

FYTOSCOPE

Walk-in growth chamber

Instructions Manual

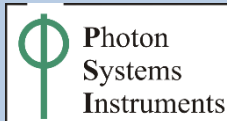
Please read this manual before operating this product



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The contents of this manual have been verified to correspond to the specifications of the device. However, deviations cannot be ruled out. Therefore, a complete correspondence between the manual and the real device cannot be guaranteed. The information in this manual is regularly checked, and corrections may be made in subsequent versions.

The visualizations shown in this manual are only illustrative.

PSI is never liable for damage caused to things inside the growth chamber. This manual is an integral part of the purchase and delivery of equipment and its accessories and both Parties must abide by it.

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1 SAFETY INSTRUCTION

1.1 GENERAL INFORMATION

Before using the growth chamber, read this manual carefully and follow the instructions. If you are not sure about anything in the manual, contact the manufacturer for clarification.



By taking device, the customer agrees to follow the instructions in this guide.

It is forbidden to relocate the growth chamber and its accessories. Handling may only be performed by PSI service personnel.

The control box of growth chamber and selected accessories contains electrical components whose connections must always be carried out in accordance with the requirements e.g. Standards EN60204-1, EN60204-31, or according to the standards of the countries of the target application. Protection against dangerous contact voltage must comply with applicable standards and regulations of the target country.

It is necessary to carry out regular maintenance according to the information contained in this manual.



Chamber must be weaned if any of the following conditions occurs:

- Fault or damage of any element or accessory
- Leak of operating fluids
- Other circumstances mentioned in this manual

If any irregular behavior is observed, it is necessary to report this to the PSI support immediately.



Prohibited activities:

- Smoking and handling with open fire in the growth chamber and its surroundings
- Storing flammable and explosive materials in the growth chamber and its surroundings
- Operating the growth chamber with any damage in the structure or mechanism, or without safety equipment
- Carrying out maintenance, cleaning and repair during the growth chamber operation
- Phasing out the security, protection and safety devices
- A further in this manual mentioned circumstances

1.2 SAFETY OF WORK

- Operation and maintenance may be carried out only by the persons who are bodily and mentally capable, older than 18, who have been provably trained in operation and function of the growth chamber and made acquainted with safety regulations and instructions.
- Perform adjustment, maintenance and cleaning of the growth chamber only with the main switch turned off and main power supply disconnected.
- Only the persons with the corresponding electro-technical qualification and authorization of the PSI may carry out adjustments on the electric equipment. The operators who do not comply with such requirements may not perform these activities under any circumstances
- The growth chamber may be used only for the purposes it is technically adapted to in accordance with the conditions specified by the manufacturer and in such technical condition, which corresponds to the regulations for ensuring safety and hygiene of work.
- The operator must pay attention to keep the growth chamber clean and tidy and, above all, to perform the prescribed inspections and cleaning of all functional elements (according to the manufacturer's instructions).
- If the operator finds out a defect or damage, which could result in risks for safety of work or operation of the growth chamber, which she/he is not able to rectify by her/his own forces, she/he may not put the growth chamber in operation.
- Safety marks, symbols and signs on the growth chamber must be maintained in legible condition. In case of damaging them or their illegibility, the user is obliged to restore their condition in accordance with the former appearance.
- Guards and other elements can be removed and dismantled away only after complete stop of the growth chamber and locking of the turned off condition and it can be done only by trained and authorized persons.
- The guards marked with relevant symbol protect the spaces containing electric equipment. Before removing the guards marked in this way, the electric equipment of the growth chamber must be disconnected from the mains and the turned off condition must be secured! This activity can be performed by qualified, trained and authorized personnel only.
- When cleaning the growth chamber, it is necessary to wear personal protective means (gloves, working clothing, safety glasses etc.).

1.3 FIRE PROTECTION

- The growth chamber is not provided with fire extinguishers. The user is obliged to provide the premises in which the growth chamber is installed with suitable fire-fighting means of an approved type in a corresponding quantity positioned on a visible place and protected against damage and misuse. The location of the fire extinguishers must be known all people and workers in the given locality.
- Fire extinguishers are subjected to regular inspections and the operator must be made acquainted with their use in a provable way as it is ordered by the corresponding law and notice of the countries of application.
- In connection with the notification above and in accordance with provisions of the mentioned law, the user is obliged to act so as to prevent in fire. It means that flammable liquids or other hazardous substances and gases may not be stored in the proximity of the growth chamber and naked flame may not be used here, smoking is forbidden during operation of the conveyor and it is necessary to observe the working procedure as recommended by the manufacturer.
- Because the manufacturer does not provide the chamber with extinguishing means, the user is obliged to protect the workplace in accordance with the appropriate notice, i.e. to install a sufficient capacity hand fire extinguisher in a suitable place. The only permitted type of fire extinguisher is CO₂ (ie. snow).
- Electrical equipment of the growth chamber must not be extinguished with water! Inside the growth chamber, the only permitted extinguisher type is CO₂ (i.e. snow), and the operator must be aware of its use. If it is in dire need, other than snow extinguisher (e.g. water or foam) can be used only after turning off the main power supply! There is a danger of electric shock!
- After using different extinguishing agent than CO₂ (i.e. snow), customer loses the warranty on the device and its accessories.
- All places that are heated during operation of the growth chamber (electric motors, evaporators, etc.) must be cleaned regularly in order to remove settled flammable dust and other soil so that layer thickness never exceeds 1 mm.

1.4 WORKING CONDITIONS AND WORKING ENVIRONMENT

Growth chamber can operate in the environment (according CSN 33 2000-5-51, IEC 364-3, HD 384, 3 S1):

- AB 5 atmospheric conditions (+1 - +35 °C, max. 80% rel. moisture)
- AP2 low threats of seismic effects



Attention, if there is a seismic activity in the growth chamber location, the entire device must be shut down without delay and a complete revision needs to be made by the PSI personnel.

- AR1 slow movement of air
- BA1 common use
- BC1 no contact persons with earth potential
- BD1 low density / easy escape in case of danger
- BE1 the nature of the materials processed or stored without significant danger
- B2N2 fire hazard of combustibile dusts

1.5 ELECTRICAL EQUIPMENT

- Electric installation must be designed in accordance with the requirements of effective regulations and standards, which apply to the given conveyor, above all EN 33 2000-4-41, EN 60204-1 (IEC 364-4-41, HD 384.4.41) and related regulations in the current wording as required by the countries.
- Protection against electric shock must be applied in accordance with the requirements of ČSN 33 2000-4-41 (IEC 364-4-41, HD 384.4.41) and related regulations in the current wording as required by the countries.
- Only the persons with corresponding electro-technical qualification may perform adjustments on the electrical equipment, in accordance with the appropriate notice and knowing the equipment in the necessary extent and according to the other requirements specified in this manual.
- Before putting the equipment into operation, it is necessary to perform initial inspection. The user of the growth chamber is obliged to ensure execution of regular inspections of the electric equipment in specified intervals.
- The first connection of the electrical equipment to power supply may be performed only by a technician with corresponding electro technical qualification who must test correct functions of the electric equipment including function of current protections and safety growth chamber turning off after connecting. Every time it is PSI employee.

1.6 ACCESSORY AND SUB-ELEMENT INSTRUCTIONS

1.6.1 GROWTH CHAMBER DOOR

- Door to growth chamber provides access to otherwise closed growth chamber space.
- The door contains a number of elements. There is a special rubber seal around the door; also chamber contains special door hinges, locking mechanism, sensor of door opening and others. Damage to the elements mentioned endangers the functioning and security of the growth chamber. For this reason, make sure that the door, their closing mechanism, rubber seal, and other parts are not damaged in any way. Especially be careful about any foreign objects pinched in the door.
- If there is any damage to the aforementioned components, turn off the chamber immediately and contact PSI support.
- Handling the door threatens to pinch your fingers or other body parts between door and walls, or between door and floor. Always be careful in the area of door. Opening or closing the door is possible only using the door handle. It is strictly forbidden to stay in the area of door longer than necessary and to keep any tools, equipment or other things that could complicate access to the chamber in the area of doors.

1.6.2 HUMIDIFIER

- The humidifier is used to emit humid fog in a growth chamber space. It is usually mounted on the wall of the growth chamber.
- It is forbidden to cover the humidifier or place anything on top of the humidifier, or to stand or sit on the humidifier.
- Humidifier must always be kept clean. It is important to prevent small object falling into it. It is prohibited pouring or blowing or otherwise inserting anything into the humidifier.
- It is not recommend to be close to the humidifier and to keep devices and products sensitive to increased humidity there. Furthermore, it is not recommend keeping the face and sensitive parts of the body in the immediate vicinity of the humidifier for longer period of time.
- For operation of the humidifier, use only water approved by the manufacturer of the humidifier.
- Violating these instructions can damage, crash or tear the humidifier of the wall, and/or cause injury to operator or other persons.
- If there is any damage on the humidifier, turn off the chamber immediately and contact PSI support.

1.6.3 ELECTRICAL PANEL

- The electrical panel can only be opened or otherwise manipulated by persons, which have appropriate qualifications and legislative requirements and are authorized and trained by PSI.
- Further instructions are included in this manual (see eg.0, 0, 0)

1.6.4 SHELVES

- Shelving system with cultivation lighting must not be used for any purpose other than to cultivate the plants.
- Shelving system may be vertically configured (if it is a system with adjustable height) only by persons trained and authorized by PSI.
- Shelves must not be treated rudely and it must be ensure that they are in perfect condition.
- If the shelf is damaged or otherwise impaired (including power supply cable), disconnect it from the power supply immediately and contact PSI support.
- Any shelf repairs are only allowed to be carried out by only by persons trained and authorized by PSI.
- It is important to respect the maximum load capacity of shelf (see parameters of the device and its accessories) and to balance the load equally.
- When loading the shelves, never lean on, stand or sit on it. If using a ladder, use only dedicated and secure self-standing ladder. Never lean the ladder against the shelves or walls or any other parts of the growth chamber. When working on the ladder, it is recommended to have one extra employee to secure it against moving or slipping.
- It is forbidden to wash shelves with high pressure water jet. Shelves can be adequately cleaned with a damp textile. Before cleaning shelves, disconnected them from the power supply. It is not allowed to use aggressive cleaning agents, including acids and bases of any concentration. It may damage the protective lacquer. Use only standard cleaning agents that lower the surface tension (e.g. detergents) in diluted form. For sterilization, use only dedicated technical alcohol. Do not sterilize with UV, as it can damage the shelves protective lacquer.

1.6.5 MAINTENANCE OF THE GROWTH CHAMBER



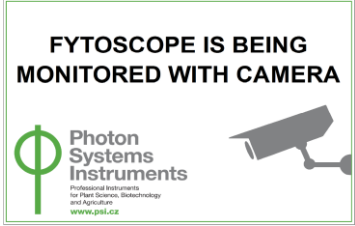
- When doing the regular maintenance of the growth chamber, always follow the safety and other regulations and use protective devices and tools. It is strongly recommended to inform responsible third parties, which will periodically check on the workers during the maintenance.






- Usage of aggressive detergents is not allowed. It may damage the protective lacquer or may cause damage to the ventilation filters and other equipment (e.g. influence of vapors of acids and bases and other aggressive media).
- Use only standard cleaning agents that lower the surface tension (e.g. detergents) in diluted form. For sterilization, use only dedicated technical alcohol. Do not sterilize with UV, as it can damage the shelves protective lacquer. Growth chamber is constructed from PUR panels, coated with thin sheet of powder painted metal. Any mechanical surface damage must be repaired with retouch varnish, otherwise there is a danger of corrosion.
- It is not recommended to minimize work time inside the growth chamber. Any set of growth conditions might affect sensitive individuals.

1.7 USED SAFETY SIGNS AND WARNING SYMBOLS

The following table shows used safety signs and warning symbols (Tab. 1).

Tab. 1 Used safety signs and warning symbols

Label	Descriptions
	<p>The magnetic field could be very strong, be careful while manipulating magnetic and metallic objects</p> <p>Operation of pacemakers could be interfered</p>
	<p>Growth chamber contains electrical equipment</p>
	<p>The facility is monitored with CCTV</p>

	<p>The device includes parts which emit LED radiation and operators must use appropriate safety equipment, especially for eye protection</p>
	<p>The device includes parts which emit UVA radiation and operators must use appropriate safety equipment, mainly for skin and eye protection</p>
Symbol	Descriptions
	<p>This symbol alerts the user to the complementary and additional information</p>
	<p>General risk of injury. It is necessary to follow safety precautions to avoid risk of injury or damage to the operator, third parties or surroundings of the device.</p>
	<p>Danger of electric shock</p>

1.8 BEFORE STARTING

Before the first start, check that:

- The device is complete and all appliances have been connected correctly
- Auxiliary components perform their function (e.g. thermometer and other elements)

1.9 FIRST START

- Visually check that all inlets and outlets are connected and whether the equipment is complete and has covered and closed all service access points.
- Test the function of the device at the minimum load
- Test the electrical control system
- During the test, monitor the control and measurement equipment

1.10 WARRANTY

- Warranty conditions for the growth chamber and its accessories are part of the purchase agreement and can vary depending on the user's requirements.
- The supplier provides the original customer with at least 12 months of warranty to the following: construction, quality of the manufacturing, material and function of the growth chambers. The warranty starts on the date of delivery of the growth chamber to the customer regardless of the date of putting the growth chamber into operation. Terms and conditions of this paragraph can be changed or further specified in the purchase contract.
- Warranty is applied at the PSI support hotline or via email. PSI representative will then assess the legitimacy of the claim in accordance with applicable regulations and inform customer about further progression. Condition for the acceptance of the warranty is that the growth chamber and its accessories have been used only for the purpose for which it was made.
- Customer is obliged to carry out periodical technical maintenance of equipment. The warranty does not apply to the wear and tear damage, damage caused by lack of care, omission or neglect of apparently minor defects, overloading of the device even if not permanent, faulty storage and other damage caused by the user or other persons during transport, traffic or by natural factors. The warranty also expires if any changes in the growth chamber or its parts, or any repairs have been carried out within the warranty period outside of manufacturer workshop or without his direct approval or if the defect was caused by improper or violent intervention. The warranty period is always extended by the time the product is in the warranty repair.

2 DESCRIPTION OF THE DEVICE

2.1 CONTROL AND ELECTRICAL BOX

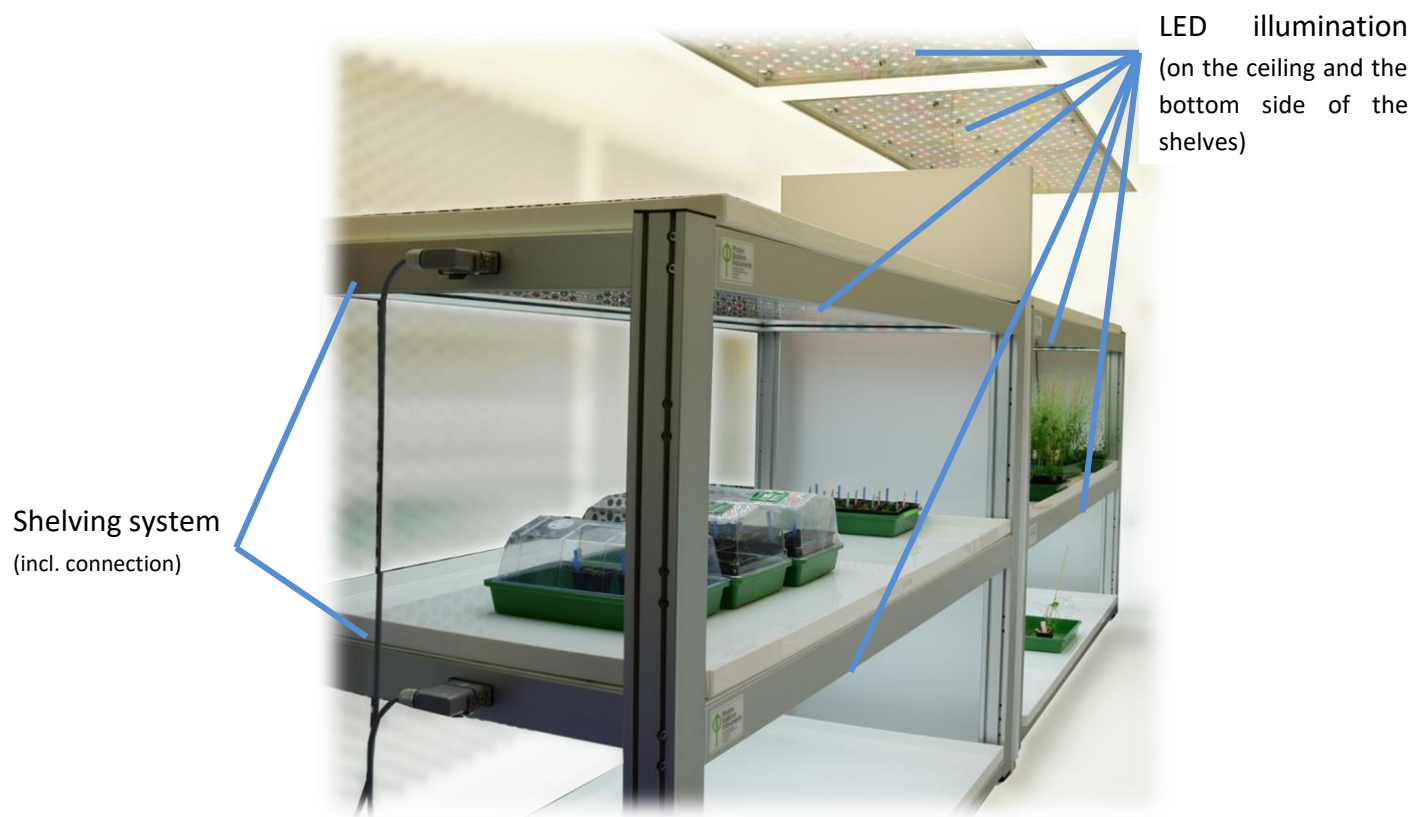
Control and electrical box is located outside of the growth chamber and allows control of the growth chamber. Part of the casing is a touch-control display and control and safety buttons.



Pict. 1 Control and electrical box

2.2 SHELVES AND LED TECHNOLOGY

Shelves are most frequently located on the sides of the growth chamber inner area and are sufficiently accessible. LED illumination is part of the shelves.



Pict. 2 Shelves and LED technology (on the shelves are already samples)

2.3 HUMIDIFIER

Humidifier is usually placed on the side opposite to the growth chamber door, but its location may be adjusted based on the customer preference and needs.



Pict. 3 Humidifier



Ceramic membranes are used in the humidifier to create the water mist and increase humidity. Their service life is about 10,000 hours (on average about 2 years). After this time, the performance of the humidifier will gradually decrease.

The humidifier contains 3 of these membranes. Their replacement is not covered by the warranty and is therefore fully financed by the customer.

2.4 VENTILATION

Ventilation provides adequate air circulation and is a part of the temperature control system.

Ventilation



Pict. 4 Ventilation

2.5 CAMERA SYSTEM

The camera is usually placed above the entrance door, but its location may be adjusted based on the customer preference and needs.



Pict. 5 Camera

3 DISPOSAL OF THE PRODUCT AND COMPONENTS

The growth chamber should be professionally disassembled to the components and recycled after the end of its life-cycle.

3.1 ECOLOGICAL HANDLING WITH OILS AND EMULSIONS

All prescriptions concerning work with oils and emulsions must be kept when working with these materials.

3.2 POSSIBLE ECOLOGICAL THREATS

Possible ecological threats are: oils, lubricants, used cleaning means (oil cleansers, any used cleansers), used cleaning material (cleaning rags) etc.

3.3 DISPOSAL OF ECOLOGICAL WASTES

All ecological waste must be disposed accordingly to the valid prescriptions and directives.

3.4 DISPOSAL OF INDUSTRIAL EQUIPMENT

For dismantling, all equipment must be put out of operation and all energetic sources must be fully disconnected. All oil and cooling fillings must be discharged and the equipment must be properly cleaned. The dismantling itself must be performed by an experienced and trained worker. For the dismantling current tools are sufficient.

All wastes must be fully sorted to separate categories:

- oil wastes, cleaning means and material
- metallic scrap
- electric scrap
- and others (plastics, rubber, etc.)

All used cleaning means and materials must be liquidated accordingly to the local prescriptions and in compliance with the valid laws about wastes.

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