Wexiödisk

HOOD TYPE DISHWASHER
WD-7 DUPLUS

(translation of the original documentation)

Service manual

S/N: (En) Valid from: 201403 Rev.:

1. Safety instructions

1.1 General information

The machine is CE marked, which means that it complies with the requirements of the EU machinery directive with regard to product safety. Product safety means that the design of the machine will prevent personal injury or damage to property.

Modifying the equipment without the approval of the manufacturer invalidates the manufacturer's product liability.

To further improve safety during installation, operation and servicing, the operator and the personnel responsible for installing and servicing the machine should read the safety instructions carefully.

Switch off the machine immediately in the event of a fault or malfunction. The machine must only be serviced by trained engineers. The regular checks described in the manual must be carried out in accordance with the instructions. The machine must be serviced by a person authorised to do so by the manufacturer. Use original spare parts. Contact an authorised service company to draw up a programme of preventative maintenance. Dangerous situations may arise if the instructions above are not followed.

Before using the machine, ensure that personnel are given the necessary training in operating and maintaining the machine.

1.2 Transport

Handle the machine with care during unloading and transport to avoid the risk of it tipping over. Never lift or move the machine without using the wooden packaging to support the stand.

1.3 Installation

The electrical cabinet must only be opened by an authorised electrician. The machine is sensitive to electrostatic discharge (ESD), which is why a static electricity wristband must be used when handling the electronics.

The water connections must only be put in place by qualified technicians.

Water pipes must be connected in a way that complies with the current regulations of the local water supply authority. Check that the water connections do not leak before starting the machine.

Make sure that the mains voltage is the same as that indicated on the machine's rating plate. The machine should be connected to a lockable mains switch.

1.4 Detergent and drying agent

Only detergent and drying agent intended for industrial dishwashing machines must be used. Washing-up liquid must not be used in the machine or for pre-treating items (soaking, pre-washing, etc.). Contact your detergent supplier regarding the choice of a suitable detergent.

Be aware of the risk of handling washing and drying agents. Protective gloves and safety glasses should be used when handling dishwasher detergent. Read the warning text on the detergent and drying agent containers as well as the detergent supplier's regulations.

1.5 Operation

1.5.1 Hot water

The temperature of the washing and rinsing water is 60°C and 85°C. If the machine has a manual hood lift, do not open the hood until the washing and rinsing phase is finished.

1.5.2 Crushing risk

If the machine has an automatic hood lift, take care when the lid is closing that your fingers or arms do not become trapped.

1.6 Cleaning the dishwasher

The water in the tank has a temperature of approximately 60°C and contains detergent. Take care when draining and cleaning the dishwasher. Use protective gloves.

1.6.1 Pressure washing

The machine must not be cleaned with a pressure washer, either inside or out.

In order to satisfy current requirements, electrical components of approved IP classes are used. No enclosure classes are designed to withstand pressurised water.

1.6.2 The outside of the machine

Pressure washers and hoses must not be used to wash the outside of the machine. Water can penetrate into the electrical cabinet and the control panel and damage the equipment, which may affect the safety of the machine.

1.7 Washing the floor

When the floor is washed, water can splash up under the machine and damage the components. These have not been designed to withstand being washed with water. Do not wash the floor within a distance of 1 metre from the dishwasher. Problems with splashing can also occur when using ordinary hoses.

1.8 Repairing and servicing the dishwasher

Disconnect the power supply before removing the front panel. Avoid touching hot pipes and the booster heater.

Check the following points:

- Are there any error messages on the display?
- Has the machine been used according to the instructions?
- Are all the removable parts in the correct place?
- Is the mains switch in the “ON” position?
- Are the fuses in the electrical cabinet undamaged? Ask the service personnel to check the fuses.

If this does not solve the problem, ask authorised service personnel to check the machine.

1.9 Recycling the machine

When the dishwasher has reached the end of its service life, it must be recycled in accordance with current regulations. Contact professionals who specialise in recycling.

2. Operational description

2.1 General information

The dishwasher is intended for cleaning items used for preparing and serving food, as well as various types of food storage container.

The machine can be fitted with automatic hood closure. If the machine is fitted with automatic hood closure it can also be fitted with “Autostart” function. Automatic hood closure closes the hood and starts the machine when a basket has been loaded into the machine. Automatic hood lift opens the hood once the function in question has been completed.

The machine has three different washing programmes that can be set to different washing times.

2.2 Design

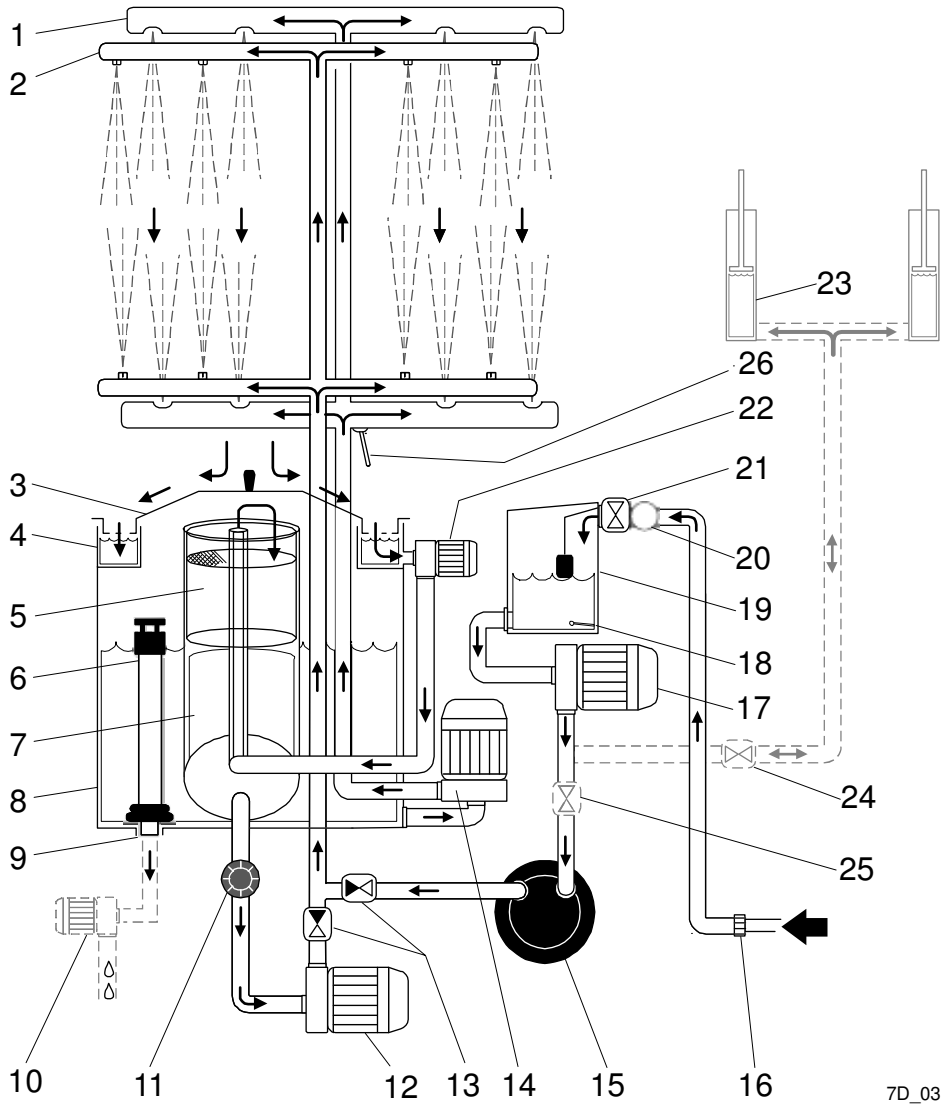
The machine is manufactured entirely from non-corrosive materials. The bottom frame has adjustable legs.

The electrical cabinet containing the electrical and electronic equipment is on the front of the machine to make it more easily accessible.

The hood is double-skinned to insulate against heat and noise. The housing of the machine is made of polished sheet metal.

The machine's control panel has displays to show the temperature, programme selection, remaining washing time, error messages, reference values, etc.

The picture below shows the design of the WD-7 DUPLUS fitted with automatic hood lift and drain pump. The automatic hood lift and drain pump are option.



1. Wash arm
2. Rinse pipe for final rinsing water
3. Cover plate over tank for recirculating rinse water
4. Collection channel for rinsing water
5. Filter for tank for recirculating rinse water
6. Level pipe
7. Tank for recirculating rinse water
8. Wash tank
9. Drain
10. Drain pump (option)
11. Filter for recirculating rinse
12. Rinse pump for recirculating rinse water
13. Non-return valves
14. Washing pump
15. Booster heater to heat the final rinse water
16. Connection for incoming water
17. Booster pump
18. Level sensor
19. Break tank
20. Filter
21. Float valve
22. Filler pump for tank for recirculating rinse water
23. Air cylinder for hood lift (option)
24. Solenoid valve for hood lift (option)
25. Solenoid valve for final rinse (option)
26. Lever for normal / heavily soiled wash

2.2.1 Components, functions

Bottom section

The bottom section of the machine contains the break tank for incoming water, pumps (sometimes including detergent pump), tanks, booster heater, drying agent injector, valves and the electricity cabinet. The chemical washing tank is intended for water mixed with detergent. The tank contains a heating element, level pipe, pump filter and connection to the level sensor. If the machine has a drain pump, the tank is also fitted with a drain filter. The tank has a strainer with cover plates and a filter for collecting dirt.

The tank for recirculating rinse water is fitted with a filter and the water pumped from the tank during the recirculating rinse passes through a filter that collects dirt.

Top section

The top part of the machine consists of a hood which can be raised and lowered and which surrounds the washing chamber. This contains the washing system and a folding basket conveyor used to slide the washing baskets into and out of the machine. If the machine has been fitted with an automatic hood and “autostart”, there is a switch placed next to the conveyor. When the switch is activated by a washing basket pushed into the machine, the hood closes automatically and the machine starts after 5 seconds.

The standard version of the machine has a manually operated hood. The hood is opened and closed by hand using a handle. Gas springs help to ensure that the hood is in balance while it is being lifted.

Machines with a hydraulically controlled hood are fitted with lifting cylinders for water. The hood is closed by pressing a control button on the panel or closes automatically if the machine is fitted with the autostart function. When the washing phase is finished, the hood opens automatically. The hood opens in two stages to reduce the discomfort caused by the steam emerging from the front of the machine. The hood opens a few centimetres and then stops briefly. Before the hood opens fully, the majority of the steam has escaped through the back of the hood.

A hood switch stops the pump if the hood is opened during the washing or rinsing phases of the washing programme. This switch also stops the machine filling. The machine cannot be filled when the hood is open. When the machine is started, a check is made to ensure that the switch is functioning so that washing cannot take place when the hood is open.

The washing system

The washing system includes two removable washing arms with rinsing pipes, chemical washing pump, pump for the recirculating rinse water and a booster pump for clean rinsing water. The washing arms, which rotate during the washing and rinsing phases, wash the items from above and below.

During the washing phase, the chemical wash pump takes its water from the washing tank and circulates it through the washing system via the wash nozzles on the washing arms.

The rinsing phase is triggered by the rinsing pump taking used rinsing water from the tank for the recirculating rinse and circulating this around the system via nozzles in the washing pipe for the washing arms.

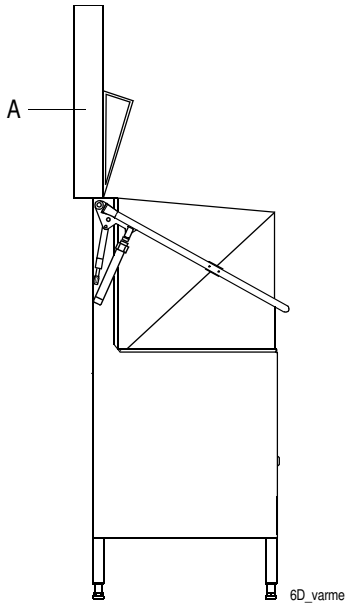
The booster pump for final rinsing with fresh water takes its water from the mains. The water is heated to rinsing temperature in the booster heater before being sprayed over the dishware via nozzles in the the washing pipes for the washing arms.

Incoming water

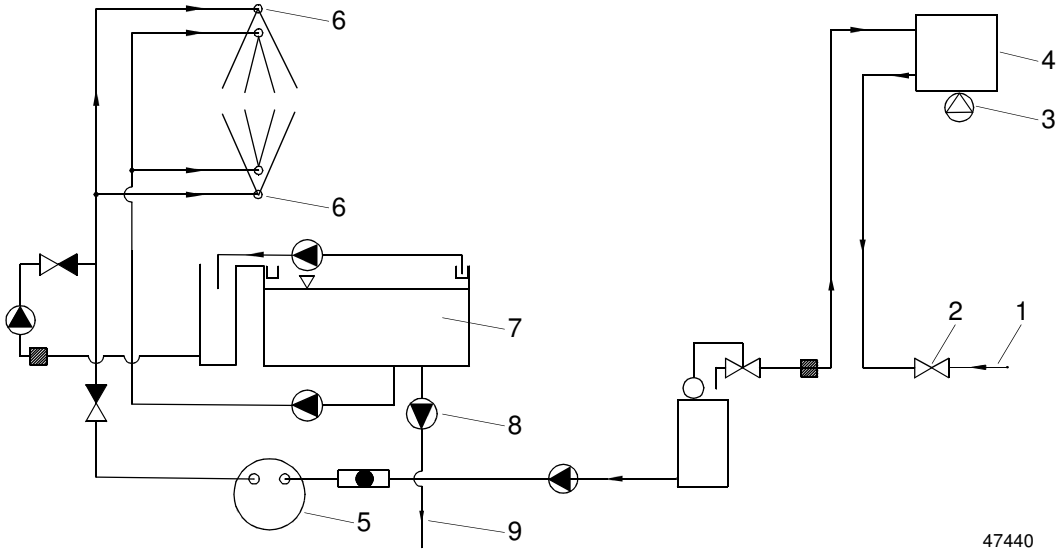
The water supply pipe has a filter and is connected to the machine via a break tank. The water level in the break tank is regulated by a float valve and the water pressure from the mains. The water is pumped with a booster pump to the the washing pipe for the washing arms. This ensures the correct flow of water for the final rinsing phase. The water is used both to fill the tanks and for the final rinsing.

2.3 Heat recovery (option)

As an extra, the machine can be fitted with a condensation unit to recover heat. Recovered thermal energy is used to heat incoming cold water.



Dishwasher WD-7 DUPLUS with heat recovery.
A=Condensation unit

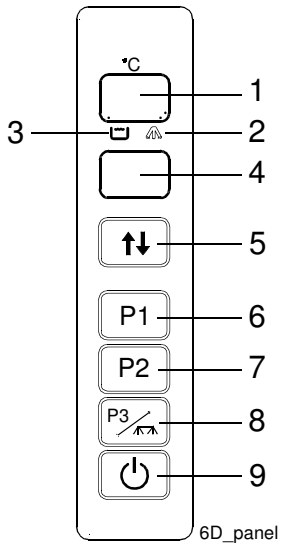


Flow diagram for heat recovery with condensation unit

1. Incoming water
2. Safety valve
3. Fan for condensation unit (Option)
4. Condensation unit (Option)
5. Booster heater
6. Rinsing pipe for final rinse
7. Wash tank
8. Drain pump
9. Drain

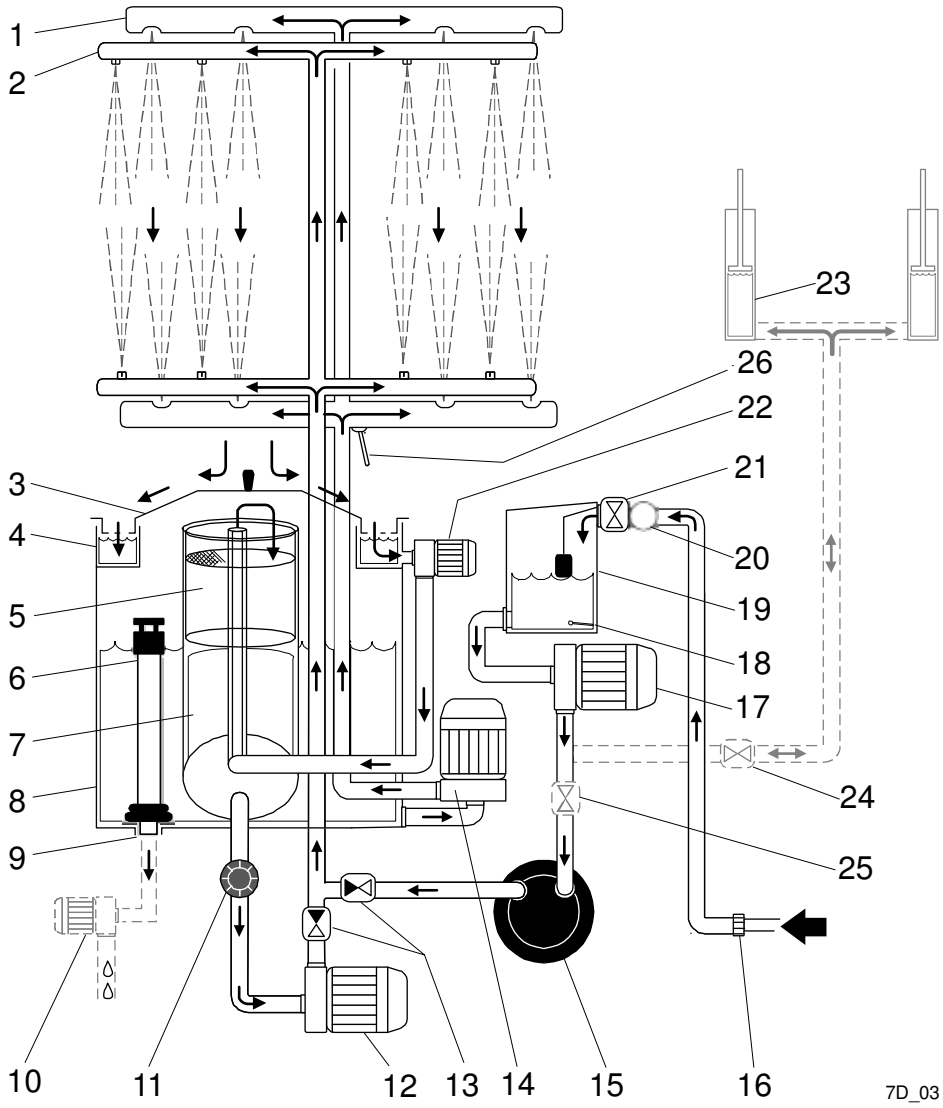
The incoming water pipe (1) is connected to the condensation unit (4). After the washing cycle has finished, the machine hood opens slightly and the fan (3) in the condensation unit starts. The fan removes the steam from the machine hood for condensing and heat recovery in the condensation unit. The warm moist air passes through the condensing battery which returns the thermal energy to the incoming water.

2.4 Control panel



1. Display. When in operation, the display shows the washing or rinsing temperature. Together with display (4), it shows error and information messages. When set to service mode, it shows the text number for the reference value, e.g. 01, 02, 03 etc.
2. Final rinse indicator. The symbol is lit while the machine is filling up, during the final rinse phase and when the cleaning programme is run after a completed washing cycle. Both wash and rinse symbols (2, 3) are lit during the recirculating rinse. The symbol flashes if the hood is opened during the washing cycle or if the final rinse water has not reached the correct rinse temperature when the rinsing phase is due to start. The machine continues washing until the correct rinse temperature has been reached.
3. Symbol for washing function. After the machine is started, the symbol lights up when the tank is full. The symbol flashes if the water level in the tank is too low.
4. Display for programme. The remaining washing time is shown while the programme is running.
5. Button for closing or opening the hood. (On machines with an automatic hood only)
6. Button for washing programme 1. When the machine is in service mode, P1 is used to show the different reference values and to reset the reference values to the last saved values (the values that were set before you went into service mode). If the machine has a drain pump, P1 is used to start the drain pump and empty the tank after washing.
7. Button for washing programme 2. P2 is used in service mode to increase a reference value or move between tables of information and possible settings for the differen values. When the machine is in shut-off mode the software version number can be displayed by holding down P2.
8. Button for washing programme 3. P3 is used in service mode to reduce a reference value or move between tables of information and possible settings for the differen values. When the machine is in shut-off mode, P3 is used to start internal rinsing when the cleaning programme is used to clean the machine.
9. Button to switch the power on or off. This button is also used to reset alarms, display the water flow to the machine and to move to service mode.

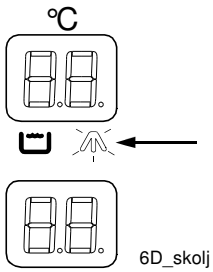
2.5 Operating principle



Numbers in brackets refer to the diagram in the chapter on “Design”.

2.5.1 Filling and heating

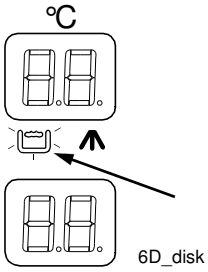
To start the machine, switch on the power using the “0/1” button on the panel. When the hood is closed, the upper display on the panel displshows two dashes “--” alternating with the water temperature in the booster heater. The lower display shows “P0”. P0 is a pause mode which indicates that no washing programme has been selected. The final rinse symbol lights up and heating of the water in the booster heater starts.



The final rinse symbol lights up when the heater is started

Once the water in the booster heater (15) has reached the correct temperature, the tanks begin to fill. The pump (17) pumps water from the break tank (19) via the booster heater to the rinsing pipes (2) in the washing arms. The water is collected in the channel (4). At the same time, the filling pump (22) starts, and pumps water from the collection channel to the tank (7) for the recirculating rinse water. When this tank is full, the water runs on to the washing tank (8). While the washing tank is filling with water, the detergent pump feeds detergent into the tank. The water level in the break tank (19) is regulated with the float valve (20).

When the tanks are full, the symbol for the washing function lights up. The temperature display on the panel shows the temperature in the washing tank. The temperature display flashes if the washing temperature drops below the reference value by more than 5°C. In its standard design, the machine cannot start before the temperature is shown by a solid bar.



The symbol for the washing function lights up when the tanks are full

The water will continue to be heated in the booster heater until the correct rinse temperature has been reached. The water in the washing tank is then heated up to the set value. The heating time is dependent on the incoming water temperature. When the tank has been heated, the washing pump (14) starts and runs for a preset time before mixing the detergent.

The water level in the tank is controlled by a level sensor. The temperature of the washing and rinsing water is monitored by temperature regulators with sensors located near the heat source.

2.5.2 Selecting a programme

The water pressure in the lower washing arm can be adjusted using the lever (26).

Buttons for selecting the programme

The machine has three washing programmes, P1, P2 and P3, selected using the respective buttons. You can only select programmes after the machine has started, when the hood is closed, the tanks have been filled and the water in the tank has reached the correct temperature.

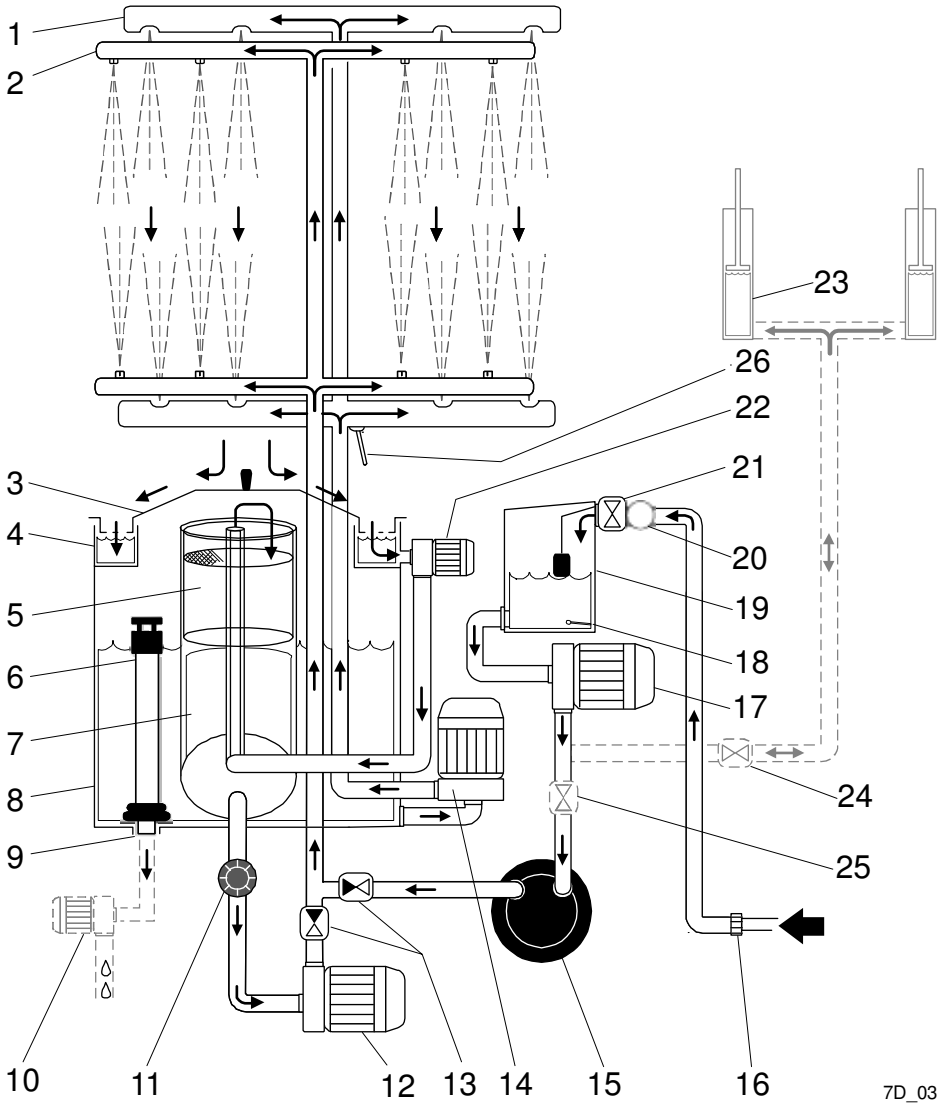
If you press a programme button whilst a washing phase is in progress, the phase is cancelled and the final rinse starts. You cannot select a new washing programme until the previous programme has completely finished.

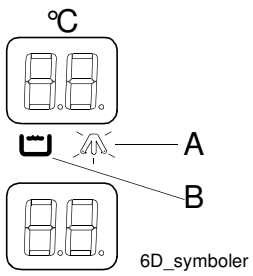
Programme “P1” is intended for lightly soiled items, e.g. trays and glassware. Programme “P2” is used for normal washing and “P3” for heavily soiled items.

In addition to washing programmes P1-P3, “P0” pause mode is used for prolonged intervals between washing cycles. The hood can then be closed without the machine starting up. “P0” pause mode is used to maintain the washing water temperature between washing cycles while the machine is not in use. The hood must be opened between each washing cycle.

The various programmes have different reference values for washing time, recirculating rinse time, final rinse time and final rinse temperature which can be changed.

2.5.3 Washing





A=Symbol for final rinse
B=Symbol for washing function

Once the hood is closed and a washing programme has been selected, the washing cycle will start. The lower display which shows the washing programme switches from showing the programme number to showing the remaining washing time. The washing pump (14) starts and circulates the water in the tank. The water is conveyed through the rinsing system and rinses the items from above and below via nozzles in the washing arms (1). The washing arms rotate during the washing phase. The symbol (B) is lit during the washing phase.

The washing pump (14) stops. For a few seconds the machine stops while the washing water flows down into the washing tank (8).

The pump (12) for the recirculating rinse water starts and circulates the used rinsing water in the tank (7). The water is passed through the rinsing system, rinses the washed items via the rinsing pipes (2) and is then taken to the collection channel (4). At the same time, the filler pump (22) starts, and pumps water from the collection channel to the tank (7) for the recirculating rinse water.

The pump (12) for the recirculating rinse water stops and the filler pump (22) continues to operate even during the final rinsing cycle. The pump (17) for the final rinse starts and fresh heated water from the booster heater (15) rinses the items via the rinsing pipes (2). The water level in the break tank (19) drops and the float valve (21) opens to let in fresh water from the mains. The symbol (A) lights up when the final rinse is in progress.

During the final rinse, the drying agent injector feeds drying agent into the rinsing water.

The pump (17) and filler pump (22) stop. The final rinse phase and the programme are complete. If the machine has an automatic hood lift, the hood opens when the programme has finished. The symbol (B) lights up.

The drain pump (10) is option and is activated while the recriculating rinse and final rinse are in progress.

If the water level in the tank becomes too low between washes or after the final rinse, the symbol (B) flashes.

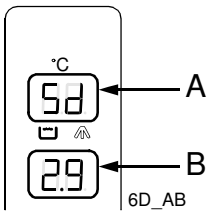
If the final rinse water has not reached the correct rinse temperature once rinsing starts, the symbol (A) flashes and the machine continues washing until the rinsing water has reached the correct temperature.

The hood is equipped with a safety switch. If the hood is opened during the washing phase, the washing pump stops and the symbol (A) begins to flash as a reminder that the items must have a final rinse before the basket is removed from the machine. When the hood is closed, the machine restarts.

If the hood is opened during the rinsing phase, rinsing will stop and the symbol (B) will start to flash as a reminder that the items must undergo a final rinse.

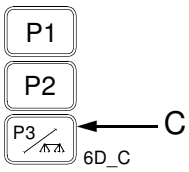
2.5.4 Draining and internal cleaning (machine without drain pump)

When the machine is switched off with the “0/1” button, the number of baskets washed appears on the display for approximately 5 seconds. The upper display then shows “Sd” (ShutDown), which indicates that the machine is in shut-down mode. For 5 minutes, the machine will still be powered on. The time until the machine is powered off is counted down with a flashing bar on the lower display.



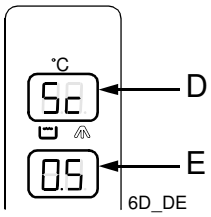
A=Indication of shut-down mode
B=Countdown of time

The washing tank is emptied by turning the level pipe (6) a quarter of a turn. When the tank is empty, internal rinsing can start. The hood must be closed. Rinsing is started with button “P3”.



The programme button “P3” (C) is used to start the cleaning programme and empty the tank for the recirculating rinse.

The rinse starts by emptying the tank for the recirculating rinse (7). The tank is emptied via the pump (12). The washing arms start to rotate. When the tank is empty, the pump (17) starts and clean water rinses the inside of the machine. During the internal rinse, the upper display shows “SC” (SelfClean) and the countdown of the rinsing time is shown on the lower display. When the rinse has finished, the machine goes into shut-down mode (ShutDown) and powers off after 5 minutes.

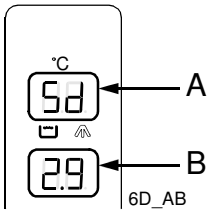


D=Indication of cleaning programme
E=Countdown of time

2.5.5 Draining and internal cleaning (machine with drain pump)

The machine should be in shut-down mode (upper display showing “Sd”) and the level pipe taken out of the machine.

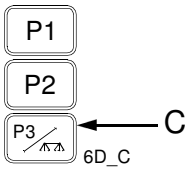
The drain pump (10) will start automatically.



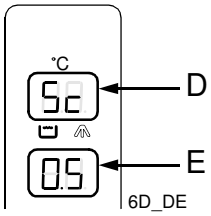
A=Indication of shut-down mode
B=Countdown of time

The water in the washing tank is pumped to the drain. The pump stops automatically after a set time, but it can also be stopped manually.

As with a machine without an drain pump, the cleaning programme is started with programme button “P3”. The drain pump runs during the internal cleaning process. When the cleaning programme has finished, the drain pump empties the machine of rinsing water. The pump stops automatically after a set time. After emptying, the panel goes out and the machine is powered off.



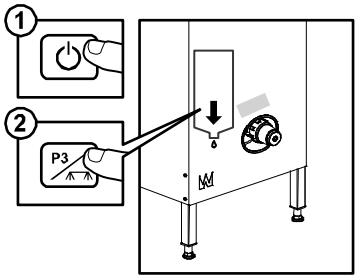
The programme button “P3” (C) is used to start the cleaning programme and empty the tank for the recirculating rinse.



D=Indication of cleaning programme
E=Countdown of time

2.5.6 Emptying the tank for the recirculating rinse

The tank for the recirculating rinse is emptied during the cleaning programme, which is started with button “P3”.



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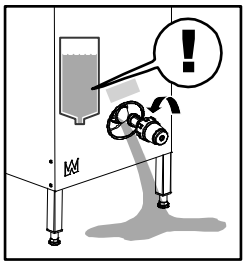
Note that emptying is necessary when you want to unscrew and clean the filter, because otherwise the water from the tank will spill out onto the floor.



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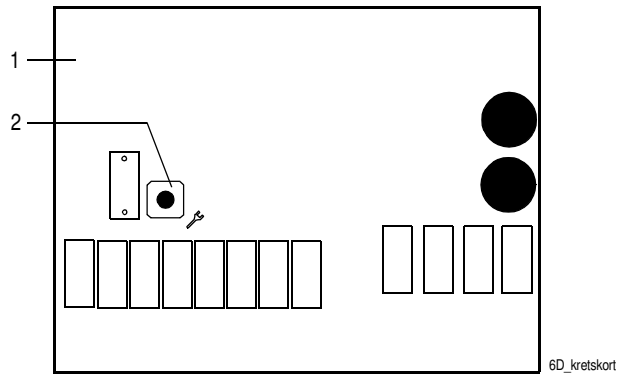
2.6 Other functions

- The hood switch functions as a safety switch. If the hood is opened during operation, hot water must be prevented from spraying out during the washing or rinsing phase. The function of the hood switch is checked when the power is switched on and before the hood is closed.
- The machine can be filled with hot or cold water, but the time it takes for the machine to fill and heat up will be longer if it is connected to cold water. The choice of hot or cold water fill is made with the machine in service mode and is described in the ADJUSTMENT INSTRUCTIONS. With cold water filling, the filling process is automatically controlled regardless of the incoming water temperature, so that when the tank is full, the machine has heated the water in the tank to a temperature close to the reference value, and therefore washing can start more quickly.
- The final rinse temperature can be set to a maximum of 95°C without causing the water in the booster heater to boil. As a result, plastic objects, such as trays, dry more quickly once the basket has been removed from the machine.
- The incoming water flow is shown on the panel. This is useful for checking and adjusting the flow during installation and servicing. If the 0/1 button on the panel is held down when the full machine is in operating mode, the flow is shown on the control panel display in litres/min.
- The machine will sound an alarm if any of the memory units in the electronics system are faulty.
- Memory faults will result in the machine not being able to start. Service personnel must be contacted.
- In shut-off mode the software version of the computer and panel cards is shown. When the “P2” programme button is held in, first the version number of the computer card is shown on the bottom display of the control panel for 3 seconds. After this two horizontal dashes “--” are displayed for 1 second and then finally the version number of the panel card is shown for 3 seconds. Whilst each version number is being displayed, “Sn” appears on the top display.
- The cards can be replaced independently.

Service personnel can connect the machine up to a computer. This allows statistics and events which took place during operation etc. to be displayed:

- Basket counting: the daily amount and total number of washed baskets.
- Operating time of the washing pump
- Water flow
- Events during operation: the machine starting, programme selection, selecting service mode, changing values (row number, old value, new value), alarms, alarm numbers.
- Temperatures: minimum, average and maximum temperatures for the tank and booster heater for chemical washing and the start of the final rinse.
- HACCP. The following data is saved for each washing cycle: The start time of a washing cycle, the programme selected, the average tank temperature during the washing cycle and the temperature in the booster heater when the final rinse starts.

2.7 Controlling the washing process



1. Circuit board
2. Button for selecting service mode

The various machine functions are controlled by a microcomputer. The circuit board (1) is located in the electrical cabinet.

There are three different levels of authorisation for changing the values.

- (OP)=Operator. The operator can only change the washing temperature and washing time. These values are changed directly on the control panel display.
- (S1)=Non-authorised service personnel. Service technicians use the button (2) on the circuit board to select service mode. People with authorisation level S1 cannot change all the values. These values are changed directly on the control panel display.
- (S2)=Authorised service personnel. S2 connects the machine to a computer and uses a special programme to access service mode and change the values. People with authorisation level S2 are authorised to change all the values.

The different values can be changed in different ways depending upon the authorisation level involved.

All the values are listed in tables with the following contents:

- Table 00: Tank and booster heater temperatures and washing and rinsing times.
- Table 20: Settings for alarms etc.
- Table 40: Settings for pause and rinsing times
- Table 50: Analogue inputs, diagnostic values.
- Table 60: Digital inputs, diagnostic values.
- Table 70: Digital outputs, diagnostic values.
- Table 90: Diagnostic values.
- Table A0: Basic settings.

The process of selecting service mode and setting the different values is described in more detail in the ADJUSTMENT INSTRUCTIONS.

2.8 Operating problems

Various error messages can be shown on the control panel displays. These messages are divided into two categories. The first category is alarms that must be dealt with by service personnel. These have the code numbers Er01, Er02 etc. The second category is alarms that can be dealt with by the operator. These have the code numbers IF01, IF03 etc. The code number indicates the type of error. The errors are listed in the TROUBLESHOOTING chapter. Most alarms can be reset with the 0/1 button on the control panel.

3. Adjustment instructions

This symbol is used to indicate electrical equipment. The electrical cabinet may only be opened by a qualified electrician. The machine is sensitive to electrostatic discharge (ESD), which is why a static electricity wristband must be used when handling the electronics.

3.1 Adjusting the detergent dosage (option)

The equipment is intended for liquid detergent. The detergent dosage is set to default at the factory. The dosing takes place when filling. The dosage time is given in units of the time that water is added to the tank. The dosage time for the WD-7 DUPLUS is 8 units. 1 unit is 0.5 %.

If the time needs to be changed (row 22), the machine must be reset to service mode. This is done on the printed circuit card in the electrical cabinet and is described later on in the ADJUSTMENT INSTRUCTIONS.

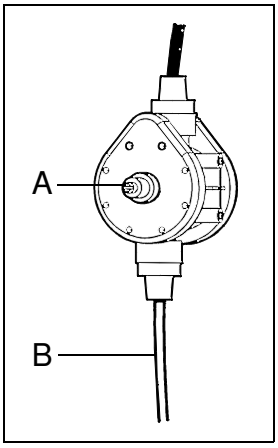
If the detergent dispenser is connected in accordance with the instructions for external connections, the dosage can be set to between 1 and 98 units. 1 unit is 0.5 %. See the wiring diagram for the correct connection.

At 0 setting the dispensing of the detergent always starts if the machine is live.

At a setting of 99 detergent dosing is performed at the same time as chemical washing pump.

3.2 Adjusting the drying agent injector

- The suction hose (B) must be submerged in the drying agent container.
- Unscrew the injector adjustment screw (A) completely.
- Press the adjustment screw repeatedly to pump the drying agent into the injector. Then pump a further 10-15 times.
- Lift the suction hose out of the drying agent container and pump a little air into the hose using the adjustment screw. Lower the hose into the container.
- When the machine is in operation, the air bubble in the hose must move around 10 cm when dosing the drying agent.
- Adjust the dosage by turning the adjustment screw. The quantity of drying agent can be adjusted between 0 and 4 cm^3, which corresponds to 0-30 cm in the suction hose. The quantity can be reduced by turning the adjustment screw clockwise and increased by turning it anticlockwise.



67_22

Drying agent injector
A=Adjustment screw
B=Suction hose

3.2.1 Setting the electrically operated drying agent pump and relay KA11

Following text relates to reference value at row 23.

If the drying agent dispenser is connected in accordance with the instructions for external connections, the dosage can be set to between 0 and 98 units. 1 unit is 0.5% of the time that water is being added to the machine. See the wiring diagram for the correct connection.

At 0 setting, the drying agent dosing always starts if the machine is live.

At 99 setting, the drying agent dosing starts at the same time as the chemical wash pump (M1).

3.3 Diagnostics function

The reference values and various functions can be checked and adjusted using the diagnostics function.

Authorisation is required to change the values. There are three different levels of authorisation:

- OP=The operator. At this level the dishwashing staff can change certain values such as the tank temperature and chemical washing time. This is described in the USER INSTRUCTIONS.
- S1=Non-authorised service personnel. By setting the machine to service mode, service personnel can change values using the machine's control panel. People with authorisation level S1 cannot reset all the values.
- S2=Authorised service personnel. Personnel trained by the manufacturer and with access to passwords can change all the values by using a computer connected to the dishwasher and a terminal program.

The values that OP and S1 can change, depending upon who is logged on, are shown by the relevant value flashing on the panel.

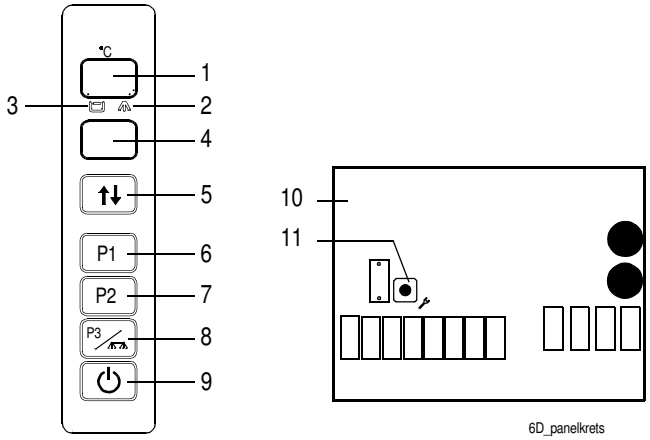
3.3.1 Tables for reference values and other functions

All the information is divided into several numbered tables with the following content:

- Table 00: Tank and booster heater temperatures and washing and rinsing times.
- Table 20: Settings for alarms etc.
- Table 40: Settings for pause and rinsing times
- Table 50: Analogue inputs, diagnostic values.
- Table 60: Digital inputs, diagnostic values.
- Table 70: Digital outputs, diagnostic values.
- Table 90: Diagnostic values, basket counting.
- Table A0: Basic settings.

3.3.2 Control panel function in service mode

When service mode is selected, the control panel's displays and buttons have different functions than in normal operating mode.



Control panel functions when the machine is in service mode.

1. Display for the table numbers and the row numbers of each table.
2. Symbol for final rinse.
3. Symbol for washing function.
4. Display of values and other information for all the row numbers in the tables.
5. Button for opening/closing the hood. (On machines with an automatic hood.)
6. Use the P1 button to move between the table rows or to reset the values to those last saved.
7. Use the P2 button to navigate forwards between tables and to increase a value.
8. Use the P3 button to navigate backwards between tables and to reduce a value.
9. Use the 0/1 button to exit service mode.
10. Printed circuit board.
11. Button for selecting service mode.

3.3.3 Displaying table numbers and row numbers

Table and row numbers are shown in the top display (1) when the machine is in service mode.

There is a two-digit display for row numbers 00-99. The subsequent row numbers are A0-A9 and B0-B9 etc.

- A0=Row 100
- A1-A9=Row 101-109
- B0=Row 110
- B1-B9=Row 111-119
- C0=Row 120
- C1-C9=Row 121-129
- etc…

3.3.4 Selecting service mode – Authorisation level S1

All the values that are shown on the lower display (4) that can be changed, flash. The values of row numbers up to 99 can be changed using the programme buttons on the control panel. Row numbers from A0 upwards can be displayed but not changed.

All the reference values are set to the recommended values on delivery. Changes can always be made to the machine's values.

- Hold down the service button (11) on the printed circuit board until 0.0 appears on the display (1). The two dots on the panel indicate that the machine is in service mode.
- 0.0 also indicates that you are in table 00, where various temperatures and washing and rinsing times can be changed.
- To display the first row in table 00, press P1. The upper display (1) now shows row number 01. The lower display (4) shows the set value, which in this case is the tank temperature.
- To increase the value, press P2. To reduce the value, press P3.
- Use P1 to move to the next row number.
- When you have browsed through all the row numbers in table 00, the upper display (1) shows 0.0 again.
- From here you can move to the next table (table 20) using the P2 button. If you want to continue switching between the various tables, 40, 50, 60 etc., press P2 again. Use P3 to move backwards between the tables. To be able to use P2 or P3 to switch between the tables, you must be in the first row of one of the tables, i.e. row 00, 20, 40, 50, 60, 70, 90 or A0.
- If the values have been changed and you want to return to the last saved values (the values that applied before you entered service mode), keep P1 pressed in for a few seconds whilst you are in service mode. When the upper display (1) has shown “CL” for a few seconds, the values have been reset.
- To return to normal operating mode and exit service mode, hold the 0/1 button down until the displays switch to the normal temperature and programme display. The changed values have now been saved.

3.3.5 Table 00. Temperatures and times

Table 00			
Row no.	Function	Value	Remarks
01	Reference value, tank B21	60℃	
02	Chemical washing time, programme P1	0,9 min.	
03	Chemical washing time, programme P2	1.5 min.	
04	Chemical washing time, programme P3	3.0 min.	
05	Reference value for booster heater, programme P1	85℃	Norway 92℃
06	Reference value for booster heater, programme P2	85℃	Norway 92℃
07	Reference value for booster heater, programme P3	85℃	Norway 92℃
08	Final rinse time, programme P1 (M10)	3.6 sec.	5,5 *
09	Final rinse time, programme P2 (M10)	2.7 sec.	5,5 *
10	Final rinse time, programme P3 (M10)	4,1 sec.	5,5 *
11	Stop delay time, filling	10 sec.	35 sec. **

* With increased rinsing capacity.

** In combination with PRM

3.3.6 Table 20. Settings for alarms etc.

Table 20			
Row no.	Function	Value	Remarks
21	Cold-/hot water connection	0	0=Normal, 1=Hot water >65°C
22	Dosing time, detergent KA9	8	0=KA9 is on when the dishwasher is switched on. 1-98=Every step is equal to 0.5% of Y1's open time. 99=Relay KA9 is on at the same time as the chemical wash pump (M1). *Example 12 means that relay KA9/detergent pump is switched on for 6% of Y1's open time*
23	Dosing time, external drying agent KA11	0	0=KA11 is on at the same time as Y1. 1-98=Every step is equal to 0.5% of Y1's open time. *99=Relay KA9 is on at the same time as the chemical wash pump (M1).* *Example 12 means that relay KA11 is switched on for 6% of Y1's open time*
24	Alarm for changing the water	0	0=IF09 alarm not active
25	Alarm for weekly cleaning	0	Given in hundreds, e.g. 2=200 washing cycles, 0=Alarm IF10 not active
26	Alarm time, changing water and weekly cleaning	5 sec.	Dependent upon rows 24 and 25
27	The machine locks if the alarm for changing the water sounds.	0	0=No, 1=Yes dependent upon row 24
28	Alarm time, detergent	5 sec.	
29	Alarm time, completed washing programme	5 sec.	
30	Waiting mode before hood opens	4 sec.	Option Not adjustable if row A2=0
31	Time in waiting mode	4 sec.	Option Not adjustable if row A2=0 0=No waiting mode
32	Delay interval for hood opening	5 sec.	Option Not adjustable if row A2=0
33	Time for automatic hood closing (basket in)	0	Not adjustable if row A2=0 0=not activated, 3 seconds when function activated
34	Drain pump	0	Option 0=No, 1=Yes
35	Computer card configured	1	0=No, 1=Yes
36	Booster heater filled *	0	0=No, 1=Yes

* To prevent the booster heater element from overheating if the booster heater has been emptied of water for any reason, the filling memory must be reset to zero, i.e. row 36 = 0. The tank must be empty when you reset the memory.

3.3.7 Table 40. Settings for pause and rinsing times

Table 40			
Row no.	Function	Value	Remarks
41	Pause before recirculating rinse, programme P1	10 sec.	
42	Pause before recirculating rinse, programme P2	10 sec.	
43	Pause before recirculating rinse, programme P3	10 sec.	
44	Recirculating rinse, programme P1 (M02)	9 sec.	15 sec.*
45	Recirculating rinse, programme P2 (M02)	9 sec.	15 sec.*
46	Recirculating rinse, programme P3 (M02)	9 sec.	15 sec.*
47	Start delay M03 after M02 has started P1	3.6 sec.	5,5 sec.*
48	Start delay M03 after M02 has started P2	2.7 sec.	5,5 sec.*
49	Start delay M03 after M02 has started P3	4,1 sec.	5,5 sec.*

* With increased rinsing capacity.

3.3.8 Table 50 – Analogue inputs, diagnostic values

Table 50			
Row no.	Function	Value	Remarks
51	AI1 (0-1V) Actual temperature value in tank B21	0-99℃	
52	AI1 (0-1V) Actual temperature value in booster heater B41	0-99℃	
53	AI3 (0-1V) Vacant	0-99℃	
54	AI4 (0-5V) Vacant	---	

3.3.9 Table 60. Digital inputs, diagnostic values

Table 60			
Row no.	Function	Value	Remarks
61	DI1 – Level in tank SP1	0 or 1	0=Low, 1=High
62	DI2 – Hood closed B1	0 or 1	0=Open, 1=Closed
63	DI3 – Level in the break tank SP3	0 or 1	1=Low, 0=High
64	DI4 – Level in tank for recirculating rinse water SP02	0 or 1	1=Low, 0=High
65	D15 – Basket in B3	0 or 1	See row 33 0=No, 1=Yes
66	DI6 – Detergent and/or drying agent alarm KA9	0 or 1	See row 28 0=No alarm, 1=Alarm
	DI6 – Detergent alarm KA1	0 or 1	See row 28 0=No alarm, 1=Alarm
67	DI7 – Motor safety cut-out	0 or 1	0=Alarm, 1=no alarm
68	DI8 – Vacant	---	

3.3.10 Table 70. Digital inputs, diagnostic values. Relay test *

Table 70			
Row no.	Function	Value	Remarks
71	Relay 1. Valve Y1, tank filling	0 or 1	0=Unactivated, 1=Activated
72	Relay 2. Washing pump M1	0 or 1	0=Unactivated, 1=Activated
73	Relay 3. Heat from booster heater E41	0 or 1	0=Unactivated, 1=Activated
74	Relay 4. Pump, recirculating rinse M02	0 or 1	0=Unactivated, 1=Activated
75	Relay 5. Tank heat E21	0 or 1	0=Unactivated, 1=Activated
76	Relay 6. Booster pump M10	0 or 1	0=Unactivated, 1=Activated
77	Relay 7. Valve Y4, hood up/down	0 or 1	0=Unactivated, 1=Activated Applies if row A2=1
79	Relay 9. Detergent pump M9 or supply to detergent equipment A3	0 or 1	0=Unactivated, 1=Activated
80	Relay 10. Drain pump M8	0 or 1	See row 34 0=Deactivated, 1=Activated
81	Relay 11. External drying agent KA11	0 or 1	0=Deactivated, 1=Activated Applies if row A5=0
81	Relay 11. External general alarm or 1-HA1	0 or 1	0=Deactivated, 1=Activated Applies if row A5=1
81	Relay 11. Signal, programme completed or 1-HA3	0 or 1	0=Deactivated, 1=Activated Applies if row A5=2
82	Relay 12. Pump, recirculating tank M03	0 or 1	0=Unactivated, 1=Activated

* In table 70 you can use the “Relay test” function to check the machine’s various components. Relay tests can only be carried out when you have selected service mode using the service button (11) on the printed circuit board.

The P0 pause mode must be selected, the tank filled and the hood closed to be able to carry out the relay test. You can use the P2 and P3 buttons to test the function of the components. For example: Select row 72 in the table for the washing pump. Press P2 to start the pump. Stop the pump by pressing P3.

3.3.11 Table 90. Diagnostic values. Basket counting

Table 90			
Row no.	Function	Value	Remarks
91	Basket counting	--- *	**99** 999 999
92	Basket counting	--- *	99 **99**9 999
93	Basket counting	--- *	99 99**9 9**99
94	Basket counting	--- *	99 999 9**99**
95	Active programme	00, 01, 02, 03	

* Row nos. 91-94 together show the total number of baskets washed. You must browse through the four rows to be able to view the total number. For example: row 91 shows 00, row 92 shows 01, row 93 shows 23, row 94 shows 45. Total number = 12345

3.3.12 Table A0. Basic settings *

Table A0			
Row no.	Function	Value	Remarks
A1	Machine type	5	
A2	Hood lift	0 or 1	0=No, 1=Yes
A3	Low temperature indicator	0	0=No change 1=Without Er06 and without flashing temp. disp. 2=Without Er06
A4	Temperature conditions in tank after filling	1	0=No, 1=Yes
A5	Relay 11 function	0	0=External drying agent dosing, 1=General alarm, 2=Signal for completed washing programme
A6	Vacant	---	
A7	Vacant	---	
A8	Expo programme	0	0=No, 1=Without water, 2=With water
A9	Support for natural gas heating with booster heater	0	0=No, 1=Yes
B0	Pre-set tank heat	1	0=No, 1=Yes
B3	Release delay for level switch	0 sec.	
B4	Upper alarm limit for tank temperature	0	Applies to KMS (Kitchen Management System)
B5	Lower alarm limit for tank temperature	0	Applies to KMS (Kitchen Management System)
B6	Upper alarm limit for final rinse temperature	0	Applies to KMS (Kitchen Management System)
B7	Lower alarm limit for final rinse temperature	0	Applies to KMS (Kitchen Management System)

* The values in table A0 can only be changed by authorised service personnel (authorisation level S2).

4. Service

Read the SAFETY INSTRUCTIONS chapter carefully before starting work.

4.1 Repairs and machine maintenance

Switch off the power supply at the mains switch before working on the machine.

The electrical cabinet must only be opened by an authorised electrician. The machine is sensitive to electrostatic discharge (ESD), which is why a static electricity wristband must be used when handling the electronics.

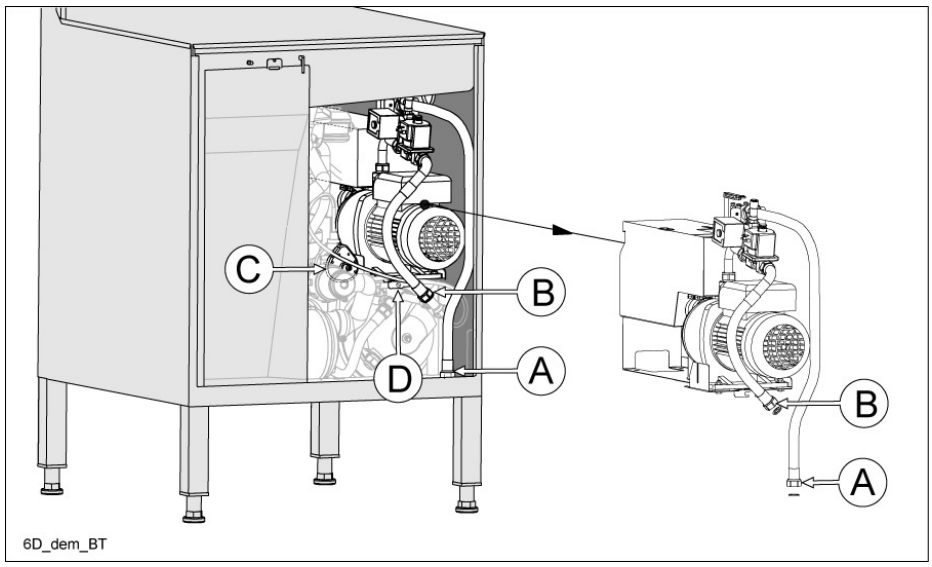
Close the stopcock before servicing the machine.

Allow the machine to cool down before starting work. The pipes for water, pumps, booster heaters and valves become very hot when the machine is in operation.

Use protective gloves and goggles when working on the detergent equipment. There may be detergent in the pipes, container and other equipment.

4.1.1 Dismounting of break tank unit

Replacement of element, washing pump, booster heater and main pipe demands dismounting of the break tank unit, see following instruction.

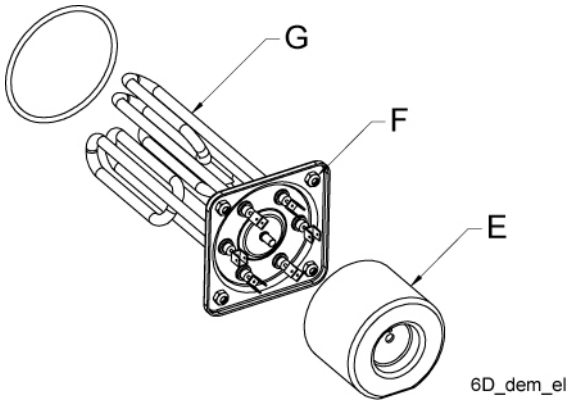


1. Turn off incoming water.
2. Empty tank by activating contactor for final rinse pump (if machine is equipped with hood lift, activate Y1).
3. Detach hose (A) from incoming water.
4. Detach hose (B) to booster heater.
5. Remove the drying agent pump (C).
6. Unscrew M6-nut (D) that holds the break tank unit.
7. Pull out the break tank unit (be careful with cables and hoses).

Mounting of break tank unit is made in reverse order.

4.1.2 Replacement of tank element

Dismount the break tank unit according to the instructions in previous chapter.

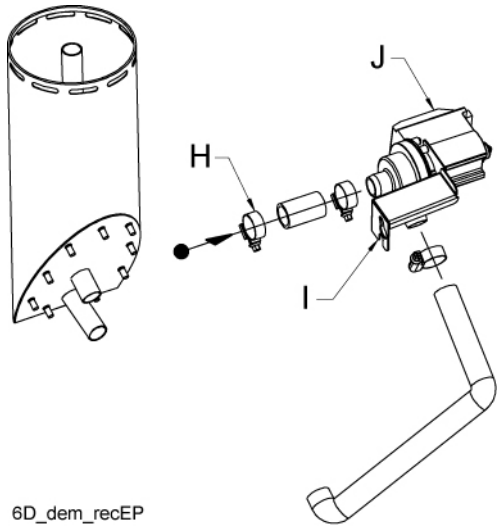


1. Detach the plastic cover (E) so it hangs loose on the cable.
2. Unscrew the 4 nuts (F) that holds the element.
3. Detach the element (G) by pressing it up and past the mounting plate.

Mounting of element is made in reverse order.

Check the o-ring for damages to prevent leakage.

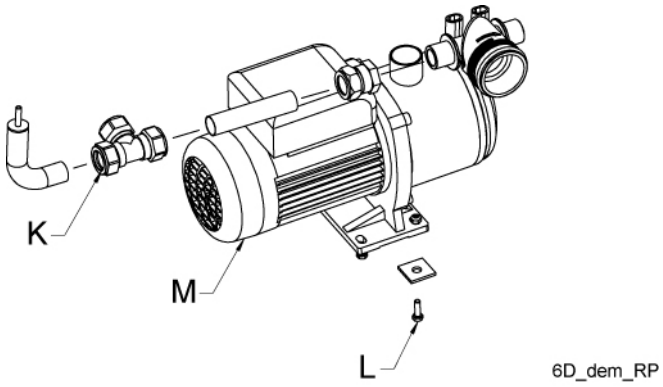
4.1.3 Replacement of pump M03 and/or non return valves



1. Detach inner hose clamp (H).
2. Unscrew the two M6-nuts about 2 mm.
3. Detach the pump (J) by turning it clockwise.

When replacing the non return valves, the pump must first be removed.

4.1.4 Replacement of pump for recirculating rinse



1. Unscrew the nut for the electric cabinet, place it on the bolt to the right and detach the pressure switch hose.
2. Detach t-coupling (K) at the the tank for recirculating rinse.
3. Unscrew M6-nut (L) at pump attachment.
4. Remove the pump (M).

4.1.5 Machine damage

The equipment must be fitted and the necessary adjustments carried out only by authorised personnel.

To ensure that the machine can operate safely and reliably, regular, scheduled maintenance must be carried out and the maintenance procedures must be followed carefully.

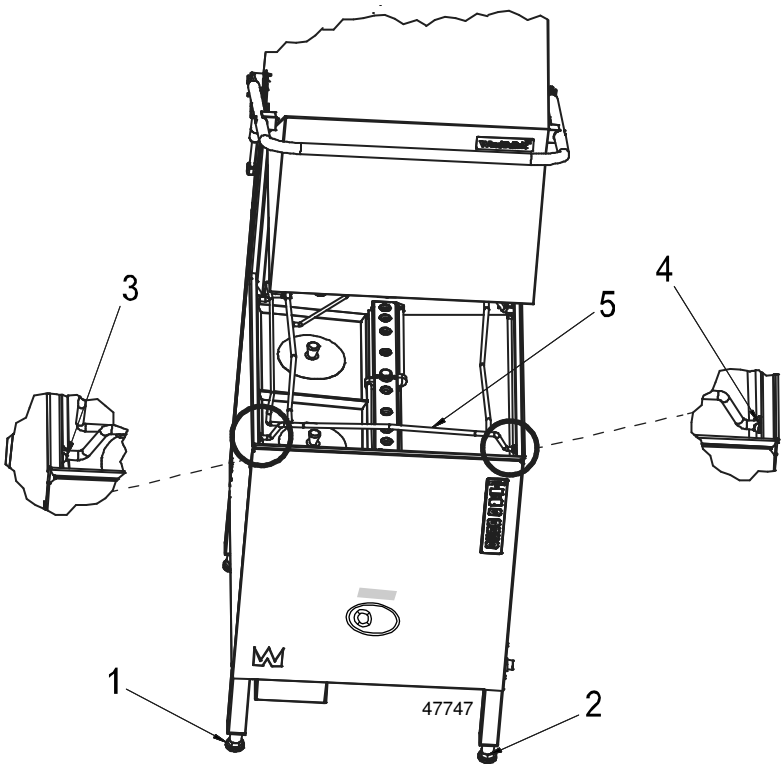
Static electricity can cause damage to sensitive equipment. Always use an earthed static electricity wristband when handling printed circuit boards.

4.1.6 Diagonal adjustment of the machine

If the hood appears to be lopsided when it is closed, the adjustment screws on the tank may have come loose. The screws are positioned on the front of the bottom section of the tank.

Adjust the screws at the same time as the bottom section of the machine is measured diagonally across the front.

4.1.7 Adjusting the folding basket path



Place the machine in level by adjusting the four feets so they have full contact with the floor. Use spirit level.

Fill up your machine.

Lift basket guide (5) up and down and adjust foot 1 and 2 until the basket guide is in the middle of the two supports 3 and 4.

If further adjustment of the machine's leveling is required, the legs are adjusted in pairs (side, back or front).

4.1.8 Replacing cards

This symbol on a machine component warns of the presence of electrical equipment. The machine is sensitive to electrostatic discharge (ESD), which is why a static electricity wristband must be used when handling the electronics.

Computer cards and panel cards can be replaced independently.

If both the cards need to be replaced at the same time, certain settings must be made using a computer.

All the values stored in the machine can be accessed from both cards.

Panel card

When the panel card is replaced, information from the computer card is automatically retrieved.

Computer card

- Replace the card and fit the contacts, but NOT J69.
- Check that the panel card cable J2 is fitted in the right direction.
- Start the machine, but do NOT fill it.
- Log on as S1 or S2.
- Change row 35 to 0.
- Log out.
- Fit the J69 cable.

4.1.9 Checks and maintenance

The machine should be serviced annually and in accordance with the following schedule:

CONNECTIONS	
OBJECT	CHECK/ACTION
Water connection	Check that there is no leakage from the connections and couplings.
Drainage system	Check for leaks.
Electrical connection	Tighten the connections on all the main circuits.

ELECTRICAL EQUIPMENT	
OBJECT	CHECK/ACTION
Element	Measure the amperage of all the elements. Check the tightness of the O-ring and grommets.
Relays	Check the function and wear. Tighten the connections.
Solenoid	Check the function and any leakage.
Pressure switch	Check the hose connections.
Relays	Check the function. Follow the instructions in the chapter ADJUSTMENT INSTRUCTIONS.
Electronic components	Check the function of all the sensors. Follow the instructions in the chapter ADJUSTMENT INSTRUCTIONS.
Control equipment	Check that all reference values are correctly adjusted.

PUMPS	
OBJECT	CHECK/ACTION
Pumps	Measure the amperage of every pump.
	Check for leaks and check the function of the cooling fans.
	Check the motor bearings. Clean the fan casing.
	The rubber pressure and suction hoses must be changed every five years.
	Check the function of the pumps.

HOOD	
OBJECT	CHECK/ACTION
Hood	Check that there is no play and that the hood opens and closes easily. Check for leakage.
Hood switch	The machine must stop if the hood is opened during the washing and rinsing phase.
Gas springs	Check the function. The hood must open easily to its full height (machines with an automatic hood).
Lifting cylinders	Check that the cylinders do not leak (machines with an automatic hood).

WASHING AND RINSING SYSTEM	
OBJECT	CHECK/ACTION
Nozzles	Check that there is no dirt in the nozzles and that they are correctly adjusted.
Wash arms	Check: that there is no dirt or cracks in the nozzles and that the washing arms can be easily removed and refitted.
	Check rotation during the rinsing phase. Open the hood during final rinsing. If the arms do not rotate, position the rinsing pipes at more of an angle.
Lever for selecting normal/heavily soiled wash.	Check that the adjustment for high and low pressure washing is functioning.

DETERGENT AND DRYING AGENT	
OBJECT	CHECK/ACTION
Detergent and drying agent equipment	Check the function and any leakage. Check the hoses. They must be replaced every other year.
Detergent, drying agent	Check that the right type of agent is used.

OTHER INFORMATION	
OBJECT	CHECK/ACTION
Rinsing arm bearings	Rinse arm bearing replaced after 30,000 washes.
	If there is play of more than 10 mm at the outer end of the rinse arm, the lower bearing must be exchanged.
	If there is play of more than 10 mm at the lock nut, the whole bearing must be exchanged.
V rings	Damaged or worn V- rings must be replaced.
Tanks	Check for a build-up of limescale in the tanks and on the element. If necessary, remove the limescale.
Rubber sleeves	Check the rubber sleeves and replace those which are damaged.
Water level	Check the upper and lower water level in the tank.
Filters	Check that the filters are not damaged and that no filters are missing.
Chemical washing filter	Cleaning
Sinks	Check that the sinks are correctly connected and that the hood does not interfere with the sinks when it is closed.
Hoses	Check that the hoses other than the pump hoses are not damaged.

Run the machine at full operation and check the functions and the results in the table below:

TRIAL RUN, OPERATION	
OBJECT/FUNCTION	CHECK/ACTION
Water pressure, final rinse flow	Check the filling time of the machine. At the correct water pressure, the filling time is around 5 minutes.
Washing and drying results	Check that the washing and drying results are satisfactory.
Temperatures	Check that the temperatures are maintained during operation.
Foaming	Check that no foam forms in the tank when the machine is in operation.
Training	If necessary, provide training for the personnel about operating and maintaining the machine.
Manuals	Check that the installation and user manuals are available.

5. Troubleshooting

5.1 General information

The electrical cabinet may only be opened by a qualified electrician. The machine is sensitive to electrostatic discharge (ESD), which is why a static electricity wrist-band must be used when handling the electronics.

NOTE: Read the SAFETY INSTRUCTIONS before attempting any form of trou-bleshooting and repair work.

All work involving the dismantling of equipment must be carried out by authorised service personnel.

The tables describe a number of common faults, together with the components and functions which should be checked.

In addition to the faults described in the tables, other kinds of problems could also affect the functioning of the machine. The authorised service engineers should therefore be familiar with the machine and use the relevant flow and wiring dia-grams when troubleshooting.

5.2 Troubleshooting

STARTING THE MACHINE		
PROBLEM	CAUSE	ACTION
Nothing appears on the control panel display when the start button 0/1 is pressed.	The machine has no power.	Check the fuses and the incoming power cable.
	The mains switch is off.	Turn on the mains switch.
	The circuit breaker has tripped (230V).	Reset the circuit breaker.

FILLING		
PROBLEM	CAUSE	ACTION
The machine does not fill with water.	The stopcock on the incoming water supply is closed.	Open the stopcock.
	The hood solenoid switch is not functioning.	Check and, if necessary, replace the solenoid switch.
	The solenoid coil is defective.	Replace the coil.
	Fault in the level sensor.	Check and, if necessary, replace the level sensor. Check that the hose for the level sensor is not trapped, blocked or leaking.
	The rinsing pipe nozzles are blocked.	Clean the rinsing nozzles.
	The final rinsing pump is not functioning.	Check the pump. Replace the pump, if necessary.
	Valve on break tank not working.	Clean and, if necessary, replace the valve.
The machine does not stop filling.	The solenoid is dirty (machine with automatic hood lift).	Clean the solenoid.
	The solenoid membrane is broken (machine with automatic hood lift).	Replace the solenoid.
	Fault in the level sensor.	Check and, if necessary, replace the level sensor.
	The rubber sleeve on the level pipe or the drain seal is not sealing against the bottom plate.	Check that the overflow pipe and the drain seal are closed. Replace the rubber sleeves, if they are damaged.
The machine fills slowly.	The filter in the incoming water supply pipe is blocked.	Clean the filter.
	The solenoid is defective. The solenoid is dirty (machine with automatic hood lift).	Check and, if necessary, clean the solenoid. Replace damaged parts or the entire valve.
	Dirt in the rinsing pipe nozzles.	Clean the rinsing nozzles.
One of the tanks does not fill to the correct level.	Fault in the level sensor.	Check and, if necessary, replace the level sensor.

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TEMPERATURES		
PROBLEM	CAUSE	ACTION
Tank temperature too low	The element in the chemical washing tank is faulty.	Replace the element.
	Low water level in the chemical washing tank.	Check the water level and that the level pipe's rubber sleeve forms a seal against the bottom plate.
	Fault in the level sensor.	Check and, if necessary, replace the level sensor.
	The relay is not working.	Check and, if necessary, replace the relay.
	Incorrect reference value.	Check and adjust the reference value.
The final rinse temperature is too low.	The element in the booster heater is defective.	Replace the element.
	The relay is not working.	Check and, if necessary, replace the relay.
	Incorrect reference value.	Check and adjust the reference value.

WASHING		
PROBLEM	CAUSE	ACTION
The hood does not open (machine with automatic hood lift).	The relay switch for the hood lift pump is not functioning.	Check and, if necessary, replace the relay.
	The hood lift pump motor is faulty.	Replace the pump.
The hood opens slowly (machine with automatic hood lift).	The solenoid is dirty.	Clean the solenoid.
The hood does not close (machine with automatic hood lift).	The hood lift solenoid is faulty.	Replace damaged parts or the entire valve.
The hood closes slowly (machine with automatic hood lift).	The solenoid is faulty.	Replace the solenoid.
The washing pump does not start.	Water level in the tank too low.	Check that the level pipe's rubber sleeve forms a seal against the bottom plate.
	Fault in the level sensor.	Check and, if necessary, replace the level sensor.
	The pump's overheating protection device has tripped.	Check that the impeller is not jammed. If necessary, replace the pump.
	The pump motor has burnt out.	Replace the pump.
	The relay is not working.	Check and, if necessary, replace the relay.
The overheating protection device in the washing pump has triggered.	Fault in the motor.	Check the motor power supply.
	Phase drop-off.	Check the incoming power supply.
Washing pump is noisy.	Incorrect direction of rotation.	Check that the direction of rotation matches the arrow on the pump. Change two of the incoming phases.
	Dirt in the pump housing.	Dismantle and clean the pump housing.
	Bearing fault.	Replace the bearing and the entire pump, if necessary.
	Low water level. Faulty level sensor.	Check the level and the level sensor.
	The pump fan has come loose.	Tighten the fan.
Final rinse with fresh water not starting.	The solenoid valve for incoming water is not working.	Check the membrane and the coil. Replace the solenoid, if necessary.
The washing machine stops in the middle of the washing cycle and starts taking in water.	The level sensor is not functioning.	Check, and, if necessary, replace the level sensor.
	The level pipe's rubber sleeve is not sealing against the bottom plate.	Adjust the level pipe. Check that the rubber sleeve has not been damaged.

WASHING RESULTS		
PROBLEM	CAUSE	ACTION
The machine does not clean the dishware properly.	The rinsing and washing nozzles are clogged with dirt.	Check and clean the nozzles.
	There is too little detergent.	Check that there is sufficient detergent and that the detergent dosage is correctly set. The suction hose for the detergent pump must be submerged in the detergent container. Check that the filter in the suction hose is clean.
	The wash or rinse temperature is too low.	Check: The function of the element in the washing tank, the booster heater, the relay switches and the reference values. Check the setting of the reference values.
	The water in the washing tank is too dirty.	Change the water.
	Foam forming in the washing tank.	Check that the washing temperature is not too low and that the correct detergent is being used. Change the water.
	The washing programme is too short.	Choose a programme with a longer wash time.
	The items are incorrectly positioned in the basket.	Use the correct type of washing basket and accessories to ensure that the items are correctly positioned.

DRYING RESULTS		
PROBLEM	CAUSE	ACTION
Items do not dry.	The washed items have been left in the machine after the rinsing phase.	Remove the washed items once the rinsing phase has finished.
	The rinsing nozzles are blocked.	Check and clean the nozzles.
	The final rinse temperature is too low.	Check the function of the element and the relay switches in the booster heater. Check the reference settings for the final rinse.
	Incorrect dosage of drying agent.	Check and adjust the dosage equipment. The suction hose for the drying agent injector must be submerged in the drying agent container. Check that the filter in the suction hose is clean.

DRAINING (MACHINE WITH DRAIN PUMP)		
PROBLEM	CAUSE	ACTION
The tanks do not empty when the drain pump starts.	The impeller is jammed. The pump is faulty.	Check the pump. Replace the pump, if necessary.

5.3 Error messages

Machine faults and operating errors Er01, Er02 etc. are shown on both displays in the control panel.

When the machine is operating, various alarms or information messages can appear on both the control panel displays. There is a distinction between IF and Er alarms. IF alarms can normally be dealt with by the operator. If there is an Er alarm, the service personnel must be called. Some IF alarms that have been dealt with by the operator a few times will eventually change to Er alarms, meaning that the service personnel must be contacted.

CODE	CAUSE	ACTION
IF01/Er01	The filling time of 10 minutes has been exceeded without the tank being filled.	The alarm can be reset by pressing 0/1 on the panel.
	The level pipe is not in place.	Fit the level pipe.
	The level pipe's rubber sleeve is not sealing against the bottom plate.	Adjust the level pipe. Check that the rubber sleeve has not been damaged. Replace the sleeve, if it is damaged.
	The water stopcock is closed.	Open the stopcock.
	The solenoid is faulty.	Replace damaged parts or the entire valve.
	Fault in the level sensor.	Check and, if necessary, replace the level sensor.
Er02	It has taken too long for the machine to heat up, compared with the previous time.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.
Er04	Temperature sensor B41 faulty.	Replace the sensor.
Er05	Temperature sensor B21 faulty.	Replace the sensor.
IF06/Er06	The booster heater is not cooled during the final rinsing phase.	The alarm can be reset by pressing 0/1 on the panel.
	The water stopcock is closed.	Open the stopcock. Close the hood.
IF09	Alarm for changing the water.	Change the water. The alarm can be reset by pressing 0/1 on the panel. If the alarm is not set to stop the machine, the washing programme can continue.
Er12	The break tank has not filled with water.	The alarm is reset automatically when the tank is full.
IF10	Alarm for weekly cleaning.	The machine must be cleaned more thoroughly than during daily cleaning. The alarm can be reset by pressing 0/1 on the panel.
Er16	The temperature in the booster heater is too low.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel.
Er23	The hood does not open when the automatic hood opener is used.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the fault recurs.
Er27	The set values have been corrupted.	It is impossible to continue using the machine. The fault must be rectified by an authorised service technician (level S2)
IF29	Low water level in the tank for recirculating rinse.	The alarm can be reset by pressing 0/1 on the panel.
IF30	Low water level in the washing tank.	Check that the level pipe is closed. The alarm can be reset by pressing 0/1 on the panel.
	The level pipe's rubber sleeve is leaking.	Check that the level pipe's rubber sleeve has not been damaged.

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CODE	CAUSE	ACTION
IF31	The tank for recirculating rinse water is not emptied when rinsing finishes. The filter in the tank is clogged.	Clean the filter. The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.
Er32	Non-return valve for final rinse is faulty.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.
Er33	Non-return valve for recirculating rinse is faulty.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.
IF34	The detergent alarm.	The alarm can be reset by pressing 0/1 on the panel.
	The machine has run out of detergent.	Check the amount of detergent and refill, if necessary.
IF35	The machine is started with the door/hood closed.	Open and close the hood to start the filling process. The alarm can be reset by pressing 0/1 on the panel.
Er96	The motor safety cut-out for the pump has tripped.	Y1 and M1 are blocked.
Er97	One digital input is shorted to ground.	Check that the wires to and from the sensor are not touching earth, chassis or minus.
Er98	Communication fault between the CPU and computer card.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.
Er99	Communication fault between the computer and panel card.	The alarm can be reset by pressing 0/1 on the panel. Contact service personnel if the alarm recurs.