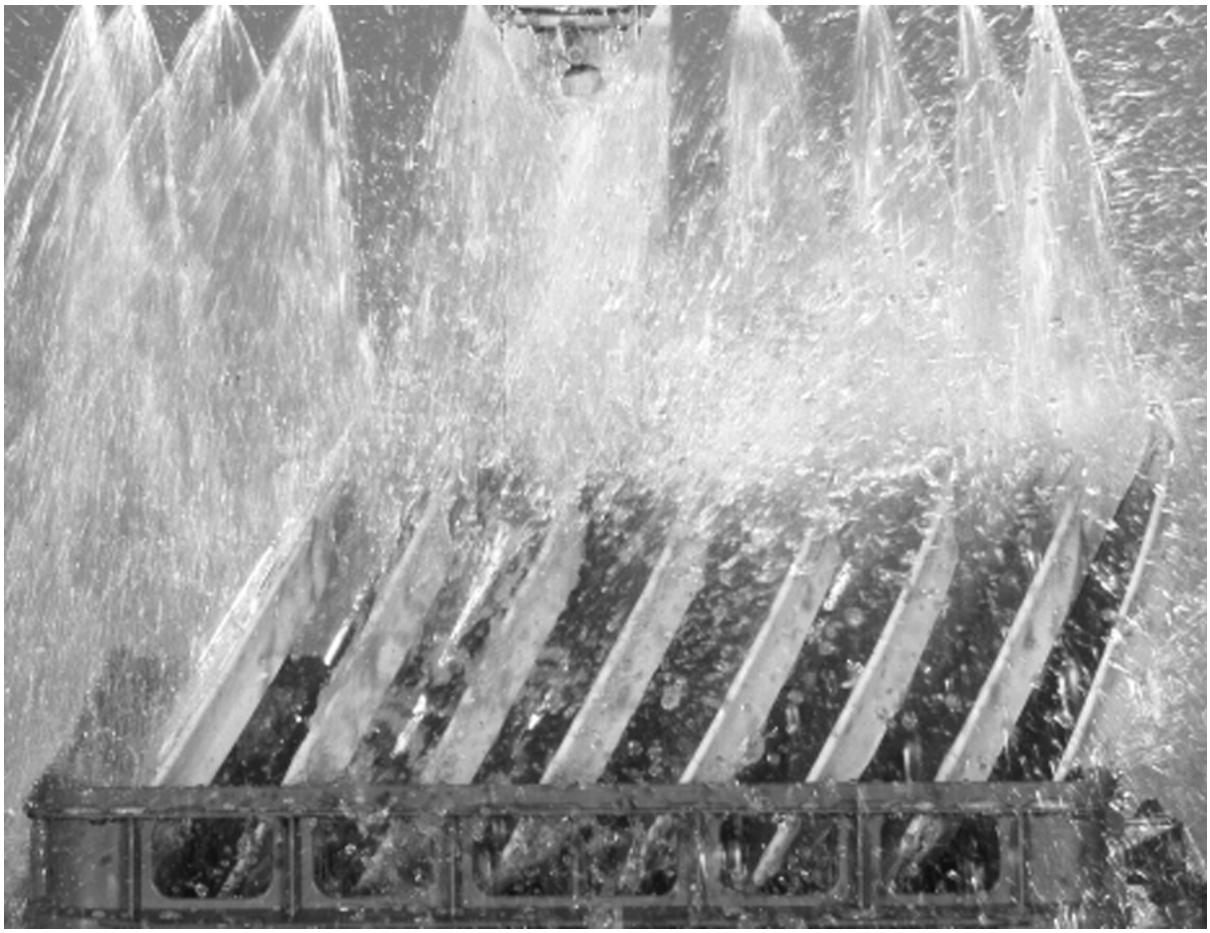
Operating instructions

Stationary rack machine
EcoStar 545 D

General Information and Safety Information



1 Contents

2 Declaration of conformity and other certificates

See separate EU declaration of conformity.

3 General safety information

The stationary rack machine has exclusively been designed for the washing of dishes, cutlery and glasses. It must not be used for any other purpose.

For a trouble-free and safe operation of the appliance, the operating instructions must be carefully observed.

3.1 Explanation of the safety symbols

The following symbols are used in this booklet as important safety notes for the operator. The safety notes, especially the warnings, MUST be observed and followed at all times.

Warning: indicates possible hazard for persons, especially through electrical equipment.

Attention: indicates the endangering of system parts or possible functional damage.

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.

Danger of crushing: indicates hazard caused by moving parts of the appliance.

Note: includes important additional information for the operator regarding the system or parts of the system and offers further information.

➢ **Instruction symbol:** placed in front of text requiring an action.

3.2 Operating conditions

It is taken for granted that the planning of the system, its installation, commissioning and maintenance are executed by properly 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
- ❑ Fresh water connection in accordance with the technical sheet
- ❑ Waste water connection in accordance with the technical sheet

3.2.1 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, damage can occur to components containing water, such as pump, solenoid valve, boiler, etc.

3.2.2 Requirements for the electrical connection

The electrical connection of the appliance must only be made by a specialist as defined in DIN EN 50110-1.

The customer must guarantee the following points relating to the connection:

- ➢ The correct voltage and type of current must be available.
- ➢ Mains supply lines must be protected according to regulations and provided with a main switch.
- ➢ Mains supply must have a fixed connection and equi-potential bonding.
- ➢ In the case of three-phase current and unearthed neutral (N) use a 4-pole main switch; in the case of an alternating current use a 2-pole main switch.

- In the case of three-phase current a 5-pole terminal strip (L1, L2, L3, N, PE) must be used and in the case of alternating current a 3-pole (L1, N, PE) terminal strip.
- Mains supply without neutral (N): when connecting to three-phase current, use a supply connection terminal strip with 4 poles (L1, L2, L3, PE) and in the case of alternating current a supply connection terminal strip with 3 poles (L1, L2, PE).
- Conductor colors/numerical indications: live conductor L1 = black/1, L2 = black/2, L3 = black/3, neutral conductor N = black/4, protective earthing conductor PE = yellow-green

Protective measures as well as the connection of the equi-potential bonding must be carried out according to DIN VDE 0100-540 and conform to the local power utilities' regulations.

Do not use fuses to protect any additional consumers together with the stationary rack machine.

3.2.3 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 DIN 1988 part 1-8 or EN 1717, DVGW-work sheet W 507, or according to local regulations.

The flow pressure of the fresh water supply line must be at least 2.5 bar up to max. 5 bars (in front of the solenoid valve).

- If this flow pressure is not present, then increase the pressure by means of a booster pump or reduce it with a pressure reducing valve.
- 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.

3.2.4 Requirements for the waste water connection

- Build an odour trap into the waste water connection if this is not already built-in (further information about this is in the Technical Sheet).
- A grease trap may be needed, depending on the machine application.

3.2.5 Free standing machines

Free standing machines must be equipped with a rear panel.

3.3 Correct operation

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

Temperature of wash water = 58-60 °C.

Items that have been washed and components in contact with the wash water have the same temperature. Appropriate protective measures must be observed.

Open the hood very carefully during the programme cycle, as otherwise wash water could splash out.

3.3.1 Emergency switch

- Set the local main switch to ”OFF“ or disconnect the local main fuse.

3.4 Authorised users / operators

It is assumed that two groups of users will come into contact with the appliance:

1. Service engineers from the manufacturer or the agency or installation engineers from the authorised dealer: these are qualified technicians and have good product knowledge.
2. Operator - with basic knowledge (our customers must instruct the operators).

Customer’s responsibility relating to the groups of users

- ❑ The persons responsible for safety must fully guarantee that only qualified persons carry out connection, adjustment or maintenance works on the open appliance.
- ❑ The permission for the execution of such works is given by the person responsible for the safety of staff and of the appliance to persons qualified because of their training, education, experience or instructions, or because of their knowledge regarding standards, regulations, accident-prevention regulations and the circumstances of the installation.
- ❑ The persons responsible for safety must instruct the operators with regard to the operation and the safety aspects of the appliance.
- ❑ Steps must be taken to ensure that the operating instructions supplied are available for both user groups. Service personnel must also have the documentation relating to the order available for them when undertaking any work and observe these instructions in order to avoid any hazard and/or damages.

3.5 Chemicals for the operation of the stationary rack machine

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-aids can present a health hazard if they are not correctly used. Please observe the manufacturers’ instructions on the original packing and on the safety data sheets.

If a de-scaling agent is used, please strictly observe the manufacturer's instructions regarding handling and safety. After such an agent has been used the product must be completely removed from the machine, as even small residues are sufficient to destroy plastic parts and sealing materials.

3.6 Environmentally acceptable measures, measures for disposal

Each discarded appliance is to be made immediately unserviceable in order to avoid accidents at a later date.

- Therefore, set the local main switch to "OFF" or disconnect the local main fuse.

The appliance can now be properly recycled (stainless steel, plastic materials, etc. separately).

4

Basic information on the stationary rack machine

Each machine is manufactured according to state of the art technology. Operation is safe.

Dangers could arise from this model if it is incorrectly operated by unsuitable operating staff or if it is not used for the purpose intended.

Liability

We accept no responsibility for damage to the appliance and other objects caused by operating faults or by failure to observe the Operating Instructions. Any modifications to the appliance - especially internal technical modifications - undertaken by unauthorised persons without the written permission of the manufacturer will invalidate the warranty.

4.1 General description of the stationary rack machine

4.1.1 Type

Square basket appliance with stationary basket.

4.1.2 Wash principle

The appliance has one wash and one final rinse cycle.

The temperature regulator maintains the wash temperature. A centrifugal pump moves the water from the wash tank into the wash nozzles. The water jets hit the items to be washed from different directions. This guarantees an even wash.

The washing cycle is followed by the fresh water final rinse. The items are rinsed via a separate nozzle system with hot fresh water (dish washers 80 - 83° C, glasswashers 62 - 65° C). This also heats the items for the subsequent drying process. At the same time the final rinse

water is used to regenerate the wash water, thus reducing the level of contamination of the wash water.

4.1.3 Detergent dosing (optional)

The detergent dosing unit is designed for the automatic addition of liquid alkaline detergent to the wash water. The detergent is moved from the container into the wash tank by means of a hose line. Precise dosing of the detergent is ensured by the integrated conductivity meter or by a revolution counter.

In every case the separate Operating Instructions for the dosing unit must be observed.

The use of the conductivity-controlled detergent dosing unit is only possible with a product which modifies the conductivity of the water. Relevant information is provided by the manufacturers of these products

4.1.4 Rinse aid dosing unit

The rinse aid dosing unit is designed to add liquid final rinse aid automatically to the rinse system. The precise dosing of the rinse aid is guaranteed by a revolution counter.

The instructions for operating and adjustment of the dosing units can be found in the ”Service Instructions“ .

4.2 Use for the purpose intended

The stationary rack machine may only be installed and used for the purpose for which it is intended.

Dishwasher: Designed only for the washing of dishes and cutlery.

Glasswasher: Designed only for the washing of drinking glasses.

4.3 Improper use

The stationary rack machine and especially switch boxes and other electrical-technical components must not be sprayed with a water hose or a high-pressure hose.

Do not place any solvents or other easily flammable substances in the washing-up area, as this increases the danger from explosions.

The water in the washing-up area is not drinking water! Do not use the water from the washing-up area for food preparation or drinking.

Open the hood very carefully during the programme cycle, as otherwise wash water could splash out.

Steel pan scrubbers must not be used for the pre-scouring or for cleaning the items to be washed.

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

The entry of metal particles (especially iron, tinplate, copper) MUST be

prevented.

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.

4.4 Emissions

- ❑ Work place noise level $L_{pA} \leq 70$ dB
- ❑ Water vapour

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

4.5 Data relating to the electrical and hydraulic equipment

Technical data: installation drawing

5 Documentation

Installation drawing / Technical Sheet

Wiring diagram

optional:

Operating Instructions for partial de-mineralisation or complete de-mineralisation, or water softening.

The Service Instructions are part of the Operating Instructions and should be kept in the appliance together with the wiring diagram.

6 Appendix

6.1 Name and address of manufacturer

MEIKO Maschinenbau GmbH & Co. KG
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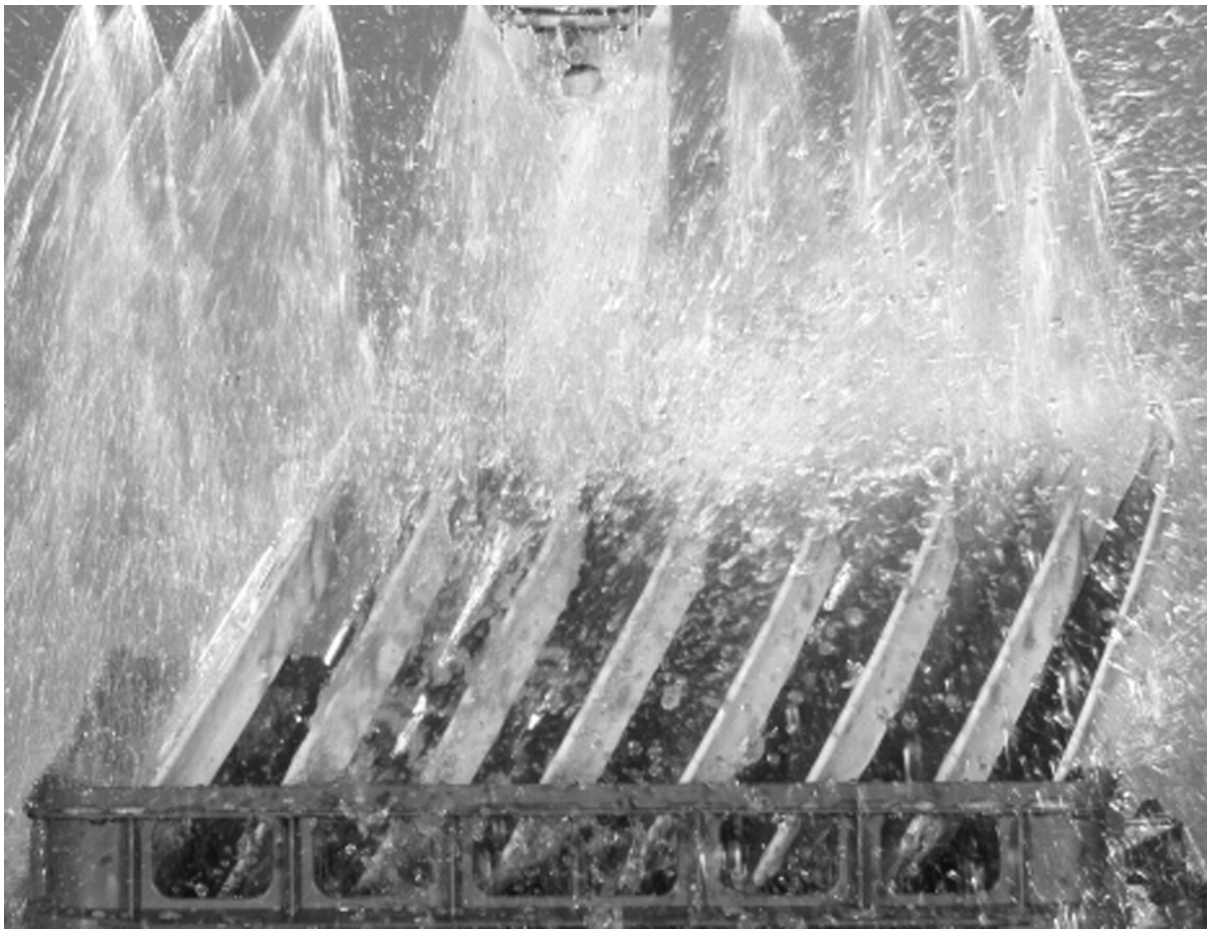
Operating instructions

Stationary rack machine
EcoStar 545 D

Operating instructions



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1 Contents

2 Operation

The stationary rack machine must not be used without a thorough knowledge of the ”General Information and Safety Information“. Incorrect operation could result in injuries to personnel or damage to the appliance.

2.1 Operating panel

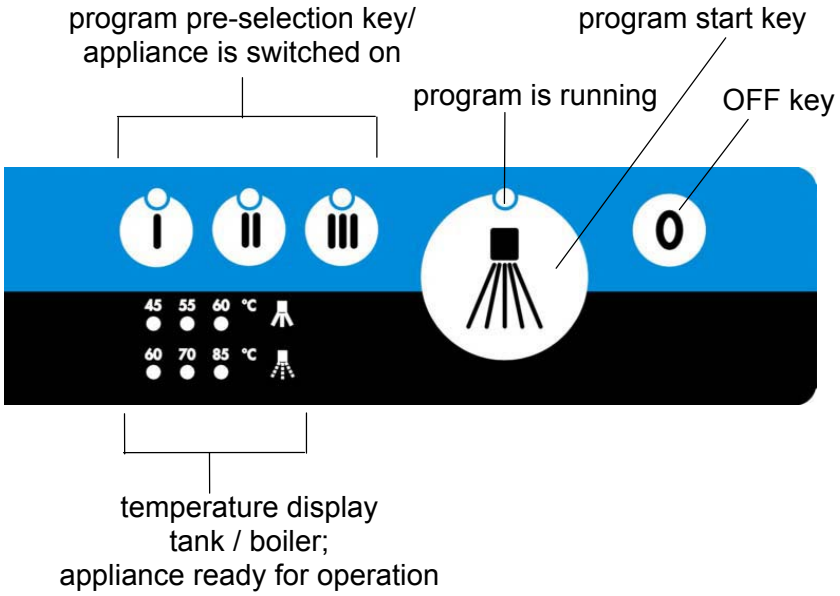


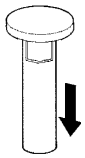
Illustration 1; operating panel

Key / display	Meaning
	Short cycle for lightly soiled items
	Normal cycle
	Intensive cycle
	Wash temperature
	Final rinse temperature
	Program start Tank drain Self-cleaning cycle
	Switch off appliance Cycle interruption

Table 1; Program key function / items to be washed

2.2 Preparation for washing and rinsing

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



- ➢ Open the hood.
- ➢ Insert the strainers.
- ➢ Insert standpipe discharge and close.
- ➢ Close the hood.

Danger of crushing.
Close the appliance with both hands!

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

The time until the appliance is ready for operation depends on the temperature of the water supply and the heating capacity of the boiler or tank installed.

In the case of cold water supply, the time taken is about 15 minutes.

2.3 Automatic dosing

The required detergent and rinse aid is moved from the containers into the tank or boiler via electronically controlled dosing units. The dosing is carried out automatically according to the requirements arising during the wash process.

2.4 Manual detergent dosing

(Only if no rinse aid dosing unit is built in)

In the case of stationary rack machines without a dosing unit, the detergent must be added to the wash water by hand. Corresponding standard values for the initial and subsequent dosing are listed in table 2.

Use only lather-free detergents suitable for industrial dish-washing machines. Detergents in the form of powder should be evenly scattered on the tank water after the tank has filled or added in the form of a solution. This avoids the discolouration of stainless steel parts.

Standard values for initial and subsequent detergent dosing, related to a concentration of 2 grams per litre		
Machine model	**Pre-dosing (when filling) grams**	**Subsequent dosing (after 5 cycles) grams**
EcoStar 545 D	44	30

Table 2; Standard values for detergent dosing

2.5 Operating during wash and rinse cycle

The relevant lights indicate when the stationary rack machine is ready for operation (see illustrations in Chapter 2.1)

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 with their 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 cutlery baskets.
- Do not stack the dishes in the wash basket directly on top of each other, as the wash water could not strike the items directly and unnecessarily long wash times would have to be selected. Short wash times with baskets which are not overloaded are much more economical.

2.5.1 Start the wash cycle

- Place the items in the basket.
- Place the basket in the appliance, ensuring that it is correctly centred.
- Close the hood.
- Depress the hood lever or 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 is not sufficient for heating up the fresh water to the pre-set boiler temperature during the program time. In this case the automatic wash time extension will be activated.

2.5.2 Remove the washed items

- When the light goes out, open the hood and remove the basket.

3 Shutting the machine down

- Press the ”0“ key (OFF key). The machine is switched off when all the lights are out.
- Remove the wash tank standpipe discharge by lifting.

In addition - for machines with integrated wash water pump:

- 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.

4 Care and maintenance

4.1 Care, general

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

However, correct care and maintenance is necessary for reliable, safe and long-lasting operation of the appliance and in the interest of hygiene and cleanliness.

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.

4.2 Refilling with detergent

The detergent container is situated close to the stationary rack machine.

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

Use only lather-free rinse aids suitable for industrial dish-washing machines.

4.3 Refilling with rinse aid

The rinse aid storage container is situated close to the stationary rack machine.

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

Use only lather-free rinse aids suitable for industrial dish-washing machines.

4.4 Cleaning

After the tank has been drained, proceed as follows:

- 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.

4.5 Maintenance of stainless steel surfaces

The appliance is made of high-quality stainless steel. Nevertheless, under certain conditions corrosion may appear.

To maintain stainless steel surfaces permanently free from corrosion

- use only cleaning products which are properly suited.

Use only products which do not attack the material, build up a film or cause discoloration.

4.6 De-scaling

If the appliance is operated with hard water, scale can build up in the boiler and wash tank, making it necessary to de-scale the tank interior, the tank heating equipment, the boiler heating equipment, the wash system and final rinse system.

Use only products suitable for industrial dishwashing machines to de-scale the appliance. When using these products please observe the manufacturer's instructions.

After de-scaling:

- Flush the de-scaling product completely out of the appliance. 1 or 2 rinse cycles with fresh water are necessary to achieve this.

Even small amounts of de-scaling product remaining in the appliance may cause plastic components and sealing materials to deteriorate.

If the appliance is heavily scaled, you should ask a service engineer from the agency responsible to de-scale the boiler.

4.7 Regeneration

(Only in the case of a built-in water softener)

If the red light is illuminated this indicates that the capacity of the water softener is almost exhausted. Only about a further 10 program cycles are possible before the softener is fully exhausted. In this way it is possible to schedule the necessary regeneration for a time when the appliance is not needed.

- Press the ”0“ button.
- Remove wash tank standpipe discharge by lifting
- Open the salt container (in the tank bottom).
- Fill the salt container with 0.8 kg of regeneration salt; use a funnel if necessary.

Use only regeneration salt with a grain size of 0.3 mm to 1 mm.

- Clean seal and thread of the salt container.
- Close the salt container.
- Spilled salt or salt water must be flushed away immediately to avoid crevice corrosion of the stainless steel parts.

- Press the regeneration key.

A red light indicates that regeneration process is running. The regeneration process runs automatically and takes 25 minutes. When the red light goes out the machine is ready for operation once more.

The machine must not be used during the regeneration process. The hood must stay closed.

The regeneration process can also be started even though the red light is not illuminated to indicate that the capacity of the water softener is almost exhausted.

Proceed as described above, but press the regeneration key for at least 3 seconds to start the process.

5 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 appliance it must be disconnected from the power supply. The local main switch must be switched ”OFF“, or the local main fuse must be removed.

Should any of the described faults arise repeatedly, their cause must be established.

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

5.1 Information messages and trouble-shooting

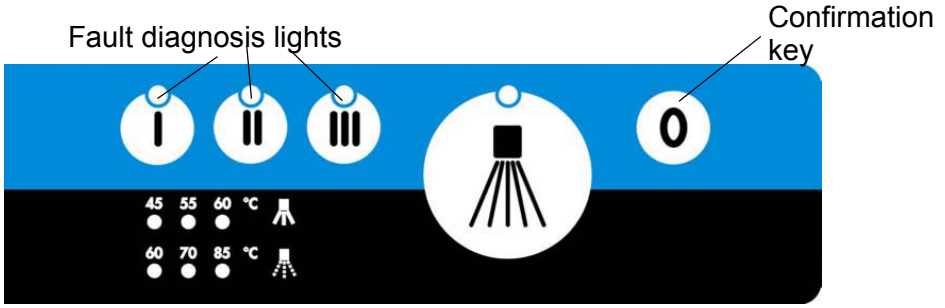


Illustration 2; LED error display

Flashing of at least one light above the program symbols I-III indicates an operation fault.

Faults are represented through different combinations of the lights above the program symbols I-III. Every light may have 3 different states:

- ○ off
- ✸ flashing
- ● on

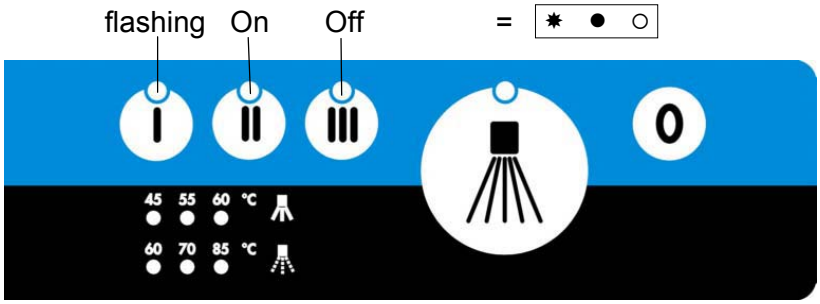


Illustration 3; Example of lights

Except in the case of the fault "Error at the memory module," the operation of the machine can, in principle, continue after a fault has been indicated. To continue, remedy the fault according to the table below and acknowledge the error message by pressing the confirmation key.

✸ ● ○	**Insufficient detergent dosing (warning)**
	Is there still enough detergent in the container?
NO:	Refill the container or replace it by a full one.
YES:	Notify a service engineer.

✷ ○ ●	**Insufficient fresh water supply**
	Is the fresh water supply closed?
YES:	Open the fresh water supply.
NO:	Notify a service engineer.

✷ ✷ ●	**Broken wire / boiler temperature sensor short circuit**
● ✷ ✷	**Broken wire / tank temperature sensor short circuit**
✷ ● ✷	**Incorrect conductance control**
	Always notify a service engineer.

✷ ✷ ✷	**Memory module error**
	Should the fault arise again after it has been acknowledged, always notify a service engineer.
	Further operation is not possible.

5.2 Tips for self-help

Pump motor not running, machine not operating

The fuses have blown.

- Check fuses, replace if necessary.

Built-in thermal protection of motor stops the motor when overloaded.

- Let the motor cool down. The machine will be ready for operation afterwards.

The rinse water does not heat up

The thermostat in the heating element was triggered due to over-heating and switched off the power supply to the element, or the element is defective.

- Ask the service engineer to check the cause of the overheating.
- Switch the thermostat on again or replace the heating element.

Rinse water not sprayed

The water supply on site is cut off.

- Turn the water supply on.

The rinse jets or the solenoid valve soil traps are blocked.

- Clean jet caps, final rinse nozzle inserts or the soil traps.

Filling or rinsing does not stop

The solenoid valve will not close due to lime or other contaminants.

- Notify the service engineer.

Wash water cools down

The tank heater power supply was switched off. The heating element of the tank is protected against overheating by a thermostat. A red button projects when the thermostat is activated.

- Ask the service engineer to find out the reason for the overheating.

Dosing units don't work
The special operating instructions in the appendix "Service Instructions" must be particularly observed in this case. *Suction / pressure hose kinked and therefore detergent / rinse aid products cannot pass.* ➢ Position the hose without kinks. *Product alteration due to ageing: detergent / rinse aid products can solidify if the machine is not used for a long period.* ➢ Inform the service engineer. *Result of using a different product: faults may occur after changing the detergent / rinse aid product due to the fact that products tend to precipitate on mixing. The appliance and the suction pipe must therefore be flushed out.* ➢ Inform the service engineer.

6 Appendix

6.1 Name and address of manufacturer

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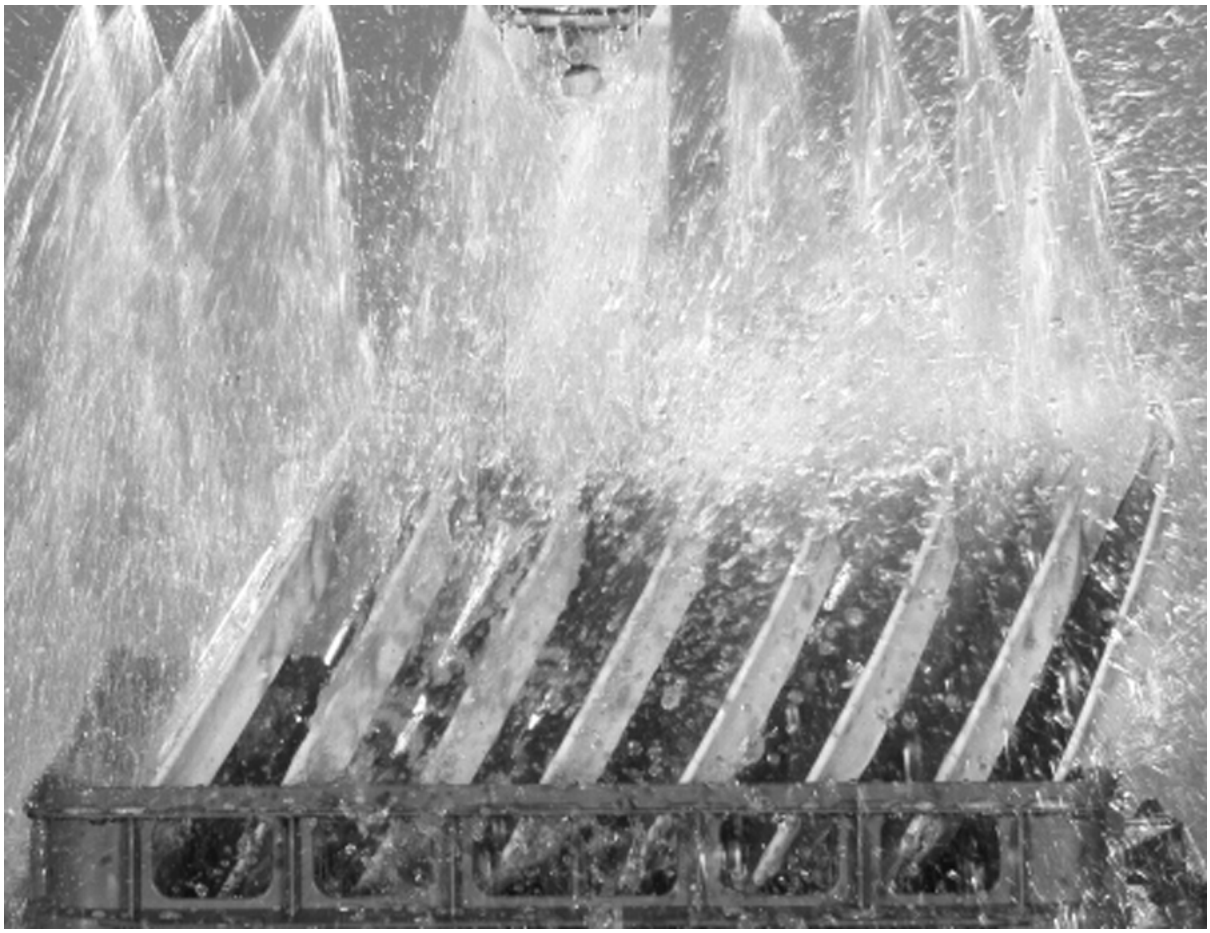
Operating instructions

Stationary Rack Machine
EcoStar 545 D

Service instructions



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1 Contents

2 Authorized user of this documentation

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

2.1 Safety information

The following symbols are used in this booklet as important safety notes for the operator. The safety notes, especially the warnings, must be observed and followed at all times.

Warning: indicates possible hazard for persons, especially through electrical equipment.

Attention: indicates the endangering of system parts or possible functional damage.

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.

Note: includes important additional information for the operator regarding the system or parts of the system and offers further information.

➢ **Instruction symbol:** placed in front of text requiring an action.

3 Transport, delivery, dimensions

3.1 Transport

- Observe transport instructions on the packing.
- The appliance must be moved with great care.
- Unpack the stationary rack machine.
- Check completeness of the delivery using the shipping documents.
- Examine the appliance for possible transit damage.
- Any damage must be reported immediately to the carrier, the insurance company and the manufacturer.

Damaged stationary rack machines must not be commissioned.

3.2 Dimensions, technical data, installation instructions

See attached technical sheet.

4 Installation, Commissioning

4.1 Installation of the stationary rack machine

The enclosed technical sheet indicates the connected loads and consumption ratings of the stationary rack machine.

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 stationary rack machine at the required position and connect the tables - upon request.

The following must be observed during the installation of the stationary rack machine:

- The complete unit must be levelled in both directions using a spirit level.
- Compensate for an uneven floor by adjusting the feet.
- Table joints must be sealed with detergent-resistant sealing compound (e.g. silicone).
- Fit the pads supplied (with the equipment) to the adjustable feet to avoid scratching the floor.

4.2 Installation and assembly

4.2.1 Electrical connection

The conditions to be provided by the customer for the electrical connection of the stationary rack machine can be found in the chapter

”Requirements for Electrical Connection“ in the ”General Information and Safety Information“ section of the Operating Instructions. The following work must also be carried out:

- Install the main switch. If an unearthed neutral (N) is used with three-phase current the main switch must have 4 poles, and 2 poles if alternating current is used.
- The stationary rack machine must have a fixed connection and equi-potential bonding. When connecting to three-phase current, a 5-pole terminal strip (L1, L2, L3, N, PE) must be used, but for connection to alternating current a 3-pole (L1, N, PE) terminal strip must be used.
- Mains supply without neutral (N): for connection to three-phase current use a supply connection terminal strip with 4 poles (L1, L2, L3, PE), and in the case of alternating current a supply connection terminal strip with 3 poles (L1, L2, PE).

Cable colours/numbering of the cables: live wires L1 = black/1, L2 = black/2, L3 = black/3, neutral wires N = black/4, earth wire PE = yellow-green

Protective measures as well as connection of the equi-potential bonding must be carried out according to DIN VDE 0100-540 and conform to the local power utilities' regulations.

The earth of the stationary rack machine must not be shared by any other user.

- All conductor fixing screws must be re-tightened before commissioning the appliance.

The wiring diagram is behind the front panel or front cladding of the stationary rack machine. The enclosed wiring diagram must remain in the appliance.

4.2.2 Fresh water connection

The appliance is installed ready for operation. Each appliance carries the DVGW test symbol and does not require an extra safety valve in the water feed.

Basic conditions for the fresh water connection are explained in the chapter ”Requirements for the Fresh Water Connection“ in the ”General Information and Safety Information“ section of the Operating Instructions.

The instructions in the technical sheet must be observed during installation.

4.2.3 Waste water connection

- If not already in existence, an odour trap should be built into the appliance (please see corresponding information in the installation instructions).
- A grease trap may be needed, depending on the machine application.

4.2.4 Free-standing appliances

Free-standing appliances should be provided with a rear panel.

4.3 Dosing units

4.3.1 General information

The appliance is provided with detergent and rinse aid units as standard, unlike most other appliances where the rinse aid unit is an optional extra.

Only lather-free detergents and rinse aids suitable for industrial mechanical dishwashers may be used.

If unsuitable products are used, the life expectancy of the dosing units can be reduced considerably.

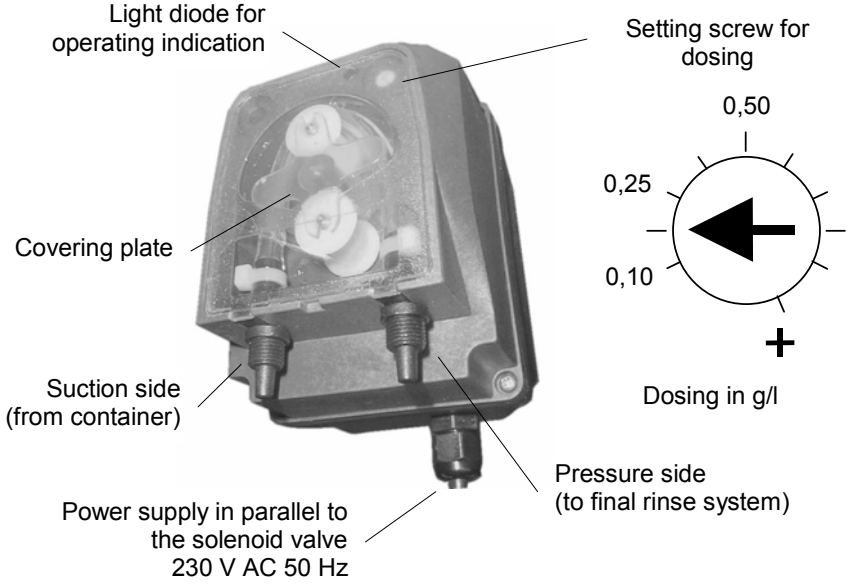
Observe the dosing instructions of the manufacturer and the operating instructions of any external dosing units.

4.3.2 Rinse aid dosing unit Model PR-1 SIL

The dosing unit is designed for the automatic addition of acid to neutral rinse aid to the rinse water.

General

The dosing unit is energized in parallel to the rinsing operation of the appliance so that it feeds rinsing agent continuously into the rinsing system during this time. The purpose of the rinsing agent is to reduce the surface tension of the water, thus producing a perfect bright surface on the dry crockery, cutlery etc.



Setting

The dosing unit supplies rinse agent during the whole of the rinsing process. For this reason the dosing rate is determined by the speed of the pump. The electronic controls for this are to be found inside the pump housing. The dosing rate can be set using the adjusting screw accessible at the front.

- Remove cover plate
- Adjust dosage with the adjusting screw
- Check the condition of washed items.

The correct dosing results in a smooth, even water film.

In case of overdosing, there are bubble and stripe formations - reduce dosing.

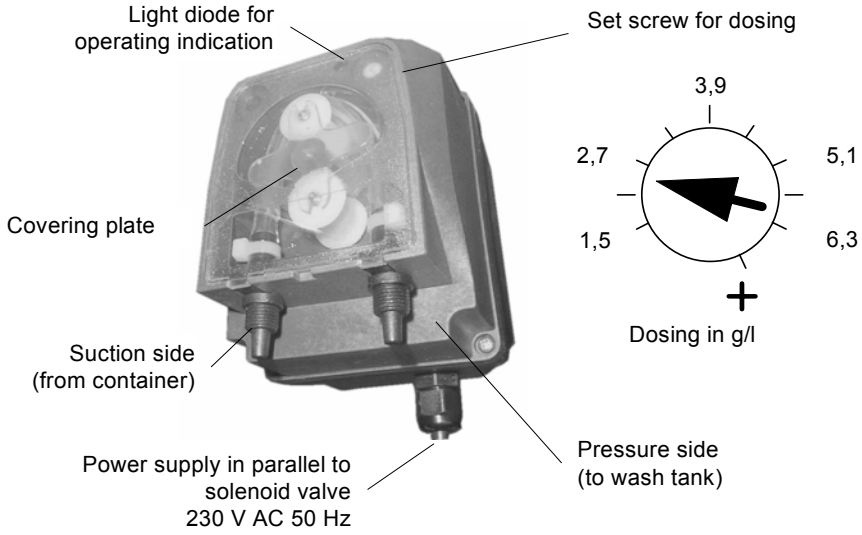
In case of under-dosing, water drops remain on the washed items - increase dosing.

4.3.3 Detergent dosing unit Model PR-7 SAN

The detergent dosing unit is designed for the automatic addition of liquid alkaline detergent to the wash water.

General

The dosing unit is energized in parallel to the rinsing operation of the appliance so that it feeds detergent continuously into the appliance tank during this time, maintaining the correct detergent concentration in washing water.



Setting

The dosing unit supplies detergent during the whole of the rinsing process. For this reason the dosing rate is determined by the speed of the pump. The electronic controls for this are to be found inside the pump housing. The dosing rate can be set using the adjusting screw accessible at the front.

- Switch off power before working on the pump
- Remove cover plate
- Adjust dosage with the adjusting screw
- Check condition of the washed items

4.4 Built-in water softener

4.4.1 General information

The stationary rack machine can be supplied with a built-in water softener as an optional extra. This unit reduces the hardness-inducing compounds in the water supply, thus preventing the formation of lime-scale on the appliance and the goods to be washed. The hardness of the water is set at 30°dH at the factory.

The following table shows the relationship between the water hardness of the local water supply and the quantity of water that can be treated by a fully regenerated cation exchanger.

Water hardness in °dH (German hardness)	**Water hardness in ppm $CaCO_3$**	**Capacity in litres**
5	90	2000
10	180	1000
15	270	680
20	360	500
25	450	400
30	530	350

Table 1: Relationship of water hardness to built-in water softener capacity

In general:

Capacity in l = 10,000 / water hardness in °dH (German hardness)

If the red light is illuminated (see illustrations in the “Operation“ section) this indicates that the capacity of the water softener is almost exhausted. Only about a further 10 program cycles are possible before the softener is fully exhausted. In this way it is possible to schedule the necessary regeneration for a time when the appliance is not needed.

The local water hardness must be programmed into the appliance in line with the „Short Programming Instructions“.

Continued use of the appliance with an exhausted built-in water softener can reduce the capacity of the machine to the point where it becomes unserviceable.

5 Maintenance

5.1 Dosing units

The dosing units themselves are basically maintenance-free.

5.1.1 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 could eventually result in a failure.

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

5.2 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!

6 Appendix

6.1 Name and address of manufacturer

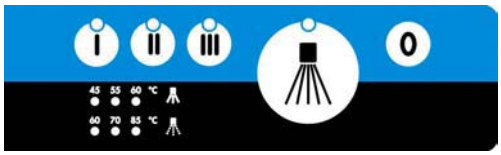
MEIKO Maschinenbau GmbH & Co. KG
Englerstrasse 3
D-77652 Offenburg
Phone no.: (++49) 781 / 203 - 0
Fax no.: (++49) 781 / 203 - 1179
www.meiko.de
e-mail: info@meiko.de

Service plan for stationary rack machines

Service procedures	FV 28G / FV28GIO EcoStar 430 F / 530 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	DV 40 – DV 240 B EcoStar 545D / DV 80.2 / DV 120.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 DV 270.2	Component OK	Component faulty	Component replaced
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. Washing 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)										
Check water hardness										
6. Waste water installation										
Check if watertight										
Check pressure hose position and operation of wash water evacuation pump										

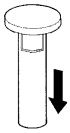
Service plan for stationary rack machines

Service procedures	FV 28G / FV28GIO EcoStar 430 F / 530 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	DV 40 – DV 240 B EcoStar 545D / DV 80.2 / DV 120.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 DV 270.2	Component OK	Component faulty	Component replaced
7. Electrical installation										
Check of all fuses										
Tighten all electrical connections										
Check tank and boiler heating										
Check thermostat and stop switch										
8. Detergent dosage										
Check dosage, adjust if necessary										
9. Rinsing dosage										
Check dosage, adjust if necessary										
10. Operation check of the complete machine										
Check stationary rack machine for correct interaction of all operations										
11. Test run										
Check results of test wash and rinse										
Brief instruction for new personnel										



Control panel

1. Preparing to wash and rinse



- Open the hood.
- Insert wash water strainers.
- Insert standpipe discharge into tank outlet and close.
- Close the hood.

- Turn on the machine by pressing one of the pre-selector buttons.
- Check level and if necessary refill detergent and rinse aid reservoirs.

- The machine is ready for operation when boiler and tank temperature lights are on.

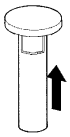
2. Washing and rinsing operation

- Pre-set program I, II or III.
- Place the items to be washed in the basket.
- Insert the basket in the machine and centre it correctly in the basket carrier.
- Close the hood.

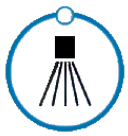
- Start appliance by depressing the hood lever or pressing the program start button.
- The machine automatically washes, rinses and switches itself off when the wash program is finished. Open the hood after the lamp goes out and remove the basket.

3. Shutting the machine down

- Press the ”0“ button (off button). The machine is switched off when all the lights are out.



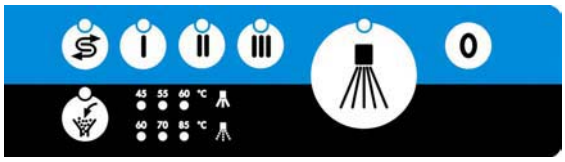
- To empty the tank open the overflow pipe for draining.



- Press the program start button. The interior is rinsed with fresh hot water. The hood must be kept closed.
- Clean tank, strainers and wash arms.

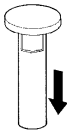
Short Operating Instructions EcoStar 545 D

(with integrated water softening equipment)



Control panel

1. Preparing to wash and rinse



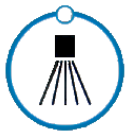
- Open the hood.
- Insert wash water strainers.
- Insert standpipe discharge into tank outlet and close.
- Close the hood.

- Turn on the machine by pressing one of the pre-selector buttons.
- Check level and if necessary refill detergent and rinse aid reservoirs.

- The machine is ready for operation when boiler and tank temperature lights are on.

2. Washing and rinsing operation

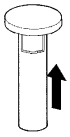
- Pre-set program I, II or III.
- Place the items to be washed in the basket.
- Insert the basket in the machine and centre it correctly in the basket carrier.
- Close the hood.



- Start appliance by depressing the hood lever or pressing the program start button.
- The machine automatically washes, rinses and switches itself off when the wash program is finished. Open the hood after the lamp goes out and remove the basket.

3. Shutting the machine down

- Press the ”0“ button (off button). The machine is switched off when all the lights are out.



- To empty the tank open the overflow pipe for draining.

- Press the program start button. The interior is rinsed with fresh hot water. The hood must be kept closed.
- Clean tank, strainers and wash arms.

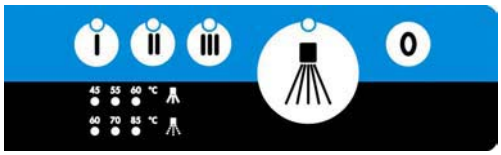
4. Regeneration

- A red lamp indicates that the capacity of the water softener is nearly exhausted.

- Carry out the regeneration process according to the operating instructions.

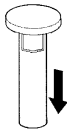
Short Operating Instructions EcoStar 545 D

(with drain pump)



Control panel

1. Preparing to wash and rinse



- Open the hood.
- Insert wash water strainers.
- Insert standpipe discharge into tank outlet and close.
- Close the hood.

- Turn on the machine by pressing one of the pre-selector buttons.
- Check level and if necessary refill detergent and rinse aid reservoirs.

- The machine is ready for operation when boiler and tank temperature lights are on.

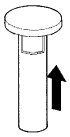
2. Washing and rinsing operation

- Pre-set program I, II or III.
- Place the items to be washed in the basket.
- Insert the basket in the machine and centre it correctly in the basket carrier.
- Close the hood.

- Start appliance by depressing the hood lever or pressing the program start button.
- The machine automatically washes, rinses and switches itself off when the wash program is finished. Open the hood after the lamp goes out and remove the basket.

3. Shutting the machine down

- Press the ”0“ button (off button). The machine is switched off when all the lights are out.

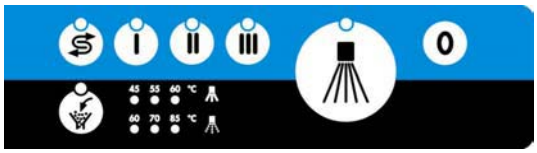


- Remove the standpipe discharge.

- To empty the tank press the program start button.
- After the tank water has been pumped out, the interior is rinsed with fresh hot water. The hood must be kept closed. The waste water pump disconnects itself automatically.
- Clean tank, strainers and wash arms.

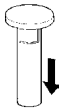
Short Operating Instructions EcoStar 545 D

(with drain pump and integrated water softening equipment)



Control panel

1. Preparing to wash and rinse



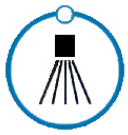
- Open the hood.
- Insert wash water strainers.
- Insert standpipe discharge into tank outlet and close.
- Close the hood.

- Turn on the machine by pressing one of the pre-selector buttons.
- Check level and if necessary refill detergent and rinse aid reservoirs.

- The machine is ready for operation when boiler and tank temperature lights are on.

2. Washing and rinsing operation

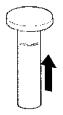
- Pre-set program I, II or III.
- Place the items to be washed in the basket.
- Insert the basket in the machine and centre it correctly in the basket carrier.
- Close the hood.



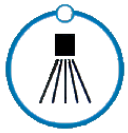
- Start appliance by depressing the hood lever or pressing the program start button.
- The machine automatically washes, rinses and switches itself off when the wash program is finished. Open the hood after the lamp goes out and remove the basket.

3. Shutting the machine down

- Press the ”0“ button (off button). The machine is switched off when all the lights are out.



- Remove the standpipe discharge.



- To empty the tank press the program start button.
- After the tank water has been pumped out, the interior is rinsed with fresh hot water. The hood must be kept closed. The waste water pump disconnects itself automatically.
- Clean tank, strainers and wash arms.

4. Regeneration

- A red lamp indicates that the capacity of the water softener is nearly exhausted.

- Carry out the regeneration process according to the operating instructions.

Short programming instructions M1-6-EA3 - System STD

MEIKO
01.03/KDST2_7

General

There must be power supply to the circuit board before the controls can be programmed. The appliance must also be completely switched off (all LEDs off) and the programming block (bridge between terminal 44 and 45 on the circuit board) must be removed. The programming is basically carried out in three steps:

Selecting the programming mode

The programming mode is accessed by depressing the cycle start key until the LED on this key flashes twice. The programming mode can be exited at any time by depressing the cycle start key once more, in which case no alterations to the programming will be initiated.

Selection of the function

Once in the programming mode, the function selection mode is then accessed. Using the function listing below, the desired function can be selected by depressing the selection key, and confirmed by using the confirmation key.

Setting the parameter

After confirming the function, the parameter mode is entered (at least one LED above the cycle duration symbols will flash). The parameters can be selected from the adjoining list, and confirmed. After confirmation, the programming mode will be automatically exited.

CAUTION:

THE ALTERATIONS OF FACTORY SET PARAMETERS CAN AFFECT THE OVERALL FUNCTIONS OF THE MACHINE. ALL ARBITRARY PARAMETER ALTERATIONS PERFORMED BY AN UNAUTHORIZED PARTY WILL CAUSE THE WARRANTY TO BE VOID.

Non-critical fault - (operation still possible within limits; fault is acknowledged by depressing the "0" key)

✸ ● O	inadequate detergent dosing
O ✸ ●	faulty boiler or tank heating
✸ O ●	insufficient fresh water supply (ST)
● ✸ O	insufficient drain pump throughput (ST)

Critical fault - (only emergency operation possible; fault is acknowledged by depressing the "0" key)

✸ ✸ ●	Broken wire or short circuit of the boiler temperature sensor
● ✸ ✸	Broken wire or short circuit of the tank temperature sensor

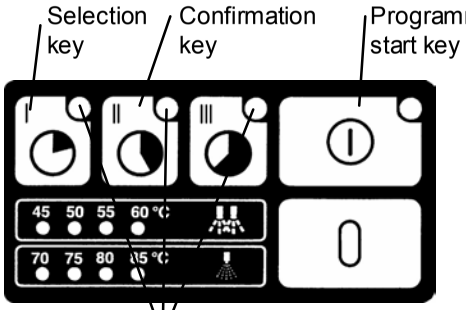
Complete fault - (no operation possible; disconnect machine from power supply)

✸ ✸ ✸	Chip (EEPROM) faulty, not properly installed or missing (If the programming start key also flashes, the touch panel is defective)

(ST) not applicable if error message partially blocked

Function mode

● O O	**BT**	Boiler temperature
O ● O	**TT**	Tank temperature
● ● O	**LZ**	Cycle duration
O O ●	**NZ**	Rinse time
● O ●	**WH**	Water hardness
O ● ●	**ZV1**	Additional variant 1
● ● ●	**ZV2**	Additional variant 2
O O O	**AT**	Machine type

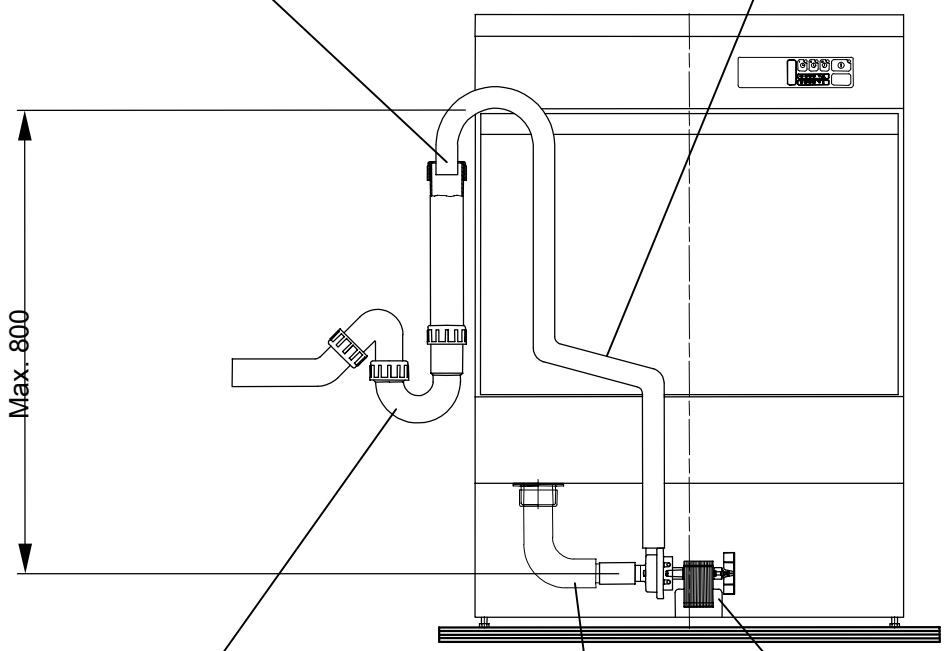


Parameter mode

	BT [°C]	TT [°C]	LZ [s]	NZ [s]	WH [°dH]	ZV1	ZV2	AT
✸ O O	50	40	60-90-120	4	0	--	--	FV20N / FV20T
✸ ● O	53	42	60-90-210	5	8	G	SV	FV40T
✸ O ●	56	44	90-120-240	6	10	LP	ST	FV70T / FV110G
✸ ● ●	59	46	120-160-240	7	12	VS	RZ	OR50H
O ✸ O	62	48	120-240-360	8	14	G+LP	RZ+SV	DV40N / DV40T
● ✸ O	65	50	120-240-480	9	16	G+VS	RZ+ST	DV80T
O ✸ ●	68	52	160-210-270	10	18	LP+VS	FK	DV120TV
● ✸ ●	71	54	160-240-360	11	20	G+LP+VS	FK+SV	DV160
O O ✸	74	56	160-270-300	12	22		FK+ST	DV240BV
● O ✸	77	58	60-120-180	13	24		FK+RZ	FV130B
O ● ✸	80	60	200-200-200	14	26		FK+RZ+SV	FV250B / DV270B
● ● ✸	83	62	200-240-480	15	28		FK+RZ+ST	DV160/240B-NDD
✸ ✸ O	86	64	--	17	30			FV250B/DV270B-NDD
✸ ✸ ●	89	66	--	19	32			EcoStar545D
O ✸ ✸	92	68	--	21	34			
● ✸ ✸	--	70	--	23	36			
✸ O ✸	--	72	--	25	38			
✸ ● ✸	--	74	--	27	40			
✸ ✸ ✸	--	76	--	30	42			

G	Glass washing programme	PB	Partially blocked error message
PR	Pre-rinsing	SV	Full blocked error message
WP	Wash water pump		

Anschlußvorschrift für Laugenpumpe
Connection prescription for drain pump
Prescription de connexion pour pompe de vidange
Prescrizioni di collegamento per la pompa scarico
Prescripciones para la conexión de la bomba de vaciado



Freier Auslauf
Air gap
Système anti-refoulement avec disconnecteur atmosphèrique
Air gap
Sistema air gap

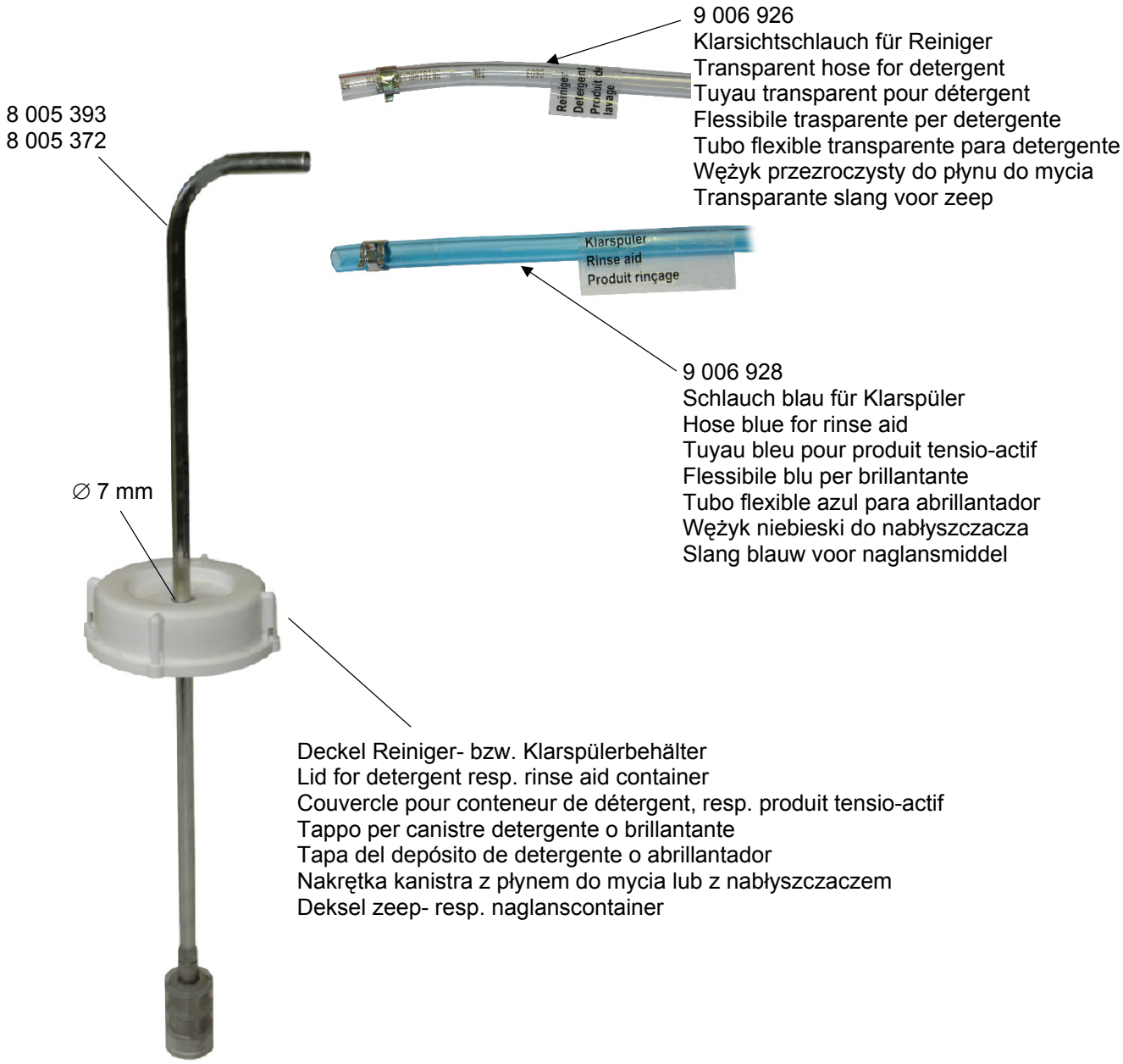
Druckleitung, durchgehend steigend verlegt
Pressure pipe continuously ascending
Tuyau de pression continuellement ascendant
Tubo di pressione, montato con salita continua
Tubo de presión, continuamente ascendente

Ablaufverrohrung mit Siphon bauseits
Drain pipework with siphon, locally
Tuyauterie de vidange avec siphon sur place
Scarico con sifone a cura del committente
Tubería de desagüe con sifón, a cargo del cliente

Laugenpumpe
Drain pump
Pompe de vidange
Pompa di scarico
Bomba de vaciado

Saugleitung
Suction pipe
Tuyau d`aspiration
Tubo d`aspirazione
Tubo de aspiración

Saugleitung für Reiniger bzw. Klarspüler
Suction line for detergent resp. rinse aid
Conduite d'aspiration pour détergent, resp. produit tensio-actif
Tubo d´aspirazione per detergente e brillantante
Tubo de aspiración para detergente y abrillantador
Układ ssący płynu do mycia lub nabłyszczacza
Aanzuigleiding voor zeep- resp. naglansmiddel



ACHTUNG!	**Saugleitung von Wärmequellen fernhalten!**
ATTENTION!	**Keep away suction line from heating sources!**
ATTENTION!	**Ecartez la conduite d'aspiration de toute source de chaleur!**
ATTENZIONE!	**Tenere il tubo d´aspirazione lontano da fonti di calore!**
¡ATENCION!	**¡Mantenga el tubo de aspiración alejado de las fuentes de calor!**
UWAGA!	**Układ ssący należy trzymać z dala od źródeł ciepła!**
LET OP!	**Aanzuigleiding van warmtebronnen verwijderd houden!**

Geschirrspülautomaten
Gläserspülautomaten
Topfwaschautomaten
Universalwaschautomaten
Salat- u. Gemüsewaschautomaten
Vollautomatische Spülanlagen

Sonderwaschanlagen
Förderanlagen
Speisereste-Anlagen
Kücheneinrichtungen
Pflegeeinrichtungen
Reinigungs- und Desinfektionsautomaten

CE - Konformitätserklärung

gemäß EN 45014 und
EG-Maschinenrichtlinie 98/37/EG
Stand: 25.09.2007

CE declaration of conformity as defined by EC machinery-directive
Déclaration de conformité CE conformément à la directive CE relative aux machines
Declaración de cónformidad CE según los requerimientos CE en la construcción de maquinas CEN03A/01/98
CE-Conformiteitsverklaring volgens de EG Machinerichtlijn
CE – dichiarazione di conformitá secondo le direttive stabilite riguardo alla costruzione di macchine

Firma/Company/Société/Empresa/Firma/Casa costruttrice:
Adresse/Adress/Adresse/Dirección/Adres/Indirizzo:

MEIKO Maschinenbau GmbH & Co. KG
Englerstraße 3
D-77652 Offenburg
e-mail: info@meiko.de

Spülmaschine Typ	**FV 28G**	**FV 110G**	**DV 40N**	**DV 120.2**	**EcoStar 430F**	**OR 50H**
dishwashing model	**FV 28GIO**	**FV 130B**	**DV 40T**	**DV 120T**	**EcoStar 530F**	**GK 60**
lave-vaiselle modèle	**FV 20N**	**FV 250B**	**DV 80T**	**DV 160**	**EcoStar 530F-M**	
lavastoviglie modello	**FV 40T**	**FV 130.2**	**DV 80.2**	**DV 200.2**		
Vaatwasmachine type	**FV 40.2**	**FV 250.2**		**DV 200.2 PW**	**EcoStar 545D**	
Modelo de lavavajillas	**FV 40.2 G**		**DV 125.2**	**DV 240B**	**EcoStar 545D-M**	
	FV 60.2			**DV 270B**		
	FV 70.2					
	FV 70T			**DV 270.2**		

Konformitätserklärung

Declaration of conformity/Déclaration de conformité/Declaración de conformidad/Conformiteitsverklaring/Dichiarazione di conformitá:

Hiermit bescheinigen wir in alleiniger Verantwortung die Konformität des Erzeugnisses mit den grundlegenden Anforderungen der folgenden EG-Richtlinien, harmonisierten Normen, nationalen Normen.

We herewith confirm the sole responsibility for the conformity of the product with the basic requirements of the following EC-regulations, harmonized standards, national standards.

Par la présente nous déclarons, que nous avons responsabilité pour la conformité du produit aux demandes fondamentales des régulations CE, normes harmonisées et normes nationales suivantes.

Por la presente atestamos en exclusiva responsabilidad la conformidad de nuestros productos con los requerimientos básicos de los siguientes requerimientos CE, normas armonizadas y nacionales.

Hiermee bevestigen wij onze verantwoordelijkheid van de conformiteit van het product met betrekking tot de fundamentele en gestelde eisen volgens EG-Richtlijnen, geharmoniseerde Normen en Nationale Normen.

Con la presente dichiarazione confermiamo la nostra responsabilità riguardo alla conformitá sul prodotto con i regolamenti basilari delle seguenti normative CE, normative armonizzate e normative nazionali.

EG-Richtlinie/EC-regulation/Régulation CE/Requerimiento CE/EG-Richtlijn/Regolamento CE:
98/37 EWG

Offenburg, 08.06.2009
Offenburg, the/Offenburg, le/Offenburg, el/Offenburg,/Offenburg, il

Unterschrift/Signature/Signature/Firma/Handtekening/firma:
Konstruktion/Construction/Construction/Construcción/Constructie/resp. progettazione:

MEIKO Maschinenbau GmbH & Co. KG

ppa . Dr. Thomas Peukert

Dr. Thomas Peukert
Leiter Entwicklung und Konstruktion