DV 270.2

Utensil washer

Original operating instructions



EN

Read operating instructions before using machine!

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1 Introduction and general information

Dear Customer,
We are delighted about the confidence you have shown in our products.
It is very important to us that you should obtain significant use from MEIKO products and that they should make your work easier.

If you follow the instructions in this document carefully, your dishwashing machine will always give you total satisfaction and will have a long service life.

The cleaning and disinfection machine has been assembled by us at the factory and has undergone a thorough inspection. This provides us with the certainty and you with the guarantee that you will receive a fully developed product.

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

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

This information will help you to get to know the installation fully and to use it properly. It will also enable you to avoid repairs and the related loss of operational time.
In the event of any damage caused by non-observance of these operating instructions, any guarantee claims are invalid. This information will help you to use the installation properly.

MEIKO is constantly working on the further development of all its models.

We would therefore ask you to understand that because of this, we must reserve the right to make modifications at any time to any items covered by the contract in terms of their shape, fittings and technical characteristics.

No claims may therefore be based on the details, the images or the descriptions contained in these operating instructions.

Should you require any further information, or in case any particular problems not dealt with in great detail in the operating instructions should arise, you may contact the relevant MEIKO branch to obtain the information you require.

All MEIKO’s obligations arise from the relevant purchase contract which also contains the entire and only valid guarantee provisions.

The operating instructions must exist in the local language for each EU country. If this is not the case, the dish-washing machine must not be commissioned.

The original operating instructions in Germany, and all operating instructions in all languages for EU countries can be downloaded from the following address: https://partner-net.meiko.de
The complete technical documentation is issued to you free of charge.
Additional copies will be charged at cost.

These contractual guarantee rules shall be neither extended nor restricted as a result of any explanations given in the instructions.

The MEIKO Company very much hopes that you will enjoy our product and use it successfully.

1.1 Storage

Always store the operating instructions close to the installation!
The operating instructions must always be kept within easy reach!

1.2 Authorisation for service technicians of our service partners

MEIKO exclusively authorises authorised service partners for commissioning, inductions, repairs, maintenance, assembly and installation of the corresponding product groups within MEIKO devices.

1.3 Description of the machine

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

Type: _____

SN _____

 _____

This information can be found on the plate.

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.

3 Explanation of the safety symbols used

The following safety symbols will appear throughout these operating instructions. The purpose of these symbols is to draw the reader's attention to the text of the adjacent safety information.

	This symbol warns that there is danger to human life and health.
	This symbol warns that there is danger to the installation, to material or to the environment.
	This symbol denotes information that helps you to understand the installation's operation.
	Warning of dangerous electrical current!
	Warning of possible hand injuries!
	**No splashing water:** Prohibits the use of a high pressure hose.
	**Danger of explosion:** Indicates a potential explosion hazard.
	**Non-potable water:** The water is not for drinking. Health can be endangered by drinking.
	**Danger of burning:** Indicates possible hazard due to hot surfaces or media.
	Eye protection must be used or protective glasses must be worn
	Hand protection must be worn
	Read the operating instructions

4 Use of the appliance for the purpose intended


DANGER!



The machine is intended exclusively for the commercial washing of pots, kitchen utensils, baking trays, containers and beer mugs.

The washware must be suitable for use in commercial dishwashers 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.

5 General safety information

5.1 Operator's duty of care


IMPORTANT!

The dishwashing machine has been constructed based on a risk analysis and after careful selection of the applicable harmonized standards, as well as additional technical specifications. It therefore corresponds to the latest technology and is guaranteed to provide maximum safety.
This level of safety can only be achieved in practice, however, if all the necessary measures are taken. The operator of the installation has an obligation of care to ensure that these measures are scheduled, and also to check that they are correctly executed.

Measures to ensure the safe machine operation:


IMPORTANT!

<u>The operator must ensure in particular that ...</u>

... the washing machine is only used in accordance with the regulations.
Should it be used in any other way, damage or danger may occur, for which we accept no liability (see the chapter on "Use for the Purpose Intended“).



... in order to preserve the operational and safety guarantees, whenever required, only original parts supplied by the manufacturer are used.
the user will lose the right to any possible claims if the appliance is modified using any parts other than original parts.


IMPORTANT!

... only appropriately qualified and authorized personnel use, maintain, and repair the installation.


IMPORTANT!

... the relevant personnel is regularly trained in all questions relating to safety at work and environmental protection and, in particular, that they are familiar with the operating instructions as well as with the safety information provided in them.


IMPORTANT!

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


IMPORTANT!

... machines accessible only from behind may be operated only with rear panel cladding.


IMPORTANT!

... the required personal protective equipment is made available to maintenance and repair personnel, and is worn by them.



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



... the operating instructions are always kept in legible, complete condition at the place where the installation is installed, and are always at hand.



... any necessary initial tests to parts supplied by sub-suppliers must be carried out. More detailed information, if required, can be found in the relevant operating instructions.



Once the washing machine has been installed, put into service and handed over to the customer/operator, no modifications (electrical or location modifications, for example) may be made. Any modifications to the appliance - especially technical modifications inside - undertaken by unauthorised persons without the written permission of the manufacturer will invalidate the warranty.



... in accordance with 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.

5.2 Basic safety measures



Danger can arise from the improper use of the machine or if it is used for purposes for which it was not intended.



Parts carrying electric current as well as moving or rotating parts can cause

- dangers to the user's life and limb and
- material damage



The machine may only be operated by adequately qualified staff who have been trained by the operating company and who have been trained about the Hazard and Safety Instructions.
Qualified staff, as defined by the Operating Instructions, are persons:

- who are over 14 years of age,
- who have read and who observe the safety instructions,
- who have read and who observe the Operating Instructions (or the part applicable to the work to be carried out).



The machine operates with hot water. (Temperature of wash water = 58-60 °C, by Cleaning and disinfection machine must be 74 °C. The machine operates with hot water.) Avoid all contact with the rinse water. Please observe appropriate protective measures.
Observe all the instructions posted on the machine.



Warning !
When electrical equipment is in operation, it is inevitable that certain parts carry a dangerous current.
Before the machine's cover plates or an electrical device are opened it is imperative the entire machine is switched off completely via the on-site power disconnection device and that it is secured against reactivation by using appropriate measures.

Only specialist personnel may carry out repairs and rectification work on the electrical part of the machine. The Health and Safety Regulations must be observed.
The machine may be used again only after **all cladding panels** have been installed by the user of the machine.



The machine may **not** be sprayed with a water hose or high-pressure cleaner.



The machine must only be operated under the supervision of instructed staff.



The water in the wash-up area is non-potable and can´t be used for food preparation!



If you are unsure about the operation of the machine, the machine must not be used.



Do not place any solvents or other easily flammable substances in the wash-up area, as this increases explosion hazard



Steel scrub pads are not to be used for the pre-scouring nor for cleaning the items to be washed.

Do not wash any metal items in the machine which are not made of stainless steel.

The in-coming of metal parts (especially iron, tinplate, copper) must absolutely be avoided.

The appliance must not be used to transfer waste water from other sources into the drain (Warning: risk of corrosion and blockage).

Only use suitable products for cleaning the stainless steel surfaces, which do not attack the material, form any deposits, nor cause any discolorations.



Hood and doors MUST be closed.

Open the hood very carefully during the programme cycle, as otherwise wash water could splash out. In case of automatic hood opening do not open the hood during the programme cycle!



The tank heating element may still be hot after the tank has been emptied. There is therefore the danger of burns when the machine is cleaned manually.



Only detergents and rinse-aids suitable for the use in industrial dishwashers may be used.

Corresponding information is submitted by the manufacturers of such products.

Detergents and rinse agents can be injurious to health.

The manufacturers hazard instructions on the original packaging and in the safety data sheets must be observed.



At the end of operation the machine is to be switched off completely with the on-site power disconnection device.

The accompanying Operating Instructions must be observed for accessory devices, e.g. water treatment installations.



WE ACCEPT NO LIABILITY FOR DAMAGE OR INJURY ARISING FROM FAILURE TO OBSERVE AND ABIDE BY THESE SAFETY INSTRUCTIONS!!!

5.2.1 Working on electrical equipment



Any repair work and repairs to the power supply on the installation’s electrical equipment may only be carried out by a qualified electrician!

Check the electrical equipment regularly! Tighten any loose connections! Replace any damaged leads/cables immediately!

6 Delivery, shipping, installation and assembly

6.1 Delivery

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

If necessary, complain about any missing parts immediately to the shipping company and notify MEIKO.

Examine the appliance for possible transit damage.

Should you suspect any damage has occurred during shipping, you should inform:

- the shipping company,
- and MEIKO

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



Damaged appliances must not be commissioned.

6.2 Transport, installation and assembly

In order to avoid damage or life-threatening injuries during shipping of the installation, the following points must be observed:



- The shipping operations may only be carried out by qualified persons who observe the safety instructions.
- Observe transport instructions on the packing.
- The appliance must be moved with great care.
- Unpack the machine.

In order to ensure safe shipping, the installation parts are placed on a special four-sided wooden frame.

The washing machine must be transported on the supplied wooden frame only.
The packing is specifically designed to allow the appliances to be moved safely and securely using a pallet truck.

The enclosed technical sheet indicates the connection and consumption ratings of the appliance.



Small quantities of steam may escape from the hood of the appliance. Furniture and equipment situated near the hood must be protected.

An engineer from your local MEIKO Service Centre can install the appliance at the correct point and connect the tables - upon request. An engineer from your local MEIKO Service Centre can install the appliance at the correct point and connect the tables - upon request.

The following must be observed during the installation of the dishwashing machine:

- The complete unit must be levelled in both directions using a water level.
- Compensate for an uneven floor by adjusting the feet.
- Table joints must be sealed with detergent-resistant sealing compound (e.g. silicone).

6.3 Operating conditions

It is taken for granted that the planning of the system, as well as installation, setting in operation and maintenance works are executed by sufficiently instructed staff and that these works are checked by responsible specialists. The indications on the name plate of the machine must correspond to the technical sheet and the local connection conditions.

Conditions to be provided by the customer:

- Frost free storage and installation area
- Electrical connection in accordance with the technical sheet
- Steam connection (option) as per dimension sheet
- Fresh water connection in accordance with the technical sheet
- Waste water connection in accordance with the technical sheet
- Anti-slip floor coverings should be provided around the washing appliance.

6.3.1 Requirements for the installation area

- Ensure that the storage and installation area is permanently frost free.



The machine is only frost-resistant in the state it is delivered or when provided with special features (option: frost drainage). If the appliance is installed in an area where the surrounding temperatures are below freezing point, the water freezing inside can damage the internal water components such as pump, solenoid valve, boiler, etc.



- **<u>Only of automatic hood</u>**

The machine must be set up so that there is a minimum distance of 300 mm between the open hood and the ceiling.

6.4 Requirements for the electrical connection

Note

The wiring diagram is located behind the front panel of the dishwashing machine.
This must remain in the machine!
The type plate with the electrical connected values 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

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 for this dishwashing machine are fulfilled if the network has a current-carrying capacity of ≥ 100 A.

Main switch/mains connection cable

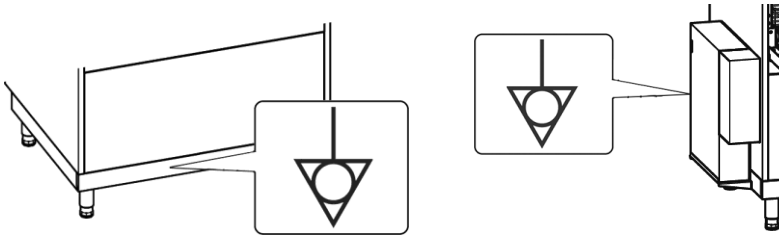
- Install a main switch with all-pole disconnection from the mains in accordance with the regulations for installers in the permanently installed on-site installation.
- The main switch must be easily accessible for the operating personnel.
- The contact opening width must correspond to overvoltage category 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.
- Refer to the circuit diagram for technical data for the main switch such as torque and stripping length.

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



Located in the centre behind the lower front panel and at the rear of the GiO-MODULE (optional).

6.5 Requirements for the fresh water connection

Each appliance carries the DVGW test symbol and does not require an extra safety valve in the water feed.

- Fresh water connection must be made according to EN 1717 or according to local regulations.

The machine is equipped with a water supply air gap (group A, model A in accordance with DIN EN 1717).

- The requirements of the clean water supply in the accompanying GiO module operating and service manual are to be observed for machines equipped with the GiO module.
- Observe the following limits for the fresh water supply to machines with the AirConcept exhaust air heat recovery system:
  - Water supply temperature max. 20°C
  - electr. conductivity > 100 µS/cm
  In case of electr. conductivity < 100 µS/cm (e.g. in operations with complete demineralisation or reverse osmosis systems) the stainless steel heat exchanger available as an option must be used.



The minimum flow pressure of the clean water supply upstream of the solenoid valve must be 0.6 bar; if water-softening (AktiveClean) equipment is incorporated into the machine, it should be 1 bar; and for machines equipped with the GiO module it should be 1 bar.
The maximum pressure must not exceed 5 bar.

- If the flow pressure is below the minimum, increase the flow pressure with a booster pump; if the maximum pressure is exceeded, limit it with a pressure reducer.
- A water stop is integrated into the fresh water inlet of the machine. This, together with the leak water switch in the floor pan of the base, ensures that the fresh water supply will be cut off in the event of any leak

- Suitable protective measures must be taken to ensure that no iron particles can enter the appliance via the mains water supply. Similarly, precautions must be taken to prevent the entry of other metal particles, for example copper turnings. Corresponding instructions are contained in the installation drawing. Therefore suitable measures must be taken.
- A dirt trap must be fitted into the fresh water supply to protect the solenoid valve.

For Australia and New Zealand only:
All work carried out must be in accordance with AS/NZS 3500.1!

6.6 Requirements for the waste water connection

- A waste water pump is integrated in the waste water line (further information about this is in the technical sheet).
- The drain hose must be connected to the waste water pipe in the building.
- A grease trap may be needed, depending on the machine application.
- The requirements of the waste water supply in the accompanying GiO module operating and service manual are to be observed for machines equipped with the GiO module.

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.

6.7 Emergency-off

- Switch the machine off completely via the on-site power disconnection device.

7 Settings for initial commissioning by the service engineer

7.1 Commissioning

In order to avoid damage to the installation and the injury and death of persons when commissioning the installation, the following points must be observed without fail:
Any necessary initial tests to parts supplied by sub-suppliers must be carried out. More detailed information, if required, can be found in the relevant operating instructions.



- The installation may only be commissioned by suitably qualified persons observing the safety instructions.
- Before initial startup, check that any tools and parts not belonging to the installation have been removed.
- Check whether any escaping liquid is removed.
- Activate all the safety systems and hood switches before commissioning.
- Check that all screw connections are tight.
- Please also read the chapter on “General safety instructions ".
- Commissioning and instructions will be provided by technicians specially trained by Meiko. The operator may only use the installation after training has been provided.
- The "Commissioning certificate for GiO modules" is to be observed for machines equipped with the GiO module and the instructions adhered to accordingly.

8 Washing with dish-washer



The appliance must not be used without a thorough knowledge of the ”Operating Instructions“. Incorrect operation could result in injuries to personnel or damage to the appliance.



- **<u>Only of automatic hood</u>**

Climbing alongside the washing machines while they are in operation is prohibited. The same applies when cleaning the washing machines.

8.1 Operating panel

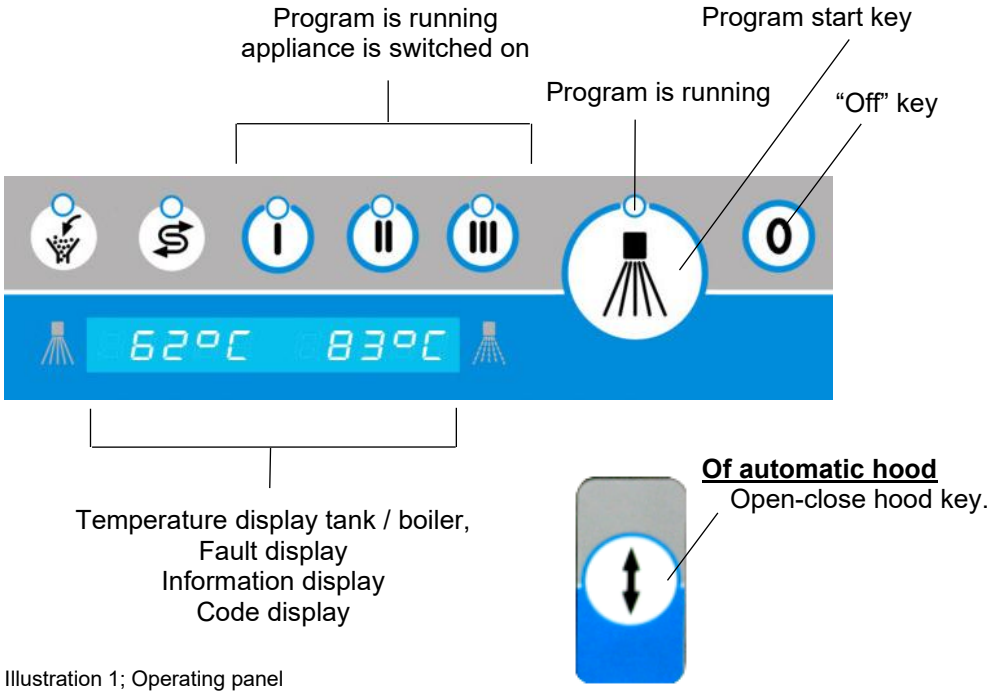
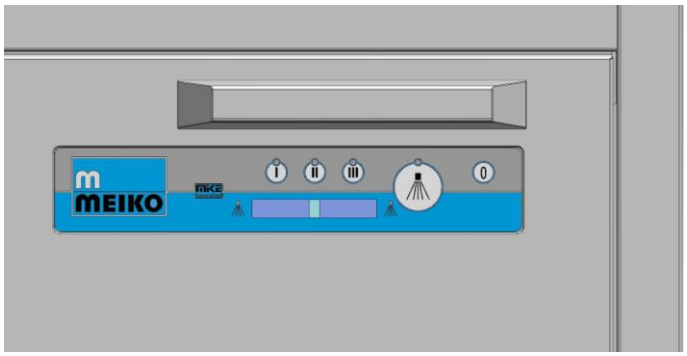


Illustration 1; Operating panel

Key / display	Meaning	Only of automatic hood
	Short cycle for lightly soiled items – Wash program I	If the program pre-selection buttons 1-2-3 are pressed when the hood is open and the appliance is not ready for operation, the hood closes, the appliance fills with water and heats the water until it is ready for operation.
	Normal program – Wash program II	
	Intensive program – Wash program II	
	Program start Tank drain Self-cleaning cycle **Only in case of automatic hood opening:** If the program start button is pressed when the hood is open and the appliance is ready for operation , the hood closes and the program starts automatically	
		Open-close hood key.
	Wash temperature	
	Final rinse temperature	
	Switching off / Cycle interruption	

Table 1; Program key function / items to be washed

8.2 Impact protection strip



An impact protection strip is attached to the front in order to protect the membrane key-pad.

8.3 Preparation for washing and rinsing

The preparatory work described below must be carried out before each operation.

- Open the hood. (In case of automatic hood opening: Open the hood using the hood open/close button)
- Place the screen and stand pipe in position.
- Close the hood. (In case of automatic hood opening: Close the hood using the hood open/close button)

ATTENTION! Danger of crushing!
Close the appliance with both hands.

Hood in motion!

Ensure that **no part of your body** is between the hood and the tank when closing the hood.

- Switch on the appliance by pressing one of the program pre-selection keys.

During the filling and heating phase, the light above the pre-selection key will flash. When the light remains constantly lit, the machine is ready for operation.

The time until the operation readiness is reached depends on the temperature of the supplied water and the installed boiler, resp. tank heating capacity.

In the case of cold water supply, duration is 40 minutes for: DV 270.2.

8.4 Automatic dosing

The required detergent (detergent dosing pump: option) and rinse aid is transported out of the containers into the tank, resp. boiler, via electronically controlled dosing units. The dosing is effected automatically acc. to the requirements arising during the wash process.

IMPORTANT!

If unsuitable products are used, the life of the dosing equipment will be significantly shortened.

We therefore recommend that detergents should have a pH value greater than 7 and that rinse agents should have a pH value between 7 and 2.

8.5 Operation during washing and rinsing cycle

The following fundamental principles must be observed when placing the items to be washed in the baskets:

- All hollow containers must always to be loaded upside down. Otherwise the water will be trapped inside and they will not dry to a brilliant finish.
- Plates, trays and big plates should always stand at a **slight angle** in the basket. The inside faces pointing upwards.
- When using cutlery baskets, ensure that cutlery is always inserted handle down.
- Load the cutlery baskets with a **mixture** of spoons, knives and forks, as identical items of cutlery can be too close together.
- Do **not overload** the baskets.
- **Do not stack** the dishes in the wash basket, as the wash water could not strike the items directly and the wash times would have to be unnecessarily prolonged. Short wash times with baskets which are not overloaded are much more economical.

Some fundamental points must be observed in case of excessive soiling intake:

- Make sure that the sieve is not totally clogged with waste food, soiling particles or other foreign bodies. Check the sieve for soiling between washes, and clean as needed. A high water level above the tank cover sieve after washing is indicative of a high level of soiling or a blockage.

8.5.1 Start the wash cycle

Program start key



- Pre-wash the dishware (major food residues, serviettes, tooth picks, etc.) and place in the basket.
- Place the basket in the appliance, ensuring that it is correctly centred.
- Close the hood.
  (In case of automatic hood opening: Close the hood using the programme start key or the hood open/close button).
  Ensure that **no part of your body** is between the hood and the tank when the hood is closing.
- Press the program start key.

The appliance washes and rinses automatically and switches off the wash program after completion. The program cycle is indicated by a light on the program start key.

+The wash time can differ from the set program time if the boiler heating capacity or tank heating capacity (by disinfection machine) is not sufficient for heating up, the fresh water to the pre-set boiler temperature to the keep program time. In this case, the automatic wash time extension is activated. (see chapter 11)

8.5.2 Remove the washed items

- When the light goes out, open the hood and remove the basket/baskets
- Open the hood after the light has gone out. Remove the basket(s).

9 Shutting down the dishwasher

"Off" key



- Press the "0"key (OFF key). The machine is switched off when all the lights are out.

- Press the program start key to drain the tank.
- The tank interior is sprayed with clean hot water after the tank water has been drained. The hood must remain closed. The waste water pump switches off automatically.
- The hood opens automatically

Program start key





Only of automatic hood

The hood can be opened and closed by means of
the hood open-close button when the appliance is switched off.

10 Care and maintenance

10.1 Care, general

The appliance has been designed to minimise the need for cleaning, care and maintenance.



However, for a reliable, safe and permanent function of the appliance and in the interest of hygiene and cleanliness a correct care and maintenance is necessary. To facilitate this procedure, a maintenance contract can be concluded with the manufacturer or the manufacturer's agent.



Works/repairs which were not correctly executed and the use of unauthorised parts by unqualified personnel endanger both operators and the appliance, and will invalidate the warranty.

10.2 Refilling of detergent

External container

The container is located next to the appliance.

- Check the filling level of the container and if necessary, replace it by a full one



Only non-foaming alkali detergents (pH > 7) suitable for commercial dishwashers may be used.

Detergent dosing units must be checked to see if they are functioning properly if there is reason to believe that they are malfunctioning. Carry out a visual inspection!

10.3 Refilling with rinse aid

External container

The container is located next to the appliance.

- Check the level and, if necessary, replace the container by a full one.



Only non-foaming acid rinse aid (pH < 7) suitable for commercial dishwashers may be used.

Detergent dosing units must be checked to see if they are functioning properly if there is reason to believe that they are malfunctioning. Carry out a visual inspection!

10.4 Cleaning

After the tank has been drained, proceed as follows:

- Do not use a foaming detergent for dish-washing by hand for pre-cleaning close to the dish-washer. Foam can cause malfunctions in the dish-washer and a poor wash.
- Food residues sticking to the tank, tank heating element and sieves must be removed with a brush.
- Dismantle the wash arms and rinse them under running water.
- Wash nozzles must be cleaned daily.
- The cleanliness of final rinse nozzles must be checked weekly and if necessary clean under running water.



The inserts for the final rinse nozzles must be inserted with the prongs facing the water flow.

10.4.1 Safety instructions for cleaning



The tank heating element may still be hot after the tank has been emptied.
There is therefore the danger of burns when the machine is cleaned manually.



The machine, switch cabinet and other electrical components must NOT be sprayed with a hose or a high pressure cleaner.

10.5 Care of stainless steel surfaces

We recommend cleaning the stainless steel surfaces only when needed with cleaner and care products suitable for stainless steel.
Lightly soiled parts can be wiped with a (possibly damp) cloth or sponge.
Be sure to wipe dry after cleaning to avoid traces of scale. Use demineralised water if possible.

Do not use aggressive cleaning or scouring agents.
The care products must not attack the stainless steel, form deposits, or cause discoloration.
Never use cleaning agents that contain hydrochloric acid or bleaches based on chlorine.

Never use cleaning equipment that you have used previously by non-stainless steel to avoid external corrosion.

Aggressive external influences due to cleaning and care products that evaporate in the vicinity of the dish-washing machine, or caused by direct application, can lead to machine damage and put the material at risk (e.g., aggressive tile cleaners).

Caution!
Respect the safety rules of the manufacturers on the original packing as well as on the safety data sheets.

10.6 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.

10.7 De-scaling

If the appliance was operated with hard water, the boiler and wash tank could have lime scale deposits. De-scaling of the tank interior, boiler housing, tank heating, boiler heating and wash and final rinse system then becomes necessary



For de-scaling the appliance use only products suitable for industrial dishwashers. Please observe the instructions of the manufacturers of such products.

After de-scaling the appliance:

- Remove the de-scaling agent completely from the appliance. 1 or 2 rinse cycles with fresh water are necessary to achieve this.



Even small residues of de-scaling agents can be sufficient to destroy plastic parts and sealing materials! If the appliance is heavily scaled, you should ask a service engineer from the agency responsible to de-scale the boiler.

11 Basic information on the appliance



Each dishwashing machine is manufactured acc. to the latest state of the art technology. Operation is safe.



Dangers could arise from this model, if it is not correctly operated by unsuitable operating staff or if it is not used acc. to it's purpose.

Liability

We accept no responsibility for damage of the appliance and other objects caused by operating faults, resp. non-observance of the operating instructions. Any modifications to the appliance - especially technical modifications inside - undertaken by unauthorised persons without the written permission of the manufacturer will invalidate the warranty.

11.1 General description of the washing machine

11.1.1 Execution

Square basket appliance with stationary basket

11.1.2 Wash principle

The appliance has one wash and one final rinse cycle.

The temperature regulator maintains the wash temperature of 58-60 °C. Centrifugal pumps moves the water from the wash tank into the wash nozzles. The water jets reach the items to be washed out of differing directions. Therefore an even washing result can be guaranteed.

The washing cycle is followed by the fresh water final rinse. The items are rinsed via a separate nozzle system with hot fresh water at 80 - 83° C. Thus heating up the items for the following drying process. At the same time the final rinse water serves for the regeneration of the wash water, the level of soil of the wash water thus being reduced.

11.1.3 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.

11.1.4 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 ≥ 80° C, which must be maintained on the washware for ≥ 30 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.

11.1.5 **Water change programme** (option)

The program pre-selection keys can be allocated to a water change programme. In the standard setting this applies only to button III.

After completing the wash programme, all the water is pumped out of the the tank. Flushing with fresh water follows. This water remains in the wash tank and is used as the next tank filling.

Then the programme ends and the programme start button light goes out.

Now the following options are possible:

1. Open door, remove tray, close door; this makes the washer ready for operation (fill tank, heat)
2. Switch to programme 1 or 2; this makes the washer ready for operation (fill tank, heat)
3. After changing the tray, press the start button; this makes the washer ready for operation (fill tank, heat), and then immediately starts the washing programme.
4. Press the "0" button (off button) and then press the start button to launch the self-cleaning programme for complete flushing of the machine.

11.1.6 Operation on a power optimisation system

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.

11.2 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.

11.2.1 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.

11.2.2 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.

11.2.3 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.

11.2.4 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.

11.2.5 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.
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.

11.3 Noise level

Work place noise level LpA £ 70 dB

11.4 Data reg. the electrical and hydraulic equipment

See attached technical sheet

11.5 Dimensions, technical data, installation instructions

See attached technical sheet

12 Non-ionizing radiation

Non-ionizing radiation is not produced intentionally but unfortunately comes about due to electrical operating equipment (e.g. electrical motors, high-voltage cables and magnetic coils). In addition the machine has no strong permanent magnet. There is a high possibility of eliminating the influence of active implants (e.g. pacers, defibrillators) by maintaining a safety distance of 30 cm (distance of the field source to the implant).

13 Tips for self-help in the case of faults

Fault:	Remedy
Machine does not fill.	• No water available • Dirt trap blockedDirt trap blocked • Level switch defective • Solenoid valve defective • Hood safety switch defective
Rinse water does not spray!	• No water available • Dirt trap blockedDirt trap blocked • Solenoid valve defective • Booster pump to drop out • Fresh water rinse system furred
Stripes and smears on the dishes!	• Rinse water mineral content too high (see operating instructions) • If this is observed only at particular times, check water softener for regeneration. This must not carried out during the dishwashing operation. • Water pre-treatment defective or not carried out • Different water type depending on the waterworks • Unsuitable rinse aid products or wrong dosage quantity
Formation of a significant amount of foam in the wash tank!	• Detergent for dish-washing by hand enters the wash tank because of pre-cleaning the dishes • Daily cleaning is carried out with foaming cleansing agents which afterwards enter the machine. • Improve pre-wash, as too much food residue is entering the tank. Alternatively, empty wash tanks between uses. • Rinse water quantity too low • Detergent or rinse aid product not suitable • Temperatures too low < 40°C

14 Staff training

Only trained and instructed personnel are allowed to work on the dishwashing machine. Staff responsibilities for the installation's operation, maintenance and repair must be clearly defined.
Any personnel undergoing training are only allowed to work on the dishwashing machine installation under the supervision of an experienced person.

Persons / Activity	Trained operating personnel	Trained in-house technician	Trained in-house technician or installation engineer
Installation and assembly			◆
Commissioning			◆
Operation, use	◆	◆	◆
Cleaning	◆	◆	◆
Checking safety devices	◆	◆	◆
Fault finding		◆	◆
Troubleshooting, mechanical		◆	◆
Troubleshooting, electrical			◆
Maintenance			◆
Repairs		◆	◆

Training should be recorded in writing.

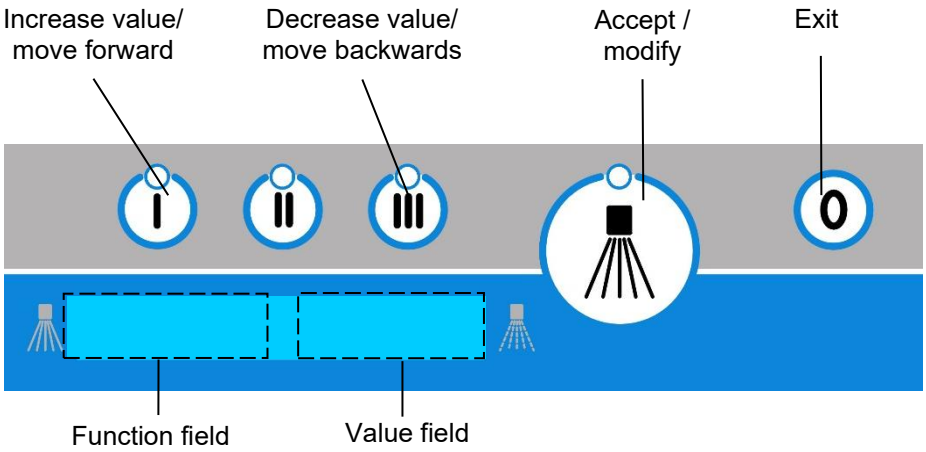
15 Authorized user of this documentation



The works described in this booklet (chapter 16 - 19) may only be carried out by specialists of the manufacturer, the responsible agency or an authorized dealer.

16 Settings / modifications / on-site adaptation

16.1 Using the keyboard for programming



Access codes for various user-levels have been defined. Once the complete code has been entered, the entered code is compared with the internal code table. Depending on the code entered, the corresponding user level will be accessed. 2 access codes are available for each user level; the first is for restricted access, i.e. no modification of parameters is possible (viewing mode), and the second gives access to the entire range of functions (viewing and modification).

In the short programming instructions accompanying every machine in the series, this is described in condensed form.

For control programming, the power supply must be available but the machine must be completely switched off (no LED must be illuminated).

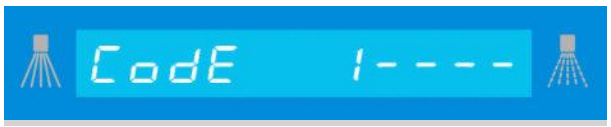
Code – input:

View service data:	CODE 10000
Modify service data:	CODE 10001
View configuration data:	CODE 20000
View dosing technology:	CODE 40000
Modify dosing technology:	CODE 40044

The code numbers for the further levels can be found in the Service Manual.

16.2 Code entry

To get into the code entry mode, you should keep the key “0” pressed (for around 3 seconds) until you see



on the display unit.

By pressing the key “0” once again you can leave the programming area at any time.

The digit to be modified will flash.

Press the “I” key to increase the value/code indicated on the display unit, or press the “III” key to decrease it, or press the “accept” key to save it. The next value will then flash and will be the only one visible.



If your entry is incorrect you will exit the code entry procedure, and the information code 122 will be displayed.



If you enter all the digits correctly you will arrive at the chosen level, either service, configuration or machine data.

16.3 Service level

The list of service parameters can be found on this level (parameter numbers 1xx). Here you can view these or modify them, or you can also call up the ventilation of the rinse and wash hoses.

On the service level, you will first see the display below:



This corresponds to the viewing/modifying parameters (see 15.3.1)



This corresponds to rinse aid inlet ventilation (see 15.3.2)



This corresponds to detergent inlet ventilation (see 15.3.3)

Press the “I” key to move forwards or the “III” key to move backwards or the “accept” key to make a selection. You are now at the current level.

You can leave this level by pressing the “0” key.

16.3.1 View/modify parameters

Indication



this display by pressing the “accept” key.

Now, the first parameter will be displayed with a value.



Press the “I” key to go forwards and the “III” key to go backwards, until the parameter you require is displayed.

Confirm the parameter to be modified by pressing the “accept” key, the value will flash. + Press the “I” key to increase the value, the “III” key to decrease the value, and the “accept” to save the value.

You can leave this level by pressing the “0” key.

See 16.4 for list of parameters

16.3.2 Ventilating the rinse aid inlet



this display by pressing the “accept” key.

Now the dosage pump will be activated and the remaining running time will be indicated.



You can leave this level by pressing the “0” key. The ventilation will be interrupted off.

16.3.3 Ventilating the detergent inlet



this display by pressing the “accept” key.

Now the dosage pump will be activated and the remaining running time will be indicated.



You can leave this level by pressing the “0” key. The ventilation will be interrupted off.

Should the ventilation process be insufficient, repeat the process.

The function "vent detergent pipe" is not existing with machines including detergent dosing system type ***ADT*** ('Advanced Dosing Technology with depression dosing). The detergent dosing pipe is vented automatically when the first cycle is running, after filling of the detergent reserve container.

16.3.4 Configuration level

You can find the list of configuration parameters on this level (parameter numbers 2xx). + Here you can view these and modify them. You can also call up the status of the inputs and outputs, or set the outputs for testing.

On the configuration level, you will first see the display below:



This corresponds to the viewing/modifying parameters. (see 15.3.1).



This corresponds to viewing the status of inputs. (see 15.3.6).



This corresponds to viewing and setting the status of outputs. (see 15.3.7).

Press the “I” key to move forwards or the “III” key to move backwards or the “accept” key to make a selection. You are now at the current level.

You can leave this level by pressing the “0” key.

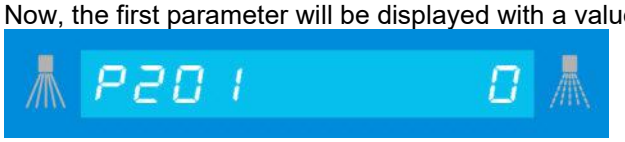
16.3.5 Viewing / modifying parameters (depending on the code entered)

Indication



this display by pressing the “accept” key.

Now, the first parameter will be displayed with a value.



Press the “I” key to move forwards or press the “III” key to move backwards, until the parameter you require is displayed.

Confirm the parameter to be modified by pressing the “accept” key, the value will flash. + Press the “I” key to increase the value, the “III” key to decrease the value, and the “accept” to save the value.

You can leave this level by pressing the “0” key. See 15.4 for list of parameters

16.3.6 Viewing input status

Indication



this display by pressing the “accept” key.

by pressing the “accept” key.



Press the “I” key to move forwards and the “III” key to move backwards, until you reach the input you require.

Display: input set



Display: input not set



You can leave this level by pressing the “0” key.

Assignment details for the inputs are given on the assignment list for each machine (see 15.5).

16.3.7 Viewing / modifying output status (according to code entered)

Indication



this display by pressing the “accept” key.

Viewing:

Now, the first output will be shown, with status.



Press the “I” key to move forwards and the “III” key to move backwards, until you reach the output you require.

Modifying:

Press the “accept” key to confirm the modification of the output, the value will flash.
Press the “I” key to modify the value and press the “accept” key to save it.

The output is now set.



You can leave this level by pressing the “0” key.

Assignment details for the outputs are given on the assignment list for each machine (see 15.5.)

16.3.8 Viewing / modifying dosing technology level

By entering code 40000 (read only) or 40044 (read / enter), the user can access the new 4th parameter level summarizing all the dosing technology parameters:

P104, P105, P218, P219, P224, P225, P321, P322, P326, P327.

See 15.4 for list of parameters

16.4 Parameter list

Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
101	Wash program Key 1	Parameters	1 .. 50	-	1	Allocate the wash program to the key 1 Assignment adjustable
102	Wash program Key 2	Parameters	1 .. 50	-	3	Allocate the wash program to the key 2 Assignment adjustable
103	Wash program Key 3	Parameters	1 .. 50	-	4	Allocate the wash program to the key 3 Assignment adjustable
104	Rinse agent Dosing quantity	Parameters	0.10 .. 1.00	ml/Liter water	0.2	Value can be read from the rinse aid container label (dependant on water quality)
105	Rinse program Dosing quantity	Parameters	0.1... 20.0	ml/Liter water	2.0	Value can be read from the detergent container label (dependant on water quality)
106	Hardness degree	Parameters	0 .. 50	[°dH]	0	The quantity of soft water available between two regenerations depends on the hardness of the water.
107	Beep ON/OFF	Parameters	0/1	-	1	Switch on/off acoustic ready message
108	Mode “Clear” display	Parameters	0/1	-		“Clear” display 0: via INFO 420, 520 1: display of special characters
111	Total Operation time Indication	Indication	5 figures	h		Operation time query only
112	Total number of wash cycles	Indication	5 figures	-		Wash cycles/loads, query only
113	Total number of wash cycles since last reset	Indication	5 figures	-		Wash cycles/loads, re-setting possible
114	Serial number	Indication	8 figures	-		Option for calling up works parameters
119	IR-communication	Parameters	0/1	-	1	It is possible to shut off communication via IR interfaces. (0)
120	Total number of wash cycles Indication	Parameters	0/1	-	0	Effective only upon power supply reset ON/OFF **ATTENTION!** All changes to service parameters will be reversed. Power supply reset must be carried out within 5 minutes, otherwise factory settings will not be loaded. Without power supply reset, the information 123 will be displayed.

Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
121	Activate maintenance display	Parameter	0 .. 3		0	0 = OFF 1 = Operating hours 2 = Batch counter 3 = Operating hours or number of batches
122	Operating hours reference value	Parameter	10 .. 10000	Hour	0	Evaluation according to operating hours
123	Batch counter reference value	Parameter	100 .. 50000	Loads	0	Evaluation according to number of batches
124	Reset maintenance display	Parameter	0/1		0	0 = NO 1 = YES Note: When using the M-Commander an upload and download is necessary for the reset procedure.
201	Machine type	Parameters	1 – 9	-	2	1: FV 40.2 / FV 60.2 / FV28 GiO-M 2: FV 130.2 / FV 250.2 / DV 270.2 3: DV 80.2 / DV 200.2 4: DV 120.2 / DV 125.2 / DV 200.2PW 5: FV 70.2D / FV 40.2TL / TopClean60 6: FV 130.2 TL / FV 250.2 TL / DV 270.2 TL 7: DV 80.2 TL / DV 200.2 TL 8: DV 120.2 TL / DV 125.2 TL / DV 200.2 TL PW **Attention!** Only assignment list and machine sequences change – no parameters
202	Must be-tank temperature	Parameters	10 ... 80 (50 .. 176)	°C/°F	60	Standard for all the rinse programs on one appliance! Output dependent on definition.
203	Pre-rinse time	Parameters	0 ... 8	sec.	0	See pre-rinse process step
204	Post-rinse time	Parameters	4 ... 30	sec.	8	Energizing duration for the booster pump (running time limited by P306!!)
205	Operation indicator	Parameters	0 .. 8	-	1	Definition of the information which is to be switched via the potential-free contact 0 – No information 1 - Filling/Heating, ready for washing/washing or pumping out 2 – Filling/Heating, ready for washing/washing 3 - Filling / Heating 4 - Ready for washing 5 - Washing 6 - Draining 7 - Error 8 – Not status machine OFF and Draining 9 - Reserve 10 - Not status Machine OFF

Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
211	Fine adjustment Post-rinse time	Parameters	0,0..0.9	sec.	0	0: FV 130.2 / FV 250.2 Figures after the decim al point in P204
218	Shortage of rinse aid	Parameters	0/1		0	Monitoring Indication
219	Shortage of detergent	Parameters	0/1		0	Monitoring Indication
224	Shortage of detergent rinse aid dosing pump	Parameters	0 .. 4	-	1	Definition: Energizing rinse aid pump: 0 – Rinse aid pump = 0; no signal 1 – Rinse aid pump; energizing according to calculated running time 2 – Rinse aid pump = booster pump; energizing as booster pump 3 – Rinse aid pump = wash pump; energizing as wash pump 4 - Free
225	Energizing mode Detergent dosing pump	Parameters	0 .. 4		1	Definition: Energizing detergent pump: 0 – Detergent pump; no signal 1 – Detergent pump; energizing according to calculated running time 2 – Detergent pump = pressure increasing pump; energize as pressure increasing pump 3 – Detergent pump = wash pump; energize as wash pump 4 – Option – detergent pump using negative pressure dosing (only DV 80.2 and DV 200.2)
240	Detergent pump activation mode	Parameters	0/1	-	0	Effective only upon power supply reset ON/OFF **ATTENTION!** All changes to service parameters will be reversed. Power supply reset must be carried out within 5 minutes, otherwise factory settings will not be loaded. Without power supply reset, the information 123 will be displayed.
241	A_0-value	Parameters	0 …60	-	0	Only with disinfection machine no. 5 - 9 in parameter 201
321	Rinse agent pump output	Parameters	0.1 ... 10	l/h		Rinse aid pump. Output definition.
322	Detergent pump output	Parameters	0.1 ... 20	l/h		Detergent pump Output definition.
326	Pipe vent time Rinse aid	Parameters	0 ... 255	sec.		Activate rinse agent pump temporarily to remove air from pipe.
327	Pipe vent time Detergent	Parameters	0 ... 100	sec.		Activate detergent pump temporarily to remove air from pipe.
347	Desinfection temperature	Parameters	10 ...80	°C/°F	0	Only with disinfection machine no. 5 - 9 in parameter 201

Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
348	Desinfection temperature	Parameters	0 ...900	sec.	0	Only with disinfection machine no. 5 - 9 in parameter 201

16.5 Assignment list

View inputs / control outputs

Indication		Input / output / other	Conditions
Left	Right		
In 1	0/1	Hood closed	none
In 2	0/1	Boiler level	none
In 3	0/1	Leak water switch floor	none
In 4	0/1	not occupied	none
In 5	0/1	not occupied	none
In 6	0/1	not occupied	none
In 7	0/1	Hall-sensor ADT (vacuum dosing)	none
In 8	0/1	not occupied	none
In 9	0/1	Level rinse aid (option)	none
In 10	0/1	Level detergents (optin)	none
In 11	0/1	Leak water switch dosage	none
In 12	0/1	not occupied	none
In 13	0/1	Threshold tank level. 1	none
In 14	0/1	Threshold tank level. 2	none
In 15	0/1	Threshold tank level. 3	none
In 16	0/1	Tank level. 4 (Option)	none
In 17	0 .. 255	Without function	none
In 18	0 .. 255	Without function	none
In 19	xxx	Boiler temperature in °C or °F	none
In 20	xxx	Tank temperature in °C or °F	none
In 21	xxx	Tank level (1 mm unit)	none
In 22	0 .. 255	Without function	none
Ou 1	0/1	Booster Pump	No leak water
Ou 2	0/1	Swivel wash arm	No leak water
Ou 3	0/1	Drain pump	No leak water
Ou 4	0/1	Rinse aid – dosage pump	No leak water
Ou 5	0/1	Detergent – dosage pump	No leak water
Ou 6	0/1	Operation indicator	No leak water
Ou 7	0/1	Filling valve	No leak water
Ou 8	0/1	SASm soft starter system	none
Ou 9	0/1	Boiler heating	No leak water
Ou 10	0/1	Tank heating	No leak water
Ou 11	0/1	Wash pump	No leak water
Ou 12	0/1	Pressure reduction (option)	No leak water
Ou7 4	0/1	Booster pump water softener	No leak water
Ou7 5	0/1	not occupied	none
Ou7 6	0/1	not occupied	none
Ou7 8	0/1	Solenoid valve Y2 EW	No leak water
Ou7 9	0/1	Solenoid valve Y3 EW	No leak water
Ou7 10	0/1	Solenoid valve Y4 EW	No leak water
Ou7 11	0/1	Solenoid valve Y5 EW	No leak water
Ou7 12	0/1	not occupied	none

Leak water switch condition: Leak water switch must not have operated.
Heating condition: Tank / boiler heating are inter-locked (boiler priority)
Tank heating only when boiler heating deactivated

16.6 Rinse program parameter

Program no.:	Boiler temperature target value	Wash time target value		Wash pressure reduction target value
		Washing	Total	
1	83	91	120	0
2	83	151	180	0
3	83	211	240	0
4	83	331	360	0
5	83	451	480	0
6	65	91	120	0
7	65	151	180	0
8	65	211	240	0
9	65	331	360	0
10	65	451	480	0
11	83	91	120	1
12	83	151	180	1
13	83	211	240	1
14	83	331	360	1
15	83	451	480	1
16	65	91	120	1
17	65	151	180	1
18	65	211	240	1
19	65	331	360	1
20	65	451	480	1
21	85	91	120	0
22	85	151	180	0
23	85	211	240	0
24	85	331	360	0
25	85	451	480	0
26	85	91	120	1
27	85	151	180	1
28	85	211	240	1
29	85	331	360	1
30	85	451	480	1
31	80	91	120	0
32	80	151	180	0
33	80	211	240	0
34	80	331	360	0
35	80	451	480	0
36	80	91	120	1
37	80	151	180	1
38	80	211	240	1
39	80	331	360	1
40	80	451	480	1
41-50	83	91	120	0



* For machines with the AirConcept exhaust recovery system, the total running time is extended by the time stated for vapour extraction in the technical data sheet.



The dosage times will be adapted to the rinse time, so that the correct concentration remains if the rinse time is modified.

17 Trouble-shooting

Despite being expertly designed, the machine may develop minor faults which are usually easy to eliminate. This section explains a number of possible problems and how you can deal with them yourself.

Before carrying out work on the open appliance, it MUST be disconnected from the power supply. The machine is to be switched off completely with the on-site power disconnection device here.

Should any of the operational faults described arise repeatedly, their cause must be established in each case.

Faults not described here can in general only be eliminated by a technician or electrician. Please contact the agency responsible or the authorised dealer.

17.1 Information reporting and troubleshooting

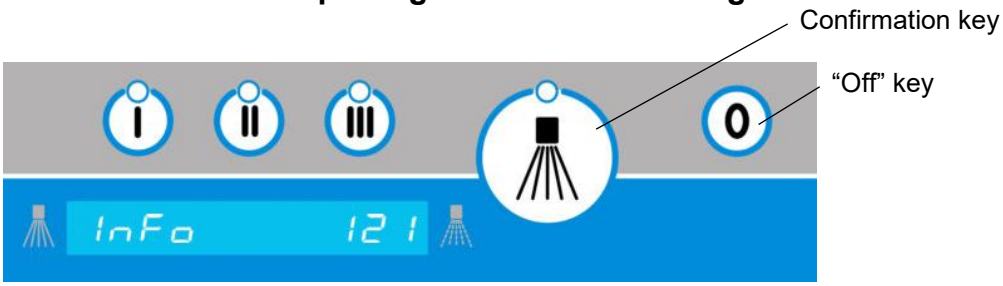


Figure 2: Information display

Information displays can be cleared by pressing the confirmation key.

Provided that the machine function is restored, the next program sequence will begin. The information display can also be deleted by pressing the “Off” key.

Information indicator (extract)

Info No.	Description	Possible cause
120	Emergency program active Restricted washing possible.	No boiler / tank heating No fresh water supply Check system
121	Hood not closed	Check connection S1 Change microswitch Check microswitch adjustment Replacing a defective I/O circuit board
122	Incorrect password / no authorization	Enter code once again
123	Factory setting parameter list	Switch power supply ON/OFF within 5 minutes and set parameters back to factory settings. This will be rejected and parameters will be retained. Information 123 will disappear
126	Maintenance required	The set operating hours (P122) or batch number (P123) has been reached. Inform the service department and perform maintenance. Reset the maintenance counter (P124)
323	Hood propulsion active	Hood drive active; also when the appliance is switched off
324	Opening the hood after a blockage	Basket under closing hood. Information remains pending until the button is pressed again.

Info No.	Description	Possible cause
420	Shortage of rinse aid	If the machine is ready for operation, a shortage of rinse agent will be signalled (only if there is a built-in warning system).
520	Shortage of detergent	If the machine is ready for operation, a shortage of detergent will be signalled (only if there is a built-in warning system).
521	Shortage of detergent with dosing system ADT	Impulses of the flow meter are recognized, although the detergent dosing is not approached. Valve of the dosing unit is not closing.
522	Error in the dosing system ADT	Impulses of the flow meter are recognized, although the detergent dosing is not approached. Valve of the dosing unit is not closing.

Table 2: Information displays

17.2 Error messages and troubleshooting



Figure 3: Error messages

Error messages will disappear automatically when the fault has been rectified.

Error messages (extract)

ERR.-No.	Description	Possible cause
001	EEPROM plug-in fault.	EEPROM not available / incorrectly plugged in / defective Empty or incorrect EEPROM Replace EEPROM with correct parameter set
111	Floor pan leakage	Leak inside the machine Pump sump / motor /etc. Defective leak water switch Repair fault, remove water
112	Dosage leakage	Dosage pump leak Hose defective / kinked Defective dosage pump Defective measurement electrodes
201	Level not reached during 1st filling	Fresh water inlet insufficient (water faucet closed) Aquastop hose kinked Inlet filter soiled Aquastop defective Boiler switch defective
202	Level not reached early enough during filling	See 201

ERR.-No.	Description	Possible cause
203	No change detected by the level switch during emptying	Boost pump defective Booster pump plug connector loosened Start capacitor defective Plug connector loosened Boiler level switch defective No boost pump signal to - from input/output circuit boards Check boost pump DSP / S2 using manual control
204	Following the end of post-rinse time, still no change detected at the level switch	See 203
205	Temperature increase not reached	Boiler heating defective / thermal fuse radiator Temperature sensor defective, incorrect installation position Boiler contactor defective, performance switch loosened No signal from ON/OFF circuit boards
206	Wash time increase	Boiler not ready for rinsing early enough (boiler level/ boiler temperature) Boiler heating defective / thermal fuse radiator Temperature sensor defective Boiler contactor defective, performance switch loosened No signal from ON/OFF circuit boards
210	Temperature sensor short circuit	Check sensor cable (plug contacts) Replace sensor Install sensor correctly
211	Temperature sensor interruption	See 210
212	Actual boiler temperature too high	Contactor sticking Incorrect sensor / defective sensor Check sensor / cable (contact plug MIKE II XA5)
301	Number of circulatory pumping cycles exceeded. Tank level analysis disruptedTank level analysis disrupted	Booster pump yield too low Rinse jets soiled Air trap soiled Booster pump rotor defective Condensate in level pipe Hose kinked / loose / not watertight
302	When pumping out during rinse program, level does not fall below level 1.	Fresh water supply insufficient (water faucet closed) Drain pump soiled / defective Rotor loose Drain pump plug connector loose Start capacitor defective Tank level analysis disruptedTank level analysis disrupted Aquastop not closing completely No signal from ON/OFF circuit boards
303	Level does not fall below level 3 after time (drain pump ON)	See 302

ERR.-No.	Description	Possible cause
304	Temperature increase not reached	Tank heating defective / thermal fuse Radiator Temperature sensor defective, incorrect installation position Tank protection defective, performance switch loose
305	Boiler content quantity insufficient for rinsing. Level 2 not reached	See 301 Ventilation valve soiled Level switch defective Plug connector loosened
306	Tank level analysis disrupted Tank level analysis disruptedTank level analysis disrupted	Check tank level Level sensor air catch / check hose
307	Tank level sensor defective	Connection plug loosened Sensor defective Replace input/output circuit boards
308	Hood drive malfunction	motor defective, limit switch jammed
309	Hood drive malfunction, maximum current exceeded	Hood jammed, Spindle jammed, Motor jammed, descale
310	See 210	See 210
311	See 211	See 211
312	See 212	See 212

Table 3: Error messages

Should information or fault numbers not shown in the tables be indicated, or should the suggested measure not lead to the elimination of the fault, please notify a customer service technician.

18 Maintenance

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.

Have reverse osmosis (GiO MODULE) (option) disinfected in the case of downtimes of more than 6 months.

Regular maintenance is a prerequisite for the long-term reliable and safe operation of a warewashing machine. Maintenance which is neglected or improperly carried out increases the residual risk of unforeseen damage to property and persons, for which no liability will then be assumed.
Maintenance work should only be conducted if the machine has been switched off completely via the on-site power disconnection device.
Existing safety systems may not be removed!



A functional test on all safety systems of the machine / installation is carried out during every regular maintenance.
We recommend that you take out a maintenance contract with our manufacturer’s agent in order to ensure a long service life.

18.1 Basic safety measures during normal operation

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



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!



Before implementing any maintenance or repair work the machine must be switched off completely via the on-site power disconnection device and secured against reactivation by using appropriate measures (e.g. via a padlock whose key is in the possession of the person conducting the maintenance or repair work)! Failure to observe these precautions can result in severe physical injury or damage to property.



Before carrying out any maintenance and repair work, ensure that all the parts of the machine that may be touched have cooled down to room temperature!
Carefully dispose of any cleaning products that could harm the environment!



Before carrying out repair work on the hood weight equalisation system, the springs in the rear of the machine must be relieved. If the springs cannot be reached when the machine is upright, the hood handles must be secured in the lower position (hood closed) with a tensioning strap. The screws connecting the hood handle and hood linkage must not be loosened without the aforementioned precautions.

18.1.1 Before starting operations following maintenance or repair work



Before starting operations following maintenance or repair work, all initial tests must be carried out as described in “Machine Settings for Initial Commissioning by the Service Engineer”.

18.1.2 Observe the environmental protection regulations



Legal obligations relating to the avoidance of waste materials and to their recycling/removal in accordance with applicable regulations must be observed!
In particular, during installation, repair and maintenance work, materials that could pollute water such as: Grease and oils, Cleaning fluids containing solvents, must not pollute the ground or run into the sewerage system! These materials must be stored, shipped, collected and disposed of in suitable containers!

18.2 Dosing units

The dosing units themselves are maintenance free in principle but the working life is largely dependent on the chemical used.

18.2.1 Change of products

Change of product means that one rinse aid or detergent product is replaced by another. The use of differing products alongside each other can result in break-downs.

➢ Hose lines and dosing units must always be rinsed out with warm water.

18.3 Maintenance plan



NOTE

Maintenance work should only be conducted by authorised MEIKO personnel.

Maintenance procedures	FV 28G / FV28GIO EcoStar 430 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	EcoStar 545D / DV 80.2 / DV 120.2 / DV 125.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 / DV 270.2	Component OK	Component faulty	Component re-
1. Pumps										
Check pumps for watertightness, pump rotor noise, rotation direction and function										
Check pump suction										
Check pump sieves correctly fitting and operating correctly										
Check sliding ring washer/contra-rotation ring										
2. Wash systems										
Check water level in tank										
Check that wash water pipe is watertight										
Check washing system is complete and produces correct spray pattern										
Check wash arm hubs										
3. Fresh water rinse										
Check flow pressure/water pressure										
Check rinsing system is complete and produces correct spray pattern										
Check that system is watertight										
4. Housing and mounting parts										
Check housing, tank, sheet metal cover, hood, doors and covering of machine base for damage and correct operation										
Check tank cover sieves										
Check boiler, hoses, clamps, plastic parts and seals										
Check operation of raising and lowering equipment										
5. Fresh water installation										
Check level regulation										
Check valves, clean dirt trap										
Check that all connections (incl. hand spray) are watertight										
Check settings of built-in water softener (if fitted)										
Check operation of complete or partial water softener (if fitted)										
For the GiO module: Perform pre-filter change (must be completed every 6 months at the latest)										
Check water hardness										
Check the free discharge section for cleanliness and tightness of the connections (visual check)								at least once a year		
6. Waste water equipment										
Check if watertight										
Check pressure hose position and operation of drain pump										
7. Electrical safety check (certificate is optional)										
Visual inspection								at least once a year		

Maintenance procedures	FV 28G / FV28GIO EcoStar 430 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	EcoStar 545D / DV 80.2 / DV 120.2 / DV 125.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 / DV 270.2	Component OK	Component faulty	Component re-
Protective conductor check								at least once a year		
Measure insulation resistance								at least once a year		
Protection conductor current measurement								at least once a year		
8. Detergent dosing										
Replace peristaltic hose and seals on the nozzles								at least once a year		
Check detergent dosing system is working and not leaking								at least once a year		
Check dosage, adjust if necessary										
9. Rinse aid dosing										
Replace peristaltic hose and seals on the nozzles								at least once a year		
Check rinse aid dosing system is working and not leaking								at least once a year		
Check dosage, adjust if necessary										
10. Operation check of the complete machine										
Check machine for correct interaction of all functions										
11. Test run										
Check results of test wash and rinse										
Brief instruction for new personnel										

18.4 Repair to the hood counterweight system

⚠ Warning

Risk of injury due to built-up spring energy

When loosening the screws connecting the hood handle and hood linkage, serious injuries can occur if the tension on the springs in the rear of the machine is not relieved.

- Always relieve the tension on tension springs before repairs.
- Remove any other persons from the danger zone.

18.4.1 Procedure for repair work on the hood, hood linkage and counterweight without an automatic hood system

The hood is connected directly to the counterweight via the hood linkage (Fig. 1-3).



Fig. 1



Fig. 2



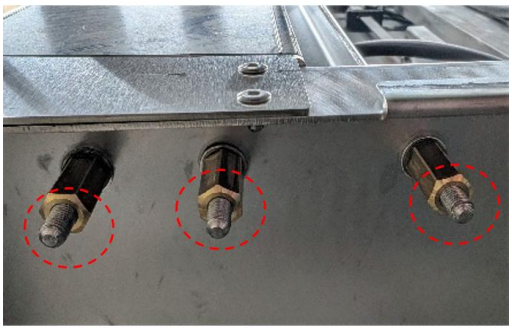
Fig. 3

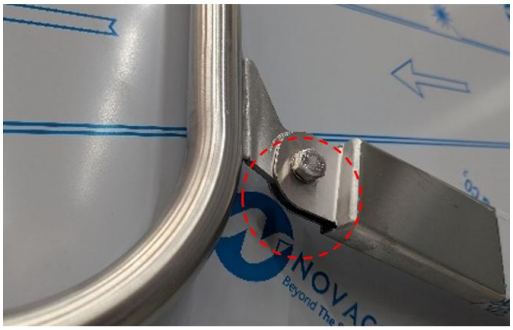
The following disassembly sequence must be observed:

1. Open the hood.



2. Secure the hood against lowering.
   A squared timber (approx. 80x80 mm, length 640 mm) is suitable as a support. The squared timber must be secured to the rack holder using a screw clamp.





3. Loosen all pull bars at the bottom and thus release the tension springs.
4. Loosen the screws on the connections of the hood linkage.
5. Additional parts of the hood linkage can now be disassembled in order to perform the corresponding repair work, e.g. to replace the bearings of the hood linkage.

Installation is done in reverse order.

18.4.2 Procedure for repair work on the hood, hood linkage and counterweight with an automatic hood system



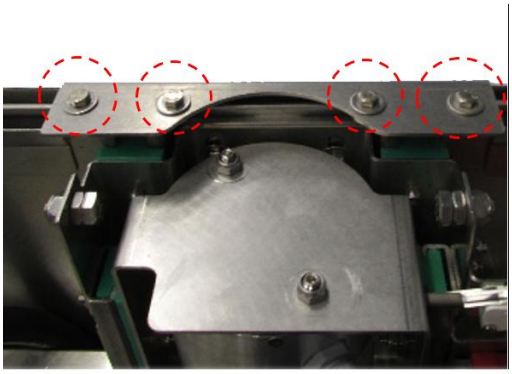
A machine with an automatic hood system does not have a handle for manually opening the hood.



Due to the hood drive with a threaded spindle and drive motor, it is not possible to open the hood manually if the hood drive is defective.

In this case, the spring-loaded screw connections of the hood linkage must not be loosened under any circumstances!

The following disassembly sequence must be observed:

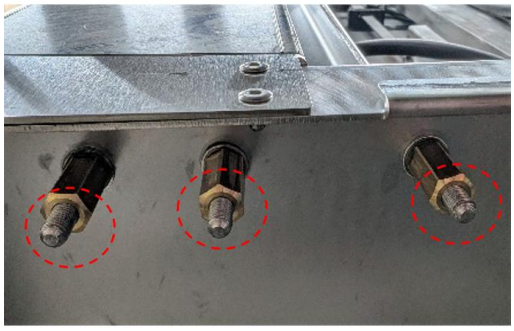


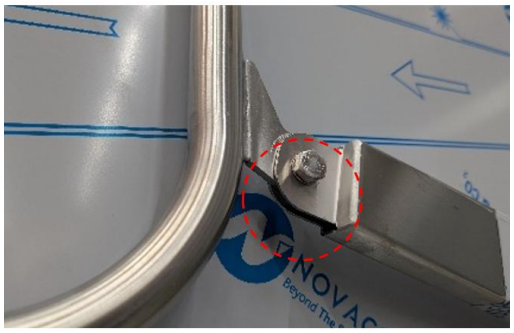
1. Remove the four fastening screws above the hood in the area of the spring box cover. This means that the hood drive is decoupled from the hood and the hood can be raised.



2. Secure the hood against lowering.

A squared timber (approx. 80x80 mm, length 640 mm) is suitable as a support. The squared timber must be secured to the rack holder using a screw clamp.





3. Loosen all pull bars at the bottom and thus release the tension springs.
4. Loosen the screws on the connections of the hood linkage.
5. Additional parts of the hood linkage can now be disassembled in order to perform the corresponding repair work, e.g. to replace the bearings of the hood linkage.

Installation is done in reverse order.

19 Dismantling and disposal

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

19.1 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)

19.2 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.

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



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

The components should be separated by material for recycling.

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

20 Documentation

Installation drawing / technical sheet

Technical Data

Wiring diagram / Programming instructions

The clean solution

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