Errors and Troubleshooting

SERVICE BOOK

ENG - Rev09

CE 0051

MN-111

WHERE TO FIND TOPICS

Topic	Service book or other source
Accessories	Repair and Spare Parts
Adjusting the 24V power output	Repair and Spare Parts
Assembling and disassembling instructions	Repair and Spare Parts
Authorized Service Partners	Instructions for Use
Calibration	Instructions for Use of the Sterilizer Calibration Device
Cycle descriptions and phases	Product description and operation
Diagnostic cycles	Test instructions
Diagnostics and fault finding	Errors and Troubleshooting
Displaying the functional parameters INFO screen	Instructions for Use - Test instructions
Electric diagram	Product description and operation
Electrical component testing	Test instructions
Error list	Errors and Troubleshooting
Hydraulic diagram	Product description and operation
Importers and local Partners	Instructions for Use (inside the back cover)
Installation Instructions	Instructions for Use
Installation of upgrading and retrofitting kits	Repair and Spare Parts
Installation requirements	Instructions for Use
Level switch testing	Test instructions
Loop cycle	Test instructions
Maintenance program table	Instructions for Use - Repair and Spare Parts
Manufacturer reference contacts	All
Message list	Instructions for Use
Operational states of components	Product description and operation
Passwords and special codes	Repair and Spare Parts
Pressure sensor testing	Test instructions
Repair and spare parts instructions	Repair and Spare Parts
Replacement of consumables	Instructions for Use
Replacing the backup battery of the main board	Repair and Spare Parts
Requirements for the supply water	Instructions for Use - Product description and operation
Retrofitting and upgrading kits	Repair and Spare Parts
Safety thermostat testing	Test instructions
Saturated steam: pressure - temperature correlation table	Test instructions
Service kits	Repair and Spare Parts
Software menu (Service)	Product description and operation
Software menu (User)	Instructions for Use
Software update	Repair and Spare Parts
Software version installed	Repair and Spare Parts
Spare part list	Repair and Spare Parts
Technical data	Instructions for Use - Product description and operation
Test cycles	Instructions for Use - Test instructions
Time duration of cycles and Phases	Test instructions
Tool list	Repair and Spare Parts
Torque values for bolts and nuts	Repair and Spare Parts
Water consumption table	Test instructions

Table of contents

MANUAL CONTENT

This manual contains the Instructions for Use and for maintenance of the following sterilizer versions:

- MN-111 100–125 V ac
- MN-111 200–240 V ac
- MN-111 Med 100–125 V ac
- MN-111 Med 200–240 V ac

Versions differ for nominal voltage, maximum current, chamber material (AISI 304 or 316) and some functionality between W&H and W&H Med versions.

DISCLAIMER

All pictures, graphics and illustrations provided in this manual are for the comprehension of the text. They are not meant to be an accurate representation of product details. Thus, they should be taken as indicative only, and may differ from the actual product.

For any suggestions or remarks please send an email to office.sterilization@wh.com.

COPYRIGHT NOTICE

CONFORMITY TO EUROPEAN AND AMERICAN STANDARDS AND DIRECTIVES

STERILIZER featuring sterilization cycles conform with the following standards:

Standards and Directives	Description
CE 0051 93/42/EEC	Medical Device Directive (MDD). Medical Device Directive 93/42/EEC for devices class IIb, in accordance with the Rule 15 – ANNEX IX of the above Directive.
CE 0497 2014/68/EU	Pressure Equipment Directive (PED). Directive 2014/68/EU (PED – Pressure Equipment Directive) for every sterilization chamber designed and manufactured in conformity to the ANNEX 1 and to the procedure described in the module D1 Annex III.
2012/19/EU	Waste Electrical and Electronic Equipment (WEEE).
CSA C22.2 No. 61010-1-12	Safety requirements for electrical equipment for measurement, control and laboratory use, general requirements.
UL 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use, general requirements.
ASME	Boiler and pressure vessel code.
EN 13060	Small steam sterilizers.
ANSI/AAMI ST55	Table-top steam sterilizers.
IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use, general requirements.
IEC 61010-2-040	Safety requirements for electrical equipment for measurement, control and laboratory use; particular requirements for sterilizers and washer-disinfectors used to treat medical materials.
IEC 61326-1	Electrical equipment for measurement, control and laboratory use - EMC requirements; general requirements.
IEC 61770	Electric appliances connected to the water mains - Avoidance of backsiphonage and failure of hose-sets.

Note: Every new sterilizer is delivered with a Declaration of Conformity and a Warranty Card.

SAFETY SYMBOLS USED IN THIS MANUAL

WARNING: Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

Related to a sterilizer, these warnings indicate hazardous situations that could result in non-sterile conditions (e.g. non-sterile instruments) which could lead to fatal personal injury.

CAUTION: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Live parts. Risk of electrical shock

Hot surfaces. Risk of burns.

SYMBOLS USED IN THIS MANUAL

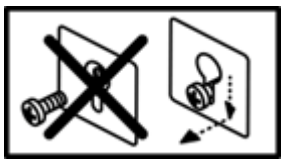
Mounted with magnets OR magnetic components present

Components sensitive to electrostatic discharges.

ATTENTION!
Don't use any glue.

ATTENTION! Do not use any lubricant. Use water instead.

ATTENTION!
Moisten with water only.



Keyhole mounting.
No need to remove the screws.

General explanations, without risk to persons or objects.

Call service.

SYMBOLS DISPLAYED ON THE PRODUCT

Hot surfaces!
Risk of burns.

Hot steam!
Risk of burns.

Consult the Instructions for Use for important cautionary information.

Don't use drinking water to fill the clean water tank; use only distilled or demineralized water.

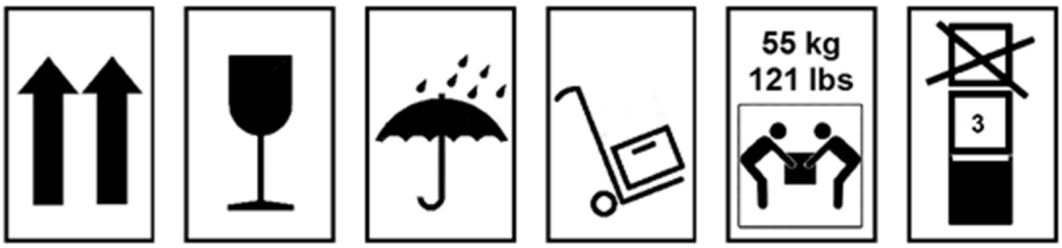
Consult the Instructions for Use.

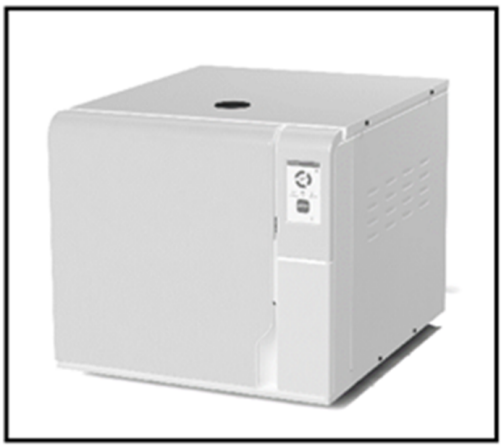
Do not dispose of with normal waste

PROPERTY DAMAGE MESSAGES

Notice: Indicates information considered important, but not hazard-related. Typically to avoid damage to the product.

LABEL ON THE BOX





TYPE	?????????????
REF	????????
SN	???????
VOLUME	?????????????
100-125 Vac	12 A
2018	50 / 60 Hz

??

??????????????????????????????

+60°C -20°C STORAGE

+60°C -20°C TRANSPORTATION

W&H Sterilization s.r.l.
Italy, I - 24060 Brusaporto
Bergamo (BG), Via Bolgara, 2
wh.com

Made in Europe / Produit en Europe

GENERAL WARNINGS

- Before performing any repairing or service interventions on the sterilizer, ALWAYS DISCONNECT the electric power supply cable to avoid injury.
- If for any reason you are unable to remove the power supply or if you have to walk away from the unit, always place a “WORK IN PROGRESS” sign, to warn other people that might walk up to the sterilizer.

- Service should be performed by qualified technicians only.
- Observe all local and national directives related to service and safety standards.
- Always use personal safety devices (e.g. glasses, gloves, protection mask, etc.).
- Before making any repairs or transport, ward off unauthorized personnel from the working area.
- Refer also to all the safety indications given in the Instructions for Use of the product.
- Keep service manual for future consultation
- Never operate on the hydraulic circuit until the door is not opened. Depressurize the chamber and wait until the chamber temperature (or pressure) is equal to the environment temperature (or pressure) before the door opening; check the chamber temperature and pressure on the sterilizer display. In case the door remains locked due to a black-out or an electric fault, an auxiliary unlocking procedure is available on the Instructions for Use (see Emergency door opening).

TRANSPORT

Spare parts shall be handled with care.

In case of transport of the sterilizers:

- Completely drain both water tanks;
- Drain the condenser bottle;
- Allow the sterilization chamber to cool down;
- Use original or appropriate packaging;
- Put the box of the sterilizer on a desk;
- Remove the upper part of the box;
- Position the sterilizer in the dedicated area of the box;
- Carefully seal the box;
- The transport of the sterilizer shall be done by two authorized technicians using PPE devices (personal protective equipment) according to applicable standards;
- The sterilizer shall be handled with care.

CHECKS AND ACTIONS

Notice: For any error not listed in this table, call technical service.

Code	Description	Possible causes	Checks and actions
010	Mains voltage or 24V error during the cycle.	Power cord failure or disconnected.	Check the power cord is properly plugged. Check the power cord for electric continuity.
		Sterilizer switched OFF during a cycle.	Wait until the error phase on the screen is finished.
		Electric failure in the building system.	Connect the sterilizer to a dedicated circuit as reported in the user instruction. Check the electric power in the building. Check the electric power at the wall plug.
		24 V power unit failure.	Check the 24 V power unit (see Test instructions service book).
011	Software error during update.	Software update failure.	Repeat the update. If the failure persist, call service.
012	Microprocess or error	Bad communication with the mains load control microprocessor	Update – reload the software. If the problem persists, replace the main board.
020 to 043	Internal voltage out of range.	Sensor failure. Main board failure.	Disconnect progressively all sensor cables from the main board. Check the ERRORS screen: ■ If the error persists, replace the main board. ■ If the error disappears, replace the sensor/cable that causes the error.
050 - 051	Mains voltage out of range.	Mains voltage out of range. Main board failure.	Check the **System Info** screen. The mains voltage of the 230V sterilizer version must be between 180 and 264 volts and must be stable. The mains voltage of the 110V sterilizer version must be between 90 and 132 volts and must be stable. If the mains voltage is bad (out of range or unstable), check the mains supply voltage with a multimeter and compare it with the reading of the **System Info** screen. If the values are different, replace the main board, otherwise check the electric supply.
060	Low voltage on 24 VDC circuit.	Failure of a 24 V-supplied component or in its connection cable to the main board.	Disconnect progressively all components from the main board. Check the ERRORS screen: ■ If the error disappears, replace the component/cable that causes the error. ■ If the error persists, see next step.
		Failure of the 24 V supply unit.	Check the 24 V power unit (see Test instructions service book).
061	Too high voltage on 24 VDC circuit.	Failure of the 24 V supply unit.	Check the 24 V power unit (see Test instructions service book).
070	24 VDC overcurrent.	24 V component failure.	If the error is permanent disconnect progressively all 24V components/sensors cables from the main board. Check the ERRORS screen: ■ If the error disappears, replace the component/cable/sensor that causes the error. ■ If the error persists, replace the main board.
		Sensor failure.	If the error is not permanent: If the problem persist see next step.
		Door locking motor failure.	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode.
080 , 083	Main board temperature too high.	Main board failure.	With a hand-held thermometer, check the temperature in the main board area. If the values are different from those measured by the sterilizer (check the **System Info** screen), replace the main board.
		Room temperature too high. Condenser/Dust filter/Fan grid clogged/dirty.	Clean the component with compressed air.
084	Mains frequency out of range (44-67 Hz)	Mains frequency out of specifications Main board failure	Check the mains frequency with a suitable instrument. The frequency must be between 45 and 67 Hz: If no: ■ check the mains supply and/or contact the electric Company. ■ replace the main board.
087	Internal voltage (VREFB) out of range (too low).	Quality meter sensor failure. Main board failure.	Check the quality meter sensor connections and cables. If the error persists, replace the quality meter sensor. If the quality meter sensor is OK, replace the main board.
088	Internal voltage (VREFB) out of range (too high).		

Code	Description	Possible causes	Checks and actions
089 to 098	Internal board error or sensor error.	Sensor failure. Main board failure.	Disconnect progressively all sensor cables from the main board. Every time you disconnect a sensor, check the ERRORS screen: ■ If the error disappears, replace the cable/sensor that causes the error. ■ If the error persists, replace the main board
100	Timeout of the pressure phase HEA3 (30')	Steam leak from the door gasket.	Check the door gasket and the chamber face side for damage or dirt. Clean and replace door gasket, if needed. Run a sterilization cycle. If the problem persist, see next step.
		Water pump failure. Check/priming ULKA valve failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump.
		Failure of the clean water MIN level sensor.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water level sensors.
		Water quality failure.	Drain both water tanks. Use water of good quality. Please refer to the Instructions for Use. See Instructions for Use, chapter TECHNICAL DATA, Water quality
		S.G. temperature sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor. If it is necessary, replace the sensor.
		Failure in the steam generator heating element.	Run the diagnostic cycle **S. G. Perform. Test**. If bad, replace the steam generator.
		Failure on a solenoid valve EV1 Failure on a solenoid valve EV5	Run the diagnostic cycle **EVX test**. If one valve is detected as faulty, replace it.
		EV5/EV1 tube line clogged/dirty	Check the tube line conditions. Replace the components if necessary.
		Pressure transducer failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.
		Multiple failure: solenoid valve EV3 and check valve V1	Run the diagnostic cycle **EVX test**. If one valve is detected as faulty, replace it. Check the V1 conditions, replace if necessary.
		Other steam leak (e.g. chamber).	Run a WRAPPED/POUCHED 270°C cycle with maximum load and check for leaks during the pressure and process phases. The check should be done visually (water drops, steam sprays). Fix any detected leak.
101	Timeout of the pressure phase HEA1 (10')	See error "100" above, all causes.	
120-121	Unexpected pressure reading or pressure reading error during door opening.	Pressure sensor failure. Main board failure.	Depressurize the chamber artificially (activate the chamber safety valve manually). If the problem persist, see error "089 to 098" above and perform the relevant test.
130	Theoretical temperature too high.	Chamber temperature sensor mispositioned.	Check and restore the position of the temperature sensor. Use the dedicated tool F190100X.
		Pressure sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.
		Chamber temperature sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber temperature sensors. If the sensor is broken, replace it. If the error persists, replace the main board.
		Steam generator sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 3). If it is necessary, replace the sensor. If the problem persists, see next step.
		Main board failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 2). If it is necessary, replace the main board.
131	During PR phase the difference between theoretical and chamber temperature > 2°C.	See error "130" above, all causes.	

Code	Description	Possible causes	Checks and actions
132	At the end of HEA2 phase the difference between theoretical and chamber temperature >2°C. (if Tchamaber>Ttheo no error shown).	See error "130" on the previous page, all causes.	
133	At the end of HEA3 phase the difference between theoretical and chamber temperature > 2°C. (if Tchamaber>Ttheo no error shown).	See error "130" on the previous page, all causes.	
140	Theoretical temperature too low	Steam leak.	See error "100" on the previous page.
150	Chamber temperature too low		
160	Chamber temperature too high		See error "130" on the previous page, all causes.
161	Chamber temperature too high.		
163	Chamber pressure too high.	Pressure sensor failure.	See error "130" on the previous page, same cause.
164	Safety block during PHE phase. (Pchamber > 1.4 barA)	EV1 failure V2 clogged/failure F1 clogged/failure All the 3 internal chamber filters clogged/failure EV5/EV1 tube line clogged/dirty	Check and clean the chamber filters. Check the components conditions. Replace the components if necessary.
		Steam generator sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 3). If it is necessary, replace the sensor. If the problem persists, see next step.
		Main board failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 2). If it is necessary, replace the main board.
		Pressure sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.
165	Steam generator temperature too high during HEA1, HEA2 and HEA3 phases.	Temperature sensor failure or not calibrated.	See error "130" on the previous page, same causes.
166	Safety block during HEA2 phase. (Pchamber > 1.9 barA)	See error "164" above, all causes.	
181	No temperature decrease at the beginning of the DRYING phase (in the first 90").	Solenoid valve EV1 failure/clogged. V2 one way valve clogged	Check the components conditions. Replace the components if necessary.
		F1 filter clogged Chamber filters clogged or dirty.	Check and clean the filters. Replace the components if necessary.
182	No pressure decrease during the DRYING phase (if after 10' Pchamber ≥ Penviroment).	See error "181" above, all causes and the following.	
		Door gasket failure V2 clogged/dirty	Check the components conditions. Replace the components if necessary.
		F1 filter clogged/dirty All three chamber filters clogged/dirty	Check and clean the filters. Replace the components if necessary.
		Pressure sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.
183	At the end of the drying phase, Pchamber > 0.3 bar.	Solenoid valve EV5 failure. Solenoid valve EV1 failure.	Check the components conditions. Replace the components if necessary.

Code	Description	Possible causes	Checks and actions
205	Chamber heater error (R2 too low)	Main board failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heating element and safety thermostat (TABLE POINT 2).
		Chamber heating failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heating element and safety thermostat (TABLE POINT 3). See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heating element and safety thermostat (TABLE POINT 4).
206	Chamber heater error (R2 too high).	Chamber heater thermostat operated.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heating element and safety thermostat (TABLE POINT 1).
		Chamber heater not connected.	Check the connections and the wires between the heater and the main board. If the error persists, see next step.
		Others.	See error "205" above.
207	Chamber heater error (R1 too high).		See error "206" above, but all tests and actions apply to R1.
208	Chamber heater error (R1 too low).		See error "205" above, but all tests and actions apply to R1.
210	Chamber pressure sensor error or disconnected.	Pressure sensor disconnected.	Check the pressure sensor connections and cables.
		Pressure sensor failure.	See error "130" on page 10, same cause.
		Main board failure.	See error "130" on page 10, same cause.
211	Chamber pressure sensor error.	Pressure sensor failure	See error "130" on page 10, same cause.
214	Chamber temperature sensor error.	Chamber temperature sensor failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber temperature sensors (TABLE POINT 1 and 2). If it necessary replace the chamber temperature sensor. If the problem persists, see next step.
		Main board failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber temperature sensors (TABLE POINT 1 and 3). If it is necessary, replace the main board.
215	Chamber temperature sensor error or disconnected.	Chamber temperature sensor disconnected.	Check the connection to the board and the relevant wires.
		Chamber temperature sensor failure. Main board failure.	See error "214" above, same causes.
216	Chamber heater sensor error.	Chamber heater sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heater temperature sensor (TABLE POINT 1 and 3).. If it is necessary, replace the chamber heater sensor. If the problem persists, see next step.
		Main board failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Chamber heater temperature sensor (TABLE POINT 1 and 2). If it is necessary, replace the main board.
217	Chamber heater sensor error or disconnected.	Chamber heater sensor disconnected.	Check the connection to the main board and the relevant wires. If the error persists, see next step.
		Chamber heater sensor failure. Main board failure.	See error "216" above, same causes.
230	Steam generator temperature sensor error	Steam generator sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 3). If it is necessary, replace the sensor. If the problem persists, see next step.
		Main board failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor (TABLE POINT 1 and 2). If it is necessary, replace the main board.
231	Steam generator temperature sensor error or disconnected	Steam generator sensor disconnected	Check the connection to the board and the relevant wires. If the error persists, see next step.
		Steam generator sensor failure Main board failure	See error "230" above, same causes.

Code	Description	Possible causes	Checks and actions
240	Steam generator heating element error.	Heating element thermostat operated.	Reset the steam generator thermostat. Check the thermostat continuity (0Ω). If it is open, replace the component.
		Heating element not properly connected.	Check the connections and the wires between the heating element and the main board. If the error persists, see next step.
		Main board failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Heating element of the steam generator and safety thermostat (TABLE POINT 2). If it is necessary, replace the main board.
		Heating element failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Heating element of the steam generator and safety thermostat (TABLE POINT 3). If the problem persists, see next step.
			See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Heating element of the steam generator and safety thermostat (TABLE POINT 4). If it is necessary, replace the steam generator.
241	Steam generator heating element error (coil L1).	Heating element failure. Main board failure.	See error "240" above, same causes.
242	Steam generator heating element error or disconnected (coil L2).		See error "240" above, but all tests and actions apply to L2.
243	Steam generator heating element error (coil L2).		See error "240" above, but all tests and actions apply to L2
300	Timeout in LEV phase (Pchamber<Penviroment-0.10 bar) Levelling set points not achieved.	HEPA filter clogged/dirty. EV3 clogged/dirty HEPA filter tube line clogged/dirty. F2 filter clogged/dirty	Check if the sterilizer is installed in accordance to the technical specification reported in the Instructions for Use. Replace component if needed and/or fix the problem.
340	During HEA2 phase Pchamber<Penviroment-0.10 bar.	EV1 Solenoid valve failure.	Replace component if needed and/or fix the problem.
		Main board failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Heating element of the steam generator and safety thermostat (TABLE POINT 2). If it is necessary, replace the main board.
		Water pump failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the water pump if needed.
		Check/priming ULKA valve failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the ULKA valve if needed.
		S.G. temperature sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor. Replace the sensor if needed.
		Failure in the S.G. heating element	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Heating element of the steam generator and safety thermostat (TABLE POINT 3, if problem persists, see TABLE POINT 4). If it is necessary, replace the steam generator.
		EV5 solenoid valve failure	Run the diagnostic cycle **EVX test**. If one valve is detected as faulty, replace it.
		Pressure transducer failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.

Code	Description	Possible causes	Checks and actions
422	H^2O overconsumption during HEA3 phase.	Door gasket failure.	Check and replace the door gasket if needed.
		water pump failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the water pump if needed.
		Check/priming ULKA valve failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the ULKA valve if needed.
		Failure of the clean water MIN level sensor.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water level sensors. Replace the sensor if needed.
		S.G. tempearture sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor. Replace the sensor if needed.
		Steam generator failure.	Run the diagnostic cycle **S. G. Perform. Test**. If necessary, replace the steam generator.
		Solenoid valve EV5 failure.	Check the components conditions. Replace the components if necessary.
		Solenoid valve EV1 failure.	Check the components conditions. Replace the components if necessary.
		EV5/EV1 tube line clogged/dirty	Check the tube line conditions. Replace the components if necessary.
		Pressure transducer failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS. Replace the sensor if needed.
		Multiple failure: solenoid valve EV3 and check valve V1.	Check the components conditions. Replace the components if necessary.
		Leakage (e.g. chamber)	Run a 270°F sterilization cycle with maximum load and check for leaks during the pressure and process phases. The check should be done visually (water drops, steam sprays). Fix any detected leak.
423	H20 overconsumption during HEA1 phase.	See error "422" above, all causes.	
424	H20 overconsumption during HEA2 phase.	Water pump failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the water pump if needed.
		Check/priming ULKA valve failure.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water pump. Replace the ULKA valve if needed.
		Failure of the clean water MIN level sensor.	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Water level sensors. Replace the sensor if needed.
		S.G. temperature sensor failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, Steam generator temperature sensor. Replace the sensor if needed.
		Main board failure	See Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS: ■ Water pump (step 3), or ■ Heating element of the steam generator and safety thermostat (step 2), or ■ Steam generator temperature sensor (steps 2, 5 and 6). Replace the main board if needed.
430	Fan error.	Fan disconnected.	Check the connection to the board and the relevant wires.
		Fan blade jammed.	See Test instructions service book, chapter DIAGNOSTIC CYCLE/LEAKAGE TESTING (2), Diagnostic cycle: fan tests (step 2).
		Fan motor failure.	Run diagnostic cycle **Fan Test**. Follow the instructions given on MN-111's screen. Replace component if needed.
		Main board failure.	If the problem persists, replace the main board.

Code	Description	Possible causes	Checks and actions
520	Door locking timeout.	Microswitch disconnected (LOCKED position).	Check the connections between the microswitch (LOCKED position) and the main board and the relevant wires. If the problem persist, see next step.
		Microswitch failure (LOCKED position). Main board failure.	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode. Replace the microswitch if needed. If the problem persists, check the continuity of the cables from the microswitch to the main board. If the problem persists, replace the main board.
521	No current through the door locking motor.	Motor disconnected.	Check the connections between the motor, the pressure switch and the main board.
		Main board failure (current detection or motor supply).	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode. If the motor rotates, but the problem persists replace the main board. Otherwise see next step.
		Cable failure.	Check the integrity of the relevant wires. If needed replace cables.
		Motor failure.	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode.
522	Door locking motor: too high current at start (during door closure)	Motor failure. Main board failure.	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode.
526	Unexpected position of the microswitch (the door is locked and the switch changes status)	Microswitch failure Main board failure	Replace the door locking system, if the problem persists replace the main board.
		Execution of the Emergency door opening procedure.	-
527 - 531	Impossible position detected.	Microswitch failure. Main board failure.	See Test instructions service book, chapter SPECIFIC TEST FOR INDIVIDUAL COMPONENTS, Door locking system - automatic mode, Door locking system - manual mode.
529	Unexpected pressure during door opening.	Pressure sensor failure.	See error "120-121" on page 10.
532	Door locking motor: too high current at start (during door opening)	Motor failure. Main board failure.	See error "522" above.
533	Door unlocking timeout.	Wrong microswitch connection (OPEN side). Microswitch failure (OPEN side). Main board failure.	Proceed as per errors "527 - 531" above, but only with the OPEN side microswitch.
534	Impossible position detected.	See error "527 - 531" above.	
535	Door locking: motor: current consumption error (during door opening)	Motor failure. Main board failure.	Replace the door locking system, if the problem persists replace the main board.
591	Software error in door position detection	Software error. Main board failure.	Upgrade the software to the latest version, if the problem persists replace the main board. If the problem persists, call service.
948 to 951 **954 to 958, 968** **967, 969, 971 to 983**	Software error.	Software error / corruption. Main board failure.	Upgrade the software to the latest version, if the problem persists replace the main board.
985 to 989, 991, 992	Memory error.	Software error / corruption. Main board failure.	Upgrade the software to the latest version, if the problem persists replace the main board.
990	Manual stop.	Cycle interrupted manually by the user.	
993 to 997	Software error.	Software error / corruption. Main board failure.	Upgrade the software to the latest version, if the problem persists replace the main board.
998	Test bench connection error.	Communication error with the Sterilizer Calibration Device.	Check the serial cable connecting the two devices.
			Check the model selector on the Sterilizer Communication Device.

WATER TANK PROBLEMS

Description	Possible causes	Checks and actions
Overflow of the clean water tank during filling (no acoustic signal)	Upper clean water tank level sensor faulty	Check the sensor placement (must be horizontal). Check the floating part moves freely. Check the sensor connections and wiring. Check electrical operation of the sensor. (*)
Overflow of the used water tank	Used water tank level sensor faulty	Check the sensor placement (must be horizontal). Check the floating part moves freely. Check the sensor connections and wiring. Check electrical operation of the sensor. (*)
Water on the top lid or from the top cap, no warning on screen)		
The "Drain used water tank." message is displayed, in spite the tank is empty.		
Used water tank drains slow or not at all	Clogged tank outlet filter or clogged drain tube	Clean the used water tank outlet filter. Check the tubes from the used water tank outlet to the drain connection; clear or replace any clogged tubes. Recommend the user to properly clean the load prior to sterilization. **Note**: If the sterilizer is not used for over a week, both tanks must be emptied to avoid algae growth.
No water filling from the automatic system.	Low-level clean water sensor faulty	Check for proper sensor placement. Check the floating part moves freely. Check the sensor connections and wiring. Check electrical operation of the sensor. (*)
	Water filling valve faulty	Check electric operation of the valve. Check the valve connections and wiring.
The "Fill clean water tank." message is displayed, in spite the tank is full.	Low-level clean water sensor faulty	Check for proper sensor placement. Check the floating part moves freely. Check the sensor connections and wiring. Check electrical operation of the sensor. (*)

Note (*): see Test instructions service book.

WATER SPILLAGE PROBLEMS

Location of the water	Possible Cause	Checks and actions
Below the door.	Dirt or debris under the door gasket or chamber flange.	Execute the monthly maintenance described in the Instructions for Use.
	Improper door adjustment.	Execute the Door adjustment cycle and procedure.
	Door seal damaged.	Replace the door seal.
Below the service door	Leak from the front drain connections	Check connections and tubes.
From the bacteriological filter	Leak of the check valve inside the chamber	Check the check valve inside the chamber behind the steam diffuser
Under the sterilizer	Leak from the water tank	If necessary replace the water tank.
	Leak from the tank filter hose	Check connections and tubes. If necessary replace tank filter hoses.
	Leak from any of the water tubes (drain, water pump feed)	Check connections and tubes. Replace tubes.

PRINTER PROBLEMS

Description	Possible Cause	Checks and actions
Thermal printer		
No report printed.	Connection problem / printer power problem	Check the printer serial cable. Check the printer power supply. Check (connect or replace) the serial (printer) flat cable coming off the MMI board.
	No paper.	Check presence of paper.
	Printer fault.	Replace printer.
	Wrong printer model selected.	Set the right printer model. Please refer to the Instructions for Use.

Description	Possible Cause	Checks and actions
Local label printer		
Label printer menu not accessible	Activation code not entered	Insert the activation code of the printer. See www.sterilizers.wh.com/LisaSafe.
	Label printer model not compatible.	Connect a compatible label printer.
No labels printed	Connection problem / printer power problem	Check the printer USB cable. Check the printer power supply. Check if the power button of the printer is switched ON. Check (connect or replace) the printer flat cable coming off the MMI board.
	No labels / no ribbon	Check presence of labels / ribbon
	Label printer fault	Replace label printer
	Automatic label printing is not enabled	Enabled the “automatic print” option. See user manual instruction.
	Device has not performed a sterilization cycle, or the cycle was aborted or an error code was generated.	No action required. Labels are not automatically printed if the cycle is not a sterilization cycle or if the cycle was not successfully executed (error code or manual stop).
Shared label printer		
No labels printed	Connection problems	Lost Ethernet connection. Check Ethernet cable and connections. Check IP address of the sterilizer master. Sterilizer master switch off. Switch on the sterilizer master. Label printer master Switch off. Switch on the label printer. See above all points of "Local label printer" above

USB DEVICE PROBLEMS

Description	Possible Cause	Checks and actions
USB error	No communication between the MMI to the USB devices/boards	Check the connections between the HUB, the MMI board and the USB plug. If all connections are OK, replace the faulty component.
HTML save error or SCL save error	Impossible to save a file on the USB device	Check if the USB device works properly. Check if there is enough memory space in the USB device. **Note**: The SCL files take much more memory space that the HTML files. Check if the USB device is formatted, format if necessary. Valid formats are FAT 16 or FAT32. It is suggested to format the USB device through the sterilizer.

DISPLAY PROBLEMS

Description	Possible Cause	Checks and actions
Points or lines are missing on the touch screen	Connection problems	Check display connection on MMI board.
	Touch screen failure	Replace the MMI board if necessary.
Touch screen is too dark	Connection problems	Check the sterilizer power supply. Check MMI board connection. Check connection MMI removable module.
	Touch screen failure contrast off	Adjust the display contrast. Please refer to the Instructions for Use.
	The sterilizer is in SLEEP MODE	Press the ⏻ icon or open or close the chamber door to exit sleep mode.
	Touch screen failure	Replace MMI board if necessary.
Touch screen is too bright or show strange colour	Connection problems	Check MMI board connection (e.g. Display flat cable).
	Touch screen failure	Replace MMI board if necessary.
Display is working but the touch is not working	Connection problems	Check MMI board connection (e.g. touchscreen connector).
	Touch screen failure	Replace MMI board if necessary.
User configuration lost or cycle history lost	SD card not detected	Check if the SD card in insert properly in the MMI slot. Replace SD card if necessary (the SD card shall be programmed). Replace MMI board if necessary.

OTHER PROBLEMS AND MALFUNCTIONS

Description	Possible Cause	Checks and actions
Wet load at the end of the cycle	Chamber overloaded	See maximum load weight specified for each cycle and type of load. Please refer to the Instructions for Use.
	Wrong load distribution	Check if rack and trays are well positioned. See Instructions for Use.
	Particular load type	Extend the drying time.
	Bacteriological filter failure	Replace the bacteriological filter. Please refer to the Instructions for Use.
	Chamber filters obstructed	Clean the chamber filters. Please refer to the Instructions for Use.
White stains on the load, chamber, trays and/or chamber rack	Water quality	Check the quality of the water used for sterilization and switch to water of better quality if necessary. If water gets close to the threshold of 15µs/cm conductivity, it may cause spots on sensitive objects such as mirrors.
	Load not properly rinsed and/or dried	Ensure that loads get properly rinsed and dried prior to placement in the sterilizer to prevent stains from minerals of residual tap water.
B&D or HELIX test not passed	Leakage	See error "100" on page 10 and "130" on page 10, all causes.
	Non conform water	Drain and clean the sterilizer water tank. Please refer to the Instructions for Use. Check external filling system.
Safety valve leakage or sudden opening	Load not properly rinsed	Clean instruments and sterilizer chamber. Please refer to the Instructions for Use.
	Non conform water	Drain and clean the sterilizer water tank. Please refer to the Instructions for Use. Check external filling system.
	Chamber not properly rinsed after cleaning	Clean sterilizer chamber. Please refer to the Instructions for Use.
Cycle time too long	Chamber overloaded	See maximum load weight specified for each cycle and type of load. Please refer to the Instructions for Use.
	Chamber filter obstructed	Clean the chamber filter and relevant tubes
	Leakage	See error "100" on page 10 and "130" on page 10, all causes.
Water consumption too high	Chamber overloaded	See maximum load weight specified for each cycle and type of load. Please refer to the Instructions for Use.
	Leakage	See error "100" on page 10 and "130" on page 10, all causes.
	Water pump failure	Run the diagnostic cycle **EVX test**.
	ULKA valve failure	See the Test instructions service book, chapter SPECIFIC TESTS FOR INDIVIDUAL COMPONENTS, ULKA valve.
	Steam generator heater failure	Run the diagnostic cycle **S. G. Perform. Test**.
Noisy water pump	Check valve spring	Disassemble the check priming valve placed between the water pump and the steam generator and check the valve spring.
	Water pump **Note**: Water pumps will be noisy when they run dry (no water available from the clean water tank).	Check if the water pump is priming – apply some positive pressure at the inlet tube to prime the pump. Check the condition of the two rubber brackets that keep the water pump in place Check condition and positioning of all tubes. Replace the water pump.
Noisy fan	Condenser fan obstructed	Check if cables or tubes obstruct the fan.

Manufacturer
W&H Sterilization Srl
via Bolgara, 2
Brusaporto (BG)
Italy
www.wh.com
med.wh.com
+39 035 66 63 000

MN-111
Service book
Errors and Troubleshooting
ENG
Rev09
03/09/2020
Subject to changes

CE 0051