

**Washing machines,
Toploader**

**EWM 1000
ELECTROLUX**

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- Rotary programme selector with 16 positions and integral on-off switch
- 5 function keys
- 11 function LEDs

The diagram illustrates the control panel and drum layout of a washing machine. The control panel features several buttons and indicators:

- PREWASH** and **BLEACH** buttons, each with a small dot indicator.
- NIGHT CYCLE**, **SHORT**, **START/PAUSE**, and **DELAYED START** buttons, each with a small dot indicator.
- A **9h** indicator with a dot.
- A vertical column of five dots corresponding to the following options: **6h**, **3h**, **WASH**, **END**, and **DRUM POSITION**.

The drum layout is shown as a circle with various positions and temperatures marked:

- SPIN** and **RINCE HOLD** positions at the top.
- PUMP** position on the right.
- COLD** and **WOOL** positions on the left, with a hand icon indicating a cold water tap.
- DELICATE** and **EASY CARE** positions at the bottom.
- COTTON/COLOURED** position at the top right.
- Temperature markings: **95°**, **60° E**, **60°**, **40°**, **30°**, and **30°**.
- Drum rotation markings: **1000°**, **500°**, **700°**, and **900°**.

LED-6 h
LED-3 h
LED-Wash
LED-End
LED-Drum position

- The selected program is activated by pressing the start/pause button.
- If the cycle is to be paused, press the start/pause button. This button is not effective when the suds temperature is >40° C.

LED	status	process
start/pause	ON	cycle is running (lid closed)
	FLASHING	cycle in pause position
	OFF	lid not closed
lid (red)	ON	does not exist
	FLASHING	lid still open, appliance was started
	OFF	cycle running, door lock closed

Delayed start Button

Function:

- This is available in the programmes Cotton / Coloured wash, Easy-care, Delicate and wool fabrics,.
- By pressing this key, you can reduce the duration to zero step by step.
- For example, if a time preselection of 9h has been selected, the LED lights for 9h. When the timepreselection reduces to 6h, the LED goes out for 9h and the LED lights for 6h etc.

Rinceplus / Extra Rinse Button

Function:

- This is available in the programmes Cotton / Coloured wash, Easy-care and Delicate fabrics,.
- Two additional rinse cycles are added.
- No intermediate rinse, except after the last rinse cycle.

Pre-Wash Button

Function:

- This is available in the programmes Cotton / Coloured wash, Easy-care and Delicate fabrics,.
- It is heated up to max. 30 ° C.
- Cannot be combined with the "bleach" button.

Bleach Button

Function:

- This is available in the programmes Cotton / Coloured wash fabrics.
- Cannot be combined with the "prewash" button.

Short Button

Function:

- This is available in the programmes Cotton / Coloured wash, Easy-care and Delicate fabrics.
- The program time are reduces.
- The water level in the compartment is increased during rinse cycles.
- Cannot be combined with the "cotton / coloured E60°C" program.

Half load Button

Function:

- This is available in the programmes Cotton / Coloured wash fabrics.
- One rinse cycle is missed.

Night Cycle Button

Function:

- This is available in the programmes Cotton / Coloured wash, Easy-care, Delicate and wool fabrics.
- Six rinse cycles are carried out.
- All rinces are without a spin phase.
- The programm is stopped in a rinse hold.
- In order to continue a program afterwards, you first have to select a separate draining or spinning.

Easy-Iron 40°C

Function:

- In Cotton / Coloured wash-programmes:
 - adds three rinse cycles
 - eliminates the intermediate spin cycles
 - performs an impulse spin phase
 - adds an "untangling" phase after the spin cycle
- In Easy-care-programmes:
 - reduces the heating temperature in 50/60° cycles to 40°C
 - increases the washing time
 - prolongs the cooling phase at the end of the washing phase
 - adds one rinse
 - adds an "untangling" phase after the impulse spin cycle

Spin Deselection Button

Function:

- By pressing this key, you can reduce spin-dry speed step by step down to rinse stop.
- Reduces the spinning speed of all spin-dry cycles.

Spin speed selector

Function:

- By turning the selector you can reduce a rinse stop, a pumping and step-by-step the spinning speed.
- After a rinse stop it is possible to pump off the washing sud. For this you have to adjust the selector to position pumping.
- Reduces the spinning speed of all spin-dry cycles.

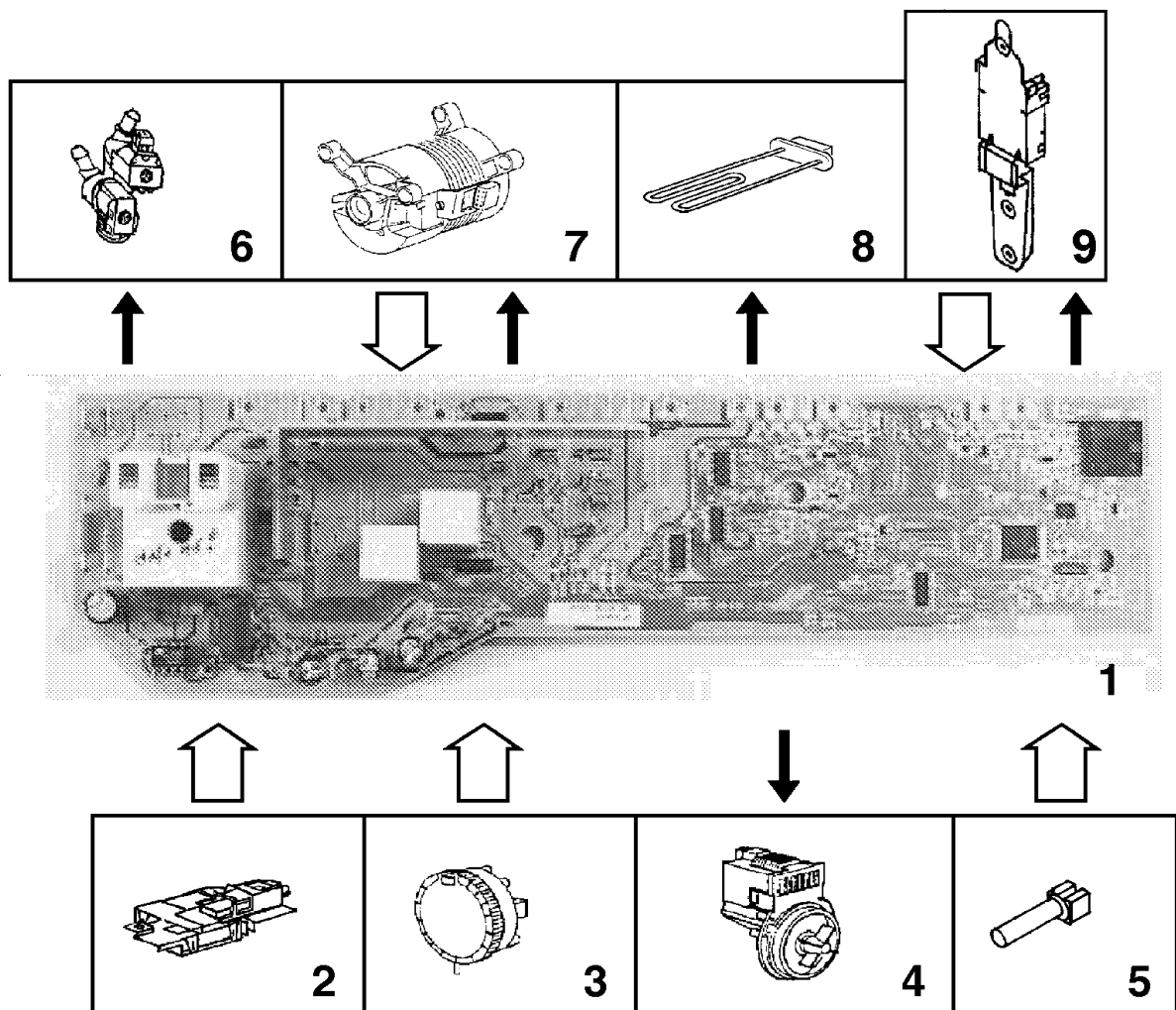
Rince hold	Pump	1200	900	700	500
Rince hold	Pump	1100	900	700	500
Rince hold	Pump	1000	900	700	500
Rince hold	Pump	900	800	700	500
Rince hold	Pump	800	700	600	500
Rince hold	Pump	700	600	500	450

Short cycle 30°/30min

Function:

- The cycle has a max. running period of 30min at 30°C drain temperature.
- The cycle includes a main cycle, two rinse cycles with a terminating final spin cycle.

Functions of the System



1. Electronic module
2. Door security
3. pressure switch
4. Drain pump
5. NTC-sensor
6. Inlet valve
7. Motor
8. Heating element
9. DSP (Drum Self Position)

Electronic Module

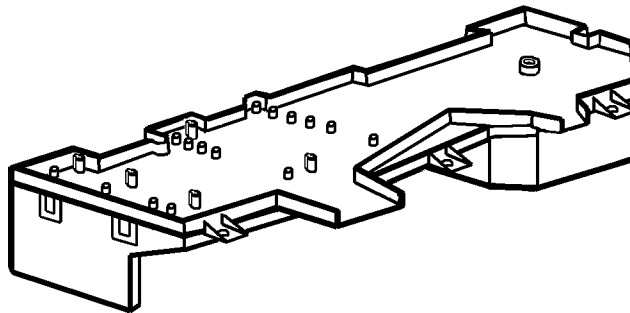
The electronic module, including the μP , controls various functions and is placed in a protective housing.

Functions:

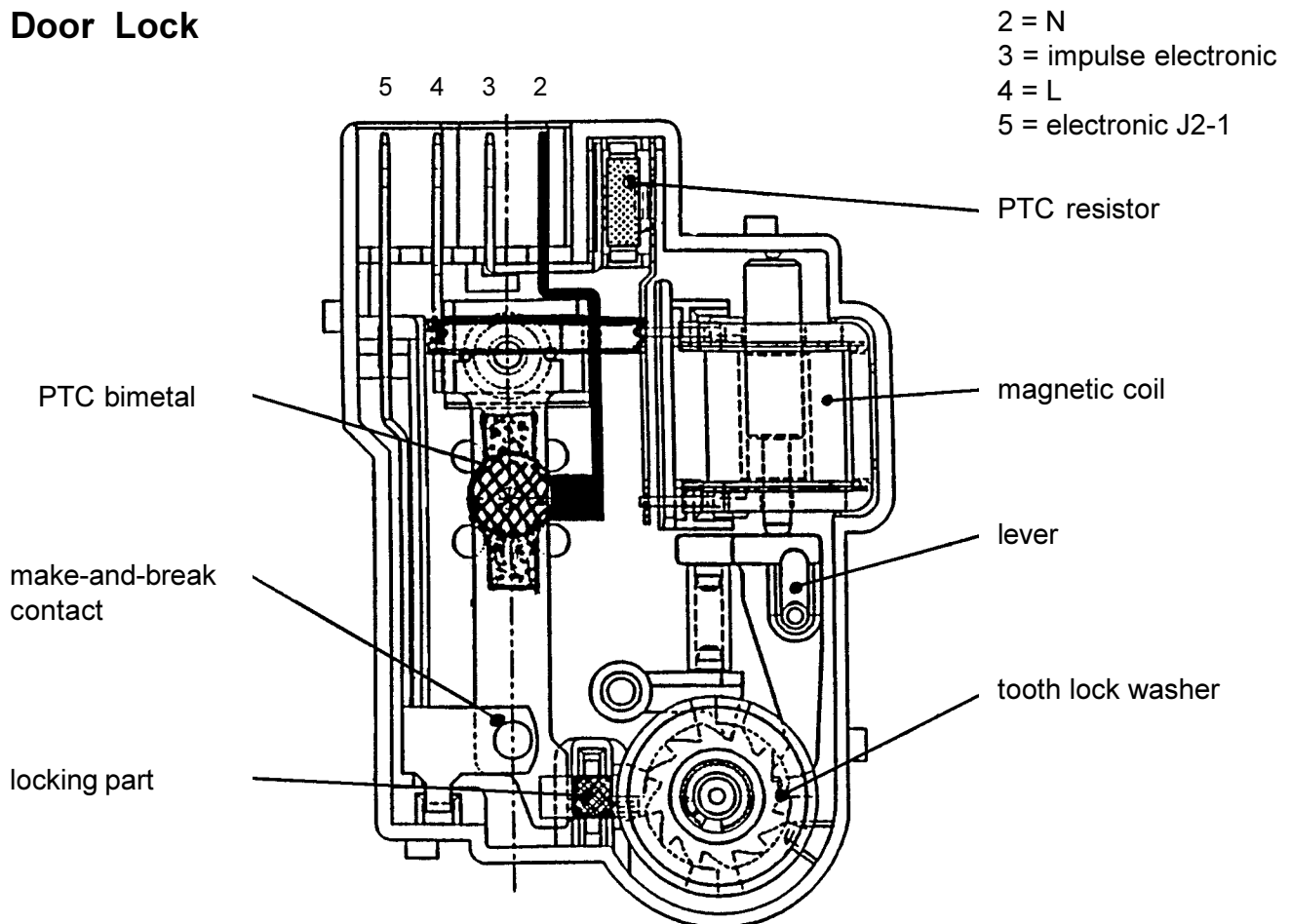
- Taking data of the selected cycle programs through the module.
- Water level control in the washtub; a pressure switch detecting the level.
- Cycle temperature control by a NTC sensor.
- Power supply of the heating element.
- Power supply of the drive motor and control of its speed by the tachymetric generator.
- Control of water inlet valves.
- Draining pump and door lock control.

In case of a power failure the module saves the just paused cycle.

- When the power supply to the appliance is restored again, the cycle starts where the program was paused.



Door Lock



When closing the lid the door lock gets an impulse from the electronic by contact 3. The impulse feeds the magnetic coil over the PTC resistor. This moves the lever down and the tooth lock washer is forwarded by another tooth. This can be heard by a click. The locking part is unlocked, the lid is closed.

When opening the lid, e.g. with the start/pause button or at the end of the cycle, the door lock gets two impulses from the electronic. The tooth lock washer is moved twice. Only because of the second impulse the lid can be opened **immediately**.

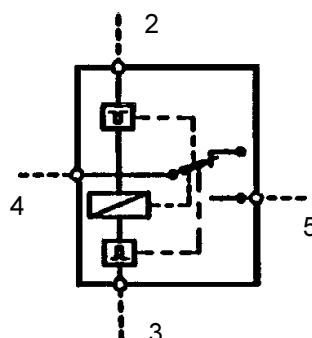
The second impulse unlocks the locking part mechanically through the tooth lock washer.

Why two impulses?

The door lock is controlled by a triac which is on the main circuit board. If there is a triac short circuit, the electronic sends an impulse to the door lock. The customer could open the appliance, if the second impulse was not required.

If there is a **power failure** during a wash cycle, the door lock requires approx. 2 min until the lid can be opened. During this time the PTC bimetal cools down and the locking part opens.

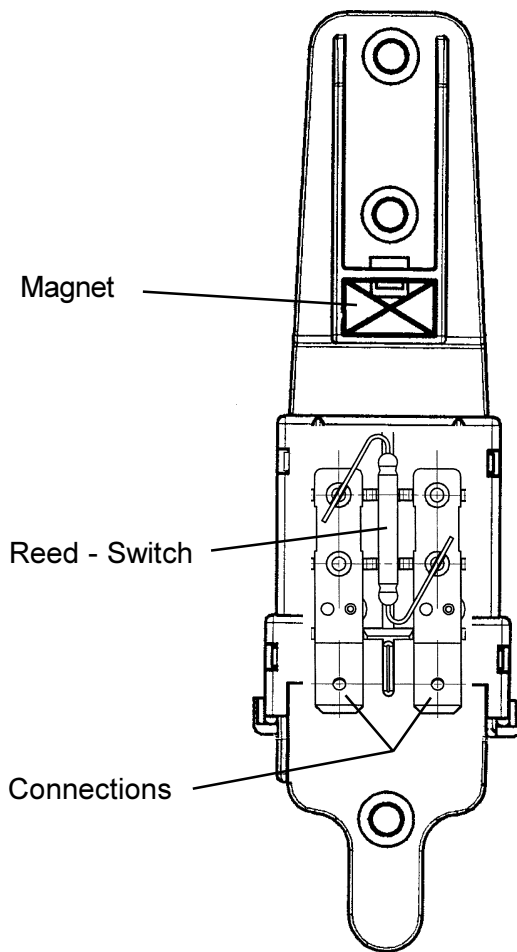
Circuit Diagram



Security:

(see page **Service - Program** fault display E40)

DSP (Drum-Self-Position)



Control (check) the DSP-Function:

1. Remove the side panel, switch on the appliance
 - Turn the drum to the right position ---> LED on
 - Turn the drum over the right position ---> LED off
2. Remove the two plugs from the DSP and check the resistance of the reed relay.
 - Turn the drum to the right position ---> $\infty \Omega$
 - Turn the drum over the right position ---> no Ω
3. The drum is still in the right position.
Now measure the voltage. 5-6V DC
 - If there is no voltage ---> Cable, Electronic board is defective
4. Check the Electronic in the customers service test program.
 - LED on ---> Electronic OK.
 - LED off ---> Electronic defective.

Function:

The reed relay is closed if the metallic sheet, located on the pulley, isn't between the magnet and the reed relay. If the position of the metallic sheet is between those parts the contact of the reed relay is opened.

To mount the pulley in the correct way, you have to take care about following items:

The metal sheet located on the pulley should be in the drum self positioning device, if the door of the drum is in the upper position. The DSP is supplied with 5-6 V DC by the main board.

Condition drum positioned:

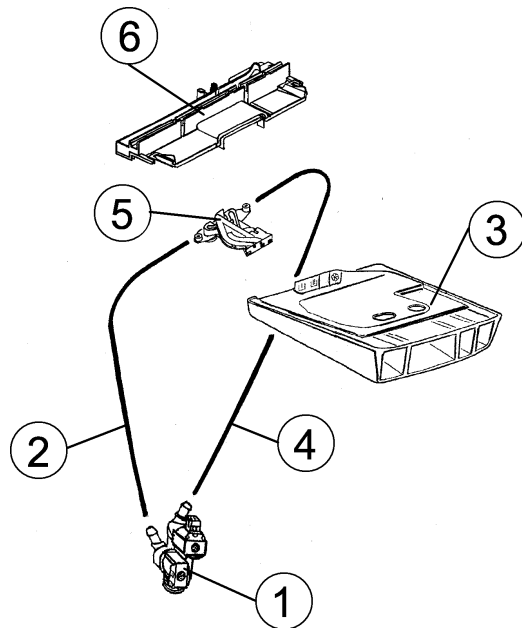
Reed contact opened, LED-Drum positioned illuminated, 5-6V DC.

Condition drum out of position:

Reed contact closed, LED-Drum positioned not illuminated, 0V.

If the washing cycle is interrupted by the start pause button the drum has to be positioned within 10 sec. During this time 2-3 attempts can be executed. If the drum isn't positioned during this time, the lid of the appliance is released and can be opened. The LED drum positioned is not illuminated. At the end of the cycle the positioning phase is 2 min until time out is reached.

Water Inlet Valve for 3-chamber detergent box



- 1 - inlet valve, 2-fold
- 2 - hose for main wash
- 3 - 3-chamber detergent box
- 4 - hose for pre-wash
- 5 - water distributor
- 6 - water distributor cover

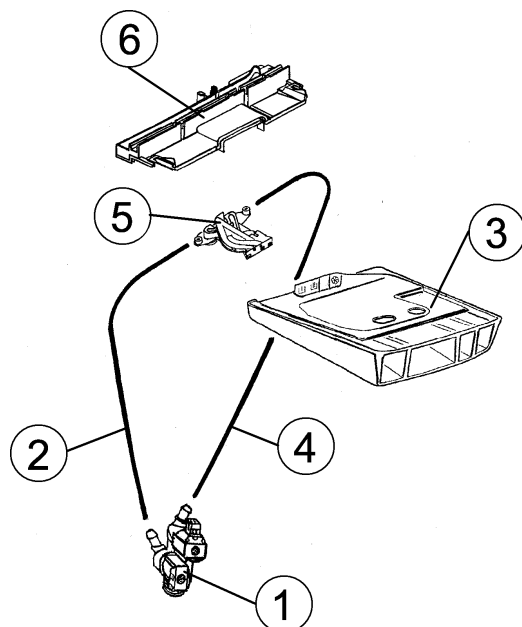
*) **Attention!**

The flushing into the prewash chamber goes via hose 4.

The flushing into the main wash chamber goes via hose 2.

The simultaneous filling through hoses 2 and 4 provides the fill-in through the softener chamber.

Water Inlet Valve for 4-chamber detergent box



- 1 - inlet valve, 2-fold
- 2 - hose for main wash
- 3 - 4-chamber detergent box
- 4 - hose for pre-wash and bleach
- 5 - water distributor
- 6 - water distributor cover

*) **Attention!**

The flushing into the prewash resp. bleach chamber goes via hose 4.

This is possible due to a connecting channel in the flush-in chamber.

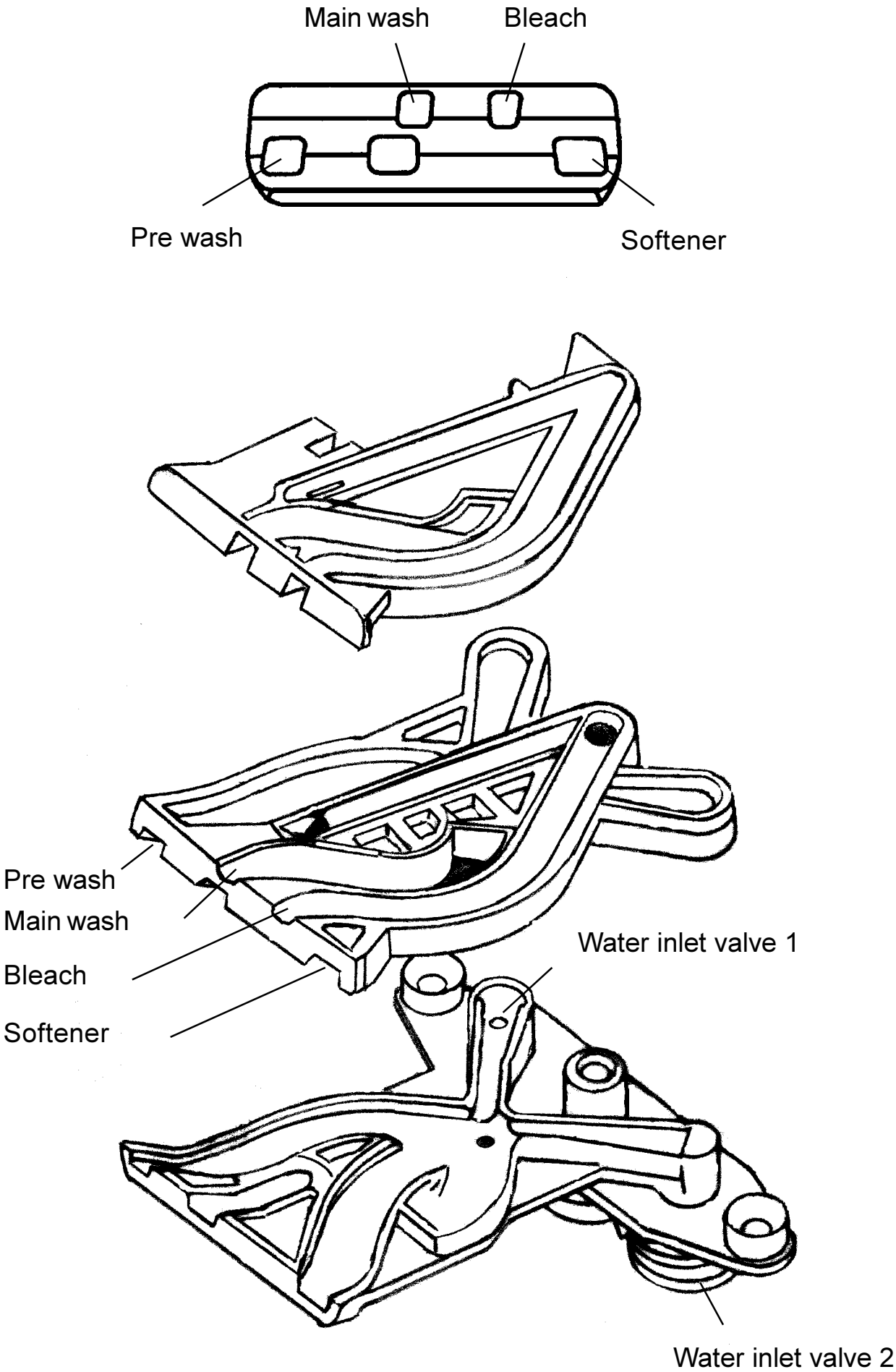
In doing so, approx. 75% water flows into the prewash chamber and aprox. 25% into the bleach chamber.

It is not possible to select both options prewash and bleaching at the same time.

The flushing into the main wash chamber goes via hose 2.

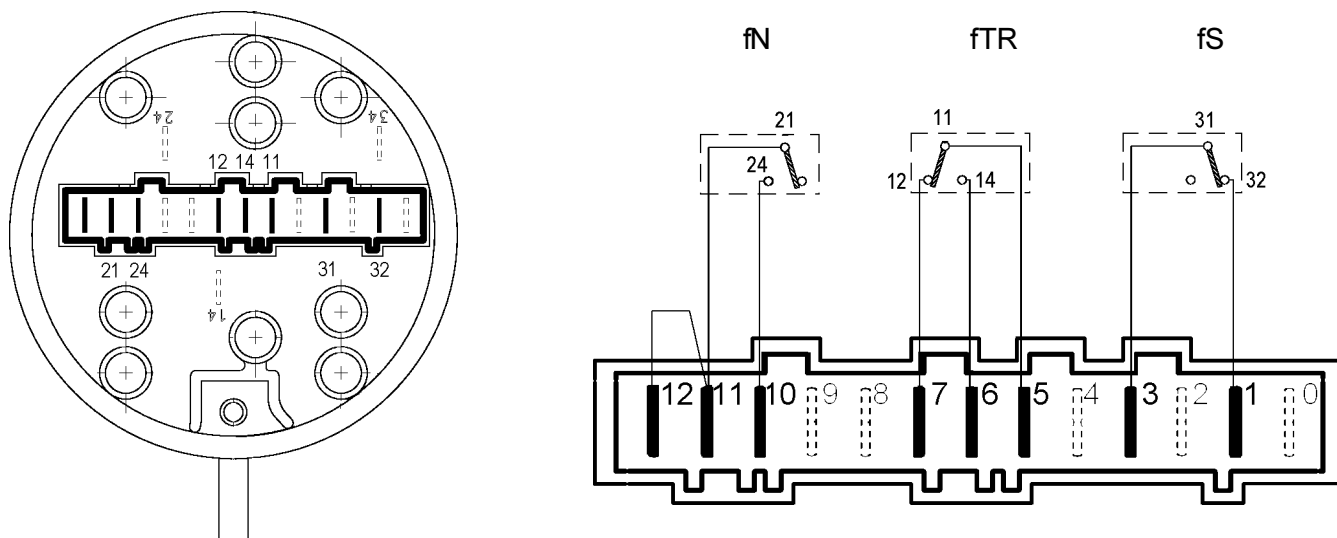
The simultaneous filling through hoses 2 and 4 provides the fill-in through the softener chamber.

Water Distributor



The pressure switch

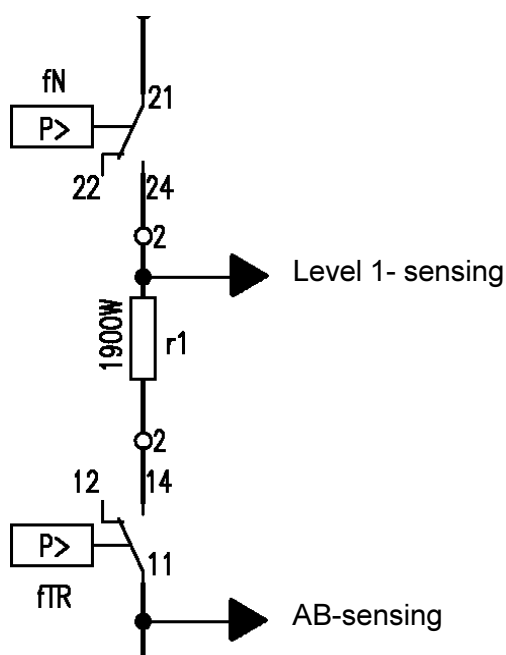
Control of the water level is performed by a three-level pressure switch which functions as follows:



Drum water filling

Water is filled into the drum by the following combination:

1. Filling up to fTR level
2. Filling up to fN level
3. Time-depending filling without control by pressure switch.



Supply valves are selected by 2 triacs, and the pressure switch switching levels are monitored by 2 control lines (sensing-wire).

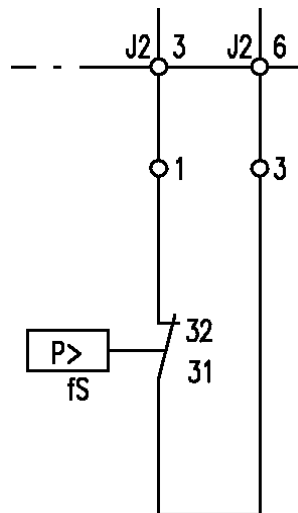
Filling period is determined by control electronics.

Calculation of filling quantity is by measuring time interval between fTR contact closing and the closing of pressure switch fN contact.

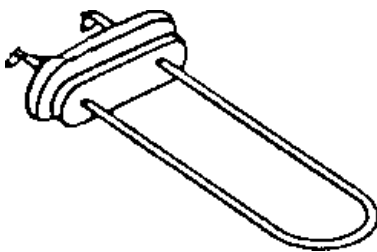
The pressure switch

Anti-flooding-device

The third pressure switch level is used as an anti-flooding safety device: if the pressure switch contact should close in the FULL position, the PCB actions the drain pump until the pressure switch returns to the EMPTY position.

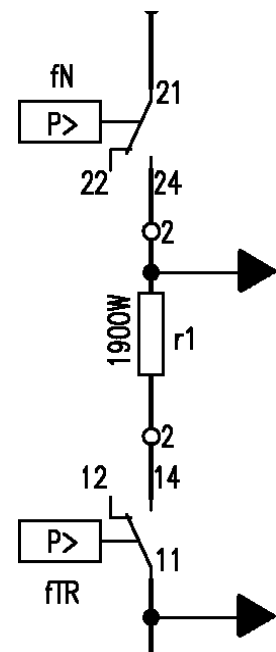


Heating element



Connection: 230V; 50Hz;
Power: 1950W
Fuse: 10A

The heating element is supplied with power directly from the control electronics by means of a relay. For security reasons, 2 switching contacts of the pressure switch are connected in series. The switching positions are monitored by control electronics via 2 control lines.



Heating Circuit

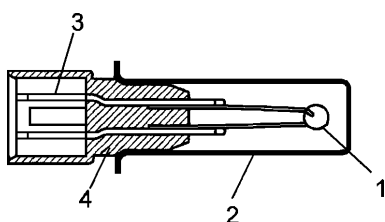
The cycle temperature is fixed by the μP depending on the selected program. The heating element RC is connected by the "full" contact of the level pressure switch of fN (21/24) and of that of fTR (11/14).

The temperature control is guaranteed by the μP through the NTC temperature sensor. The temperature sensor reduces its resistance according to the temperature increase.

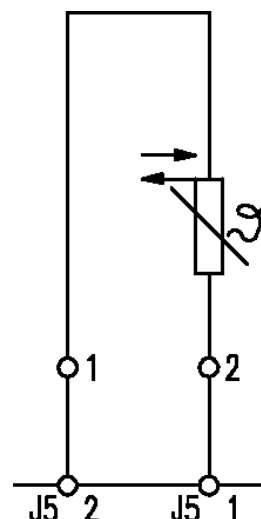
The reduction in the ohmic value of the temperature sensor is detected by the μP ; as soon as the selected temperature is reached the power supply to the heating element will be paused.

The NTC sensor is integrated in the heating element.

NTC-Sensor



1. NTC resistance
2. Metallic casing
3. Connections
4. Plastic casing



To check the NTC sensor function you can measure the ohmic resistance between the contacts J5/1 and J5/2.

Variations of NTC resistance

Temperature (°C)	Resistance (Ohm)
0	13325
15	7855
30	4028
40	2663
50	1801
60	1244
70	876
80	628
90	458

Security

- The pressure switch fN and fTR insures the power part security of the heater function.
- The μP will be break off if an anomaly on the termistance circuit is detected : cut or short-circuit. (see Page **Service-Program** fault display E70)
- The heating phase is not executed.

The drain pump

The drain pump is directly controlled via triac from the control electronics.

The motor

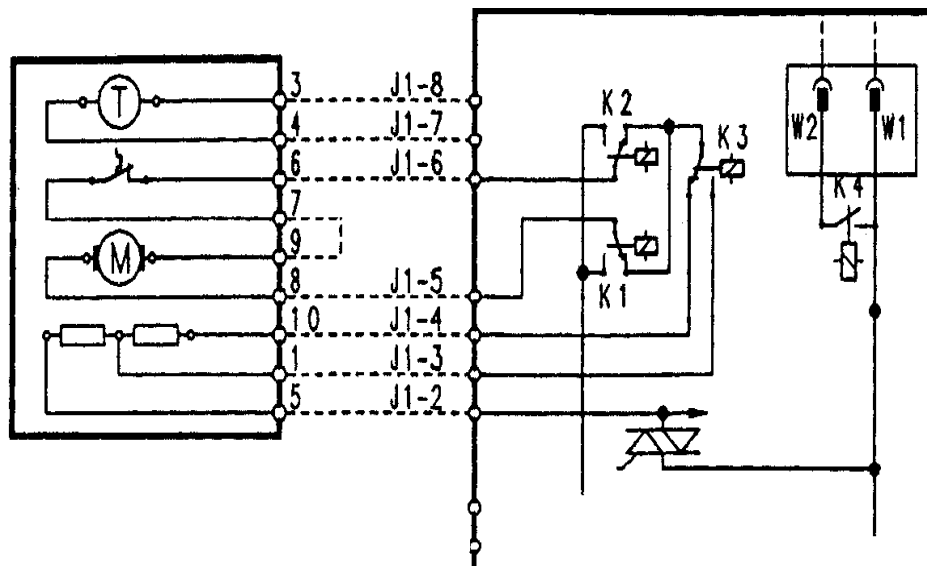
The motor is directly phase-controlled via triac from the control electronics.

Relays K2, K3 are responsible for commuting the sense of rotation.

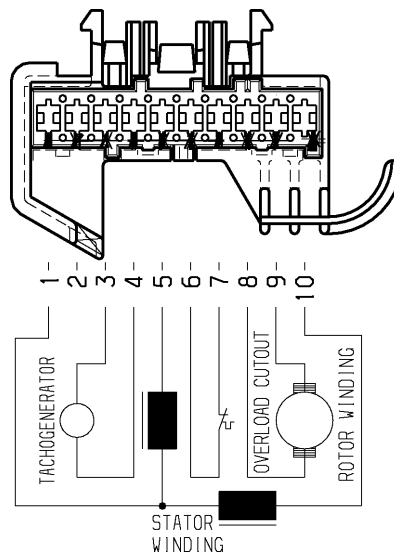
Field switching (if any) is controlled by relay K4.

Speed is monitored by tachometer generator g1 and controlled by control electronics.

Integral overheat protection disconnects the motor from power supply at 115°C.



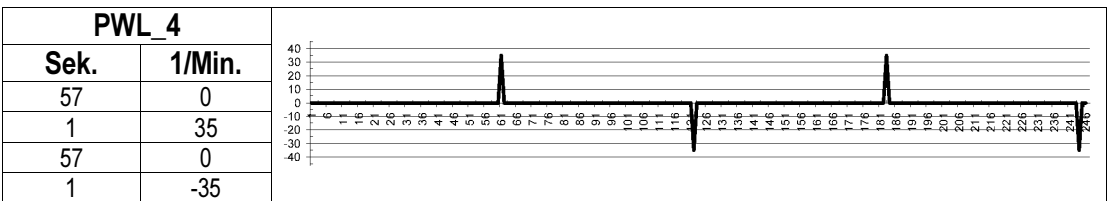
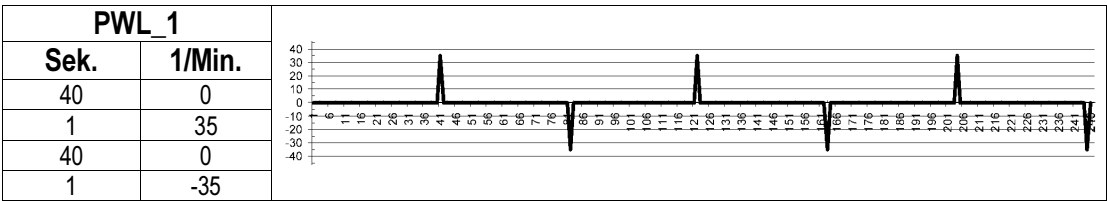
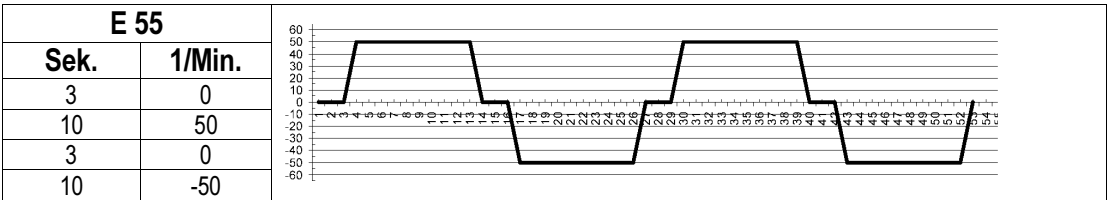
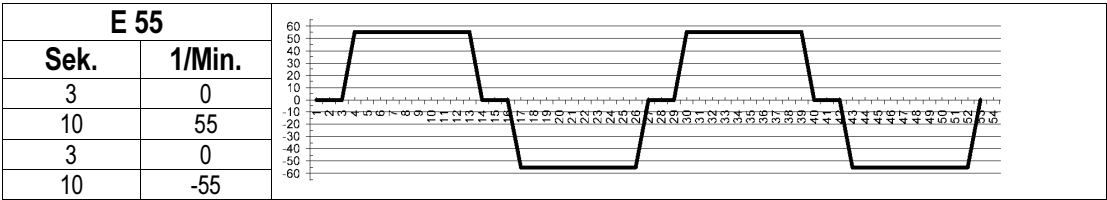
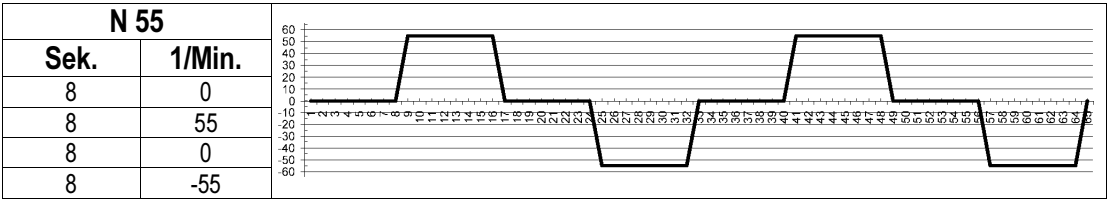
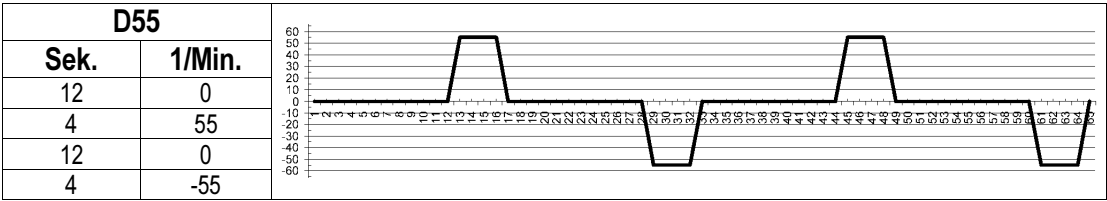
Connection:



Safety

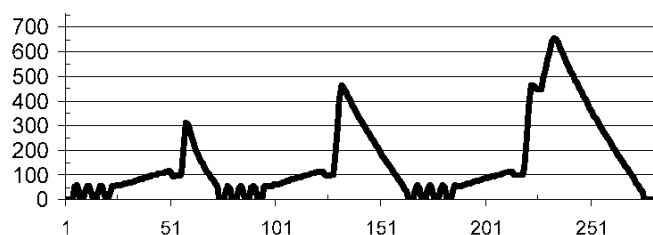
- If the triac for the motor is in short-circuit, or if the tachometer generator is interrupted, 4 trials are executed in intervals of 1 minute each.
After a break of 20 minutes, the fifth and last trial is started. If the motor does not run this time, the programme is aborted.
(see Page **Service-Program** fault display E60)

Drum movements

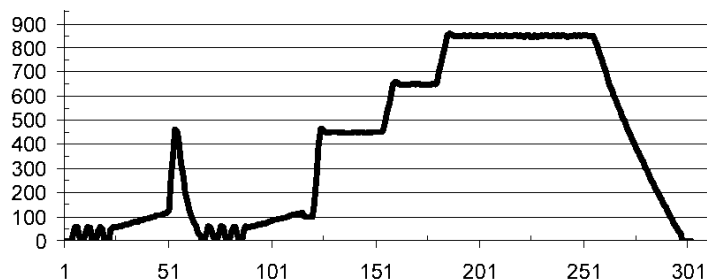


Spinning profiles

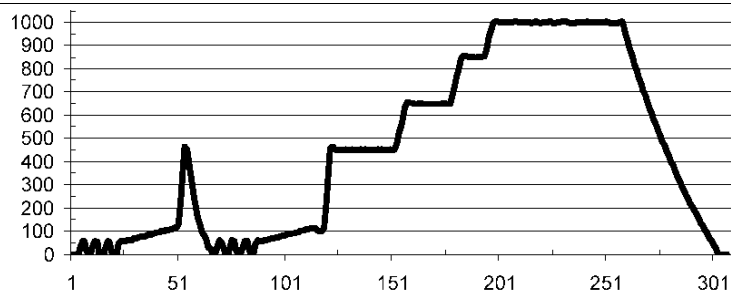
C0		
1/Min.	Sek.	AS
FUCS	x	nein
300	0	nein
FUCS	x	nein
450	0	nein
FUCS	x	nein
450	5	nein
650	0	nein



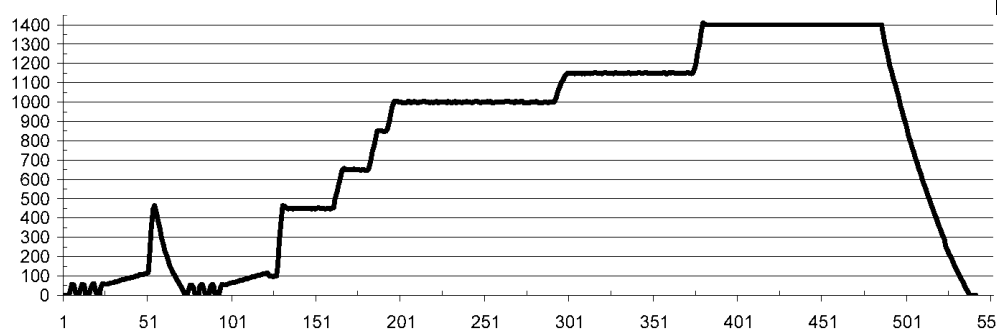
C1		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	30	AS
650	15	AS
850	10	AS
850	60	nein



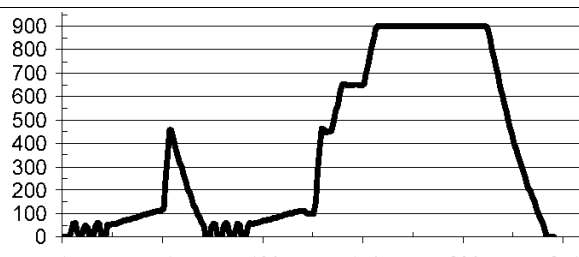
C2		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	30	AS
650	20	AS
850	10	AS
1000	60	nein



COT_CF		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	30	AS
650	15	AS
850	5	AS
1000	95	nein
1150	75	nein
1400	110	nein

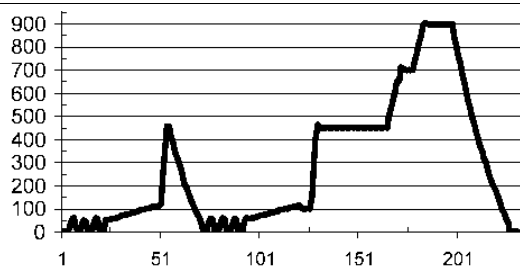


SYN_CF		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	5	nein
650	10	nein
900	55	nein

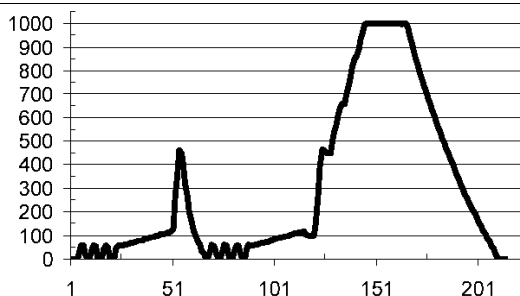


Spinning profiles

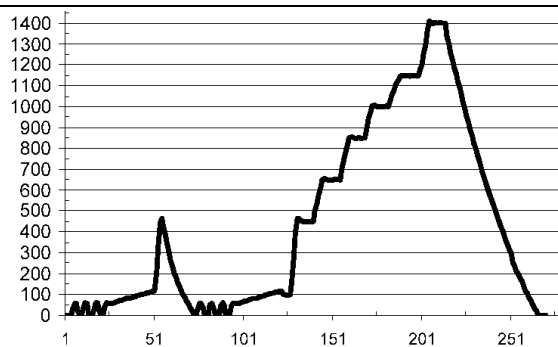
CF (Feinwäsche)		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	35	AS
700	5	AS
900	20	AS



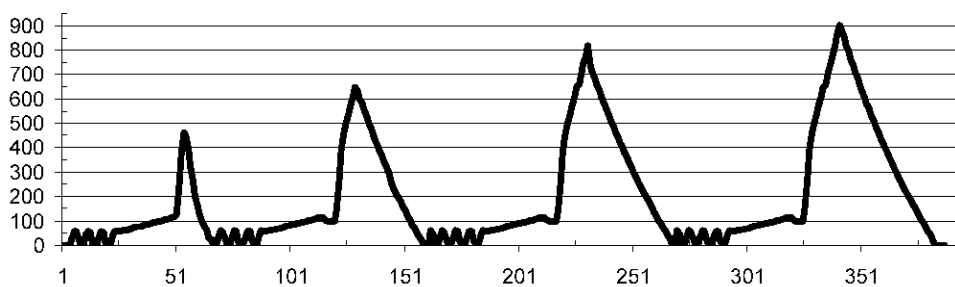
CF (Wolle)		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	5	AS
650	1	AS
850	1	AS
1000	20	nein



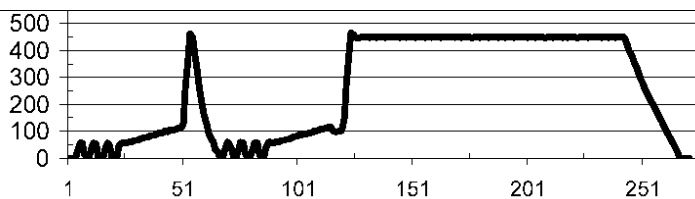
Separater Schleudergang		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	10	AS
650	10	AS
850	10	AS
1000	10	nein
1150	10	nein
1400	20	nein



EASY_IRON_IMP		
1/Min.	Sek.	AS
FUCS	x	nein
450	0	nein
FUCS	x	nein
650	0	AS
FUCS	x	nein
800	0	AS
FUCS	x	nein
900	0	AS



CSR		
1/Min.	Sek.	AS
FUCS	x	nein
FUCS imp	x	nein
FUCS	x	nein
450	120	AS



AS indicates that the anti-foam function is active.

Function of the FUCS

“FUCS” is an English expression and means “Fast Unbalanced Control System”

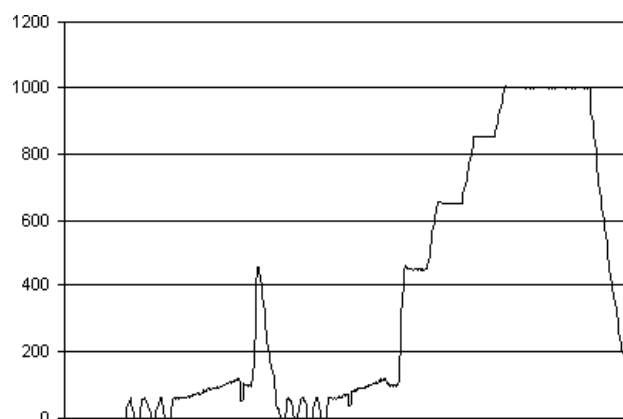
Function:

The unbalance control includes 4 phases. These phases are of different duration and have different limits of unbalance. The magnitude of the unbalance is calculated every 300 ms, hereby the magnitude is compared to the fixed unbalance limits, and then it is decided whether the speed will be increased or reduced by 2 1/min. FUCS starts at 55 1/min and ends ideally when reaching 115 1/min.

- Phase 0: Phase 0 takes max.60sec. When the unbalance threshold of the first phase is reached, the appliance performs a spin cycle with 100 1/min for 5 sec followed by a spin cycle pulse of 470 1/min.
- Phase 1: The first phase takes max. 120 sec to obtain the required speed of 115 1/min. If the speed is not reached after this 120 sec, the spinning cycle will be stopped. The laundry is dispersed and it is changed to phase 2.
- Phase 2: Phase 2 takes max. 60 sec. Here it is tried to obtain the speed of 115 1/min with various unbalance limits. If the speed is not reached after 180 sec, the spinning cycle will be stopped again. The laundry is dispersed and it is changed to phase 3.
- Phase 3: In phase 3, the required speed is reduced to 85 1/min. Within 90 sec, speed should be reached, the machine then runs a spin-dry cycle at 100 1/min for 5 sec. and a subsequent spin-dry pulse at 470 1/min, then again starting by phase 1. If the speed is reached, a reduced spin-dry cycle at 650 1/min is carried out. If the speed is not reached, spin-dry is skipped.

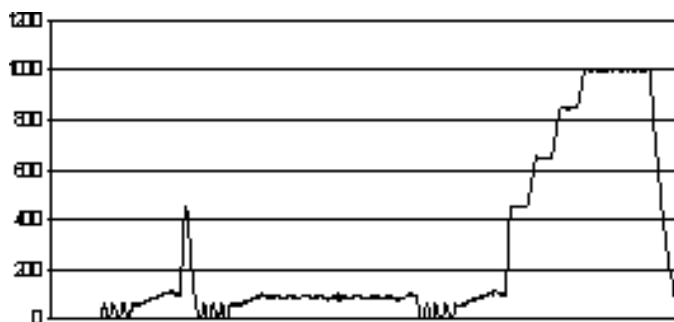
Perfect balance

- Reversing
- FUCS phase 0 with spin-dry pulse
- Reversing
- FUCS phase 1
- regular spin-dry



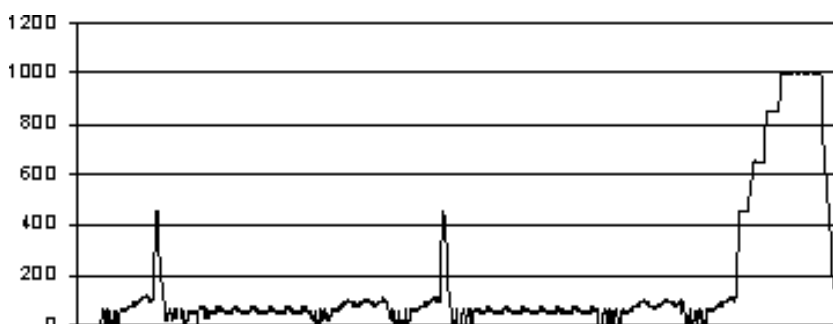
Balancing after two attempts

- Low speed
- FUCS phase 0
- FUCS phase 1
- FUCS phase 2



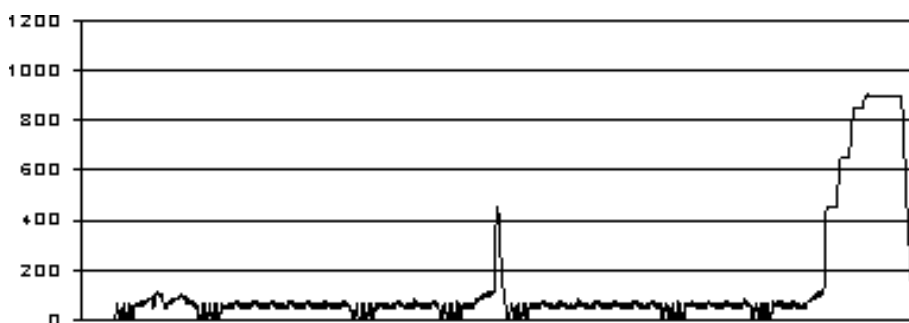
Balancing after the third phase (normal spin-speed)

- FUCS phase 0 with spin pulse
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3 with spin pulse
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3
- Normal spin



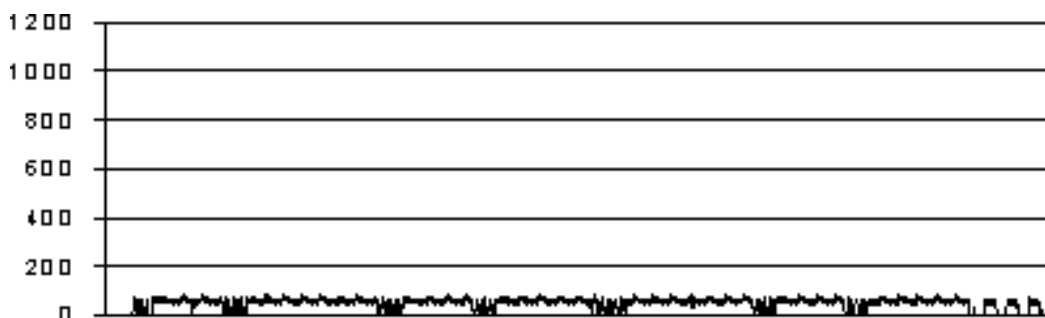
Balancing after the third phase (reduced spin-speed)

- FUCS phase 0
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3 with spin pulse
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3
- reduced-speed spin



Unalancing after the third phase

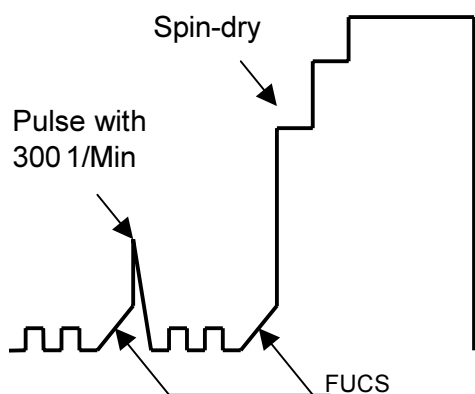
- FUCS phase 0
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3
- FUCS phase 1
- FUCS phase 2
- FUCS phase 3
- no spin



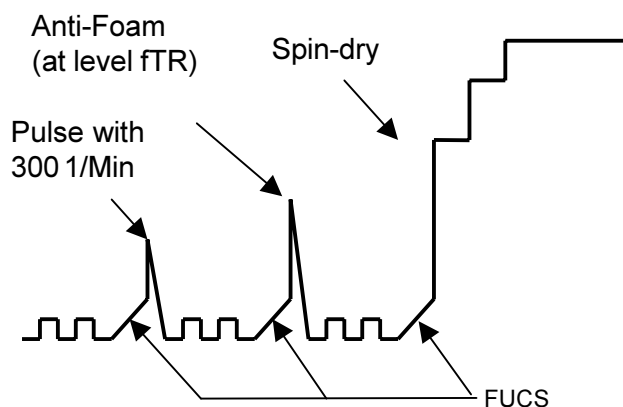
Foam Detection

Anti-foam control is excited via pressure switch contact fTR.

Spin-dry phase without foam:



Spin-dry phase with little foam:



Spin-dry with little foam:

If pressure switch contact fTR closes ("full" position), the spin-dry cycle is interrupted and the drain pump will run until the contact is reopening ("empty" position), and the spin-dry cycle will be continued.

Spin-dry with excess foam:

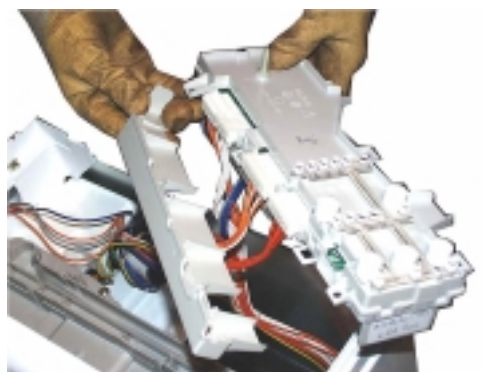
If pressure switch contact switches 5 times to « full » position, spin-dry is skipped. Draining is carried out for 1 minute with the motor at stop. If too much foam is detected during any wash cycle, an additional rinse cycle is added.

Accessibility of Components

Besides the main electronic the accessibility of components is to be taken from Service Manual 599 515 011.

Replace the main circuit board

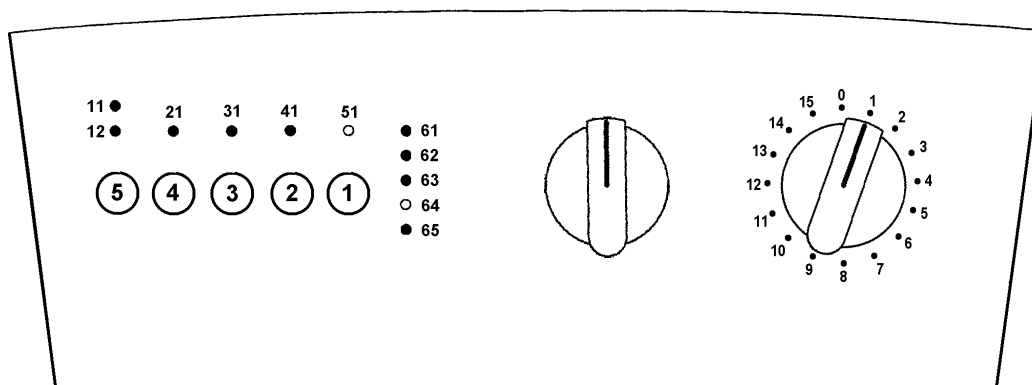
1. Remove the control panel.
2. Remove the five fixation screws from the electronic.
3. Disengage cable cover
4. Disconnect all plugs.



Service Program

Fault indication by cycle run display.

- Switch off the appliance.
- Hold buttons 1 (3) and 2 (4) pressed simultaneously and turn the program selector one position to the right.
- Hold the two selected buttons pressed until possibly a buzzer will sound and/or the LEDs will give a running light.
- By the program selector it is possible to interrogate the desired checking function according to the table.



Position of the rotary switch	Button	Test function
Off		Off
16 Positions		
01	Button 1 and Button 2	1) Start of the customer service testprogram 2) LED - Test LEDs are step by step illuminated. If you press a button the according LED is on.
02		Water channel mainwash Water intake up to safety level fS Time max. 5 min Valve mainwash
03		Water channel prewash Water intake up to safety level fS Time max. 5 min Valve prewash
04		Water channel softener Water intake up to safety level fS Time max. 5 min Valve mainwash and prewash
05		Water channel spots Water intake up to safety level fS Time max. 5 min Valve spots or hotwater
06		Heating and circulation pump Heating up to 90°C Time max. 10 min Water intake over mainwash chamber
07		Tub leakage test Water intake over mainwash chamber up to 150 mm Motor rotation 250 1/min
08		Draining and spinning Draining Spinning up to maximum spin speed, if level < fSch
09		DSP The drum is positioned if level < fSch
10		Displaying the error code (programme display)

Service Program

Fault indication by display or cycle run display.

Fault code		Type of fault	Remedy	Alarm Code		E W M 2 0 0 0 0	E W 1 M D 1 0 0 0 0 0 9	E W 1 M D 1 0 0 0 0 0 0	E W M 1 0 0 0 0 p l u s	E W M 2 0 0 0 0 E V O
E10	E11	No water filling Water tap closed Valve does not open / interruption Valve flow rate to low Air trap system leaking Cable defect Electronic defect	Open tap Change the valve Clean filter Replace air trap Cable pressure switch and electronic Replace electronic	1	S	X	X	X	X	X
	E13	Not enough water Wrong drain pipe position Valve flow rate to low Inlet valve defect Pressure switch defect Hose for pressure switch leakage or blocked	Check the drain pipe position Clean filter Replace inlet valve Replace pressure switch Check the hose for the pressure switch	1	S		X	X	X	X
E20	E21	No draining Pump blocked / not working Pump interrupted Reduced pump output rate Pressure switch defect Pressure sensor defect Electronic defect	Remove foreign object Replace drain pump Check draining system Replace pressure switch Replace pressure sensor Replace electronic	0	S	X	X	X	X	X
	E23	Incongruence between drain pump and electronic	Replace drain pump Replace electronic Cable drain pump	2	A		X	X	X	X
	E24	Drain pump triac sensing failure 1 Input voltage always 0V or 5V	Replace electronic	2	A		X	X	X	X
E30	E31	Pressure sensor defect Frequency of the pressure sensor out of limit Cable interrupted	Replace pressure sensor Replace cable	1	A	X				X
	E32	Calibration problems pressure sensor After initial calibration the water level not in between 0 - 66mm and antiboil level off	Open tap Replace inlet valve Clean filter Replace air trap Replace pressure sensor	0	S	X				X
	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	X				X
	E33	Incongruence between pressure switch Niv.1 and antiboil level 1 Fault has to be for a time longer than 3 sec.	Replace pressure switch Replace heating element Cable pressure switch and electronic Replace electronic	1	A		X	X	X	
	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	X				X
	E35	Safety level (Pressure sensor) Level has to be 300mm for a time of more than 15 sec Drain pump will be activated until level is below 120 mm	Replace pressure sensor Replace cable Replace air trap	1	A	X				X
	E35	Safety pressure switch on for a time longer than 15 sec.	Replace inlet valve Air trap system leaking Replace pressure switch Cable pressure switch and electronic Replace electronic	2	A		X	X	X	

Service Program

Fault indication by display or cycle run display.

Fault code	Type of fault	Remedy	Alarm Code	E W M 2 0 0 0 0					E W 1 M D 1 0 0 1 0 0 0 9					E W 1 M D 1 0 0 2 0 0 0 0					E W M 1 0 0 0 0 p l u s					E W M 2 0 0 0 0 E V O				
	E36	Antiboil 1 sensing failure 1 Input voltage allways 0V	Replace electronic	1	A	X	X	X	X	X																		
	E37	Antiboil 2 sensing failure 1 Input voltage allways 0V or 5V	Replace electronic	1	A	X																						X
	E37	Pressure sw itch Niv.1 sensing failure Inputvot. allw ays 0V or 5V	Replace electronic	1	A		X	X	X	X																		
	E38	Airtrap blocked No pressure differences detected	Change airtrap Clean airtrap	1	A	X																						X
	E39	sensing failure Inputvot. allw ays 0V	Replace electronic	1	A		X	X	X	X																		X
	E3A	Heating element relay defect	Replace electronic																									X
E40	E41	Lid open Door lock defect Cable defect Electronic defect	Replace doorlock Replace cable Replace electronic	0	S	X	X	X	X	X																		X
	E42	Door lock defect Door is unlocked during the cycle Tout 15 sec Door is not unlocking at the end of cycle Tout 4 min	Replace doorlock Replace cable Replace electronic	0	S	X	X	X	X	X																		X
	E43	Door lock triac defect	Replace doorlock Replace cable Replace electronic	0	A	X	X	X	X	X																		X
	E44	Door lock sensing failure Inputvoltage allw ays 0V or 5V	Replace electronic	1	A	X	X	X	X	X																		X
	E45	Door lock triac sensing failure Inputvoltage allw ays 0V or 5V	Replace electronic	1	A	X	X	X	X	X																		X
	E50	E51 Motortriac short circuit Motor cable short circuit	Replace cable Replace electronic	1,6	A	X	X	X	X	X																		X
E50	E52	No signal from tachogenerator Motor blocked Motor cable defective	Replace tachogenerator Replace motor Replace cable Replace electronic	1,6	A	X	X	X	X	X																		X
	E53	Motor triac sensing failure Input voltage allw ays 0V or 5V	Replace electronic	1	A	X	X	X	X	X																		X
	E54	Motor relay defect	Replace electronic	1,6	A	X	X	X	X	X																		X
	E55	Motor circuit interrupted	Replace motor check cable	1	A	X																						
	E56	No signal from tachogenerator No signal after 15 min	Replace tachogenerator	1	A	X																						
	E60	E61 Insufficient heating Maximum heating time expired NTC defective Heating element defect Connection heating element interrupted	Replace NTC Replace heating element Replace cable	3	S	X	X	X	X	X																		X
E60	E62	Overheating: Temperature greater 88°C for a time longer than 5 min NTC defective Cable defective	Replace NTC Replace heating element Replace cable	2	A	X	X	X	X	X																		X
	E66	Heating element defect Incongruence between antiboil 2 and relay	Replace pressure switch antiboil 2 Replace cable	2	A	X																						
	E66	Heating element defect Incongruence between antiboil 1 and relay	Replace pressure switch antiboil 1 Replace cable	2	A		X	X	X	X																		X

Service Program

Fault indication by display or cycle run display.

Fault code		Type of fault	Remedy	Alarm Code		E W M 2 0 0 0	E W 1 M D 1 0 0 0 0 0 9	E W 1 M D 1 0 0 0 0 0 0	E W M 1 0 0 0 p l u s	E W M 2 0 0 0 E V O	E W M 2 0 0 0 N E W
E80	E82	Wrong selector reset position detection	Replace electronic		A		X	X	X	X	X
	E83	Wrong selector reading	Wrong configuration of the machine Replace electronic	4	S		X	X	X	X	X
	E84	Recirc. pump sensing failure Input voltage always 0V or 5V	Replace electronic	1	A	X				X	X
	E85	Recirculation pump defect Triac defective	Replace recirculation pump Replace electronic	2	A	X				X	X
E90	E91	Interrupted communication between In/Output electronic and main electronic	Replace cable Replace electronic Replace In/Output electronic	0	A	X			X	X	X
	E92	Incongruence between In/Output electronic and electronic	In/Output electronic is incompatible with electronic	1	A	X			X	X	X
	E93	Configuration error	Wrong configuration of the machine	1	A	X	X	X	X	X	X
	E94	Lost of cycle datas	Wrong configuration of the machine Replace electronic	1	A	X	X	X	X	X	X
	E95	Communication error between microprocessor and EEPROM	Replace electronic	0	A		X	X	X	X	X
	E96	Incongruence between Hardware-version and cycles configuration	Wrong configuration of the machine Replace electronic	0	A		X	X			
	E97	Incongruence between selector and cycles configuration	Wrong configuration of the machine Replace electronic	0	A		X	X	X	X	X
EA0	EA1	DSP defect	Replace DSP Replace electronic Replace wiring Cut drive belt	5	S	X	X	X	X	X	X
	EA2	DPS sensing defect	Hauptelektronik tauschen			X					
	EA3	DPS unable to lock motor pully	Replace DPS Replace electronic Replace wiring Cut drive belt			X					
	EA4	DPS defect	Replace DPS Replace electronic Replace wiring			X					
	EA5	Triac for DPS defect	Replace electronic			X					
	EA6	Drum have blocked in the first ca. 30sec.	Cut drive belt Replace DSP Drum lid not closed					X	X	X	X
EB0	EB1	Power supply frequency out of limits	Wrong or disturbed power supply line Replace electronic	0	A		X	X	X	X	X
	EB2	Power supply voltage too high	Wrong or disturbed power supply line Replace electronic	0	A		X	X	X	X	X
	EB3	Power supply voltage too low	Wrong or disturbed power supply line Replace electronic	0	A		X	X	X	X	X

Service Program

Fault indication by display or cycle run display.

FaXOV cRde		Type Rf faXOV	5 emedy	Alarm Code		E W M 2 0 0 0 0	E W 1 M D 0 0 1 0 0 0 9	E W 1 M D 0 0 0 0 0 0	E W 1 M D 0 0 0 0 0 0 p l u s	E W M 2 0 0 0 0 0 E V O
EC0	EC1	Inlet valve blocked	Replace inlet valve Replace electronic Replace wiring							X
	EC2	Turbidity sensor defect	Replace turbidity sensor							X
EF0	EF1	Filter dirty Drainhose closed Time for draining to long	Cleaning drainhose and filter Checking drainpump		S	X			X	X
	EF2	Detergent overdosing Too much foam during the drain phase Filter dirty Drainhose closed	Cleaning drainhose and filter Checking drainpump Not overdosing	6		X			X	X
	EF3	Aqua Control system activated Drain pump cable defective Drain pump interruption	Leakage in the machine Replace cable Replace drain pump	2	A	X			X	X

Composition alarm codes			
Alarm state		Reactivate the machine with	
0	Program cycle interrupted	S	Start Button
1	Program cycle interrupted Door locked	A	Off / On
2	Program cycle stopped Drain pump is activated		
3	Heating step is skipped		
4	Program canceled		
5	DSP-function is skipped		
6	after 5 attempt		

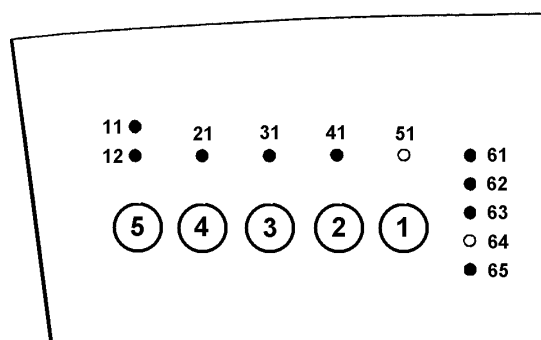
Service Program

Reading the alarm codes

In order to read the last alarm code memorized in the EEPROM on the PCB:

- Enter service test programme.
- Irrespective of the type of PCB and configuration, turn the programme selector clockwise to the tenth position.

The alarm is displayed by a repeated flashing sequence of the two LEDs (0.4 seconds lit, 0.4 seconds off, with an interval of 2.5 seconds between sequences). The buzzer (if featured) will sound "bips" in synchronization with the flashing of the LED 64:



for example

E 4 1

- The first letter of the Error code „E“ (Error) is not displayed as it is the same for all error codes.
- The program-end LED (LED 64) shows the first figure of the **number “4”** of the error code (Error group)
- The Start/Pause-LED (LED 51) shows the second digit of the **number “1”** of the error code (number within the group)

These two LEDs are featured on all models (though they are configured differently), and flash simultaneously.

for example

E A 1

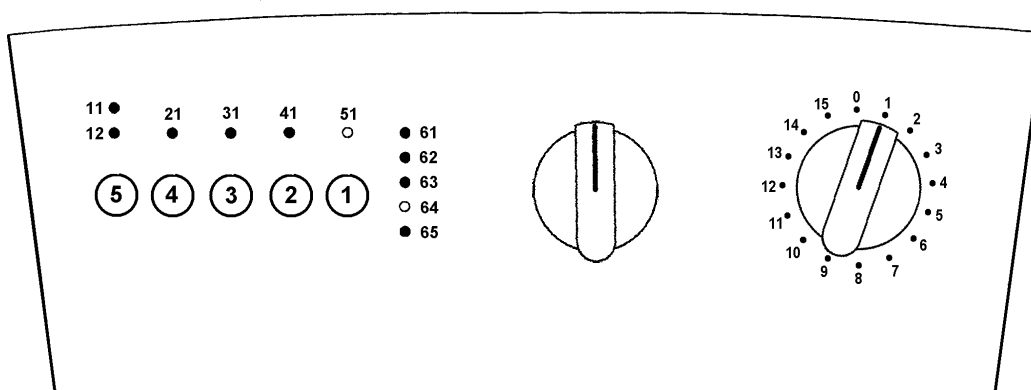
- If the Error group is a **letter „A“** this is shown on the basis of the hexadecimal system, i.e. the letters are displayed as follows:
A with 10 x flashing (LED 64)
B with 11 x flashing
...
F with 15 x flashing

Operation of alarms during diagnostics

All alarms are enabled during the components diagnostics phase.

Service Program

Rapid reading of alarm codes



The last alarm code can be displayed even if the programme selector is not in the 10th position (service test mode) or if the appliance is in normal operating mode (e.g. during the execution of an washing programme):

- Keep buttons 1 (3) and 2 (4) pressed in together.
- Then the LEDs indicate the error code by flashing sequently.
- The alarm sequence continues as long as the two buttons are held down
- While the alarms are displayed, the appliance continues to perform the cycle or, if in the programme selection phase, maintains the previously-selected options in memory.

Cancelling the last alarm

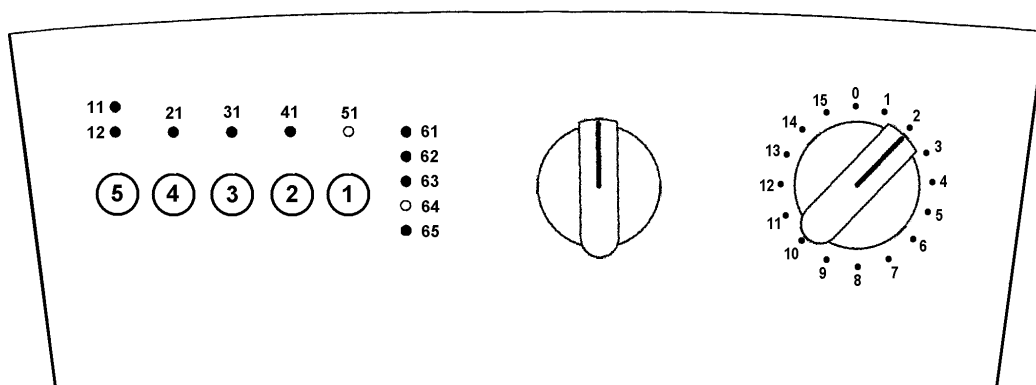
- Enter service test program (page 23)
- Press buttons 1 (3) and 2 (4) in together and keep them pressed in until the signal buzzer is heard once (all LEDs off).

It is good practice to cancel the last alarm

- after reading the alarm code, to check whether the alarm re-occurs during diagnostics
- after repairing the appliance, to check whether it re-occurs during testing.

Demo-Program

Activate the demo - program



These appliances have a Demo-Mode for demonstration purposes.

1. Access to demo program

- Switch off the appliance.
- Keep buttons 1 and 2 pressed in together and rotate the programme selector two positions to the right.
- Keep both selected keys pressed for about 2 seconds.
- You can select the individual programs and the associated option keys by using the program selector switch.
The key start/pause is disabled.
- The demo program will remain in the memory even if the appliance is switched Off.

2. Abandoning the demo program

- Switch off the appliance.
- Keep buttons 1 and 2 pressed in together and rotate the programme selector two positions to the right.
- Keep both selected keys pressed for about 2 seconds.
- Switch Off the appliance to deactivate the demo program.

Circuit Diagram

Technical Specifications

TECHNICAL SPECIFICATIONS

TOP LOAD / STAINLESS STEEL DRUM AND CARBORAN TUB
DOOR POSITIONNING

GENERAL FEATURES

Supply voltage 230 V
Dimensions (height, width, depth) 85/40/60 cm
Dryclothes loading capacity 5 or 4,5 kg
Drum rotation speed (washing/spinning) 55/1200 r.p.m

WATER LOAD CAPACITY (without clothes) :

Level I 8 l
Heating Level 3 l
Anti-overflow level 43 l

WATER PRESSURE :

Max./Min. 0,8/0,05 MPa

CONSUMPTIONS (COTTON 60°) :

see energie label

TECHNICAL PARTICULARS

DRAIN PUMP :

Maxi head 100 cm
Mini head 70 cm
Delivery rate 25 l/min
Power absorbed 30 W
Winding resistance 150/200 ohm

HEATING ELEMENT :

Power absorbed 1950 W
Resistance 27 ohm

WATER VALVE :

Delivery rate 5,5 l/min
Coil resistance 4300 ohm

DOOR INTERLOCK :

Type voltmetric
Internal door locking 0,02 s
Internal door release 0,02 s

DOOR INTERLOCK:

Type voltmetric
Internal door locking 6 s
Internal door release 40-120 s

TEMPERATURE PROBE (NTC) 6 k Ω at 20°C

PRESSURE SWITCH :

Level I 110/70 mm
Heating Level 60/40 mm
Anti-overflow level 350/290 mm

Interface EWM1000 :

Horizontal 132120250
Vertical 132120350

DOOR POSITIONNING (electric):

Identification mark 146132000

COLLECTOR MOTOR :

Pulley ratio 12
Insulation class B/F
Power absorbed : washing 300/350 W
Power absorbed : spinning 480/850 W
Washing speed 660 r.p.m
Spinning speed 12000/14760 r.p.m
Rotor : coil resistance (8-9) 1,6 ohm
Stator : coil resistance (5-10) 1,2 ohm

TACHOGENERATOR:

Coil resistance (3-4) 135/171 ohm

Pulley ratio 18

Insulation class B/F

Power absorbed : washing 250 W

Power absorbed : spinning 350 W

Washing speed 990 r.p.m

Spinning speed 15300/16200 r.p.m

Rotor : coil resistance (8-9) 1,68 ohm

Stator : coil resistance (5-10) 1,9 ohm

TACHOGENERATOR:

Coil resistance (3-4) 135 ohm

CONNECTION:

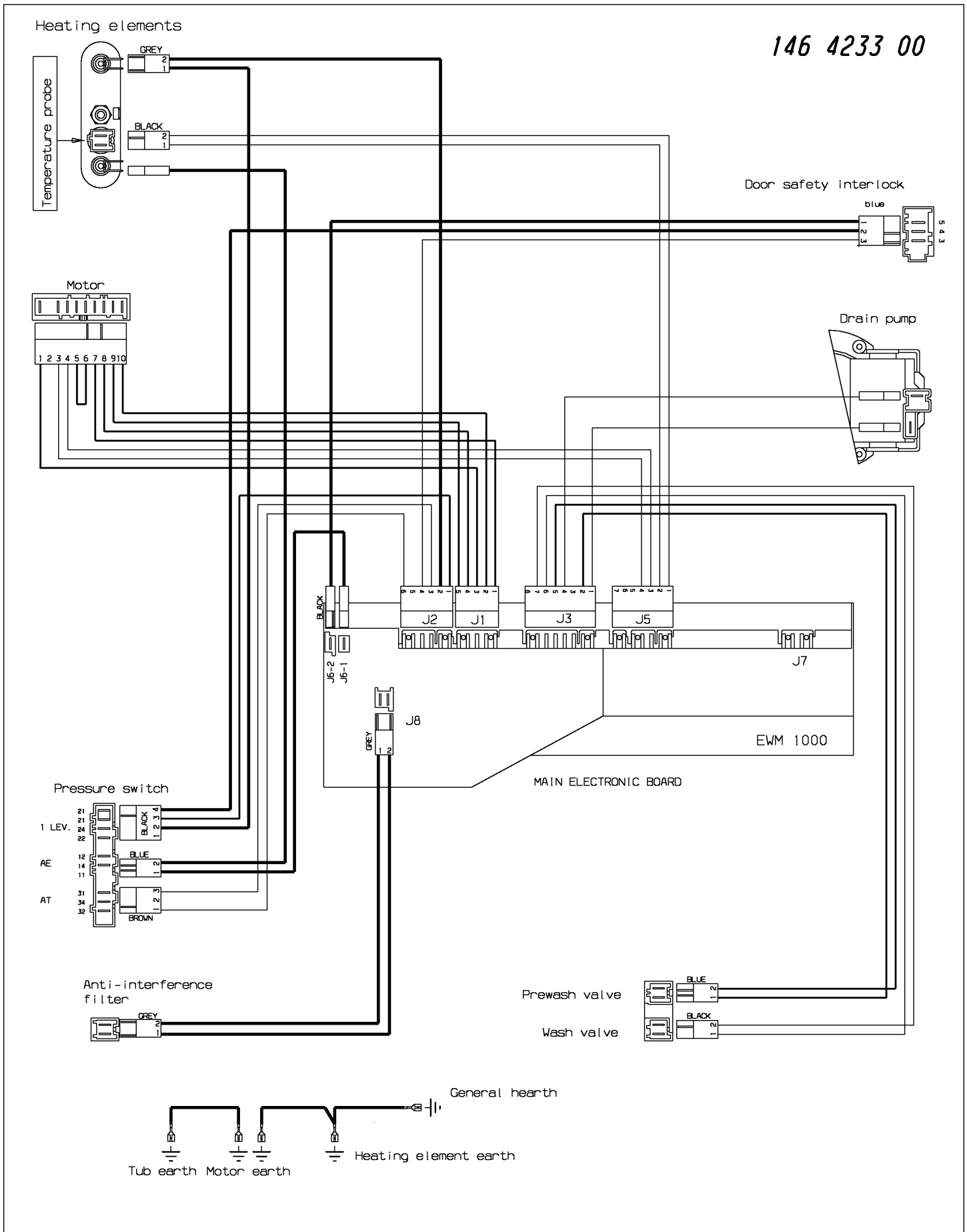
Water supply connection 1,5 m long

Water discharge connection height mini 70 / maxi 100 cm

Total power 2300 W

Circuit Diagram

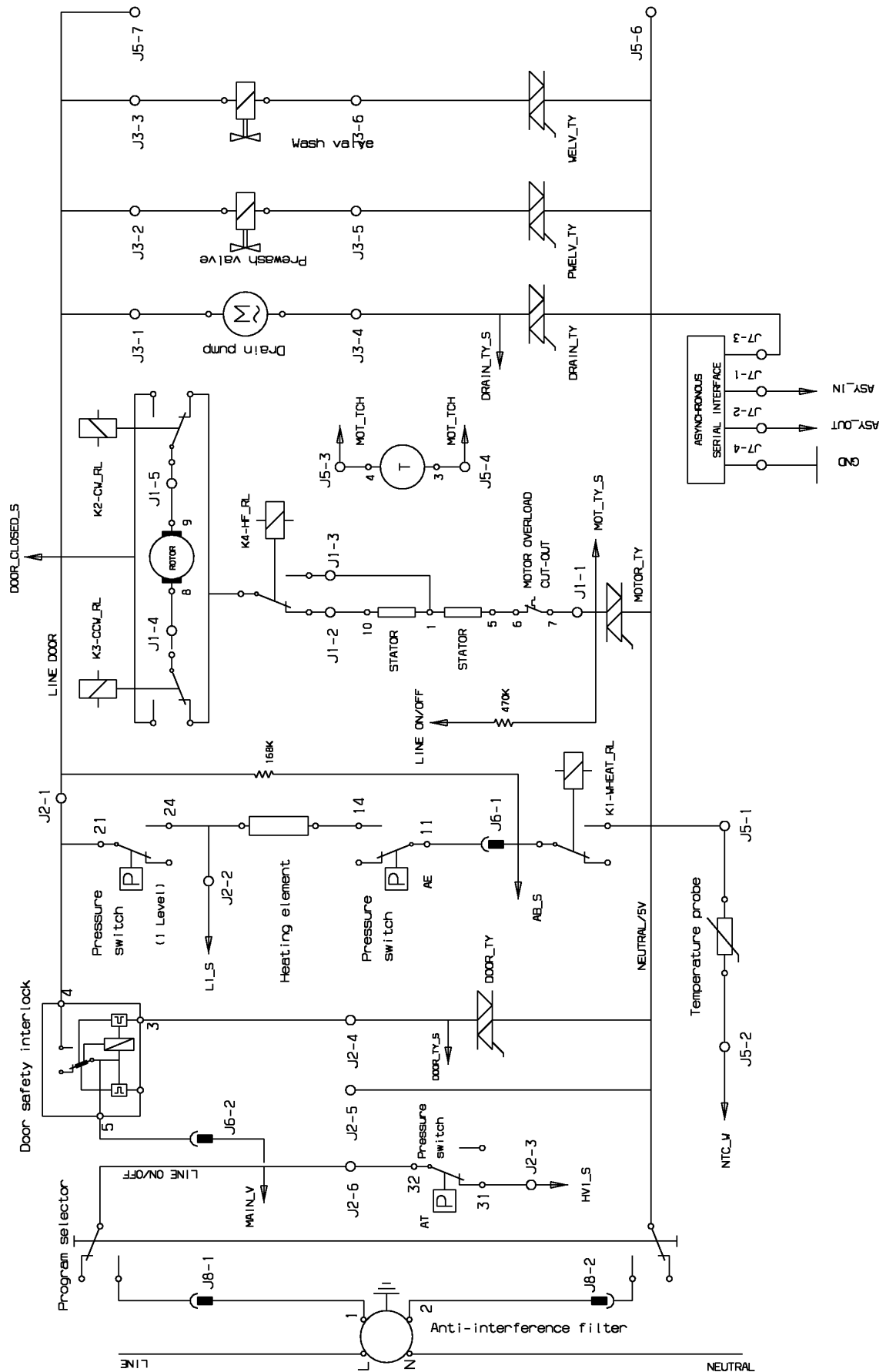
Wiring Diagram



Circuit Diagram

Elementary Diagram

146 4233 00



Circuit Diagram

Normal (consumer) Cotton / Linen Cycles: cold - 30-40-50-60-90° (without options)

Phase		N.	Function	Time/control	Movement	Heat. °C	Notes
Delay			Delayed start	Delay time	No Mov		
Prewash		0	Drain	VAE + 2" + 6"pause	No Mov		
		1	Water fill	P1 + QPW1 (*)	D55 from full		
		2	Cold wash	5'			Refill: P1
		3	Water fill	QPW2 (*)			
		4	Heating	T	D55	30	Cold = 20°C
		5	Maintenance	10'			
Wash	Stains	6	Drain + spin	VAE + 14" + 4,5'	C0		300/450/650 rpm
		7	Cotton water fill	P1 + Qh1 (*)	N55 from full		
		8	Cold wash	10'			Refill: P1+Qn1
		9	Heating	T		40	
		10	Maintenance	5'	N55		Only with "stains" option
		11	"Stains" water fill	Qs (*)			
		12	Cotton heating	T	N55	20/30/40/60/87	
		13	Maintenance	4'(87°)/5'(20-40°)/10'(60°)	N55		
		14	Cotton heating	T	E55	30/40/60/87	
		15	Maintenance	14'(87°)/35'(20-40°)/20'(60°)	E55		
	Cooling	16	Cooling water fill	Qc (*)			
		17	Movement	2'	D55		Only if >67°C
		18	Drain	VAE + 14"	No Mov		
		19	Drain + spin	5'	C1		450/650/850 rpm
Rinses	1st rinse	20	Cotton water fill	P1	N 55 from full		
		21	Movement	5'			Refill : P1+Qn1
		22	Drain	VAE + 15"	No Mov		
	2nd rinse	23	Drain + spin	5'	C2		450/650/850/1000rp
		24	Cotton water fill	P1+ Qn2 (*)	N 55 from full		
		25	Movement	5'			Refill: P1+Qne
		26	Drain	VAE + 15"	No Mov		
	Last rinse (softener)	27	Drain + spin	5'	C2		450/650/850/1000m
		28	Cotton water fill	P1			
		29	Movement	30"	N 55 from full		
		30	Time water fill	Qn3			
		31	Movement	8'			
		32	Drain	VAE + 14"	No Mov		
		33	Drain + spin	9'	COT_CF		450/650/850/1000/1200/1400 rpm
		34	Detach movement	1'	N55		

Notes:

P1 time needed to 1st level water fill

(*) time water fills are changeable and calculated by the electronic on the basis of the delivery rate (see specific table)

T time needed to heat the water at the set temperature

" seconds

' minutes

VAE time needed to drain the water till "empty" position of anti- boiling (safety heater) pressure switch

Circuit Diagram

Cotton / Linen Cycles: 90 Eco, 60 - 40/50 “energy label” (without options)

Phase		N.	Function	Time/ Control	Movement	Heat. °C	Notes
Delay			Delayed start	Delay time	No Mov		
Prewash		0	Drain	VAE + 2" + 6"pause	No Mov		
		1	Water fill	P1 + QPW1 (*)	D55 full		Refill: P1
		2	Cold wash	5'			
		3	Water fill	QPW2 (*)	D55		
		4	Heating	T		30	
		5	Maintenance	10'			
		6	Drain + spin	VAE + 14" + 4.5'	C0		300/450/650 rpm
Wash		7	Cotton water fill	P1 + Qe (*)	N55 from full		Refill: P1+Qwe
		8	Cold wash	10'			
		9	Cotton heating	T	N55	67/53/44	E50 (G19-40/50°)
		10	Maintenance	10'(67°) / 5'(50°) / 30'(40°)	E55		
		11	Cotton heating	T	E55	67/53/44	E50 (G19-40/50°)
		12	Maintenance	30'(67°) / 35'(50°-40°)	E55		20' (G19-40°)
		13	Drain	VAE + 14"	No Mov		
		14	Drain + spin	5'	C1		450/650/850 rpm
Rinses	1st rinse	15	Cotton water fill	P1 (C1=850 g/l) P1+Qn2 (C1<850 g/l)	N 55 from full		Refill: P1+Qne
		16	Movement	5'			
		17	Drain	VAE + 15"	No Mov		
		18	Drain + spin	5'	C2		450/650/850/1000m
	2nd rinse	19	Cotton water fill	P1+ Qn2 (*)	N 55 from full		Refill: P1+Qne
		20	Movement	5'			
		21	Drain	VAE + 15"	No Mov		
		22	Drain + spin	5'	C2		450/650/850/1000m
	Last rinse (softener)	23	Cotton water fill	P1	N 55 from full		
		24	Movement	30"			
		25	Time water fill	Qn3			
		26	Movement	8'			
		27	Drain	VAE + 14"	No Mov		
		28	Drain + spin	9'	COT_CF		450/650/850/1000/ 1200/1400 rpm
		29	Detach movement	1'	N55		

Notes:

P1 time needed to 1st level water fill

(*) time water fills are changeable and calculated by the electronic on the basis of the delivery rate (see specific table)

T time needed to heat the water at the set temperature

" seconds

' minutes

VAE time needed to drain the water till “empty” position of anti- boiling (safety heater) pressure switch

Circuit Diagram

Synthetics Cycles: cold - 30 - 40 - 50 - 60° (without options)

Phase		N.	Function	Time/ control	Movement	Heat. °C	Notes
Delay			Delayed time	Delay time	No Mov		
Prewash		0	Drain	VAE + 2" + 6" pause	No Mov		
		1	Water fill	P1 + QPW1 (*)	D 55 from full		Refill: P1
		2	Cold wash	5'			
		3	Water fill	QPW2 (*)	D 55	30	Cold = 20°C
		4	Heating	T			
		5	Maintenance	5'			
Wash		6	Drain + spin	VAE + 15" + 4,5'	C0		300/450/650 rpm
		7	Synthetics water fill	P1 + Qsy (*)	N 55 from full		
		8	Cold wash	10'			Refill: P1+Qy1
	Stains	9	Heating	T	N 55	40	Only with "stains" option
		10	Maintenance	5'			
		11	"Stains" water fill	Qs (*)			
		12	Heating	T	N55 for T>40° E55 per T< / = 40°	20/30/40/ 50/60	Economy = 42°C
		13	Maintenance	10'			
		14	Heating	T	E55	20/30/40/ 50/60	Economy = 42°C
		15	Maintenance	15'			Economy = 25'
	Cooling	16	Cooling water fill	Qc (*)	N55		
		17	Movement	1'			
		18	Drain	VAE	No Mov		
		19	Drain	1'	D55		
Rinses	1st rinse	20	Water fill	P1+ Qyr1 (*)	E55 from full		
		21	Movement	3'			Refill: P1
		22	Drain	VAE	No Movement		
	2nd rinse	23	Drain	1'	D55		
		24	Water fill	P1+ Qyr2 (*)	E 55 from full		
		25	Movement	3'			Refill: P1
		26	Drain	VAE	No Mov		
		27	Drain	1'	D55		
		28	Drain + spin	4'	C0		300/450/650 rpm
	Last rinse (softener)	29	Water fill	P1	E55 from full		
		30	Movement	30"			
		31	Time water fill	Qyr3			
		32	Movement	5'			Refill: P1
		33	Drain	VAE + 14"	No Mov		
		34	Drain + spin	4, 5'	SYN_CF		(max. 900rpm)
		35	Detach movement	1'	N55		Not for Economy

Notes:

P1 time needed to 1st level water fill

(*) time water fills are changeable and calculated by the electronic on the basis of the delivery rate (see specific table)

T time needed to heat the water at the set temperature

" seconds

' minutes

VAE time needed to drain the water till "empty" position of anti- boiling (safety heater) pressure switch

Circuit Diagram

Delicates Cycles: cold - 30°C - 40°C - 50°C - 60°C (without options)

Phase		N.	Function	Time/ control	Movement	Heat. °C	Notes
Delay			Delayed start	Delay time	No Mov		
Prewash		0	Drain	VAE + 2" + 6" pause	No Mov		
		1	Water fill	P1 + QPW1 (*)	D55 from full		
		2	Cold wash	5'			Refill: P1
		3	Water fill	QPW2 (*)	D55	30	Cold = 20°C
		4	Heating	T			
		5	Maintenance	3'			
		6	Drain	VAE + 15"	No Mov		
Wash		7	Delicates water fill	P1 + Qdw1 (*)	D55 from full		
		8	Cold wash	1'	D55		Refill: P1+Qdw2
		9	Heating	T	D55	20/30/40	
		10	Maintenance	10'			
		11	Heating	T		20/30/40	
		12	Maintenance	10'			
		13	Drain	VAE	No Mov		
Rinses	1st rinse	14	Drain	1'	D55		
		15	Water fill	P1+ Qrd1 (*)	D55 from full		
		16	Movement	5'	D55		Refill: P1
		17	Drain	VAE	No Mov		
	2nd rinse	18	Drain	1'	D55		
		19	Water fill	P1+ Qrd1 (*)	D55 from full		
		20	Movement	5'	D55		Refill: P1
		21	Drain	VAE	No Mov		
	Last rinse (softener)	22	Drain	1'	D55		
		23	Water fill	P1	D55 from full		
		24	Movement	30"			
		25	Time water fill	Qrd2 (*)			
		26	Movement	3'			Refill: P1
		27	Drain	VAE	No Mov		
		28	Drain + spin	3 8'	DEL_CF		(450/700rpm)
		29	Detach movement	1'	N55		

Notes:

P1 time needed to 1st level water fill

(*) time water fills are changeable and calculated by the electronic on the basis of the delivery rate (see specific table)

T time needed to heat the water at the set temperature

" seconds

' minutes

VAE time needed to drain the water till "empty" position of anti- boiling (safety heater) pressure switch

Circuit Diagram

Wool Cycles: cold - 30° - 40°

Phase	N.	Function	Time/control	Movement	Heat. °C	Notes
Delay		Delayed time	Delay time	No Mov		
	0	Drain	VAE + 2" + 6"pause	No Mov		
Wash	1	Wool water fill	P1 + Qwo (*)	Pwl_1	20/35/40	Refill: P1+Qwo1
	2	Cold wash	1'			
	3	Heating	T			
	4	Maintenance	14'			
	5	Drain	VAE+14"	No Mov		
Rinses	6	Water fill	P1	No Mov		
	7	Time water fill	Qwor1 (*)	Pwl_1		Refill: P1
	8	Movement	3'			
	9	Drain	VAE+14"			
	10	Water fill	P1	No Mov		
	11	Time water fill	Qwor1 (*)	Pwl_1		Refill: P1
	12	Movement	3'			
	13	Drain	VAE+14"			
	14	Water fill	P1	No Mov		
	15	Movement	30"	Pwl_1		Refill: P1
	16	Time water fill	Qwor2 (*)			
	17	Movement	5'			
	18	Drain	VAE+14"	No Mov		
	19	Drain + spin	3,5'	WOOL_CF		(max. 1000rpm)

Hand wash Cycles: cold - 30° - 40°

Phase	N.	Function	Time/control	Movement	Heat. °C	Notes
Delay		Delayed start	Delay time	No Mov		
	0	Drain	VAE + 2" + 6"pause	No Mov		
Wash	1	Wool water fill	P1 + Qwh (*)	Pwl_4	20/35/40	Refill: P1+Qwh1
	2	Cold wash	1'			
	3	Heating	T			
	4	Maintenance	14'			
	5	Drain	VAE+14"	No Mov		
Rinses	6	Water fill	P1	No Mov		
	7	Time water fill	Qwor1 (*)	Pwl_4		Refill: P1
	8	Movement	3'			
	9	Drain	VAE+14"			
	10	Water fill	P1	No Mov		
	11	Time water fill	Qwor1 (*)	Pwl_4		Refill: P1
	12	Movement	3'			
	13	Drain	VAE+14"			
	14	Water fill	P1	No Mov		
	15	Movement	30"	Pwl_4		Refill: P1
	16	Time water fill	Qwor2 (*)			
	17	Movement	5'			
	18	Drain	VAE+14"	No Mov		
	19	Drain + spin	3,5'	WOOL_CF		(max. 1000rpm)

Notes:

P1 time needed to 1st level water fill

(*) time water fills are changeable and calculated by the electronic on the basis of the delivery rate (see specific table)

T time needed to heat the water at the set temperature

" seconds

' minutes

VAE time needed to drain the water till "empty" position of anti- boiling (safety heater) pressure switch

Circuit Diagram

Type	Intake Time Description	Litre ca.
Levels for BOIL/COLOURS		
Qpw1	First prewash water intake (all programmes)	3.5
Qpw2	Prewash water intake after cold-wash (all programmes)	3.5
Qhl	Normal water intake for half-load	3.5
Qhl2	Water intake for half-load for "Extra Short" programme	4.5
Qe	Water intake for "Energy Saving" programme	4.5
Qwe	Refill "Energy Saving" programme if no prewash is selected	0
Qw	Refill main wash if the programme is not an "Energy saving" programme	1.5
Qc	Water intake for cooling	3.0
Qs	Water intake for "stains" chamber	1.5
Qk	Water intake for "Short" programme rinse	12.5
Qn1	Normal water intake for the 1st rinse	7.5
Qn2	Normal water intake for other rinses	9.0
Qn3	Normal water intake for final rinse	10.0
Qne	Normal water intake for "Energy Saving" programme	4.0
Qsr1	Water intake for extra rinse and night program without spinning	5.5
Qsr2	Water intake for extra rinse and night programme with spinning	6.0
Levels for easy-care textiles		
Qsy	Water intake for main wash	1.0
Qsy1	Water intake for main wash for programme "EXTRA SHORT"	3.5
Qy1	Water intake for main wash without prewash	2.0
Qyr1	Normal water intake for 1st rinse	8.0
Qyr2	Water intake for other rinses	8.0
Qyr3	Water intake for final rinse	9.5
Levels for Delicates		
Qdw1	Water intake for main wash	8.5
Qdw2	Refill main wash	5.0
Qrd1	Normal water intake for the 1st rinse and other rinses	10.0
Qrd2	Normal water intake for the final rinse	11.0
Levels for Woollens		
Qwo	Water intake for main wash	10.0
Qwo1	Refill main wash	5.0
Qwor1	Normal water intake for the 1st rinse and other rinses	8.0
Qwor2	Normal water intake for the final rinse	8.0
Levels for Hand-wash		
Qwh	Water intake for main wash	10.0
Qwh1	Refill main wash	5.0