

UPster U 500 M2

Glass- and dishwasher

Original operating instructions



For the types in the series: M002DWUC10M2-**



Before using the machine, read carefully the operating instructions, the product description and the safety instructions.



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1 Notes on the operating instructions

The operating instructions as well as the applicable documents must be read before the first commissioning, kept for later use, and must be accessible to the operator at all times. Failure to observe the operating instructions may result in damage to persons and property.

These operating instructions can be downloaded via the following address:
www.meiko.com or <https://partnet.meiko-global.com>.

1.1 Product identification

This document applies to the following machine types:

UPster U 500G M2	M002DWUC10M2-20
UPster U 500 M2	M002DWUC10M2-30

1.2 Delivery contents

The delivery contents include:

- 1x glass and dishwasher UPster U 500 M2
- Matching racks for glassware and dishes depending on machine model
- Connecting hoses for fresh water and waste water
- Documentation

1.3 Related documents

In addition to these operating instructions, there are other documents that are available depending on the authorisation:

Operator (included in delivery contents)	Authorised service technician
EC/EU declaration of conformity	Dimension sheet
Short operating instructions	Installation instructions
Wiring diagram	Installation instructions for optional components (e.g. GiO module separately)
	Service instructions

2 Declaration of conformity

This section reproduces the content of the EC/EU Declaration of Conformity for the product. The signed EC/EU Declaration of Conformity with serial number is enclosed with the product.

We hereby declare under our sole responsibility the conformity of the product with the essential requirements of this EC Directive:

- 2006/42/EC Machinery Directive, OJEU L157/24

Furthermore, we declare the conformity of the product with the following EU directives:

- 2014/30/EU Directive on Electromagnetic Compatibility, OJEU L96/79, 29/03/2014
- 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment, OJEU L174/88, 01/07/2011
- The safety objectives set out in the Low Voltage Directive 2014/35/EU (*OJEU L96/357, 29/03/2014*) were met in accordance with Annex I, No. 1.5.1 of the Machinery Directive.

Responsible for documentation:

Jan Ernst, MEIKO Maschinenbau GmbH & Co. KG, Englerstraße 3 77652 Offenburg

Responsible person:

Christoph Homburger, Head of Production and Technical Department, CTO MEIKO Group

3 Safety

3.1 Symbol explanation

3.1.1 Notes in the instructions

In these operating instructions, important notes for safety are specially marked with symbols. Please always observe these notes to avoid accidents and damages to the system.

Warnings

Danger

Short description of the danger:

The signal word **DANGER** designates an immediately threatening danger. Failure to observe this leads to very serious injuries or death

Warning

Short description of the danger:

The signal word **WARNING** designates a possible danger. Failure to observe this can lead to very serious injuries or death.

Beware

Short description of the danger:

The signal word **BEWARE** designates a possible danger. Failure to observe this can lead to minor to medium injuries.

Application information

Caution

Short description:

The signal word **Caution** designates a possible danger. Failure to observe this can lead to damage to the machine or system.



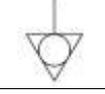
Note

The signal word **Note** designates further information on the machine / system or its application.

3.1.2 Safety symbols in the instructions

The following note and danger symbols are used both in the document and on the machine. Observe these symbols and signs on the machine to avoid personal injury and material damage!

The symbols have the following meanings:

Symbol	Meaning
	Warning of hazardous areas
	Warning of dangerous electric voltage
	Warning of the danger of hand injuries Caution, keep hands away from parts that bear this warning symbol. The danger exists that hands can be crushed, pulled in or otherwise injured.
	Warning of hot surfaces and liquids
	Warning of the machine falling over
	Warning of environmental damage
	Do not spray with water
	No drinking water
	Access prohibited for persons with pacemakers
	Eye protection must be used or protective glasses must be worn
	Hand protection must be worn
	Read the operating instructions
	Disconnect before servicing or repair
	Potential equalisation connection

3.2 Requirements for the personnel

Commissioning, instructions, repairs, maintenance, assembly and installation of or on MEIKO machines must only be carried out/authorised by MEIKO-authorized service partners.

During operation it must be ensured that:

- Only adequately trained and instructed personnel are allowed to work on the machine.
- Personnel responsibilities for operation, maintenance and repairs must be clearly defined.
- Any personnel undergoing training are only allowed to work on the machine under the supervision of an experienced person.

The required qualifications for performing specific work at the machine are determined by MEIKO.

Activity	Persons	Trained operating staff	MEIKO authorised company tradesman	MEIKO authorised service technician
Installation/assembly				✓
Commissioning				✓
Operation, use		✓	✓	✓
Cleaning		✓	✓	✓
Check safety devices			✓	✓
Troubleshooting		✓	✓	✓
Troubleshooting, mechanical		✓	✓	✓
Troubleshooting, electrical			✓*	✓
Maintenance			✓	✓
Repairs			✓	✓

* with training as an electrician



Note

The instructions must be acknowledged in writing.

Qualified staff, as defined by the operating Instructions, are persons:

- over 14 years of age,
- due to their training, experience and instruction are able to perform the required activities,
- are authorised to perform the required activities by the person responsible for safety of the machine,
- who have been trained in first aid and in the on-site rescue arrangements,
- have read and understood the operating instructions and corresponding safety instructions and will follow them.

3.3 Residual risks

Phase	Activity	Nature of the hazard	Avoidance measure
Transport and assembly	Loading and unloading with forklift truck	Crushing/impact	<ul style="list-style-type: none"> Load-bearing capacity of the forklift truck must be adequate for the weight of the machine Please note the machine's centre of gravity Secure to prevent slipping
	Deposit at the installation site	Crushing/impact	<ul style="list-style-type: none"> Ensure that the ground beneath is capable of taking the load Ensure that the machine cannot tip
	Install electrical connections	Electric shock	<ul style="list-style-type: none"> Only skilled personnel may connect up the machine Adhere to the accident prevention regulations
	Install separate GiO MODULE (optional)	Tripping/falling/crushing	<ul style="list-style-type: none"> We recommend fastening the GiO MODULE to the wall/table/machine Mount freestanding module using solid base If needed, run module at 90 degrees (lying)
Commissioning	Fill with detergent/rinse aid	Eye injury/health risks	<ul style="list-style-type: none"> Wear safety eyewear/gloves Avoid contact with skin and eyes
	Activities in the machine	Hand injuries on sharp edges	<ul style="list-style-type: none"> Wear protective gloves
Operation	Programme is running	Contact with hot water	<ul style="list-style-type: none"> Do not open door during programme run
	Loading and unloading the machine	Trapping of hand	<ul style="list-style-type: none"> To open/close the machine door, use the handle provided for this purpose with both hands.
		Broken crockery causing cuts/severing	<ul style="list-style-type: none"> Wash washware in the specially designed rack in the machine Place small items in the appropriate rack inserts Washware must not come into contact with rotating parts of the machine
		Risk of snagging with loose clothing or items of jewellery	<ul style="list-style-type: none"> Wear suitable work clothing and sturdy shoes Do not wear rings, necklaces or other pieces of jewellery
		Slipping	<ul style="list-style-type: none"> Use non-slip floor coverings
		Contact with hot water and hot machine parts	<ul style="list-style-type: none"> If necessary, allow washware to cool down If necessary, allow machine components to cool down before touching Do not remove tank cover sieve while appliance is in operation Protective gloves recommended
	Other activities	Injury through standing or sitting on the open machine door	<ul style="list-style-type: none"> Ensure that nobody sits or stands on the door
		Swallowing of water in the wash chamber	<ul style="list-style-type: none"> Do not use the water in the wash chamber for food preparation or drink it
	Independent changes to chemical dosing	Breathing difficulties/suffocation	<ul style="list-style-type: none"> Only allow specialist personnel to adjust dosing
	Refilling detergent/rinse aid	Tripping/falling over open dosing cover	<ul style="list-style-type: none"> Close dosing cover as soon as refilling is complete
Eye injury/health risks		<ul style="list-style-type: none"> Wear safety eyewear/gloves Avoid contact with skin and eyes 	

Phase	Activity	Nature of the hazard	Avoidance measure
Maintenance and cleaning	Any maintenance work	Electric shock	<ul style="list-style-type: none"> • Before opening the housing parts, ensure the mains switch has been disconnected and secured so that it cannot be turned on again • Only specialist personnel may carry out maintenance work
	Cleaning or maintenance	Tripping/falling over open door	<ul style="list-style-type: none"> • Always close door after use
		Contact with hot water and hot machine parts	<ul style="list-style-type: none"> • Allow machine components to cool down before touching • Wear protective gloves
		Hand injuries on sharp edges	<ul style="list-style-type: none"> • Wear protective gloves
	Cleaning	Poisoning	<ul style="list-style-type: none"> • Do not use aggressive cleaning or scouring agents • Only use descaling products suitable for commercial machines • Wear protective gloves
GiO MODULE: replace filter cartridge	Water escaping	<ul style="list-style-type: none"> • Provide suitable vessel (e.g. base drip tray) 	
Dismantling and disposal	Dismantling	Eye injury/health risks	<ul style="list-style-type: none"> • Wear safety eyewear/gloves • Avoid contact with skin and eyes • If needed, clean hoses, dosing system and machine parts with fresh water
	Loading and unloading with forklift truck	Crushing/impact	<ul style="list-style-type: none"> • Load-bearing capacity of the forklift truck must be adequate for the weight of the machine • Please note the machine's centre of gravity • Secure to prevent slipping

3.4 Intended use

The machine is intended exclusively for commercially washing dishes, cutlery, trays, glasses, kitchen utensils, baking trays and containers.

The washware must be suitable for use in commercial dishwashers and the associated stress caused by high temperatures and cleaning chemicals.

The washware must be suitable for use in commercial machines and the associated stress caused by high temperatures and cleaning chemicals.

Suitable cleaning chemicals and their dosing must be agreed with the chemical supplier.

The machine may only be operated by trained personnel.

Only operate the machine when it is in perfect working order.

Only operate the machine within the limits specified in the ambient conditions.

If servicing is required, only use original spare parts from the manufacturer. This is the only way to guarantee perfect function and safety.

The machine is not authorised for operation in a potentially explosive environment.

Setup, installation, repair and connection of an external dosing system may only be carried out by authorised specialists or by the dosing system supplier. This must not impair the safety of the machine. Other changes or conversions are not permitted.

3.5 Foreseeable misuse

- Washing electrical appliances.
- Washing textiles.
- Washing living creatures.
- Washing/preparing food.
- Washing items that must not come into contact with foodstuffs (e.g. ashtrays, candlesticks).
- Washing ferrous, non-corrosion-resistant objects (steel sponges, gratings, etc.).
- Only wash aluminium parts with a suitable detergent.
- Washing objects made of wood.
- Washing plastic parts that are not heat- and alkali-stable.
- Using hand dishwashing detergent for pre-cleaning.
- Filling the machine from an external source (e.g. with a shower).
- Disposing of dirty water via the machine (e.g. from a cleaning bucket).
- Standing or sitting on machine parts or using the machine as a climbing aid.

3.6 Fundamental safety and accident prevention regulations



Note

The following safety instructions aim to protect operating personnel as well as third parties and the dishwashing machine itself. Please take note of the information in these instructions and the signs on the dishwashing machine.

However, 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.

The operator must ensure in particular that:

- The dishwashing machine is only used in accordance with its intended purpose. In the event of the machine being used or operated contrary to this, damage or risks may arise.
- In order to guarantee functionality and safety, only original spare parts supplied by the manufacturer may be used.
- The safety of the dishwashing machine is not impaired by the subsequent installation of a dosage system.
- Only appropriately qualified and authorised personnel operate, maintain and repair the dishwashing machine.
- No one sits or stands on the open door.
- Staff are regularly trained in all questions relating to occupational safety and environmental protection and are familiar with the operating instructions and, in particular, the safety information that they contain.
- The area around the machine is assessed with reference to the risk to other people, e.g. children; people with physical, sensory or mental impairments; people lacking in knowledge or experience. In case of doubt, special optional initiation functions other than conscious, intentional operation (i.e. operation from the screen) are to be deactivated.
- The dishwashing machine is only operated in perfect, functional condition, all protection devices and covers are installed.
- The safety and switching equipment is regularly tested to ensure it is functioning correctly.
- Dishwashers accessible from behind may only be operated with a rear cover.
- The required personal protective equipment is made available to and worn by maintenance and repair personnel.

- A functional test on all dishwashing machine safety systems is carried out at every regular maintenance appointment.
- None of the safety and warning notices affixed to the dishwashing machine itself are removed and all are legible.
- Upkeep (maintenance and inspection) is carried out on optional vendor parts according to the requirements in the corresponding instructions.
- Following installation, commissioning and handing over of the dishwashing machine to the customer/operator, no modifications are made (e.g. electrical or mechanical machine components).

Information on operating the dishwashing machine:

- Only operate the dishwashing machine under the supervision of trained personnel.
- Do not use the dishwashing machine if you are unsure about its operation.
- Always close all doors and flaps.
- Wear suitable work clothing.
- When working on the dishwashing machine, wear appropriate protective gloves.
- Allow machine components and washware to cool down before touching.
- At the end of operation:
 - Switch off the dishwashing machine at the on-site mains disconnection device. This is located in the electricity supply pipe for the machine.
 - Close the on-site stop valve in the fresh water supply line.

Information on use of detergent and rinse aid:

- Only use detergents and rinse aid suitable for commercial dishwashing machines.
- Acquire information from the manufacturers of these products.

Detergent and rinse aid may contain hazardous substances. The wash water used during operation contains chemicals.

- Never drink the wash water.
- Contact a doctor immediately if wash water is swallowed.
- Pay attention to the manufacturers' hazard warnings on the original canisters and safety data sheets.
- When handling chemicals, wear appropriate protective gloves and safety eye-wear.
- Do not confuse detergent and rinse aid.
- Ensure that the suction connections for the dishwashing machine are correctly connected to the canisters.

Information on the use of descaling agents

Residue from descaling agents can cause damage to the plastic components and sealing materials in the machine.

- Acquire information from the manufacturers of these products.
- Please observe the manufacturer's hazard warnings.
- Thoroughly remove any residue after use.

Information on cleaning the machine

Foam can cause malfunctions in the dishwashing machine and a poor washing result.

- Do not use a foaming manual dishwashing detergent for precleaning or for cleaning the machine.
- Allow machine components and washware to cool down before touching.

Information on cleaning the surrounding area

When cleaning the surrounding area, the machine can be damaged by aggressive external influences (steams, detergents) or the ingress of water.

- Do not use aggressive detergents (e.g. aggressive tile cleaner).
- If installed at ground level, never allow the surrounding area to flood.

Notices on electrics and electronics

There is a danger to life if exposed parts and damaged supply lines under electrical voltage are touched.

- Please take note of the warning information in these instructions and the signs on the dishwashing machine.
- Whenever you are working on electrical components in the machine, ensure that electrical connections are physically secure.
- Whenever you are working on electrical components in the machine, check wires and cables for any potential damage and replace, if necessary.

Incorrect cleaning can cause damage to the electronics.

- The dishwashing machine, switch cabinets and other electrical components must never be sprayed with a hose or high pressure cleaner.
- Ensure that no water can enter the machine by accident.

Notice on non-ionising radiation



The dishwasher does not specifically generate non-ionising radiation. For technical reasons, only the electric appliances emit non-ionizing radiation.

In the immediate vicinity of the dishwashing machine, the influence of active implants (e.g. cardiac pacemakers, defibrillators) can be ruled out with a high degree of probability.

3.7 What to do in the event of an emergency



- In dangerous situations, disconnect from the power supply using the locally available mains isolator.

4 Product description

4.1 Functional description

The UPster U 500 M2 is a commercial glass and dishwasher with a square rack.

The dishwasher has one wash and one final rinse cycle.

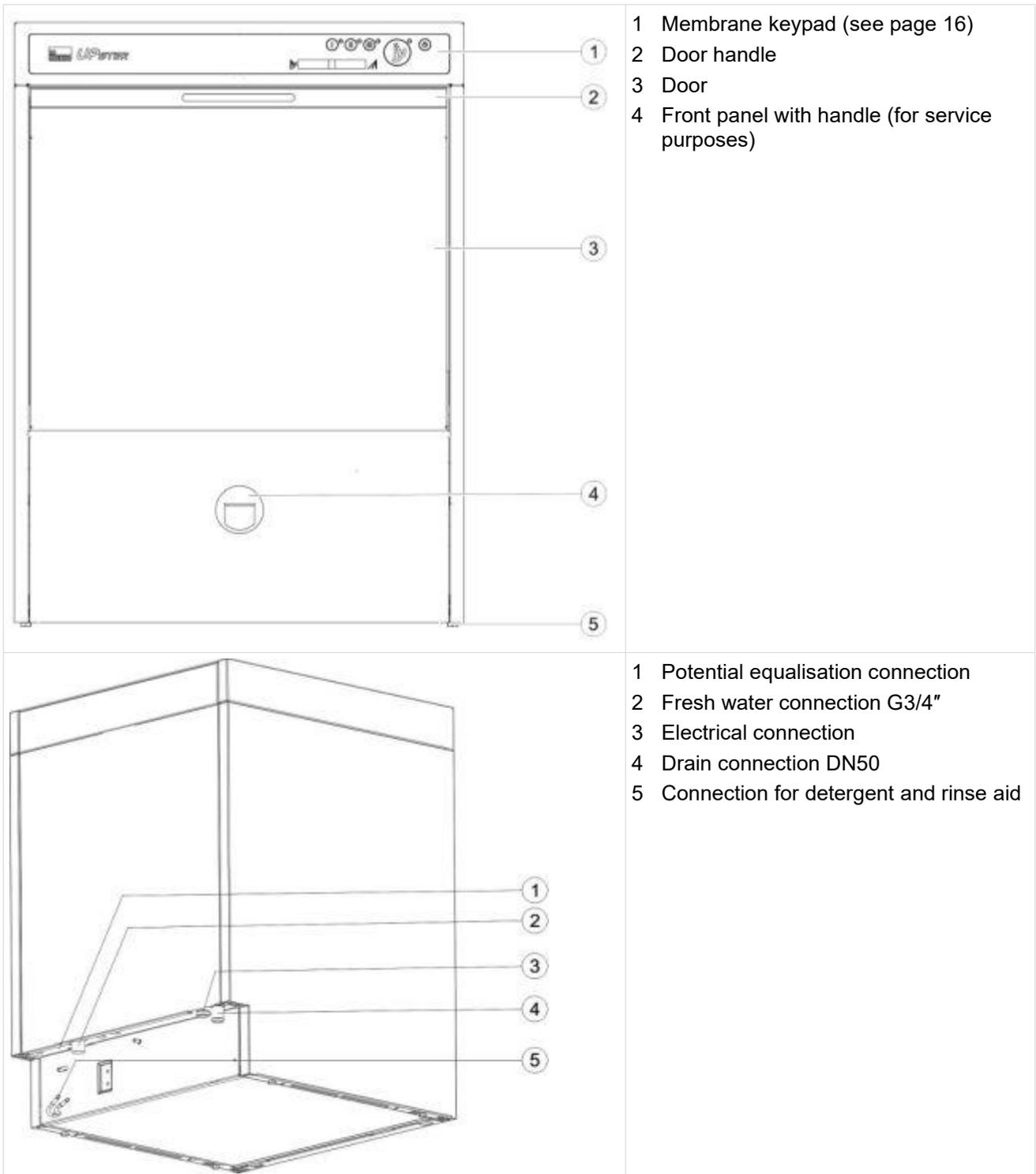
A temperature regulator maintains the set wash temperature of between 58-60 °C. A rotary pump circulates the water from the wash tank into the wash nozzles. The water jets hit the wash ware from different directions. This ensures uniform washing results.

The wash cycle is followed by a fresh water final rinse. The items being washed are rinsed with hot fresh water at 80-83 °C (65 °C for the glass programme) via a separate nozzle system. This heats up the wash ware for the following drying process.

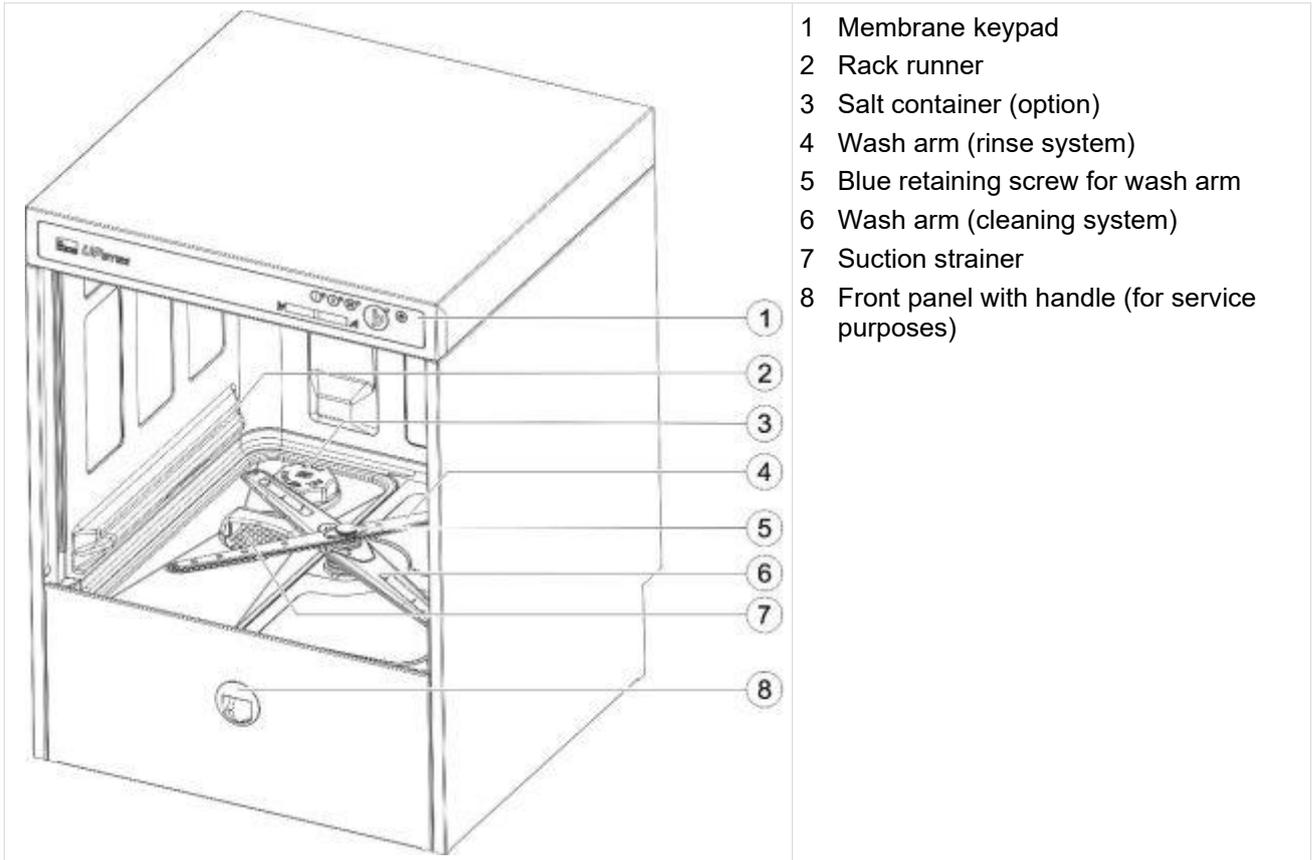
At the same time, the final rinse water is used to regenerate the rinse water; this reduces the degree of soiling of the rinse water.

4.2 Overview illustration

Exterior view



Interior view

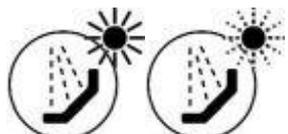
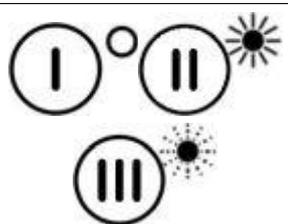
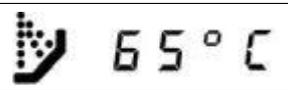
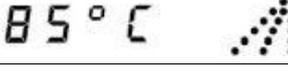


4.3 Membrane key pad

The dishwasher is equipped with a membrane key pad. For dishwashers with ActiveClean, it includes 5 operating keys and 6 control lights. Without ActiveClean, there are 2 fewer control lights. A display reports the current temperatures of the wash and rinse water and displays information messages and error codes, if applicable. Control lights with the keys show readiness to operate, the active wash programme, the current wash cycle and, if applicable, necessary and active regeneration.

The meaning of each of the keys and symbols is described below.



Key/symbol	Meaning
	On/off key / programme termination
	Wash key with control light Control light lit: wash programme is running Control light flashing: self-cleaning programme / drain programme is running
	Wash programme keys 1 – 3 with control lights Control light 1, 2 or 3 lit: dishwasher ready to run / wash programme 1, 2 or 3 selected Control light 1, 2 or 3 flashing: dishwasher is being made ready for operation
	Salt container control light (ActiveClean) Control light lit: refill salt
	Regeneration control light (ActiveClean) Control light lit: regeneration active
	Current wash temperature
	Current final rinse temperature

4.4 Type label

The rating plate is located on the left side or right side in the lower rear section of the dishwasher. Additional rating plates are located on the switch cabinet behind the front panel, and on the separate GiO MODULE (if it is part of the dishwasher).

4.5 Blue operating concept



1 AktivPlus filter

The parts of the dishwasher that must be touched by the operator in operation and in daily use are blue. And so after a short briefing, operators know intuitively that they have to remove and clean the wash system, tank cover sieve and filter, for example.

4.6 Wash programmes

Programme table

No.	Setpoint boiler temperature			Setpoint wash cycle time					
				Washing			Total		
	[°C]			[s]			[s]		
Standard	CW-FR	TD 80°C	Standard	CW-FR	TD 80°C	Standard	CW-FR	TD 80°C	
1	83	10	88	74	72	135	90	90	150
2	83	10	88	104	102	195	120	120	210
3	83	10	88	224	222	315	240	240	330
4	83	65	88	74	72	165	90	90	180
5	83	10	88	144	142	225	160	160	240
6	83	10	88	164	162	255	180	180	270
7	83	10	88	194	194	285	210	210	300
8	83	10	88	344	342	345	360	360	360
9	65	65	88	104	102	375	120	120	390
10	65	65	88	144	142	135	160	160	150
11	65	65	88	164	162	135	180	180	150
12	65	65	88	194	192	135	210	210	150
13	65	65	88	224	222	135	240	240	150
14	65	65	88	344	342	135	360	360	150
15	85	85	88	74	72	135	90	90	150
16	85	85	88	104	102	135	120	120	150
17	85	85	88	144	142	135	160	160	150
18	85	85	88	224	222	135	240	240	150
19	85	85	88	344	342	135	360	360	150
20	83	10	88	254	252	135	270	270	150
21	83	10	88	284	282	135	300	300	150
22	83	10	88	464	462	135	480	480	150
23	83	10	88	584	582	135	600	600	150
24	65	65	88	254	252	135	270	270	150
25	65	65	88	284	282	135	300	300	150
26	65	65	88	464	462	135	480	480	150
27	65	65	88	584	582	135	600	600	150
28	85	85	88	164	162	135	180	180	150

No.	Setpoint boiler temperature			Setpoint wash cycle time					
				Washing			Total		
	[°C]			[s]			[s]		
	Standard	CW-FR	TD 80°C	Standard	CW-FR	TD 80°C	Standard	CW-FR	TD 80°C
29	85	85	88	194	192	135	210	210	150
30	85	85	88	254	252	135	270	270	150
31	85	85	88	284	282	135	300	300	150
32	85	85	88	464	462	135	480	480	150
33	85	85	88	584	582	135	600	600	150
34	80	80	88	104	102	135	120	120	150
35	80	80	88	144	142	135	160	160	150
36	80	80	88	164	162	135	180	180	150
37	80	80	88	164	162	135	180	180	150
38	80	80	88	194	192	135	210	210	150
39	80	80	88	224	222	135	240	240	150
40	80	80	88	254	252	135	270	270	150
41	80	80	88	284	282	135	300	300	150
42	80	80	88	344	342	135	360	360	150
43	80	80	88	464	462	135	480	480	150
44	80	80	88	584	582	135	600	600	150
45-50	83	10	88	74	72	135	90	90	150

Standard: U 500 M2, U 500 G M2 without cold water rinsing, U 500 M2/U 500G M2 with thermal disinfection (A0 30 and thermolabel)

CW-FR: U 500G M2 with cold water final rinse

TD 80°C: U 500 M2/U 500G M2 with thermal disinfection > 80°C



Note

The concentration of the rinse aid in the water remains constant: if the rinse time is changed, the dosage amount of the rinse aid changes correspondingly.

4.7 Detergent and rinse aid



Warning

Risk of injury from contact with chemicals

- Observe the safety data sheets and dosing recommendations of the chemical manufacturers.
- Use eye protection.
- Wear protective gloves.
- Do not mix different chemical products.

Caution

- Only use products that are suitable and approved for commercial dishwashers. MEIKO recommends MEIKO ACTIVE detergent and rinse aid. MEIKO ACTIVE products are optimally adapted to MEIKO dishwashing machines.
- Do not mix different cleaning products.

The dishwashing machine is equipped by default with dosing units for dosing liquid detergent/rinse aid. Manual dosing with powder cleaner is not intended.

Optionally, the dishwashing machine can be equipped with or prepared for an external dosing system. In this case, further information can be found on the wiring diagram and in the External dosing document.

4.7.1 Detergent

Detergents are alkaline (pH value should be > 7) and are needed to dissolve soiling from the washware. The standard setting is 2 ml of detergent per litre of tank water. If necessary, the concentration can be adjusted depending on the water quality, washware and degree of soiling. This setting is made during commissioning by an service technician authorised by MEIKO or the chemical supplier.

Change dosing quantity, see page 48.

4.7.2 Rinse aid

Rinse aids are acidic (pH value should be between 2 and 7) and accelerate the drying of the washware by reducing the surface tension of the water so that it can run off the washware quickly.

The correct dosage is achieved when the water drips evenly from the washware and depends on the available water quality on-site. This setting is made during commissioning by an service technician authorised by MEIKO or the chemical supplier.

Change dosing quantity, see page 48.

4.7.3 Dosing equipment

The components of the dosing units are subject to high demands and must therefore be regularly maintained and, if necessary, replaced in accordance with the maintenance specification.

The service life of the dosing units and other components of the dishwashing machine depends on the use of suitable chemical products. MEIKO recommends MEIKO ACTIVE detergent and rinse aid. MEIKO ACTIVE products are optimally adapted to the dishwashing machine.

4.7.4 Suction lances



Suction lances with level monitoring for rinse aid (blue) and detergent (grey)

Suction lances ensure that the liquid chemical product is sucked in correctly. Suction lances are inserted vertically into the canisters and are optionally equipped with level monitoring. When the canister is running low, a message will appear on the machine display.

4.7.5 Change of products

⚠ Caution

When changing the detergent product (even to a product from the same manufacturer), crystallisation may occur, which can lead to failure of the dosing system.

- When changing the detergent product, flush the dosing system with warm water.

Procedure for changing the detergent product:

1. Provide a suitable container with warm water and insert the suction lance.
2. Thoroughly flush the dosing system several times by **venting the lines**, see page 46.
3. Wipe the suction lance and put it into the canister with the other detergent product.
4. Refill the dosing system by **venting the lines**.

For dishwashers with an internal reservoir, have the system flushed by a service technician authorised by MEIKO.

4.8 Options

4.8.1 GiO-MODULE

The module works according to the principle of reverse osmosis. Drinking water is pressed by a pump through a semi-permeable membrane. The membrane lets only water molecules through. The hardness components and salts (lime scale, etc.) contained in the water are held back. The permeate (clean water) is brought to the dishwashing machine; the concentrate (held back materials) is brought to the drain.

4.8.2 ActiveClean built-in water softener

The ActiveClean water softener automatically regenerates itself without intervention by the operator. All that is needed is to refill salt when the control light for the salt container lights up. The wash tank does not need to be emptied during regeneration, and wash processes remain possible. The regeneration water is guided directly into the waste water. The maximum intake temperature of the fresh water is 50 °C.

The water softener is preset to 30° dH at the factory. This value is adapted to the actual water hardness during commissioning. Additionally, this parameter has to be changed by a service technician (MEIKO-authorized) if the water hardness changes.

Capacity of the water softener between two regenerations

Hardness (° dH)	Capacity (l)
8	250
10	200
12	167
14	143
16	125
18	111
20	100
22	91
24	83
26	77
28	71
30*	67*
32	63
34	59
36	56
38	53
40	50
42	48

* Factory setting

4.8.3 Energy optimisation

Energy optimisation can switch off the heating of the tank or boiler as required. A connected, on-site power optimisation system switches off the heating of the tank or boiler. The maximum permissible switch-off time is 15 s per minute.

The machine reacts to the heating being switched off by increasing the wash time if necessary.



Note

According to the EN 17735 hygiene standard, an uninterrupted energy supply is required for proper operation of a dishwasher. Use of an on-site performance optimisation system is not permitted in accordance with EN 17735, as switching off water heaters leads to temperature reductions and it cannot be guaranteed that the washing and hygiene result will be achieved.

4.8.4 Cold water final rinse for glasswashers

In glasswashers (UPster U 500G M2), final rinsing in programmes I and II is not carried out with hot water (65 °C) but with fresh water which is not heated.



Note

When the programme is changed from programme III to programme I or II, it takes approx. 3-4 programme runs until final rinsing with cold water takes place. When the programme is changed from programme I or II to programme III, the required temperatures are reached in the same programme run.

Programme I (short programme) and Programme II (standard programme) - Cold

The glasses are cleaned with a rinsing temperature of 55°C. Then follows the final rinse with unheated fresh water.

The cooling of the glasses can lead to temperature stresses in the glasses, which require additional caution!

These glass temperatures can be assumed at a temperature of approx. 10°C for the incoming water:

- Approx. 22-27°C immediately after removal
- Approx. Room temperature, 1-2 minutes after removal
- Approx. 30-35°C for thick-walled glasses (beer mugs), immediately after removal

To ensure that the rinsing temperature of 55°C is reached, the machine has an extended running time. This means that the programme runs until the water is heated to the required temperature (however, for a maximum of 5 minutes).

Programme III (Intensive Programme) - Hot

The glasses are cleaned with a rinsing temperature of 60°C. The final rinse is then carried out with fresh water heated to 65°C. The described extension of the running time also ensures that the required temperatures are reached in Programme III.

4.8.5 Disinfection in accordance with the A_0 value process



Note

High water temperature and long programme durations can cause glass corrosion and detachment of decorative finishes. Only use dishes that are suitable for the high stress placed on them.

A_0 control

The term A_0 refers to a way of measuring how microorganisms are eliminated by moist heat disinfection methods. By using a moist heat disinfection method, it is expected that a specific temperature over a period of time has the effect of eliminating a predictable number of microorganisms with a particular resistance.

The standard setting for a dishwashing machine with A_0 – control is the hygiene value A_0 30:

- The tank temperature during washing is up to 74 C.
- For tank temperatures of 65 C or higher, each tank temperature is assigned a factor.
- Using the measured tank temperature, a value is determined and added every second until the hygiene value A_0 30 is reached.
- The rinsing process runs until the end of the programme cycle time, but at least until the hygiene value is reached. After this comes a pause for draining and the final rinse.



The display shows the current A_0 value.

4.8.6 Disinfection in accordance with the Thermolabel or thermal disinfection process



Note

High water temperature and long programme durations can cause glass corrosion and detachment of decorative finishes. Only use dishes that are suitable for the high stress placed on them.

Thermolabel control

In a way which is similar to A_0 control, machines with Thermolabel control have a disinfection process which uses moist heat. The dishwasher heats the rinse water to a higher temperature in order to eliminate germs. The efficacy of the disinfection can be tested using a measurement strip, the Thermolabel. The measurement strip changes colour after 4 seconds at 71 °C for a wash item.

- During washing, the tank temperature is heated up to 71° C and maintained at that temperature.
- The rinsing process runs until the end of the programme cycle time, but at least until the temperature value is reached. After this comes a pause for draining and the final rinse.
- Washing at high temperatures and long spells in the wash tank can lead to glass corrosion and premature wear to decoration.

Thermal disinfection - control

Thermal disinfection works according to the same principle as Thermolabel control, but other requirements apply:

- The disinfection temperature is $\geq 80^\circ \text{C}$, which must be maintained on the washware for $\geq 30 \text{ s}$.
- The rinsing process runs until the end of the programme cycle time, but at least until the temperature value and specified stop time are reached. After this comes a pause for draining, final rinse and a subsequent application time.

Thermolabel and thermal disinfection control offer a disinfection effect that exceeds the standard, such as for hospitals, care homes, requirements according to the ÖGSV Guideline.

5 Technical data

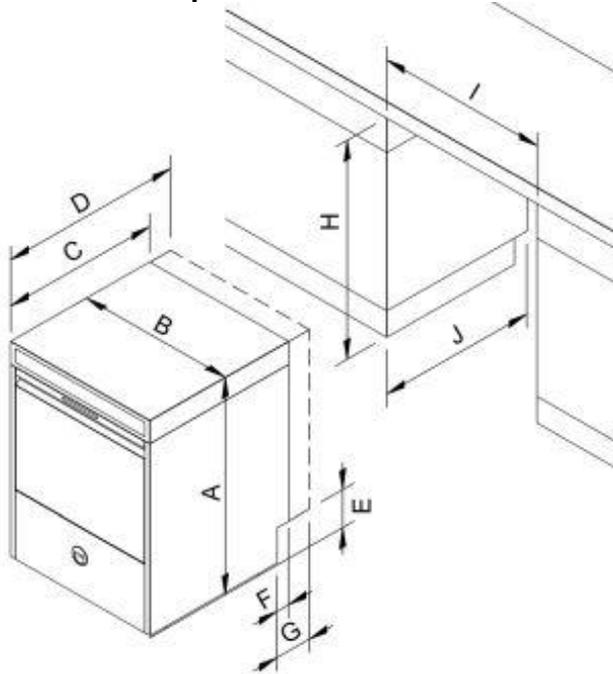
Ambient conditions	
Operating temperature	5°C ... 40°C
Relative humidity	< 95%
Storage temperature	5°C ... 40°C
Maximum height of the installation site above sea level	2000 m
Net weights	
Variant/options	Machine
UPster U 500 M2	73 kg
UPster U 500G	66 kg
+ AktivClean Wasserenthärter	9 kg
+ GiO-MODUL Umkehrosmose	23 kg
Noise emission	
Emission sound pressure level at the workplace	$\leq 70 \text{ dB (A)}$

Further data should be taken from the MEIKO dimension sheet.

5.1 Recess dimensions

When installing the dishwasher in a counter, recess dimensions must be observed. The dishwasher does not need to be fixed in the counter. Furniture in the vicinity of the dishwasher must be suitable for commercial use and resistant to steam.

Dishwasher without plinth



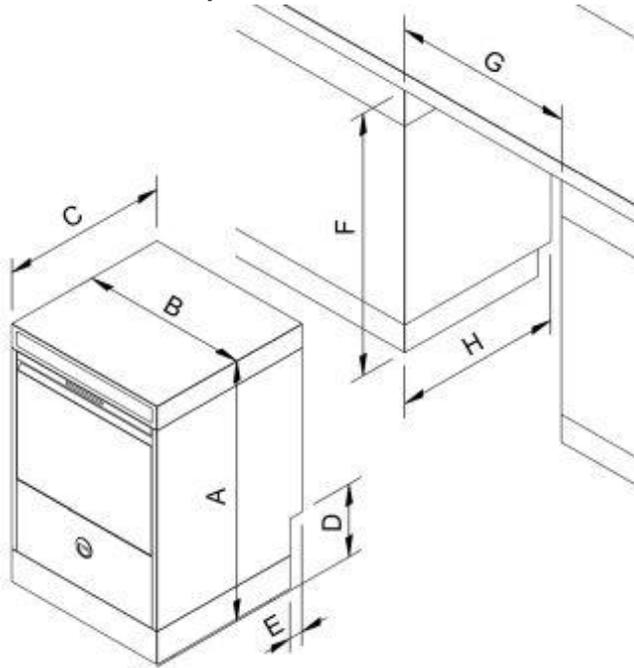
The dishwasher can also be set up without feet, in which case alignment is no longer possible.

Height of the machine without feet in mm:

U 500G M2 / U 500G M2 (GiO rear panel)	U 500 M2 / U 500 M2 (GiO rear panel)
695 ⁺⁵	810 ⁺⁵

UPster U 500G M2 / U 500 M2 (dimensions in mm)				
	U 500G M2	U 500G M2 (GiO rear panel)	U 500 M2	U 500 M2 (GiO rear panel)
A	700–730	700–730	820–850	820–850
B	600	600	600	600
C	600	–	600	–
D	–	680	–	680
E	130	130	130	130
F	50	–	50	–
G	–	130	–	130
H	705–730	705–730	825–850	825–850
I	610–620	610–620	610–620	610–620
J	605	685	605	685

Dishwasher with plinth 120 mm or 150 mm



The dishwasher can also be set up without feet, in which case alignment is no longer possible.

Height of the machine without feet in mm:

U 500G 120	U 500G 150	U 500 120	U 500 150
815 ⁺⁵	845 ⁺⁵	930 ⁺⁵	960 ⁺⁵

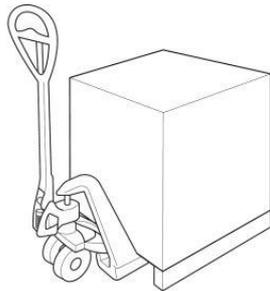
UPster U 500G M2 / U 500 M2 (dimensions in mm)				
	U 500G 120	U 500G 150	U 500 120	U 500 150
A	820–850	850–880	940–970	970–1000
B	600		600	
C	600		600	
D	250	280	250	280
E	50		50	
F	825–850	855–880	945–970	975–1000
G	610–620		610–620	
H	605		605	

6 Transport

WARNING – danger of injury due to machine tipping

- Only qualified personnel may carry out transport works.
- Please note safety notices on the packaging.
- Always transport the machine on a wooden frame only.
- Wear protective gloves and safety shoes.

The packaging is specifically designed to allow the appliances to be moved safely and securely using a pallet jack or a sack truck. For safe transport, the dishwashing machine is supported by a special square-timber frame.



- Execute transport carefully.
- Open packaging using a suitable tool.
- Unpack the dishwashing machine only after transport is completed.

6.1 Disposal of packaging materials

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

- Square timber frame
- Plastic sheeting (PE film)
- Foam material
- Cardboard packaging (edge protection)
- Packaging strap (steel strip)
- Packaging strap (plastic (PP))
- If needed, transport safety bracket (stainless steel)

7 Assembly

Warning

Danger of injury from entering a danger zone

Unauthorised persons might be in or enter the danger zone during transport, assembly, commissioning, maintenance and repair work. This can lead to injuries.

- Only permit qualified persons to perform work at the machine.
- Remove unauthorised persons from the danger zone.
- Cordon off danger zone and signpost it for third parties.
- Never remove or disable safety devices on the machine.
- Always wear cut-resistant protective gloves when removing housing parts and when working inside the machine!



7.1 Prerequisites for assembly

7.1.1 Checking the condition at delivery

- Check that the delivery is complete immediately after receiving it by comparing it with MEIKO's order confirmation and/or the delivery note.
- If applicable, submit a claim for any missing parts immediately to the freight forwarder and notify MEIKO.
- Check the machine for transportation damage.



Note

If there is any suspicion of transportation damage, the shipping company and MEIKO must be informed immediately in writing. Photograph any damaged parts and send the pictures to MEIKO.

7.1.2 Requirements for the installation area

Installation of the dishwashing machine in an area where the ambient temperature is below 0° C can result in damage to the internal water circuit components (e.g. pump, solenoid valve, boiler, etc.).

The dishwashing machine is only frost-proof in as-delivered state or if equipped with special features (optional: frost removal).

The storage and installation location must be frost-free at all times.

Install anti-slip floor coverings in the work area due to the risk of slipping.

7.1.3 Securing in a niche that is not level with the floor or pull-out system

When installed in a niche that is not level with the floor and/or on a pull-out system provided by the customer, the load-bearing capacity of the niche floor and/or pull-out system must be matched to the weight of the machine.

Secure the machine on a niche that is not level with the floor to prevent it from being pulled out unintentionally.

Secure the machine on a pull-out system in such a way that the machine cannot tip over or slide down when the pull-out system is extended.

7.1.4 Requirements for the waste water connection

A waste water pipe is integrated into the drain pump.

- Connect the drain hose to the on-site waste water pipe.

– For Australia and New Zealand only:

The drain hose must be connected so that it is waterproof with a drain fitting in accordance with AS 1589 AS 2887 and a sanitary waste water pipe or sanitary waste water fitting in accordance with AS / NZS 1260.

- Depending on the dishwashing machine application, a grease trap may be included, based on the general/location-specific regulations.
- Observe maximum drain heights above the finished floor.

7.1.5 Requirements for the fresh water connection

For Australia and New Zealand only:

All work carried out must be in accordance with AS/NZS 3500.1!

Fresh water connections and their components must be carried out in accordance with local regulations, e.g. EN 1717/DIN 1988-100. The fresh water must be of the same quality as drinking water in microbiological terms. This also applies to treated water.

The basic model of the dishwashing machine features an air gap (type AA or AB as per EN 1717 or EN 61770). In the case of SVGW (Switzerland) and other countries, a type EA safety device (at least) is also required in front of the connection hose, depending on the machine version. Installation components and materials must be suitable and permitted in accordance with local regulations. A solenoid valve is integrated into the dishwashing machine's fresh water line. This, together with the leakage detector in the base drip tray in the subframe, ensures that in the event of a leak within the machine, the fresh water inlet is shut off.

Pressure range of the fresh water supply flow pressure upstream of the solenoid valve:

- Machines with air gap or pressure booster pump:
60 – 500 kPa (0.6 – 5 bar)
- Machines with a safety device to prevent backflow:
250 – 500 kPa (2.5 – 5 bar)

Maximum pressure

- Do not exceed maximum pressure of 500 kPa (5 bar).

Flow rate in the solenoid valve

- Machines with built-in water softener: With flow regulator limited to 3 l/min.

Measures to ensure correct water pressure:

- If the minimum pressure flow is too low, increase the pressure using a booster pump.
- If the maximum pressure is exceeded, limit the pressure using a pressure regulator.

Other measures:

- Ensure that no foreign iron particles can enter the appliance via the fresh water connection. The same also applies for contamination by other metal particles (e.g. copper shavings). Corresponding instructions are contained in the assembly plan.
- A dirt trap must be fitted into the clean water supply to protect the solenoid valve.
- After the dishwashing machine has been unused for longer periods of time, drain the connection line and wash it before placing the machine in operation again.
- When replacing an old machine with a new one, make sure that the existing feed hose is exchanged for the new feed hose supplied with the machine.

7.1.6 Requirements to the electrical connection



Note

The wiring diagram is located behind the front panel of the machine. This must remain in the machine!

The rating plate with the electrical connected loads is located inside the front panel.

For Australia and New Zealand only:

All work carried out must be in accordance with AS/NZS 3000!

Electrical connection must be carried out in accordance with the locally applicable regulations (e.g. HD 60364-1/IEC 60364-1/VDE 0100-100) so the machine can be connected to the mains supply in accordance with the installer's regulations. However, national installer's regulations may differ. The machine and accessory appliances are intended for permanent connection to the on-site power supply and the on-site protective equipotential bonding and have been tested accordingly before being brought to market.

Fuse protection

- Set up the machine according to the local conditions and according to the rated current (see rating plate) as a separately fused circuit (final circuit). Take note of the available connection variants.
- The requirements for limiting voltage changes, fluctuations and flicker in accordance with IEC 61000-3-11 are fulfilled for this machine if the network has a current-carrying capacity of ≥ 100 A.

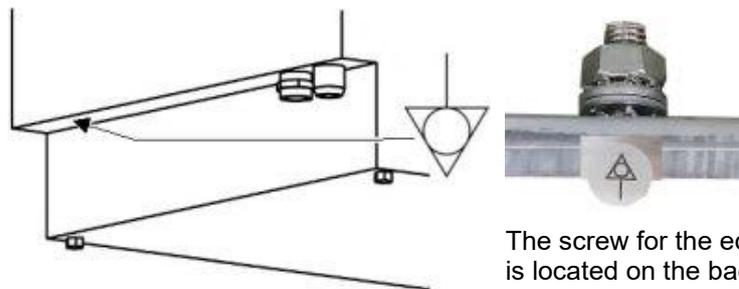
Main switch/mains connection cable

- Install a main switch with all-pole disconnection from the mains in accordance with the installer's regulations in the permanently installed on-site installation.
- The main switch must be easily accessible for the operating personnel.
- The contact opening width must correspond to overvoltage category III in each pole.
- Mains power cables, unless part of the standard product scope of supply, must be oil-resistant, sheathed, flexible cables no lighter than a normal polychloroprene-sheathed cable (or other equivalent synthetic elastomer) with the marking 60245 IEC 57.
- Mains connection cables may only be replaced by persons trained by MEIKO.

Electrical safety

- The electrical safety of this machine is only ensured if it is connected to a properly installed protective conductor system. It is very important to verify this fundamental safety feature. If in doubt, have the building wiring checked by an electrician.
- Carry out the protective measures as well as the connection of the equipotential bonding in accordance with the regulations of the local power supply companies as well as the locally applicable regulations.
- As an alternative to equipotential bonding, the operator can, acting on its own responsibility, use a mains-side residual current device (RCM or RCD) for personal protection. A type "A" according to IEC 60755 is sufficient.

Position of the protective equipotential bonding



The screw for the equipotential bonding is located on the back of the machine near the media connections.

7.2 Perform assembly



⚠ Warning

Danger of injury due to machine tipping

If machine is freestanding and not secured, it could fall over and cause crushing.

- If machine is freestanding, it must be secured long term to prevent tipping.
- Wear protective gloves and safety shoes.

⚠ Beware

Improper fresh water connection

Backsiphonage of non drinking water into the water supply system

- Have the fresh water connected by a qualified professional and in accordance with local regulations.

Caution

Material damage due to ingress of pressurised media

- Shut off the fresh water supply at the main valve prior to installation works.
- Check that all lines are securely connected.

Caution

Material damage due to steam escape

Small quantities of steam may escape through the dishwashing machine's door area. It is possible that adjacent furniture can swell up.

- Protect adjacent furniture from swelling up.
- If possible, avoid installing the machine in an area close to sensitive furniture.



Note

Assembly may be performed **only** by a licensed and authorised service technician!

Assembly must be carried out in accordance with the installation drawing.



- Ensure the machine is level in both directions by using a water level.
- Compensate for an uneven floor by adjusting the foot studs (1).
- Table joints must be sealed with detergent-resistant sealing compound (e.g. silicone).
- Check that the machine is stable.

For disposal of packaging materials, see page 56!

8 Commissioning



⚠ Warning

Danger of injury from entering a danger zone

Unauthorised persons might be in or enter the danger zone during transport, assembly, commissioning, maintenance and repair work. This can lead to injuries.

- Only permit qualified persons to perform work at the machine.
- Remove unauthorised persons from the danger zone.
- Cordon off danger zone and signpost it for third parties.
- Never remove or disable safety devices on the machine.
- Always wear cut-resistant protective gloves when removing housing parts and when working inside the machine!

8.1 Check prerequisites for commissioning

Caution

Material damage due to steam escape

Small quantities of steam may escape through the dishwashing machine's door area. It is possible that adjacent furniture can swell up.

- Protect adjacent furniture from swelling up.
- If possible, avoid installing the machine in an area close to sensitive furniture.

Prerequisites to be provided by the customer:

- Consistently frost free storage and installation area.
- Anti-slip floor coverings installed in the work area around the dishwashing machine.
- Electrical connection in accordance with the dimensional drawing.
- Fresh water connection in accordance with the dimensional drawing.
- Waste water connection in accordance with the dimensional drawing.

8.2 Perform commissioning



Note

Instruction and initial commissioning may be performed **only** by an authorised service technician! The operator must not use the dishwashing machine before completing training.

To avoid damage to the appliance or dangerous injuries during commissioning of the machine, please note the following points:

- Check supplier parts (e.g. external water processing devices or heating pumps). More detailed information can be found in the relevant operating instructions.
- Ensure that all tools and foreign parts are removed from the machine.
- Make sure that any escaped fluids have been removed.
- Before commissioning, activate all safety systems and door switches (on under-counter machines).
- Check all screw connections sit securely.
- For dishwashing machines with GiO Module, attention must be paid to the "Commissioning certificate for GiO Modules" and the instructions adhered to accordingly.

9 Operation/use

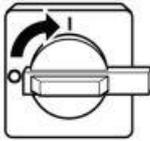
9.1 Prepare dishwasher

Warning



Risk of injury from contact with chemicals

- Observe the safety data sheets and dosing recommendations of the chemical manufacturers.
- Use eye protection.
- Wear protective gloves.
- Do not mix different chemical products.



1. Switch on the power.



2. Turn on the tap.

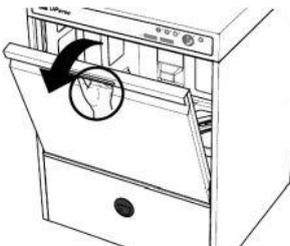


3. Check the canister fill level.

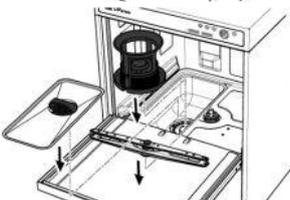


Note

If there is air in the hoses, the automatic dosing will not function correctly. The relevant pipe must be vented, see page 46.



4. Open door.



5. Insert filter, tank cover sieve and wash systems.



6. Close door.

9.1.1 Putting the machine into operation



The dishwasher is closed and does not have a rack inside.



1. Press **on/off key**.



The dishwasher is filling and heating up. During this time, the control light flashes over the selected wash programme key. The time required for the machine to be ready to operate depends on the temperature of the water supply and the installed boiler or tank heating capacity.



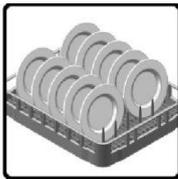
When the machine is ready to operate, the control light above the selected wash programme key is lit permanently.

9.2 Washing

9.2.1 Putting away washware



- All hollow containers must always be loaded upside down. Otherwise the water will not be drained from the wash ware and brilliant drying will not be possible.



- Place plates, trays and dishes into the baskets at an angle. The inner surfaces face upwards.

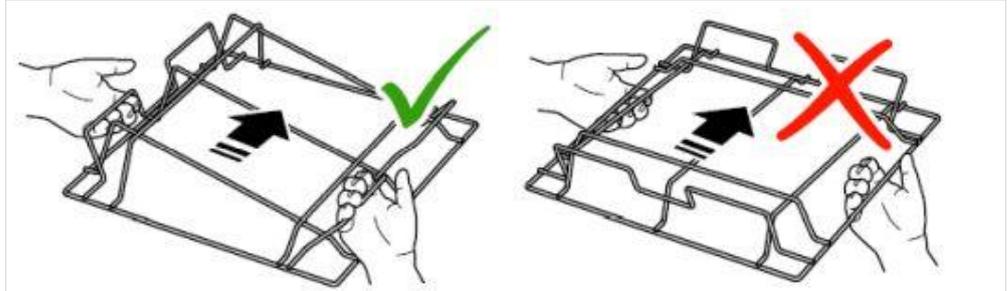


- If cutlery holders are used, always insert the cutlery pieces with the handles down.
- Mix up the spoons, knives and forks as much as possible in each cutlery basket, since similar cutlery pieces may nest together.
- Do not put too many cutlery pieces into the individual cutlery baskets.



- Do not stack crockery items on top of each other in the basket. Direct access to the wash water would be more difficult and the washing times would have to be unnecessarily long. Shorter washing with baskets which are not overfilled is more economical.

Loading of the UPster U 500 M2 TT



The skewer ensures that the water can run off the crates better. Always use the slanting plate in such a way that the high edge is on the right or left, not at the front or back!

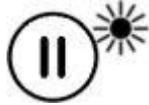


- Push the crates into the machine on the tilter.
- Always place trays and compartment food trays into the rack at an angle. The inner surfaces face upwards.

9.2.2 Select wash programme



1. Press the desired wash programme key.



The control light of the selected wash programme key is lit.

UPster U 500 M2		
Wash programme	Meaning	Washware
	Short	Lightly soiled washware
	Normal	Normally soiled washware
	Intensive	Heavily soiled washware pots, containers, kitchen utensils

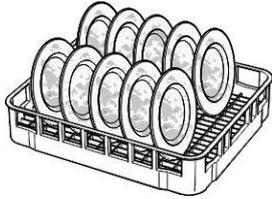
UPster U 500G M2		
Wash programme	Meaning	Washware
	Short with cold water final rinse	Slightly soiled glasses
	Normal with cold water final rinse	Normal soiled glasses
	Intensive with hot final rinse	Heavily soiled, thick-walled glasses; coffee cups

The best cleaning result for glasses at U 500G is achieved when little coarse dirt is carried into the dishwashing machine through dishes, for example.

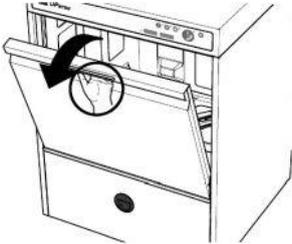
Programme configuration

Depending on the machine type, the electrical connection and water supply, the programme configuration can vary. The programme configuration is shown in the following table.

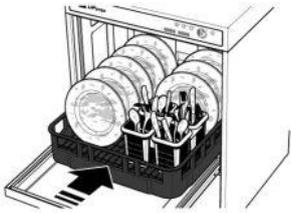
9.2.3 Start wash cycle



1. Clear the washware (removing any large food residues, napkins, tooth picks, lemon peel etc.).
2. Put the washware into the rack.



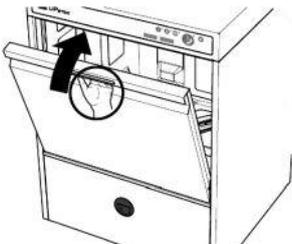
3. Open door.



4. Insert the rack into the dishwasher.



5. Ensure that the correct programme has been selected, see page 35.



6. Close door.



7. Press the **wash key**.

The control light above the wash key is lit. The machine washes automatically and switches the programme off after completion.



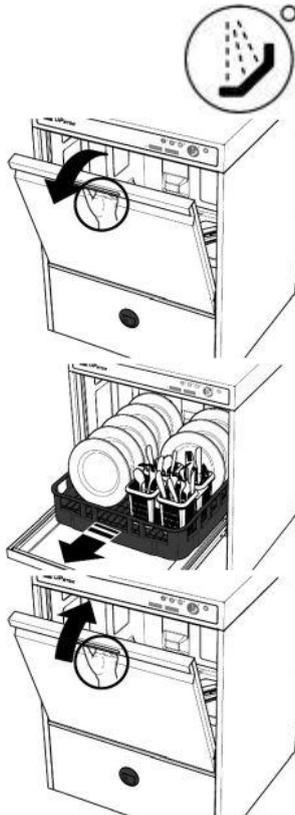
The wash cycle time may differ from the set programme running time if the programme running time is not sufficient to heat up the boiler and tank water to the pre-set temperature. In this case, the cycle time is automatically extended. This means that the dishwasher runs until the required temperatures are reached, but max. 5 minutes.

9.2.4 Emptying the washware

⚠ Caution

Danger from hot wash water, washware and machine parts

- Wear protective gloves if necessary.
- Let the washware cool down before emptying, if necessary.
- Let the machine cool down before touching machine parts, if necessary.
- Never open the machine door or hood during a wash cycle.
- Only open and close the hood/door using the designated handle(s).



After the programme ends, the control light above the wash key turns off and an acoustic signal sounds.

1. Open door.
2. Carefully remove the rack.
3. Close door.

9.3 Shutting down the dishwasher



The dishwashing machine is closed and does not have a rack inside.



1. Press the **On/Off button**. All control lights turn off.



2. Press the **wash key** to start the self-cleaning programme.



The control light on the wash key is flashing. The rinse water is pumped out and the wash chamber is sprayed with hot fresh water. After the programme ends, the control light turns off.



After the end of the process, clean the machine, see page 52.

9.4 Fill consumables



⚠ Warning

Risk of injury from contact with chemicals

- Observe the safety data sheets and dosing recommendations of the chemical manufacturers.
- Use eye protection.
- Wear protective gloves.
- Do not mix different chemical products.

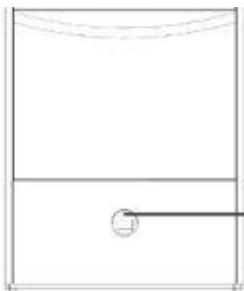
9.4.1 Refill of internal storage container



Rinse aid low



Detergent low



The machine indicates the shortage of detergent and/or rinse aid on the display. The internal storage containers must be topped up. The storage tanks are located on the inside of the lower front panel.

1. Open front panel by lifting slightly on the handle (1).



Dosing recommendation

2. Pour the appropriate chemical for dosing into a measuring cup.

Maximum filling quantity	UPster U 500 M2
Detergent	1000 ml
Rinse aid	150 ml



3. Use the loading chute to pour the chemical carefully into the machine until the storage container is full. Check fill level from outside.
 - Blue: rinse aid
 - Transparent: detergent
4. Rinse the loading chute and measuring cup.
5. Close lower front panel.

9.4.2 Replacing the canister



Rinse aid low



Detergent low



Note

The canisters for detergent and rinse aid are located in close proximity to the dish-washing machine.

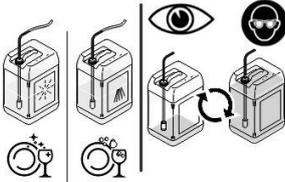


Note

When using a suction lance which detects whether a canister is empty, a shortage of detergent or rinse aid will be indicated on the display.



A canister is empty.



1. Remove the suction lance from the empty canister and insert it into a full canister.

2. If necessary, ventilate the pipelines, see page 46.

9.4.3 Fill salt container

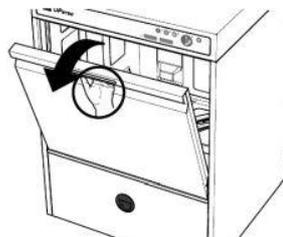
Caution

Damage to water softener if salt container is not filled

Fill empty salt container promptly if **salt container control light is red!**



If the capacity of the installed water softener is largely exhausted, the red control light above the symbol for the salt container lights up.



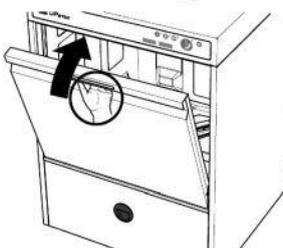
1. Open door, open salt solution container and fill with 1.5 kg of regeneration salt (sodium chloride with a grain size of 0.3 - 1 mm). If possible, use a loading chute!



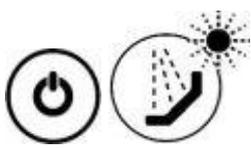
During filling, water and salt particles may overflow from the salt container!



2. Clean the seal and thread of the salt solution container and close tightly. The ingress of wash water can cause capacity loss in the water softener!



3. Close door.



4. Start the self-cleaning programme (if necessary, switch off the dishwasher using the on/off key and then press the wash key) to dissolve any salt particles that have escaped and pump them out of the tank. If the salt remains in the wash tank for a long time, this can result in corrosion, and even pitting, in the tank bottom.



Regeneration starts automatically once machine is ready for operation, see page 33 and on the next page.

9.5 Regeneration of the built-in water softener

The **ActiveClean** water softener automatically regenerates itself without intervention by the operator.



The control light shows the ongoing regeneration (duration: approx. 8 minutes). The dishwasher can be used for a programme run as normal. If a second programme run is started during the regeneration time, the wash time is lengthened until regeneration is completed. Then the pause for draining and fresh water rinse follow.

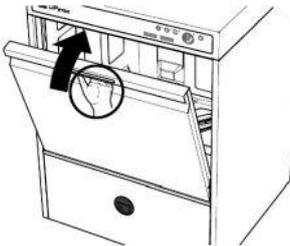
Regeneration can be started manually, if necessary, see page 47.

9.6 Water change programme (option)

A water change programme can be assigned to the wash programme keys. In the standard setting, the water change programme is stored at the wash programme key III (if present).

The dishwasher washes normally and empties the tank. The fresh water final rinse follows. The water from the fresh water final rinse is already used for refilling the wash tank. The control light above the wash key goes out.

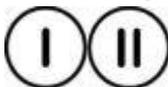
The following options now exist:



- Open door, remove rack, close door.



Machine is made ready for operation.



- Press wash program key I or II.



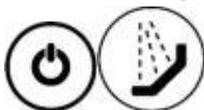
Machine is made ready for operation.



- Open door, remove rack, close door and press wash key.



Machine is made ready for operation and the wash programme is started.



- Press the on/off key and then the wash key.



The self-cleaning programme is started in order to take the dishwasher subsequently out of operation.

9.7 Malfunctions

If the described operational problems occur repeatedly, the cause must be identified.

Occasional malfunctions

Malfunction	Possible cause	Remedy
Dishwashing machine doesn't fill up	No water present	Open the shut-off valve
	Dirt trap clogged	Clean the dirt trap
	Door open	Close door
Final rinse does not spray	No water present	Open the shut-off valve
	Dirt trap clogged	Clean the dirt trap
Streaks / smears on the washware	Unsuitable rinse aid	Change product
	Incorrect dosing quantity	Adjust dosing quantity
	Water pre-treatment defective	Check water pre-treatment
Strong formation of foam in the wash tank	Dirt level too high	Prepare the washware more thoroughly/change tank water more frequently
	Manual dishwashing detergent used	Do not use a foaming manual dishwashing detergent for precleaning or for cleaning the machine. Foam can cause malfunctions in the dishwashing machine and a poor washing result.
	Unsuitable detergent	Change product
	Unsuitable rinse aid	Change product

As a rule, malfunctions that are not described here require assistance from a service technician authorised by MEIKO. Please contact your market organisation or an authorised dealer.

9.7.1 Messages



When a malfunction occurs, an information or error message (**INFO/ERR**) is displayed.

- Information messages (**INFO**) can be acknowledged with the wash key. If the cause has been remedied (see table), operation can be continued.
- Error messages (**ERR**) usually require the deployment of an authorised service technician!
- If the machine displays an info or error message not listed in the following tables, contact your service technician!

INFO	Description	Possible cause	Measures/remedial action
120	Emergency programme active	<ul style="list-style-type: none"> • No boiler/tank heating • No fresh water supply 	<ul style="list-style-type: none"> • Possible to continue work at limited capacity • Call a service technician!
121	Door/hood not closed	<ul style="list-style-type: none"> • Door/hood open • I/O circuit board defective • Microswitch defective • Microswitch not correctly set 	<ul style="list-style-type: none"> • Close door/hood • Call a service technician!

122	Incorrect password/no authorisation	<ul style="list-style-type: none"> Code incorrectly entered 	<ul style="list-style-type: none"> Enter code again
123	Factory setting parameter list	<ul style="list-style-type: none"> Switch supply voltage on/off 	<ul style="list-style-type: none"> No intervention by the operator is necessary Message disappears after 5 min.
126	Maintenance necessary	<ul style="list-style-type: none"> The set operating hours (P 122) or batch number (P 123) has been reached 	<ul style="list-style-type: none"> Possible to continue working Call a service technician!
420	Lack of rinse aid (with integrated fill-level detection)	<ul style="list-style-type: none"> Canister empty Suction lance not correctly introduced 	<ul style="list-style-type: none"> Replace empty canister Check suction lance Where appropriate, ventilate pipes
520	Lack of detergent (with integrated fill-level detection)		
720	Regeneration is running	<ul style="list-style-type: none"> Regeneration programme has been started and is running 	<ul style="list-style-type: none"> Let regeneration programme run to completion Regeneration programme cannot be interrupted Possible to continue working
721	Regeneration not possible	<ul style="list-style-type: none"> Salt container empty 	Fill salt container
722	Salt container empty	<ul style="list-style-type: none"> No salt present No water in the salt container 	Fill salt container <ul style="list-style-type: none"> Where appropriate, Fill water in the salt container

ERR	Description	Possible cause	Measures / remedial action
001	EEPROM error	<ul style="list-style-type: none"> EEPROM <ul style="list-style-type: none"> Not present/defective Installed incorrectly Incorrect data/empty 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
111	Floor pan leakage	<ul style="list-style-type: none"> There is a leak 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
118	Signal of the two door contact switches unequal	<ul style="list-style-type: none"> Malfunction/defect door contact switch 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
201	Boiler level not reached during first filling (with integrated pressure booster pump)	<ul style="list-style-type: none"> Fresh water inlet insufficient (water tap closed) Feed hose kinked/disconnected/leaks Inlet filter soiled Solenoid valve defective Boiler switch defective 	<ul style="list-style-type: none"> Check water supply Check feed hose Check pre-filter/sieve and clean, if necessary Where appropriate, call a service technician!
202	Boiler level not reached on time during filling (with integrated pressure booster pump)		
203	No change detected by the boiler level switch when emptying (with integrated pressure booster pump)	<ul style="list-style-type: none"> Pressure booster pump defective Plug connections disconnected (e.g. pressure booster pump) Start capacitor defective Boiler level switch defective No signal to or from pressure booster pump and I/O circuit board No signal boiler full - from I/O circuit board 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
204	No change yet detected at the boiler level switch (with integrated pressure booster pump installed) after the rinse time expired		

ERR	Description	Possible cause	Measures / remedial action
205	Boiler temperature not reached after max. heat time (P310)	<ul style="list-style-type: none"> Boiler heating defective/melting beads, heating element Temperature sensor defective, incorrect installation position Boiler protection defective, output switch triggered No signal from I/O circuit board 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
206	Wash time increase	<ul style="list-style-type: none"> Boiler not ready for final rinse on time (temperature or level not reached) Boiler heating defective (melting beads) Temperature sensor defective Boiler protection defective, output switch triggered No signal from I/O circuit board 	<ul style="list-style-type: none"> Acknowledge message, continued work possible Let programme run without intervention by the operator If it occurs frequently, call a service technician!
210	Boiler temperature sensor short-circuit	<ul style="list-style-type: none"> Sensor defective Sensor position not correct 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
211	Boiler temperature sensor interruption	<ul style="list-style-type: none"> Plug contact not connected properly 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
212	“Actual” boiler temperature too high (>95°C)	<ul style="list-style-type: none"> Contacting sticking Incorrect sensor/defective sensor 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
301	Number of circulatory pumping cycles for tank filling exceeded Tank level analysis disrupted	<ul style="list-style-type: none"> Feeding water pressure too low Inlet filter soiled Rinse nozzles dirty Air trap dirty Condensate in level pipe Feed hose kinked/disconnected/leaks 	<ul style="list-style-type: none"> Check water supply Check feed hose Clean inlet filter Clean rinse nozzles Call a service technician!
302	While drain pumping during the wash programme, tank level 1 is not fallen below on time (with integrated drain pump)	<ul style="list-style-type: none"> Drain pump output too low Drain pump dirty/defective Impeller loose Drain pump plug connection open 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
303	While drain pumping during the wash programme, tank level 3 is not fallen below on time (with integrated drain pump)	<ul style="list-style-type: none"> Start capacitor defective Tank level analysis disrupted Aquastop does not close correctly No signal from I/O circuit board 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
304	Tank temperature not reached after max. heat time (P314)	<ul style="list-style-type: none"> Tank heating defective/melting beads, heating element Temperature sensor defective, incorrect installation position Tank protection defective, output switch triggered 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!

ERR	Description	Possible cause	Measures / remedial action
305	Number of boiler fills insufficient for rinsing. Tank level 2 not reached	<ul style="list-style-type: none"> Feeding water pressure too low Inlet filter soiled Rinse nozzles dirty Air trap dirty Condensate in level pipe Feed hose kinked/disconnected/leaks Level sensor defective Plug contact not connected properly 	<ul style="list-style-type: none"> Check water supply Check feed hose Clean inlet filter Clean rinse nozzles Call a service technician!
306	Max. tank level exceeded Tank level analysis disrupted.	<ul style="list-style-type: none"> Air trap dirty Condensate in level pipe Level sensor defective Plug contact not connected properly 	<ul style="list-style-type: none"> Empty dishwashing machine and refill Call a service technician!
307	Tank level sensor defective	<ul style="list-style-type: none"> Connection plug loosened Sensor or I/O circuit board defective 	<ul style="list-style-type: none"> Call a service technician!
310	Temperature sensor short-circuit	<ul style="list-style-type: none"> Sensor defective 	<ul style="list-style-type: none"> Not possible to continue working
311	Temperature sensor interruption	<ul style="list-style-type: none"> Sensor position not correct Plug contact not connected properly 	<ul style="list-style-type: none"> Call a service technician!
312	Actual tank temperature too high (>85°C)	<ul style="list-style-type: none"> Contacting sticking Incorrect sensor/defective sensor 	<ul style="list-style-type: none"> Not possible to continue working Call a service technician!
701	ActiveClean interim container does not get full	<ul style="list-style-type: none"> Water inlet insufficient (water faucet closed) ActiveClean level switch does not switch/defective Aquastop valve defective 	<ul style="list-style-type: none"> Check water supply Call a service technician!
702	ActiveClean interim container does not empty	<ul style="list-style-type: none"> ActiveClean pressure booster pump overheated/defective ActiveClean level switch does not switch/defective ActiveClean valve does not switch 	<ul style="list-style-type: none"> Call a service technician!

9.8 Change authorisation level

Key/symbol	Meaning
	On/Off key Start programming
	Wash key Confirm entry and jump to next position in the code
	Wash programme key 1 Increase value by one
	Wash programme key 3 Decrease value by one



1. Press and hold the On/Off key for about three seconds.

Code 1- - - -

Code -0- - -



2. Enter the service code for the required authorisation level.

1-1 - - - -

Info 122

After entry of the correct code, the desired authorisation level (1, 4) is displayed in the left field in the first digital position. If the entry is incorrect, the message **Info 122** appears.

Authorisation level 1 – Service level

Read service data (**service code: 10000**)

The operator can view the service data.

Read/modify service data (**service code 10001**)

The operator can carry out all functions required for normal operation and configure the settings.

Authorisation level 4 – Dosing equipment level

Read settings (**service code: 40000**)

The operator can view the data for the dosing technology.

Read/modify settings (**service code 40044**)

The operator can view/edit all the relevant parameters for the dosing technology.

9.9 Service level

Code display	Meaning
	View parameter, see page 46.
	Vent rinse pipe, see page 46.
	Vent detergent line, see page 46.
	Manually start regeneration, see page 47.
	Reset the counter for replacing the partial desalination cartridge, see page 47.

9.9.1 View parameters

1. Switch to authorisation level 1 **Service level (10000)**, see page 45.



2. Select the entry 1–1.



3. Confirm the selection.



The first parameter is displayed.

4. Scroll through and view the parameters using the wash programme keys.

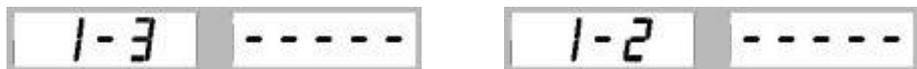


The service level can be exited with the **On/Off key**.

9.9.2 Ventilating the pipes

The ventilation of the detergent or rinse pipes must be performed if air is sucked in from the dosing units. This occurs if a canister is completely emptied during operation, or if one of the suction lances is not threaded through to the base of the canister.

1. Switch to authorisation level 1 **Service level (10001)**, see page 45.



2. Select the entry 1–3 for ventilating the detergent pipe, and entry 1–2 for the rinse pipe.



3. Confirm the selection.



The respective pipes are being ventilated, and the remaining time in seconds is displayed. If necessary, repeat ventilation.



Venting can be cancelled with the **on/off key**.

9.9.3 Start regeneration manually

1. Switch to authorisation level 1 **Service level (10001)**, see page 45.



2. Select the entry 1-4.



3. Confirm the selection.



Regeneration begins.



The service level can be exited with the **On/Off key**.

9.9.4 Replace counter for partial desalination cartridge (optional)

For dishwashers with a partial desalination cartridge and activated end-of-service indicator, the counter must be reset after changing the partial desalination cartridge.

1. Switch to authorisation level 1 **Service level (10001)**, see page 45.



2. To reset the counter, select entry 1-5.



3. Confirm the selection to reset the value.



The setting level can be departed with the **on/off key**.

9.10 Dosing system level

1. Switch to authorisation level 4, Dosing technology level (40000 or 40044), see page 45.



The parameters relevant for the dosing technology are displayed and can be changed.

Code display	Meaning	Adjusting range
P104	Rinse aid dosing quantity	0.10 - 1.00 ml/L
P105	Detergent dosing quantity	0.10 - 20.00 ml/L
P218	Lack of rinse aid	1/0 = Display on/off
P219	Lack of detergent	1/0 = Display on/off
P224	Rinse aid dosing unit activation method	0 = Do not activate 1 = Activate through calculated running time 2 = Activate as per pressure booster pump 3 = Activate as per wash pump
P225	Detergent dosing unit activation method	0 = Do not activate 1 = Activate through calculated running time 2 = Activate as per pressure booster pump 3 = Activate as per wash pump
P321	Rinse aid dosing unit output	0.10 - 10 L/h
P322	Detergent dosing unit output	0.10 - 20 L/h
P326	Rinse pipe bleed time	0 - 255 s
P327	Detergent pipe bleed time	0 - 100 s

10 Maintenance and cleaning

Warning



Danger to life from electric shock

Contact with live electrical parts can lead to serious injury or death.

- Work at or repairs to 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. To do this, turn the local mains switch to **OFF** and ensure that it can't be switched back on again.

Warning



Danger to life from electric shock if cover panels are open

If the machine is operated without cover panels, electrified parts are freely accessible. Contact with these parts can lead to serious injury or death.

- Disconnect the machine from the power supply before opening 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 placing the machine back in operation.

Warning



Danger of injury from entering a danger zone

Unauthorised persons might be in or enter the danger zone during transport, assembly, commissioning, maintenance and repair work. This can lead to injuries.

- Only permit qualified persons to perform work at the machine.
- Remove unauthorised persons from the danger zone.
- Cordon off danger zone and signpost it for third parties.
- Never remove or disable safety devices on the machine.
- Always wear cut-resistant protective gloves when removing housing parts and when working inside the machine!

Caution

Danger from hot wash water, washware and machine parts

- Wear protective gloves if necessary.
- Let the washware cool down before emptying, if necessary.
- Let the machine cool down before touching machine parts, if necessary.
- Never open the machine door or hood during a wash cycle.
- Only open and close the hood/door using the designated handle(s).

Caution



Environmental damage due to improper disposal of liquids

Environmentally hazardous liquids (e.g. grease and oils, hydraulic oils, coolants, cleaning agents containing solvents etc.) may be used during work on and with the machine. Improper disposal of these liquids can damage the environment.

- Always capture, store and transport liquids in suitable containers.
- Never mix liquids.
- Dispose of liquids properly in accordance with local requirements.

10.1 Maintenance



Note

MEIKO recommends having the machine serviced by an authorised service technician at least once a year. As part of the maintenance, an electrical safety inspection is also carried out in accordance with DIN VDE 0701-0702 / DGUV Regulation 3. Wear parts are checked and replaced, if necessary, and the machine tested. Cleaning work and changing pre-filters in machines with GiO MODULE must be carried out by trained operators.

Neglected or improper maintenance increases the residual risk of unforeseen damage to property and persons, for which no liability will be assumed.

A functional test on all safety systems of the machine is carried out during every regular maintenance.

- Comply with the maintenance intervals prescribed in these operating instructions.
- Please note the maintenance instructions for the individual components in these operating instructions.
- Carefully dispose of any detergents that could harm the environment.

10.2 Maintenance table



Note

Maintenance work must **only** be carried out by MEIKO authorised staff!

Maintenance work	U = U 500 M2 H = H 500 M2	Checked	Cleaned	Replaced	Maintenance requirement
Visual inspection					
1. Error memory					
Check error memory for unusual events using M-Commander 2.7	U/H				annually
2. Pumps					
Check pumps for leaks and any visible damage	U/H				annually
Check pumps for pump rotor noise and function	U/H				annually
3. Wash tank, wash and rinse system					
Functional and visual tests of wash and rinse arms	U/H				annually
Replace the ring, nut, bearing and spacer washer on the wash and rinse arms	U/H				annually
Check air trap on tank and clean if necessary	U/H				annually
Check tank level control for leaks	U/H				annually
Check sieves and filters	U/H				annually
Check rack holder/guide for damage	U/H				annually
Check wash and rinse systems for leaks	U/H				annually
Check water level in tank	U/H				annually
Check door seal	U				annually
Check tank and boiler heating	U/H				annually
4. Casing					
Check casing, tank and covers for damage and correct operation	U/H				annually
Check door and door counter balance for correct operation	U				annually
5. Fresh water installation					
Check valves, clean dirt trap	U/H				Annually
Check that boiler level control/air gap does not leak	U/H				Annually
Check that boiler, hoses, clamps and plastic parts do not leak	U/H				Annually
Check boiler drainage system does not leak	U/H				Annually
Check the free discharge section for cleanliness and tightness of the connections (visual check)	U/H				Annually
6. Wastewater installation					
Replace flap on ventilation valve	U/H				annually
Check operation of drain pump during drainage	U/H				annually
Check that pumps, hoses are not leaking	U/H				annually
7. Detergent dosing					
Replace peristaltic hose	U/H				annually
Check detergent dosing system is working and not leaking	U/H				annually
8. Rinse aid dosing					
Replace peristaltic hose	U/H				annually
Check rinse aid dosing system is working and not leaking	U/H				annually
9. Test run with function test of whole machine					
Check filling and heating until it is ready for operation	U/H				annually
Visual inspection of the entire machine for leaks	U/H				annually
Carry out test wash and check results	U/H				annually

10. Options									
ActiveClean water softener (if applicable)									
Check water hardness setting					U/H				annually
Check the seal on the lid of the salt container					U/H				annually
Start and check the regeneration process manually					U/H				annually
Integrated reverse osmosis system (if applicable)									
Visually check whole system for leaks					U/H				annually
Prefilter change standard membrane (< 0.1 mg/l)					U/H				every six months
Change pre-filter, chlorine-resistant membrane (≥ 0.1 and ≤ 2.0 mg/l)					U/H				every three months
Check fine sieve insert and choke in concentrate pipeline					U/H				annually
Check correct function of concentrate drain and check for deposits					U/H				annually
Fill in separate log: Certificate of Commissioning, GiO					U/H				annually
Partial demineralisation (PD)/full demineralisation (FD) (if applicable)									
Check operation					U/H				annually
Exhaust air heat recovery (if applicable)									
Check operation of fan					H				annually
Check operation of solenoid valve					H				annually
Carry out visual inspection and check for leaks					H				annually
11. Water quality, temperature									
Drinking water	°C	°dH	°CH	μ S/cm	U/H				annually
Water quality after water treatment (if applicable)		°C	°dH	μ S/cm	U/H				annually
12. Electrical safety check (certificate is optional)									
Carry out the visual inspection					U/H				annually
Check the protective earth conductor					U/H				annually
Insulation resistance measurement					U/H				annually
Measure current on protective earth conductor					U/H				annually

10.3 Daily cleaning

Caution

Material damage due to water ingress

Electrical cables and electronic components can be damaged if they come into contact with water.

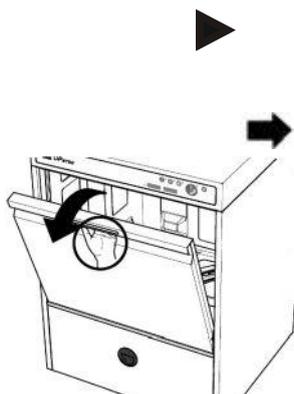


- The dishwashing machine, switch cabinets and other electrical components must **never** be sprayed with a hose or high pressure cleaner.
- Make sure that no water can enter the machine unintentionally.
- If installed at ground level, **never** flood the surrounding room.

Note

Do not use a foaming detergent for dish-washing by hand for pre-cleaning or cleaning the dishwashing machine. Foam causes malfunctions and poor washing results.

The machine is emptied, see page 37.



1. Open door.



2. Remove tank cover sieve, filter, wash systems top and bottom. All parts to be cleaned are blue or have a blue handle.
3. Remove all food residues sticking to the tank, the door, the tank heater and the filters using a brush.
4. Remove the wash and rinse arms and rinse thoroughly under running water. When doing this, pay particular attention to the nozzles!
5. Clean filter under running water.
6. Reinstall all parts in reverse sequence.

10.4 Cleaning the stainless steel surfaces

Caution

Material damage due to incorrect cleaning

Cleaning of parts made of stainless steel with unsuitable cleaning agents, care products and cleaning utensils leads to damage, deposits or discolourations on the machine.

- Never use aggressive cleaning or scouring agents.
- Never use cleaning agents that contain hydrochloric acid or bleaches based on chlorine.
- Do not use cleaning utensils previously used to clean non-stainless steel.

Caution

Material damage due to aggressive cleaning products

The use of aggressive cleaning and care products near the machine can cause damage to the machine due to their fumes.

- Make sure that the cleaning and care products cannot have direct contact with the machine.
- Do not use aggressive cleaning agents (e.g. aggressive tile cleaner) to clean the surrounding area.
- Please observe the notes on the product packaging.
- In case of uncertainty, request information from the suppliers of these products.

We recommend that, when required, the stainless steel surfaces are cleaned exclusively using cleaning and care products that are suitable for stainless steel.

- Lightly soiled parts can be cleaned with a soft and possibly damp cloth or sponge. For moistening we recommend only using demineralised water.
- In order to prevent limescale, we recommend wiping the surfaces thoroughly dry after cleaning.

10.5 Basic cleaning

MEIKO offers the M-5900PCL dishwasher cleaner for regular basic cleaning of the machine. The dishwasher cleaner reduces cleaning effort and eliminates unpleasant odours.

The dishwasher cleaner can be used as required. MEIKO recommends quarterly use. The MEIKO dishwasher cleaner is available from MEIKO service partners.

10.6 Descaling



Warning

Danger of injury from contact with acids

Descaling agents can cause damage to health if they come into contact with skin or eyes or are swallowed.

- Use eye protection.
- Wear protective gloves.
- Contact a physician immediately if chemicals or water containing chemicals (rinse water) are swallowed.
- Please take note of the manufacturer's safety instructions.

Caution

Destruction of plastic parts and seals from residues of de-scaling agent

Completely flush the de-scaling agent out of the machine.

Operating the dishwashing machine with hard water can result in the build up of lime scale deposits in the boiler and the tank interior. In this case, descale the following components:

- Inner chamber of tank
- Boiler casing
- Tank heating
- Boiler heating
- Wash and rinse system

Notes on conducting descaling:

- For descaling, only use products suitable for commercial dishwashing machines. Follow the manufacturer's instructions.
- Completely flush the de-scaling agent out of the dishwashing machine. To do so, perform 1–2 wash cycles with fresh water.
- Where necessary, assign Customer Service the task of descaling the boiler.

10.7 Spare parts

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, see page 16.)

11 Non-use for several days

11.1 Break in operation (e.g. seasonal operation)

- Run self-cleaning programme and clean the machine, see page 37.
- Close the on-site shut-off valve.
- Switch off on-site mains isolator.
- Manually open a gap in the front door or hood to prevent germ formation and odours.
- Frost protection: If necessary, have the machine frost-proofed by the authorised service technician. Dishwashing machines of the M-iClean U series without GiO MODULE can be frost-proofed by yourself.

11.2 Commissioning after break in operation

- Set up the machine for 24 h at 25°C if it is not frost-free. Have an authorised service technician commission the machine again.
- Have reverse osmosis (GiO MODULE) (option) disinfected in the case of down-times of more than 6 months.
- Open the on-site shut-off valve and switch on the main switch.
- Put machine into operation, see page 33.

12 Dismantling and disposal

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

12.1 Dismantling and disposal of the old device



Warning

Risk of injury from contact with chemicals

- Observe the safety data sheets and dosing recommendations of the chemical manufacturers.
- Use eye protection.
- Wear protective gloves.
- Do not mix different chemical products.

If applicable, wash machine components, containers, dosing units and hoses with fresh water to remove chemical residues. Wear suitable clothes (gloves, safety glasses) for this.



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

The components should be separated by material for recycling.

When disposing of the old appliance, the battery contained in the control system must be removed and disposed of separately.

13 Abbreviations

Abbreviation	Meaning
GiO	GiO module, integrated reverse-osmosis system
pH	The pH value denotes the acidity of liquids
LpA	LpA denotes the emission sound pressure levels at the workplace
dB	Decibel, unit of sound pressure level.

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The clean solution



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