MELAG

Service Instructions

for the MELAG Autoclaves

MELA*tronic*®23

CE 0124

Functional reliability and retention of value of the unit depend on:

- The proper preparation of the objects to be sterilized
- The avoidance of rust film formation
- The attentive care of the unit
- The regular exchange of the distilled/demineralized water

CONTENT Page

CONTENT PAGE 2

1 MALFUNCTIONS WITHOUT ERROR MESSAGE 3

1.1 NOTHING SHOWN ON THE DISPLAY ..... **FEHLER! TEXTMARKE NICHT DEFINIERT.**
1.2 NO WATER FEED AFTER PRESSING THE SWITCH "WATER FEED" 4
1.3 NO PROGRAM START AFTER THE OPERATION OF THE "START" KEY 4
1.4 NO PRESSURE QUICK RELEASE AT THE END OF THE PROGRAM 4
1.5 BAD DRYING/ RESIDUAL WATER IN THE CHAMBER 4
1.6 TOO HIGH PRESSURE INDICATOR 5

2 MALFUNCTIONS WITH FAULT MESSAGE 5

2.1 FAULT MESSAGE "ERR1" 5
2.2 FAULT MESSAGE "ERR2" 6
2.3 FAULT MESSAGE "1999" 6

3 MAINTENANCE AND CONTROL INSTRUCTIONS FOR DOOR AND LOCKING COMPONENTS 7

4 APPENDIX 8

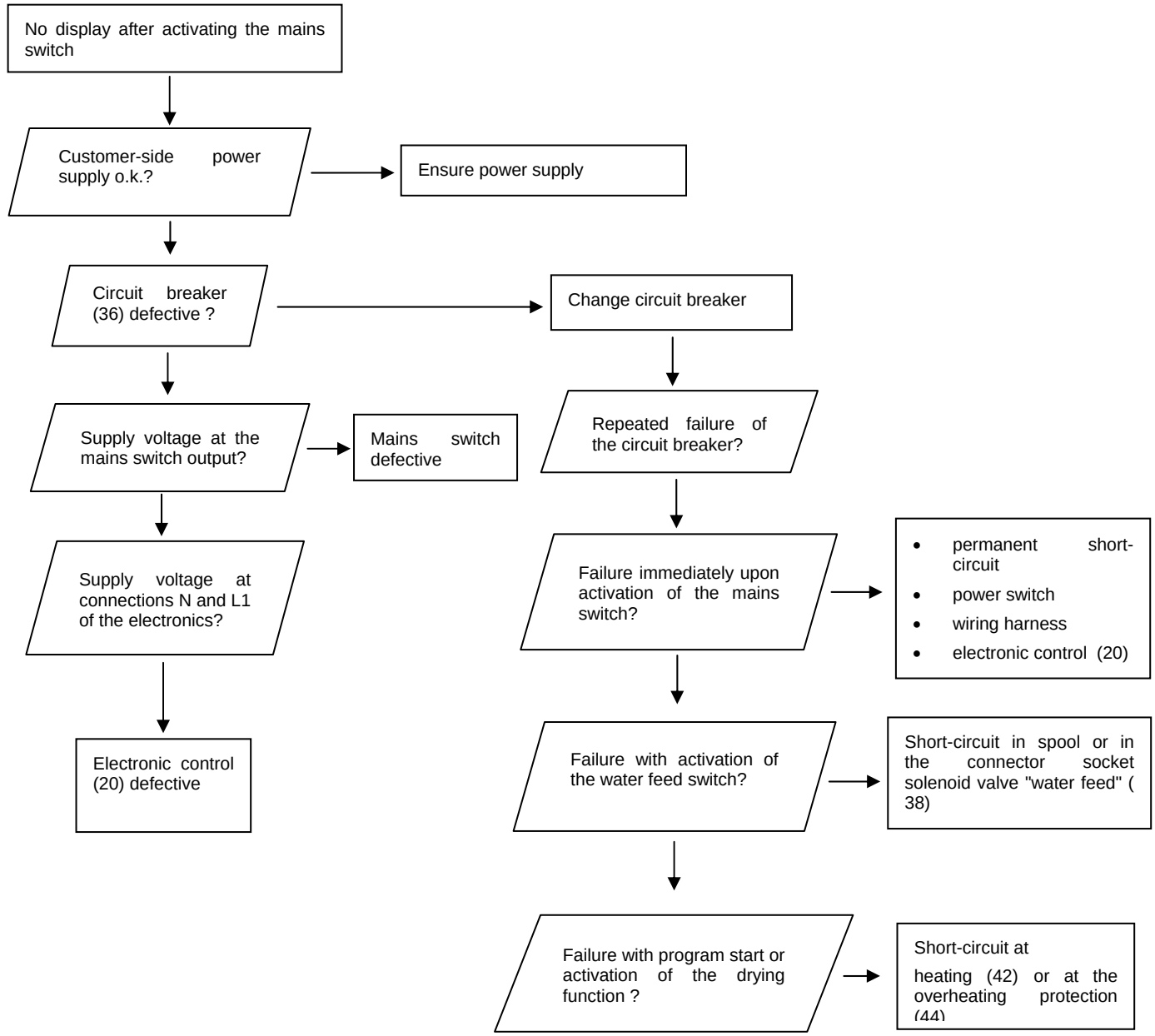
4.1 EQUIPMENT VIEWS 8
4.2 ARTICLE/ SPARE PART NUMBERS 8
4.3 PIPING PLAN 8
4.4 WIRING DIAGRAMM 8
4.5 PROGRAM FLOWCHART 8
4.6 OPERATION OF THE ELECTRONIC CONTROLS "MELATRONIC" 8
4.7 PARAMETER LIST 8
4.8 OPERATING INSTRUCTIONS 8

1 Malfunctions without error message

1.1 Nothing shows on the display

After switching on the autoclave at the power switch (21), the display is empty:

- Verification of the customer-side power supply
- Verification of the power circuit breaker (36), replace possibly defective circuit breaker, if there is a renewed failure of the circuit breaker, then this means there is a short-circuit in the apparatus :
    - Failure immediately when mains switch is activated: permanent short-circuit (mains switch / wiring harness/ electronic control (20))
    - failure when the switch "water feed" is activated: spool / connector socket solenoid valve water feed (38) defective
    - failure at program start or activation of the drying function: heating (42) defective
- mains switch defective: No voltage at the output of the switch when mains switch is activated
- Electronic control (20) defective (no display despite supply voltage on the connections N and L1)



1.2 No water feed after pressing the switch "water feed"

If there is no intake of water in the autoclave chamber after activating the switch "water feed" (19), check the following possible causes:

- Solenoid valve "water feed" (38) does not open
  - No power supply (water feed switch, wiring harness, connector socket)
  - Solenoid valve spool defective (check magnetic force on spool with screwdriver, check spool for electrical passage)
  - Valve mechnically blocked (plunger sticks/ jams, open valve housing, clean valve)
- Tank filter (41) clogged (unscrew filter with jaw or ring wrench size 13 and clean and possibly replace mesh filter insert, clean drillings in the filter housing)
- Filter water storage tank (27) is clogged (unscrew conduit (28) at the filter, withdraw and clean mesh filter insert downwards, possibly replace, clean drillings in the filter housing)

  Notice: Cleaning the filter without opening the apparatus and dismantling the piping can be attempted by activating the switch "water feed" during a program sequence pressure at the manometer > 1 bar to produce a pressure discharge on the water feed line. After completed pressure discharge, the program must immediately be canceled manually.

1.3 No program start after the operation of the "Start" key

After activating the "Start" key no program start takes place - i.e. no display of "run":

- "Start" key (22) defective (when pressed, contact of the key must close)
- Cable connection to the electronic control (connection 5/6) interrupted

1.4 No pressure quick release at the end of the program

No quick pressure release takes place at the end of the program; the pressure indicator on the manometer drops very slowly:

- The solenoid valve "pressure discharge" (52) does not open (currentless open):
  - valve mechnically blocked (plunger sticks/ jams, open valve housing, clean valve)
  - Voltage does not switch off at the end of the program, relay output of the electronic control (connection 9/10) is defective

1.5 Bad drying/ residual water in the chamber

To guarantee good drying, the loading and operating instructions in the operating instructions must be observed. If residual water remains in the chamber at the end of the program, then drying is made difficult. Causes for this can be:

- No quick pressure release takes place at the end of the program (see Section 1.4.)
- The tank filter (41) is clogged (see Section 1.2.)

1.6 Too high pressure indicator

In fault-free operation, maximum pressures of 1.4 bar with the 121°C program or 2.4 bar with the 134°C program may not be exceeded. Causes for a too high pressure/ manometer display can be:

- Manometer defective:
    - Traling pointer stiff, jumps to a too high value. Attention, at the beginning of the pressure discharge phase, the trailing pointer can be shifted by approx. 0.1 bar higher due to vibrations. This does not reflect a device error.
    - Manometer display too high
- poor ventilation because the solenoid valve "pressure discharge" does not open during the ventilation phase (see program sequence), see Section 1.4
- Temperature control too high
    - temperature sensors (40) not completely in sensor capsule
    - bad heat transfer from the sensor to the sensor capsule, assembly with the thermal conductivity paste
    - contact resistance at the sensor connection (1/3) of the electronic control
    - temperature sensors (40) defective
    - electronic control defective / possibly carry out another inherent regulation (see Appendix "Operation control Melatronic Section "Inherent regulation")

2 Malfunctions with fault message

2.1 Fault message "Err1"

Trigger: After start of a program, the maximum heating-up time t3 up to achievement of the temperature range (Sp1- H1 with the 121°C program or Sp2-H1 with the 134°C program) is exceeded

Possible causes for this error can be:

Operating error:

- Apparatus overloaded
- Switch "water feed" not activated, no water dosed
- Switch "water feed" not switched off
- Customer-side supply voltage too low
- door not firmly sealed (leaks)

Hardware errors

- Heating (42) defective (apparatus remains cold, check heating for passage)
- Solenoid valve "water feed" (38) does not close (water is pressed back over the water feed filter into the reserve vessel, check with empty reserve vessel)
- Solenoid valve "pressure discharge" (52) does not close (permanent water outlet at the condensate line (51))
    - solenoid valve polluted, leaks
    - spool defective
    - no voltage at the solenoid valve (cable / plugs / output 9/10 of the electronic control defective)
- Vent nozzle (30) washed out (heating permanently on, standard temperature is not achieved)
- Spring-operated safety valve (49) untight, opens too early
- Overheating protection system (44) defective (switches too early, or permanently activated)
- Power switch (26) defective (despite actuation, LED lights up, no output voltage)
- Electronic control (20) defective

2.2 Fault message "Err2"

Trigger:

- After the start of a program, another program was selected on "program" switch
- A running program was manually canceled by simultaneously pressing the button "P" and "⇓"
- During of the sterilization phase the sterilization temperature T falls short or exceeds the permissible temperatur range SP1-H1 < T < Sp1+H1 (for the 121°C program) or SP2-H1 < T < SP2+H1 (for the 134°C program).
- During a program sequence there was a power loss

Operation/ operating error

- The "program" switch (18) was pressed during a running program
- The mains switch was switched off during a running program
- A running program was manually canceled by pressing the button "P" and "⇓"

Device error:

- Water shortage during the sterilization phase:
  - Leakage at the solenoid valve "pressure discharge" (52) or at the solenoid valve "water feed" (38), see under "Err1"
  - Vent nozzle (30) washed out
  - Spring-operated safety valve (49) leaks
- Overheating protection system (44) defective (switches too early)
- Device-internal interruption of the power supply (intermittent contact)
- Temperature sensors (40) not completely plugged in the mount
- Power switch (26) defective, check for secure assembly on the baseplate
- Electronic control (20) defective

2.3 Fault message "1999"

Trigger:

Cable breakage or short-circuit at the input 1 and 3 (connection temperature sensors) of the electronic control (20)

Device error:

- Intermittent contact at the sensor connection, inspection for secure screw connection at the input 1 and 3 of the electronic control
- Temperature sensors (40) defective (short-circuit / cable breakage)

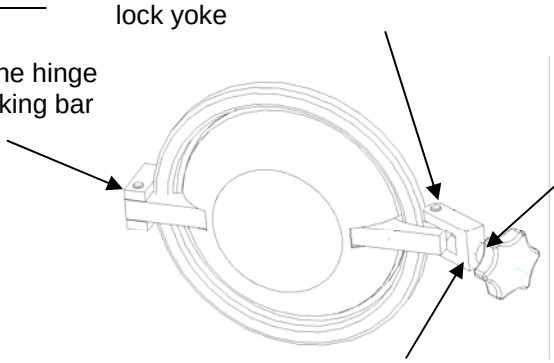
Remark: After the removal of the cause of the fault, the fault message "Err2" is shown one time and must be acknowledged.

3__ Maintenance and control instructions for door and locking components

In order to prevent premature wear, the threaded spindle of the star knob as well as the hinges of the lock yoke and the pressure locking bar must always be well greased
(Preferably with plain-bearing grease MELAG-Art. No.24355).

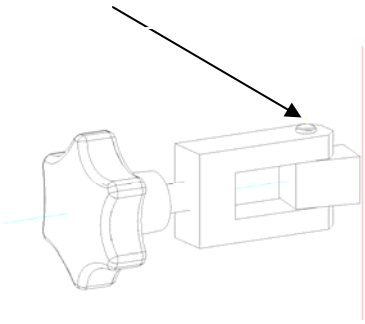
Following points are to be checked and possible defects eliminated:

- excessive play in the hinge of the lock yoke
- excessive play in the hinge of the pressure locking bar (door hanging)
- excessive play of the threaded spindle of the star knob ("clatter" of the spindle in the latch bolt)
- clearly difficult operation if the threaded spindle



- hard metal screwed out of the latch bolt

Attention!
The pivot pins must be completely inserted in the latch bolt or in the hinge yoke of the pressure locking bar (left side plug. Check the retaining rings above and below for correct seat.



4 Appendix

4.1 Equipment views

see drawing (Z.-No. 23E_0_05 page 1 and 2)

4.2 Article/ Spare part numbers

see drawing (Doc.No.: 23Melatronic.xls)

4.3 Piping plan

see drawing (Z. No. 23E-0-04)

4.4 Wiring diagramm

see drawing (Z.-No.: 23E-0-01, 23E-0-02)

4.5 Program flowchart

see drawing (Z. No. 23E-0-04)

4.6 Operation of the electronic controls "Melatronic"

see drawing (Doc.No.: Melatronic_Bedienung.doc)

4.7 Parameter list

see drawing (Doc.No.: Melatronic23_Parameter.doc)

4.8 Operating instructions

see drawing (Doc. No. 17-23 Melatronic BA.doc)