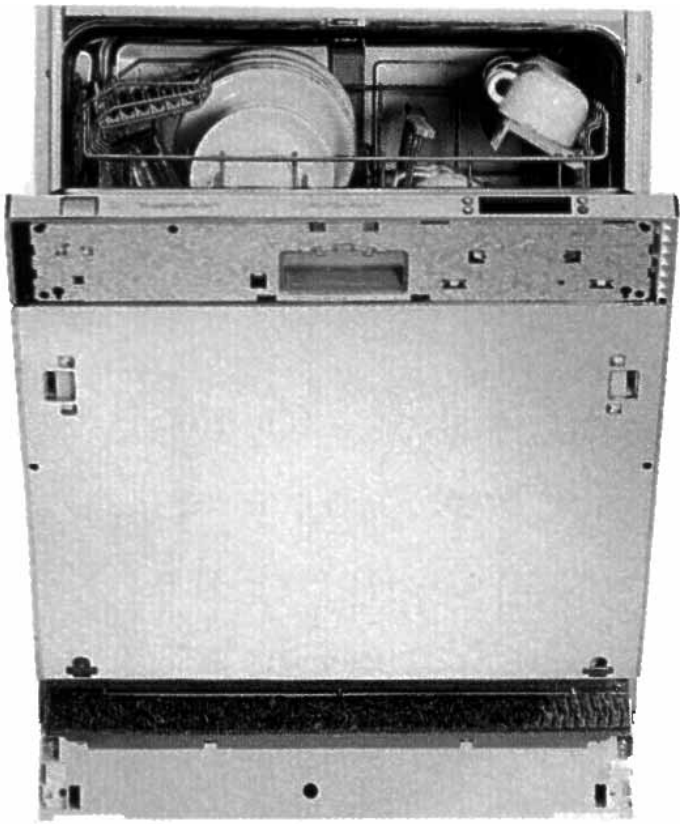

Integrated dishwashers

Series 635

IGV 699.0

IGV 699.1

Küppersbusch

THE HEART OF A GOOD KITCHEN

GB

Service Manual: H7-410-02-05

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Contents

1. General technical specification

This service manual serves the purpose of providing customer service technicians who already have the know-how required to repair dishwashers with specific information on the operating mode of the IGV 699.0 and the IGV 699.1.

This manual deals with all of the appliance specifications relevant to this model.

Descriptions and operating modes of components that are not new have therefore not been included in this edition.

For the sections on

the construction of the appliance	the base pan
cabinet components	the door spring adjuster
the cleaning agent container	height adjustment
the inner door	or the spray system and the rinsing and pumping systems

please refer to the manuals H7-410-02-01, H7-410-02-02 and H7-410-02-03.

2. Features

The new fully-automatic dishwasher comprise significant product innovations in various areas:

- Guaranteed results by means of monitoring soiling and loading, and fully automatic control of temperatures, water quantities and rinsing procedures.
- Easy operation thanks to “single-button operation” on the upper edge of the inner door and a selection of all of the functions by means of a clear text display.
- The appliance is given a new appearance with a clear text display and menu buttons.
- **Fully-automatic controls**
  For determining soiling and loading with the help of various sensors and fully-automatic control of all rinsing parameters: water quantity, temperature and time
- **Heat exchanger**
  Economical by means of a transfer of energy, hygienic through drying without any inflow of outer air and gentle on dishes through avoiding temperature shocks.
- **Glass protection**
  Targeted control of water hardness in order to avoid damage to the glass surface caused by excessively softened water.
- **Clear text display**
  Simple operation by means of the indication of all functions as well as remote indications in a clear text (17 languages).
- **Aqua sensor II**
  Water and energy consumption depending on the degree of soiling of the dishes for optimal cleanliness and economy.
- **Speed sensor**
  Water consumption according to the volume of dishes loaded and offsetting of losses, for example through pots which have turned over.
- **Consumption data**
  In the test program (Normal Eco) consumption data of only 14 litres and 1.05kWh.
- **Remaining time indication**
  Information on time remaining until completion of a program, in minutes.
- **Fold-over spikes**
  Flexible loading of plates and large dishes in the bottom basket and in the top basket.
- **Fold-over spikes in the top basket**
  The spikes in the front part of the two rows (dark grey) can be folded over. Thus this space can be used for small plates or for bowls and pots, etc., as required.
- **Optosensor (IGV 699.1)**
  Protects glasses and dishes against scaling
- **Filter system with four settings**
- **Cutlery rack for long items of cutlery**

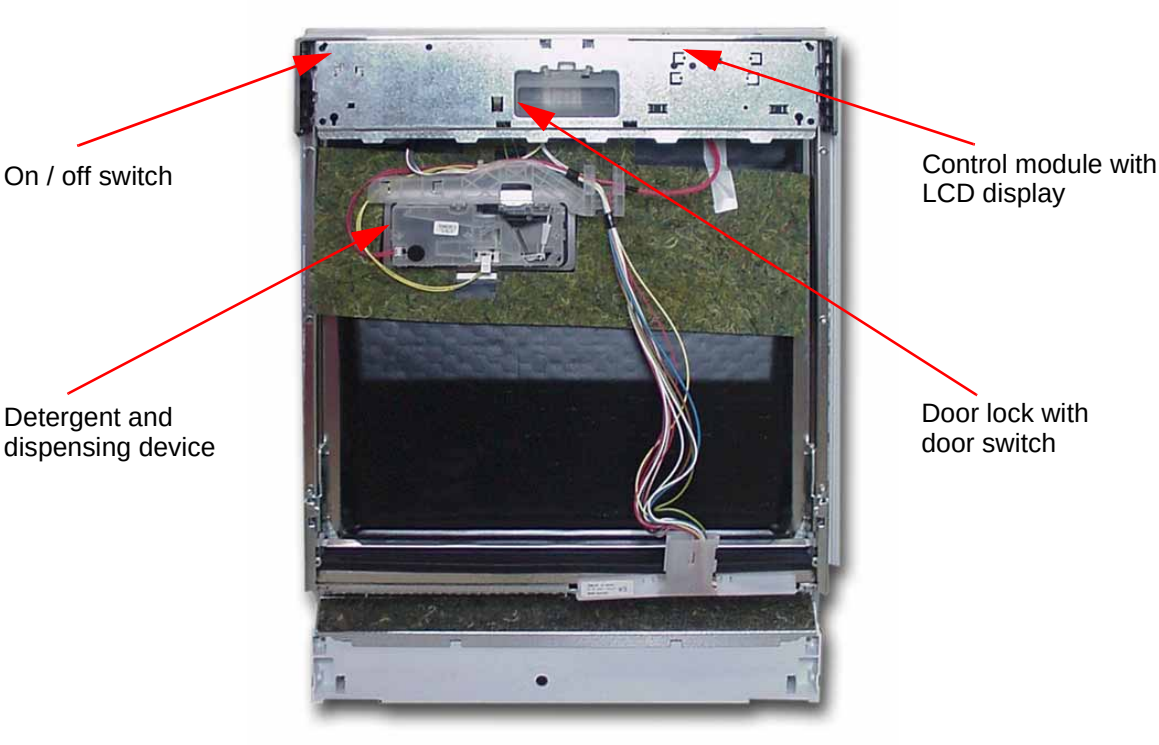
- **Aqua-stop optional**
- **Types of baskets:** Standard baskets and an additional small cutlery basket at the top
- **Normal Eco test program**
- **Consumption data: 14 litres / 1.05 kWh - Noise level 44 dB**
- **A-A-A energy label**
- **Height-adjustable top basket** (Rackmatic)
  The rackmatic “basket adjustment” is a system which enables the top basket position to be adjusted easily, even when it is loaded. In order to lower the top basket press both of the handles on the sides. The basket must only be lifted in order to raise it.

- **Multiflex premium baskets**
  Convenience and flexibility for optimal space utilisation

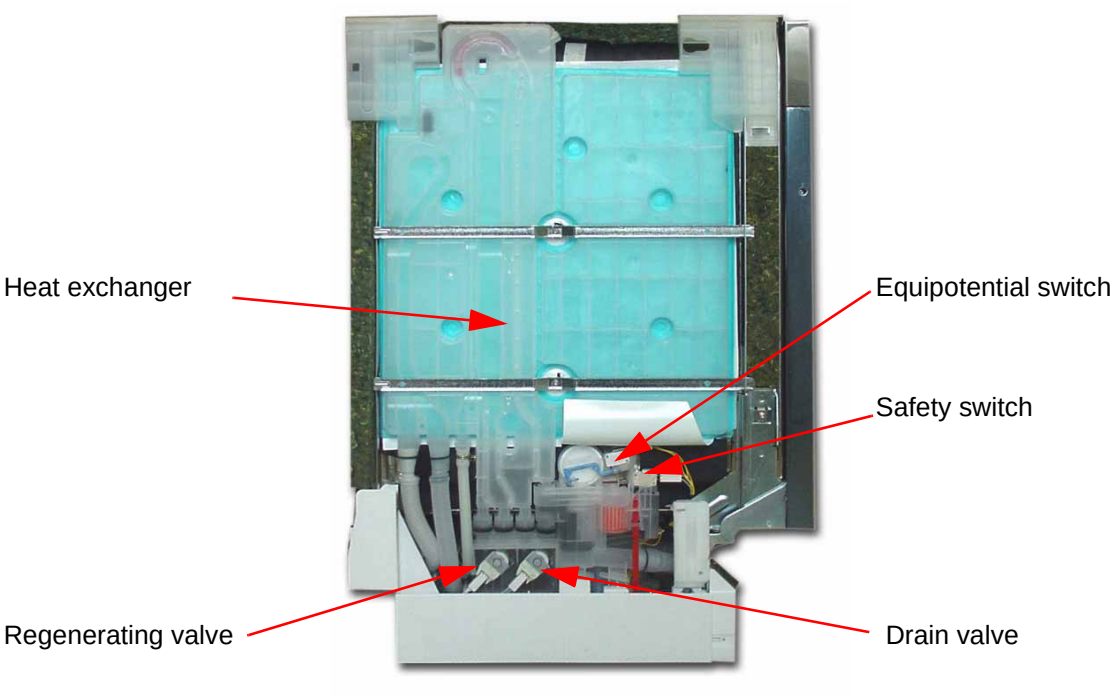
3. Construction components

Control panel
Control module
Power module
Door lock
Detergent water pump
Circulation pump
Water diverter
Raw water valve
Aqua sensor II
Equipotential system
Water inlet

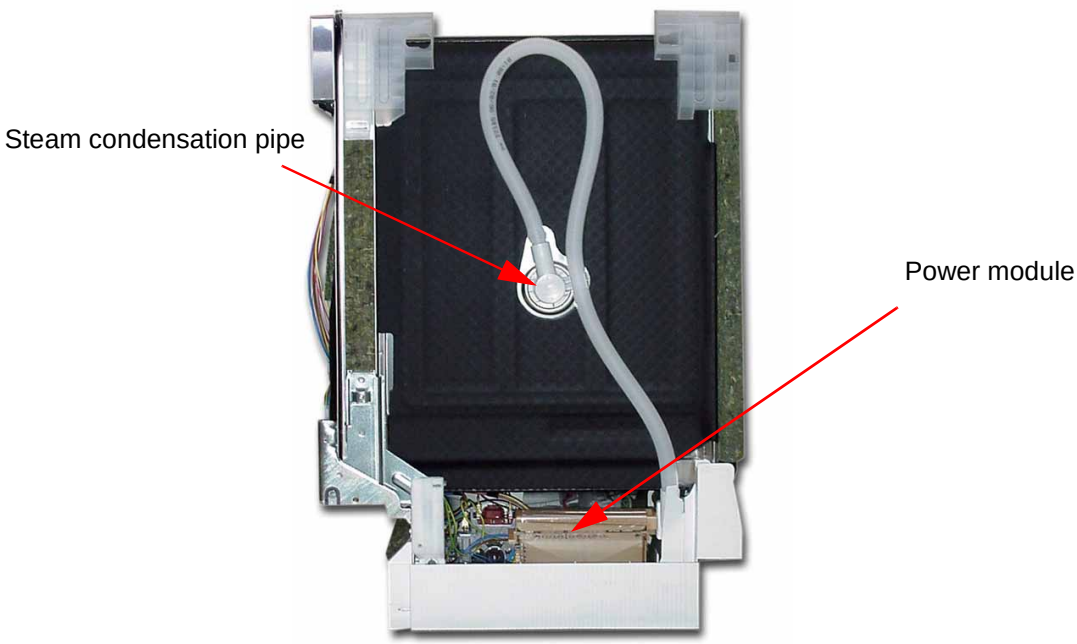
3.1 Door components



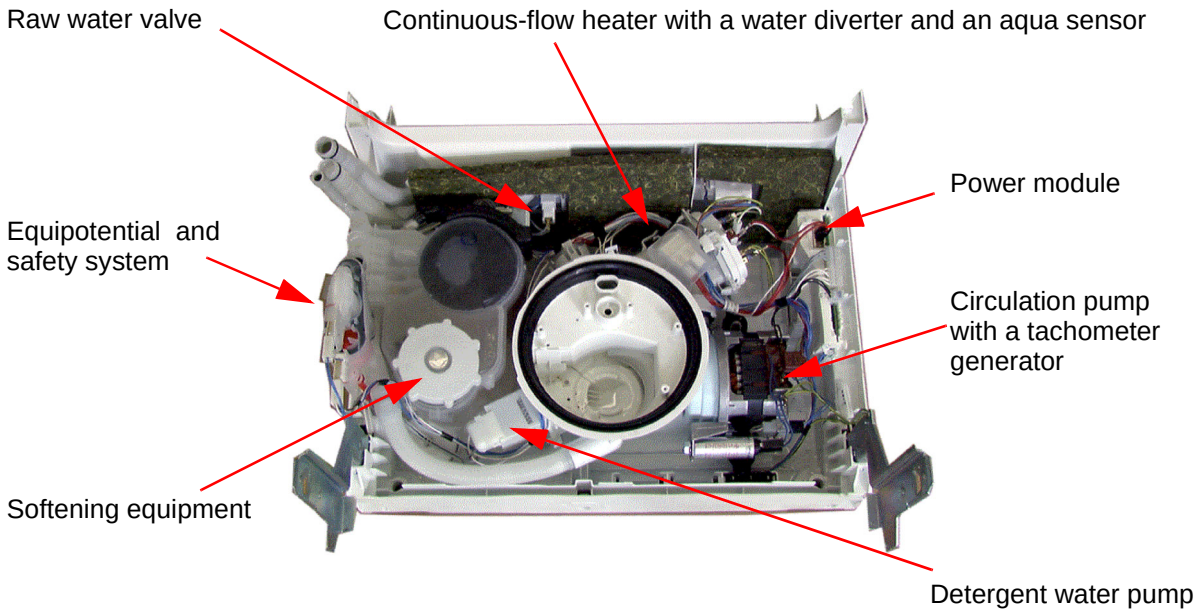
3.2 Left side wall components



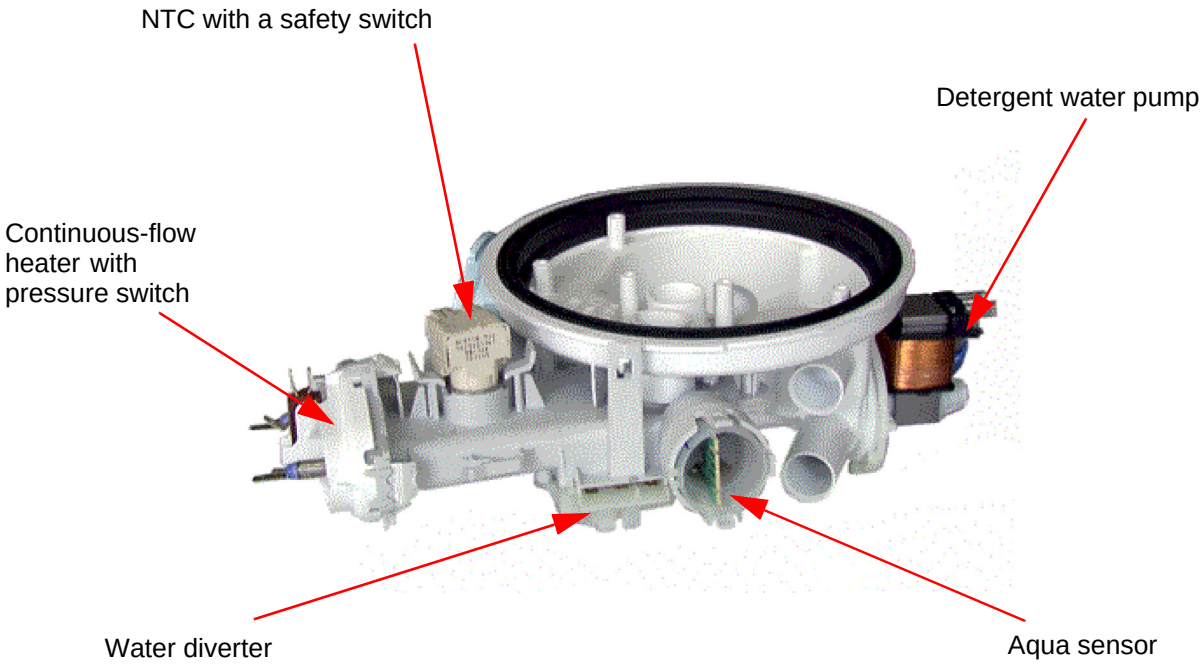
3.3 Right side wall components



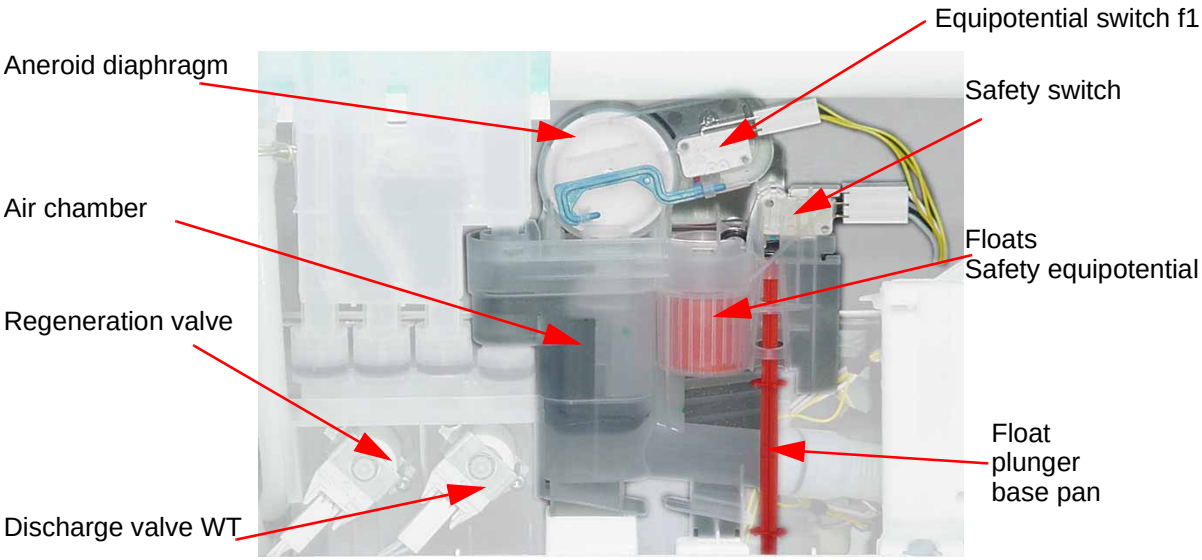
3.4 Components in the plinth



3.5 Pump cavity components

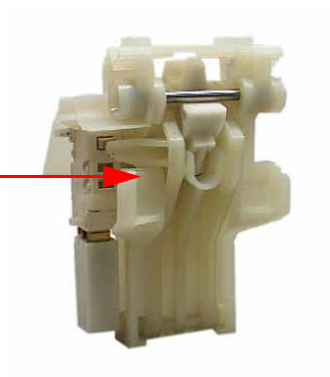


3.6 Equipotential system



3.7 Door lock

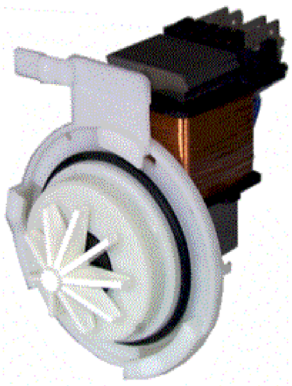
The new “servo lock” in all of the fully-automatic dishwashers is extremely easy to handle due to smooth-running bearings. The door of the appliance does not need to be pressed on closing; instead it virtually closes by itself (from an opening angle of approx. 10°, depending on how the door springs are adjusted).



3.8 Detergent water pump

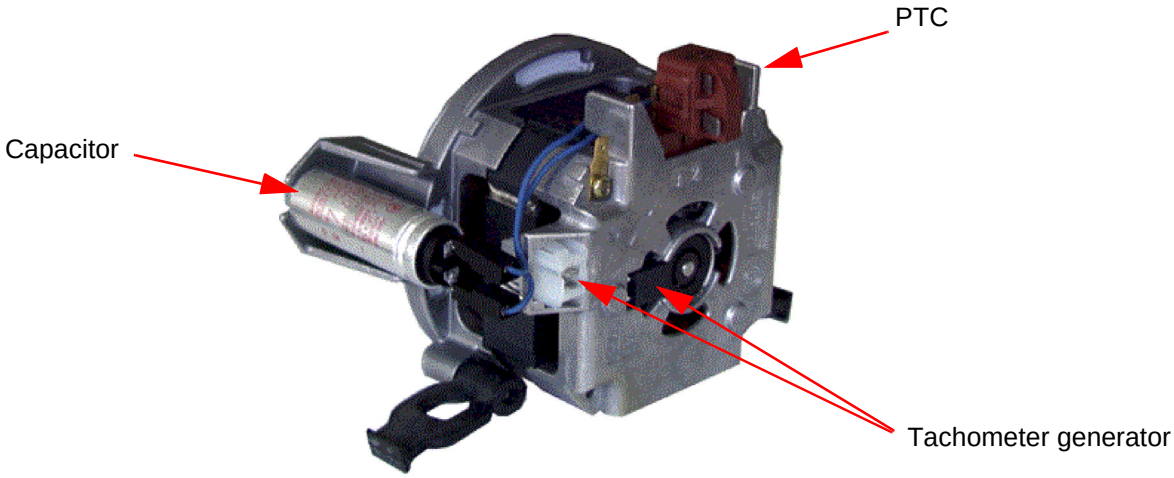
Apart from during the start-up of a program, the pump is operated on pump for 3 x 5 sec. / 5 sec. circulation.

Alternating pumping results in an improved pumping out procedure and the micro-sieve is cleaned better.



3.9 Circulation pump (SICASYM)

Single-phase alternating current motor

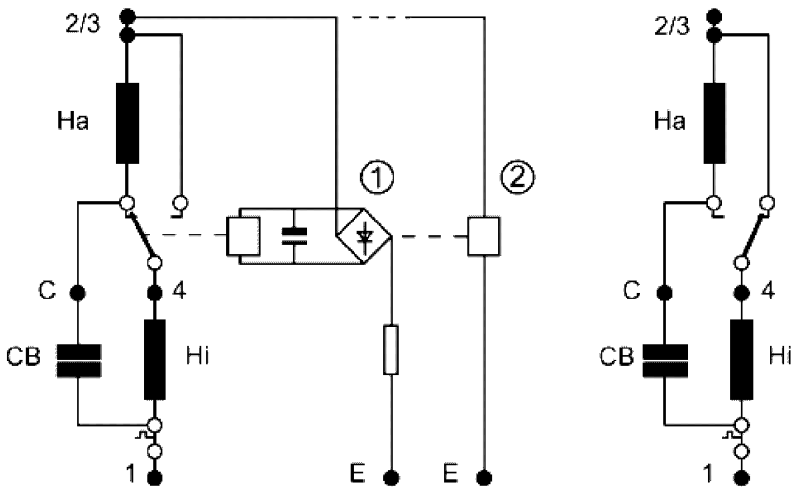


The circulation pump is operated by means of a single-phase alternator with a tachometer generator.

The tachometer generator registers the number of revolutions of the circulation pump and passes this information on to the electronics system. The number of revolutions is regulated by means of a phase-control device generated in the electronics system. Thus the regulation of the circulation pump influences:

1. Filling up to a consistent number of revolutions / (load recognition)
2. Reduction of the number of revolutions for delicate cycles
3. Reduction of the number of revolutions for alternating rinses (switching from top basket rinses to bottom basket rinses)
4. The varying number of revolutions for bottom basket and top basket (2200/2800 rev/min)

The control element between the two motor windings and the motor capacitor is either triggered by means of electronics or a relay on the motor connection ① or by means of module ②,. During the start-up phase the two windings (in series with the capacitor)) are parallel to one another direct on the power supply and generate an extremely powerful starting force. Subsequent to the change-over phase the windings are in series (behind one another), i.e. the two windings each carry half of the voltage, in which case the motor is optimally adjusted to the pump (in operation) and, besides having an extremely low input - for the AAA label - it also generates very little noise, since in operation, the windings carry half of the voltage.



3.10 Tachometer generator

The number of revolutions and the variations in the number of revolutions of the circulation pump are gauged by means of a tachometer generator. The speed is controlled by means of an electronic phase control.

- Fill until a constant number of revolutions has been achieved
- Reduction in the number of revolutions in the gentle-wash cycles
- Reduction in the number of revolutions in the case of alternating rinsing (switching from top basket rinsing to bottom basket rinsing)
- Differing number of revolutions for the bottom basket and for the top basket (2800 / 2200 1/ min)

Moistening with water, hollows or grooves in the dishes or containers which have turned over may result in losses of rinsing water. In this case air is transported through the pump. This will result in noisier operation of the dishwasher and in a changed (irregular) operation of the pump.

The tachometer generator will only recognise irregular operation on filling and will reduce the number of revolutions of the pump. In order for the pump to operate “smoothly” again, water is filled in until the optimal water level has been reached.

3.11 Recognising concentric running / filling up to concentric running

In the filling positions, water is filled in until the tachometer generator signals that the circulation pump is running concentrically.

On first filling, between 2.8l and 3.7l are filled in and 3 enquiries concerning concentrical running are made:

- 1st enquiry, max. 200 ml
- 2nd enquiry, max. another 200ml
- 3rd enquiry, max. 500 ml

are filled up.
A maximum of up to 900 ml can be filled up during the first filling stage. During an intermediate rinse and a clear rinse, a maximum of another 500 ml respectively can be filled up.

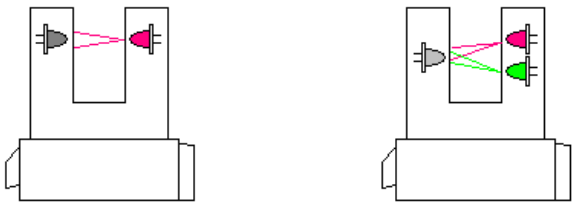
This means that:

- a fill-up with too little water, due to containers / pots which have turned over, is avoided.
- the noise level of the circulation pump is reduced.

3.12 Aqua sensor II

In addition to an infra-red LED, the aqua sensor II is also equipped with a green LED, which means that undissolved substances such as tea or spinach can also be recognised. In the automatic program, for example, the Aqua sensor II has the following functions:

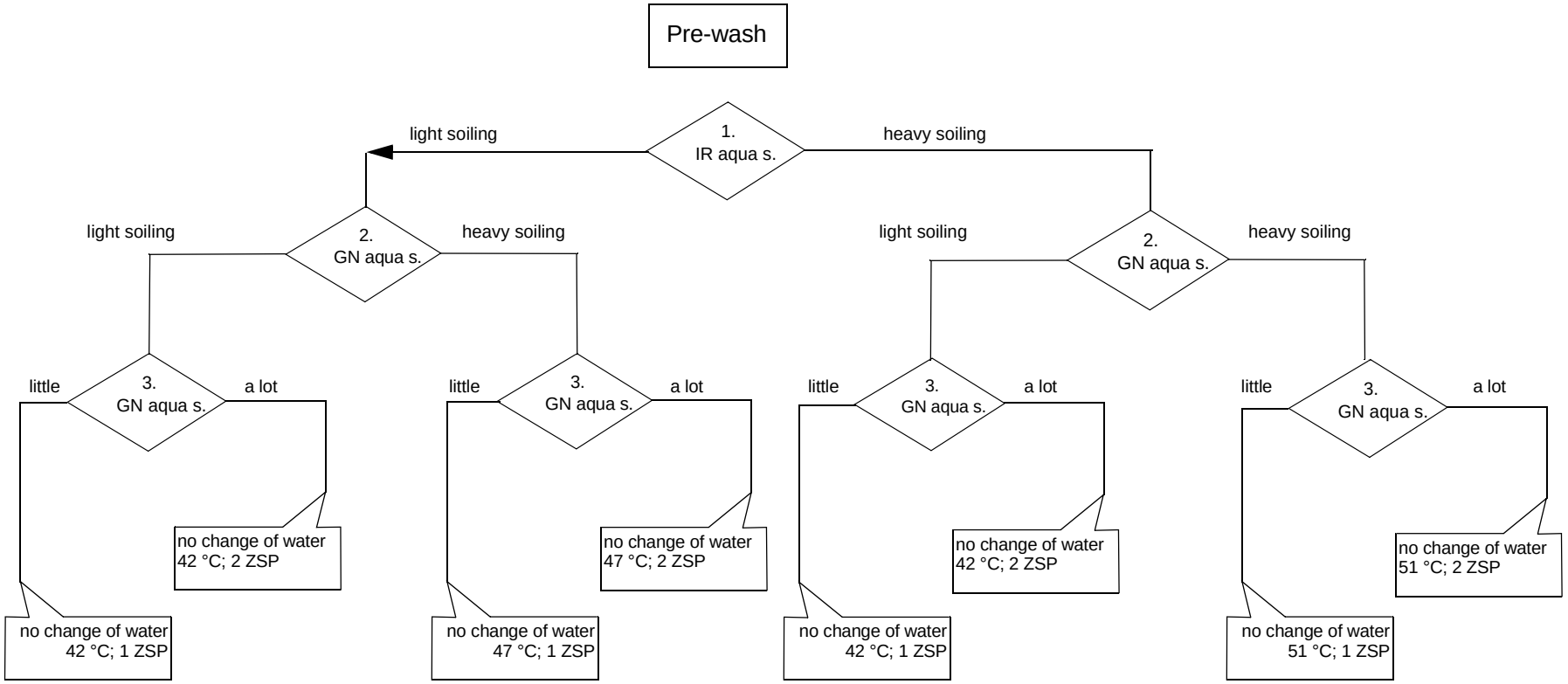
1. Aqua sensor infra-red LED check in the pre-wash cycle
   Depending on the result of this check, the water is either exchanged (extremely dirty) or still used (hardly dirty).
2. Aqua sensor green LED check in the washing cycle
   Depending on the result of this check, a final temperature of 45°C (little soiling) or 50°C or 55°C (heavy soiling) is reached during the washing cycle. If, during a pre-wash rinse, the Aqua sensor decides on an exchange of water, the temperature for washing is raised from 50°C to 55°C. Should washing take place at 50°C or 55°C, the filter will subsequently be rinsed through.
3. Aqua sensor green LED check in the first intermediate rinse
   Depending on the result of this check, an additional intermediate rinse will be carried out after the first intermediate rinse (heavy soiling) or only the filter will be rinsed through.



Calibrating the Aqua sensor II

An additional 400 ml of water is required for the calibration procedure in the first three rinsing cycles. This step is repeated after 20 rinses.

3.13 Aqua sensor – decisions in the automatic program



ZSP = intermediate rinse
GN = green
IR = turbidity sensor

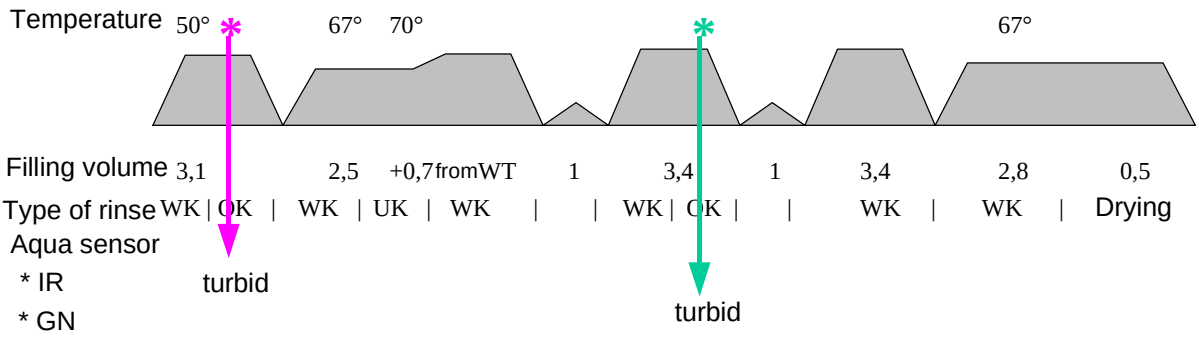
4. Program sequences

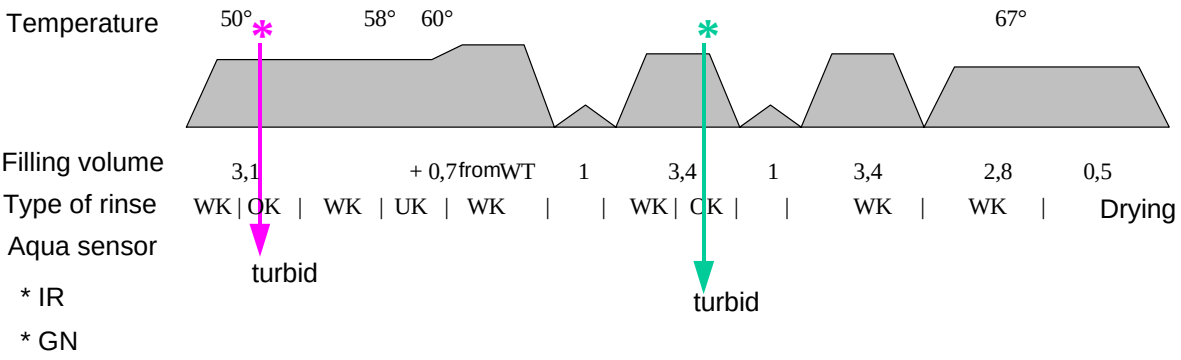
4.1 Program selection “Auto-plus rinse”

The program comprises a pre-rinse at 50 °C, a washing cycle at 60 °C / 70 °C, an intermediate rinse, a clear rinse at 67 °C and a drying cycle. Two aqua-sensor decisions are taken.

Depending on the first decision in the pre-rinse cycle, the water will be exchanged or the pre-rinse water will still be used for the washing cycle. In addition, the washing temperature will be raised from 60 °C to 70 °C. Depending on the second decision in the intermediate rinse, a second intermediate rinse will be carried out.

4.1.1 Program sequences in the auto-plus range, part 1

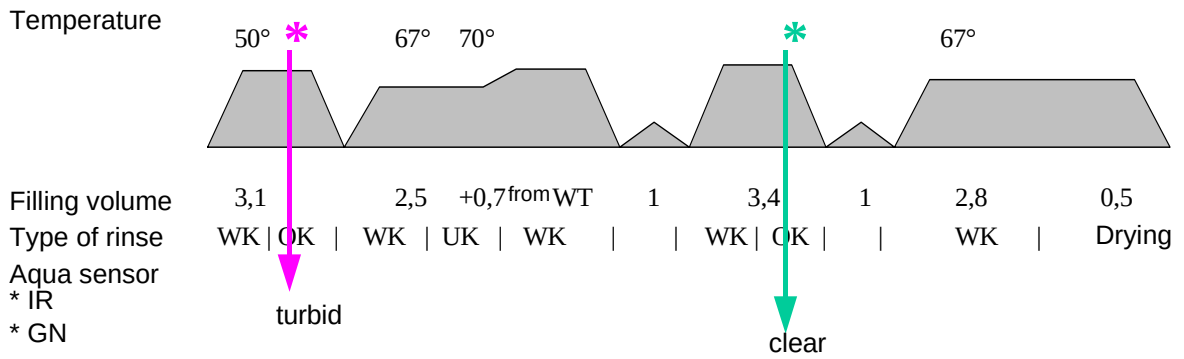


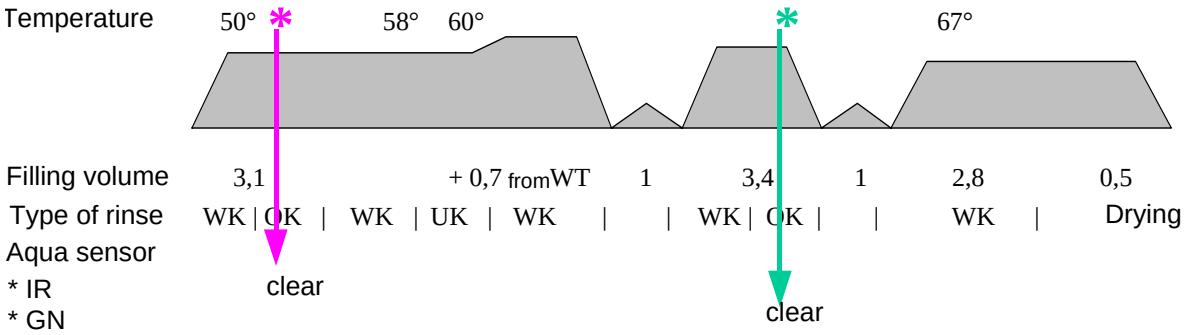


Energy: 1.20 kWh -> 1.40 kWh
Water: 14 - 20 litres
Time: 90 - 110 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

4.1.2 Program sequences in the auto-plus range, part 2





Energy: 1.20 kWh -> 1.40 kWh
Water: 14 – 20 litres
Time: 90 -110 min.

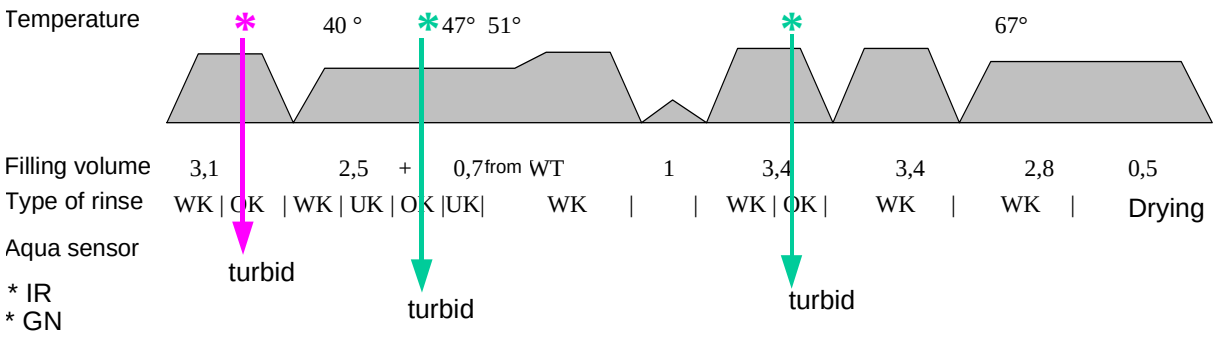
WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

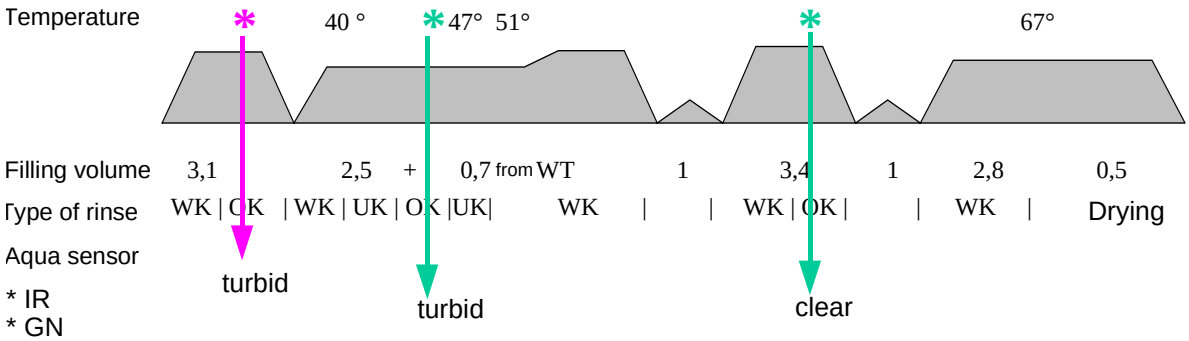
4.2 Program selection “Automatic rinse”

The program comprises a pre-rinse cycle, a washing cycle at 45 °C - 55 °C, an intermediate rinse, a clear rinse at 67 °C and a drying cycle. Three aqua-sensor decisions are taken.

Depending on the first decision in the pre-rinse cycle, the water will be exchanged or the pre-rinse water will still be used for the washing cycle. The second aqua-sensor test will take place in the washing cycle. Depending on the decision taken in the two tests, washing will be carried out at 45° / 50° / 55°. Depending on the third decision in the intermediate rinse, a second intermediate rinse will be carried out.

4.2.1 Program sequences in the automatic range, part 1

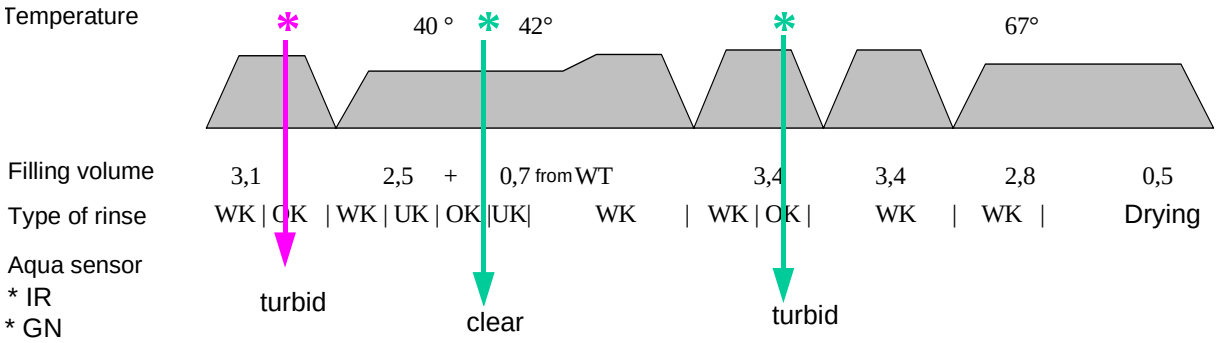


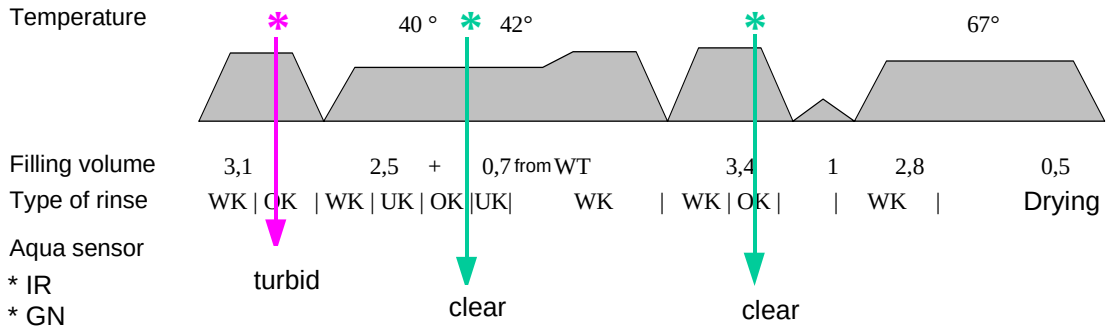


Energy:	1.20 kWh -> 1.20 kWh
Water:	12 -18 litres
Time:	100 -130 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

4.2.2 Program sequences in the automatic range, part 2

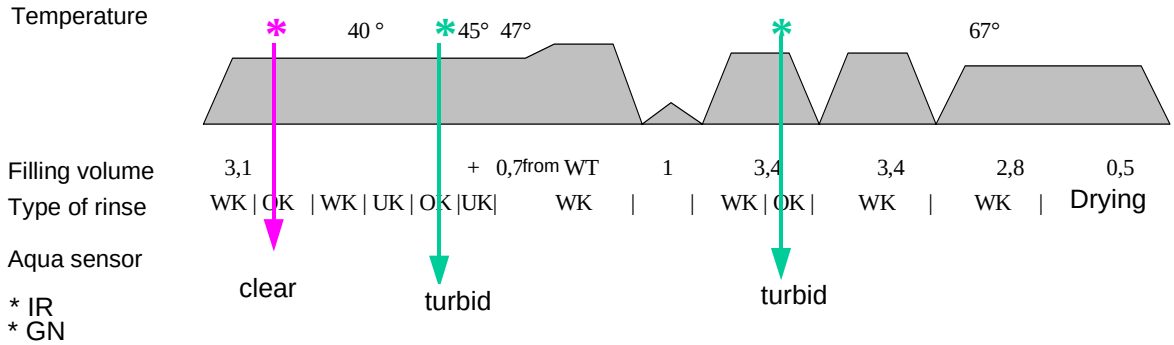


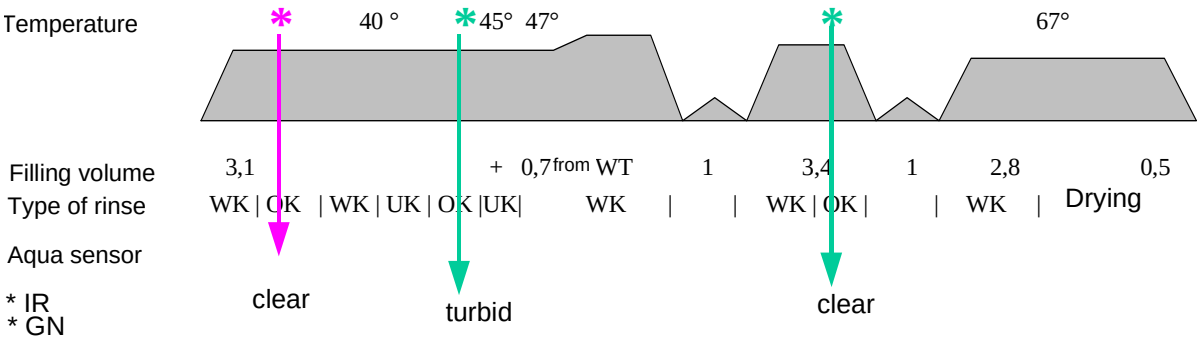


Energy: 1.20 kWh -> 1.20 kWh
Water: 12 -18 litres
Time: 100 -130 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

4.2.3 Program sequences in the automatic range, part 3

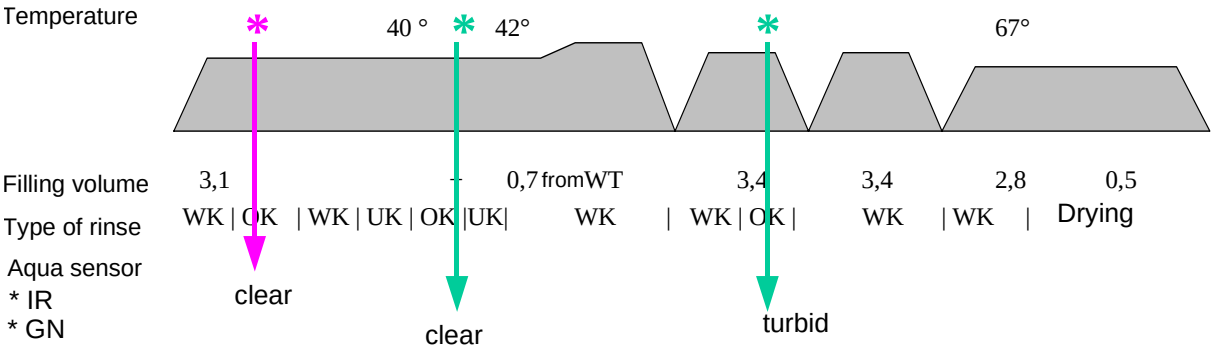


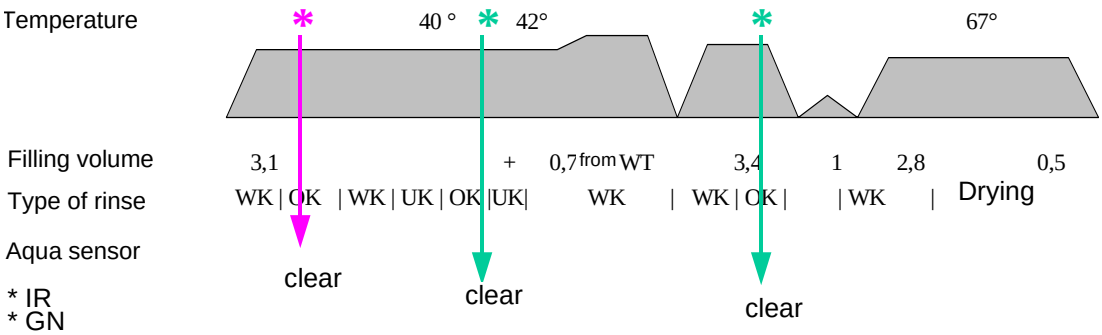


Energy: 1.20 kWh -> 1.20 kWh
Water: 12 -18 litres
Time: 100 -130 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

4.2.4 Program sequences in the automatic range, part 4





Energy: 1.20 kWh -> 1.20 kWh
Water: 12 -18 litres
Time: 100 -130 min.

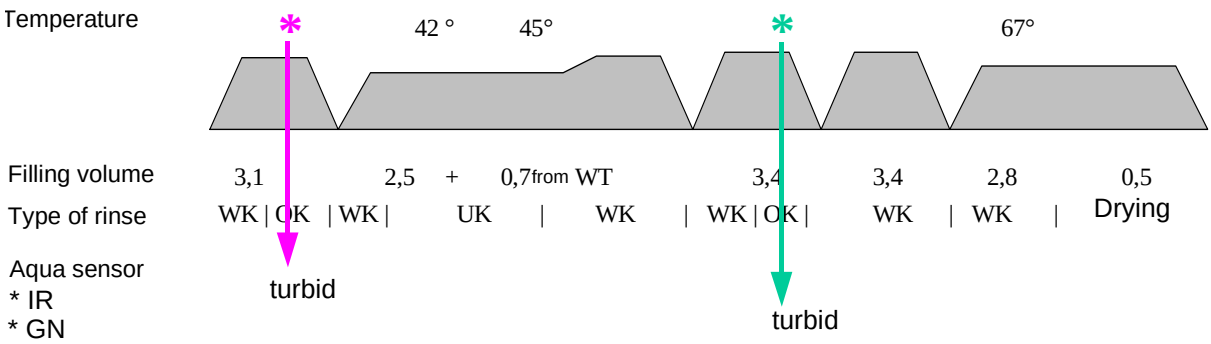
WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

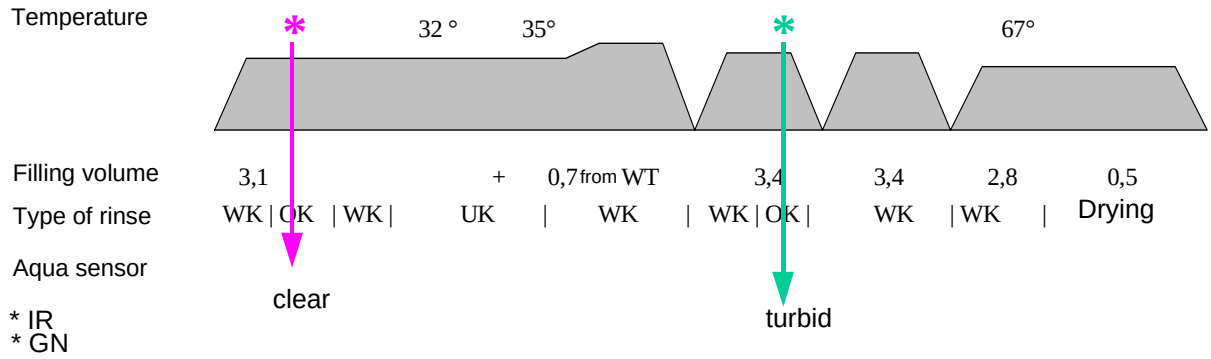
4.3 Program selection “Automatic gentle rinse”

The program comprises a pre-rinse cycle, a washing cycle at 35 °C / 45 °C, an intermediate rinse, a clear rinse at 67 °C and a drying cycle. Two aqua-sensor decisions are taken.

Depending on the first decision in the pre-rinse cycle, the water will be exchanged or the pre-rinse water will still be used for the washing cycle. In addition, the washing temperature will be raised from 35 °C to 45 °C. Depending on the second decision in the intermediate rinse, a second intermediate rinse will be carried out.

4.3.1 Program sequences in the automatic gentle range, part 1

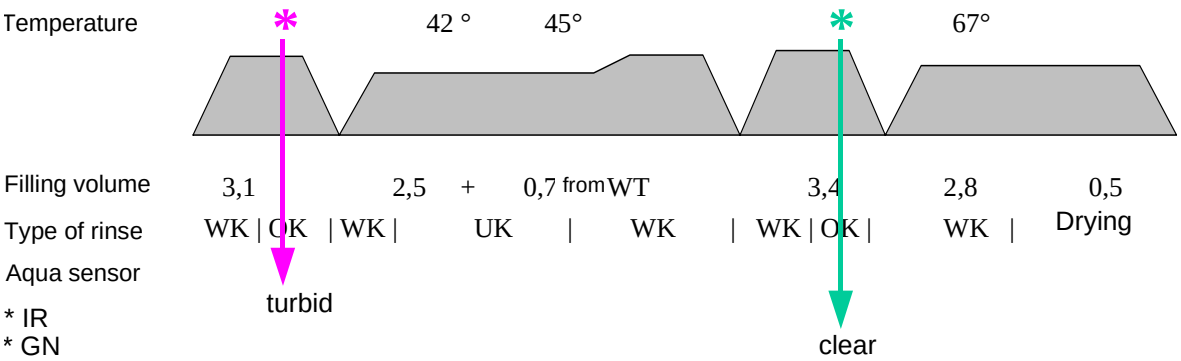


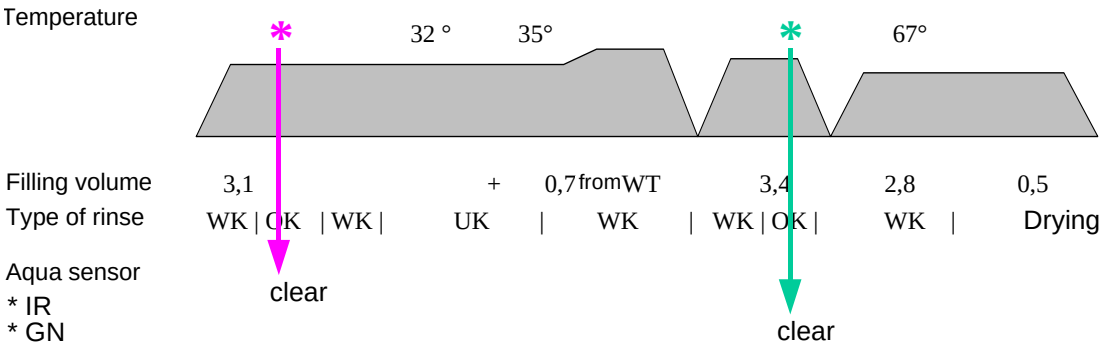


Energy: 0.8 kWh -> 1.00 kWh
Water: 10 -16 litres
Time: 80 -100 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

4.3.2 Program sequences in the automatic gentle range, part 2





Energy:	0.8 kWh -> 1.00 kWh
Water:	10 -16 litres
Time:	80 -100 min.

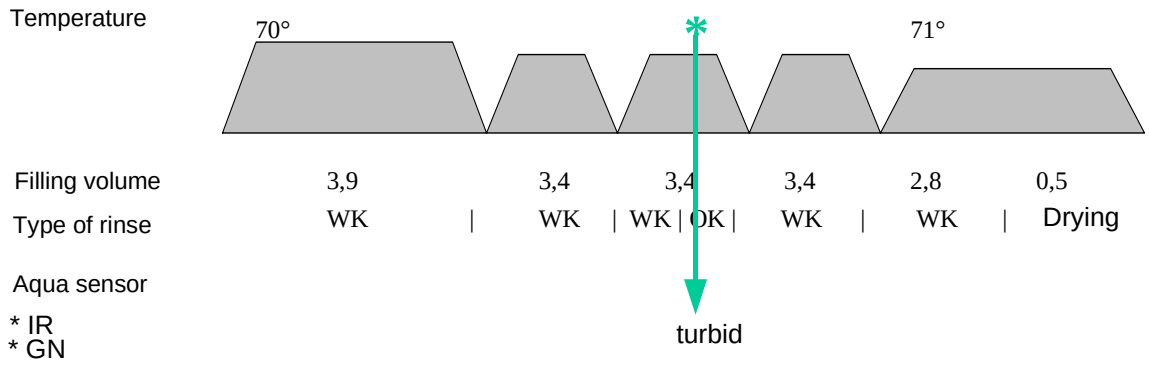
WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT= heat exchanger

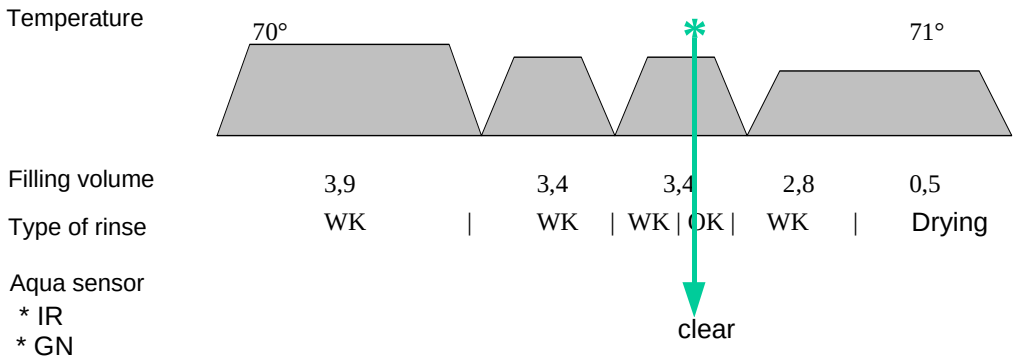
4.4 Program selection “Time saver”

In the time-saving menu, the buttons +/- can be used to switch the function on or off. If the time-saving option has been activated, the aqua sensor in the automatic programs will only be activated once in the intermediate rinse, there will be no pre-rinse and the temperature will be raised.

This means that rinsing times are shorter and more water and energy are used.

4.4.1 Program sequences option “Time saver” – auto plus range

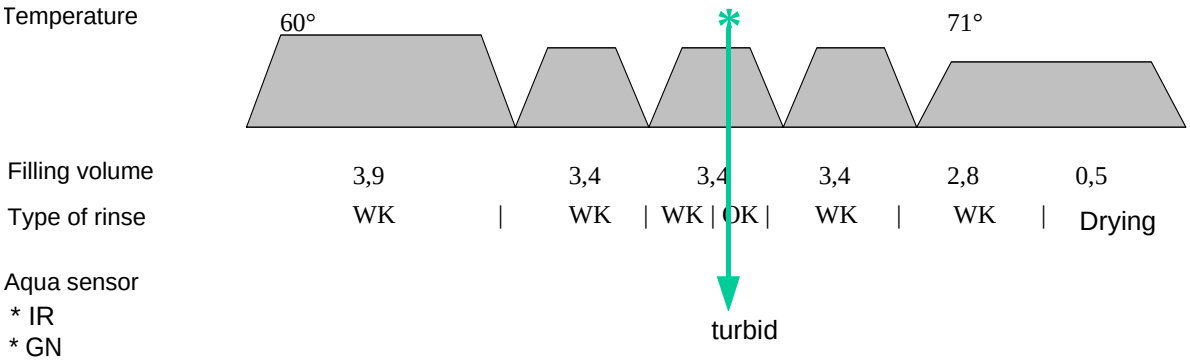


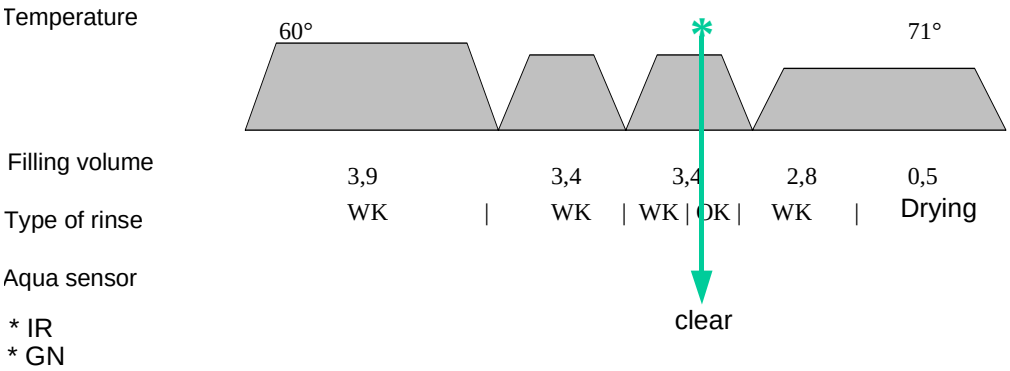


Energy: 1.40 kWh
Water: 18 litres
Time: 85 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse

4.4.2 Program sequences option “Time saver” – automatic range

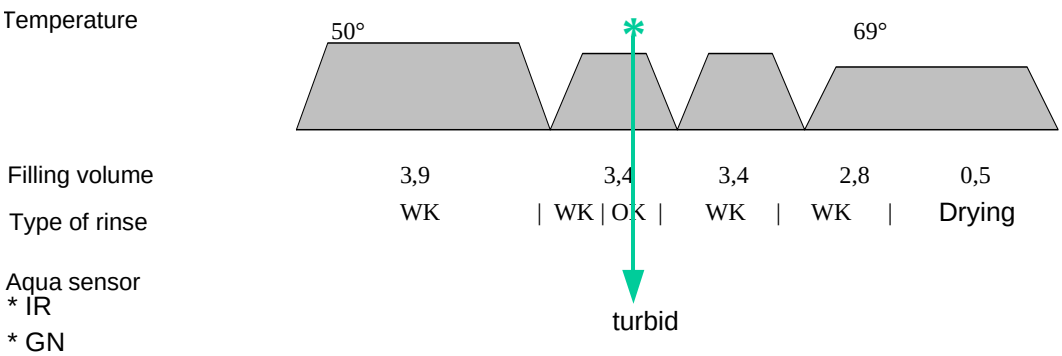


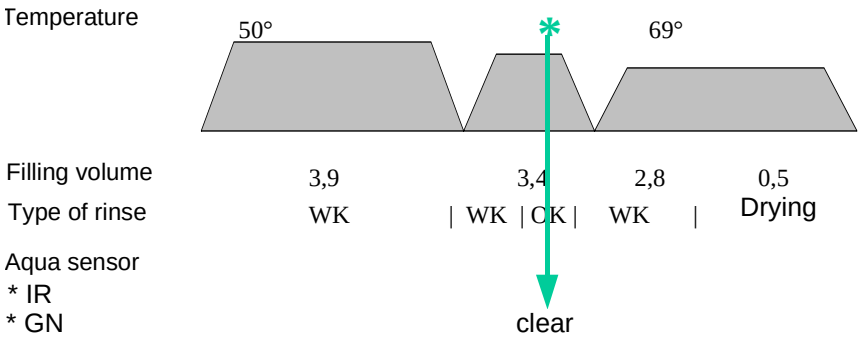


Energy: 1.30 kWh
Water: 18 litres
Time: 80 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse

4.4.3 Program sequences option “Time saver” – auto gentle range





Energy: 1.10 kWh
Water: 15 litres
Time: 65 min.

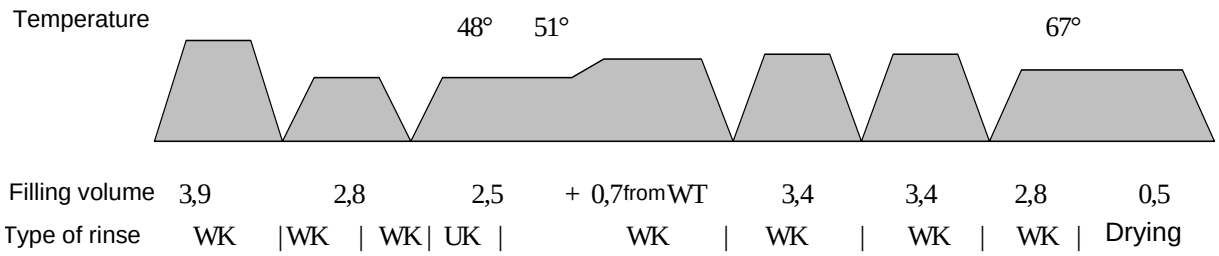
WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse

4.5 Options “Standard programs”

In addition to the rinsing programs indicated in the standard menu, the programs Normal Plus, Normal, Normal ECO and Normal EXTRA can be selected. The program procedure is precisely stipulated, so there are no aqua sensor decisions.

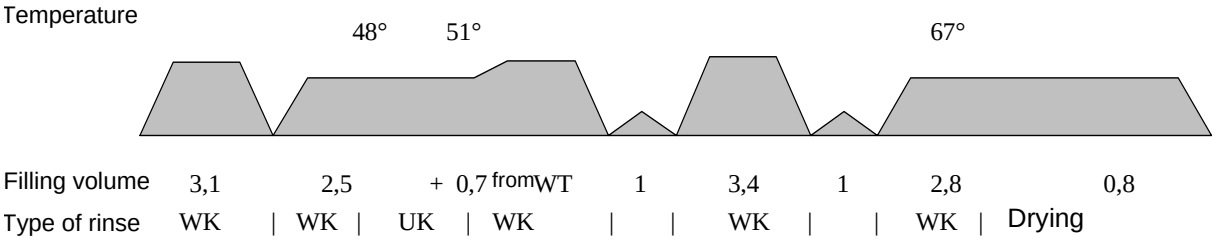
4.5.1 Program sequences standard – programs, part 1

Normal plus



Energy: 1.25 kWh
Water: 19 litres
Time: 135 min.

Normal (AAA)

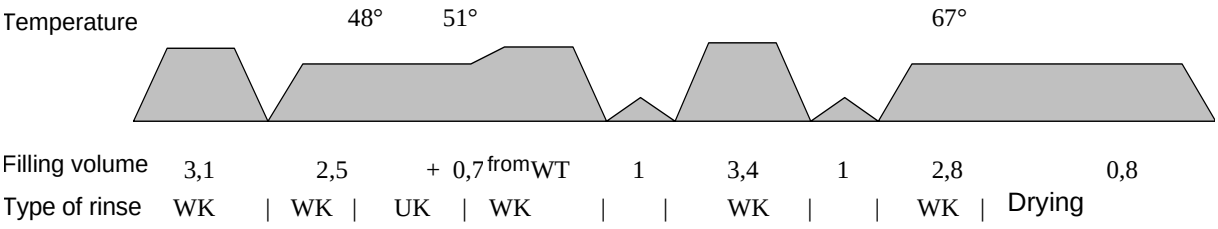


Energy: 1.05 kWh
Water: 14 litres
Time: 140 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT=heat exchanger

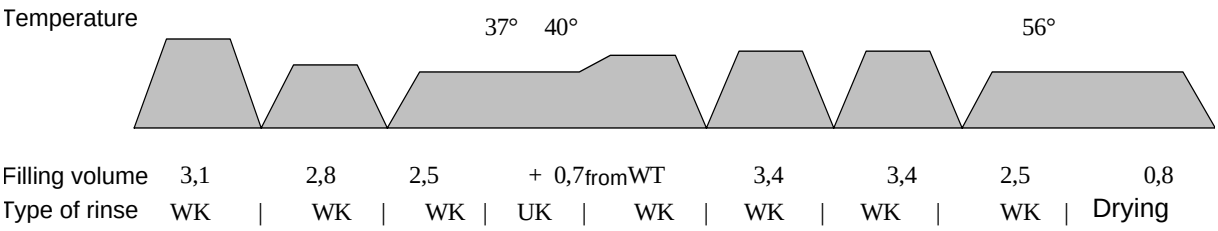
4.5.2 Program sequences standard – programs, part 2

Normal ECO (AAB)



Energy: 1.05 kWh
Water: 14 litres
Time: 115 min.

Normal EXTRA



Energy: 0.95 kWh
Water: 19 litres
Time: 135 min.

WK=alternating basket rinse UK=bottom basket rinse OK=top basket rinse WT=heat exchanger

5. Power module

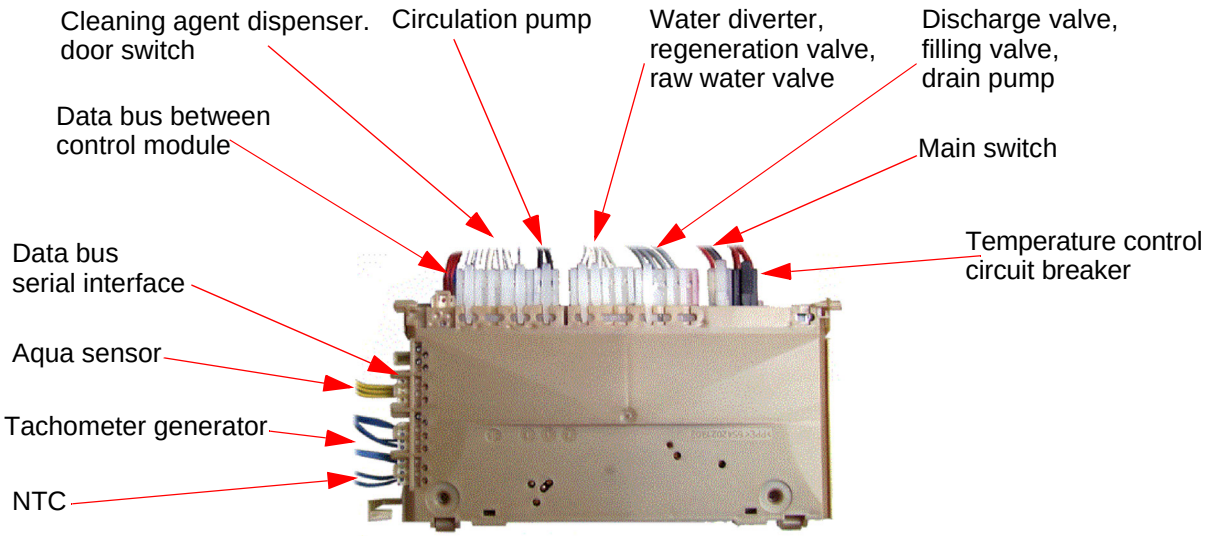
The power module is located behind the right side wall in the area of the base.

Dismounting power module

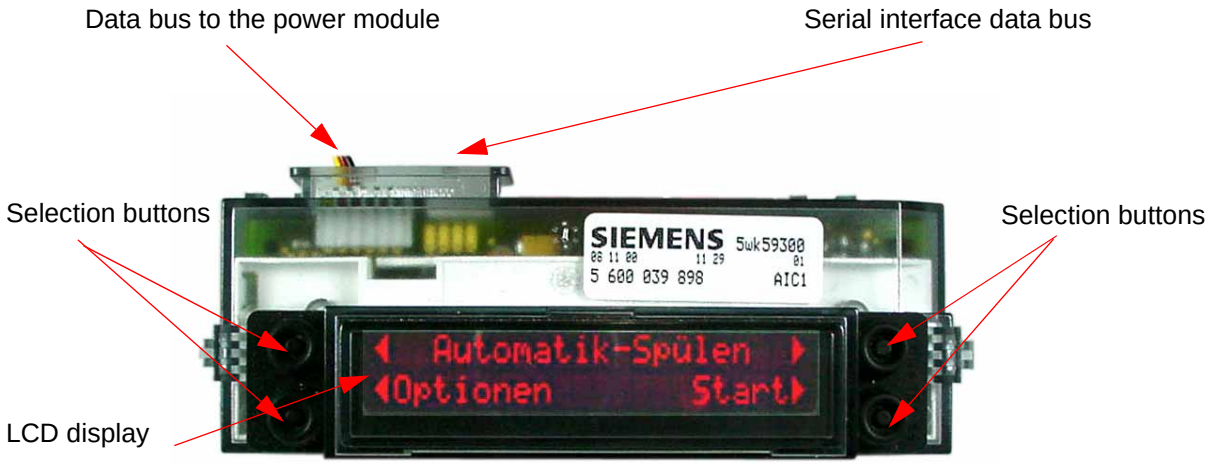
The power module is locked at the rear with a lever.

The lever must be pushed to the right for dismounting.

Connection power module



Control module, fully-integrated (U-type control) connections



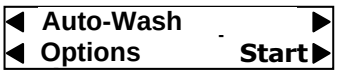
6. Technical specification of the contents

The new dishwashers are equipped with clear text displays for selecting any required function and for indicating respective remote indications to the user.
All of the lines in the display comprise 20 characters in an 8x5 dot matrix. The appliances, with a total of 17 display languages (German, English, French, Dutch, Italian, Spanish, Portuguese, Greek, Norwegian, Swedish, Finnish, Danish, Russian, Polish, Hungarian, Czech and Turkish), can be used throughout Europe.

6.1 Display indication

6.1.1 Dialogue procedure

After switching on the dishwasher, the following appears in the selection display.



If no change of setting is required the automatic rinsing cycle is started by means of pressing the **start** button. The enquiry **return - close door** appears in the display.

With the **return** button the start menu can be called up once again in order to alter the setting. Otherwise the program proceeds with operation once the dishwasher door has been closed.

An alternative rinsing section can be selected with the “+” and “-” selection buttons. The following are available for selection: **auto-plus rinse, automatic rinse** (pre-set)**, auto-gentle rinse** as well as the **rapid rinse** and **pre-rinse** programs.

In order to change the basic settings, the options **button** is pressed. The respective possibilities for selection will appear consecutively.

Pre-set time

In the pre-set time menu, the buttons +/- can be used to adjust the starting time in 30-minute stages. The time setting ranges from 0:00 to 24:00 hours.

Rapid rinse

In the rapid rinse menu, the buttons +/- can be used to switch the function on or off. If the time-saving function has been activated, the aqua sensor will be activated only once during the automatic programs, namely in the intermediate rinse. There is no pre-rinse, and the temperature will be raised.
This means that rinsing times are shorter and more water and energy are used.

Drying

In this menu, the +/- buttons can be used to set the degree of dryness.

No drying = the programs are reduced by the drying period
Standard drying= factory setting
Extra dry = in this case the clear rinse temperature is raised by 3 K, resulting in better drying.

Signal loudness level

The signal loudness level menu is used to adjust the level of the acoustic signals in a range of seven settings.

0 = off
1 = soft to 6 = loud
4 = factory setting

If the buzzer is switched on it will sound 5 times at the end of a cycle in 5-second intervals. This procedure will be repeated 5 times after 10 minutes.

Setting the level of water hardness

In this menu buttons +/- are used to set the level of water hardness to any of 8 settings.

Choice of language

In the language menu the buttons +/- are used to set the language indicted on the clear text display. There is a choice of up to 17 languages.

There is another menu for selecting the test programs (carrying out comparative tests) divided in **standard programmes** and **start menu.**

After selecting the standard program “option” one of the three test programs, indicated as **Normal Plus, Normal,** and **Normal Eco** can be selected.

While the prorams are in operation, the indicator display (only visible when the door is open) will show the rinsing time remaining (**ready in 1h 27 min.**).

When the program has been completed, the display will show **ready**.

The refill indicators for salt and for the rinsing aid are also integrated in the display in the case of the fully-automatic washers. When there is insufficient salt or rinsing aid available, this will appear subsequent to opening the door and switching on the dishwasher.

Refill dishwasher salt
Confirm

Refill rinse-aid
Confirm

Subsequent to refilling salt or rinsing aid or after pressing the demonstration program **confirm** button, the indication will be deleted.

6.1.2 Demonstration program

In order to demonstrate the functions in show rooms, all of the fully-automatic dishwashers are equipped with a demonstration program.

Activation:

- Press both of the selection switches on the left of the display at the same time as the **ON/OFF** button
- Select the S5 indication with the “+” button,
- Confirm **2x** and press **start** 2x
- Close the door

Contents

All of the display functions can be operated and a simulated program procedure with indications and signals is demonstrated.

The demonstration program is ended by means of opening the door and selecting **terminate program**.

6.1.3 Resetting the modules

Switch the appliance on and press the main switch until the language selection menu is shown in the display.

Note All of the settings, such as the water hardness setting, have been set for delivery and must be reset.

Indication “Check the water intake”

If, on filling, the filling level fl is not reached within 210 sec., the display will indicate “check water intake”.

6.1.4 Special programs

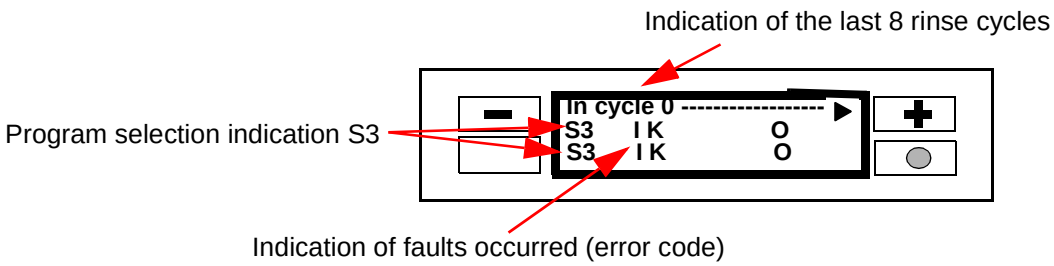
Open the door and switch the appliance off. Then, while pressing the two buttons on the left of the display, activate the main switch.

Pressing the +/- buttons will activate the special programs (S1-SB). Pressing the start button will start up the respective program.

- S1 = Checking the LCD display
  Pressing the buttons will activate all of the display pixels.
- Normal
- S3 = Customer serivce test program
- S5 = Show room / demonstration program
- S6 = Delete error storage
- S7 = Dispensing device (normal / top dispense)
- S8 = Setting with / without softening device

The programs S2, S4 and S9 are test programs which may **only** be used in production.

Customer service special program S3



Reading out the error storage

In the customer service program, the +/- buttons can be used to select one of the last 8 rinse cycles. The upper part of the display shows the rinse cycle selected (in cycle ….), and in the lower part of the display S3 for the customer service program and all of the errors which have occurred in the program selected are indicated as a coded display.

Once the error storage has been read-out, the customer service program is started by closing the door. Apart from the filling steps, program steps can be skipped with the upper left button (STEP). Errors which occur in the customer service program will be shown as a coded display in the lower part of the display, and on the bottom right the program step will shown as a double-digit number.

Customer service special program S3

INDEX	Function	°C	Time	Sensor	Top basket/ bottom basket	rev./min. bottom basket	rev./min. top basket	r/min. alternating baskets	Time bottom basket	Time top basket	Mlock*	Volume
0	P		30									
1	FWW + AS_KAL_IR											
2	Pa + AS_KAL_IR		1									
3	FRW + AS_KAL_IR											
4	Pa + AS_KAL_IR		1									
5	VF + ASKAL_IR			F1								
6	Pa		1									
7	AS_KAL_GN		60									
8	AWT		60									
9	R		10									
10	ZR		90									
11	WWP				OK							
12	WWP				UK							
13	WWP				OK							
14	WWP				UK							
15	WWP				OK							
16	WWP				UK							
17	U		20		UK	2800						
18	U + WWP				OK			2800				
19	U		20		OK		2000					
20	U + H	max. 65°C	250		WS	2500	1500	2000	15	15		
21	P		30									
22	ZK		90									
23	MSP *										closed	
24	Pa		4									
25	MSP *										open	
26	FWW + AWT											1.01
27	AWT		10									
28	P		30									
00	End of program											

AWT = discharge valve (heat exchanger)
FRW = fill raw water
FWW = fill soft water
H = heater
MSP = position motor lock
P = pump
Pa = pause
U = circulate
VF = prefill heat exchanger f1
WS = alternating rinse
WWP = position water diverter
ZR = add cleaning agent
ZR = add rinsing aid
R = regeneration valve
OK = top basket
UK = bottom basket
AS_KAL_IR = clouding sensor calibration

* only if available

6.2 Error code, customer service program

A = aqua sensor calibration error infrared measured section
B = aqua sensor calibration error green measured section
C = no tachometer impulses
D = triac short circuit circulation pump output
E = water diverter, no circuit impulses
F = filling error
G = triac short circuit water diverter outlet
H = heating error
I = motor lock, no circuit impulses
J = triac short circuit motor lock outlet
K = NTC error, interruption or short circuit
L = not occupied
M = overhub on all the time
N = network synchronisation not possible
O = safety level recognised
P = safety level recognised 8 times

6.2.1 Error code A / B

A = aqua sensor calibration error infrared measured section
B = aqua sensor calibration error green measured section

Possible causes:

- aqua sensor defect
- line disconnection
- plug error
- contact problems on the plug connectors
- aqua sensor excessively soiled
- electronic input or output defect

Effect:

A stipulated procedure from the automatic program is carried out.

6.2.2 Error code C

C = no tachometer impulses

Possible causes:

- circulation pump defect
- tachometer generator defect
- line disconnection
- plug error
- contact problems on the plug connectors
- electronics output triac defect or disconnected
- electronic input defect

Effect:

The circulation pump is fully triggered and, if possible, it operates at full speed (approx. 2800 rev./min.).

6.2.3 Error code D

D = triac short circuit circulation pump output

The tachometer generator sends signals although the circulation pump is not to be triggered.

Possible causes:

- electronics output triac defect, has transmission
- electronics system short circuit

Effect:

The circulation pump operates as soon as the appliance is switched on and stays on all the time.

6.2.4 Error code E

E = water diverter, no circuit impulses

Possible causes:

- water diverter defect
- line disconnection
- plug error
- contact problems on the plug connectors
- electronics output triac defect, disconnected
- electronic input defect

Effect:

The water diverter is constantly triggered (constant alternation between the top basket and the bottom basket within 6 seconds).

6.2.5 Error code F

F = filling error

Cause:

- filling level is not reached in the pre-defined time of 6 minutes

Effect:

Program procedure, remaining time indicator stops after 6 min., until the filling level is reached, the filling valve remains switched on during this period. The raw water valve is switched off after 6 minutes.

6.2.6 Error code G

G = triac short circuit water diverter outlet

Possible causes:

- electronics output triac defect, has transmission
- electronics system short circuit

Effect:

The water diveter operates as soon as the appliance is switched on and stays on all the time.

6.2.7 Error code H

H = heating error

Temperature is not reached within 60 minutes

Possible causes:

- the NTC has too much resistance but is nevertheless still within the permissible range, e.g. due to contact problems on the plug connectors to the NTC
- heater is interrupted
- press switch is defect
- electronics system heater relay defect
- lead disconnection to the heater

Effect:

After 60 min. the heating step is discontinued and the program continues to run.

6.2.8 Error code I

I = motor lock, no circuit impulses

Possible causes:

- motor lock is defect
- line disconnection
- plug error
- contact problems on the plug connectors
- electronics output triac defect, disconnected
- electronic input defect
- appliance has no motor lock

Effect:

Within 30 seconds an attempt is made to position the motor lock, after which it remains standing in a random position.

The next positioning command results in a renewed attempt to position the motor lock.

6.2.9 Error code J

J = motor lock output triac short circuit (only in the case of appliances with a motor lock)

Possible cause:

- electronics output triac defect, has transmission

Effect:

The motor lock starts up as soon as the appliance is switched on and remains in constant operation until the main switch is switched off.

6.2.10 Error code K

K = NTC error, interruption or short circuit

Cause:

- NTC figures are beyond the defined range (smaller 2.7 kiloohm is equivalent to below 0°C / larger 135 kiloohm is equivalent to more than 100°C)

Effect:

The heating step is immediately overrun.

6.2.11 Error code M

M = overhub on all the time

Possible causes:

- overhub contact in the main switch is permanently closed
- plug error
- electronics system short circuit
- electronic input defect

Effect:

Every time the appliance is switched on the indication only appears after 5 sec. Settings are returned to the basic setting (Language German, degree of hardness 4, buzzer 6, drying normal …).

6.2.12 Error code N

N = network synchronisation not possible

Cause:

- power module defect

Effect:

Circulation pump runs at the maximum no. of revolutions

Program continues with normal operation

6.2.13 Error code O

O = safety level recognised

Possible causes:

- filling switch is defect, overhub contact in the main switch is permanently closed
- filling level system defect
- rinse-water pump does not discharge
- leaks, water in the base pan
- line disconnection
- plug error
- contact problems on the plug connectors
- electronic input defect

Effect:

Rinse-water pump starts (has been connected accordingly).

Filling valve is switched off (has been connected accordingly), the filling step is abandoned (by the electronics system).

If filling up to safety level always take place in 7 rinses, the electronics system will remain in the step in which the safety level occurs in the 8th rinse. Subsequent to main switch on/off, the step is carried out again.

6.2.14 Error code P

P = safety level was recognised in the last 8 rinses

Cause:

- the error O has occurred in the current and in the last 8 rinses.

Effect:

The rinse-water pump commences operation.

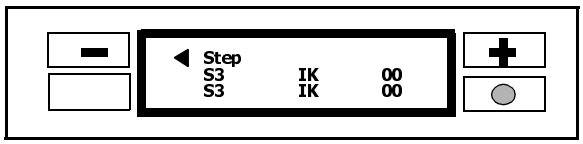
The filling valve is switched off.

The program remains in the step in which the safety level occurs.

6.3 Customer service special program S3

Acoustic signal on a change of state

- in the case of overhub contact
- in the case of the equipotential switch f1
- in the case of the door switch
- in the case of the position switch of the water diverter
- in the case of the safety level switch
- in the case of the circuit breaker



6.4 Special program Error storage delete S6

The error storage can be deleted with the special program 6.

In order to store the setting the appliance has to be switched off.

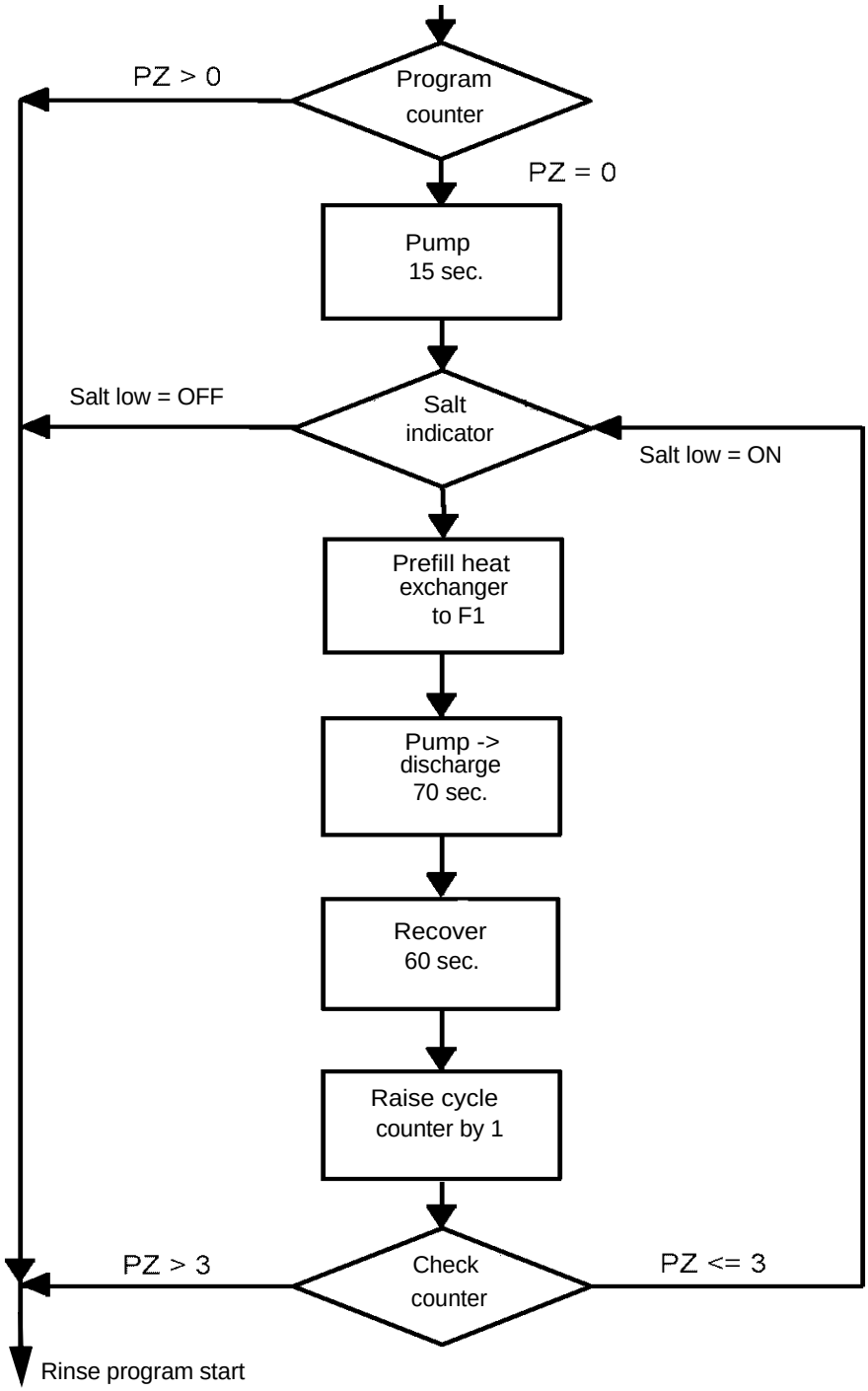
6.5 Special program Setting without water softener S8

The special program S8 is used to adjust the module for appliances without a water softener. The setting in the option menu is then suppressed.

Note Should, in the case of an appliance with a water softener, the setting "NO water softener" be selected, the water softener will be switched off (as with hardness level 0).

6.6 Initial start-up / replacing the electronics system

The following program sequence is to be observed on initial start-up or when replacing the electronics system (Program counter = 0!)



6.7 Customer service test program

Index	Function	Temperature	Filling volume	Time [s]	Motor lock	Sensor
1	P			15	closed	
2	VF					F1
3	F		3.9 1			
4	U + H + ZR	max. 72°C		120		
5	U + H	65°C				
6	U + H + R	max. 72°C		120		
7	U + ZK			120		
8	AS_KAL_IR			0-480		
9	P			60		
10	FWW + AWT			60		
11	P + AWT			30	open	

P = pump
F = fill/dynamic
H = heat
ZK = add rinsing aid
FWW = fill soft water
AS_KAL_IR = clouding sensor calibration
VF = pre-fill/static heat exchanger (F1)
U = circulate
ZR = add cleaning agent
R = regenerate
WT = heat exchanger drain-off valve

Select test program. Keep the S2 and S4 buttons pressed and switch on the main switch. The following will be indicated on the control panel:

- LEDs L2 and L4 blink.
- As long as both the S2 and S4 buttons are kept pressed subsequent to switching on, an indication for the variant code will be given in the case of a successful overhub contact enquiry.
  e.g. : 20 = Variant 0
  21 = Variant 1, etc.
- When one of the buttons are pressed, the respective LED will light up.
- Operating the S3 button will result in the display 188 and the fault indication LEDs as well as the sequence LEDs also lighting up, accompanied by the buzzer sounding.
- When the pre-set time switch is activated, an 18h-indication will light up in the 7-segment display.

The test program is started by means of pressing the S2 and S4 buttons. A time pre-set is not possible. The test program is ended by means of switching off the main switch.

The error number is indicated on the display:

0 = no error has occurred
1 = aqua sensor defect **(Attention: indication even if there is no aqua sensor!)**
2 = heating error
4 = filling error
8 = NTC system error
16 = water diverter cannot be positioned
32 = motor lock position switch **(Attention: indication even if there is no motor lock!)**

If more than one error code is recognised, the error code adds up

e.g. : error code 3 = error code 1 + error code 2

Should neither of the two special functions be selected, alternating rinsing will be set. Should the soaking/top basket special function be selected, the water diverter will be positioned for the top basket. Should the shorten time/bottom basket special function be selected, the water diverter will be positioned for the bottom basket.

The next program step can be activated by means of pressing the S3 button. Skipping the heating step will be indicated as an error (**exception:** in the case of the filling step it is only possible to move on by means of the filling switch f1).
Error code indication is available in the customer service test program only!

7. Technical Data

7.1 General technical data

Dimensions	
Height	81.0 cm
Width	59.6 cm
Depth	55.0 cm
Voltage / Frequency	230 - 240V / 50 Hz
Connected load	2.3 kW
Filament energy consumption	2.15 kW
Fuse protection	10 / 13 A

Dispenser	
Rinse-aid filling quantity	120 ml
Setting 0-6	je 1 ml
Detergent filling quantity	45 g

Circulation pump	
Nominal voltage	230-240 V
Frequency	50 Hz
Widerstand	Ha ca. 44-57 Ω Hl ca. 50-55 Ω
Lift	3.9 - 4.1 m
Delivery performance	25 - 30 l/min
Starting current	2.4 A
Operating current	0.31 A

Water diverter	
Nominal voltage	230-240 V (synchronous motor)
Frequency	50/60 Hz
Resistance	ca. 9.3 kΩ

Recovery / discharge / natural water valve	
Nominal voltage	230-240 V
Frequency	50 Hz
Resistance	2 kΩ
Flow rate	2.75 l/min.
Water pressure	0.5 - 10 bar

Actuator	
Nominal voltage	110-240 V
Frequency	50/60 Hz
Resistance	0.5 - 1.5 kΩ

Flow heater	
Nominal voltage	230-240 V
Frequency	50/60 Hz
Output	2150 W
Resistance	ca. 22 Ω

Aqua Stop Valve	
Nominal voltage	230-240 V
Frequency	50 Hz
Flow rate	2,75 l/min
Water pressure	0.5-10 bar

Energy label data	
Energy category	A
Washing performance	A
Drying performance	A

Volume (Permanent Rinse system)

Temperature	Resistance in kΩ	Tolerance
25	48.4	7.9
30	38.5	7.1
50	16.5	6.2
60	11.0	5.6
65	9.1	5.6

Klixon / NTC

85°C safety switch

Salt container - filling capacity	
Fine-grain salt	approx. 2 kg
Coarse-grain salt	approx. 1.5 kg
Salt tabs	approx. 0.7 kg

Rinse pump	
Nominal voltage	230-240 V
Frequency	50 Hz
Resistance	110-260Ω
Lift	0.9 m
Delivery performance	10 l/min

7.2 Consumption data

7.2.1 Automatic programs

	Auto-plus-program	Automatic rinse	Auto-delicate program	Quick rinse	Pre-rinse only
Time in min.	90 - 110	100 – 130	80 - 100	30	19
Power consumption in kWh	1.20 – 1.40	1.00 – 1.20	0.80 – 1.00	0.60	0.10
Water consumption in litres	14 - 20	12 - 18	10 - 16	10	4

7.2.2 Standard-Programs

	Normal-Extra	Normal-ECO	Normal	Normal Plus
Time in min.	135	165	140	140
Power consumption in kWh	0.65	1.05	1.05	1.05
Water consumption in litres	19	14	14	15

The data indicated may deviate upwards or downwards. The figures are those resulting from laboratory tests in accordance with EN 50242 for the start of a series.