

Frontloading  
Washing machines

EWM 2000+

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## **II. LAVAMAT 70030**

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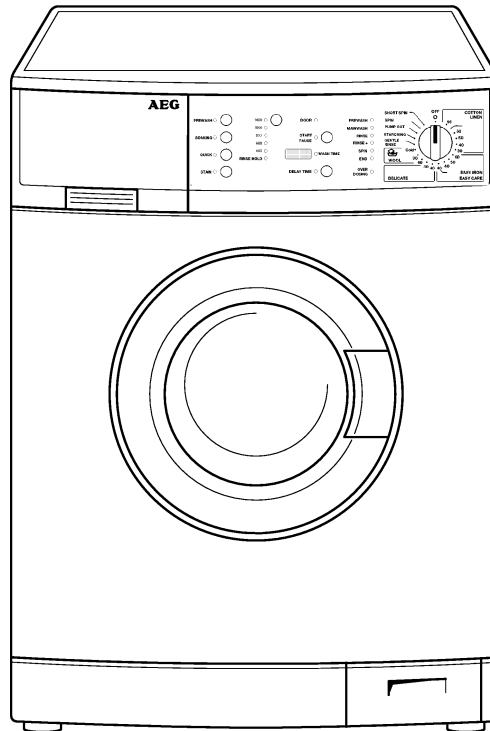
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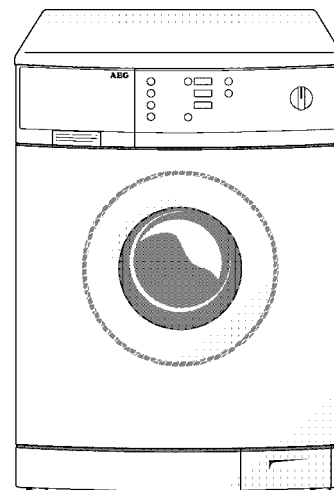
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## ÖKO\_LAVAMAT 70030 UPDATE Characteristics ( features )

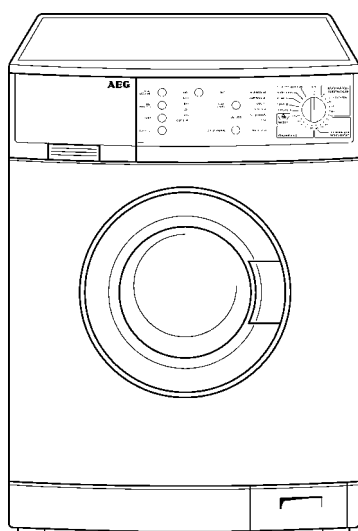
- Electronic machine
- Sensortronic foam detection
- **Fast unbalance control system FUCS**
- Motor is phase cutting controlled
- Jet - System
- Carbon tube
- Updatefunction
- Maximal number of drum revolution 1600 1/min
- Handlaundry program
- Easy Iron
- Top class machines with automatic foot

## Machine classes



Machine class			PGS TYPE
<b>I</b>	ÖKO_LAVAMAT	80030	EWM3000 with Handlaundry and easy iron
<b>II</b>	ÖKO_LAVAMAT	70030	EWM 2000+ with Handlaundry and easy iron EWM 2000- with Handlaundry and easy iron
<b>III</b>	ÖKO_LAVAMAT	Wxx3x	Vs 70

Over view Range					
Machine class 97-98	80000	70000	60000	Wxxxx	
PGS - Type	EPW EPW+ EPW++	EAC EAC+ ; EAC- EAC++ ; EAC--	H200 V H200 E H200 V+ H200 E+	ZD ZAD ZD+ ZAD+	
		↘	↙		
<b>Machine class 99</b>	<b>80030</b>	<b>70030</b>		<b>W1030</b>	
		↙	↘		
PGS - Type	EWM3000 (mirrored)	EWM 2000+	EWM 2000-	VS 70	



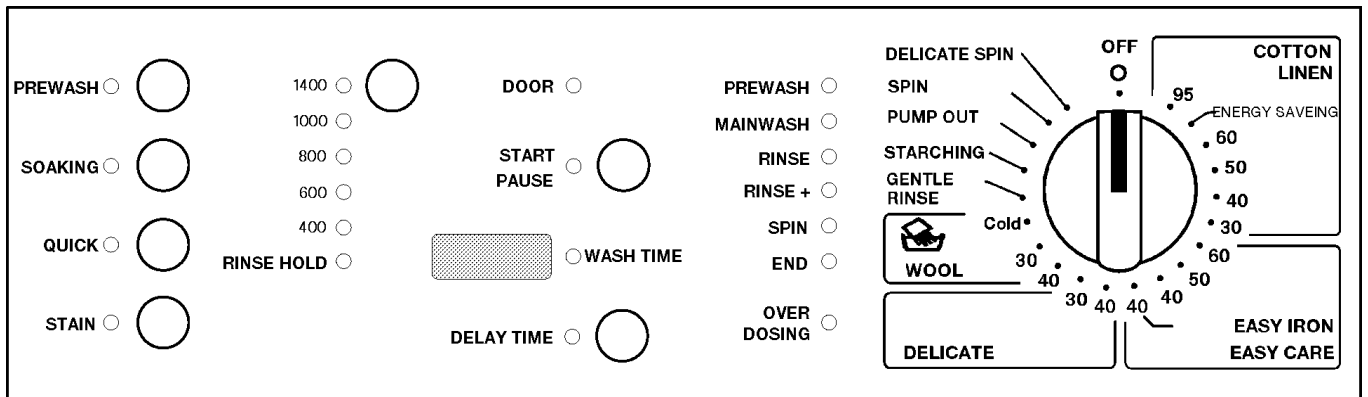
## Indication of several models

digits						
X	X	X	X	X		
⇓	⇓	⇓	⇓	⇓	⇒	<b>Sales kind</b> 0 = Linie 2 = Otto 3 = Special Netherland sales kind 4 = Special Netherland sales kind 6 = Saphir 8 = Carat 9 = Exclusiv
⇓	⇓	⇓	⇓		⇒	<b>Design and equipment</b> 0 = convex 1 = with hot water connection 2 = Range 98 z.B. 80020 ; 70020 3 = Range 99 z.B. 80030 ; 70030 5 = flat door glass 6 = flat door
⇓	⇓	⇓			⇒	<b>Order of rank</b> 8 = illuminated from behind 7 = Basic machine with Aqua - Control 6 = Basic machine without Aqua - Control 5 = without preselected start time 4 = Flange valve with Aqua - Control 3 = with flange valve
⇓	⇓				⇒	<b>Spinspeed 1/min</b> 8 = 1800 6 = 1600 5 = 1500 4 = 1400 3 = 1300 2 = 1200 1 = 1100 0 ≤ 1000
⇓					⇒	<b>Appliance class Appliance group</b> 8 = 80000 7 = 70000 6 = 60000 5 = 50000 ; Wxxxx 4 = Toploader high 3 = 30000 ; Wxxxx 2 = Toploader low 1 = Washer dryer

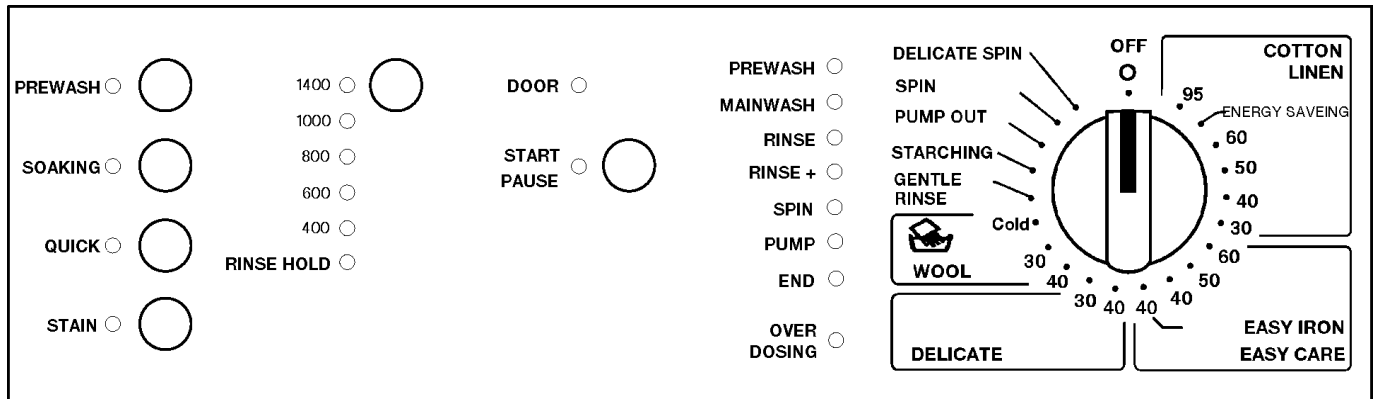
# 1. Operating elements / panel

## 1.1 One button - Input philosophy

Every washing programme with its temperature can be adjusted with the programme selection switch.

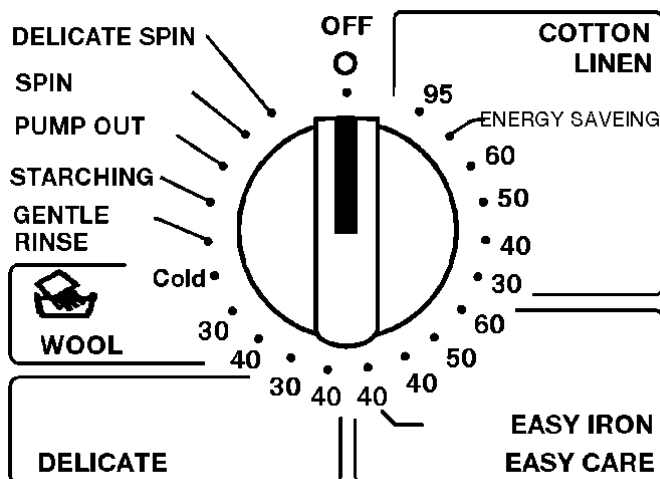


Option buttons Spin speed Door Start / Pause Multidisplay Program cycle Program adjusting



Variants without multidisplay have 8 LED's in the program cycle display. The LED „Pump“ is added. The reason is, 8 LED's are needed for the customer service test program.

## 1.2 Programme selection switch



- 15 basic programmes
- 4 program blocks
  - Cotton / Linen
  - Energy saving
  - Easy care
  - Easy Iron
  - Delicate wash
  - Handlaundry program / Wool
- 5 additional programmes
- On / Off - switch integrated in programme selector
- Quick programme correction possible

## 2. Additional programmes

### 2.1 Gentle spin

Select with programme selection switch  
Programme time 4 min.; speed 600 1/min  
„Gentle spin“: (IMP\_C0 Page 34 )  
same as delicate spin at 700 1/min

### 2.2 Spinning

Select with programme selection switch  
Programme time 8 min.; speed maximum  
„Spinning“: ( IMPCF\_01\_AC Page 33 )  
same as cotton / linen final spin

### 2.3 Fast unbalanced control system FUCS

Common function:

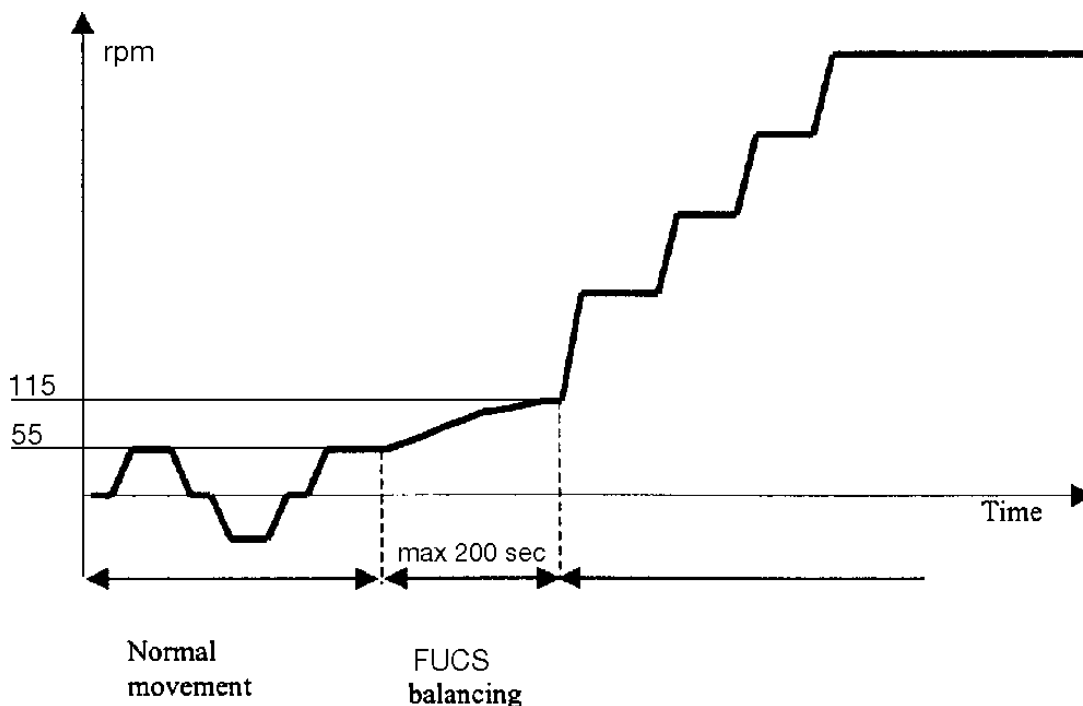
The unbalanced load measurement has 3 phases.

These phases have different durations and unbalanced load limits.

The value of the unbalanced load is calculated every 160 ms.  
After this the unbalanced load is compared with the fixed limits  
in order to decide whether the drum speed is increased or  
decreased by 2 rpm.

The FUCS measuring phase starts at 55 rpm and ends in the ideal  
case at 115 rpm.

Ideal case:



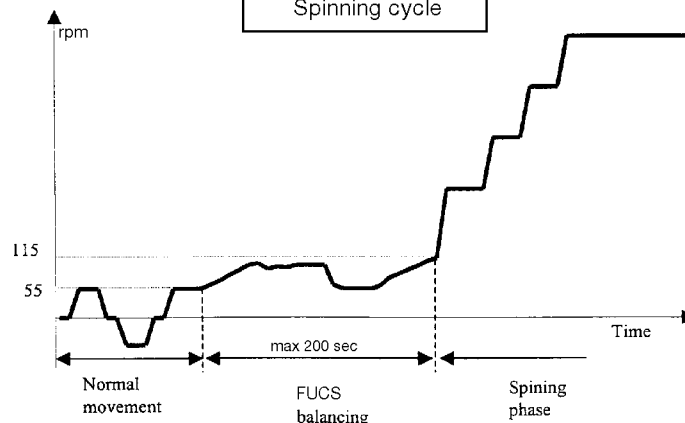
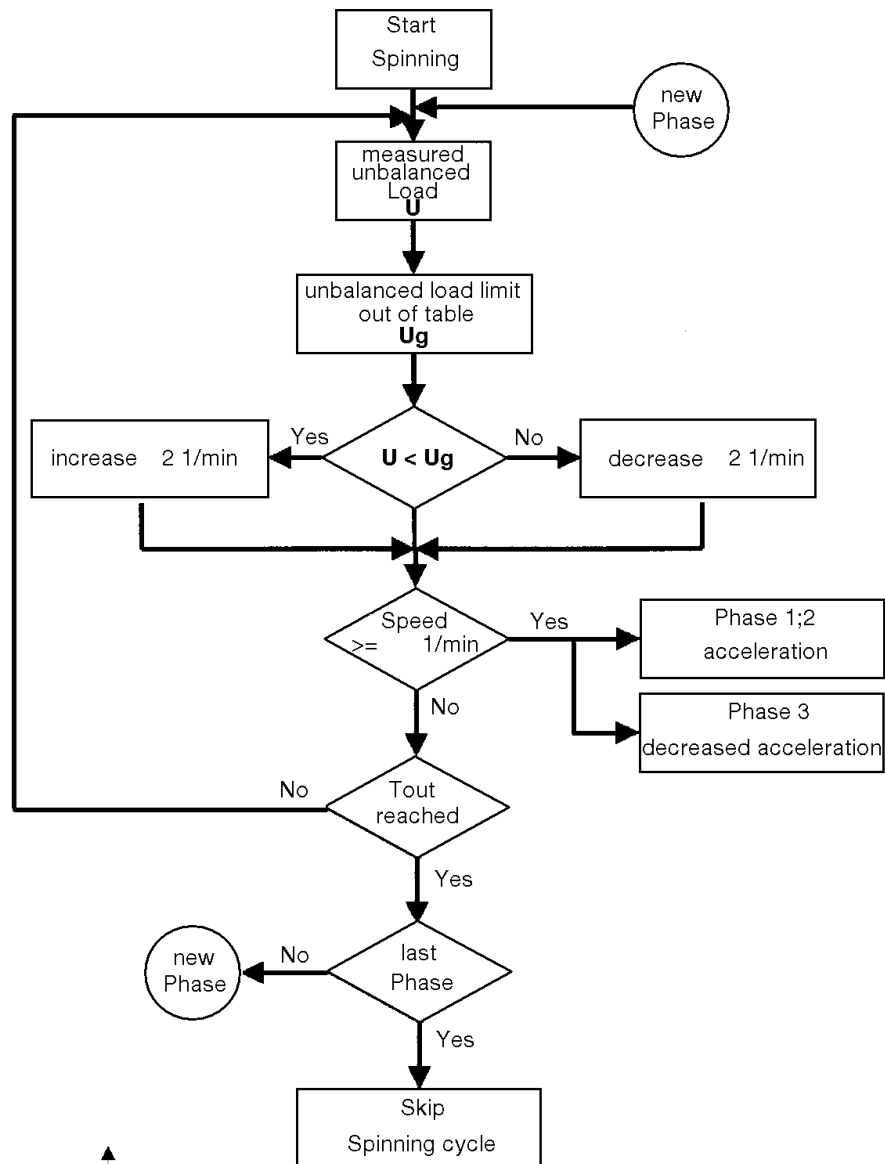


## 2. Additional programmes

### 2.3.1 Function of FUCS

Duration and limit table:

Phase	Speed start	Speed end	Time (duration)	Unbalanced load limits
1	55 1/min	115 1/min	from 0 to 200 sec Time out 1	1,280
2	55 1/min	115 1/min	from 0 to 140 sec from 140 to 155 sec from 155 to 170 sec from 170 to 200 sec Time out 2	1,280 1,760 2,240 2,720
3	55 1/min	85 1/min	from 0 to 60 sec Time out 3	5,440



## 2. Additional programmes

### 2.4 Pumping

Select with programme selection switch position „Pumping“  
Programme time 3 min.  
Pumping until switching point of the pressure switch (Foam level)  
additional 120 sec. fixed pumping time

### 2.5 Starching

Select with programme selection switch position „Starching“  
Programme time 23 min. maximum spin speed  
It's the same rinse as the 3. rinse from cotton linen

- ☞ It's a traditionell rinse
- ☞ Filling over softener chamber ( RII\_level) about 13L with 5 Kg
- ☞ Movement N\_MOV 8sec off 8 sec on 55 1/min
- ☞ Without recirculation pump

Final spin cotton/linen ( IMPCF\_01\_AC Page 33 )

### 2.6 Delicate rinse

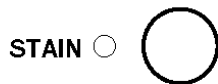
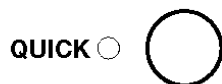
Select with programme selection switch position „Delicate rinse“  
It's the same as 3 rinsing cycles from delicate wash  
Programme time 20 min.

- ☞ All rinses are traditionell
- ☞ First two rinses filling over bleaching chamber ( High\_level) about 13L with 2,5 Kg  
The last rinse uses the softener chamber
- ☞ Movement D\_MOV 12sec off 4 sec on 55 1/min

Final spin delicate ( IMP7 Page 35 )

## 3. Option buttons / display





### 3.1 Prewash







- Can be started in front of each main programme.
- If you chose **wool with prewash** it is not possible because this function is locked. It's also locked, **soaking** is chosen. The option **stain** is available
- Prewash is hot 30°C
- Different washing mechanics  
They depend on the chosen main programme
- It takes about 25 min.
- 5 min. circulation pump „On“
- Spinning at the end of prewash is IMP\_C0
- After the prewash the main programme is automatically started

### 3. Option buttons / display

#### 3.2 Soaking





- PREWASH  
- No prewash can be chosen
  - for dried, encrusted stains
- SOAKING  
- If you chose handlaundry with soaking it is not possible because this funktion is locked
- QUICK  
- soaking with a temperature max. 30°C possible
- STAIN  
- Different washmechanics. They depend on the chosen main programe such as **cotton, easy care and delicate**
  - Programe time ca. 25min. plus heating step till soaking stop (Stoptime: 0,5 h.)  
Soaking time (Stoptime) can be adjusted with the pre-select starting time (Stoptime overall: 0,5 / 1,5 / 2,5 .... and so on in 1h steps)
  - After start the selected soaking time is added to the program time and it's then shown in minutes.
  - 14 min: Movement D\_MOV 12sec off 4 sec on 55 1/min and heating  
After heating gentle movement PWL1\_MOV 40 sec off 1 sec on 35 1/min
  - shortest possible soaking time ca. 50 minutes
  - after the soaking, pump out is executed and the programe continues with the main programe

#### 3.3 Quick







- PREWASH  
- This option is available during the entire cycle.
  - For the programes cotton load 3,5 kg, easy care load 2,5 kg and delicate 2,5 kg.
- SOAKING  
- It doesn't work with the option stain or energy saving.
- QUICK  
- Shorter washing time
- STAIN  
- It reduces the amount of rinses by one.
  - It increases the water levels of the rinse cycles.
  - It's not available for the handwash, enrgy saveing and stain program

### 3. Option buttons / display

#### 3.4 Stain

- PREWASH   - Available for cotton, easy care and delicate with a chosen temperature greater or equal the 40°
- SOAKING   - Load spot powder into the stain compartment of the drawer  
- Spot powder intake after the 40° bio phase
- QUICK   - Program time extension of 10 min.  
- Not working in combination with the quick and intensive options
- STAIN   - Also working with handlaundry program

#### 3.5 Alternating spin speed

- 1400   - This option is available during the entire cycle.
  - 1000  
  - 800  
  - 600  
  - 400  
  - RINSE HOLD  
- Selectable with push button function
  - At the program cotton linen the max. spin speed is suggested.
  - At easy care, delicate wash and handlaundry the maximum spinspeed is suggested.  
Easy care / Easy iron: 800 1/min  
Delicate wash: 600 !/min  
Handlaundry: 800 1/min
  - At all programmes the rinse hold can be chosen
  - The intermediate spin speed is decreased the same way as the final spin.

**Only in cotton linen programmes, the kind of rinses is adapted to the chosen spin speed.**

Intermediate spin 1/min	1 rinse	2 rinse	Last rinse
< 850	TR2	TR2	TR2
900 - 1150	TE	TE	TR2
1200 - 1600	TE	TE	TE

**TR2:** Traditional rinses high level  
**TE:** Vitual rinses ( Total exchange )

### 3. Option buttons / display

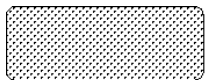
#### 3.6 Start / Pause

**DOOR** 

**START  
PAUSE**  

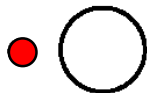
- It starts the machine after the options and the desired cycle is selected.
- Pressing the start / Pause button during a cycle, the program stops and the start/pause LED blinks. The locking condition decides, if the machine can be opened. The door LED illuminates according to the locking conditions.
- If the cycle is paused it's possible to add or eliminate the extra rinse before it's executed. The spin speed can be alternated until the final spin has been performed.
  - ⇒ During the breaktime the change of the programe isn't possible.
- To continue the cycle it's necessary to press the start / pause button again.
- If you turn the selection switch during the programe the machine continues with the previous started programe.

#### 3.7 Multidisplay



 **WASH TIME**

**DELAY TIME**



- It indicates pre-selected start time up to 19h
- Adjustable in steps of 1 h
- after the start time is chosen, the start button must be pushed to activate the pre-selected start time. The countdown begins in steps of 1 h.
- If the pause button is pressed during delay time, the countdown is stopped and the door can be opened.
- It indicates the soaking time.
- It indicates the estimated duration of a programe in minutes. The suggested program time may be corrected automatically during the cycle.
- The display also indicates the fault codes. ( E10 )
- In the customer service test program it shows the water level

### 3. Option buttons / display

#### 3.8 Elektronik cycle display

- PREWASH**  - indicates the selected programme steps
- MAINWASH**  - indicates the actual steps during the programme
- RINSE**  - indicates the end of programme
- RINSE +**  - indicates at the end of programme „Overdosage“ that means too much detergent is used. The LED is only illuminated if foam is detected during the first intermediate spin. Its active in all programmes.
- SPIN**
- END**  - indicates fault codes
  
- OVER DOSING**

#### 3.9 The intelligent doorlock

- This is a magneto - dynamic doorlock
- You have to open the door with the handle, which is not depending on the power source.
- Emergency opening with the knob on the base panel.

Before start- door is open	Green	Door is open
	Red „blinking“	Start button is pressed, while the door is open. Until E40 is shown.
Before start – door closed	Green	Door can be opened with the handle
After start – door closed	Green	Door will be locked and LED stays green
After the end of program	Green	Door is unlocked and can be opened with the handle.
	Green	Door is open
During the program cycle	Off	Door is locked due to level and temperature

#### 3.10 Door locking conditions

If the door is closed and the machine started, the door is locked in any case. If you push the break button the locking condition decide, if the machine can be opened. The LED illuminates according to the locking conditions.

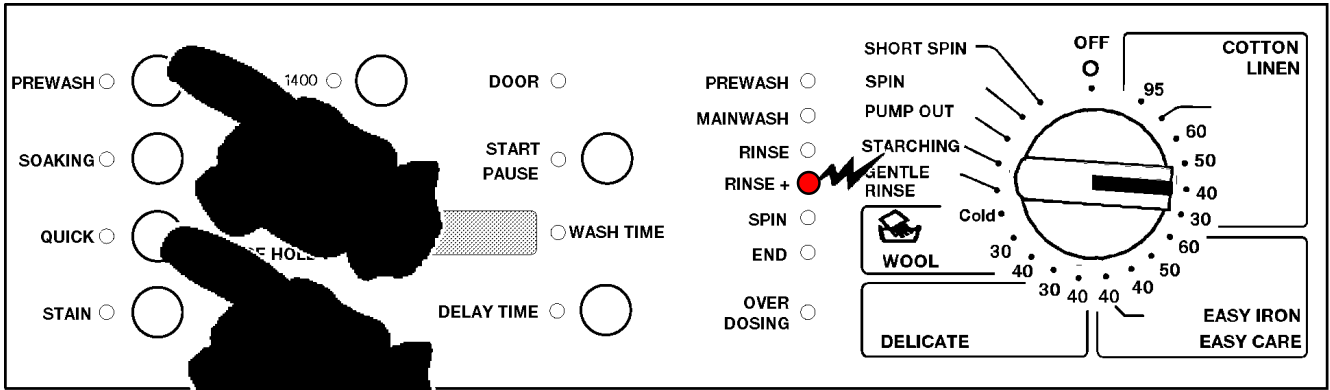
1. Niveau
2. water temperature  $\geq 60^{\circ}\text{C}$
3. Drum speed
4. Broken tacho generator

## 4. Additional features

### 4.1 More water switch

The function of the more water switch must now be programmed with the in/output electronic. This has to be done before a programme is started. The extra rinse will be inserted in all programmes except wool. The cool down setting is not available if it's executed, if the chosen temperature is > 60°C in a cotton linen program.

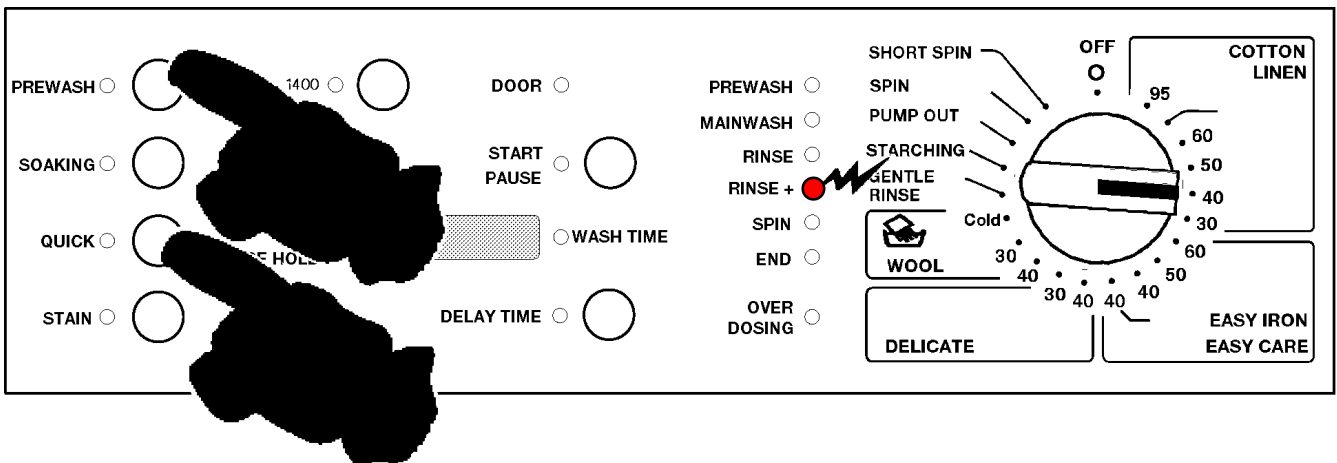
#### 4.1.2 Activating the extra rinse



Activating during the set up phase:

- Keep the buttons prewash and quick pressed for 2 sec.
- The LED **Rinse+** is permanently illuminated as confirmation
- The extra rinse is memorized until it's deactivated.

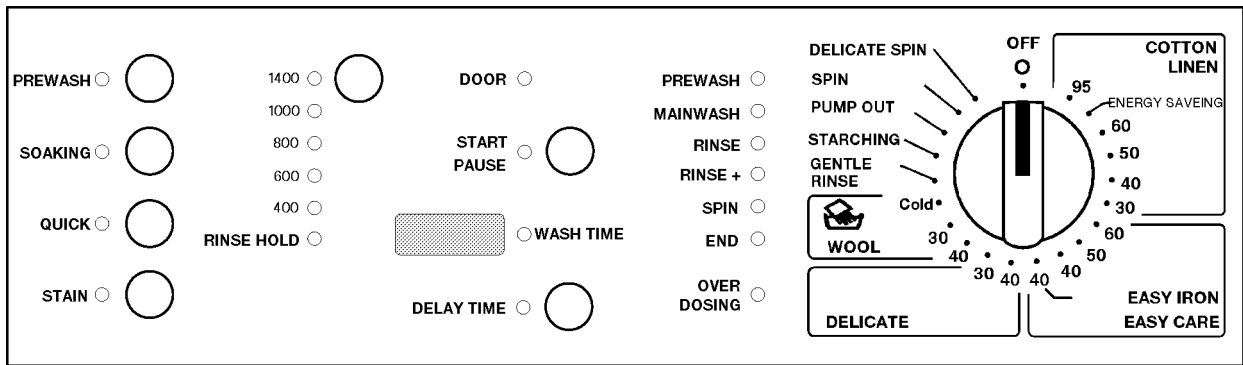
#### 4.1.3 Deactivating the extra rinse



Activating during the set up phase:

- Keep the buttons prewash and quick pressed for 2 sec.
- The LED **Rinse+** is off as confirmation

## 4.2 Easy iron



- You can find the programme easy iron in the programme block easy care.
- Temperature 40°C; Load 1Kg
- The mainwash is the same as by easy care,  
The movement of the motor is 2 minutes extended
- The rinse cycles are the same as by easy care  
No intermediate spin
- Automatic cool down about 8L
- Final spin as in the programme easy care ( short variomatic)
- Additional options: quick, prewash, soaking, stain, extra rinse

## 4.3 The hand-laundry programme

Every piece of laundry with the sign " only suited for hand-laundry " can now be washed with the appliance.

The machine wash has an advantage regarding the hand wash.  
This proves an expert's report of the Wfk-Institute.

- ☞ less shrink
- ☞ the laundry is less felted ⇒ The surface is more even and fleecy
- ☞ less bleaching of colours
- ☞ less formation of crease



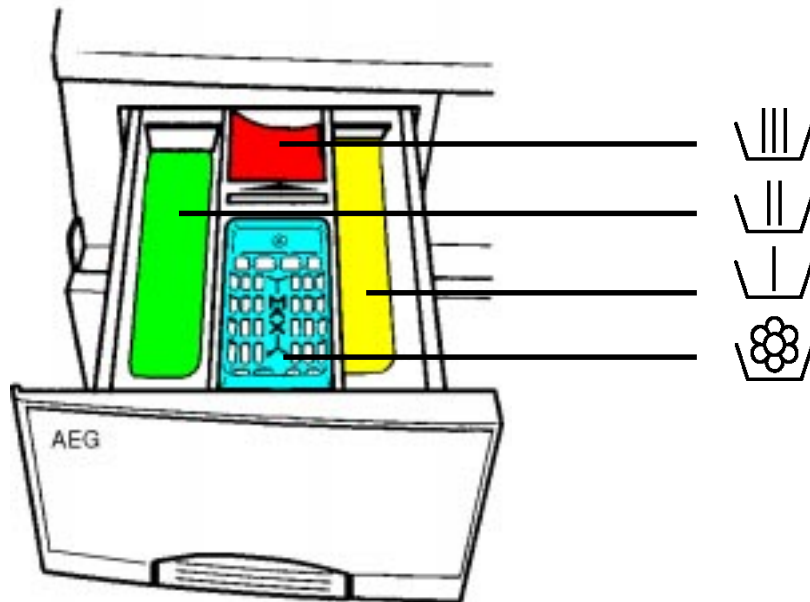
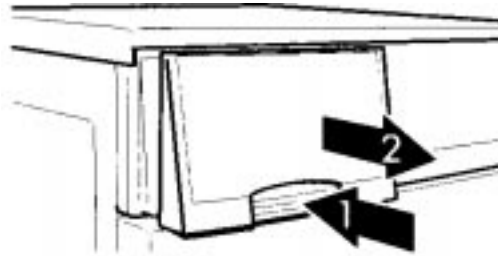


## 5. Water intake system

### 5.1 Waterdistributer + Valve

- 4 - Way Waterdistributer mechanically moved
- 3 - Valves

### 5.2 Drawer



Compartment for **prewash** powder/**soaking** powder or **water softener**

Will be taken in at the very beginning of the program

**Active valve: S1**



Compartment for the **main wash** powder.

Will be taken in at the beginning of the main wash.

If you like to use water softener and the right compartment is filled with prewash or soaking powder, add the water softener to the washing powder.

**Active valve: S2**



Compartment for the **spot** powder

The intake is delayed during the main wash.

**Active valve: S15**



Compartment for the **liquid softener** or **starching powder**

Intake at the last rinse.

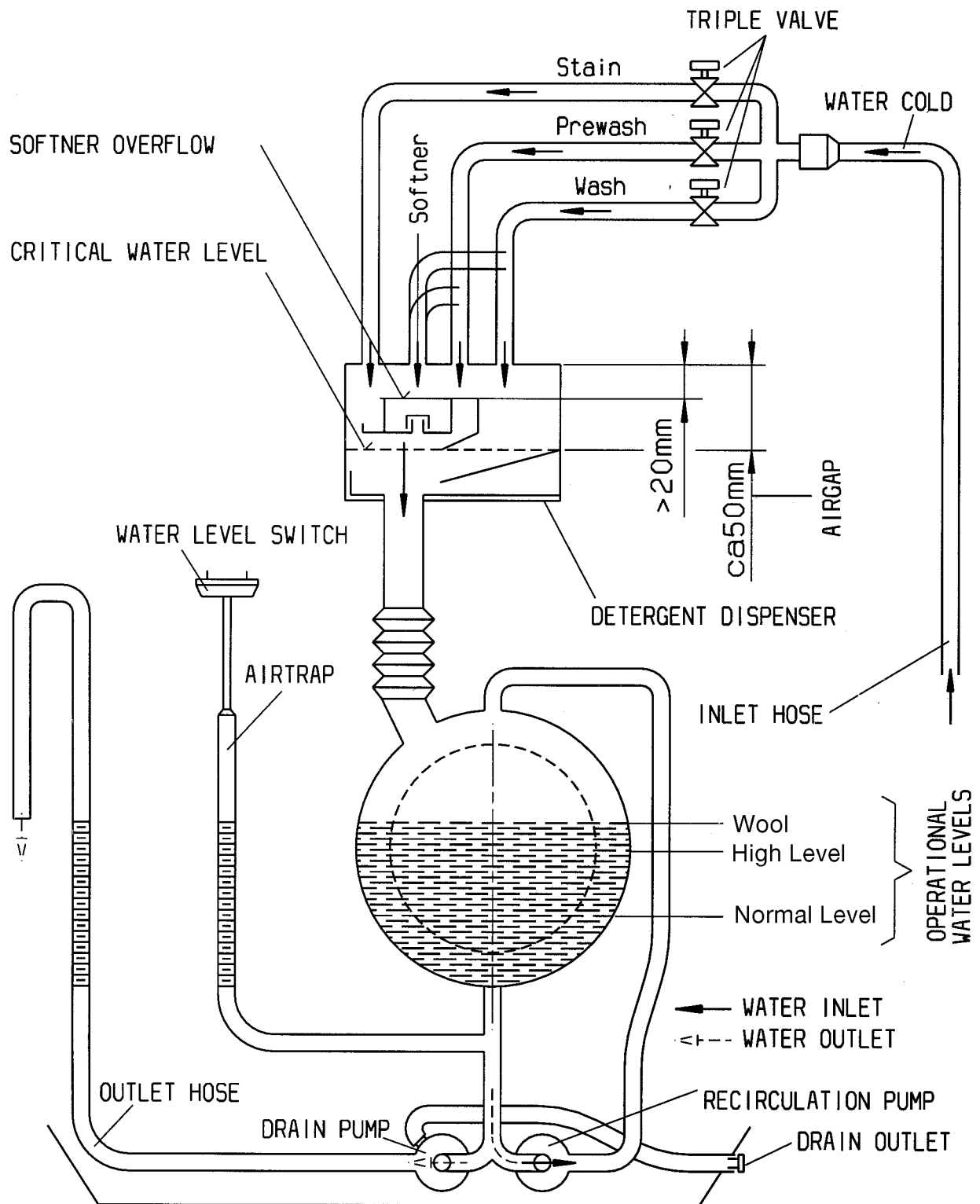
Caution: Fill the compartment to the mark maximum.

Dilute high viscosity fluids.

**Active valves: S1+S2**

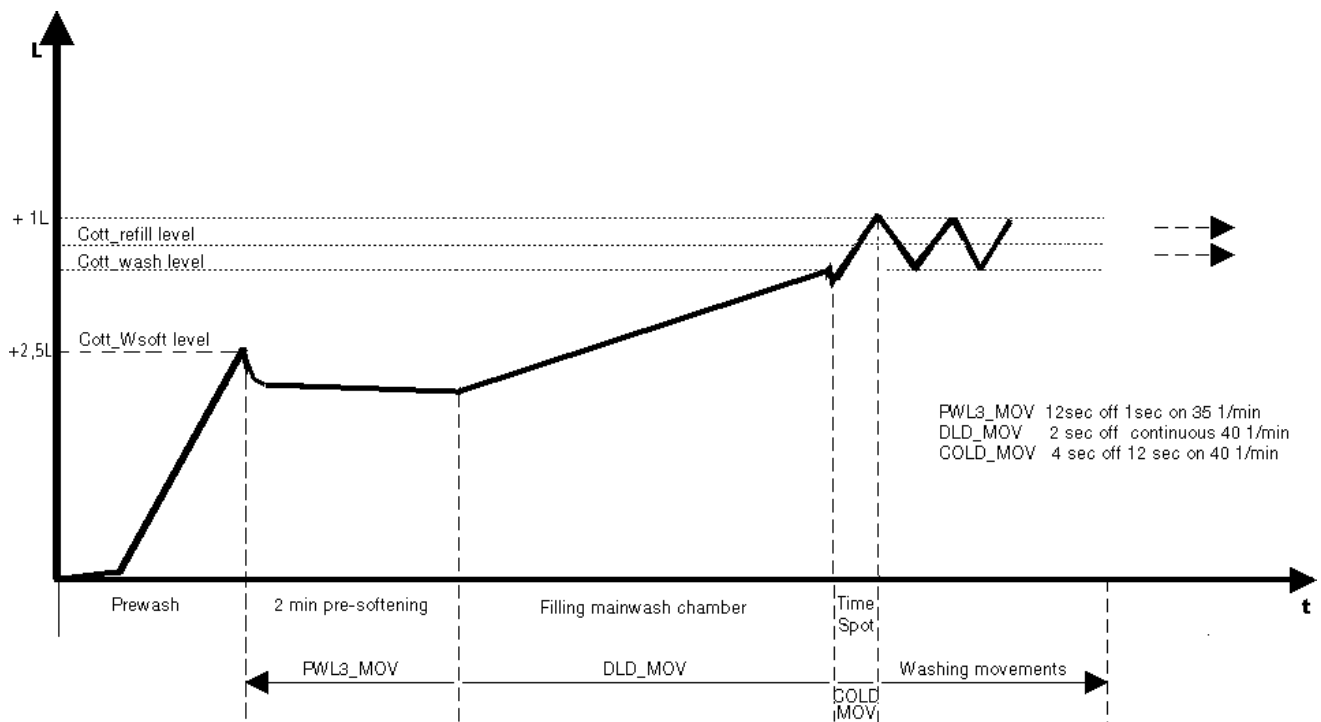
### 5.3.1 Water scheme

- 4 detergent chambers; recirculation pump and drain pump
- 4 - Way Waterdistributer mechanically moved
- 3 - Valves



## 5.3 Water intake diagrams

### 5.3.1 Water intake diagram cotton linen without any options chosen.



Waterintake depends on the kind of laundry and the soakingability!  
No Fuzzy logic measurements in this machine.

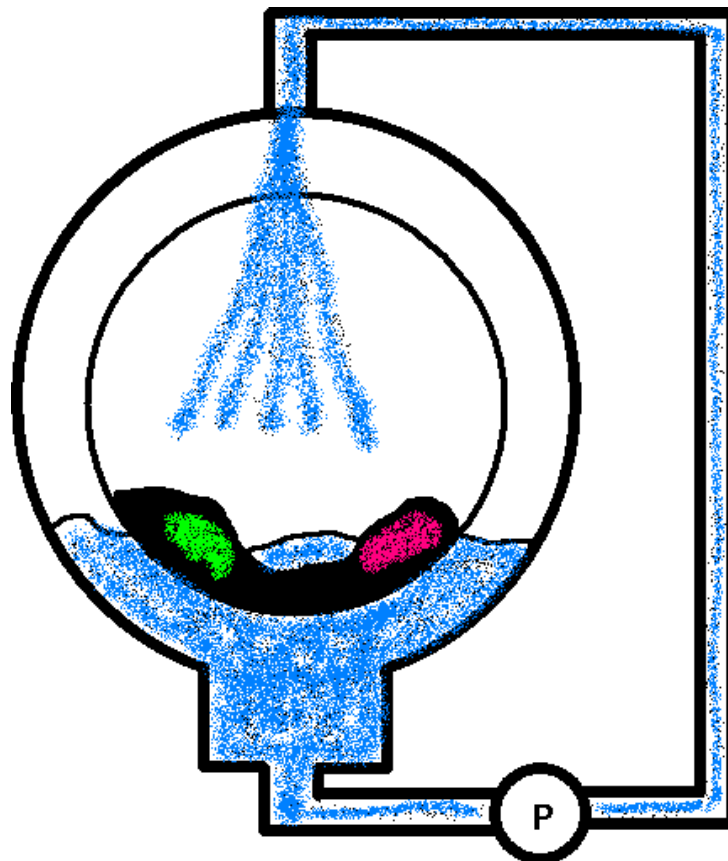
## 5.4 Definition Rinsing

### SPMFF Rinse with free water

The machine executes a maximum of 4 rinses

This rinse technology has no disadvantage, because the recirculation system guarantees the rinse result.

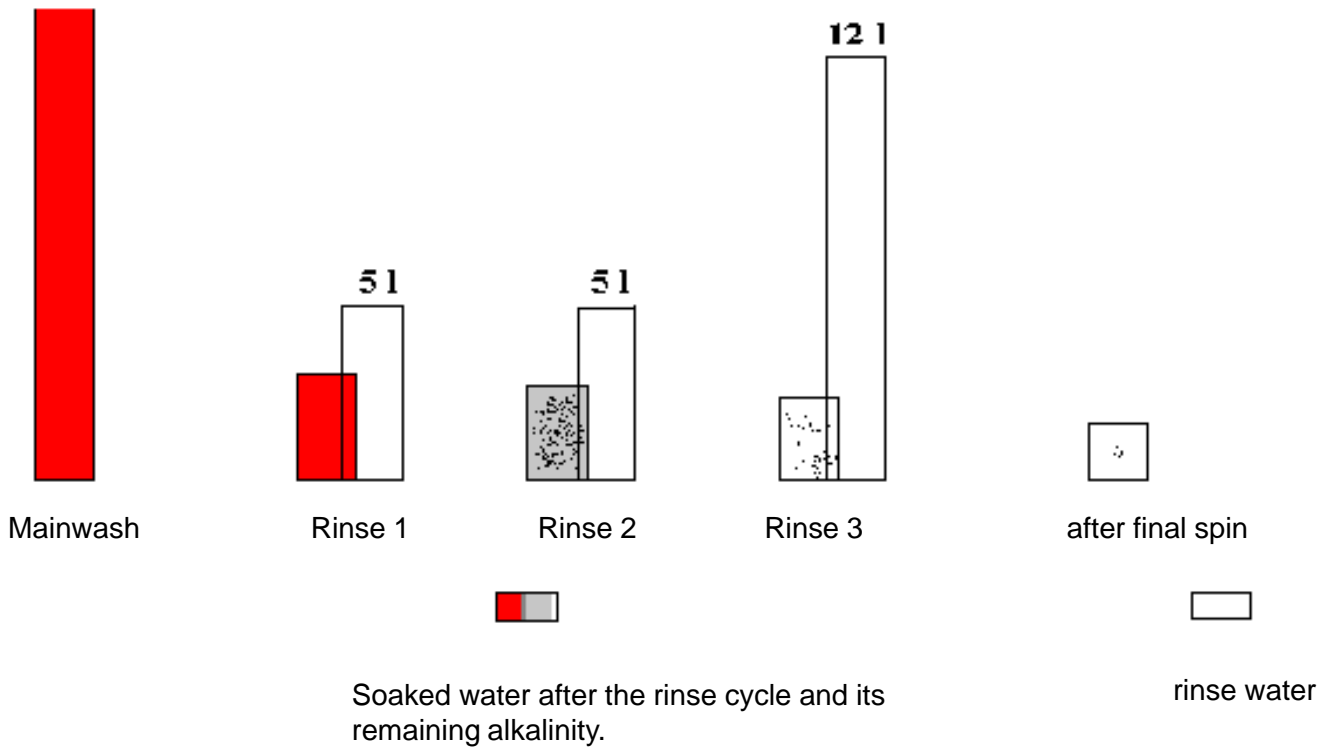
The last range of washing machines had the same amount of water and needed therefore more rinse cycles (SPOFF), because the free water couldn't be used.



## 5.4 Definition rinsing

### 5.4.1 The principle rinse technology

Gradual increasing of the water used at the rinse cycle and the intermediate spin.



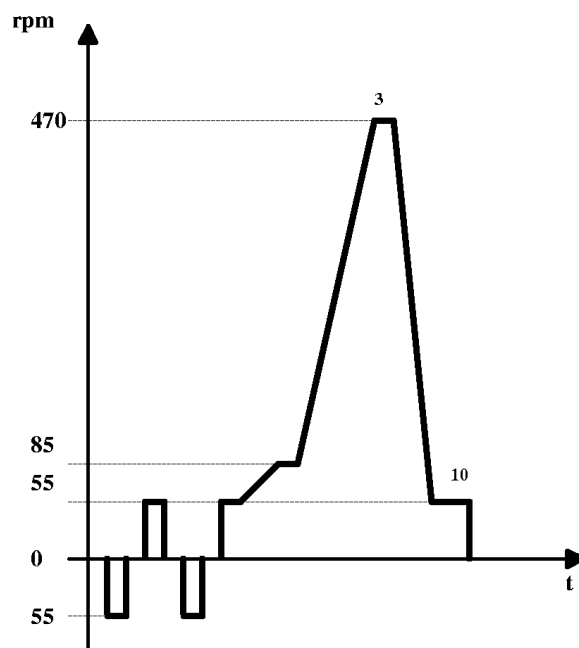
Gradual increasing the duration of the rinsing cycle.  
The saturation of the rinse water is reached.

## 5.5 First rinse

### a) Cotton / linen virtual rinse:

- ⇒ filling up to TAB\_rinse level (bleach chamber) about 9L if load 5 kg depending on pressure sensor (Soakingability and load)
- ⇒ circulation pump on
- ⇒ movement E\_MOV 3 sec off 10 sec on 55 1/min  
movement E1\_MOV 4 sec off 12 sec on 75 1/min
- ⇒ If the pressure sensor detects a level below the TAB\_rinse level, following steps are executed:
  1. Spinning with a spin speed of 470 1/min without draining
  2. Movement for a time of 5 sec in one direction 55 1/min without recirculation
  3. Movement for a time of 5 sec with recirculationThese steps can be repeated up to 5 times.

### IMP400



### b) Easy care traditionell rinse:

- ⇒ Filling up to High\_level (bleach chamber) about 12L if load 2,5 kg and recirculation pump is on. Depending on pressure sensor. (Soakingability and load)
- ⇒ movement N\_MOV 8 sec off 8 sec on 55 1/min

### c) Delicate wash traditionell rinse:

- ⇒ Filling up to High\_level (bleach chamber) about 12L if load 2,5 kg Depending on pressure sensor. (Soakingability and load)
- ⇒ Recirculation pump is off.
- ⇒ movement D\_MOV 12 sec off 4 sec on 55 1/min

### d) Wool Handlaundry:

- ⇒ Filling up to high level (bleach chamber) about 14L if load 2 kg without recirculation pump. Depending on pressure sensor. (Soakingability and load)
- ⇒ movement PWL4\_MOV 57 sec off 1 sec on 35 1/min

## 5.6 Additional rinse

### a) Cotton / linen, easy care and delicate traditionell rinse:

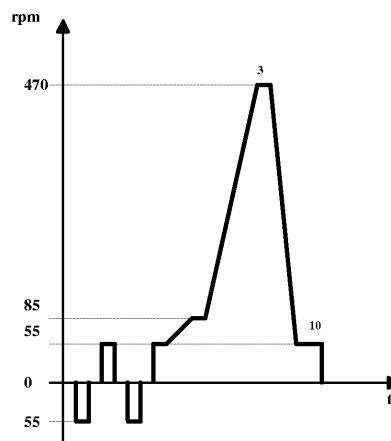
- ☞ Filling over bleaching chamber ( RII\_level) about. 13L with 5 Kg
- ☞ Movement D\_MOV 12sec off 4 sec on 55 1/min
- ☞ Without recirculation pump

## 5.7 Second rinse

### a) Cotton / linen virtual rinse:

- ⇒ filling up to TAB\_rinse level (bleach chamber) about 9L if load 5 kg depending on pressure sensor (Soakingability and load)
- ⇒ circulation pump on
- ⇒ movement E\_MOV 3 sec off 10 sec on 55 1/min
- ⇒ movement E1\_MOV 4 sec off 12 sec on 75 1/min
- ⇒ If the pressure sensor detects a level below the TAB\_rinse level, following steps are executed:
  1. Spinning with a spin speed of 470 1/min without draining
  2. Movement for a time of 5 sec in one direction 55 1/min without recirculation
  3. Movement for a time of 5 sec with recirculationThese steps can be repeated up to 5 times.

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- ⇒ Filling up to High\_level (bleach chamber) about 12L if load 2,5 kg Depending on pressure sensor. (Soakingability and load)
- ⇒ Recirculation pump is off.
- ⇒ movement D\_MOV 12 sec off 4 sec on 55 1/min

### d) Wool Handlaundry:

- ⇒ Filling up to high level (bleach chamber) about 14L if load 2 kg without recirculation pump. Depending on pressure sensor. (Soakingability and load)
- ⇒ movement PWL4\_MOV 57 sec off 1 sec on 35 1/min

## 5.8 Softening rinse

### a) Cotton / linen traditionell rinse:

- ☞ Filling over softener chamber ( RII\_level) about 13L if load 5 Kg  
Depending on pressure sensor. (Soakingability and load)
- ☞ Movement N\_MOV 8sec off 8 sec on 55 1/min
- ☞ Without recirculation pump

### b) Easy care traditionell rinse:

- ⇒ Filling up to High\_level (softener chamber) about 12L if load 2,5 kg  
and recirculation pump is on. Depending on pressure sensor (Soakingability and load).
- ⇒ movement N\_MOV 8 sec off 8 sec on 55 1/min

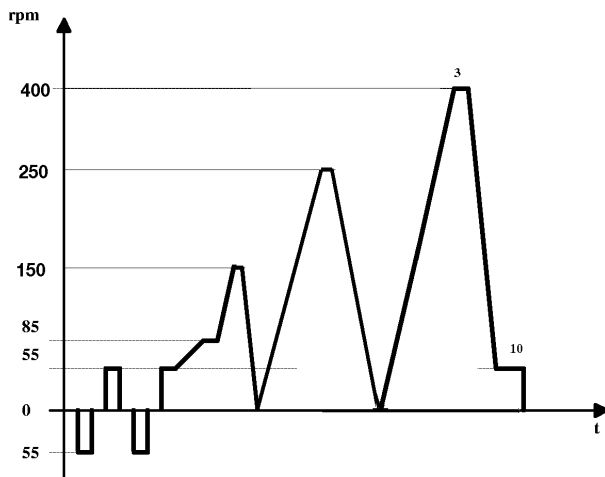
### c) Delicate wash traditionell rinse:

- ⇒ Filling up to High\_level (bleach chamber) about 12L if load 2,5 kg  
Depending on pressure sensor (Soakingability and load).
- ⇒ Recirculation pump is off.
- ⇒ movement D\_MOV 12 sec off 4 sec on 55 1/min

### c) Wool Handlaundry:

- ⇒ Filling up to high level (softener chamber) max. 14L if load 2 kg  
with recirculation pump on. Depending on pressure sensor (Soakingability and load).
- ⇒ movement PWL4\_MOV 57 sec off 1 sec on 35 1/min

## 5.9 Foam detection and anti foam phase



The anti foam phase depends on the temperature of the chosen program.  
The movement is executed after the mainwash.  
At the programmes cotton linen and easy care:.

### a) Temperature < 45°C

- ☞ Complete movement

### b) Temperature > 45°C

- ☞ Movement without reversing

Pressure sensor does the foam detection.  
The spinning cycle will be interrupted.

## 6. Cool down

Cool down is depending on temperature and chosen program.

### a) Cotton / linen

- ☞ Filling about 3 L if temperature > 67°C

### b) Easy care and easy iron

- ☞ Filling about 8 L generally in that program

### c) Delicate wash and wool

- ☞ General without cool down



## 7. Aqua Control System

### 7.1 General construction

- Safty hose with a „normal“ pressure hose inside, without integrated electrical connection between the machine and the water tab valve.
- Hose system is all around closed and watertight
- At the water tab is a „mechanic“ safty valve without electric connection
- The hose is connected at the water inlet valve
- In case of a fault, that means the inner hose is leaking, a sponge as a part of the mechanic safty valve expands and closes the valve at the water tab.
- The water inlet valve with a flow regulator is positioned in the machine.
- There is no need for for special AC water distributer or valves.

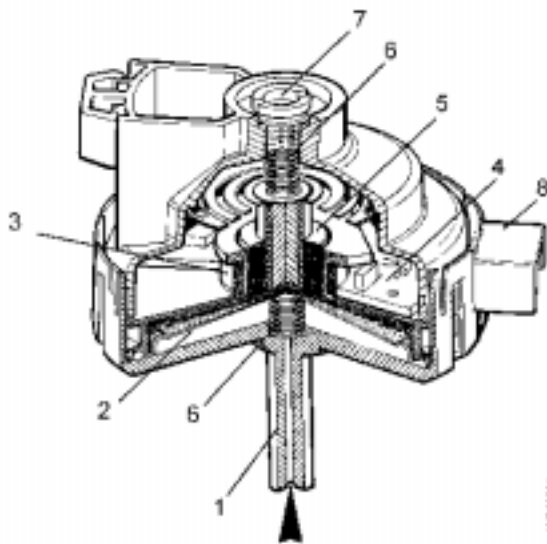


### 7.2 Floating switch

#### **Floating switch f16 with 2 alternating contacts:**

- ☞ Switches on the pump - The Pump has direct voltage.
- ☞ Electronic regognizes the opened pump contact and therefore the AC- case.
- ☞ The fault code „**EF0**“ is shown.
- ☞ At this position the programe stops.
- ☞ If the floatng switch switches back, the machine stops pumping.  
If you switch off the machine and start it again, the programe will start from the beginning.

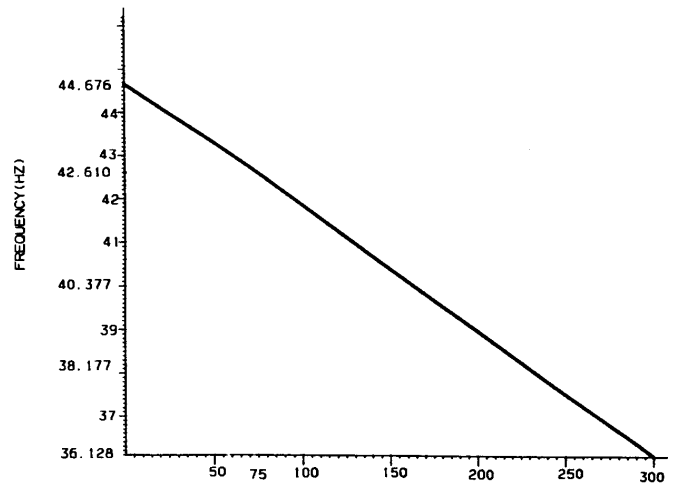
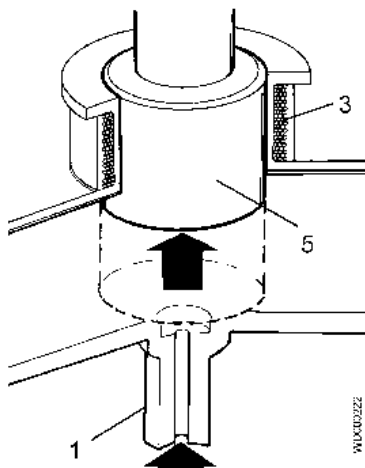
## 8. The pressure sensor



- 1 Air inlet
- 2 Membrane
- 3 Coil
- 4 Oscillator ( Elektronik )
- 5 Magnetic ring
- 6 Spring
- 7 Screw to adjust
- 8 Connector

### 8.1 Function of the analog sensor

- 1 Over the air inlet the water pressure moves the membrane.
- 2 The membrane moves the magnetic ring (5) into the coil (3). Then the oscillator puts an other frequency on the main electronic. The water level is recognized.



PRESSURE (mm H<sub>2</sub>O)

PRESSURE (mm H <sub>2</sub> O)	FREQUENCY (Hz)
0	44.676
75	42.610
300	36.128

## 9. Automatic foot

The automatic foot is a kind of shock absorber.  
The machine stands on three fixed points ( The usual adjustable feet ).  
The adjustable range of the automatic foot is about 11 mm.

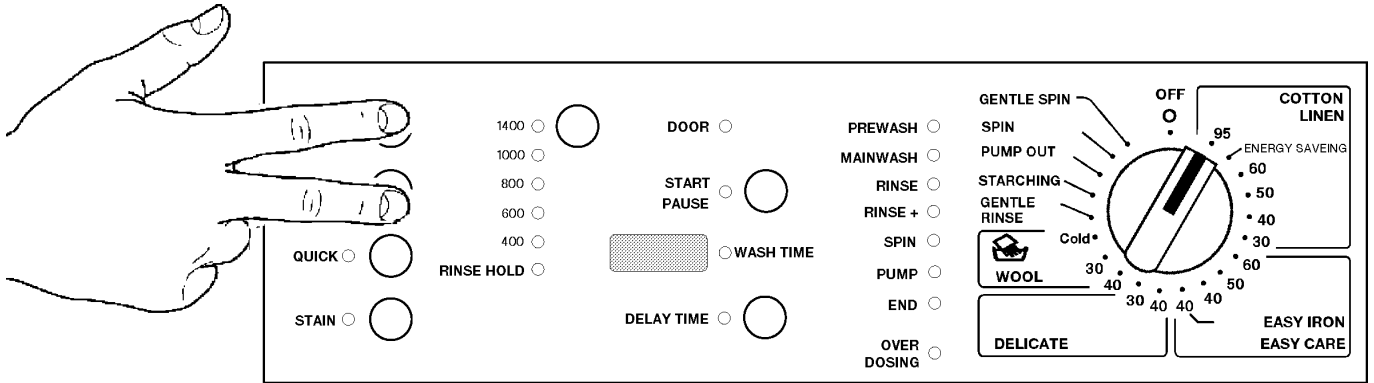
- It is not necessary to adjust the feet anymore.
- The machine allways stands nicely.



# 10. Service - Program

## 10.1 Activate Service - Program

- ⇒ Switch the machine off.
- ⇒ Keep the prewash and soaking button depressed and turn the rotary switch to the position cotton linen 95°C.
- ⇒ Keep the prewash and soaking button depressed until the LED's are illuminated.



Position of the rotary switch		Button	Test function
Off	Off		Off
01	Cotton linen 95°C	Prewash Soaking	<b>❶ Start of the customer service test program</b> <b>❷ LED - Test</b> - LEDs are step by step illuminated. - If you press a button the according LED is on, and the according binary code is shown in the display
20	Delicate spin		Activates the configuration program
19	Spin		Shows the fault code (Display + program duration LEDs)
02	Energy saving		<b>Water channel mainwash</b> Water intake up to safety level fS Time max. 10 min Valve mainwash
03	Cotton linen 60°C		<b>Water channel prewash</b> Water intake up to safety level fS Time max. 10 min Valve prewash
04	Cotton linen 50°C		<b>Water channel softener</b> Water intake up to safety level fS Time max. 10 min Valve mainwash and Prewash
05	Cotton linen 40°C		<b>Water channel spots</b> Water intake up to safety level fS Time max. 10 min Valve spots or hotwater
06	Cotton linen 30°C		<b>Heating and circulation pump</b> Heating up to 90°C Time max. 10 min Water intake over mainwash chamber
07	Easy care 60°C		<b>Tub leakage test</b> Water intake over mainwash chamber up to 150 mm Motor rotation 250 1/min
08	Easy care 50°C		<b>Draining and spinning</b> Draining Spinning up to maximum spin speed, if level < fSch

Water level in mm shown in the display

Temperature in °C shown in the display

Drum speed shown in the display; x 10

### Clear the fault memory

- ⇒ To clear the fault memory access the configuration program.  
Press the „prewash“ and the „soaking“ button at the same time until the LED's are blinking.

# 10. Service - Programm

## 10.2 Fault indication in the multidisplay.

Fault code		Type of fault	Program knob Position	Remedy	Alarm Code	
Customer	Register					
E10	E11	Water tap closed Valve does not open / interruption Valve flow rate to low Air trap system leaking	Energy saving Cotton linen 60°C Cotton linen 40°C Cotton linen 30°C	Open tap Change the valve Clean filter Replace air trap	0	S
	E20	E21	Pump blocked / not working Pump interrupted Reduced pump output rate Pressure sensor defect Pressure switch defect	Easy care 50°C Remove foreign object Replace pump Check draining system Replace pressure sensor Replace pressure switch	0	S
	E31	Pressure sensor defect Frequency of the pressure sensor out of limit Cable interrupted	Easy care 50°C Easy care 50°C	Replace pressure sensor Replace cable	1	A
	E32	Calibration problems pressure sensor After initial calibration the waterlevel not in between 0 - 66mm and antiboil level off		Open tap Change the valve Clean filter Replace air trap Replace pressure sensor	0	S
	E33	Incongruence between pressure sensor and antiboil level 1 Fault has to be for a time longer than 60 sec.		Replace pressure sensor Replace cable Replace air trap	1	A
	E34	Incongruence between pressure sensor and antiboil level 2 Fault has to be for a time longer than 60 sec.		Replace pressure sensor Replace cable Replace air trap	1	A
	E35	Safety level (Pressure sensor) Level has to be 300mm for For a time of more than 15 sec Drain pump will be activated Until level is below 120 mm	Easy care 50°C Easy care 60°C	Replace pressure sensor Replace cable Replace air trap	1	A
	E36	Antiboil 1 sensing failure 1 Input voltage allways 0V		Change mainelectronic	1	A
	E37	Antiboil 2 sensing failure Input voltage allways 0V or 5V		Change mainelectronic	1	A
	E38	Airtrap blocked No pressure differences detected		Change airtrap Clean airtrap	1	A
E40	E41	Door lock defective Cable defective		Replace doorlock Replace cable	0	S
	E42	Door lock defective Door is unlocked during the cycle Tout 15 sec Door is not unlocking at the end of cycle Tout 3 min		Replace doorlock Replace cable	0	S
	E43	Door lock triac defective		Replace cable Change mainelectronic	0	S
	E44	Door lock sensing failure Inputvoltage allways 0V or 5V		Change mainelectronic	1	A
	E45	Door lock triac sensing failure Inputvoltage allways 0V or 5V		Change mainelectronic	1	A
	E51	Motortriac short circuit Motor cable short circuit	Easy care 50°C	Change mainelectronic Replace cable	1	A
	E52	No signal from tachogenerator Motor blocked Motor cable defective	Easy care 50°C	Replace tachognerator Replace motor Replace cable	1	A
	E53	Motor triac sensing failure Input voltage allways 0V or 5V		Change mainelectronic	1	A
	E54	Motor relay defect		Change mainelectronic	1	A
	E55	Motor circuit interrupted		Change motor Change cable	1	A

# 10. Service - Programm

## 10.2 Fault indication in the multidisplay.

Fault code		Type of fault	Program knob Position	Remedy	Alarm Code	
Customer	Register					
	<b>E61</b>	Insufficient heating Maximum heating time expired NTC defective Heating element defective Connection heating element interrupted	Cotton linen 30°C	Replace NTC Replace heating element Replace cable	<b>3</b>	
	<b>E62</b>	<b>Overheating:</b> - Temperature greater 88°C for a time longer than 5 min - NTC defective - Cable defective		Replace NTC Replace heating element Replace cable	<b>2</b>	<b>A</b>
	<b>E66</b>	Heating relay defective Incongruence between antiboil 2 and relay	Cotton linen 30°C	Replace pressure switch Replace cable	<b>2</b>	<b>A</b>
	<b>E71</b>	NTC short circuit NTC interruption		Replace NTC	<b>3</b>	<b>S</b>
	<b>E84</b>	Recirculation pump sensing failure. Input voltage allways 0V or 5V		Replace mainelectronic	<b>1</b>	<b>A</b>
	<b>E85</b>	Recirculation pump defective Triac defective		Replace recirculation pump Replace mainelectronic	<b>2</b>	<b>A</b>
<b>E90</b>	<b>E91</b>	Interrupted communication between In/Output electronic and mainelectronic		Replace cable Replace mainelectronic Replace In/Output electronic		
	<b>E92</b>	Incongruence between In/Output electronic and mainelectronic		In/Output electronic is incompatible with mainelectronic		
	<b>E93</b>	Configuration error		Wrong configuration of the machine	<b>1</b>	<b>A</b>
	<b>E94</b>	Loss of cycle datas		Replace mainelectronic	<b>1</b>	<b>A</b>
<b>EFO</b>	<b>EF2</b>	Overdosage		Advise the customer to use less detergent.	<b>4</b>	<b>S</b>
	<b>EF3</b>	Aqua Control system activated Drain pump cable defective Drain pump interruption Floating swirch defective Isolation resistance of heating element to small < 70kΩ		Leakage in the machine Replace cable Replace drain pump Replace floating switch Change heating element	<b>2</b>	<b>A</b>

Composition alarm codes			
Alarm state		Reactivate the machine with	
<b>0</b>	Program cycle interrupted.	<b>S</b>	Start Button
<b>1</b>	Program cycle interrupted. Door locked	<b>A</b>	Off / On
<b>2</b>	Program cycle stopped. Drain pump is activated.		
<b>3</b>	Heating step is skipped		
<b>4</b>	Program continues Only shown in fault memory		

# 10. Service - Programm

## 10.2 Fault indication in the multidisplay.

⇒ Machines without multidisplay show the faultcodes with the program cycle LED's.  
In this case you have to take care about the values of the single LED's.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Value LED's					
																A	B	C	D	E	F	
Prewash	○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●	8					
Mainwash	○	○	○	○	●	●	●	●	○	○	○	○	●	●	●	●	4					
Rinse	○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●	2					
Rinse +	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	1					
<b>Value LED's</b>																						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Value LED's					
																A	B	C	D	E	F	
Spin	○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●	8					
Pump	○	○	○	○	●	●	●	●	○	○	○	○	●	●	●	●	4					
End	○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●	2					
Overdosage	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	1					

○ LED Off  
● LED On

⇒ If fault E40 is shown the LED mainwash will be blinking.

⇒ If faultcode E93 is shown, **Prewash, Rinse+, End** und **Overdosage** blinks.

The faultcode contents following values:

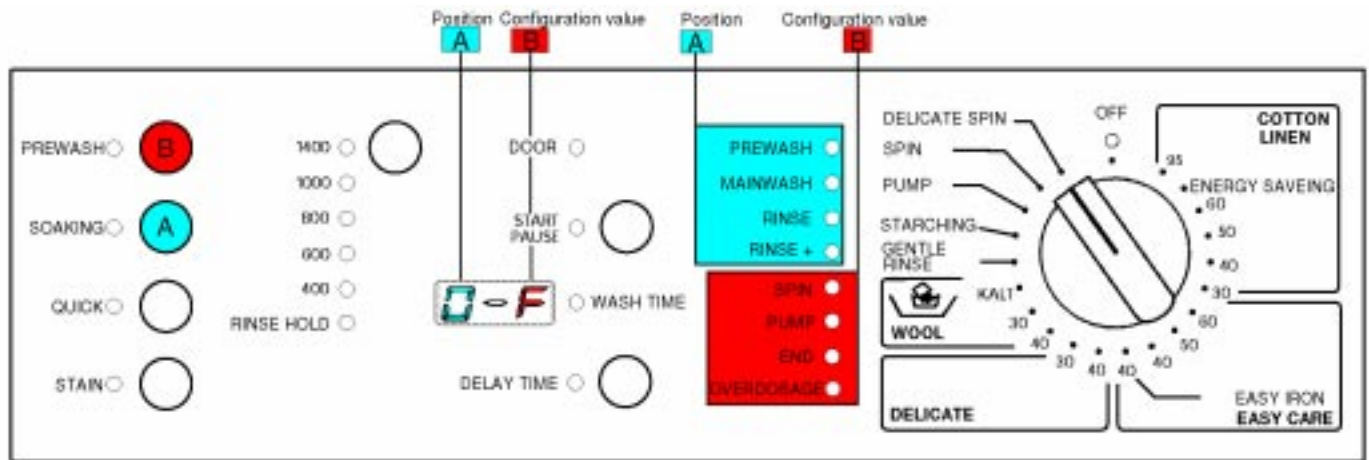
LED	Value
Prewash	8
Rinse+	1
<b>Total</b>	<b>9</b>
End	2
Overdosage	1
<b>Total</b>	<b>3</b>

☞ **Now you are able to figure out the faultcodes in the previous tables.**

# 10. Service - Programm

## 10.3 The configuration - Program

1. Activate service - program
2. Turn the rotary switch clockwise to the position delicate spin.



If the main electronic has to be changed you have to configure the spare part electronic. A code with 16 digits has to be stored. This code sets the variante of the machine.

**Caution:** Don't use the LED's to configure if there is a multidisplay, because this variante has 7 LED's. Appliances without multidisplay have 8 LED's, which you then have to use to configure the electronic board.

- A** = The first digit of the display (if present), or the first 4 program duration LED's show the binary code of the position in which the value has to be stored. **To check the several positions press the option button „Soaking“.**
- B** = The last digit of the display (if present), or the last 4 program duration LED's show the configuration digit as binary code which has to be stored in the according position. **To change the value press the „prewash“ button.**

### Store the configuration code:

After the input of the configuration code, you have to store it in the memory. Press the „prewash“ and the „soaking“ button at the same time until the LED's are blinking.

### Binary codes:

With this table you are able to convert the binary code, shown by the LED's, into the according number.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
										A	B	C	D	E	F
○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●
○	○	○	○	●	●	●	●	○	○	○	○	●	●	●	●
○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●
○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●

- LED off
- LED on

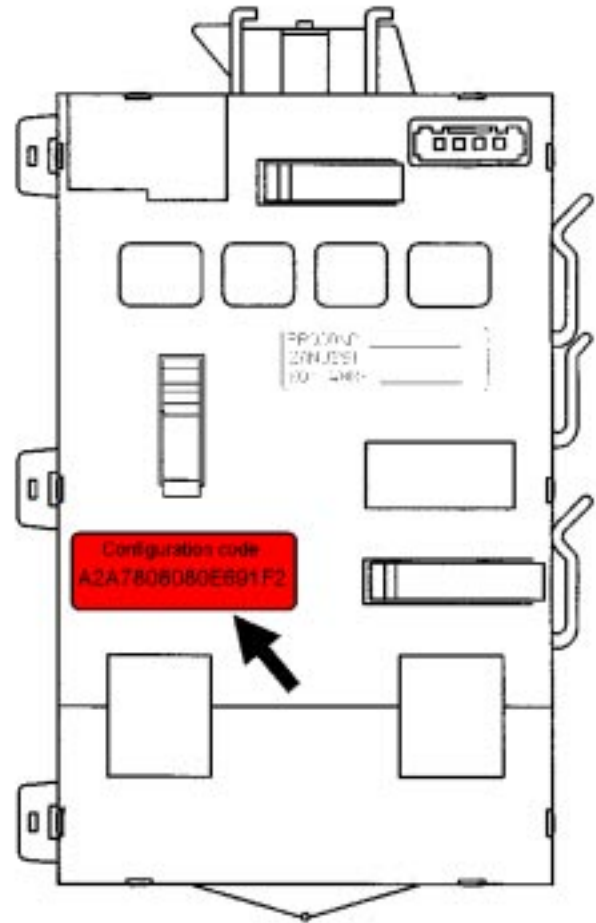
# 10. Service - Programm

## 10.3 The configuration program

### Configuration code:

You can find the configuration code on a sticker, which is located on the electronic housing. Also in the spare part list the code is shown.

It is very important to remark this code on the new electronic housing.



### Reading the configuration code:

Examble

Code: A2A7808080E691F2

### Table of the illuminated LED's:

Position: ⇒

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
										A	B	C	D	E	F
○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●
○	○	○	○	●	●	●	●	○	○	○	○	●	●	●	●
○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●
○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●
●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○
○	○	○	●	○	○	○	○	○	○	●	●	○	○	●	●
○	○	○	○	○	○	○	○	○	○	○	○	●	●	●	○

configurationscode: ⇒

A	2	A	7	8	0	8	0	8	0	E	6	9	1	F	2
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

○ LED off

● LED on

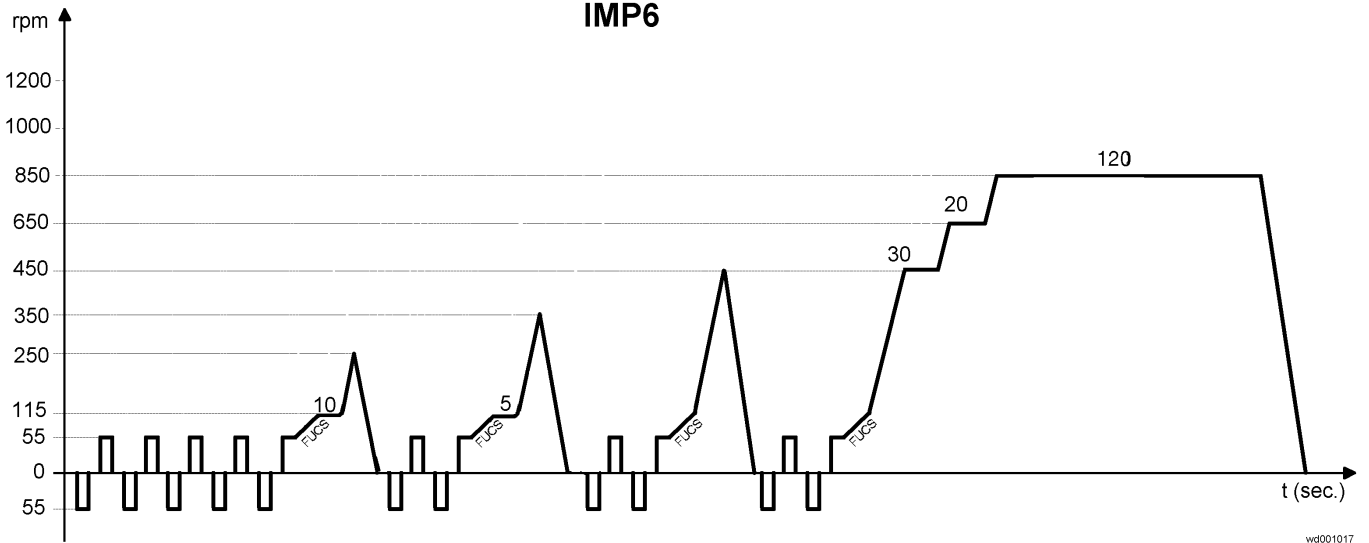


# 11. Spinning profiles

## 11.1 For the program cotton linen

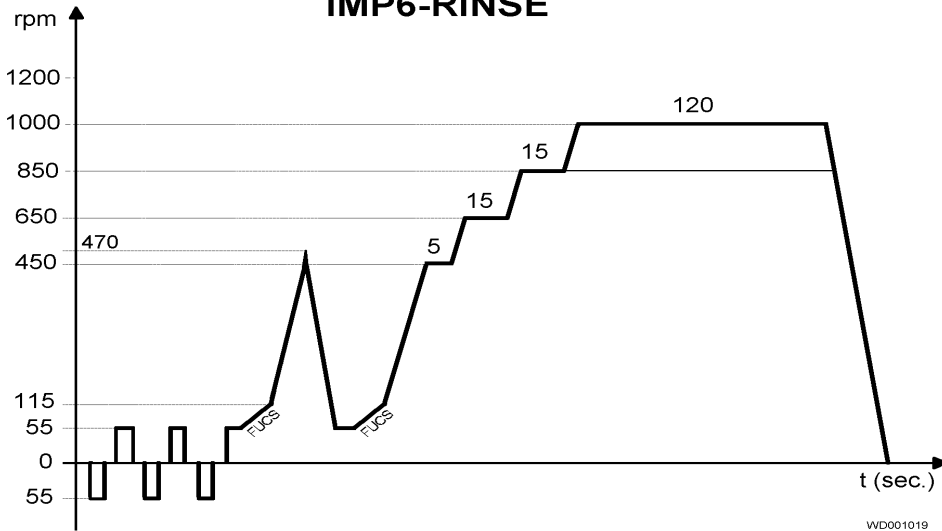
### 1. Intermediate spin

#### IMP6



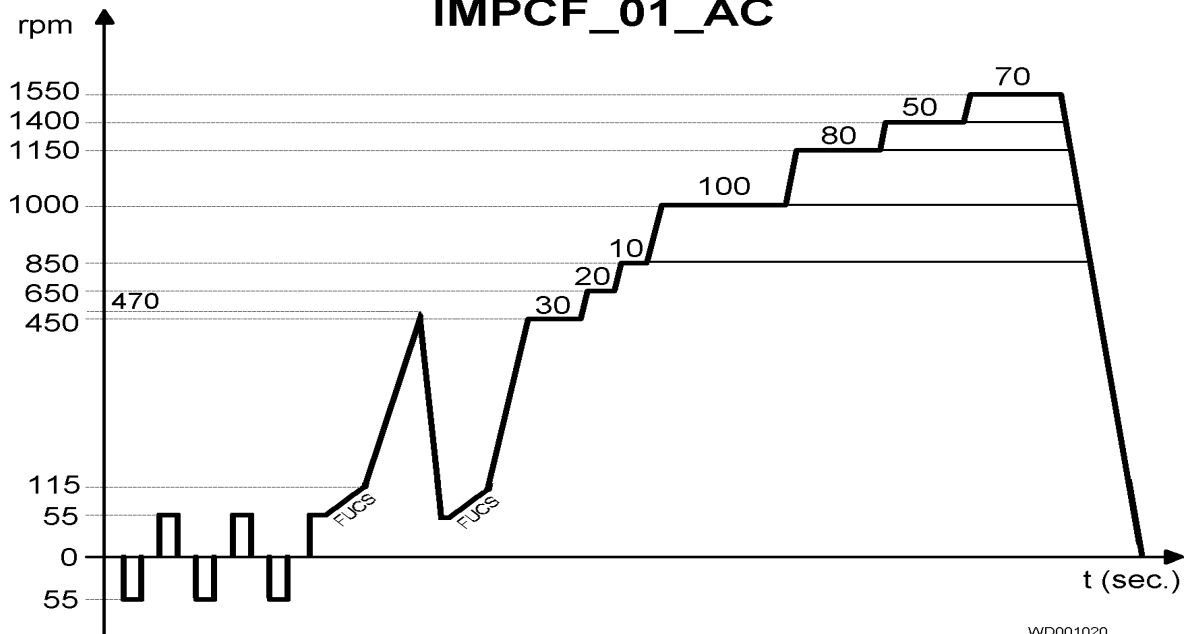
### 2. und 3. Intermediate spin

#### IMP6-RINSE



### Final spin

#### IMPCF\_01\_AC

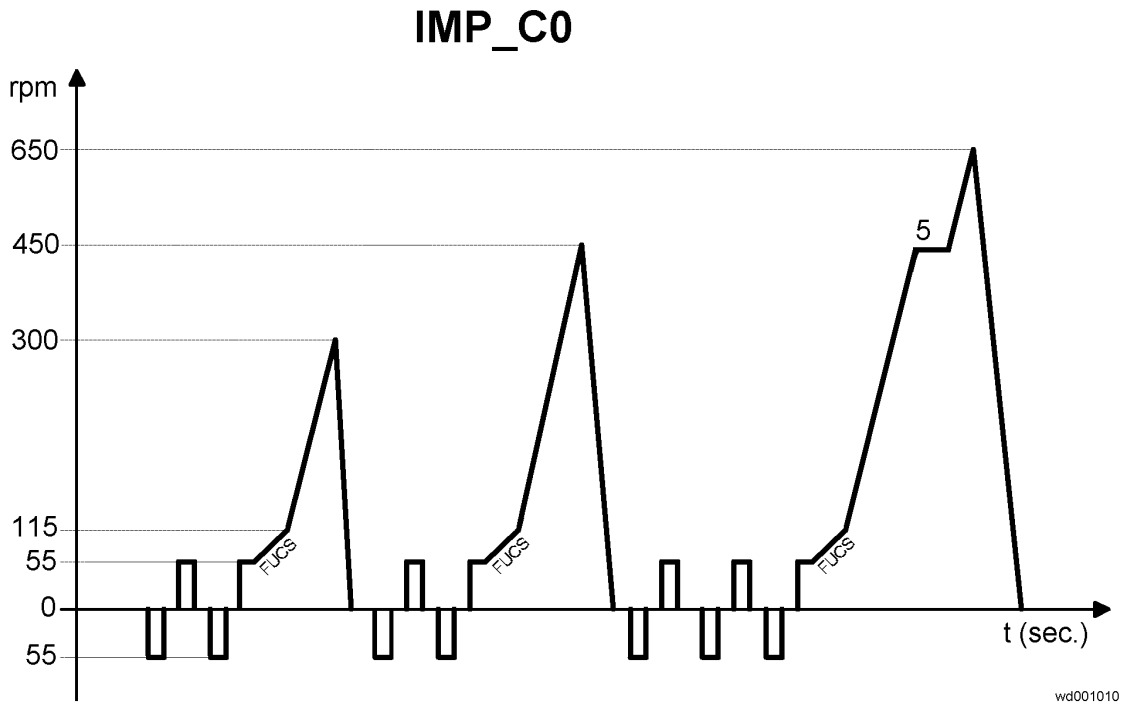


# 11. Spinning profiles

## 11.2 For the program easy care

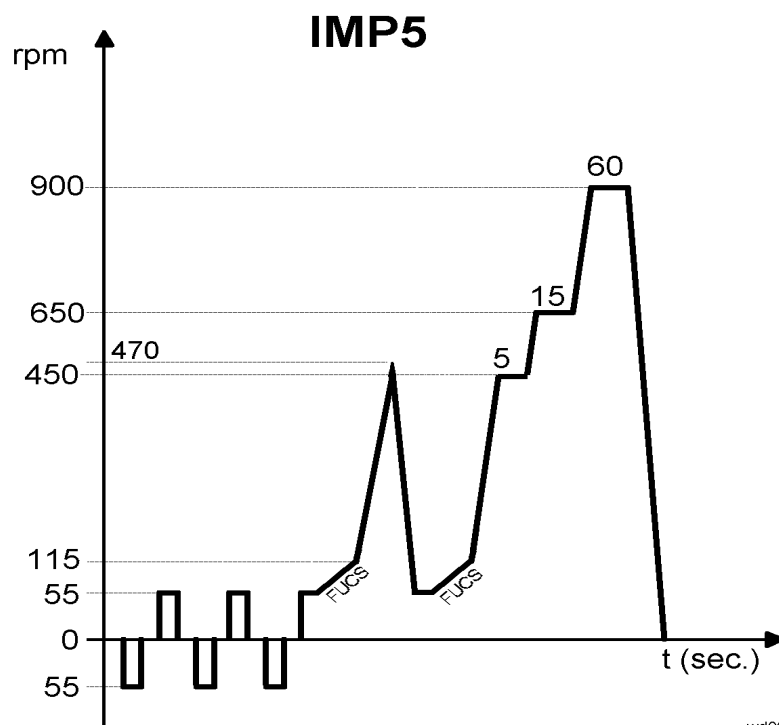
1. Intermediste spin is not excecuted

2. Intermediate spin



3. Intermediate is not excecuted

The final spin



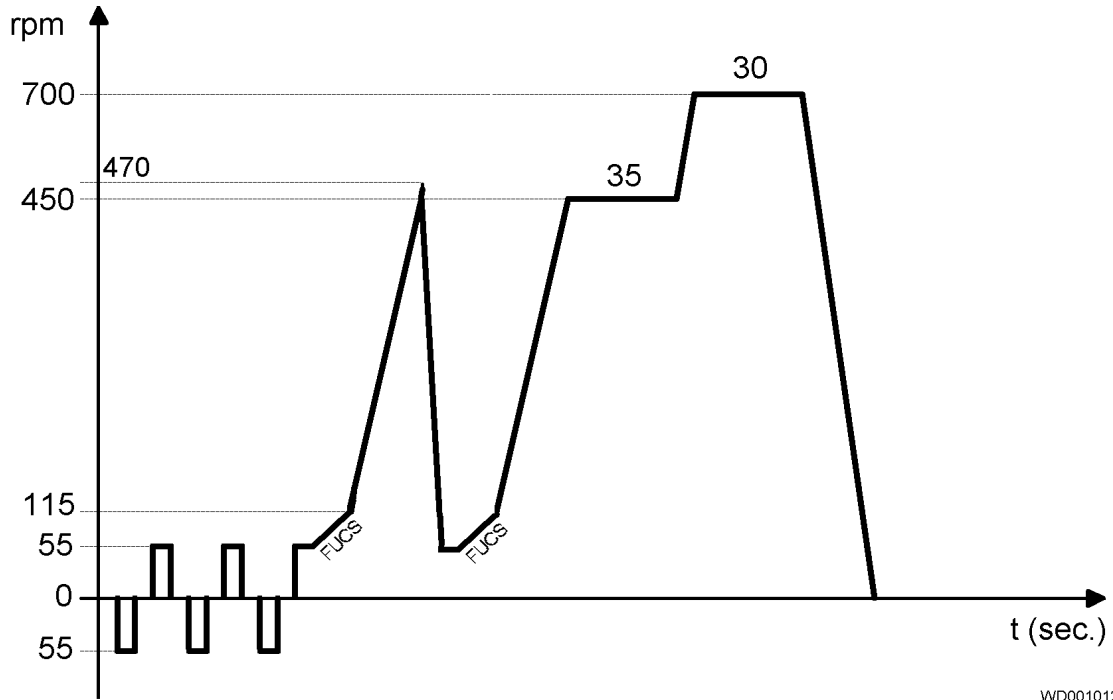
# 11. Spinning profiles

## 11.3 For the program delicate wash

No intermediate spins are executed!

The final spin

### IMP7

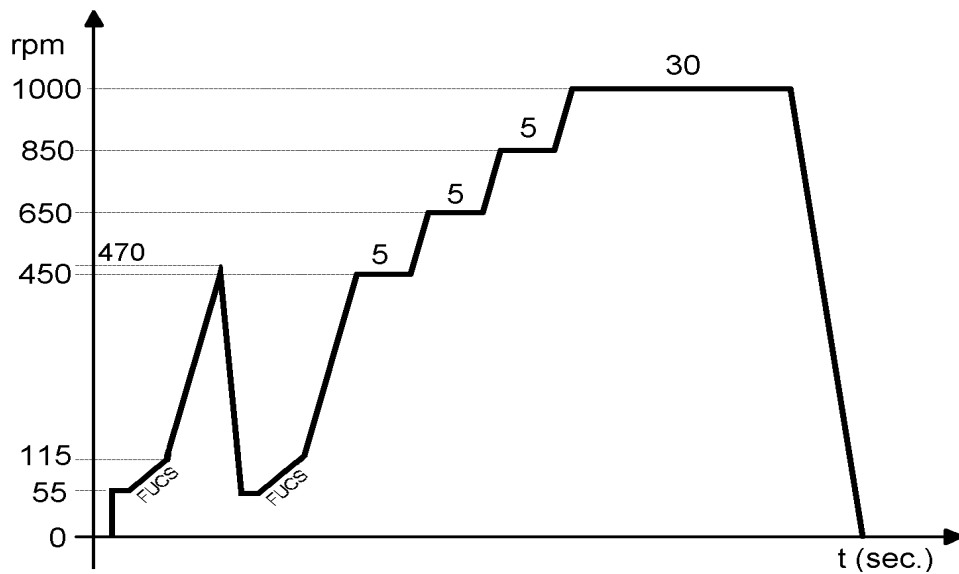


## 11.4 For the Handlaundry program

No intermediate spins are executed!

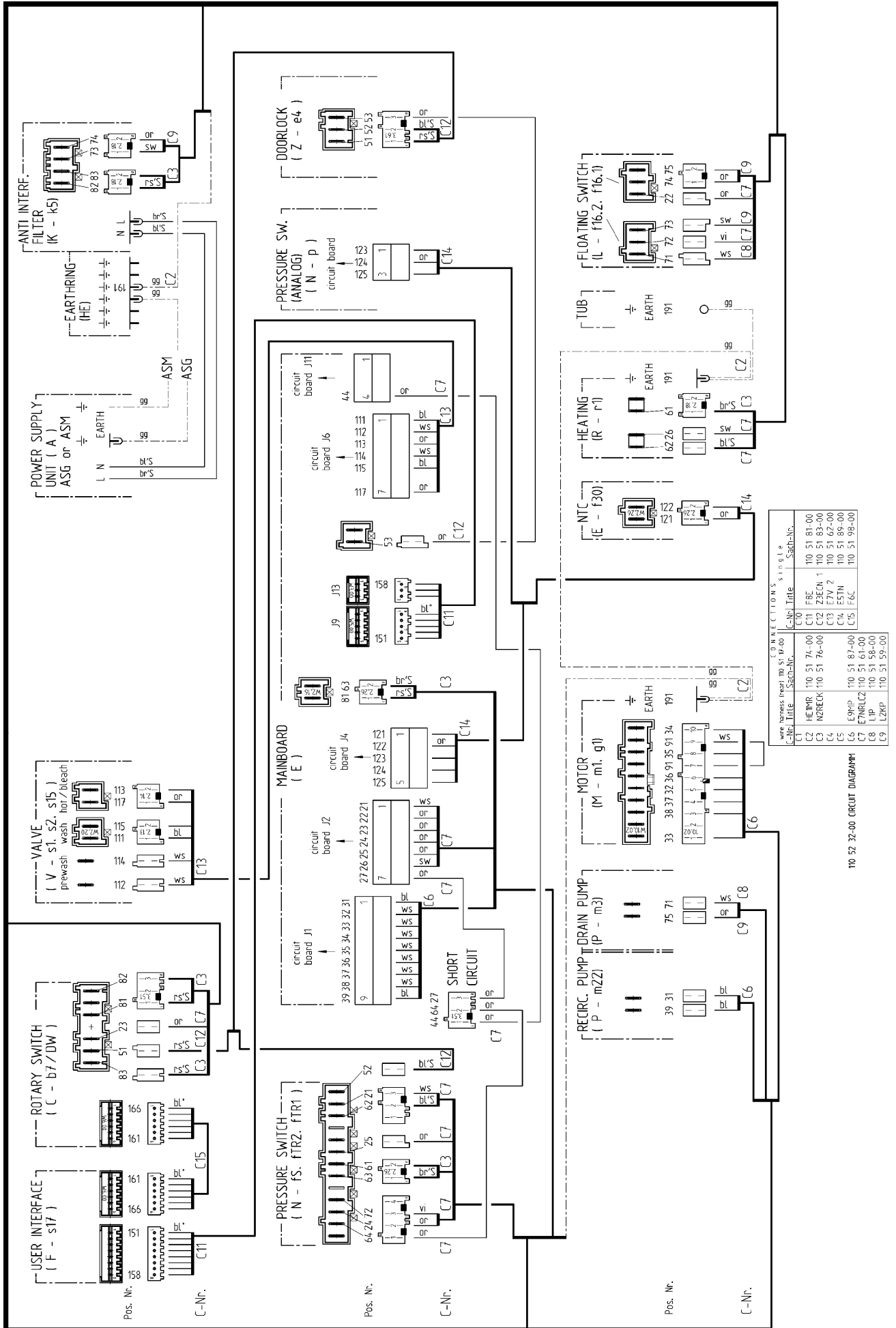
The final spin

### IMP4



# 12. Technic

## 12.1 Wiring plan

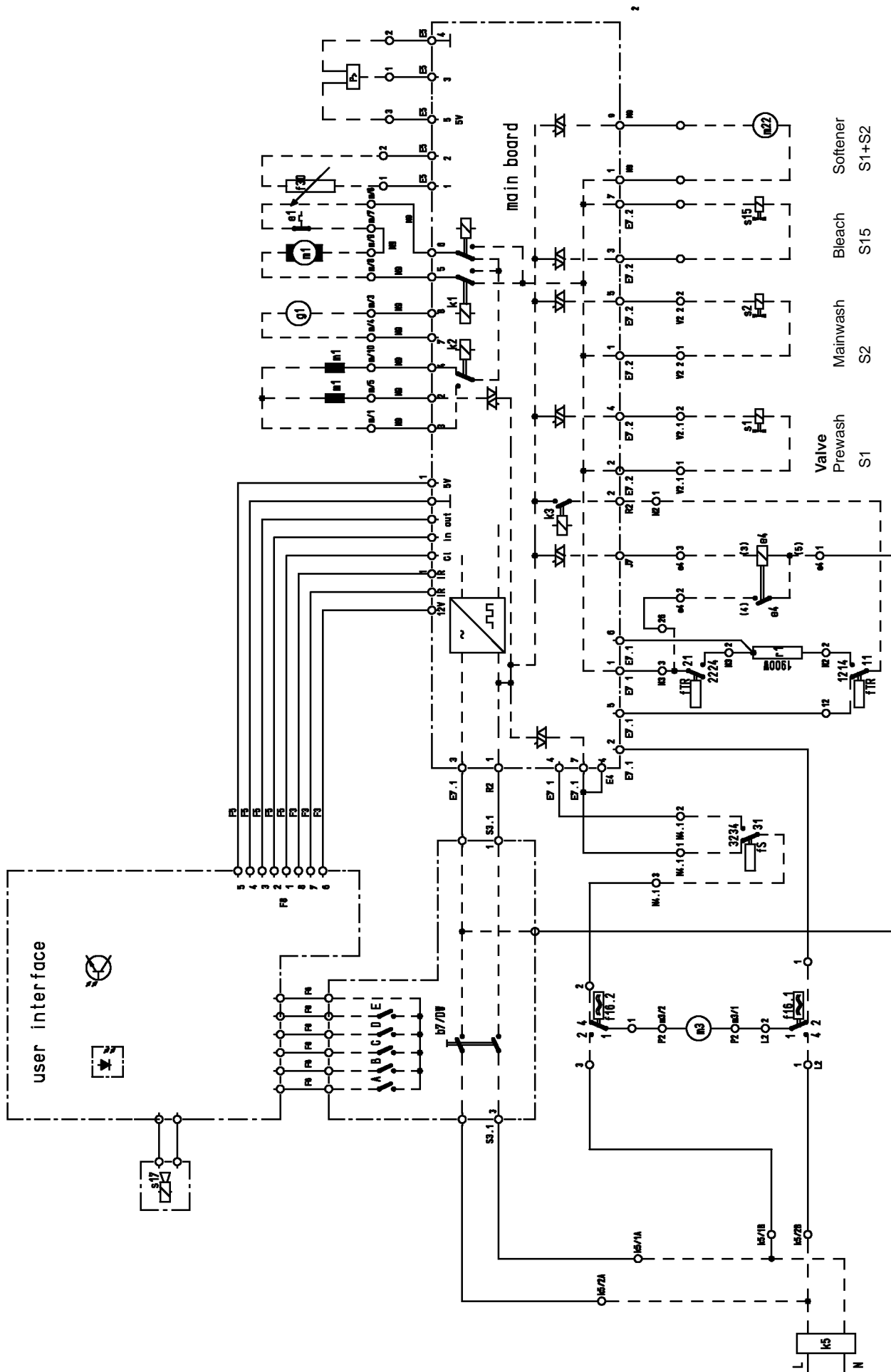


see pages 100 to 101 of 100

C-Nr.	Title	Sub-Nr.
C1	HEIMR	110 51 81-00
C2	N2RECK	110 51 83-00
C3	Z3ECH 1	110 51 62-00
C4	E7V 2	110 51 62-00
C5	E5TN	110 51 89-00
C6	E9HP	110 51 87-00
C7	E7NRLC2	110 51 61-00
C8	L1P	110 51 58-00
C9	L2KP	110 51 59-00

110 52 32-00 CIRCUIT DIAGRAM

## 12.2 Circuit diagram



## 12.3 Legend

### Legende der Steuerung

Legend for the wiring plan

Légende pour Schéma des interconnexions

Kurzzeichen Short name	Bezeichnung Description	Bez. im Stromlaufplan Description in the wiring plan
A	<b>Anschlußgehäuse</b> connection housing Boîtier de raccordement	
C	<b>Drehwahlschalter</b> Selection switch Sélecteur rotatif	b7/DW
E	<b>NTC - Fühler</b> NTC sensor Senseur CTN	f30
E	<b>Elektronik</b> Main electronic Electronique	
F	<b>Ein / Ausgabeelektronik</b> In / Output electronic Déroulem. Progr.	S17
HE	<b>Haupterde</b> Main earth Terre centrale	
K	<b>Kondensator</b> Suppressor Condensateur	k5
L	<b>Schwimmerschalter</b> Floating switch Int. Flotteur	f16.1 ; f16.2
M	<b>Motor</b> motor moteur	m1
N	<b>Druckwächter</b> Pressure switch Pressostat	fs;fTR2;fTR1
N	<b>Drucksensor</b> Pressure sensor Pressostat analog	p
P	<b>Zirkulationspumpe</b> Recirculation pump Pump circulation	m22
P	<b>Pumpe</b> Pump Pompe	m3
R	<b>Heizung</b> Heating, Résistance	r1
V	<b>Ventil</b> valve valve	s1;s2;s15
Z	<b>Türverriegelung</b> Door lock Verrouillage de porte	e4

### Legende des Stromlaufplanes

Legend for the circuit diagram

Légende pour Schéma de circuit

b7 / DW	<b>Drehwahlschalter</b> Selection switch Sélecteur rotatif
e4	<b>Türverriegelung</b> Door lock Verrouillage de porte
E	<b>Elektronik</b> Main electronic Electronique
f16.1 f16.2	<b>Schwimmerschalter</b> Floating switch Int. Flotteur
f 30	<b>NTC - Fühler</b> NTC sensor Senseur NTC
fs	<b>Sicherheits-Niveau</b> Safety level Niveau de sécurité
fTR1 ; fTR2	<b>Trockengehschutzniveau</b> Boil-dry protection Niveau sécurité séchage
g 1	<b>Tachogenerator</b> Tacho generator Générateur tachymétrique
k1	<b>Drehrichtung</b> direction of drum movement mouvement la Tambour
k2	<b>mit / ohne Anzapfung (950 1/min / 650 1/min)</b> tapping / complete field (950 1/min / 650 1/min) soutirage / champ intégral (950 1/min / 650 1/min)
k 5	<b>Störschutzfilter</b> Suppressor Filtre anti-parasite
m 1	<b>Antriebsmotor (allgemein)</b> Main motor Moteur d'entraînement
m 3	<b>Entleerungspumpe</b> Drain pump Pompe de vidange
m22	<b>Zirkulationspumpe</b> Recirculation pump Pump circulation
p	<b>Drucksensor</b> Pressure sensor Pressostat analog
r1	<b>Heizstab</b> Heating element Résistance
s1 s2 s15	<b>Ventil</b> Valve Valve
s17	<b>Ein / Ausgabeelektronik</b> In / Output electronic Déroulem. Progr.

# 12.4 Function plans

Cotton 60 RECIRCULATIONSYSTEM G46L Without options and laundry																				
Step n.°	PHASE	Option	Description	Levels			Rec. pump	Drain pump	Elv / Det comp.	Movement		Refilling			Temp. °C	Time	Time to end			
				wc	rpc	dpc				mc	type	code	type	wl				ab		
1	WASH	WITHOUT	CALIBRATION	40/15	40/15	40/15	40/15	OFF	ON		OFF	Motor Stopped	NR	Dis	Dis	OFF	Tout 10'	00:00:20		
2			WATER LOAD	42/15					OFF	OFF	ELV2							Tout 15'	00:01:40	
3			MOVEMENT										PWL3_MOV					1'	00:01:00	
5			WATER LOAD	95/60					LEV		ELV3		DLD_MOV					Tout 15'	00:01:40	
6			MOVEMENT	85/60									COLD_MOV					4'	00:04:00	
7			MOVEMENT						OFF				E_MOV					3'	00:03:00	
8			HEAT+MOV	40/15														Tout 40'	00:09:10	
9			HEAT+MOV										N_MOV					Tout 40'	00:14:00	
10			MOVEMENT						ON				SE_MOV					6'	00:06:00	
11			MOVEMENT															8'	00:08:00	
12			MOVEMENT										N_MOV					4'	00:04:00	
13			MOVEMENT										SE_MOV					18'	00:18:00	
14			MOVEMENT						OFF				Motor Stopped					22"	00:00:20	
15			WATER DRAIN										D_MOV					Tout 10'	00:00:20	
16			SPINNING										Lev					Tout 20'	00:09:00	
17			RINSE		CALIBRATION									Motor Stopped					Tout 10'	00:00:00
18	MOVEMENT												CR3_MOV				5"	00:00:10		
19	WATER LOAD	95/55							LEV	OFF								Tout 15'	00:01:40	
20	START REFILL	0/0							ON									0"	00:01:30	
21	MOVEMENT												E_MOV					5'	00:05:00	
22	WATER DRAIN								OFF				D_MOV					Tout 10'	00:00:20	
23	SPINNING												IMP6_RINSE					Tout 20'	00:05:00	
24																				
25	RINSE		CALIBRATION	40/15								Motor Stopped					Tout 10'	00:00:00		
26			MOVEMENT										CR3_MOV				5"	00:00:10		
27			WATER LOAD	95/55					LEV	OFF								Tout 15'	00:01:40	
28			START REFILL	0/0					ON									0"	00:01:30	
29			MOVEMENT										E_MOV					5'	00:05:00	
30			WATER DRAIN						OFF				D_MOV					Tout 10'	00:00:20	
31			SPINNING										IMP6_RINSE					Tout 20'	00:05:00	
32			SOFTENING RINSE		CALIBRATION	40/15								Motor Stopped					Tout 10'	00:00:00
33					MOVEMENT										CR3_MOV				5"	00:00:10
34					WATER LOAD	125/85					LEV	OFF								Tout 15'
35	MOVEMENT								ON				E_MOV					0"	00:01:30	
36	SPINNING		WATER DRAIN					OFF			Lev						Tout 10'	00:00:20		
37			SPINNING									ON					Tout 20'	00:05:00		
38	SPINNING		CALIBRATION	40/15								Motor Stopped					Tout 10'	00:00:00		
39			MOVEMENT										CR3_MOV				5"	00:00:10		
40			WATER LOAD	125/85					LEV	OFF								Tout 15'	00:01:40	
41			MOVEMENT						OFF				Motor Stopped					7'	00:07:00	
																22"	00:00:20			
																Tout 10'	00:00:00			
																Tout 10'	00:00:20			
																Tout 20'	00:20:00			
																2'	00:02:00			

Niveaus	
AF_LEV	40/15 mm
Softn_LEV	42/15 mm
Firstload_LEV	95/60 mm
Refill_LEV	85/60 mm
Rinse_LEV	95/55 mm
R_II_LEV	125/85 mm

Off	On	1/min
12	4	55
8	6	55
4	8	55
12	1	35
57	1	35
53	1	35
4	10	75

Mechanic	Description
D_MOV	Water control level
N_MOV	Recirculation control level
E_MOV	Drain pump level
PWL3_MOV	Motor Niveau
PWL4_MOV	
PWL1_MOV	

Legend Niveaus	
Typ	Description
WC	Water control level
PPC	Recirculation control level
DPC	Drain pump level
MC	Motor Niveau

Nachttakten	
NR	Normal refill
VT	Virtual refill
WL	Analog ic sensor
AB	Anti boil protection

12.4 Function plans

Handwash 30 RECIRCULATIONSYSTEM G46L Without options and laundry																		
Step n.°	PHASE	Option	Description	Levels			Rec. pump	Drain pump	Elv / Det comp.	Movement		Refilling			Temp. °C	Time	Time to end	
				wc	rpc	dpc				mc	type	code	type	wl				ab
1	WASH	WITHOUT	CALIBRATION	40/15	40/15	40/15	40/15	OFF	ON		OFF	Motor Stopped	NR	Dis	Dis	Tout 10'	00:00:00	
2			WATER LOAD	42/15					OFF		ELV2							
3			MOVEMENT									ON	PWL3_MOV					
4			WATER LOAD	140/90					LEV		ELV3	OFF	Motor Stopped					
5			MOVEMENT									LEV	PWL1_MOV					
6			HEAT+MOV						OFF									
7			MOVEMENT						LEV									
8			HEAT+MOV															
9			MOVEMENT						OFF			OFF	Motor Stopped					
10			WATER DRAIN															
11			TIME WATER DRAIN															
12	RINSE		CALIBRATION	40/15														
13			MOVEMENT															
14			WATER LOAD	135/85					LEV									
15			MOVEMENT									ON	PWL3_MOV					
16			WATER DRAIN						OFF			OFF	Motor Stopped					
17	TIME WATER DRAIN																	
18	RINSE		CALIBRATION	40/15														
19			MOVEMENT															
20			WATER LOAD	135/85					LEV									
21			MOVEMENT									ON	PWL1_MOV					
22			WATER DRAIN						OFF			OFF	Motor Stopped					
23	TIME WATER DRAIN																	
24	SOFTENING		CALIBRATION	40/15														
25			MOVEMENT															
26			WATER LOAD	135/85					LEV		ELV2							
27			MOVEMENT								ELV3							
28			MOVEMENT						OFF			ON	PWL1_MOV					
29	SPINNING		CALIBRATION	40/15				OFF			OFF	Motor Stopped						
30			WATER DRAIN															
31			SPINNING									ON	IMP4					

**Mechanic**

D_MOV	12	Off	4	On	55	1/min
N_MOV	8	Off	6	On	55	
E_MOV	4	Off	8	On	55	
PWL3_MOV	12	Off	1	On	35	
PWL4_MOV	57	Off	1	On	35	
PWL1_MOV	53	Off	1	On	35	
E1_MOV	4	Off	10	On	75	

**Legend Niveaus**

Niveaus	
AF_LEV	40/15 mm
Softn_LEV	42/15 mm
WOL_LEV	140/90 mm
HIGH_LEV	135/85 mm

**Legend Niveaus**

Typ	Description
WC	Water control level
PPC	Recirculation control level
DPC	Drain pump level
MC	Motor Niveau

**Nachaktken**

NR	Normal refill
VT	Virtual refill
WL	Analog ic sensor
AB	Anti boil protection