

# Operating instructions

## TST 7.2

### Tray infeed device

Translation of the „Original operating instructions”



EN



**Read operating instructions before using the machine!**

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# 1 Introduction and general information

Dear customer,

We are very pleased about your confidence in our products.

Wishing you much pleasure when working with the products of Mssrs. MEIKO, we are sure that they make your work a great deal easier and are of great service to you.

If you follow these instructions exactly, your transport system will always work to your entire satisfaction and have a long service life.

The transport system was installed in our factory and completely checked. Thus making us sure and gives you the guarantee that you always get a perfected product.

**We would therefore ask you to read these operating instructions carefully before using the installation. Any further associated operating instructions for accessories and integrated third-party products must be strictly observed!**

These operating instructions inform users of this installation about the installation, its operating methods, its use, the safety instructions and the maintenance.

These instructions help you to get detailed knowledge about the installation and to use it correctly. Besides, you could spare repair works and the loss of working hours resulting thereof.

We can accept no responsibility for damages caused by the failure to observe these instructions. We decline any liability for following damages resulting thereof.

MEIKO operates a policy of continuous development on all its appliances.

Please understand that we reserve the right to change the type, equipment and technical execution of the delivery at any time.

Information, illustrations and descriptions contained in this booklet may be superceeded.

Should any further information be required or special problems arise which are not described in detail, please contact the responsible MEIKO-agency.

All obligations of MEIKO result out of the resp. sales contract, which also contains the complete and only valid warranty regulation.

The operating instructions must exist in the local language for each EU country. if this is not the case, the conveyor system must not be commissioned.

The original operating instructions in Germany, and all operating instructions in all languages for EU countries can be downloaded from the following address: <https://partnernet.meiko-global.com>

The complete technical documentation is issued to you free of charge. Additional copies will be charged at cost.

The contractual warranty regulations are neither extended nor limited through these instructions.

Mssrs. MEIKO wish you much pleasure and success!

### 1.1 Safe keeping

Keep the operating instructions in the vicinity of the installation in a location that is easily accessible to all users.

### 1.2 Authorisation for service partners' service technicians

MEIKO empowers solely its authorised service partners to perform commissioning, instructions, repairs, maintenance, assembly and installation of the corresponding product groups or MEIKO devices.

### 1.3 Designation of the warewashing machine

Please provide the following information on any query and/or when ordering spare parts:

Type: .....

SN: .....



.....

This information can be found on the type plate.

## 2 Explanation of the safety symbols used

The following safety symbols are used in this booklet. These symbols should draw the attention of the reader to the text next to the safety hints.



This symbol warns that there is danger to human life and health.



This symbol warns that there is danger to the installation, to material or to the environment.



This symbol denotes information that helps you to understand the installation's operation.



Warning of dangerous electrical current!



Warning hand injury!



Do not reach into the machine while it is running!



Read the operating instructions



Eye protection must be used or protective glasses must be worn



Hand protection must be worn

### 3 General description and intended use

#### 3.1 General description

The empty tray is detected by sensors and automatically fed into the dishwasher in a transverse direction.

##### 3.1.1 Technical data sheet

Length	1210 mm
Width	500 mm
Transport height	915 or 1065 mm
Tray capacity	Max. 30 trays/min.
Area of application	Infeed device suitable for rectangular and trapezoidal trays Length 460 to 530 mm Width 320 to 370 mm <u>Use only the set tray size!</u>
Tray transport	Belt transport system

Tray stop provided by drive with brake

#### 3.2 Intended use

The tray infeed device is exclusively designed for feeding trays in a horizontal position.

Only the previously specified and factory set tray size should be used.

Individual pieces of crockery or other objects should not be transported by the tray infeed device.

Any other use is not considered intended.



### 4 EC-/EU-Declaration of Conformity

A Declaration of Incorporation is provided with the machine if it is not supplied in fully operational state, that is, as a partially completed machine pursuant to the Machine Directive.

An EC-/EU-Declaration of Conformity is provided with the machine if it is supplied in fully operational state as a complete machine.

## 5 General safety instructions

### 5.1 Operator's duty of care

The installation has been constructed based on a risk analysis and after careful selection of the applicable harmonised standards as well as additional technical specifications. It is therefore state of the art and guaranteed to provide maximum safety.

Safety can only be guaranteed during operation if all necessary measures are taken. The operator of the machine has an obligation of care to ensure that these measures are planned for and also to check that they are correctly implemented.

After installation, commissioning and handing over of the installation to the customer/operator, no modifications may be made (e.g., electrical system or location). Modifications of the tray infeed device and, in particular, technical modifications carried out without the manufacturer's written authorization, or any modifications carried out by unauthorised persons, will lead to the complete loss of any guarantee claims and will invalidate any liability for the product.



#### The operator must ensure in particular that ...

... the installation is only used in accordance with the regulations

In case of other use or operation, damage or risks may arise for which we accept no liability (cf. chapter "Intended use").

... in order to guarantee functionality and safety, use only original parts supplied by the manufacturer when needed.

Any potential claims by the user shall be rendered void if the device was altered using parts other than original spare parts.

... only appropriately qualified and authorised employees use, maintain, and repair the installation.

... staff is regularly trained in all questions relating to occupational safety and environmental protection and, in particular, the staff is familiar with the operating instructions as well as the safety instructions that they contain.

...the installation is only operated in perfect, operationally efficient condition, all protection devices and cover panels are installed, and, in particular, that the safety systems and switch elements are regularly checked for their operational efficiency.

... the required personal protective equipment is made available to and used by maintenance and repair personnel.

... the operating instructions are always in a legible state, complete, and available at the installation's location of use.

... all the self-attached safety, warning and operating instructions are not removed and are legible.

#### **... suitable clothing is worn**

Loose clothing and jewellery increase the risk of being caught on protruding parts.

- Wear fitted work clothing. Wear full-length trousers or an apron.
- Do not wear rings, necklaces or other pieces of jewellery.
- Wear protective gloves and goggles.

Wear sturdy, suitable shoes. (We recommend wearing safety shoes with steel toe caps)

Parts carrying electric current as well as moving or rotating parts can cause danger to the user's life and limb and material damage. Do not reach into the machine while it is running! Doing so could cause injury.

## 5.2 Basic safety measures

### 5.2.1 Basic safety measures during normal operation

The installation may only be operated by trained and authorised persons who are familiar with the operating instructions and who are capable of working in accordance with them!



#### Ensure the following before switching on the installation:

- Only authorised persons are present in the installation's operating area.
- Nobody could be injured by starting of the installation!

#### Before every commissioning

- Inspect the machine for any visible damage and ensure that it is only operated in perfect working condition!  
Report any defects to the supervisor immediately!
- Remove any materials and/or objects from the operating area that are not required for operation of the installation!
- Check and ensure that all safety systems are operating perfectly!

### 5.2.2 Basis safety measures during maintenance and repair



Observe the maintenance intervals prescribed in the operating instructions!  
Observe the maintenance instructions for the individual components in these operating instructions!

Block access for unauthorised persons to the operating area of the installation before starting maintenance or repair work! Display a sign drawing attention to the maintenance or repair work!



Before carrying out any maintenance and repair work, switch off the electrical power at the main electrical power switch and secure the switch with a padlock! The key for this lock must be kept in the hands of the person carrying out the maintenance and repair work! Failure to observe these precautions can result in serious bodily injury or damage to property.

Before carrying out any maintenance and repair work, ensure that all the parts of the machine that may be touched have cooled down to room temperature!

Environmentally hazardous lubricants, cooling or cleaning agents must be disposed of correctly!

### 5.2.3 Working on the electrical equipment



Work on the electrical system must be conducted by a qualified electrician who complies with the electrotechnical rules.

Disconnect the machine from the power supply before working on the electrical system and before lifting the cover panels. To do this, turn the local mains switch to OFF and ensure that it cannot be switched back on again.

Attach all cover panels before putting the machine back into operation.

Check the electrical equipment regularly!

Tighten any loose connections!

Replace damaged lines/cables immediately!

Always keep the switch cabinet closed! Access is only for qualified persons with key/tool!

Electrical parts, switch cabinets and other housings of electrical equipment must not be sprayed with a water hose or high-pressure cleaner. (EN 60 335 and accident prevention regulations-APR)





### 5.2.4 Before commissioning after maintenance and repair work

Before commissioning, after maintenance and repair work,

- check tightness of any screw connections that have been loosened!
- ensure that removed sieves, protective screens or accident protection systems have been re-installed!

#### After completion of maintenance or repair work and before commissioning the installation again, make sure that

- all materials, tools and other equipment necessary for performing maintenance and repair work have been removed from the installation's operating area.
- any liquids that have escaped have been removed.
- all safety systems of the installation operate perfectly!

### 5.2.5 Observe environmental protection regulations

For all work on or with the machine, observe legal requirements relating to the avoidance of waste materials and to their recycling/removal!

In particular, during installation, repair and maintenance work, materials that could pollute water such as:

- grease and oils
- hydraulic oils
- coolant
- cleaning fluids containing solvents

must not be allowed to pollute the soil or enter the sewerage system! These materials must be stored, shipped, collected and disposed of in suitable containers!

## 6 Delivery, transport, installation and assembly

### 6.1 Delivery

Check that the delivery is complete immediately after receiving it by comparing it with MEIKO's contract confirmation and/or the delivery note.



If necessary, submit a claim for any missing parts immediately to the freight forwarder and notify MEIKO. Check the entire installation for any damage that may have occurred during shipping. Should you suspect any damage has occurred during shipping, you should inform:

- the freight forwarder,
- MEIKO

in writing, and also send a photo of the damaged parts to MEIKO.

### 6.2 Transport

In order to avoid damage to the machine and life-threatening injuries when shipping the system, the following points must be observed:

- Transport work must be performed only by qualified persons observing the safety instructions.

For safe transport, the machine parts are supported by a special square-timber frame. Transport should take place only on this wooden frame by means of a pallet jack or fork stacker.

- Please also read the chapter "General safety instructions".



### 6.3 Installation and assembly

MEIKO has prepared an installation drawing, according to your desires and ideas, showing location, connected loads and energy consumption.

Installation and assembly work must be carried out as per specifications of this installation drawing.

The machine must only be set up at the location intended in the installation drawing using the intended feet or wall supports.

The equipment must be fastened to the floor so that it cannot be moved, particularly in the area of the scullery.

The installation area may be changed only with the permission of MEIKO.

Should you wish to set up the installation yourself, we would ask you to request the comprehensive, detailed installation instructions.

In any case, the installation may be connected **only** by technically competent personnel. We do not accept any liability for damage caused by unprofessionally implemented connection work.



CAUTION!

### 6.4 Instructions for disposal of packing material

- The special square timber frame, consisting of untreated, raw pine / spruce wood, can be used as firewood or, for do-it-yourselfers, as building wood.
- The plastic sheeting (PE foil) can be recycled.
- The cardboard packaging material used to protect the edges can also be recycled.
- The steel tensioning strap made of strip steel can be recycled as steel scrap.

### 6.5 Instructions - tray infeed station

Please note user instruction plates!

## 7 Preparation for Operation

The installation can be operated in continuous operation or emergency operation mode!

### 7.1 Continuous operation

1. Switch on the main switch for the associated warewashing machine
2. Release the emergency stop switch (if activated)
3. Release the transport stop switch on the conveyor belt (if activated).
4. Wait until the warewashing machine is ready for operation.
5. Switch on the dishwasher transport system.
6. Press the on/off button on the conveyor belt control centre. The conveyor belt starts to run.

**The tray infeed device (TST) is now ready for operation and the trays to be cleaned can be fed into the warewashing machine!**

### 7.2 Emergency operation (without warewashing machine and TST 7)

1. Switch on the main switch.
2. Release the emergency stop switch (if activated).
3. Release the transport stop switch **on** the conveyor belt (if activated).
4. Press the on/off button on the conveyor belt control centre. The conveyor belt starts to run.

## 8 Switching off and cleaning

1. Press the off button on the conveyor belt control centre.
2. Switch off the warewashing machine.
3. Set the main switch on the switch cabinet to OFF!
4. The round belt glide surface and the round belt should be freed from sticky dirt.
5. Make sure that no cleaning additives are used that become sticky after drying.
6. Cleaning agents containing alcohol, acid and chlorine as well as disinfectants, etc. should be avoided, as they attack round belts and discs.
7. We recommend performing cleaning with weakly alkaline detergents.
8. General information: Check sensors for contamination.
9. Check the transport round belt for cleanliness and any damage in the infeed and return.
10. All foreign objects must be removed.

**Thorough cleaning of the system every day is imperative for flawless and hygienic operation of the tray feeding belt and the TST 7.**

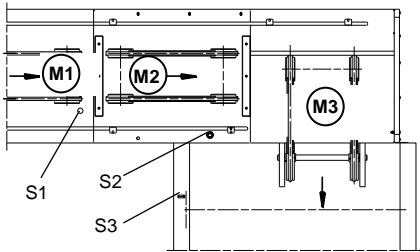
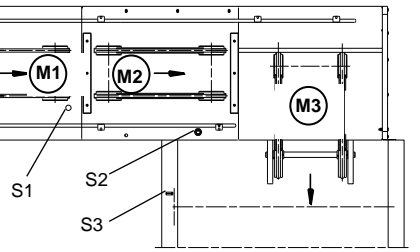
**Note!**

**In case of any device defects, only specially trained personnel are permitted to work on the mechanical or electrical parts of the machine. We will not accept any responsibility for damage caused as a result of incorrect handling.**

## 9 Adjustment

### 9.1 Functional description

S1 - Back switch-off, emergency operation mode      M1 - Scullery motor  
 S2 - Tray detection, automatic feeding              M2 - Tray stop motor  
 S3 - Pulse generator M-IQ                                M3 - Automatic feeding motor

	<b>Mechanical transport active</b>
 <p>The diagram shows a cross-section of a machine with three motors (M1, M2, M3) and three sensors (S1, S2, S3). M1 is the scullery motor, M2 is the tray stop motor, and M3 is the automatic feeding motor. S1 is a back switch-off, S2 is a tray detection sensor, and S3 is a pulse generator. Arrows indicate the direction of movement for the tray and the scullery.</p>	<ul style="list-style-type: none"> <li>▪ <b>M3</b> runs permanently if the mechanical transport is active.</li> <li>▪ <b>S2</b> detects a tray.</li> <li>▪ If <b>S3</b> does not issue an enable, <b>M2</b> stops and <b>S1</b> is activated.</li> <li>▪ If a subsequent tray is detected by <b>S1</b>, <b>M1</b> switches off.</li> <li>▪ In case of an enable by <b>S3</b>, <b>M2</b> and <b>M1</b> are reactivated. The tray can be fed automatically.</li> </ul>
	<b>Machine transport inactive</b>
 <p>The diagram shows the same machine as above, but in an inactive state. The tray is stationary, and the motors M1, M2, and M3 are not running. The sensors S1, S2, and S3 are still present.</p>	<ul style="list-style-type: none"> <li>▪ During inactive machine transport, <b>M2</b> and <b>M3</b> are stationary</li> <li>▪ The <b>S1</b> is active and does not have any limit switch function (back switch-off).</li> <li>▪ If <b>S1</b> detects a tray, <b>M1</b> switches off.</li> <li>▪ If the machine conveyor belt starts up again, all motors are reactivated simultaneously.</li> </ul>

M1-3 = Motors  
 S1-3 = Sensors

## 9.2 Tray feeding device

On the drive wheel of the dishwasher's conveyor, there is an adjustable disk with 8 (division - 60) or 4 (division 108) cut-outs for pulse determination.

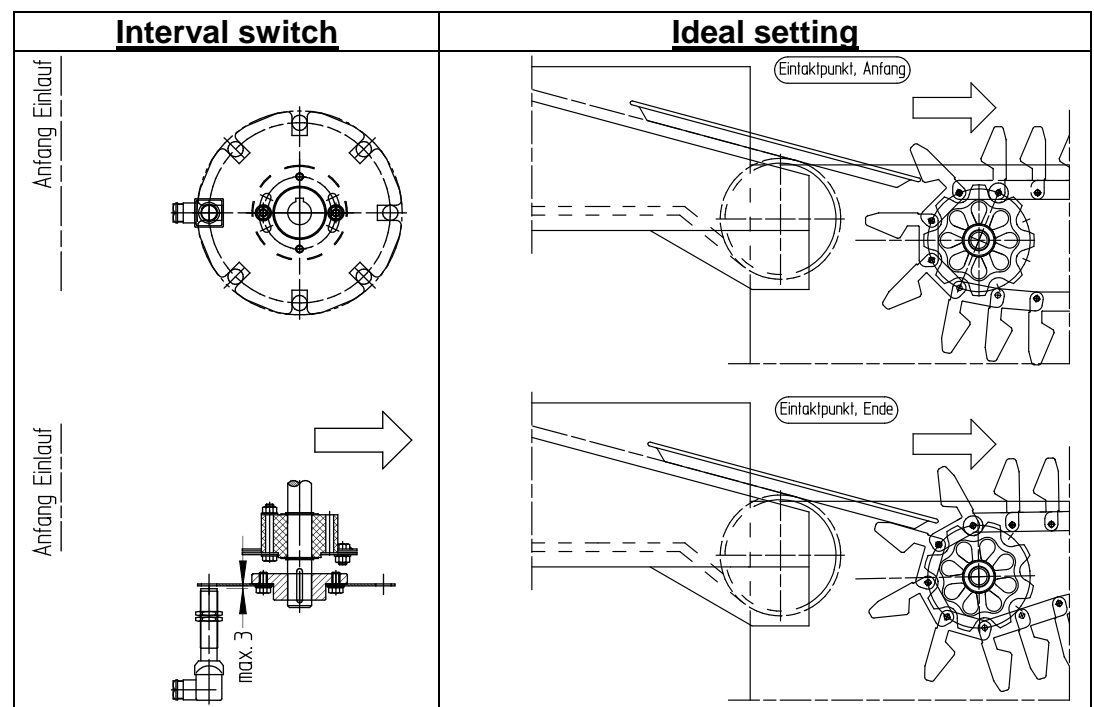
The pulse is generated by sensor (S3).

The sensor (S3) uses cut-outs to signal pulse enable or pulse stop.

This enable or stop function is executed by the tray stop motor (M2).

The sensor (S2) positioned at the end of the tray stop path detects the incoming tray and lets it pass if pulse enable (S3) is active.

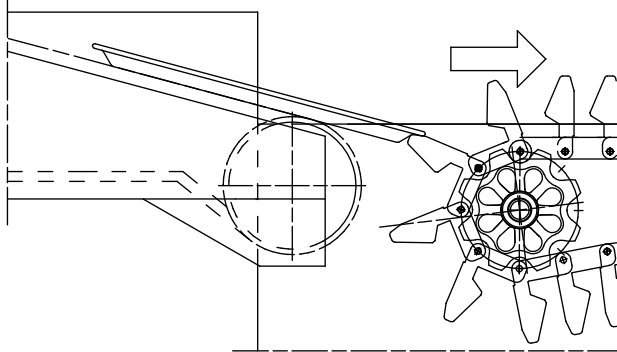
If a pulse enable signal is not present, the tray is stopped by the tray stop motor (M2) until the next enable signal is issued.



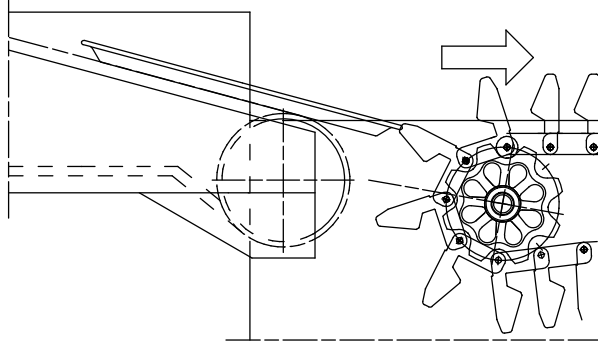
To adjust the infeed point, see the following instructions:

**CAUTION!** The infeed **sensor** (LT2) must be released after each infeed tray before the next tray arrives!

If the tray runs against the tray transport finger during infeed (see illustration below), the disc must be turned slightly towards the transport direction. If the infeed sensor (S2) is busy and S3 issues the enable signal, the tray must be gripped by the finger!



If the tray runs against the tray transport finger during infeed (see illustration below), the disc **must** be turned slightly **opposite to the transport direction**.



## 10 Self-help in case of malfunctions
















Malfunction	Remedy
Tray infeed device does not move	<ul style="list-style-type: none"> <li>• Motor defective</li> <li>• Warewashing machine conveyor does not move</li> <li>• Sensor defective or dirty</li> </ul>
The tray is not fed into the warewashing machine conveyor properly.	<ul style="list-style-type: none"> <li>• Check setting of the pulse disk.</li> <li>• Distance from pulse generator (S3) too large. It should be max. 3 mm</li> <li>• The brake lever is still in the automatic feeding motor (M3)</li> </ul>

## 11 Training of personnel

Only trained and instructed personnel are allowed to work at the machine.

Staff responsibilities for operation, maintenance and repairs must be clearly defined.

Any personnel undergoing training are only allowed to work at the installation under the supervision of an experienced person.

<b>Persons</b> <b>Activity</b>	<b>Trained personnel</b>	<b>Personnel with technical training</b>	<b>Electricians</b>	<b>Supervisor with corresponding expertise</b>
Installation and assembly				
Commissioning				
Operation				
Checking safety systems				
Operation				
Troubleshooting				
Troubleshooting, mechanical				
Troubleshooting, electrical				
Maintenance				
Cleaning				
Repairs				
Maintenance				

Only trained personnel are allowed to operate the control system.

The instructions should be acknowledged in writing.

## 12 Dismantling and disposal

In addition to valuable raw materials and recyclable materials, the packaging and the old device may also contain substances that are harmful to health and the environment and were required for the function and safety of the old device.

Please do not dispose of your old device in residual waste. Instead, contact your dealer or the collection points set up in your community for information regarding the disposal of your old device.

### 12.1 Disposal of packaging materials

All the packaging materials are recyclable. The following materials are used:

- Square timber frame
- Plastic sheeting (PE film)
- Cardboard packaging (edge protection)
- Packaging strap (steel strip)
- Packaging strap (plastic (PP))



#### Note

The square timber frame consists of untreated raw pine / spruce. In order to guard against pests, country-specific import regulations may also stipulate the use of treated wood.

### 12.2 Dismantling and disposal of the old device

#### Warning

##### Risk of injury from contact with chemicals

Detergent and rinse aid result in damage to health if in contact with skin or eyes or if swallowed.

- Use eye protection.
- Wear protective gloves.
- Contact a physician immediately if chemicals or water containing chemicals (wash water) are swallowed.

- Where appropriate, rinse machine components, containers, dosing units and hoses with fresh water to remove chemical residues. Wear suitable clothes (gloves, safety glasses) for this.

The device is marked with this symbol. Please observe the local regulations for proper disposal of your old device.

The components should be separated by material for recycling.





## 13 Maintenance

Maintenance work must only be conducted when the machine is shut down. Additionally, the main switch for the conveyor system must be switched off and locked.

**Existing safety systems must not be removed!**

We recommend concluding a maintenance contract with our authorised distributor in order to ensure a long service life.

<b><u>Maintenance work</u></b>	<b>Monthly</b>	<b>Every quarter</b>	<b>Every six months</b>	<b>Measured values / Mark for work completed</b>
<b>1. Conveyor drives</b>				
Check the gear motor for proper operation and noise		◆		
Check bearings for noise and signs of wear		◆		
Check the functionality of the belt pulley and inspect it for damage		◆		
<b>2. Transport</b>				
Check the belt for sufficient tension	◆			
Check for damage and make sure everything is complete	◆			
Check the belt for an even run	◆			
Check the entire tray guide		◆		
<b>3. Tray stop</b>				
Transport stop - check drive		◆		
<b>4. Electrical installation</b>				
Tighten all fuses and connections			◆	
Check wiring			◆	
Check all of the sensors in terms of functionality, damage and attachment (secure the sensors e.g. with Loctite ident. no. 0870016)		◆		
<b>5. Check function of TST 7</b>				
Check TST 7 for combined effect of all functions, check in-feed process (see "adjustment tray feeding device", TST7 operating instructions)		◆		



Note:

"Please exchange wear and tear parts from the spare parts list which are marked with 'V'."



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