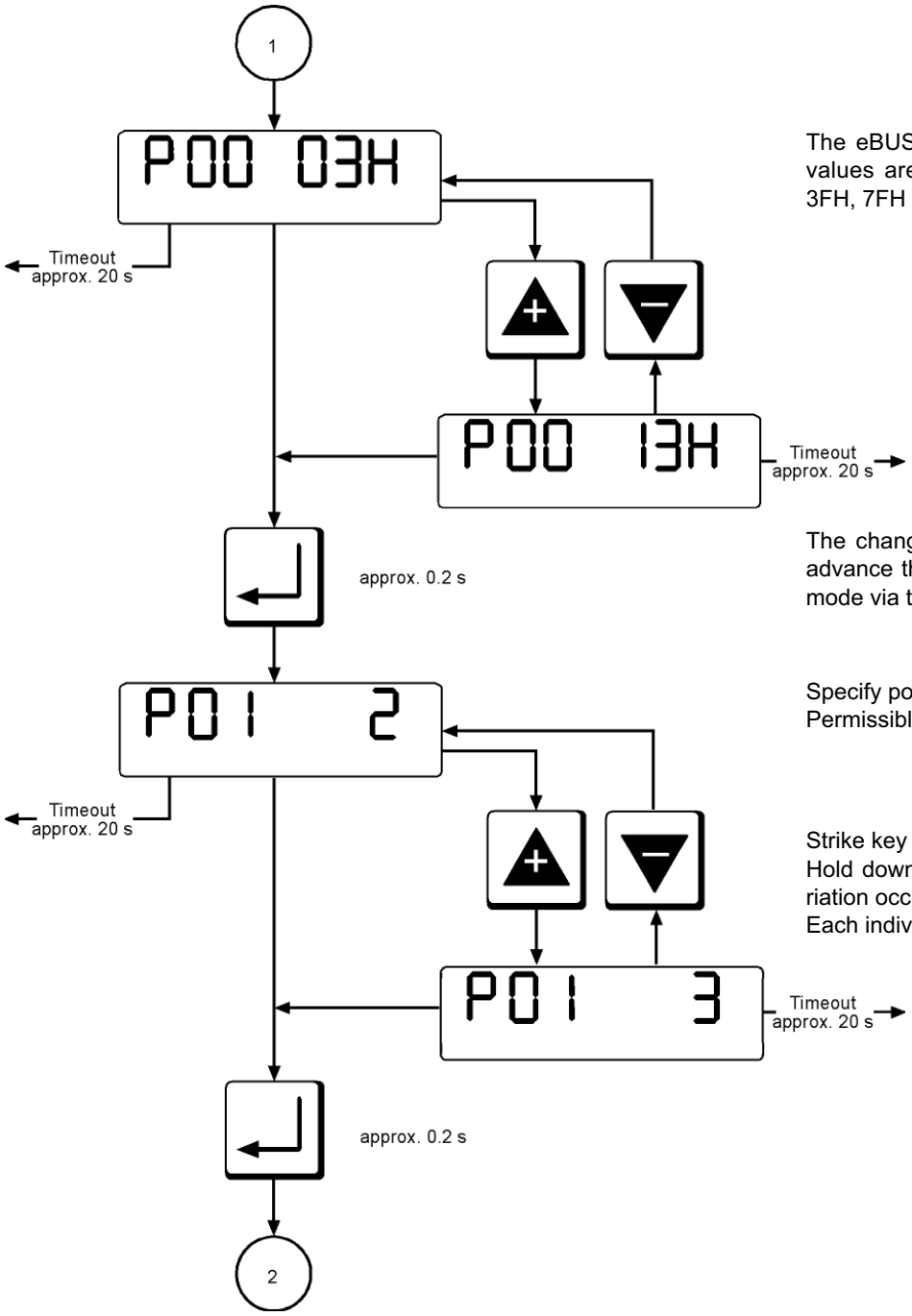
Display starting points - air and gas
0-3

Display controller regulator enable time
0.....59 s

The parameterisation-mode display can be accessed only from the operating-mode display in standby status.

Parameterisation mode can be accessed only from the operating-mode display when the controller is on standby (“OFF”). Parameterisation mode is used to view important operating parameters and adjust the settings by means of the buttons on the touch-sensitive display.
This display mode is exited after a 20 second timeout or if the readout is scrolled past the last display image.



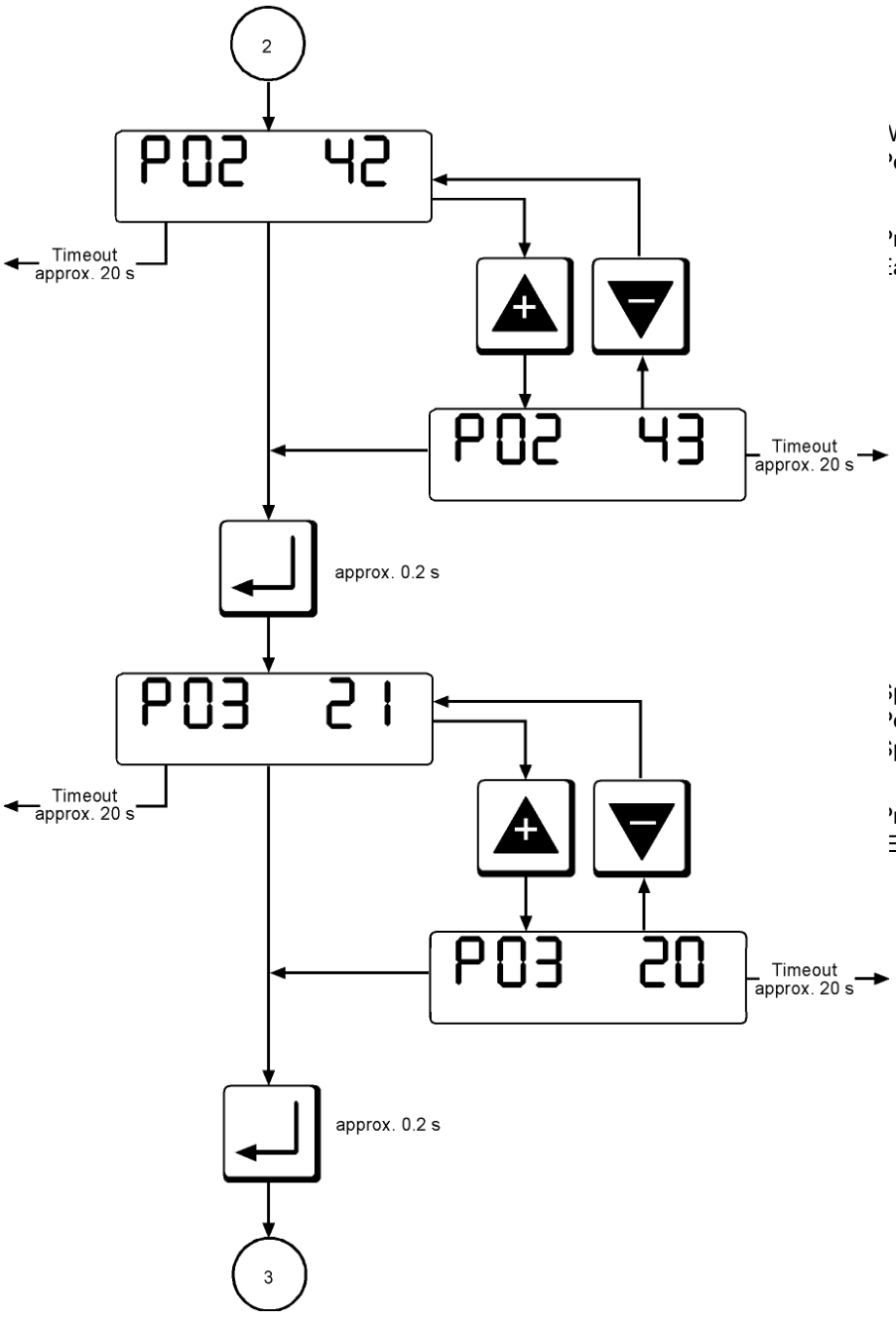


The eBUS communication address. Possible values are 03H, 13H, 33H, 73H, F3H, 1FH, 3FH, 7FH

The changed address is not stored until you advance the program or exit parameterisation mode via timeout.

Specify post-ventilation time in seconds.
Permissible range: 0 - 240 s

Strike key (+) or (-) = slow variation occurs.
Hold down key (+) or (-) constantly = fast variation occurs.
Each individual step occurs.

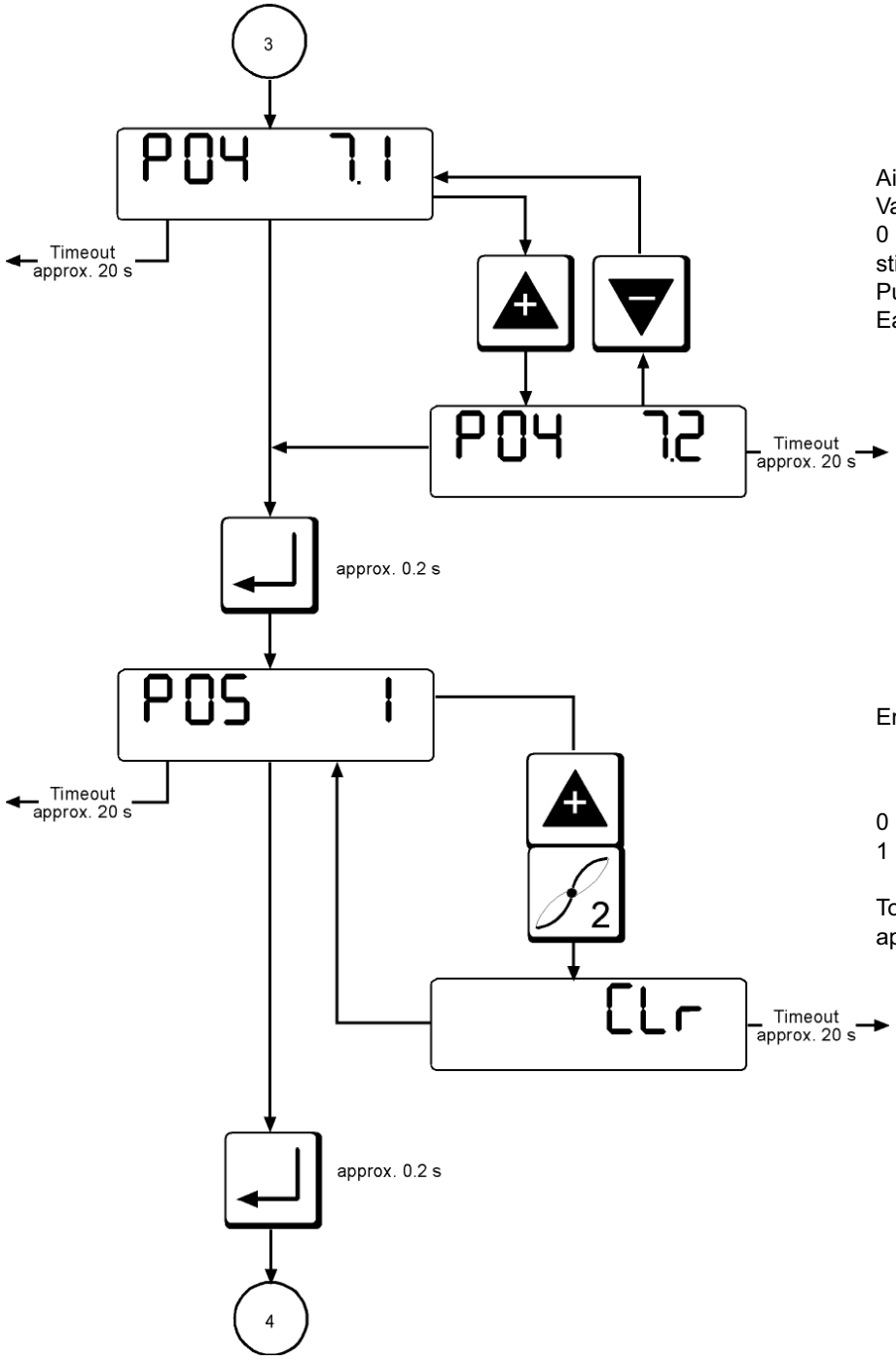


Wait in minutes
Permissible range 0 - 100 min.

Press buttons (+) and (-) to change value.
Each increment is saved.

Specify pulse divider
Permissible range: 1 - 255
Specify in pulses/litres or pulse/m^3

Press buttons (+) and (-) to change value.
Each individual step is counted.

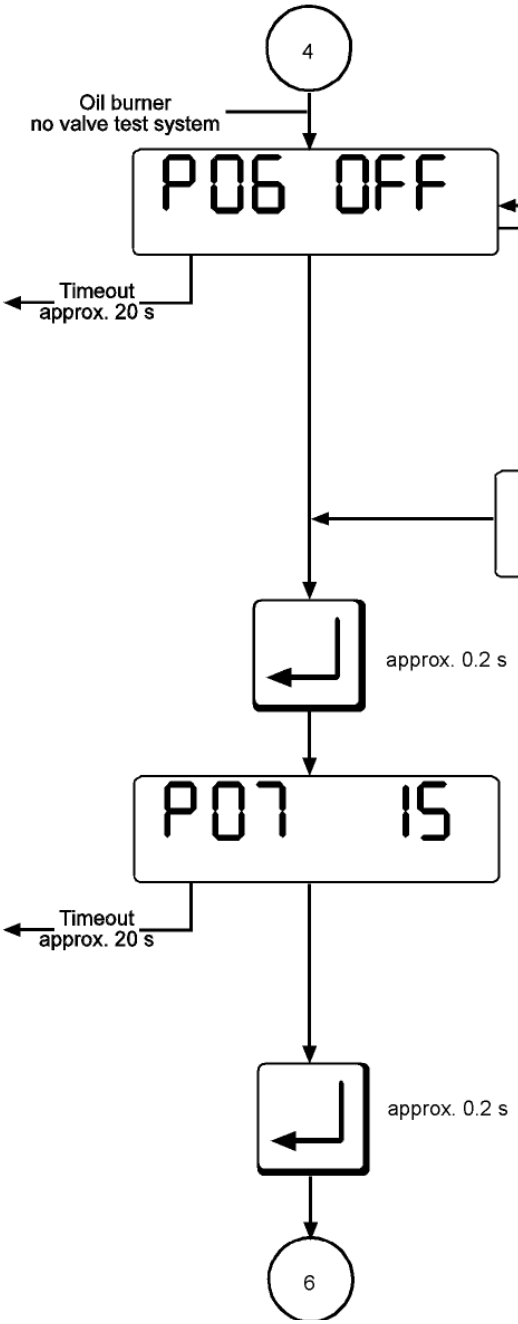


Air-flow control flap position in standby. Variable in the range
0 - 25.5°. (air flap closed while burner is still.
Push buttons (+) and (-) to change value.
Each individual step is counted.

Error memory can be cleared.

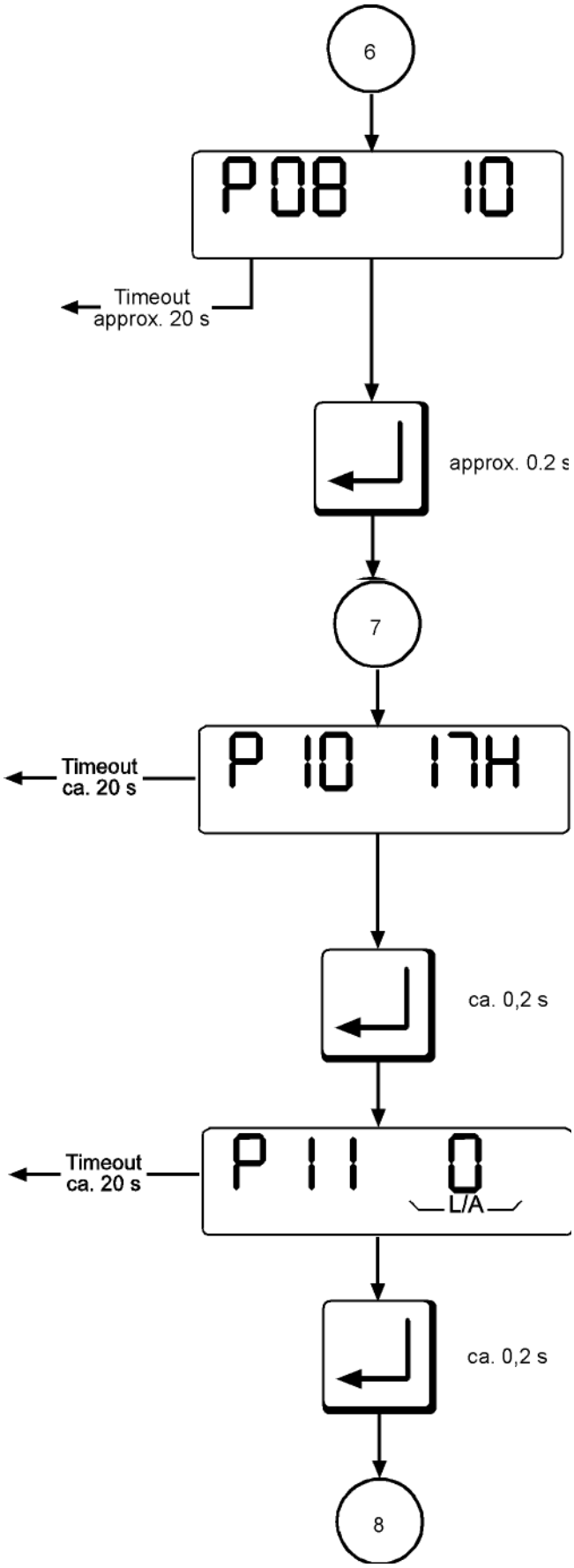
0 = Error memory is empty
1 = Error memory contains data

To cancel memory press both buttons for approx. 2 s.



Input indication for valve seal control.
Switch position of the valve testing system .
Valve seal testing system activated = ON.
Valve seal testing system deactivated = OFF.
Each change is saved.

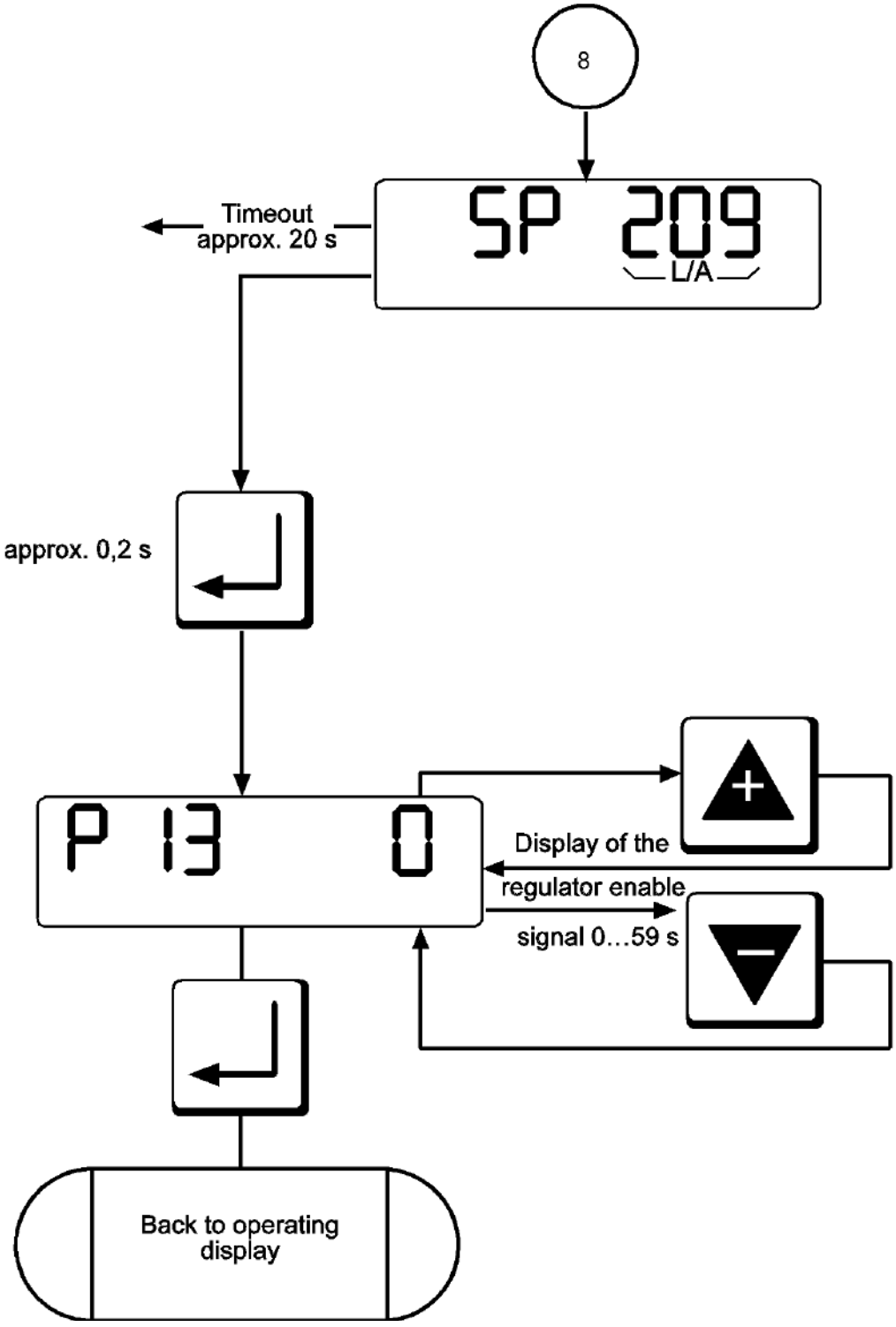
Specify test time for valve Y2 (safety valve).
Permissible range: 1 - 240.
(not changeable).



Specify test time for valve Y3 (main valve)
Not changeable: 1 - 240

Specify load control address of system.
(not changeable)

Modulation delay (not changeable)


8
Timeout
approx. 20 s
SP 209
L/A
approx. 0,2 s
P 13 0
Display of the
regulator enable
signal 0…59 s
Back to operating
display

Error mode

Error mode overwrites all other display modes.
Error mode is not active if burner is still.

Error indication

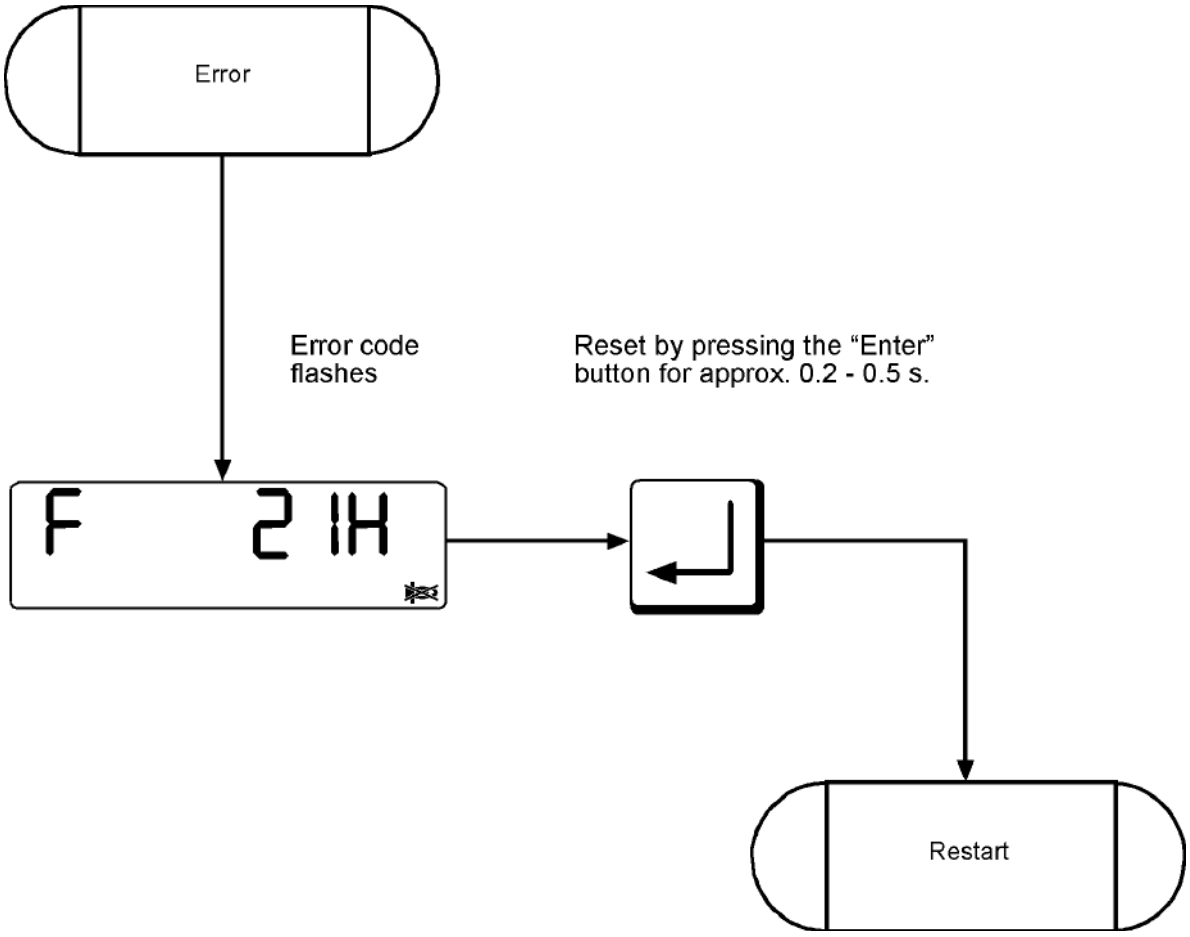
The following appears on the display:
- An "F" on the left
- The "Flame with strike-through" symbol
- The error code; occupies the three places on the right.
- The error code flashes

Error code

The error codes are listed complete with their individual meanings in the Error Codes list below.

Reset

You must press the "Acknowledgment" or "Reset" button to reset.



Code	Meaning
04H	Internal device fault
05H	Internal device fault
06H	Internal device fault
07H	Internal device fault
09H	Internal device fault
10H	Internal device fault
11H	Internal device fault
12H	Internal device fault
13H	Internal device fault
14H	Internal device fault
15H	Internal device fault
20H	Air pressure switch is not in "off" position
21H	Air pressure switch failure
22H	Gas pressure switch failure
25H	No flame after safety period elapses
26H	Extraneous light
27H	Flame failure during operation
29H	Internal device fault
2AH	Internal device fault
2BH	Short circuit in photoresistor or internal fault
2CH	Internal device fault
30H	Internal device fault
31H	Internal device fault
32H	Internal device fault
33H	Internal device fault
34H	Internal device fault

Code	Meaning
42H	Safety circuit interrupted
43H	Y2 found to be leaky during leak test
44H	Y3 found to be leaky during leak test
45H	Internal device fault
46H	Internal device fault
47H	Internal device fault
48H	Internal device fault
4AH	Internal device fault
4BH	Internal device fault
4CH	Internal device fault
4DH	Internal device fault
4EH	Internal device fault
50H	Internal device fault
51H	Internal device fault
52H	Internal device fault
53H	Internal device fault
54H	Internal device fault
55H	Internal device fault
56H	Internal device fault
57H	Internal device fault
58H	Internal device fault
59H	Internal device fault
5AH	Internal device fault
5CH	Internal device fault
5DH	Internal device fault
5EH	Internal device fault

Code	Meaning
63H	Internal device fault
64H	Internal device fault
65H	Internal device fault
67H	Internal device fault
68H	Air servomotor, incorrect acknowledgement (check cable and plug, servomotor and air damper mechanism)
69H	Gas servomotor, incorrect acknowledgement (check cable and plug, servomotor and gas damper mechanism)
6AH	Air servomotor position out of tolerance (check cable and plug, servomotor and air damper mechanism)
6BH	Gas servomotor position out of tolerance (check cable and plug, servomotor and gas damper mechanism)
6CH	Internal device fault
6DH	Internal device fault
6EH	Servomotors have been interchanged or connected incorrectly
6FH	Error in burner recognition / zero reference run (incorrect coding plug, check cable and plug)
70H	Internal device fault
71H	Internal device fault
73H	Internal device fault
74H	Internal device fault
75H	Internal device fault
76H	Internal device fault
77H	Internal device fault
78H	Internal device fault
79H	Internal device fault

DUNGS®

MPA 22 ADJUSTMENT TABLE

BURNER:		BOILER:			
POINT	GAS SERVOMOTOR ANGLE (*)	AIR SERVOMOTOR ANGLE (*)	GAS CAPACITY %	O_2 %	CO (ppm)
P0 (ignition)					
P1 (min)					
P2					
P3					
P4					
P5					
P6					
P7					
P8					
P9 (max)					
NOTE:					

* = Max programmable difference between the two points is 25°