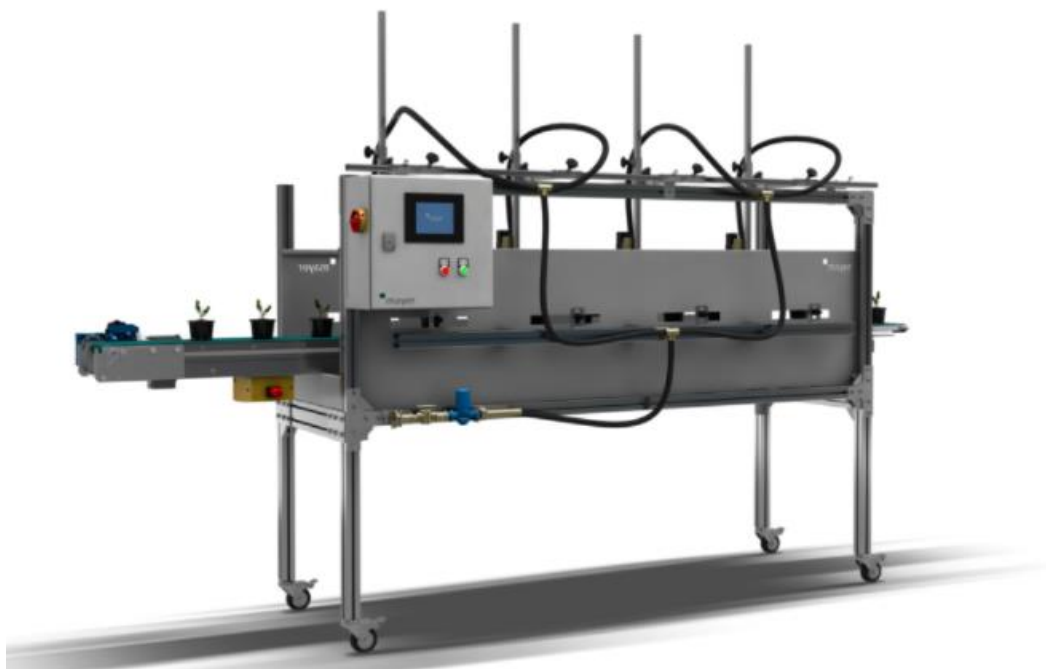


Irrigation tunnel WT 8000



Operating instructions

Issue date: 19th April 2021 / V1.0

Before the initial start-up, read and keep at the machine for future use.

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1 Product description

1 Intended use

MAYER Irrigation tunnel WT 8000 allows watering of both round and square pots with pinpoint accuracy.

Other means of use of the machine, besides the ones listed here, are not permitted – and they are considered improper use.

If the MAYER Irrigation tunnel WT 8000 is not used in accordance with the regulations, safe operation of the machine is not guaranteed.

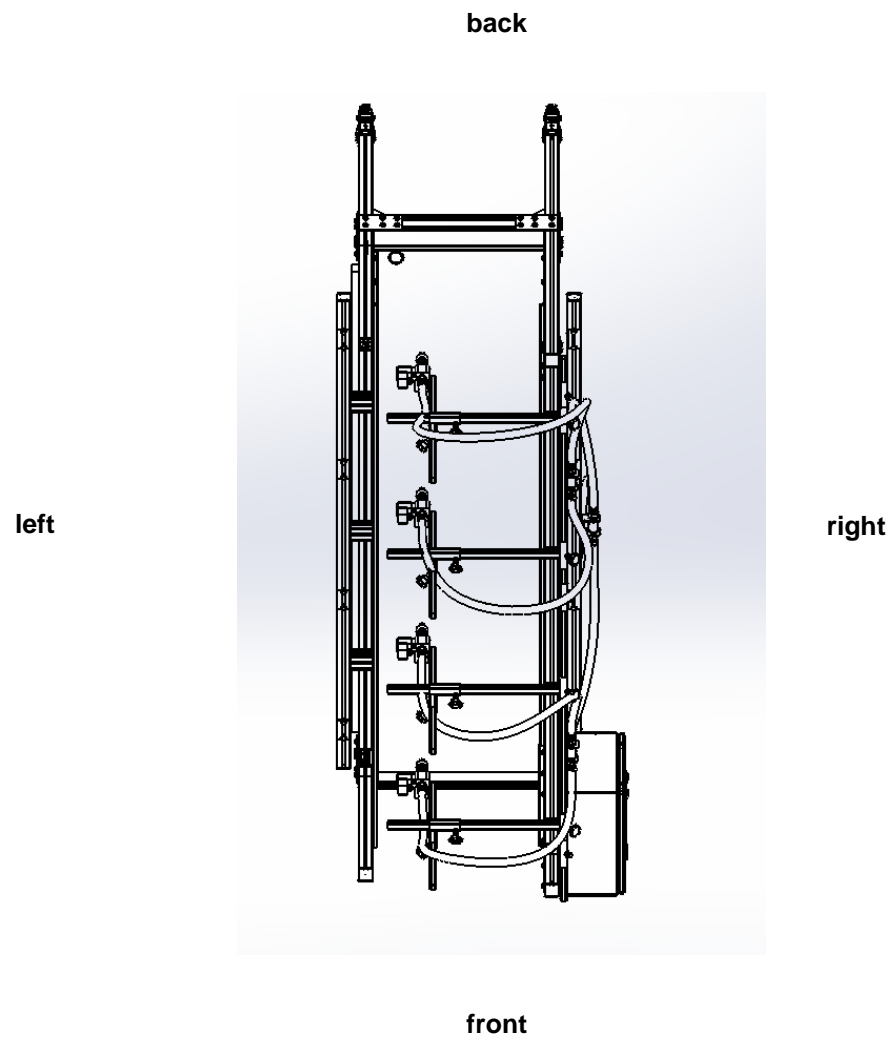
Usage for intended purpose involves reading the operating instructions and compliance with the regulations, especially safety regulations stated in them. Furthermore, every inspection and maintenance should be performed in specified time.

The manufacturer accepts no liability for damages resulting from improper use. The operator of the MAYER Irrigation tunnel WT 8000 is solely responsible for personal injuries or property damages.

2 Structure

Plan view

- Pots run through on a conveyor belt from front to back



3 Functional description

Filled pots are transported to the irrigation tunnel WT 8000 on a conveyor belt.

The irrigation tunnel allows irrigating filled pots by means of water nozzles. The unit is equipped with photo sensors which recognise the incoming pots and start watering only when the pot is under the nozzle. The duration of the irrigation is adjustable.

4 Technical data

Make	Mayer
Machine type	Irrigation tunnel
Series	WT 8000
Length / width / height	200 / 92 / 190 cm
Working height	ca. 88 cm
Weight	130 kg
Power connection	230V/50Hz
Pot size	Round pots from 9 up to 40 cm diameter Square pots 9-40 cm edge length
Noise level	75dB (A)

Please note!

When placing orders for accessories and spare parts, make sure to have information about the machine type and number at your hand!

5 EC - Declaration of Conformity

In accordance with Annex II / A of the EC Machinery Directive (2006/42/EC)

The manufacturer:

Mayer Ipari és Kereskedelmi BT.
Georg Mayer út 1. 9341 Kisfalud / Hungary

Mayer GmbH & Co. KG
Maschinenbau und Verwaltung
Poststr. 30 89522 Heidenheim / Germany

hereby attests that the machine described in the following:

Manufacturer: Mayer
Type: Irrigation tunnel
Series: WT 8000
Year of construction: from 2021

fully meets the health and safety regulations specified in the following EC Machinery Directive(s):

2006/42/EC

Applicable harmonized standards:

EN ISO 12100:2011	Safety of machinery. General principles for design. Risk assessment and risk reduction (ISO 12100:2010)
EN 60204-1:2010	Safety of machinery. Electrical equipment of machines. Part 1: General requirements (IEC 60204-1:2005, modified)
EN ISO 13849-1:2016	Safety of machinery. Safety-related parts of control systems. Part 1: General principles for design (ISO 13849-1:2015)
EN ISO 13850:2008	Safety of machinery. Emergency stop. Principles for design (ISO 13850:2006)
EN ISO 13857:2008	Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)
EN ISO 14119:2014	Safety of machinery. Interlocking devices associated with guards. Principles for design and selection (ISO 14119:2013)
EN 349:1993+A1:2008	Safety of machinery. Minimum gaps to avoid crushing of parts of the human body
EN ISO 14120:2016	Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)
EN 1037:1995+A1:2008	Safety of machinery. Prevention of unexpected start-up
EN 1005-2:2003+A1:2009	Safety of machinery. Human physical performance. Part 2: Manual handling of machinery and component parts of machinery
EN ISO 13855:2010	Safety of machinery. Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855:2010)

EN 618:2002+A1:2011	Continuous handling equipment and systems. Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors
EN 619:2002+A1:2011	Continuous handling equipment and systems. Safety and EMC requirements for equipment for mechanical handling of unit loads
EN ISO 14738:2009	Safety of machinery. Anthropometric requirements for the design of workstations at machinery (ISO 14738:2002 + Cor. 1:2003 + Cor. 2:2005)
EN 1005-5:2007	Safety of machinery. Human physical performance. Part 5: Risk assessment for repetitive handling at high frequency

Any constructional changes that affect the technical parameters and intended purpose set forth in this Instruction Manual are bound to result in considerable changes in the machine and will, therefore, render this EC Declaration of Conformity void.

Heidenheim, 19th April 2021



Managing Director

2 General safety instructions

1 Due diligence of the operating company

The MAYER Irrigation tunnel WT 8000 was designed and built taking a danger analysis into consideration and after careful selection of the harmonised standards to be complied with as well as other specifications. It therefore meets the state-of-the art of technics and guarantees a maximum degree of safety.

However, this safety can only be achieved in actual operational practice only if all necessary measures are taken. Planning these measures and checking their implementation is subject to the operating organisation's duty to take due care.

The operating organisation must guarantee in particular that

- the machine is only used in accordance with its intended use (cf. section Product description).
- the machine is only operated when in flawless working order and, especially that the working order of the safety equipment is regularly checked.
- the Operating Instructions are always available in legible condition and complete at the location where the machine is used.
- only sufficiently qualified and authorised personnel operate, service and repair the machine.
- these personnel are regularly instructed about all relevant matters concerning industrial safety and environmental protection and that they know the



Operating Instructions and especially the safety instructions they contain.

- none of the safety and warning signs attached to the irrigation tunnel are removed and that all remain legible.
- users must obligate themselves only to ever operate the machine when it is in flawless condition.
- no unauthorised conversions or alterations are allowed that influence the machine's safety.
- only when the machine has stopped, must any work ever be carried out on it.
- before beginning with any work on the machine, secure its drives and accessory parts against being switched on unintentionally.

- local safety and accident-prevention regulations always apply to any operation of the machine.
- the machine must not be started if any safety devices are removed.
- in the working area the operator is responsible for other people.
- **in case of non-compliance with any one of the points cited above, the manufacturer shall be released from all liability.**

2 Explanation of safety symbols

Safety symbols along with the text of safety instructions are meant to point out unavoidable residual dangers that exist when dealing with this machine. These residual hazards relate to:

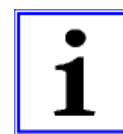
- People
- The machine
- Other things and objects
- The environment

Following safety symbols are used in these Operating Instructions:

This symbol indicates that there are dangers to the machine, things and the environment, but that no dangers to people are to be expected.
If these instructions are not followed, it might result in malfunctions and damage to the machine. Property damage and environmental damage might also come about.



This symbol identifies instructions contributing to better understanding of the machine information that helps you to use the machine in optimum performance. This symbol does not identify safety instructions.



This symbol warns against the danger of electric shock.



Be sure to also note that a safety symbol can never replace the text of safety instructions – please read the text of safety instructions therefore always completely!

3 Basic safety precautions

Always be sure that:

- tight-fitting working clothes are worn at all workplaces.
- do not wear chains, rings, bracelets or wristbands.

4 Machine-related safety precautions

Responsibilities for the various activities must be clearly defined and complied with. Unclear competencies represent a safety risk.

Persons who operate the irrigation tunnel must have been given a special training in which they were made aware of the possible danger.

In case of malfunctions during the workflow, it is forbidden to touch the running machine in order to resolve the malfunction. Access to the emergency cut-off switch must always be guaranteed.

It is forbidden to climb onto or sit on the running machine.

The machine must be set up on even and solid surface so that it stands securely in place.

The floor (workplaces at the machine and traffic routes) must be regularly cleaned from dirt and water in order to avoid danger of slipping.

Stumbling blocks in the form of cables connected to the energy supply systems must be avoided.

All feed lines to the machine must be protected against damage.

Only a skilled electrician is allowed to carry out works on the electrical equipment.

Protection devices are fitted for the safety of operating personnel and must in no case be changed, removed or evaded by modifications to the machine.

5 Demands on operating personnel

The irrigation tunnel may only be operated by personnel who have been trained for such, shown what is involved and are authorised to do so. These individuals have to know and act in accordance with the Operating Instructions. The respective authorisations for the operation personnel must be clearly prescribed.

In addition, special qualifications are required for the following activities:

Operation personnel being trained may at first only work with the machine under the supervision of an experienced individual. It should be confirmed in writing that the training has been successfully completed.

Only trained personnel may ever operate any of the control and safety equipment.

All individuals that carry out any activities with the machine have to read the Operating Instructions and confirm by their signature that they have understood the Operating Instructions.

3 Transport, handling and storage

To prevent damage to the irrigation tunnel as well as injuries while transporting the machine, it is absolutely necessary to comply with the following points:

- Transport work may only be carried out by individuals qualified to do so, complying with the safety instructions.
- The machine may only be lifted by the supporting points provided for such.
- Only the load-lifting devices and tackles specified here may be used to transport the machine.

- Be sure to also read the "General Safety Instructions" section.

When transporting the machine, the following special dangers must be expected:

- Suspended loads can drop, which would be lethal danger – never go under suspended loads!
- If load-lifting equipment other than that specified here is used, severe damage to the machine may result.

1 Transport

When the irrigation tunnel is transported, special care shall be taken to avoid damage of the machine during loading or unloading.

During transport fixings according to type and duration of transport shall be implemented.

Moisture condensation caused by temperature difference during transport as well as shocks during transport shall be avoided.

The machine shall be operated with usual care.

2 Handling

The irrigation tunnel can only be moved when it is switched off without any load.

The irrigation tunnel is equipped with 4 castor wheels, all of them are fixed – this makes the machine easy to move by one person on level ground by pushing the front part.

When the machine is moved, pay particular attention to the supply lines to the machine to prevent that the lines are damaged and/or ripped out of their couplings if the machine runs over them.

If the machine is to be moved over an inclined plane, it is necessary:

- to make sufficient safety precautions in order to prevent the machine from accidentally rolling away.

Such precautions may include:

- enough personnel
- to secure the wheels using a wedge
- and so on.

3 Storage

When the machine or its parts are not reassembled right after transport, then they shall be carefully stored in a protected place. It shall properly be covered and protected against dust and moisture.

Tasks for putting it out of operation are detailed in section 6.3.

4 Installation

1 General notes

a)

To protect the machine against weather caused damages it is suggested to use and store it inside.

b)

Electrical connection: 230V/50Hz

Connection is permitted only to socket-outlets protected by means of an all-current sensitive FI circuit breaker.

c)

Be sure that enough space is assured. Same care shall be taken in case machines are connected in front of or behind it.

d)

Water connection with Geka coupling working pressure 2-10 bar.
Caution! Water must not get into the area of the switch board under any circumstances.

2 Installing the machine

The irrigation tunnel should be set up on flat and solid surface to prevent the wheels and castors from sinking.



3 Measures for the machine's stability against overturning

For the stability of the machine the front castors must be braked, other necessary measures are listed in section 4.2.

4 Disassembly and disposal of the machine

After completion of its full time of operation, the machine must be duly separated from energy supply systems and disposed according to valid legal regulations.

5 Initial start-up

It is absolutely necessary to comply with the following safety instructions for the initial start-up of the machine. This will prevent injury to individuals, damage to machinery and other property damage.

- The initial start-up may only be carried out by qualified individuals, complying with the safety instructions.
- Before the first start-up, check whether all tools and parts not belonging to it have been removed from the machine.
- Before the first start-up, check the electrical connections.
- Activate all safety equipment and EMERGENCY SHUT-OFF switches before the initial start-up.
- Also read section "General Safety Instructions".

1 Check prior to first start

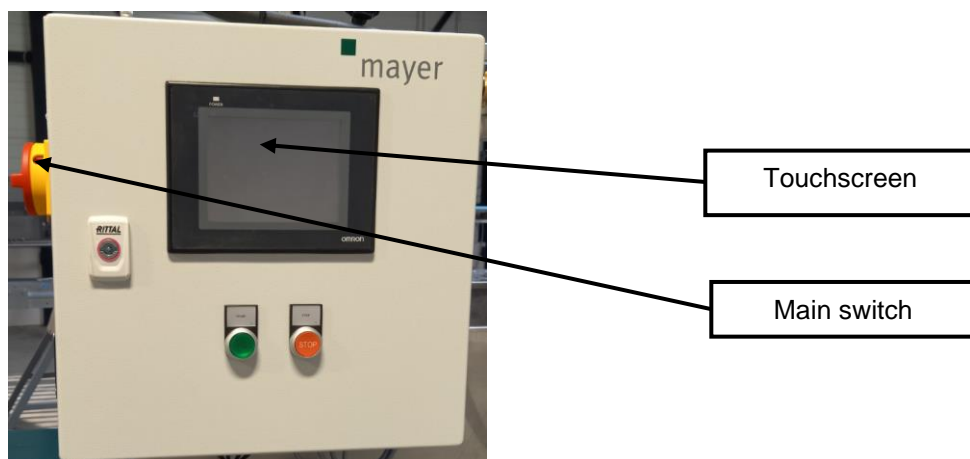
Prior to starting up the machine, the following must be checked:

- are all safety devices available?
- was the machine damaged during transport?
- all visible bolted joints must be checked for tight seat.
- prior to putting the machine into operation, the connecting cable of the machine must be checked for damages.
- all water-connections must be waterproof.

2 Starting the machine for the first time

After reassembly, the machine shall be checked as per the following:

- a) Be sure no foreign materials or tools are left in the irrigation tunnel.
- b) Put the main switch of the machine to OFF („Zero”) position before the plug of the connection cable is connected to the socket.
- c) When the machine is connected, put the switch to „1 ON” position.
- d) Connect water, check it for leaks.
- e) In case there were no problems found or unusual noises heard during test operation, the machine may be put into operation as it is described in section „Operation”.



3 Stopping the machine

There are two ways to switch off the machine.

- a) In normal case, switching “Stop” on the switch board stops the irrigation tunnel.
- b) In case of emergency by pressing “Emergency Stop”.

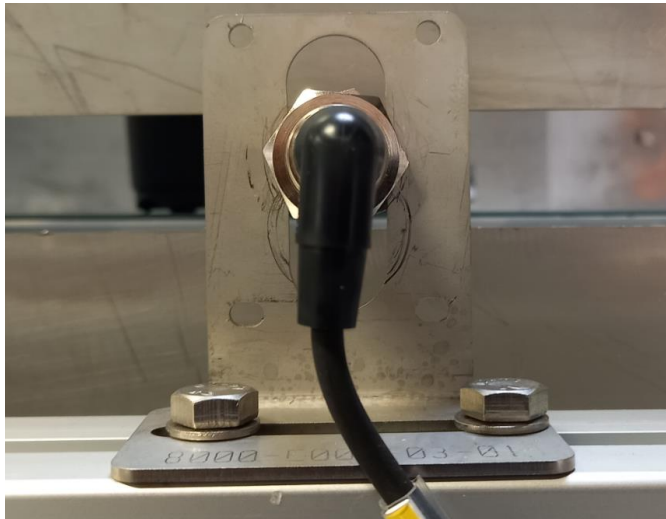
Note:

See also section "6.2 Shutting down the machine".

6 Operation

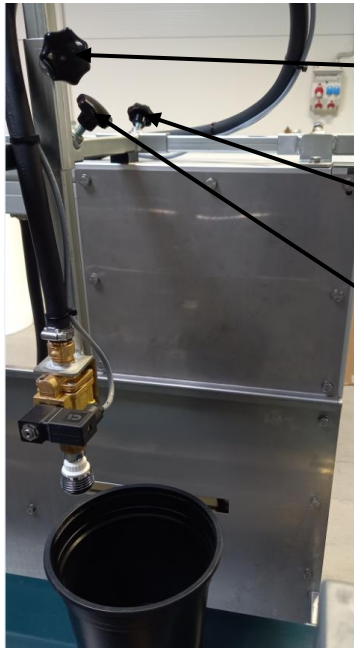
1 Settings

- Settings of photo sensor



The photo sensor should be set at proper height, so that it can detect incoming pots on the conveyor belt.

- **Positioning spray heads**
By fastening the appropriate joints.



Horizontal adjustment

Longitudinal adjustment

Cross adjustment

Touchscreen

Main menu:

Display of the four water valves is available.

By switching the ON/OFF button, the water valves can be switched on /off separately.

By pressing time, the keypad opens to set the time for activating each valve and time can be set.

The valve enables water flow from the valve for the set time.

The selected program is displayed under Program.

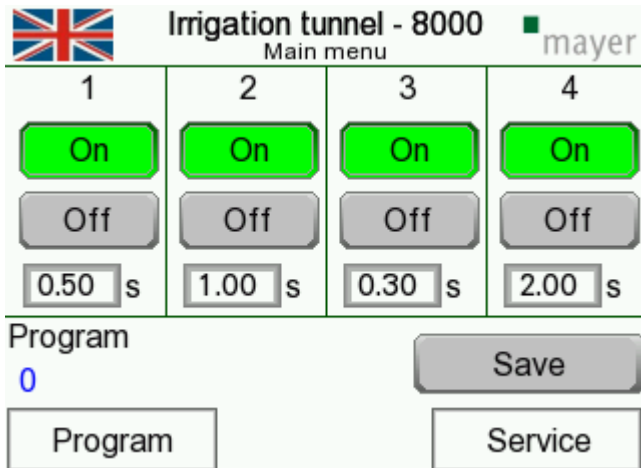
Example = Programm 1 Name = test

There are five programs available.

Pressing Save button will save the setting under the selected program.

The program button at the bottom left opens the selection area for the programs.

By activating the flag, different languages can be chosen.



The screenshot shows the 'Irrigation tunnel - 8000' Main menu. At the top left is a UK flag icon, and at the top right is the 'mayer' logo. The menu is divided into four columns for valves 1, 2, 3, and 4. Each column has an 'On' button (green) and an 'Off' button (grey). Below the buttons are time input fields: 0.50 s, 1.00 s, 0.30 s, and 2.00 s. At the bottom left, there is a 'Program' label with the number '0' below it, and a 'Program' button. To the right of the 'Program' button is a 'Save' button. At the bottom right is a 'Service' button.

1	2	3	4
On	On	On	On
Off	Off	Off	Off
0.50 s	1.00 s	0.30 s	2.00 s

Program
0

Save

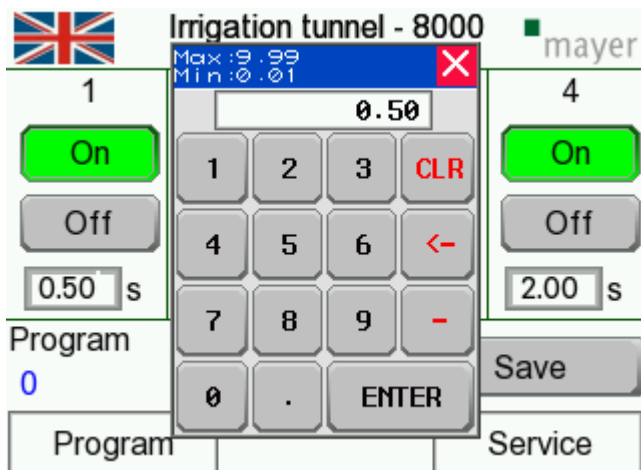
Program Service

Keypad:

Time for the different valves can be set here.

Time is adjustable from a minimum of 0.01 sec to a maximum of 9.99 sec.

Choosing Enter confirms this time.



The keypad interface for the 'Irrigation tunnel - 8000' system features a central numeric keypad and two side panels for valve control. The top status bar shows a UK flag, the title 'Irrigation tunnel - 8000', and the 'mayer' logo. A blue header bar displays 'Max: 9.99' and 'Min: 0.01' with a red 'X' icon.

Valve 1 (Left Panel):

- Indicator: 1
- Buttons: On (green), Off (grey)
- Time display: 0.50 s
- Program: 0
- Bottom label: Program

Valve 4 (Right Panel):

- Indicator: 4
- Buttons: On (green), Off (grey)
- Time display: 2.00 s
- Bottom label: Service

Central Keypad:

- Buttons: 1, 2, 3, CLR, 4, 5, 6, <-, 7, 8, 9, -, 0, ., ENTER
- Current display: 0.50

At the bottom, there are 'Save' and 'Service' buttons.

Service (page 1):

Display of the different valves.

ON / OFF selection of the different valve incl. time setting.

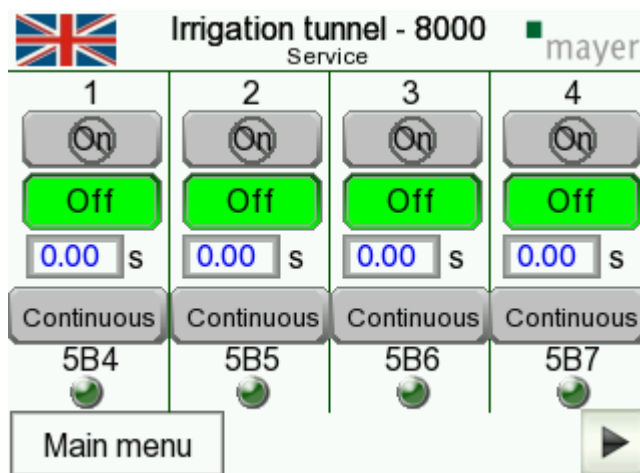
Using button "Continuous" operates the valve for the selected time.

Displays 5B4, 5B5, 5B6 and 5B7 show the status of the optical sensors: dark green for not occupied, light green for occupied.

This is used to check the function of the different valves.

Choosing Main menu brings you back to the main screen.

The arrow pointing to the right opens the second page of the service menu.

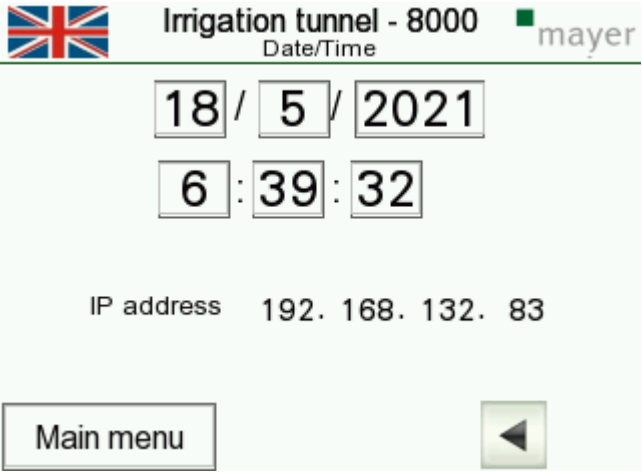


Service (page 2):

Display and setting of date and time.

The IP address of the HMI panel is also displayed.

The left arrow takes you back to the first page of the Service menu.



The screenshot displays the Service menu (page 2) of an HMI panel. At the top, there is a header bar with a UK flag icon on the left, the text "Irrigation tunnel - 8000" in the center, and the "mayer" logo on the right. Below the header, the date and time are displayed in a digital format: "18 / 5 / 2021" for the date and "6 : 39 : 32" for the time. Below the date and time, the IP address "192. 168. 132. 83" is shown. At the bottom left, there is a button labeled "Main menu". At the bottom right, there is a left-pointing arrow button.

Program:

Display and selection of the programs saved.

The other programs are displayed by using the arrow keys.

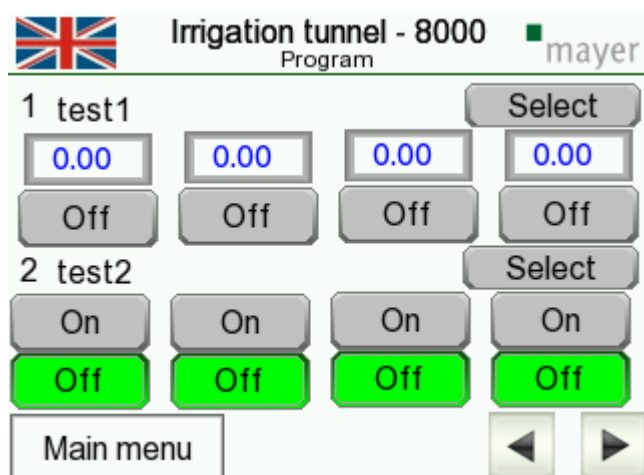
Look at the following two pictures:

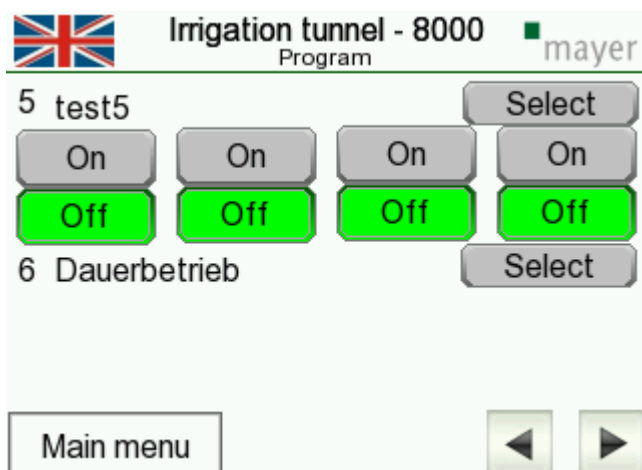
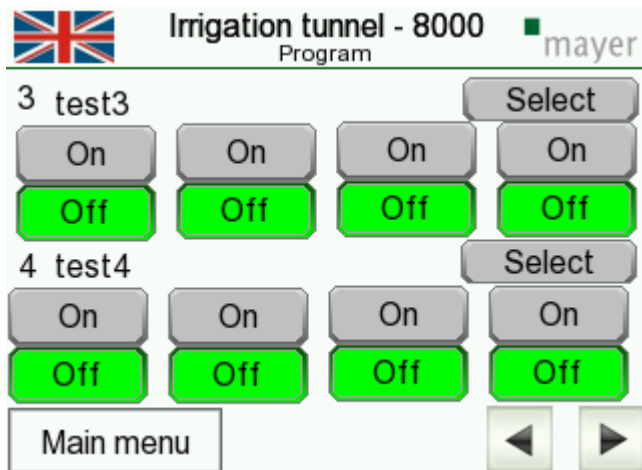
Programs 1-5 can be set and saved as in the Main menu.

By pressing the program name (example 'test') opens a keypad to change the name of the program.

Program 6 is a fixed program: all valves are switched on continuously until the stop button is pressed. This means, the valves let water out in a continuous mode.

The button Main menu takes you back to the Main screen.





2 Shutting down the machine

There are two ways to switch off the irrigation tunnel.

a)

In normal case by switching “Stop” on the “Start-Stop Switch” mounted on the swinging cable.

In this case the machine may be restarted by pressing switch “Start”.

b)

In case of emergency, the machine can be switched off by the **“Emergency Stop”** switch.

If “Emergency Stop” is pressed, the machine stops immediately and remains stopped. After “Emergency Stop” is eliminated, the machine can be started by pressing push button “Start”.

3 Measures prior to and after a longer shutdown

a) Before a long shutdown

- Clean the machine carefully.
- Remove water and soil from the machine.
- Grease and oil certain parts of the machine according to maintenance plan.
- Protect the machine against dirt and moisture (cover).
- Disconnect the machine from power lines.

b) After a long shutdown

- Visually check the machine.
- Connect the machine to required energy sources.
- Start the machine as described in section “Initial start-up”.

7 Malfunctions

To prevent damages to the machine as well as injuries while eliminating malfunctions at the machine, it is absolutely necessary to comply with the following points:

- Eliminate a malfunction only if you have the qualification specified to do so.
- Also read section "General Safety Instructions".
- When eliminating malfunctions at the machine, following special dangers have to be expected:
- Accidentally switching on the power sources can result in injuries to people as well as damage to the machine.
- In case of unprotected manual operation, there is an increased risk of injuries through bruising.

1 Behaviour in case of malfunctions

If any malfunctions occur while the machine is in operation, proceed as follows:

1. Stop the machine by either using the STOP button or EMERGENCY CUT-OFF, depending on the situation.
2. For personnel or machine security, unplug the machine from the energy supply immediately.
3. Troubleshooting > If necessary, then by qualified personnel.
4. Error correction > If necessary, then by qualified personnel.
5. Starting up the machine.

2 Possible malfunctions and trouble shooting

a) Mechanical malfunctions

Failure/Malfunction	Cause	Trouble shooting
No water is running	Tap is not open	Open tap
	Low water pressure	Adjust pressure regulator

b) Electrical malfunctions

Failure/Malfunction	Cause	Trouble shooting
No water is running	Photo sensor does not detect pots	Replace Adjust mirror

8 Maintenance

When carrying out maintenance for the machine, it is essential to comply with the following safety instructions. Doing so will prevent injuries to people, damage to the machine and other damage to property as well as the environment.

- **Cleaning, lubricating and maintenance work may only be carried out by authorised operating personnel. The Operating Instructions must be complied with exactly.**
- Only trained electricians may ever carry out any of the work on the machine's electrical equipment.
- Switch off all power supplies and secure power supplies against being accidentally switched back on.
- Release pressure of every unit that is under pressure.
- All interventions in the control programme of the machine may only be carried out by Mayer GmbH & Co. KG.
- All un-recycled operational materials, lubricants and supplies must be disposed of in an environmentally friendly manner.
- Also read section "General Safety Instructions".

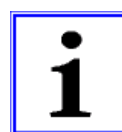
When carrying out maintenance on the machine, please note following special dangers:

- Installing incorrect spare parts or worn parts can cause severe damage to the machine.
- Accidentally switching on the power source can result in severe bodily injuries and damage to the machine.
- There is a danger of getting injured on sharp-edged machine parts/tools.
- Leaked lubricants or fertilisers can cause burns if they in direct contact with the skin.

1 General notes

We recommend an annual inspection of the entire machine by our customer service.

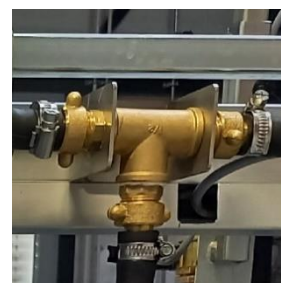
For service or repair work, order our customer service at one of our service workshops.



Spare parts have to meet the technical requirements of the machine's manufacturer. This is guaranteed with original spare parts from Mayer.

2 Inspection and preventative maintenance

Regularly check hose clips, gaskets, fixings, tap, filter, pressure regulator; water leaks and drops should be eliminated. Clean filter as well.





Filter

Pressure regulator



3 Maintenance schedules

Description	Time	
Check gaskets	monthly	
Check filter	monthly	

9 Part list

10 Circuit diagrams

11 Guarantee

Horticultural machinery and special machinery

We will accept liability for faults in the supplied goods and for any failure to provide features for the existence of which an express assurance had been given. In such a case we undertake – to the exclusion of all further claims – to improve or re-supply (at our discretion) free of charge any parts which have revealed themselves to be unserviceable or subject to a not inconsiderable impairment in serviceability due to faults in their material, manufacturing process or design within twelve months (or within six months for multi-shift operation) of their arrival on the customer's premises. For parts which we do not manufacture ourselves (e.g. motors), we can only accept liability for the same scope and length of time which the subcontractor has accorded to us.

Any replaced parts shall become our own property. No warranty claims can be accepted if the fault occurs as a result of the customer having mistreated or neglected the products delivered by us, made modifications or undertaken repairs incorrectly or without our prior approval, or had third parties undertake such work.

The customer's entitlement to assert claims due to faults shall in all cases lapse six months following a complaint made within the required time period, however no sooner than the end of the compulsory warranty period. We are not responsible for correcting faults unless the customer has fulfilled its obligations due to us up to the point when the fault became apparent.

Changes in the design and shape of horticultural machinery and equipment

We reserve the right to make changes in design and shape, in particular with regard to deviations from the drawings and descriptions etc. during the delivery period, provided that the purchased object is not thereby significantly altered, rendered less effective or reduced in value and the customer can reasonably be expected to accept the modifications.

You have chosen to purchase a product of true quality.

We wish you every success with your product.

We would be most grateful if you would recommend our products to others.

Thank you.

Your MAYER TEAM