

**AUTOCLAVE PARA ESTERILIZACIÓN A VAPOR
AUTOCLAVE FOR STEAM STERILIZATION**

MICRO 8

4001745

2 General Information for Users

2.1 Legal requirements for installation, use and maintenance of this autoclave

Valid reference regulation over pressure equipments:

- Directive 97/23/CE
- Pressure equipments regulation RD 1244/1979 (Spain)



Installation requirements are established in section 7 of this manual.

2.2 Autoclave reception

Handle the equipment with care in a suitable way according to its weight and considering it as a FRAGILE equipment.

Unpack and check that the contents coincide with the «packing list». If you see any damages or something missing, please notify your distributor as soon as possible.

Keep the original package for some days. Afterwards, throw away in the right way, by separating its components into cardboard, wood and plastic.

2.3 Documentation

The following documents are supplied with the autoclave:

- Instructions manual:

Do not install nor use this equipment before reading carefully this user's manual.

These instructions are an important part of this equipment and must be available to all users.

Any doubt should be asked to the autoclave distributor.

- CE Declaration of conformity:

This is a necessary document for authenticating the autoclave installation.

2.4 Other interesting information

Autoclaves sent to J.P. SELECTA, s.a. for repairing or maintenance should be disinfected.

Any modification, elimination or lack of maintenance of any autoclave device is forbidden.

It is forbidden also the use of this equipment in explosive environments or with steamed substances or to make explosive or inflammable mixtures.

If this autoclave is used in a way not specified by J.P. SELECTA, s.a., the guaranteed protection and its functionality can be committed.

2.5 Warranty period

Autoclaves are guaranteed for one year. The warranty does not cover damages caused by incorrect use or by causes beyond the control of J.P. SELECTA, s.a.

Any manipulation of the machine by not authorized personnel of J.P. SELECTA, s.a., automatically cancels the guarantee.

3 Technical Specifications

Autoclave volume:	8 litres
Mains voltage:	1 230V
Electrical power: (W)	1000
Maximum intensity: (A)	4.5
Fuses: (fast H type, dimensions: 10x38mm)	6
Network connection cable:	Phase, Neutral, Earth (section 0.75mm ²)
Weight (Net Kg):	25
Useful measures (cm Ø x depth)	Ø24x15
Ext. measures: (cm Depth x Width x Height)	40x38x38
Volume: (Litre)	8
Water quality	Demineralised between 15 and 200 microS/cm: pH between 5 and 7
Operation system:	Continuous with 20 minutes intervals between cycles.
Environmental conditions:	Inner use. Altitude till 2000m Room temperature between 5°C and 40°C. Max. relative humidity 80% for temperatures till 31°C, reducing in a linear way till 50% of 40°C relative humidity.
Overpressure level:	Category II
Pollution degree:	2
Vapour contact material:	Stainless steel, copper, teflon and brass
Frame material:	Steel with cover
Vessel material:	Stainless steel
Pipes material:	Copper, brass and teflon

4 Contents List

4.1 Standard contents

The standard contents consists of the following items:

Description	Code
Autoclave	4001745
Heater element cover	55088
Lid gasket	21230
Inox basket 21.5Øx16cm	1004771
Instructions manual	80241

5 Introduction

Micro 8 autoclaves are equipments suitable for a wide range of applications in several fields: health-care, industrial processes and quality control. These autoclaves allow solids without packaging sterilization processes and also of liquids and culture media.

5.1 Sterilization

Sterilization is the destruction or elimination of all forms of microbial life, including spores, which are present in inanimate objects.

5.2 Disinfection

Disinfection is the process of destruction of infectious agents. It is normally made at a lower temperature than sterilization. Disinfection only achieves the elimination of some vegetable forms.

5.3 Culture media

Culture media is a nutritional material in which microorganisms can be recovered, multiplied and isolated, as well as used in susceptibility tests. They are generally offered as fine or granular dry powder but also can be offered hydrated and prepared. They must not be used before being sterilized.

5.4 Purge (extracting the vessel air)

Purge is the cycle used to eliminate the air inside the vessel to achieve saturated steam vapour.

5.5 Saturated vapour

It is water vapour at a certain temperature corresponding to the boiling point of the original liquid.

5.6 Atmospheric purge

In the atmospheric purge, the air is expelled by vapour in a gravimetric way for a determined period of time.

5.7 Recommendations for a perfect sterilization

The material to be sterilized must be perfectly clean, free from residues. It is recommended to clean it with a good detergent and distilled water. Rinse later with plenty of water.

Do not excessively charge the trays, the racks or the baskets. Try always to leave a free space of 1 or 2 cm between them, in order to let the steam pass through and also to make drying more easily.

5.7.1 Loose instruments sterilization:

Place the instruments over the water resisting paper in the open position and not in contact with each other.

Please, avoid setting in the same tray different kind of metal instruments.

5.7.2 Containers sterilization:

Never set containers hermetically sealed.
Place the containers downwards to avoid water deposits.

5.7.3 Liquids sterilization:

Please, set the liquids for sterilization in appropriate containers prepared to support sterilization temperatures. Place them over the trays, so it could be easier to pick possible spillage.

The containers should be filled about 2/3 of their capacity. DO NOT CLOSE THEM hermetically, just cover them with a cotton or some kind of stopper to let the air exit and not to form any pressure.

Avoid using narrow bottleneck containers.

At the end of the sterilization cycle, let the autoclave freely cool down (till pressure will be 0 kg/cm²).



DO NOT STERILIZE TUBES NOR WRAPPED MATERIAL

This kind of material is reserved to the autoclaves with a prevacuum purge system.

6 Equipment description

The Micro 8 autoclave is a saturated vapour equipment which is distinguished thanks to the following features:

- They are not suitable for fixing sterilization units.
- Suitable for sterilizing:
 - Unpacked metal load: Clamps, Scalpels, ...
 - Liquid containers load.
- Water manual wastepipe.
- Manual purge.

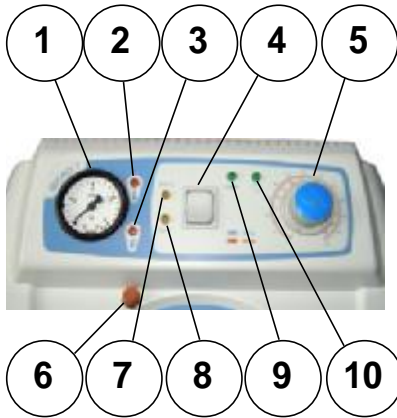
6.1 Design features decisive for the equipment life

The maximum service temperature for this equipment is much lower than the one for which used materials show damage for slow fluids.

- Fatigue: This equipment has been designed to safety resist the maximum admissible pressure PS = 2,4 bar, as well as the fatigue in materials due to pressure cycles (from vacuum to maximum pressure). The theoretical

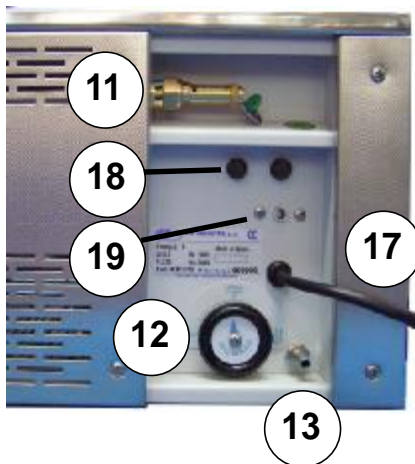
expected life for this equipment is about 20 years, with a work system of 4 operations / day during 365 days a year. However, the equipment real life is subjected to the periodical tests every 10 years and the annual checks.

- Corrosion: The use of genuine stainless steel in the autoclave vessel guarantees the resistance to the corrosion of water, steam and products to be sterilized.



6.2 Control panel

1. Pressure gauge
2. Overtemperature indicator
3. Open door indicator
4. Temperature selector 121°C/134°C
5. Timer knob
6. Lid release button
7. Operation at 121°C indicator
8. Operation at 134°C indicator
9. Sterilization phase indicator
10. End of cycle indicator



6.3 Lateral part

11. Safety valve
12. Purge, vacuum and closed manual valve
13. Purged steam and drainage outlet
17. Network connection cable
18. Fuses
19. Safety thermostat (reset button)

Important: The safety thermostat comes adjusted from the factory. It is advised not to handle it except to reset it by pressing its button

6.4 General view

14. Control panel
15. Open /Close door handle
16. Main power switch



7 Installation

7.1 Location

Locate the autoclave near an appropriate power source for the machine.



According to the current legislation, the autoclave should be located in a way that the safety valve discharge outlet **DO NOT** point to any people or could not reach them in case of steam outlet.

Install the autoclave over a flat, stable horizontal surface, suitable for the machine weight (see chapter 3 «Technical Specifications»), leaving a free space of at least 20 cm around the equipment.

Fix a hose to the outlet (13).



WARNING

If you use the machine for quick depressurization, please fix a pressure hose.

Fix the hose in such a way that cannot move by the effect of the pressure at the end of the cycle.

Do not hold the hose with the hands. It could reach temperatures higher than 60°C.

8 Operation

8.1 Preliminary operations for switching on



- Check that the lateral valve (12) is not in the «Drainage» position.
- Place the heater element cover tray at the bottom of the vessel.
- Fill the sterilization chamber with water till the heater element cover rack.
- Plug the autoclave to the mains.
- Press the main switch on (16).
- Place the material to be sterilized.
- Close the lid.

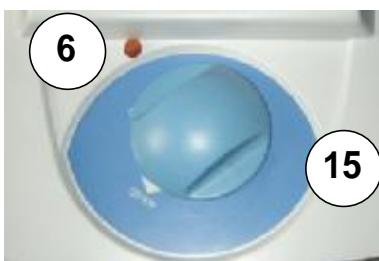
8.2 Opening and closing the lid

CLOSING

- To close, just press over the lid with one hand and turn the knob (15) with the other hand till the «CLOSED» position.

OPENING

- It is not possible to open the lid if the pressure is different to 0 bar.
- To open, press the button (6) and turn the knob (15) with the other hand till the «OPEN» position.





8.3 Starting up

Once the operations in chapter 8.1 are made, please do as follows:

- Change the lateral valve (12) to the «Steam» position.
- Select the sterilization temperature (121°C/134°C) by means of the selector (4).
- Select the sterilization time with the timer knob (5).

Recommended sterilization temperatures and times:

Material	Temp.	Time
Liquids	121°C	30'
Metallic tools and glass	134°C	10'



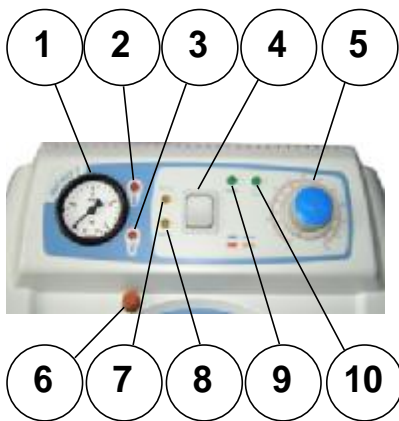
¡WARNING!

The timer has a double scale:

- Blue for equipments connected to a 50 Hz frequency.
- Red for equipments connected to a 60 Hz frequency.



- The autoclave will begin the purge process by means of which the air is expelled through the exit (13). At the end of the purge process, the autoclave will expel only steam (without air). Two minutes later, it's time to set the valve (12) to the «Closed» position.
- Once the valve is closed (12), the temperature and pressure increase till they arrive to 121°C/1 bar or 134°C/2 bar, according to what it has been selected.
- When the autoclave reaches the operating temperature, the green indicator lights on (9) and time begins to deduct from the sterilization time.
- When the sterilization time finishes, the indicator lights (10) and the autoclave finishes the sterilization cycle.



8.4 Sterilization end

Once the sterilization time ends, one of these two situations can be carried out:

- Solids sterilization: a quick devaporization can be made by setting the valve (12) to the «steam» position.



¡WARNING!

The steam outlet (13) expels high temperature steam and could produce serious burns if you don't take precautions.

- Liquids sterilization: do not open the valve when it cools down till the pressure gauge (1) indicates 0 bar. Then, set the valve (12) to the «Steam» position.

In both cases, please open the autoclave lid when the pressure gauge indicates 0 bar, as explained in chapter 8.2.

9 Alarm indicators

Overtemperature indicator (2). The safety thermostat has disconnected the heater:

Possible cause 1:

- The equipment has been switched on without or with not enough water.

Possible solution:

1. Add water until the heater element cover rack, as indicated in chapter 8.1.
2. Press the safety thermostat restart button (19) and begin the sterilization process once again.

Possible cause 2:

- The valve is not closed (12) and after the purge phase, the water in the sterilization chamber has been evaporated.

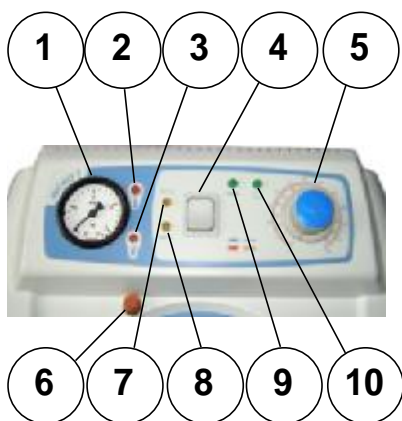
Possible solution:

1. Do the same as in cause 1 and be sure, when initiating the sterilization process, to set the valve (12) to the «Closed» position after purging. See chapter 8.3.

Open lid indicator (3)

Possible cause:

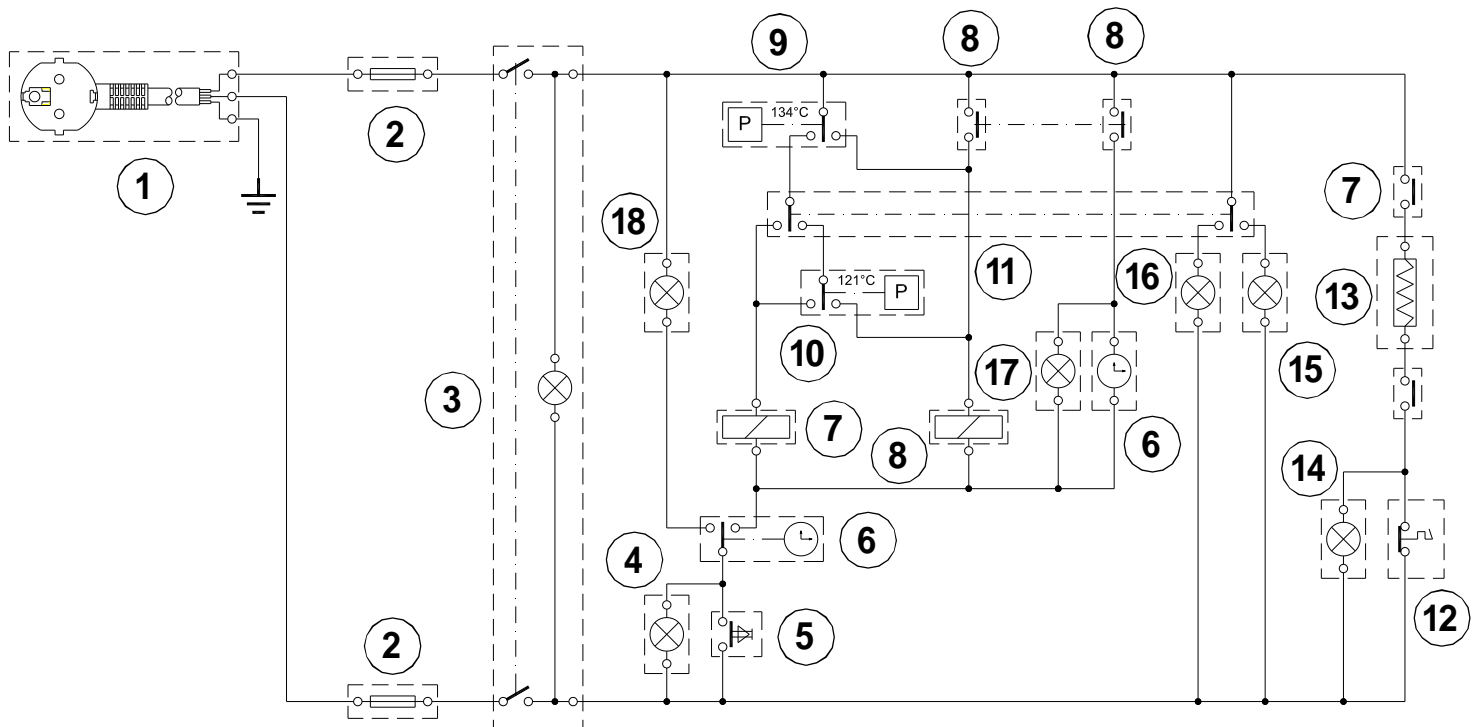
- The indicator is on while the lid is open and must be off when closing it. If it does not switch off or on when operating, carefully depressurize the autoclave and contact an authorized technical service of JP Selecta, SA.



10 Spare Parts

07001	Network connection cable
13007	Restart and heater contactors
15480	Fuse carrier
15595	Fuse
16078	Pressure gauge
16212	Pressure switch 2 bar (134°C)
16220	Pressure switch 1 bar (121°C)
20061	Temperature selector
20096	Main switch
22003	Amber indicator light
22004	Red indicator light
22063	Green indicator light
34057	Three channels valve
34202	Safety valve
37025	Timer

11 Electrical diagram



Pos.	Description	Part no.
1	Network connection cable	7001
2	Fuse	15551
3	Main switch	20096
4	Red indicator light (open lid)	22004
5	Lid microswitch	20098
6	Timer	37025
7	Heater contactor	13007
8	Feedback contactor	13007
9	Pressure switch 134°C (2 bar)	16212
10	Pressure switch 121°C (1 bar)	16220
11	Temperature selector	20061
12	Safety thermostat	43031
13	Heater element	39295
14	Overtemperature red indicator light	22004
15	Amber indicator light (121°C)	22003
16	Amber indicator light (134°C)	22003
17	Green indicator light (sterilization)	22063
18	Green indicator light (end of cycle)	22063

PROGRAMA DE FABRICACIÓN / *MANUFACTURING PROGRAMME*

- Agitadores magnéticos. / *Magnetic stirrers.*
- Agitadores orbitales, rotativos y vibradores. / *Orbital, rotary and vibratory stirrers.*
- Aparatos para anatomía e histología. / *Clinical and biotechnological instruments.*
- Aparatos a baja temperatura. / *Low temperature apparatus.*
- Aparatos de regulación y control. / *Regulation and control.*
- Arcones conservadores. / *Chest freezers.*
- Armarios conservadores para bancos de sangre. / *Blood bank storage cabinet.*
- Armarios para ensayos de germinación de plantas. / *Plant germination incubator.*
- Autoclaves para esterilización. / *Autoclaves.*
- Baños de limpieza por ultrasonidos. / *Ultrasonic cleaners.*
- Baños termostáticos. / *Thermostatic baths*
- Baterías de kjeldahl y baterías de soxhlet. / *Kjeldahl battery and Soxhlet battery.*
- Centrífugas de sobremesa y refrigeradas. / *Centrifuges.*
- Estufas bacteriológicas y de cultivos. / *Bacteriological and culture ovens.*
- Estufas desecación al vacío. / *Vacuum ovens*
- Estufas para desecación y esterilización. / *Drying and sterilization ovens.*
- Estufas para desecación y esterilización por aire forzado. / *Drying and sterilizing ovens by fan convection.*
- Extractor para determinación de celulosa y fibra. / *Extractor for Determination of Cellulose and Fibre.*
- Extractor para determinación de grasas. / *Extractor for the Determination of Fats in Food and Oils.*
- Hornos de mufla hasta 1.150°C. / *Muffle furnaces up to 1,150°C.*
- Instrumental en acero inoxidable, níquel y zirconio. / *Instrumental in stainless steel, nickel and zirconium..*
- Mantas calefactoras. / *Heating mantles.*
- Placas calefactoras. / *Hotplates.*
- Termostatos de inmersión. / *Immersion thermostats.*
- Termostatos de bloque metálico para tubos y digestores kjeldahl. / *Metallic block thermostats.*
- Ultratermostatos de circulación. / *Circulation ultrathermostat.*
- Unidad de destilación para proteínas. / *Distiller for proteins.*
- Viscosímetros. / *Viscometers.*