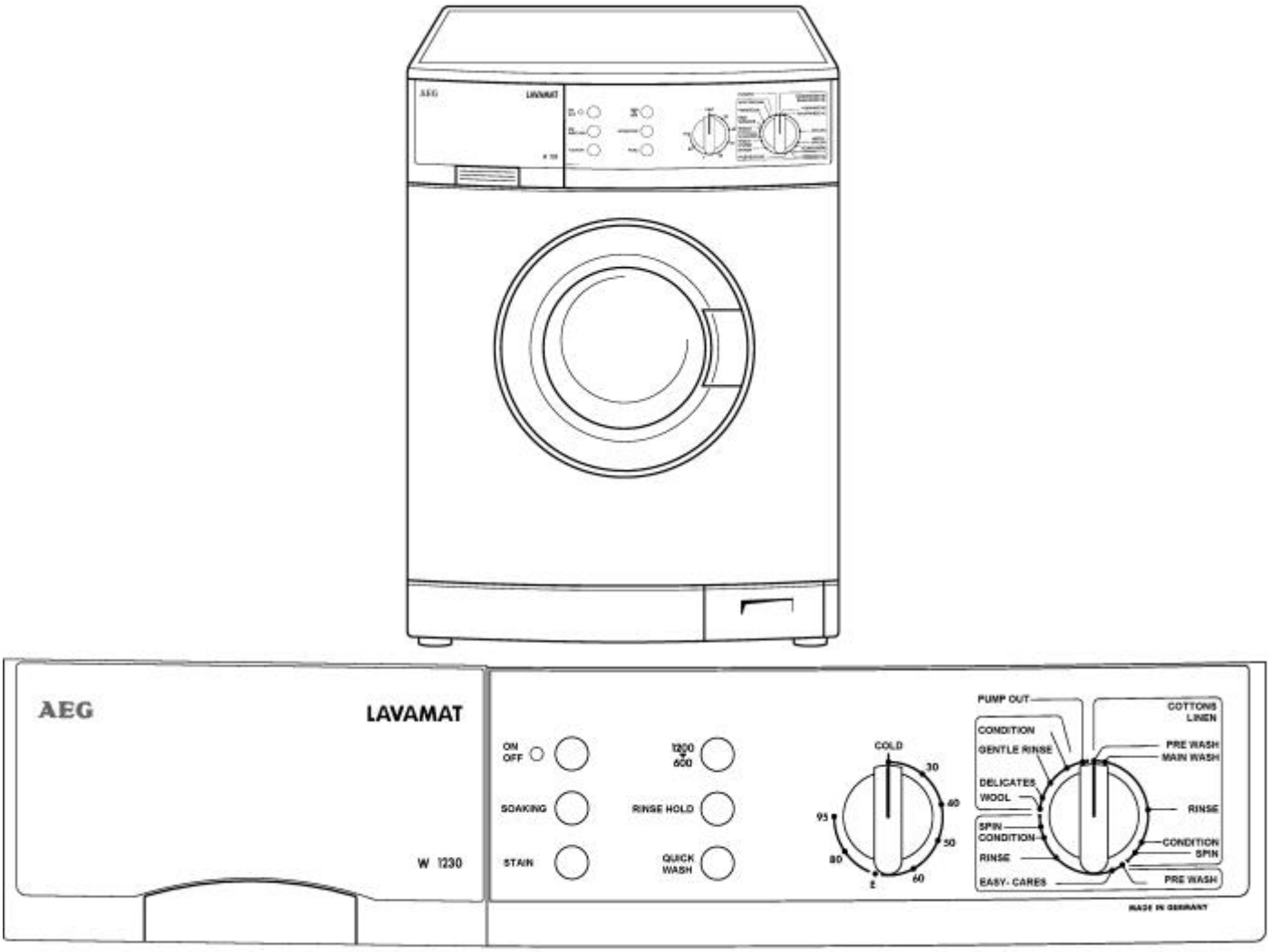
Electrolux
Technical Support Europe

SERVICE MANUAL
WASHING



		Washing machines Frontloader	
© AEG Hausgeräte GmbH Muggenhofer Straße 135 D-90429 Nürnberg Germany Fax +49 (0)911 323 1420 TSE-N Edition: 10.00	Publ.-Nr.: **599 50 88 67** 685 EN	VS 70	

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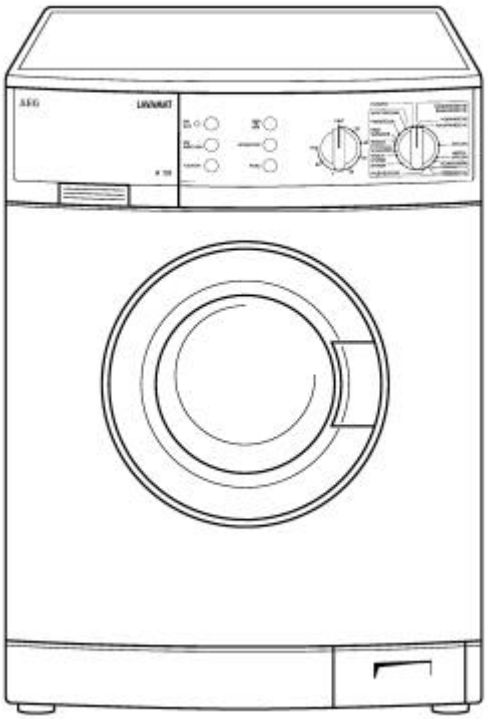
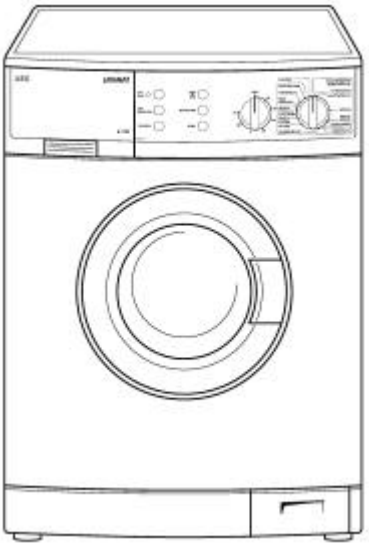
1. General Characteristics ?



ÖKO_LAVAMAT W1030
Characteristics

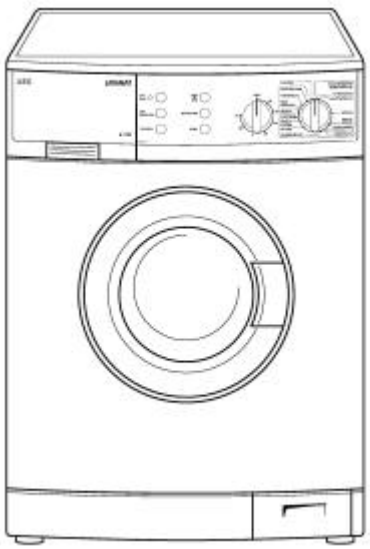
- appliance with hybrid timer VS70
- sensortronic foam detection
- unbalance control system
- motor is phase-angle controlled
- eco trap
- carbon tub
- maximum drum speed 1,200 1/min
- speed reduction
  model with push buttons
  selector

1.1 Classes of appliances



Class of appliance		PGS TYPE
I ÖKO_LAVAMAT	80030	EWM 3000 with hand wash and easy iron
II ÖKO_LAVAMAT	70030	EWM 2000+ with hand wash and easy iron EWM 2000- with hand wash and easy iron
III ÖKO_LAVAMAT	Wxx3x	Vs 70

Range survey				
Class of appliance 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+
		↘	↙	
Class of appliance 99	**80030**	**70030**		**W1030**
		↙	↘	
PGS – type	EWM3000 (mirrored)	EWM 2000+	EWM 2000-	VS 70



1.2 Model descriptions

Ziffern

X X X X X		
⇓ ⇓ ⇓ ⇓ ⇓	⇒ **channel of distribution**	0 = line 1 = Otto 3 = special channel of distribution over the Netherlands 4 = special channel of distribution over the Netherlands 6 = Saphir 7 = Carat 8 = Exclusiv
⇓ ⇓ ⇓ ⇓	⇒ **design and equipment**	0 = crowned 1 = with HC connection 2 = series 98 e.g. 80020; 70020 3 = series 99 e.g. 80030; 70030 5 = flat porthole 6 = flat front door
⇓ ⇓ ⇓	⇒ **order of rank**	8 = illuminated 7 = base appliance with aqua control 6 = base appliance without aqua control 5 = without SZV 4 = flange valve with aqua control 3 = with flange valve
⇓ ⇓	⇒ **revolution**	8 = 1800 6 = 1600 5 = 1500 4 = 1400 3 = 1300 2 = 1200 1 = 1100 0 ≤ 1000
⇓	⇒ **class**	8 = 80000 7 = 70000 6 = 60000 5 = 50000; Wxxxx 4 = toploader high 3 = 30000; Wxxxx 2 = toploader low 1 = washer/dryer

2. Appliance data of base model

Electric connection:

Voltage: 230V
Frequency: 50Hz
Fuse: 10A

Energy consumption:

60°C cotton: 0.95kWh

Water consumption:

60°C cotton: 54l

Filling quantity:

Max.: 5kg

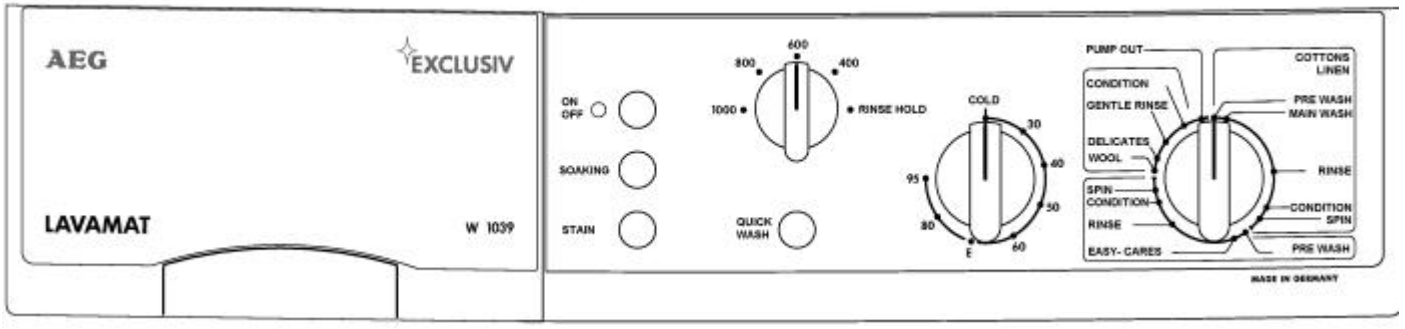
Dimensions:

Height: 85 cm
Bridth: 60 cm
Depth: 60 cm

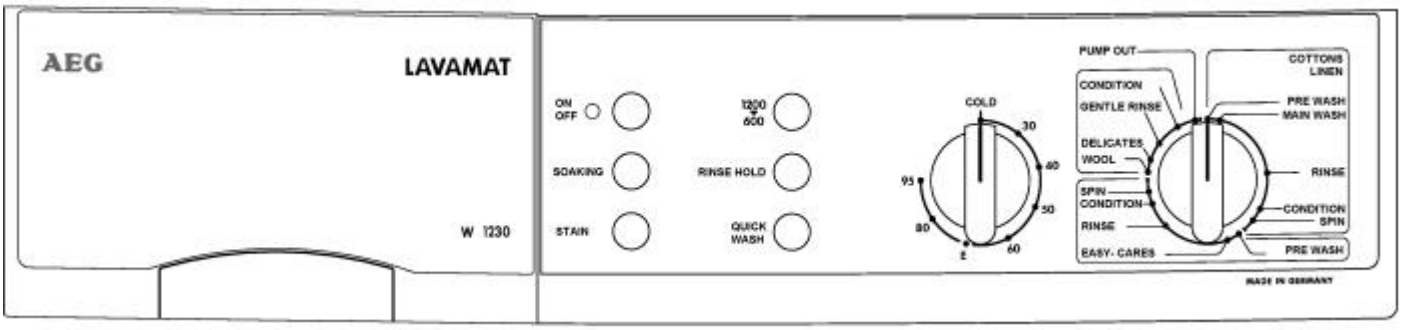
3. Control elements

3.1 Panel

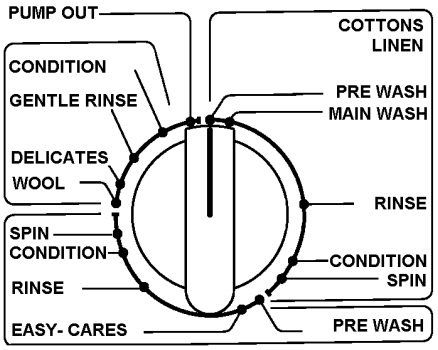
a. Version: speed reduction with selector



b. Version: speed reduction with push button



3.2 Program part



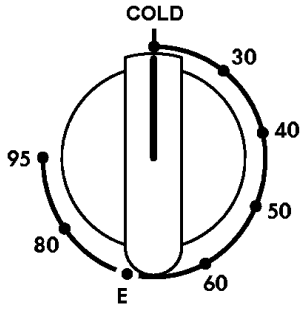
After selecting the desired cycle, i.e. COTTON, SYNTHETICS, WOOL and DELICATES, the temperature is adjusted by the temperature regulator.

Wash cycles:

1. COTTON
2. SYNTHETICS
3. WOOL and DELICATES integrated in one cycle
4. Additional cycle: DRAIN

The individual cycle steps, such as PREWASH, MAIN WASH, RINSE, SOFTENER, SPIN etc., can also be selected separately. Please refer to the functional plans for functions.

3.3 Temperature selector



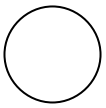
The temperature can be selected according to the table below. The temperatures in SYNTHETICS, DELICATES and WOOL are limited by the timer.

potentiometer position	COTTON	SYNTHETICS	DELICATES – WOOL PREWASH/SOAK
	temperature (°C)	temperature (°C)	temperature (°C)
1	cold	cold	cold
2	30	30	30
3	40	40	40
4	50	50	40
5	60	60 (50 UK)	40
6	70	60 (50 UK)	40
7	80	60 (50 UK)	40
8	90	60 (50 UK)	40

3.4 Options

3.4.1 ON / OFF

ON / OFF



The ON / OFF lamp h6 is executed as a stand-by lamp.
The lamp lights up when switching on the appliance.
The lamp does not go out automatically at the end of the cycle, but only when switching off the appliance.

3.4.2 SOAK

SOAK

Pushing this button means, with the cycles COTTON and SYNTHETICS, that the PREWASH changes to SOAK. (after heating up the water to 40°C and 20 minutes of washing; mechanical system D OFF for 4 sec and ON for 12 sec, 55 1/min).
A RINSE HOLD follows the SOAK.
The water will be drained and the cycle continued with the MAIN WASH by another pressing of this button.

3.4.3 STAINS

STAINS

With the COTTON and SYNTHETICS cycles (except the QUICK cycle) the stain remover will be flushed in through the stain remover compartment after the water has been heated up to 40°C (BIO phase).

3.4.4 QUICK

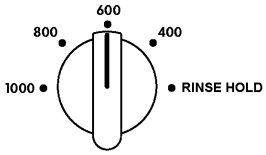
QUICK

Pressing this button reduces the cycle duration time as follows: by approx. 35 minutes with the COTTON cycles 0-60°C, by approx. 20 minutes with the COTTON cycles 70-90°C and with the SYNTHETICS cycles.

3.4.5 RINSE HOLD

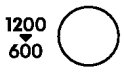
RINSE HOLD

By pressing this button the water in the drain tank will not be drained after the last rinse cycle. This function can be selected both with the COTTON and the SYNTHETICS cycles and with the DELICATES and WOOL cycle. By pressing this button again the water will be drained, the final spin carried out and the cycle finished.



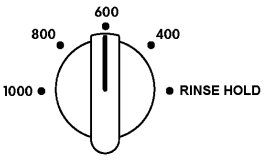
In this case a 5-position-potentiometer is used. In position 5 (RINSE HOLD) the appliance is stopped without that the water is drained after the last rinse. This function can be carried out with following cycles: COTTON, SYNTHETICS, DELICATES and WOOL. For starting the cycle anew you only have to adjust the desired spin speed with the potentiometer. Then the water will be drained, the final spin carried out and the cycle finished.

3.4.6 SPEED REDUCTION



The speed reduction button only affects the final spin speed (the intermediate rinses remain unchanged in order not to affect the efficiency of rinses).

	COTTON				DELICATES (EU-(UK) SYNTHETICS (UK)	WOOL (EU-UK) SYNTHETICS (Europ.)	
normal spin speed	650	850	1,000	1,115	650	650	650
reduced spin speed	420	480	540	580	420	420	480



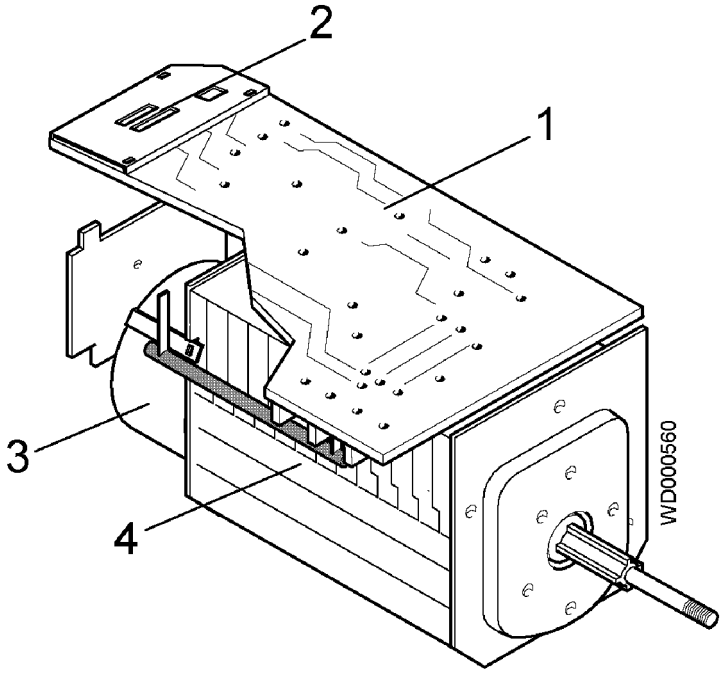
In this case a 5-position-potentiometer is used.
In positions 1 – 4 the spin speed will be reduced in the final spin according to the table below (the intermediate spins remain unchanged in order not to affect the efficiency of rinses).

4. Components

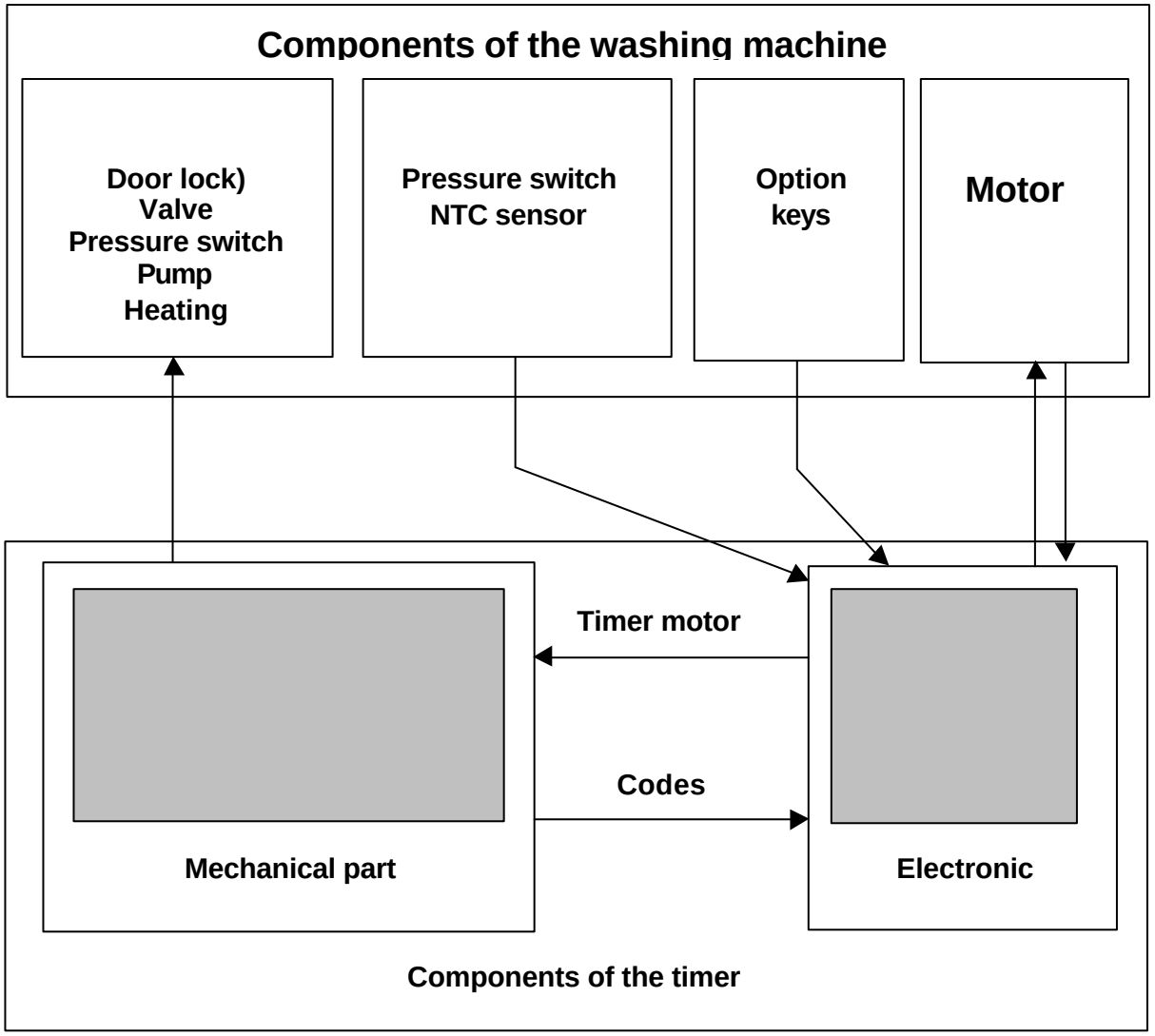
4.1 Hybrid timer (PGS)

This timer consists of two components, that is of an electromechanical timer and of an electronic control board. The electronic control board is directly welded with the timer connectors.

1. Electronic
2. Microprocessor
3. Timer motor
4. Electromechanical timer



4.1.1 Principle of function



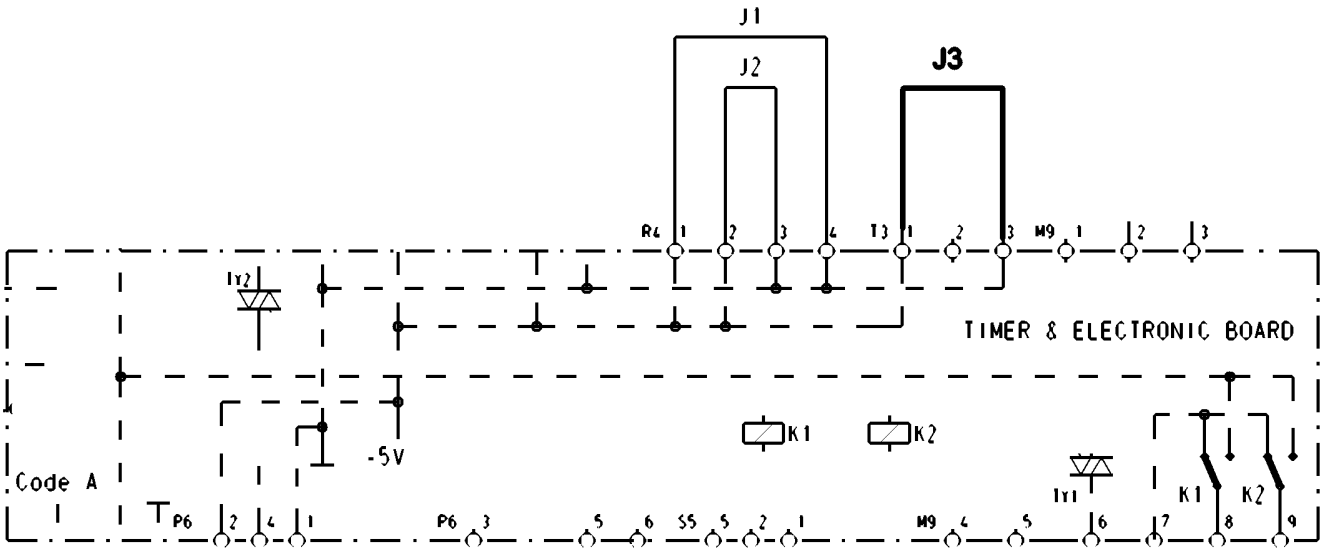
By a number of contact makings the timer transfers those codes to the electronic control, which determine the functions that have to be carried out during the switch phases of the separate cycles.

The electronic control board regulates the wash program run taking into consideration the selected additional functions.

At the end of a cycle phase executed in a certain switch position it provides the timer motor with voltage using a TRIAC, whereby the timer motor advances to the next wash cycle phase.
It controls the pressure switch closure,
controls the drain temperature by NTC sensor,
feeds the drum movement motor directly with a second TRIAC and controls its speed by a signal that is transmitted from the tachogenerator.
The rotational direction of the motor is set by the contact making of two relais.

All other electromechanical components of the automatic washing machine are fed by the timer contacts.

4.1.2 Timer coding



a. versions

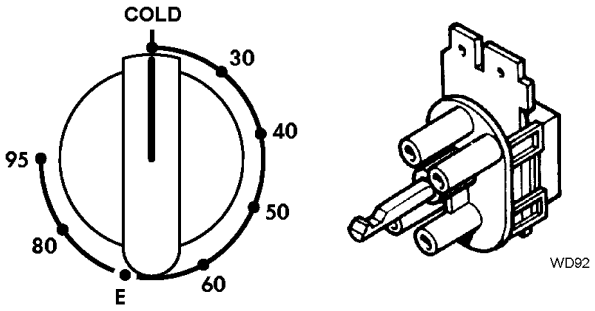
J3 Connector which defines the timer function:
”Europe” if T3.2-T3.3 are not connected
”UK” if T3.2-T3.3 are connected.

b. speed

J1-J2 Connectors, corresponding to the respective model, determine the transmission ratio between motor pinion and belt pulley and the final spin speed.

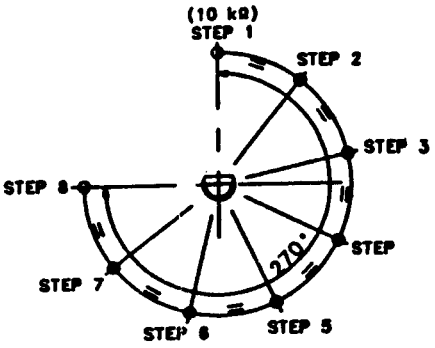
J2	**J1**	Transmission ratio	Speed
0	0	1/18	650
0	1	1/14	1,000
1	0	1/12	1,150
1	1	1/18	850

4.2 Temperature selector



An 8-position-potentiometer (10 kOhm – 0 Ohm) is used as the temperature selector.

Fig. 1



STEP n°	V_{out} (V)
1	0,04÷0,24
2	0,80÷1,00
3	1,44÷1,70
4	2,20÷2,50
5	2,90÷3,20
6	3,55÷3,75
7	4,10÷4,30
8	4,80÷4,96

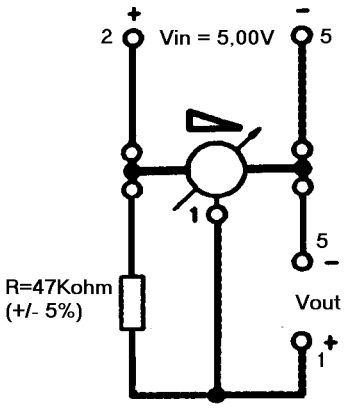
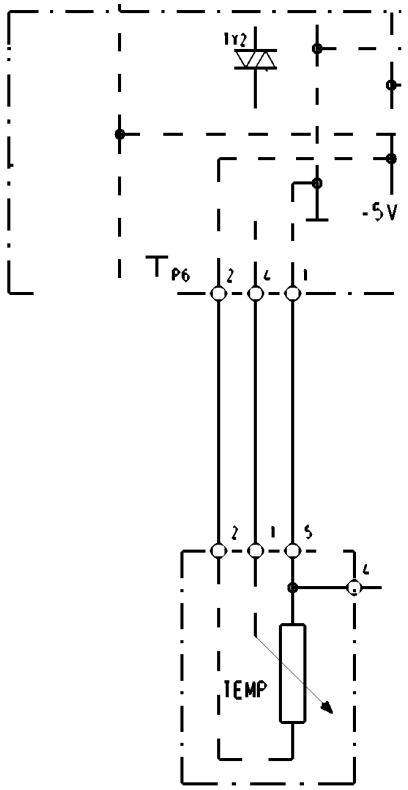


Fig. 2



To check the function of the temperature selector you can measure the output voltage (Vout) between the contacts 1 and 5 in the separate positions.
See figure 1.
The input voltage (Vin) between the contacts 2 and 5 is 5V.

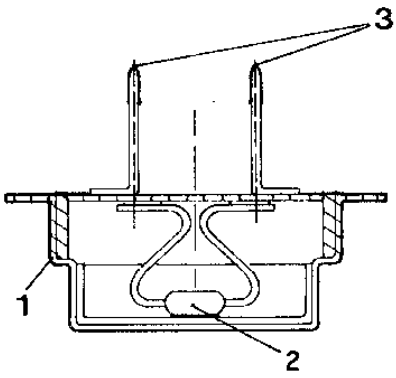
In figure 2 you can see the circuit diagram of the temperature selector in the wiring diagram.

4.3 NTC sensor

The electronic of the hybrid timer controls the drain temperature by means of a NTC temperature sensor.

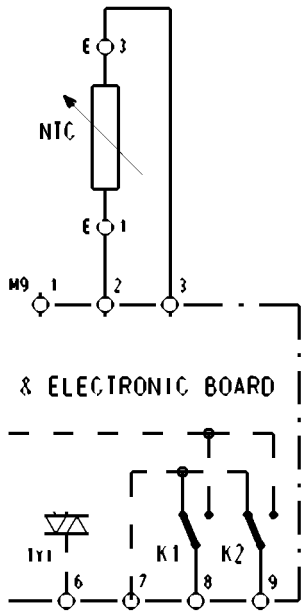
If the NTC sensor should have a short circuit or an interruption, the heating phase will be skipped.

Fig. 1



1 Casing
2 NTC resistor
3 Connection tags

Fig. 2

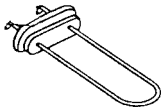


°C	KW
30	17,3 +/-10,4%
50	7,84 +/-8,5%
70	3,92 +/-7,3%
85	2,32 +/-6,5%

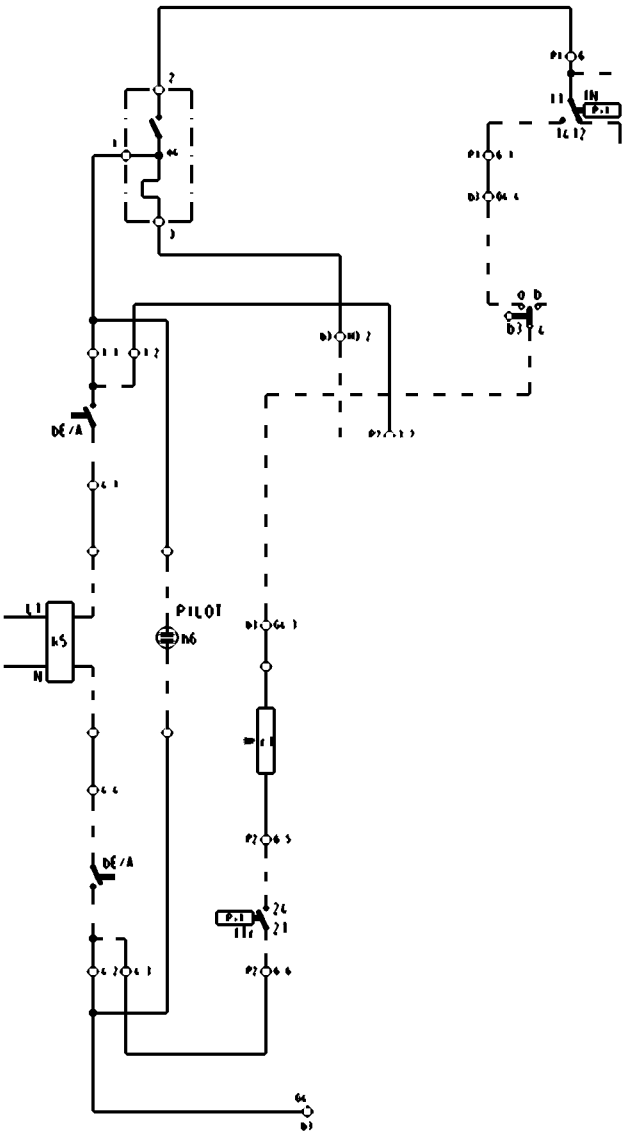
To check the NTC sensor function you can measure the ohmic resistance between the contacts E1 and E3.

In figure 2 you can see the circuit diagram of the NTC sensor in the wiring diagram.

4.4 Heating element



Heating element:
Input power: 230V; 50 Hz;
Capacity: 1950W
Fuse: 10A

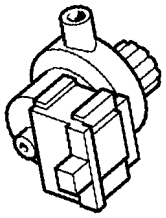


Control of heating element (r1):

In order to heat, the dry-running protection level (fTr) and the normal level (fN) must be achieved. The contact b3 / 4a has to be made by the timer. The appliance must be switched on (bE/A) and the door locked (e4).

4.5 Drain pump

Drain pump



Input power: 230W; 50Hz; synchronous
Discharge capacity: 22 l/min
Capacity: 34W + 30%
Resistance: 164Ω + 5/-5%

Pump control (m3):

In order to pump, the contact b3 / 9a has to be made by the timer. The appliance must be switched on (bE/A) and the door locked (e4).
The appliance would pump even when the appliance is switched on and the safety level (fS) has reacted. Over-filling protection!

4.6 Valve

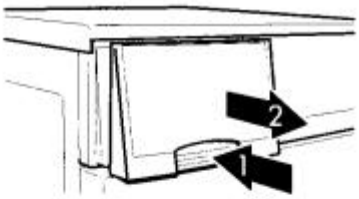
Inlet valve:

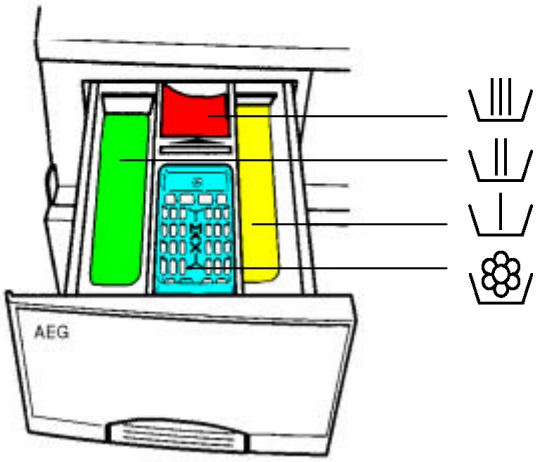
Input power	220/240V +6-15%; 50 Hz;
	0.6 – 10 bar
Flow rate:	8 l/min

Valve control (cold):

The water flows in depending on the desired level (fN; fH). The timer controls the time of the water inlet via the contact b3 / 9a.

4.7 Drawer





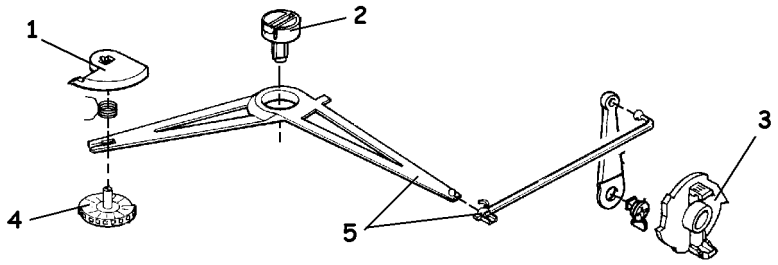
Rinse-in compartment for prewash detergent/soak agent or softener.
Is rinsed in right at the beginning of the wash cycle.

Rinse-in compartment for powdered detergent and possibly softener.
Is rinsed in at the beginning of the main wash cycle.
If you use softener and need the right compartment for the prewash detergent/soak agent, put the water softener onto the detergent in the left compartment.

Rinse-in compartment for stain remover.
Is rinsed in time-optimized during the main wash cycle with the additional cycle STAINS.

Rinse-in compartment for liquid care products (soft rinser, form rinser, starch agent).
Is rinsed in during the last rinse.
Fill the compartment only to the MAX level. Viscous agents must possibly be thinned, powdered starch agents dissolved.

4.7.1 Water distributor



The individual rinse-in compartments are selected by a lever mechanism **5** and a control pulley **3**, which is situated at the timer. The rotary lever **1** indicates the rinse-in compartment.
The eccentric **2** is to set the water distributor. Then the water is sprayed into the corresponding compartment via nozzle **4**.

Fig. 1 **Fig. 2**

1 rotary lever
2 eccentric

Setting of the water distributor

1. Set the timer (PGS) to main wash
2. Check whether the red rotary lever shows to the letter "**b**" of the water distributor. (Fig. 1) If not, set it with the help of the eccentric.
3. Now set the timer (PGS) to softener and control whether the red rotary lever shows to the letter "**d**" of the water distributor. If necessary, it must be re-set. (Fig. 2)

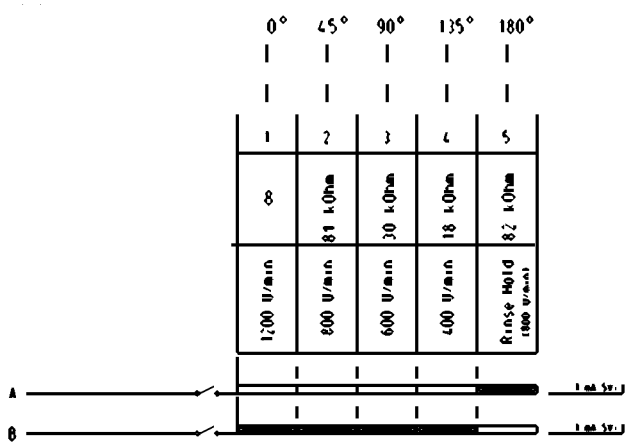
4.8 Speed selector

The spin speed with the final spin is reduced in accordance with the table below.

	COTTON			DELICATES (EU – UK) SYNTHETICS (UK)	WOOL (EU – UK) SYNTHETICS (EU)	
Type of spin	CF			C6	C4	
U ratio	01:18	01:14	01:12		1:18 (650)	
5	**X**	**X**	**X**	**X**	**X**	**X**
4	390	420	440	360	360	390
3	480	540	580	420	420	480
2	660	780	860	540	540	660
1	850	1000	1150	650	650	850

X means RINSE HOLD

Fig. 1



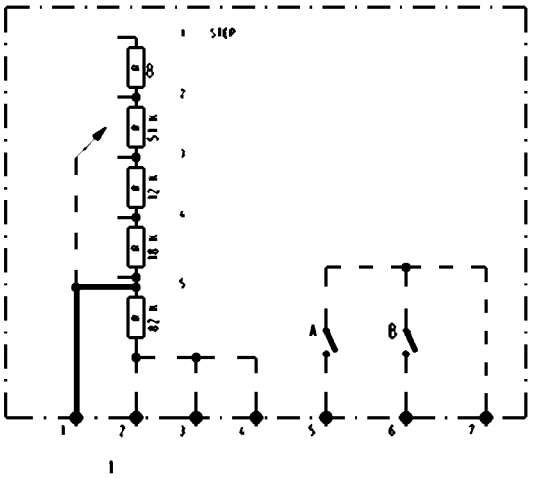
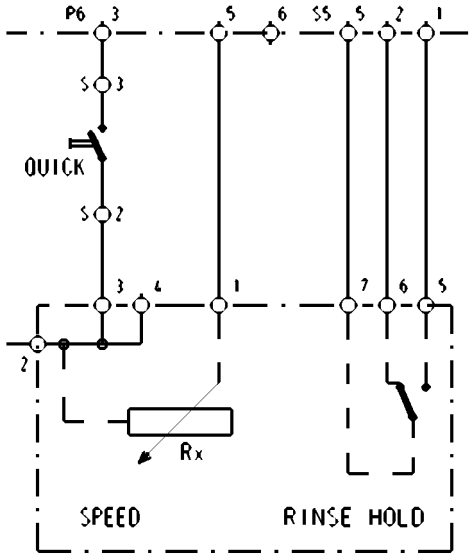


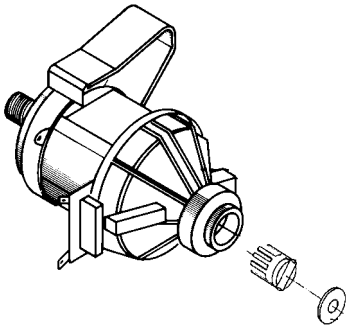
Fig. 2

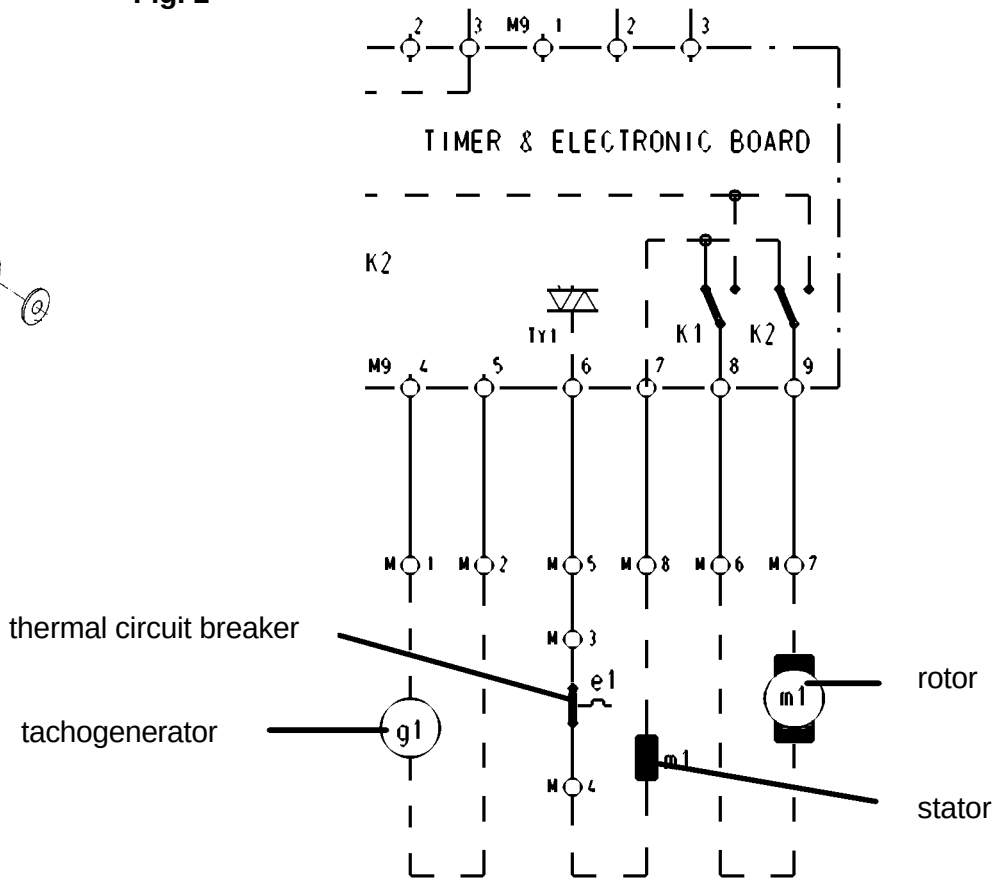


To check the speed selector, you can measure the ohmic resistances between the contacts 1 and (2;3;4) (Fig.2). If the RINSE HOLD is selected, the contact A is made. If a speed is selected, the contact B is made. This can be measured at the contacts (5;6;7) (Fig.1 and Fig.2).

4.9 Motor

Fig. 1





The motor is phase-angle controlled via the TRIAC TY1. Relais K1 and K2 are responsible for switching over the rotational direction. To check the motor you can measure the ohmic resistances between the contacts (Fig. 1).

a. measured values

Reference number	Input power	Tacho	Rotor	Stator complete
124 309 900	230; 50Hz AC	135W +/-8%	1.75W +/-8%	1.12W +/-8%
124 391 000	230; 50Hz AC	135W +/-8%	1.49W +/-8%	1.09W +/-8%
124 306 100	230; 50Hz AC	135W +/-8%	1.68W +/-8%	1.9W +/-8%

b. consumption values

Reference number	124 309 900	124 391 000	124 306 100
Drum 1/min	1000	1100-1200	1000
Load	5 kg	5 kg	5 kg
Washing	150W	150W	200W
Spin:			
Full field	450W	450W	350W
Power consumption	max. 6A	max. 6A	max. 6A

Short-circuit in the motor-TRIAC

In case of a short circuit in the motor supply TRIAC the electronic board will disconnect the power supply to the motor by switching over the relais. After 30 seconds the motor is fed again. If the malfunction continues to exist after 3 control attempts (2 with SPIN), the power supply to the motor will be disconnected again and the timer advances to the “STOP” position.

A defect in the tachogenerator or the motor

In case of a lack of the tachogenerator signal (a defect in the tachogenerator or the motor) the electronic board will disconnect the power supply to the motor for 30 seconds and tries to feed the motor again afterwards. If the malfunction continues to exist the attempts to feed the motor will be repeated every 30 seconds until the cycle end.

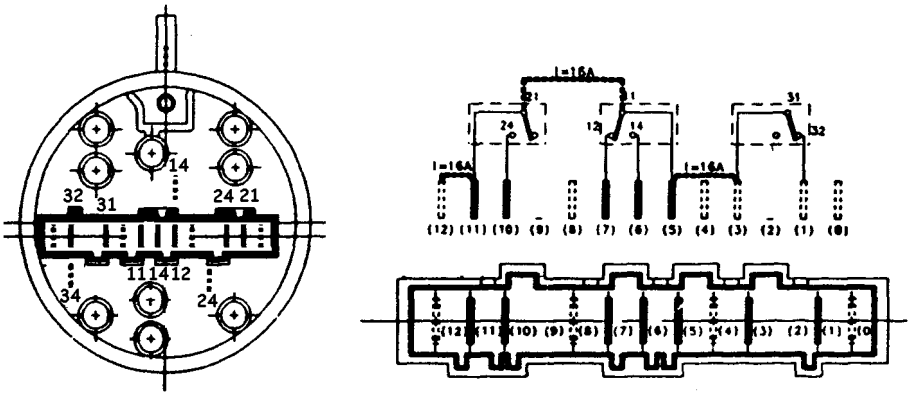
4.10 Pressure switches

This appliance contains 2 pressure switches.

a. 3-fold pressure switch S-No.: 110 570 400

This pressure switch has 3 levels (fN;fH;fTr)

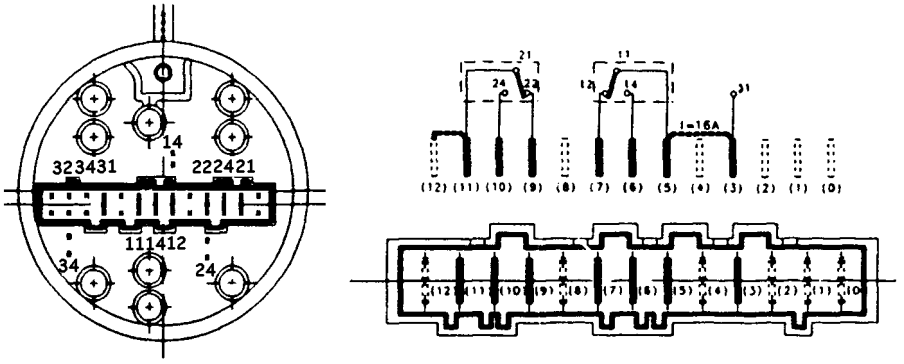
		switch point mmH_2O	reset point mmH_2O
fN	level normal	95	65
fH	level high	130	80
fTr	dry-running protection level	60	35



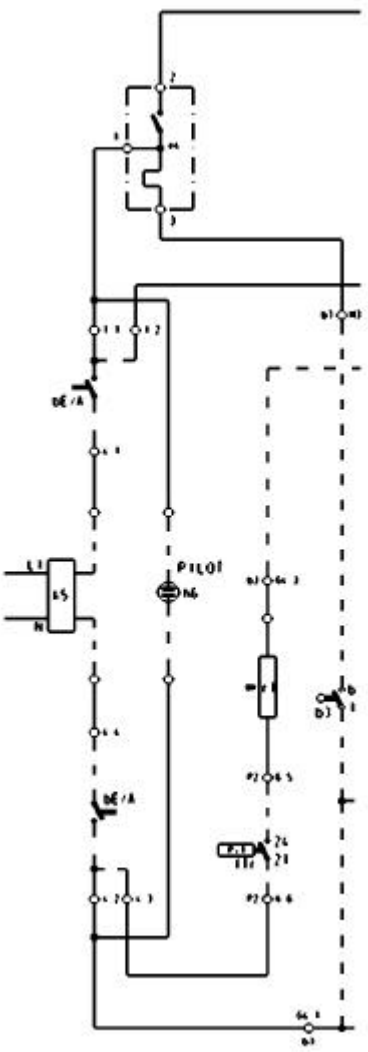
b. 2-fold pressure switch S-No.: 110 570 300

This pressure switch has 2 levels (fs;fsch)

		switch point mmH_2O	reset point mmH_2O
fS	safety level	390	240
fsch	foam level	40	18



4.11 Door lock



With these appliances a thermal door lock e4 is used.
If the door of the appliance is closed, the bimetal pretensions mechanically.
By switching on the contacts (bE/A) are made.
After selecting the cycle by the timer the contact (b3/1b) is made and the bimetal is fed by voltage e4 (1;3). This heats up, closes the door and makes the contact e4 (1;2).
Now the timer has voltage and the program starts.

Locking time: 5 – 10 sec

When switching off the appliance or at the end of the cycle the door will be unlocked.
The bimetal is disconnected from the mains (b3/1b; bE/A broken), cools down, unlocks the door and breaks the contact e4 (1;2).

Unlocking time: 70 – 120 sec

5. Program functions

5.1 PREWASH

- selected by the stop position 1 of the selector with COTTON and stop position 8 with SYNTHETICS
- PREWASH temperature is generally 40°C
- filling through the prewash compartment (a); level 1 (level normal)
- 2 min mechanical system D (4 sec ON; 12 sec OFF; 55 1/min) and then heating to 40°C with the mechanical system D (Tout 30min)
- 10 min washing with the mechanical system D
- automatic drain and spin C1

5.2 Rinse

5.2.1 COTTON cycle

- 3 rinses altogether

First and second rinse:
- Filling through the stain remover compartment (c); level 1 (normal level)
- After filling, 3 min mechanical system N (8 sec ON; 8 sec OFF; 55 1/min)
- Drain; spin C3

Last rinse:
- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system N (8 sec ON; 8 sec OFF; 55 1/min)
- Drain; final spin CF

Separate rinse:

- 4 rinses altogether

- selected by stop position 5
- rinses as with COTTON but one rinse more before the soft rinse

- Filling through the stain remover compartment (c); level 2 (level high)
- After filling, 3 min mechanical system N (8 sec ON; 8 sec OFF; 55 1/min)
- Drain; spin C3

5.2.2 SYNTHETICS cycle
- 3 rinses altogether

First rinse:
- Filling through the detergent compartment (b); level 2 (level high)
- After filling, 3 min mechanical system E (8 sec ON; 8 sec OFF; 55 1/min)
- Drain; without spin but 45 sec mechanical system E

Second rinse:
- Filling through the detergent compartment (b); level 2 (level high)
- After filling, 3 min mechanical system E (8 sec ON; 4 sec OFF; 55 1/min)
- Drain; spin C1

Last rinse:

- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system E (8 sec ON; 4 sec OFF; 55 1/min)
- Drain; final spin C4

Separate rinse
- 3 rinses altogether
- selected by stop position 12

First and second rinse:
- Filling through the detergent compartment (b); level 2 (level high)
- After filling, 3 min mechanical system D (4 sec ON; 12 sec OFF; 55 1/min)
- Drain; without spin

Last rinse:
- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system D (4 sec ON; 12 sec OFF; 55 1/min)
- Drain; final spin C6

5.2.3 DELICATES cycle

- 3 rinses altogether

First and second rinse:
- Filling through the prewash compartment (a) + stain remover compartment (c); level 2 (level high)
- After filling, 3 min mechanical system D (4 sec ON; 12 sec OFF; 55 1/min)
- Drain; without spin

Last rinse:
- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system D (4 sec ON; 12 sec OFF; 55 1/min)
- Drain; final spin C6

5.2.4 WOOL cycle

- 3 rinses altogether

First and second rinse:
- Filling through the prewash compartment (a) + stain remover compartment (c); level 2 (level high)
- After filling, 3 min mechanical system D3 (2 sec ON; 28 sec OFF; 35 1/min)
- Drain; without spin

Last rinse:
- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system D3 (2 sec ON; 28 sec OFF; 35 1/min)
- Drain; final spin C4

Fine rinse in the cycle block WOOL and DELICATES:

- 3 rinses altogether

- selected by stop position 17

First and second rinse:
- Filling through the prewash compartment (a) + stain remover compartment (c); level 2 (level high)
- After filling, 3 min mechanical system D3 (2 sec ON; 28 sec OFF; 35 1/min)
- Drain; without spin

Last rinse:
- Filling through the softener compartment (d); level 2 (level high)
- After filling, 3 min mechanical system D3 (2 sec ON; 28 sec OFF; 35 1/min)
- Drain; final spin C6

5.3 Cooling down

- Cooling down takes place in COTTON cycles if temperature > 57°C.
  With SYNTHETICS cycles the cooling down takes place in general.

COTTON cycle
- Filling through the stain remover compartment (c); level 2 (level high)
- After filling, 2 min mechanical system N (8 sec ON; 8 sec OFF; 55 1/min)

SYNTHETICS cycle
- Filling through the detergent compartment (b); level 2 (level high)
- After filling, 2 min mechanical system N (8 sec ON; 8 sec OFF; 55 1/min)

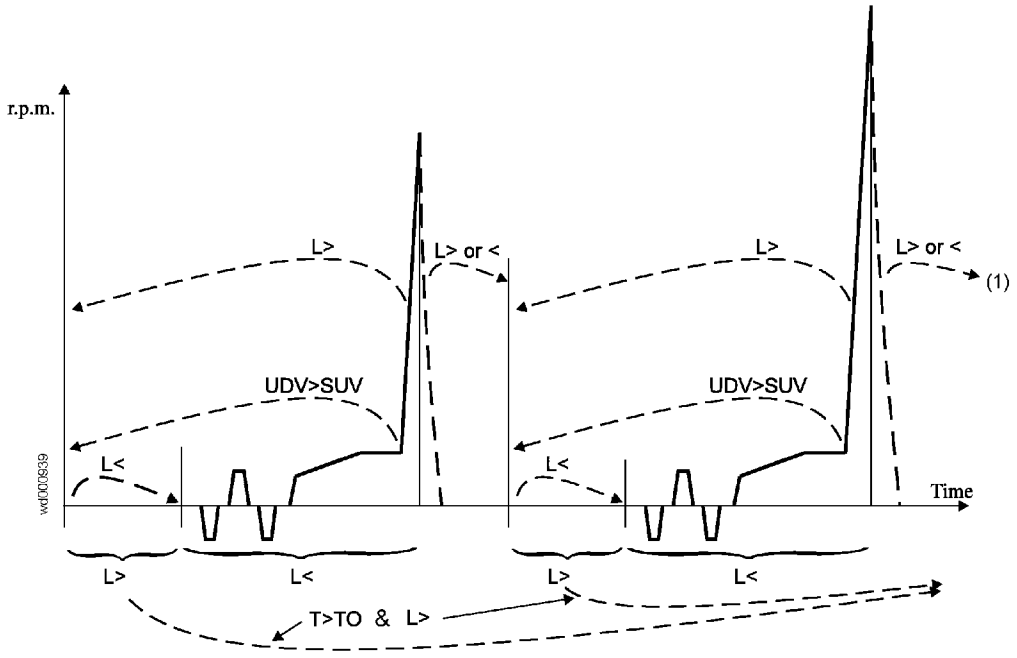
5.4 Separate drain

- Selected by stop position 19
- Drain to foam level plus 30 sec.

6. Spin

6.1 Foam detection

If the foam stop pressure switch (or the pressure switch of the 1. water level) is to close in position “full” during the spin phases, the electronic board disconnects the power supply to the motor, the drain pump however continues to be in operation. When the pressure switch goes again to the position “empty”, the spin cycle is carried out from the last phase onwards. This control system is active during the whole spin phase. After the provided maximum time (time-out) has expired the timer advances to the next cycle phase.



T = time
TO = time out
SUV = unbalance limit
UDV = measured unbalance
L = foam level; normal level

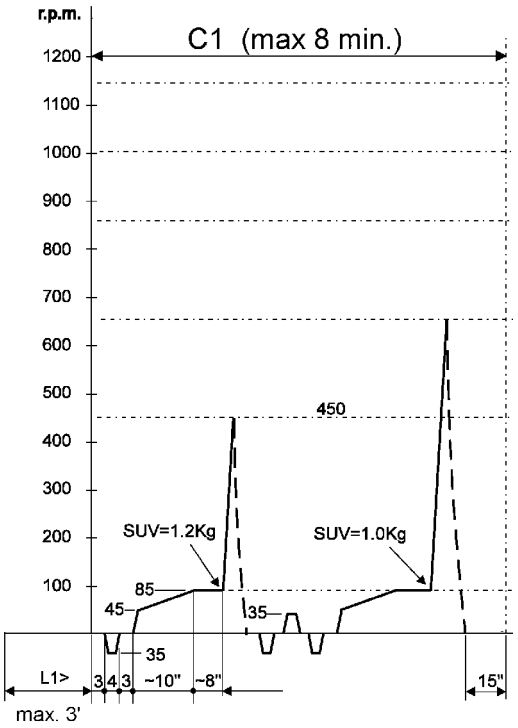
6.2 Unbalance control

Before the beginning of the spin cycles the unbalance control of the load will be carried out at a drum speed of 85 1/min. With an uneven distribution of the load the motor does not advance to the spin phase, but first makes some reverse movements at a low speed in order to start the spin cycle again.
If the load is still uneven, this process is repeated until the load is balanced regularly in the drum. If the maximum time which is provided for this process (approx. 10 minutes) runs down, without that a load balance has been achieved, the timer advances to the next phase without executing the spin cycle.

In the spin curves C1;CF;C3 and C3R the unbalance limit is lowered from 1.2 kg to 1.0 kg after the first measurement.
With the spin curves C4 and C6 the first measurement is already made with 1.0 kg.

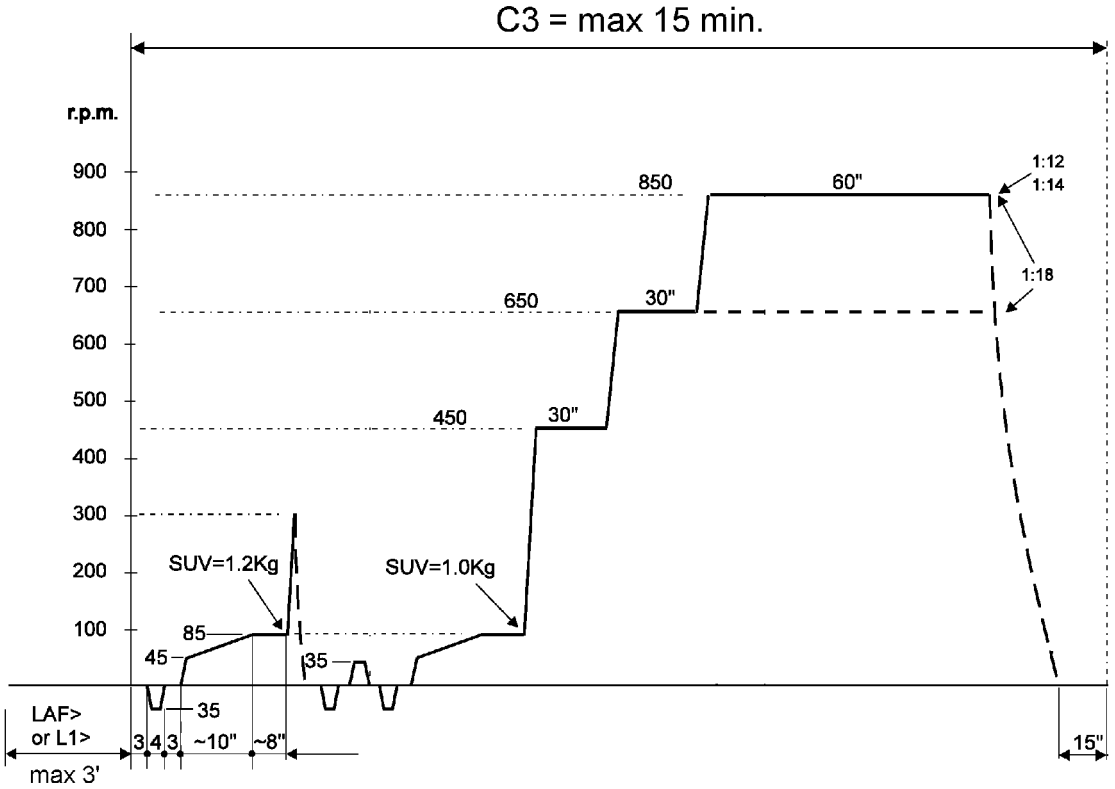
6.3 Spin curves

a. After the prewash

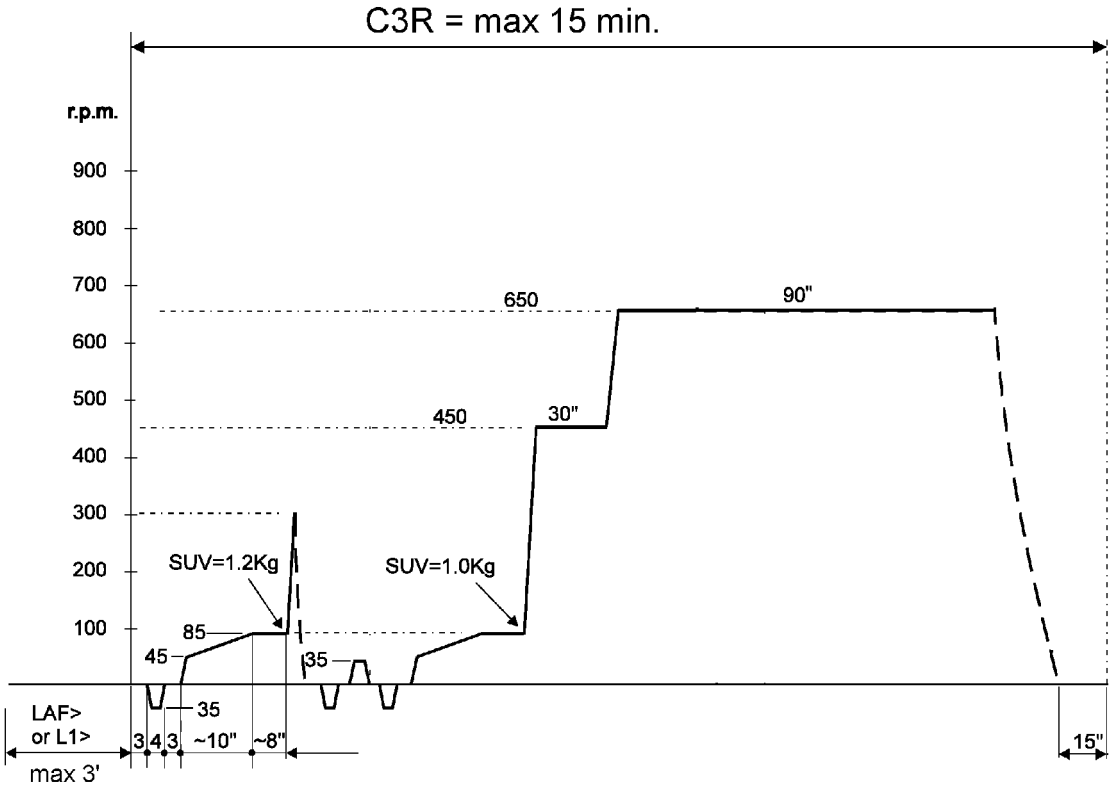


b. Intermediate spin

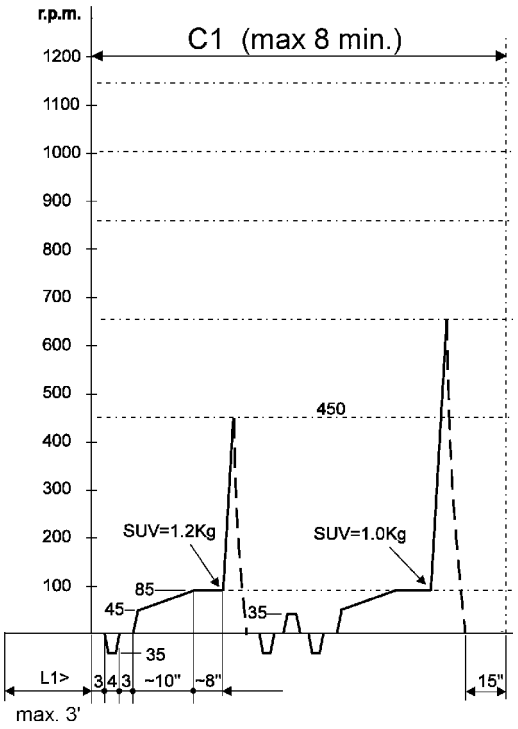
With COTTON cycles



With COTTON cycles at a temperature of < 57°C.



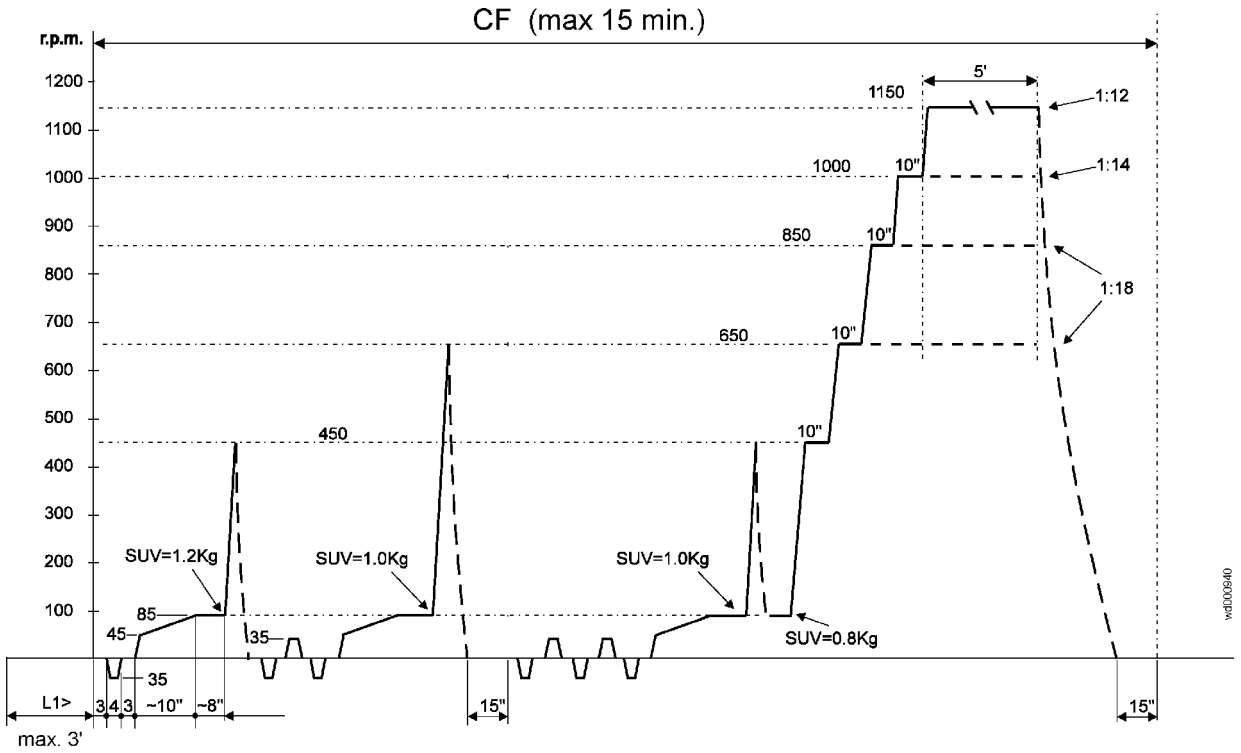
With SYNTHETICS cycles



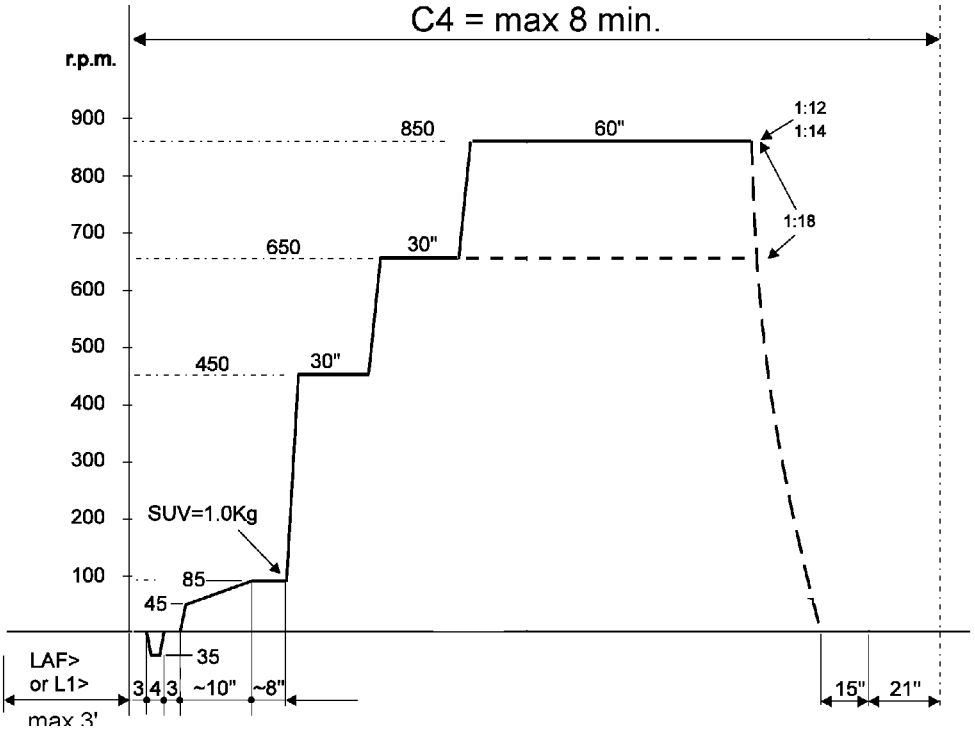
With DELICATES and WOOL
There is no intermediate spin

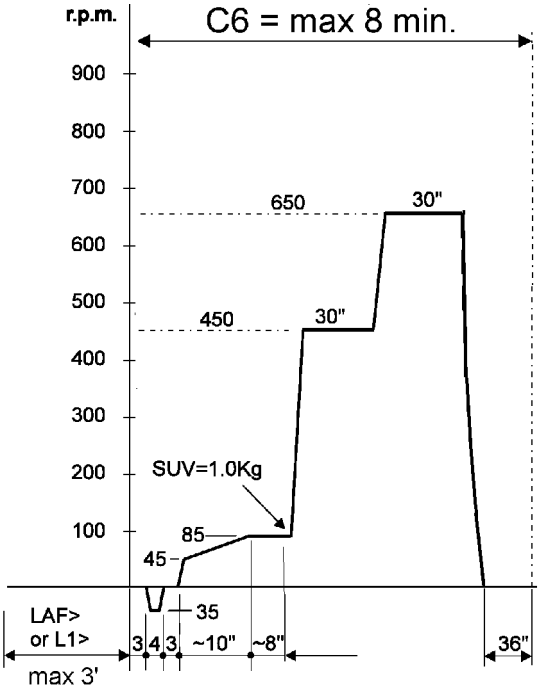
c. Final spin

With COTTON cycles



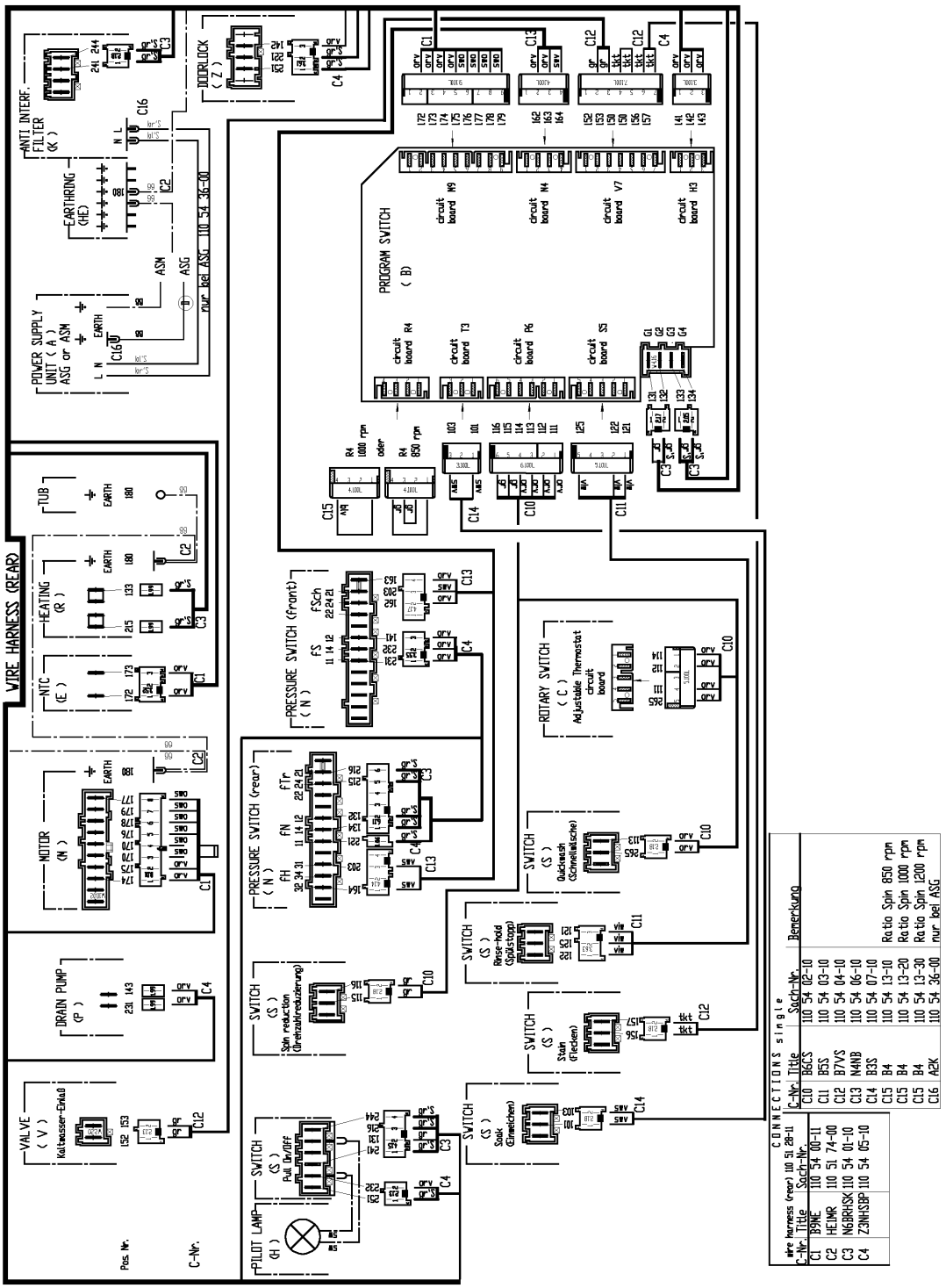
With SYNTHETICS and WOOL cycles




r.p.m.
C6 = max 8 min.
900
800
700
600
500
400
300
200
100
650
30"
450
30"
SUV=1.0Kg
85
45
35
LAF>
or L1>
max 3'
3
4
3
~10"
~8"
36"

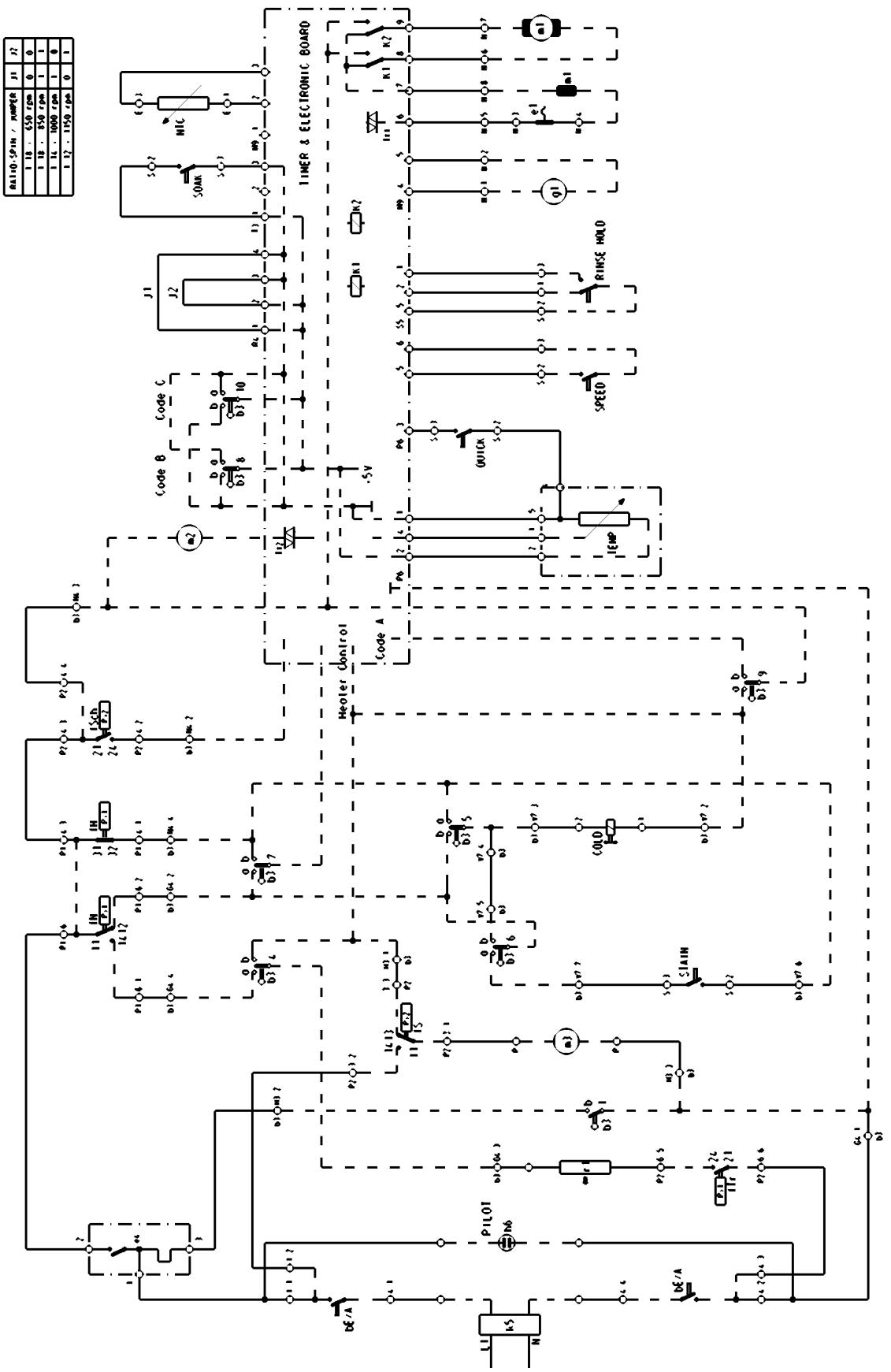
7. Wiring diagrams

7.1 Version with speed reduction button

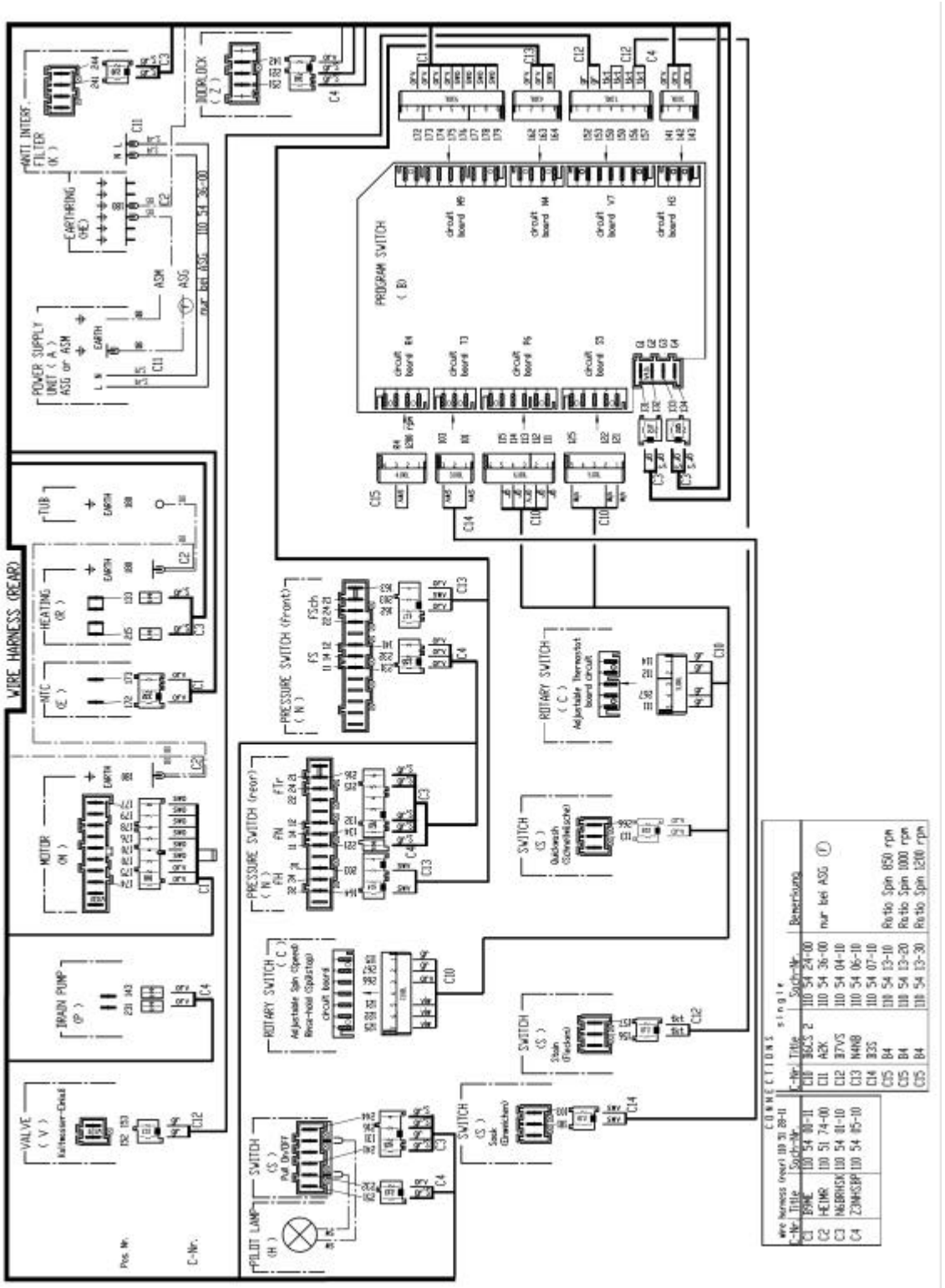


Kaltwassereinlass	cold water inlet
Pos.Nr.)	pos. No.
C-Nr.	C-No.)
Sach-Nr.)	ref. no.
(Bemerkung	comment
nur bei AGS	only with AGS

7.1 Version with speed reduction button

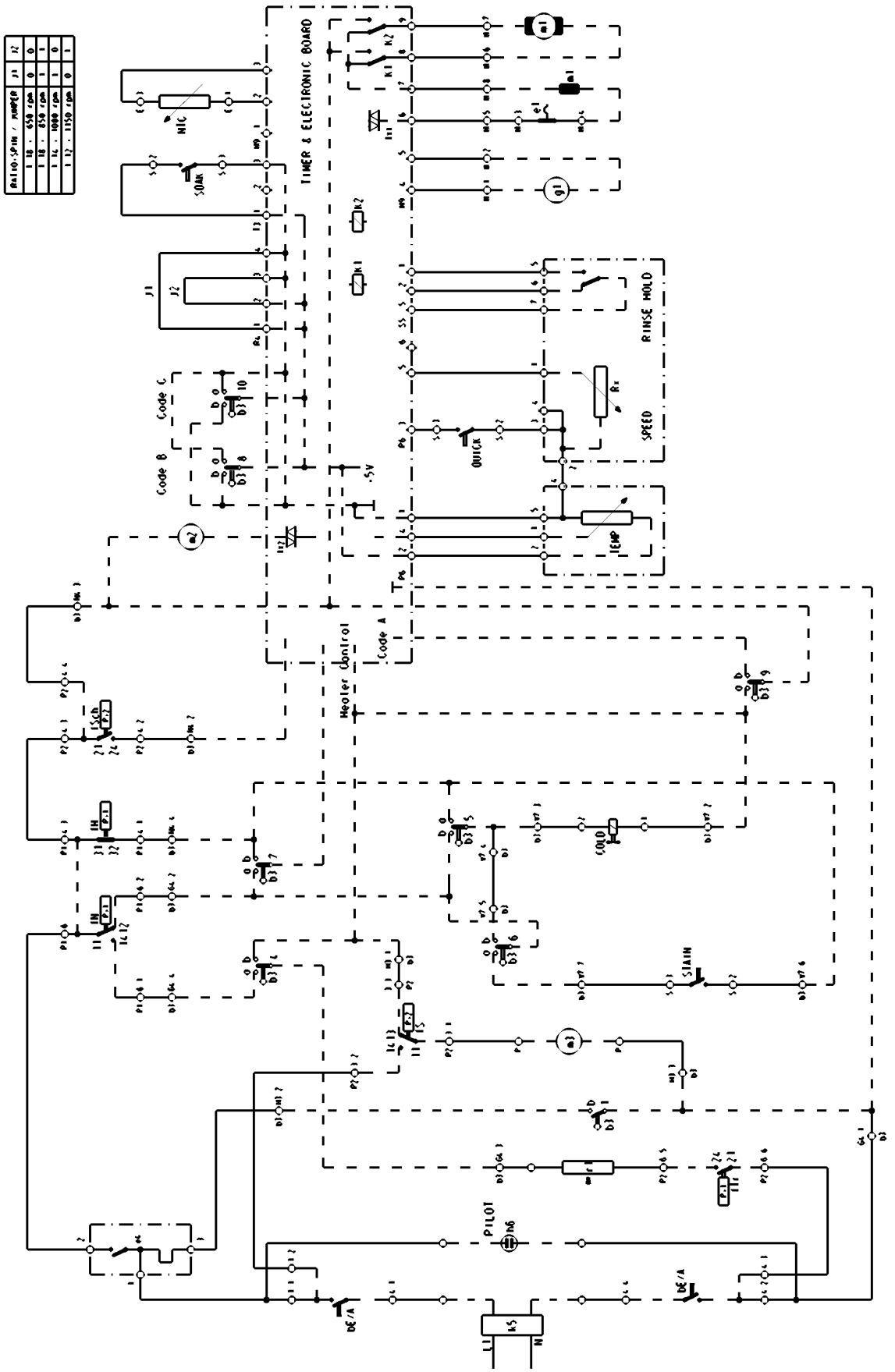


7.2 Version with speed selector

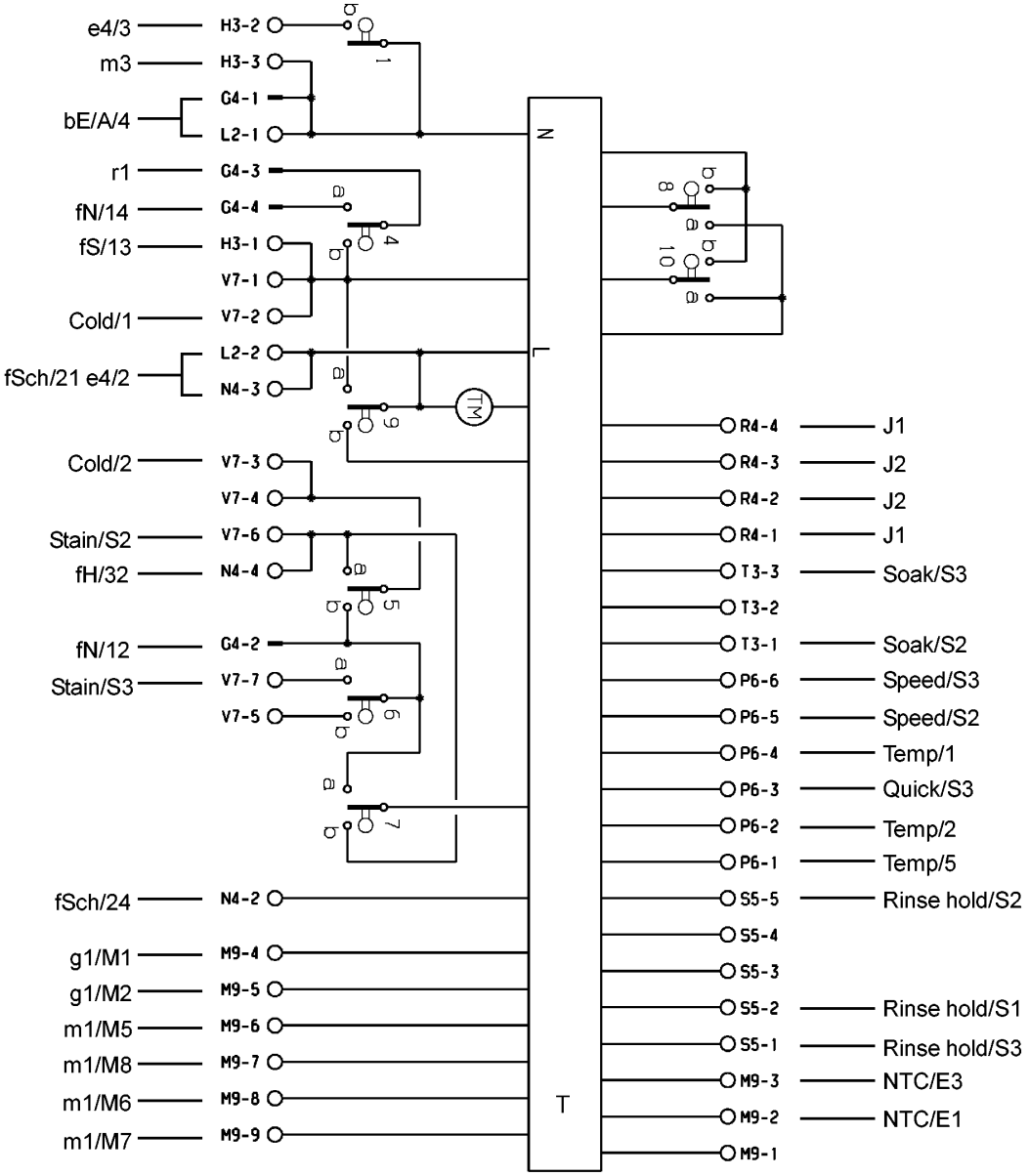


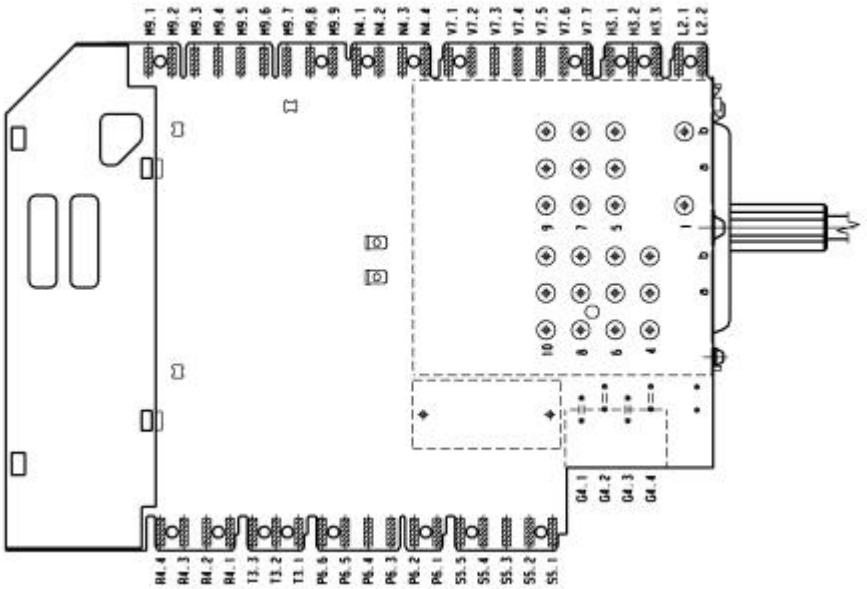
Kaltwassereinlass	cold water inlet
Pos.Nr.)	pos. No.
C-Nr.	C-No.)
Sach-Nr.)	ref. no.
(Bemerkung	comment
nur bei AGS	only with AGS

7.2 Version with speed selector



7.3 Timer – contacts





7.4 Legend

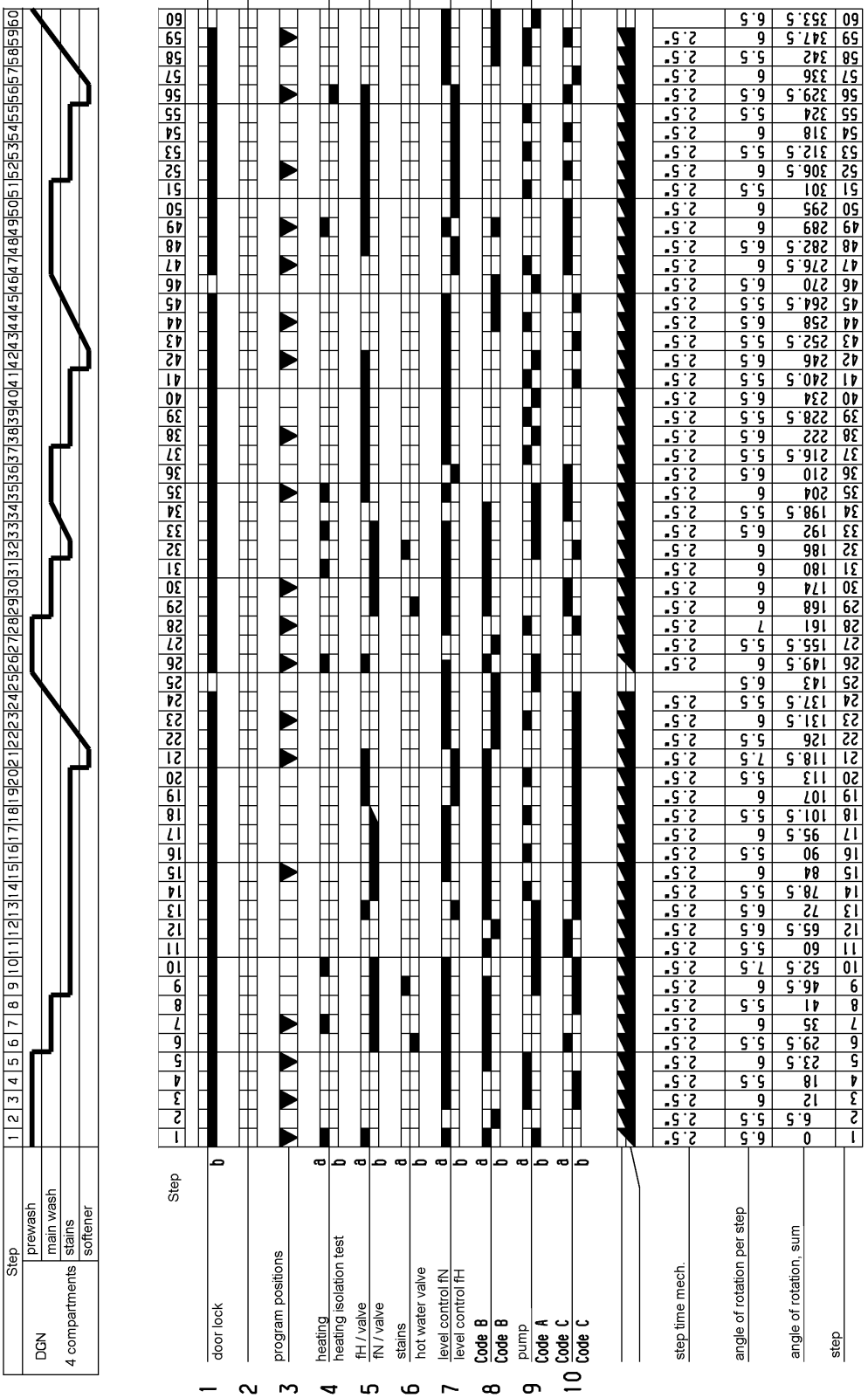
Legend of control

short sign	description	descr. in wiring diagram
A	terminal box	
B	PGS	
C	rotary selector temperature / speed	Temp Speed
E	NTC sensor	NTC
H	lamp	h6
HE	main earth	
K	capacitor	k5
M	motor	m1
N	pressure switch	fs;fTR;fH;fN;fsch
P	pump	m3
R	heating	r1
S	push button	
V	valve	cold
Z	door lock	e4

Legend of wiring diagram and timer – contacts

bE/A	ON/OFF key
cold	valve
e4	door lock
J1;J2	speed coding
NTC	NTC sensor
fH	level high
fN	level normal
fS	safety level
fsch	foam level
fTR	dry-running protection level
g 1	tachogenerator
h6	lamp
k1 / k2	sense of direction
k 5	interference filter
m 1	drive motor (general)
m 2	PGS motor
m 3	drain pump
Quick	QUICK key
R1	heating element
Rinse hold	RINSE HOLD key
Soak	SOAK key
Speed	speed reduction
Stain	STAINS key

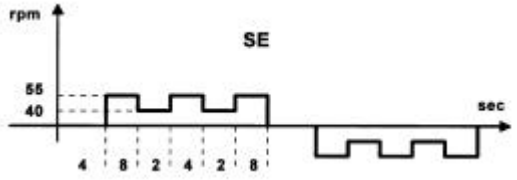
7.5 Load plan of signals



VS 70							COTTON cycle						options								
Prog.	step	DW		operation	lev.	compart-ment	prewash	Temp 70°C-90°C	Temp cold-60°C	wash cold	extra rinse	half load	soak	stains	quick wash	rinse hold	speed reduc-tion	tout	wash time	comment
1	1	L1	prewash	filling, heating, wash	1	a	L1+2'D+40° D			L1+2'D								30'		cold filling
	2			wash			10' D						20'D+Stop							
2	3	L1	main wash	drain/spin			L1<+C1	L1<+5"	L1<+5"											
	4	L1		drain				2.5"	2.5"											
(3)	5	L1		drain				2.5"	2.5"											
	6	L1		filling, wash	1	b		L1+10' N	L1+10' N						L1+3'N				3'÷10'	mixed filling UK
(4)	7	L1		filling, heating, wash	1	b		L1+40° E	L1+40° E	L1+2.5"								30'		cold filling
	8	L1		passage	1			2.5"	2.5"											
	9	L1		passage	2	c		5"	5"					filling						cold filling
	10	L1		filling, heating, wash	1	c		L1+87° N	L1+57° N	L1+2.5"								60'		cold filling
	11			wash				2.5"	10' SE+10' E						3'SE+3'E				6'÷20'	
	12			wash				18' E	18' SE						4'E/4'SE				4'÷18'	
	13	L2		filling	2	c		L2+2' N	2.5"											filling lev. 2 if T>57°C
	14	LAF		drain/spin				LAF<+C3	LAF<+C3											if T>57°C then C3R
5	15	L1	rinse 1	filling, wash	1	c		L1+ t1 N	L1+ t1 N											t1 = 3' after last re-fill
	16	LAF		drain/spin				LAF<+C3	LAF<+C3			2.5"								
	17	L1	rinse 2	filling, wash	1	c		L1+ t1 N	L1+ t1 N											t1 = 3' after last re-fill
	18	LAF		drain/spin				2.5"	2.5"		LAF<+C3									
	19	L2	rinse 3	filling, wash	2	c		2.5"	2.5"		L2+ t1 N									t1 = 3' after last re-fill
	20	LAF		drain/spin				LAF<+C3	LAF<+C3											
6	21	L2	soft rinse	filling, wash	2	d		L2+ t1 N	L2+ t1 N											t1 = 3' after last re-fill
	22			passage				2.5"	2.5"							Stop				
7	23	L1	spin	drain/spin				L1<+CF	L1<+CF								x			CF: spin curve
	24	L1		drain, loosen up				L1<+2' D1	L1<+2' D1											
	25			STOP				STOP	STOP											

Program 5 has always 4 rinse cycles (extra rinse is added

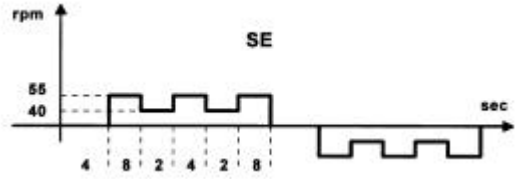
Program 1,2,3 and 4: If there is no re-fill in step 15, "half load" is executed automatically.



L1:	normal level
L2:	level high
LAF:	foam level
a	prewash compartment
b	detergent compartment
c	stain remover compartment
d	softener compartment

movement	on (sec)	pause (sec)	1/min
D	4	12	55
D1	4	12	35
D2	2	58	35
D3	2	28	35
N	8	8	55
E	8	4	55
SE	24	4	55 / 40

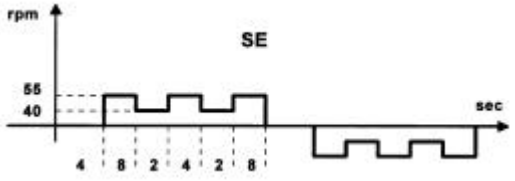
VS 70							SYNTHETICS				options								
Prog.	step	DW		operation	lev.	compart-ment	prewash	cold - 60°	rinse	wash cold	soak	stains	quick wash	rinse hold	speed reduction	tout	wash time	comment
8	26	L1	prewash	filling, heating, wash	2	a	L1+2'D+40° D			L1+2'D						30'		cold filling
	27			wash			10' D				20'D+Stop							
9	28	L1	main wash	drain/spin			L1<+C1	L1<+5"										
	29	L1		filling, wash	1	b		L1+10' N					3' N				3'÷10'	mixed filling UK
(10)	30	L1		filling, wash	1	b		2.5"					3' N				3'÷10'	cold filling
	31	L1		filling, heating, wash	1	b		L1+40° E		L1+2.5"						30'		cold filling
	32	L1		passage	2	c		5"				Fill						cold filling
	33	L1		filling, heating, wash	1	c		L1+57° E		L1+2.5"								cold filling
	34			wash				10' E+10' E					3'E+3'E				6'÷20'	
(11)	35	L1		filling, heating, wash	2	b		5"		L1+2.5"								cold filling
	36	L2		filling, wash	2	b		L2+2' N										
	37	L1/LAF		drain				L1<+45" E										
12	38	L1/LAF	rinse	filling, wash	2	b		LAF+3' E	L1+3' D									mechanical system from L>
	39	L1/LAF		drain				L1<+45" E	LAF<+30"									
	40	L1/LAF		filling, wash	2	b		LAF+3' E	L1+3' D									mechanical system from L>
	41	L1		drain/spin				L1<+C1	L1<+45"									
13	42	L1/LAF		filling, wash	2	d		LAF+3' E	L1+3' D									mechanical system from L>
	43			passage				STOP	STOP					x				
14	44	L1	spin	drain/spin				L1<+C4	L1<+C6						x			C4,C6 spin curve
	45	L1		drain, loosen up				L1<+2' D1	L1<+2' D1									
	46			STOP				STOP	STOP									



L1:	normal level
L2:	level high
LAF:	foam level
a	prewash compartment
b	detergent compartment
c	stain remover compartment
d	softener compartment

movement	on (sec)	pause (sec)	1/min
D	4	12	55
D1	4	12	35
D2	2	58	35
D3	2	28	35
N	8	8	55
E	8	4	55
SE	24	4	55 / 40

VS 70							WOOL & DELICATES cycles				options			
Prog.	step	DW		operation	lev.	com-part-ment	Wool 40°/30°	delicates 40°/30°	soft rinse	wash cold	rinse hold	speed reduction	tout	comment
15	47	L2	wool	drain			L1< + 8"							
	48	L2		filling, wash	2	b	L2 + 3' D3							cold filling
16	49	L1	delicates	filling, heating, wash	2	b	L1 + 40° D2	L1 + 40° D		L1+2.5"			30'	cold filling
	50	L2		filling, wash	2	b	L2 + 14' D3	L2 + 14' D						cold filling
	51	LAF		drain			LAF< + 30"	LAF< + 30"						
17	52	L2		filling, wash	2	a/c	L2 + 3' D3	L2 + 3' D	L2 + 3' D3					
	53	LAF	delicate rinse	drain			LAF< + 30"	LAF< + 30"	LAF< + 30"					
	54	L2		filling, wash	2	a/c	L2 + 3' D3	L2 + 3' D	L2 + 3' D3					
	55	LAF		drain			LAF< + 30"	LAF< + 30"	LAF< + 30"					
18	56	L2	soft rinse	filling, wash	2	d	L2 + 3' D3	L2 + 3' D	L2 + 3' D3					
	57			passage			STOP	STOP	STOP		X			
	58	L1		drain, spin			L1< + C4	L1< + C6	L1< + C6			X		C4,C6 spin curve
19	59	LAF	drain	drain			LAF< + 30"	LAF< + 30"	LAF< + 30"					
	60			STOP			STOP	STOP	STOP					



L1:	normal level
L2:	level high
LAF:	foam level
a	prewash compartment
b	detergent compartment
c	stain remover compartment
d	softener compartment

movement	on (sec)	pause (sec)	1/min
D	4	12	55
D1	4	12	35
D2	2	58	35
D3	2	28	35
N	8	8	55
E	8	4	55
SF	24	4	55 / 40

8. Service - Instructions
8.1 Access from the front side of the appliance

8.1.1 Worktop

The worktop is tightened to the rear side of the appliance by 2 screws.
Untighten both screws and pull the worktop away to the back.

Fig. 1

Fig. 2

8.1.2 Panel, knobs and buttons

In order to remove panel, knobs and buttons you have to remove the worktop. See 8.1.1)

To disassemble the panel you have to remove the 2 screws in the upper area (Fig. 3) and the screws behind the drawer (Fig. 4).

Fig. 3

Fig. 4

The panel is locked additionally on the right side (Fig. 5).
Pull the pilot lamp out of its support (Fig. 5).
Now the panel is disassembled and you can remove buttons and knobs depending on your need (Fig. 5, Fig. 6).

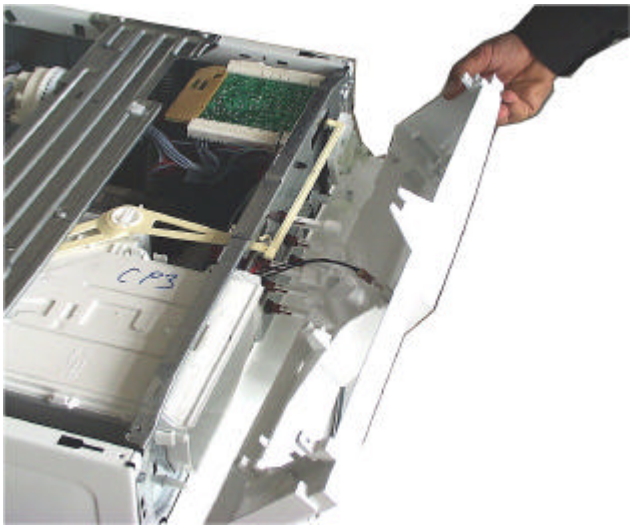


Fig. 5

Fig. 6

8.1.3 Bellows

The bellows is buttoned at the crimped part of the front side and secured by a plastic tension band. It is fixed to the tub by a helical worm spring.

- To exchange the bellows refer to the working instructions of chapters 8.1.1 and 8.1.2, as the front plate of the appliance has to be removed.
- Take off the tension band and remove the bellows from the crimped part. (Fig. 7)
- Turn up the bellows to the inside.

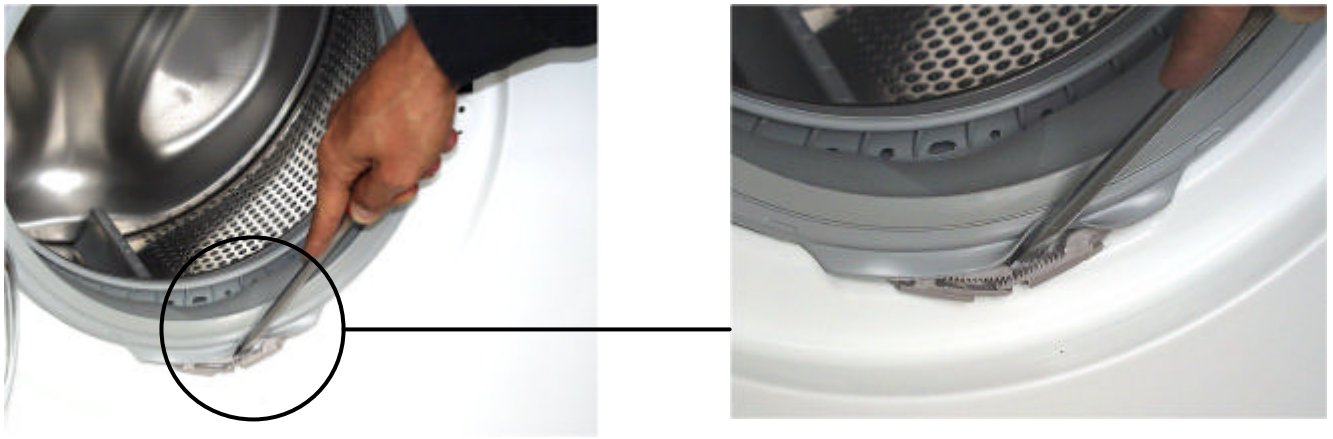


Fig. 7

- The door lock is screwed to the front plate with 2 screws. Unscrew them (Fig. 8).
- The front plate is screwed to the casing with 4 screws at the top and at the bottom. In order to get access to the lower 2 screws you have to remove the base panel. For this purpose untighten the screws behind the pump cover ? (Fig. 9). The base panel is locked in on the left side of the appliance.
- Now unscrew the front panel as shown in the figures (Fig. 10, Fig. 11, Fig. 12).
- Pulling the bellows untightens it from the cramped part of the tub.

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

8.1.4 Drain pump

- The drain pump is fastened to the base panel via rubber dampers.
- To exchange the pump refer to the working instructions of chapters 8.1.1, 8.1.2 and 8.1.3.
- It is not necessary to remove the bellows from the tub.

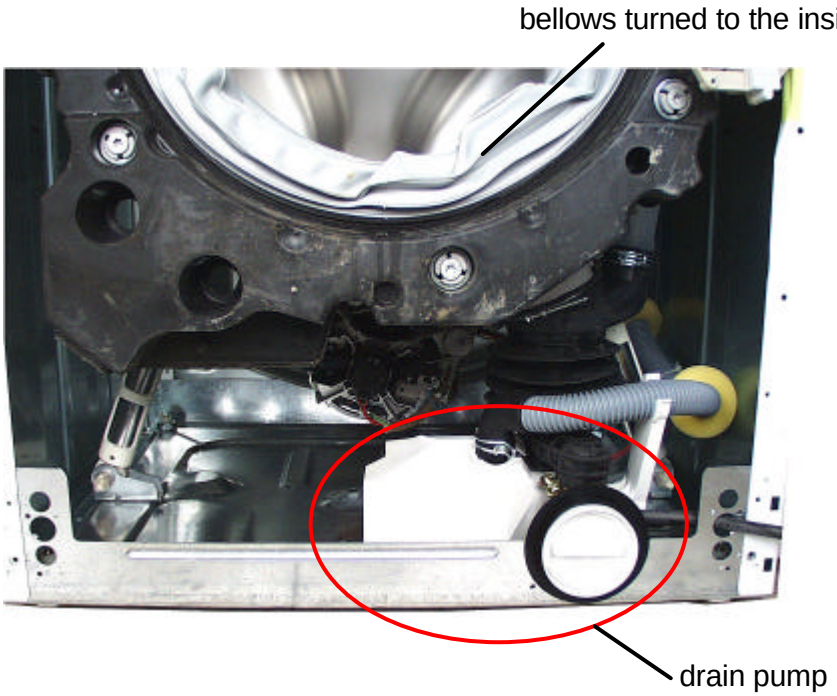


Fig. 13

8.1.5 Door lock

The door lock is screwed to the front plate with 2 screws.

- Untighten them (Fig. 14).
- Then untighten the bellows from the front plate as described in the instructions 8.1.3 (Fig. 7). Turn the bellows to the inside. Now you can pull out the door lock between the front plate and the tub and untighten the plug.

Fig. 14

8.1.6 Tub front, weight

The tub front is screwed with 17 special screws with the rear side of the tub. If the weight must be exchanged, the complete tub front has to be exchanged.

- Remove the worktop; instructions 8.1.1
- Disassemble the panel; instructions 8.1.2
- Untighten the front plate and the bellows; instructions 8.1.3
- Now you can unscrew the tub front (Fig. 15).

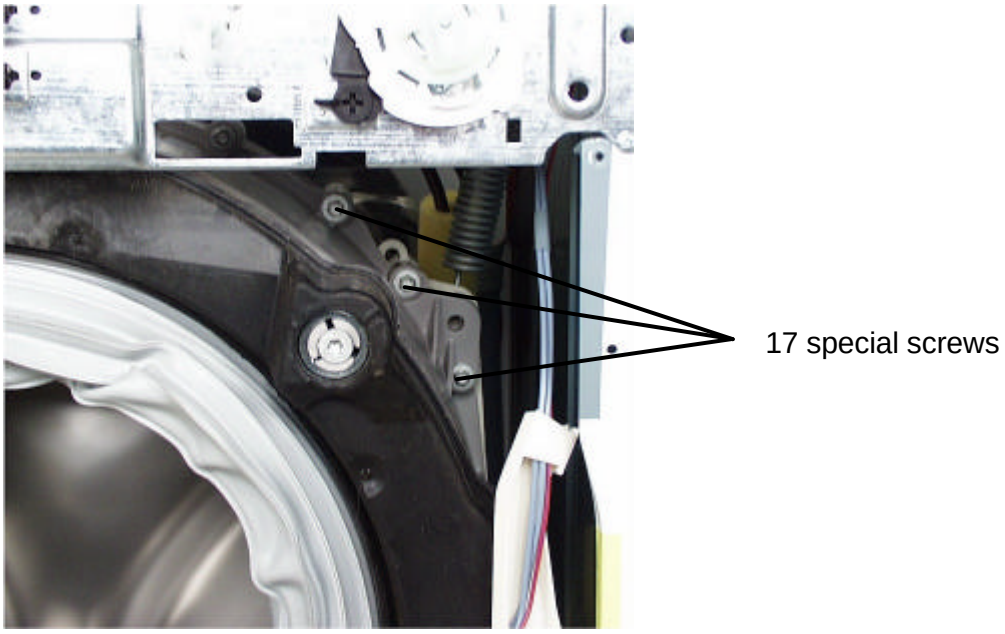


Fig. 15

8.1.7 Door, door glass, door rings, door hinge and locking hook

The door is fastened to the front plate by the door hinge.

- Untighten the door hinge screws in order to separate the door from the front plate.
- To exchange door glass, locking hook, door hinge or one of the door rings, remove the door ring screws.

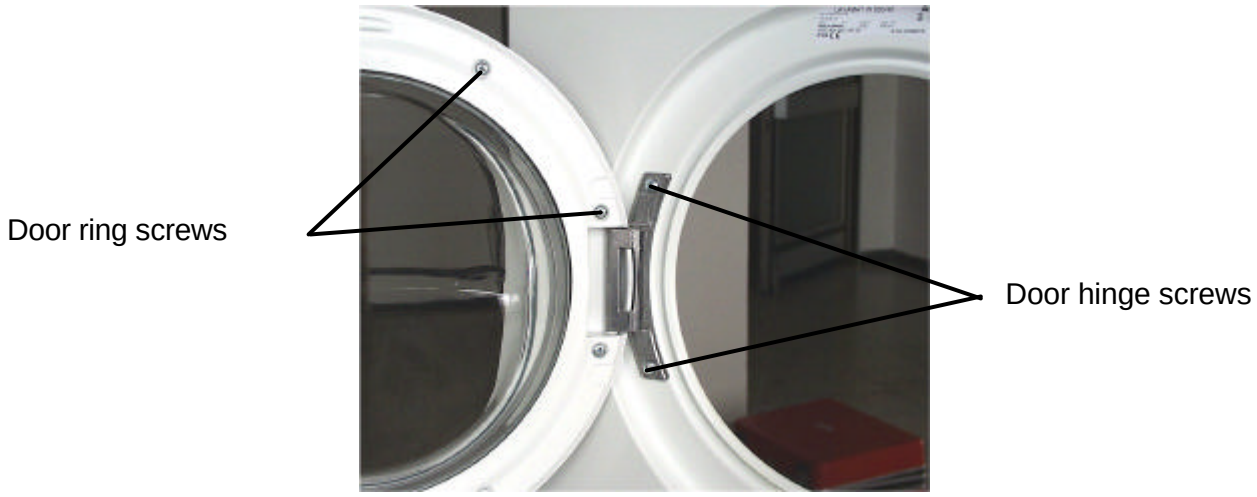


Fig. 16

8.2 Access from the rear side of the appliance

8.2.1 Rear plate

The rear plate is screwed to the casing with sheet metal screws (Fig. 17)

- In order to get access to motor, heating element, shock absorber, NTC, belt and pulley, you have to remove the rear plate.

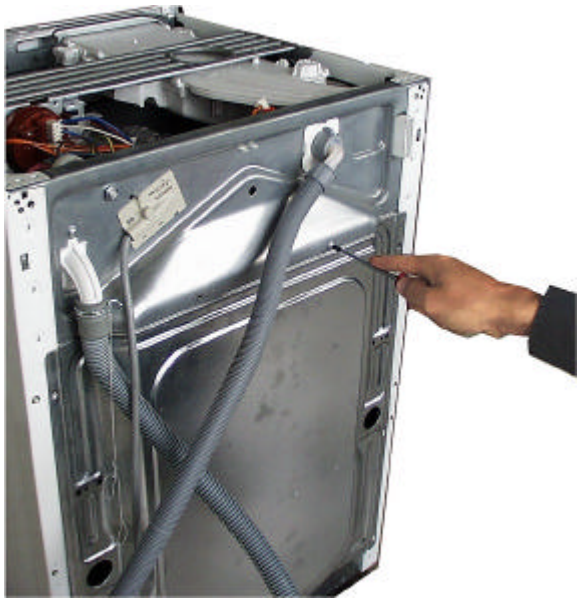


Fig. 17

8.2.2 Assembling position of motor, heating element, shock absorber, NTC, belt and pulley

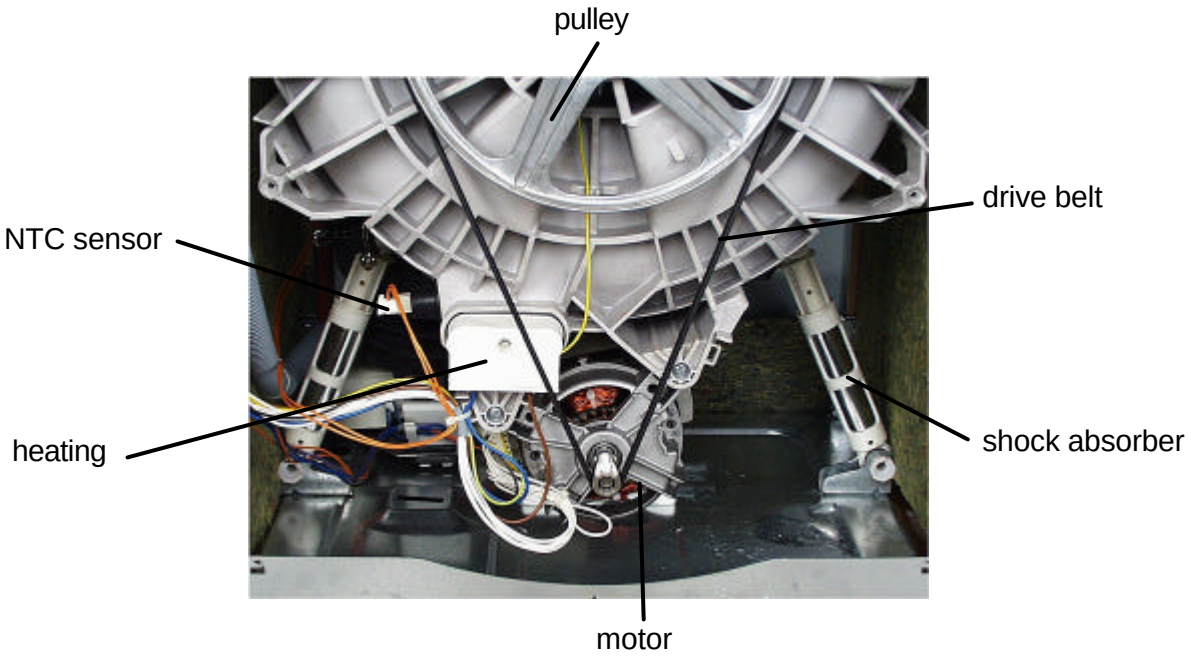


Fig. 18

8.2.3 Motor

The drive motor is fastened to the tub with 4 screws.
- Take off the rear plate; instructions 8.2.1
- Draw off the motor plug.
- Remove the drive belt.
- Now unscrew the motor

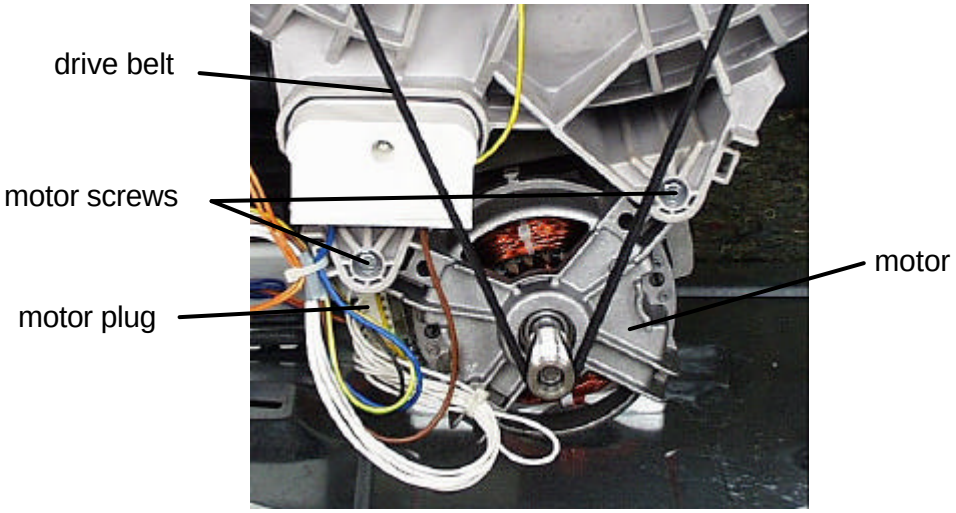


Fig. 19

8.2.4 Heating

The heating element is inserted in the rear side of the tub and the contacts are protected by tahe clipped cover. Tightening the pressure plate to the heating flange expands the sealing and thus fastens the heating element.
- Carry out an emergency drain of the appliance.
- Take off the rear plate; instructions 8.2.1
- Remove the cover
- Disconnect the electrical connections
- Untighten the flange nut to the end of the thread and press in the stud bolt with the nut as far as to the pressure plate (sealing gets released).
- Loosen the heating element by moving it laterally and pull it out of the tub.

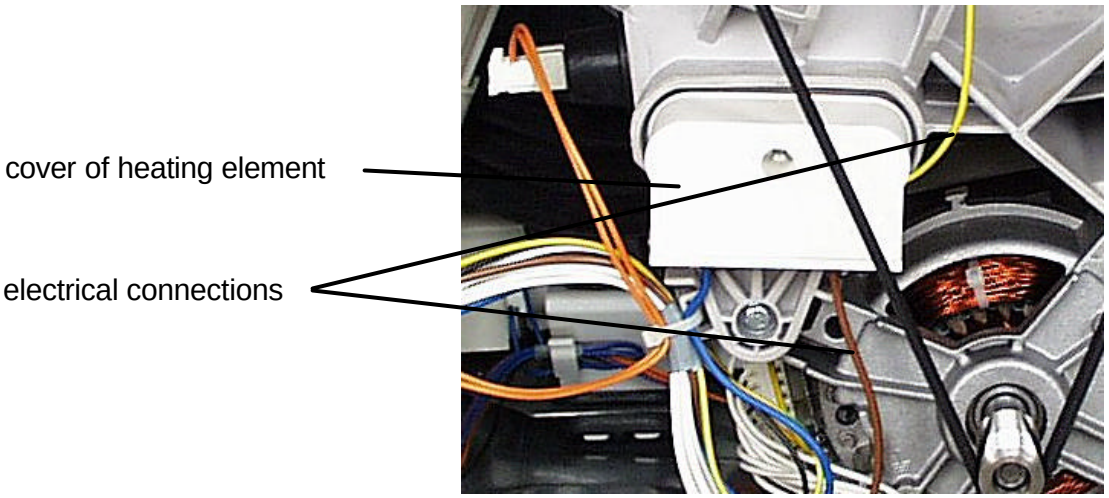


Fig. 20

8.2.5 NTC sensor

The NTC sensor (temperature sensor) is inserted in the rear side of the tub at the side next to the heating element.

- Carry out an emergency drain of the appliance
- Take off the rear plate; instructions 8.2.1
- Disconnect the electrical connections
- Pull the NTC sensor out of the sealing

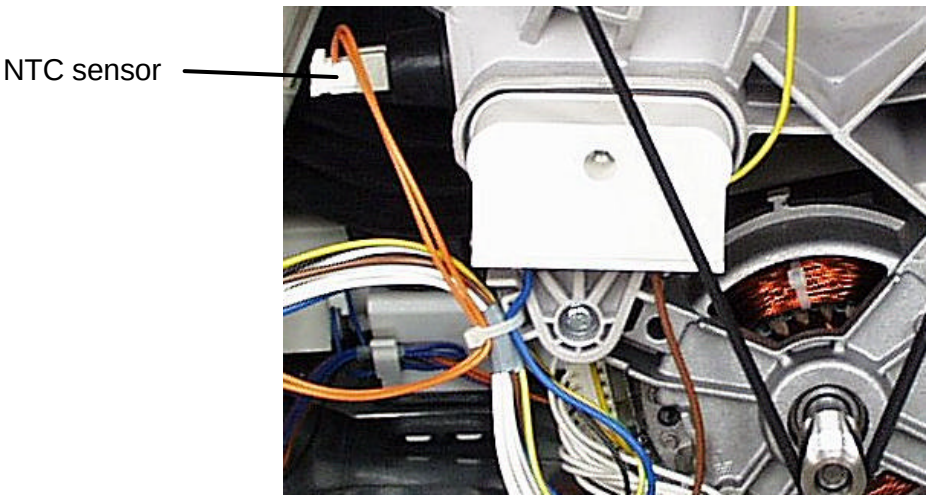


Fig. 21

8.3 Access from the top side of the appliance

8.3.1 Pressure switches

The pressure switches are clipped in the right upper area of the cross bar.

- Remove the worktop; instructions 8.1.1
- Pull off the pressure switch hose.
- Mark the plugs and then pull them off.
- Now snap out the pressure switch from the support (cross bar).

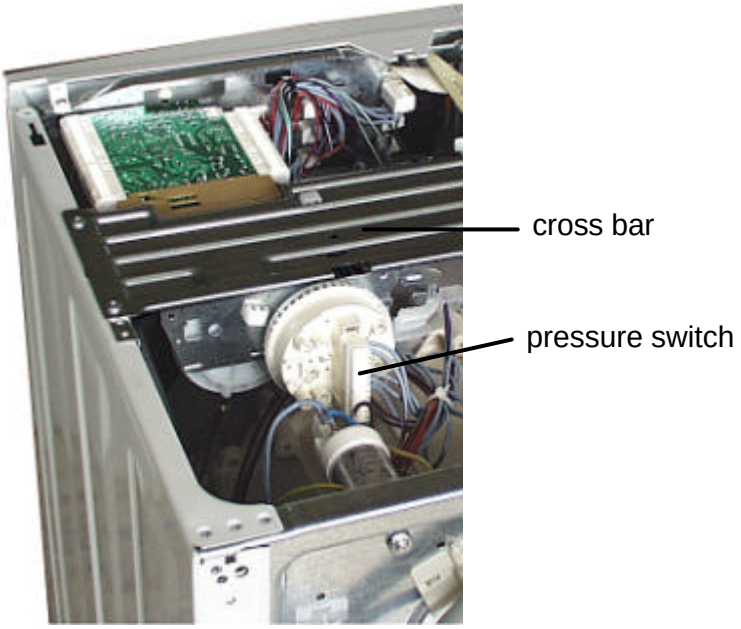


Fig. 22

8.3.2 Disassembly of timer, buttons and rotary selector

These components are fastened to the front mounting plate.
- Remove the worktop, instructions 8.1.1
- Disassemble the panel; instructions 8.1.2
- Mark the plugs and pull them off from the respective component.
- Now you can exchange timer, buttons or rotary selector.

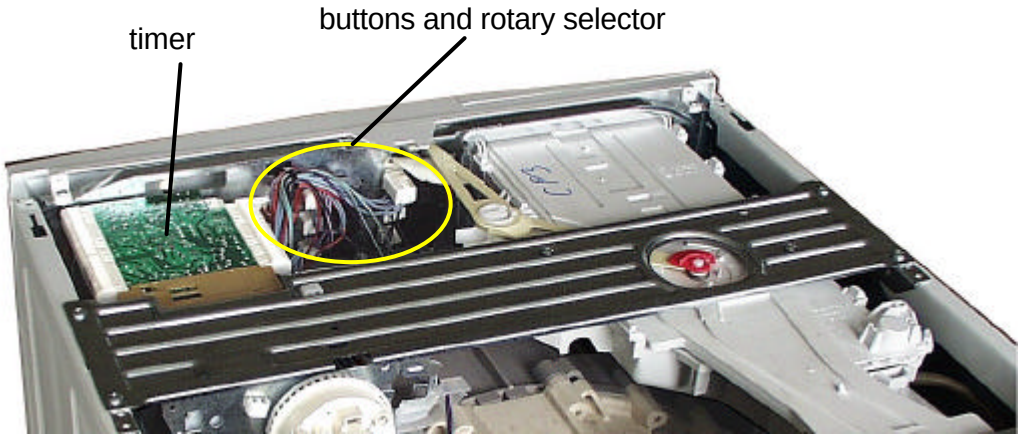


Fig. 23

8.3.3 Valve

The valve is screwed to the water distributor with 3 screws.
The connection of the inlet hose is guided out of the rear side of the appliance via a valve adaptor.
- Remove the worktop; instructions 8.1.1
- Snap out the valve adaptor from the rear side.
- Mark the plugs and pull them off
- Unscrew the valve

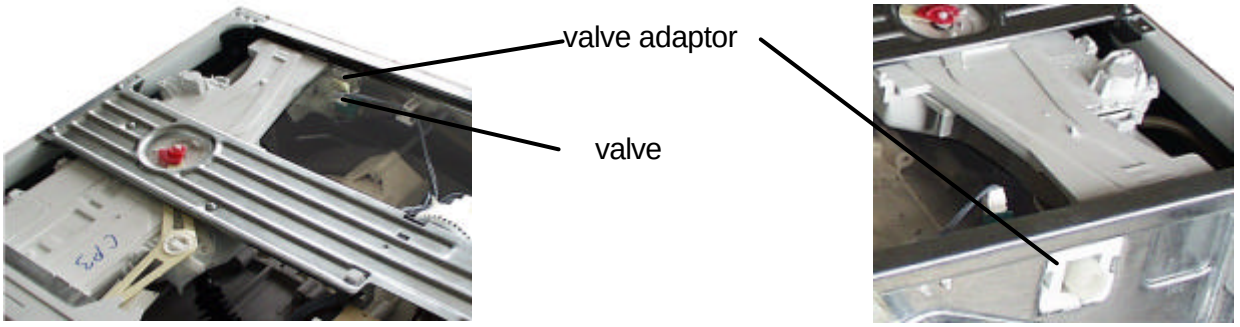


Fig. 24

8.3.4 Water distributor

The water distributor is screwed with the panel at the front. The cross bar tightens it in the middle of the appliance. The connection of the inlet hose and the overflow are guided out of the rear side of the appliance.

- Remove the worktop; instructions 8.1.1
- Disassemble the panel; instructions 8.1.2
- Untighten the valve; instructions 8.3.3
- Unscrew the cross bar
- Unlock the lever mechanism from the eccentric and the rotary lever
- Now separate the water distributor from the water inlet compartment

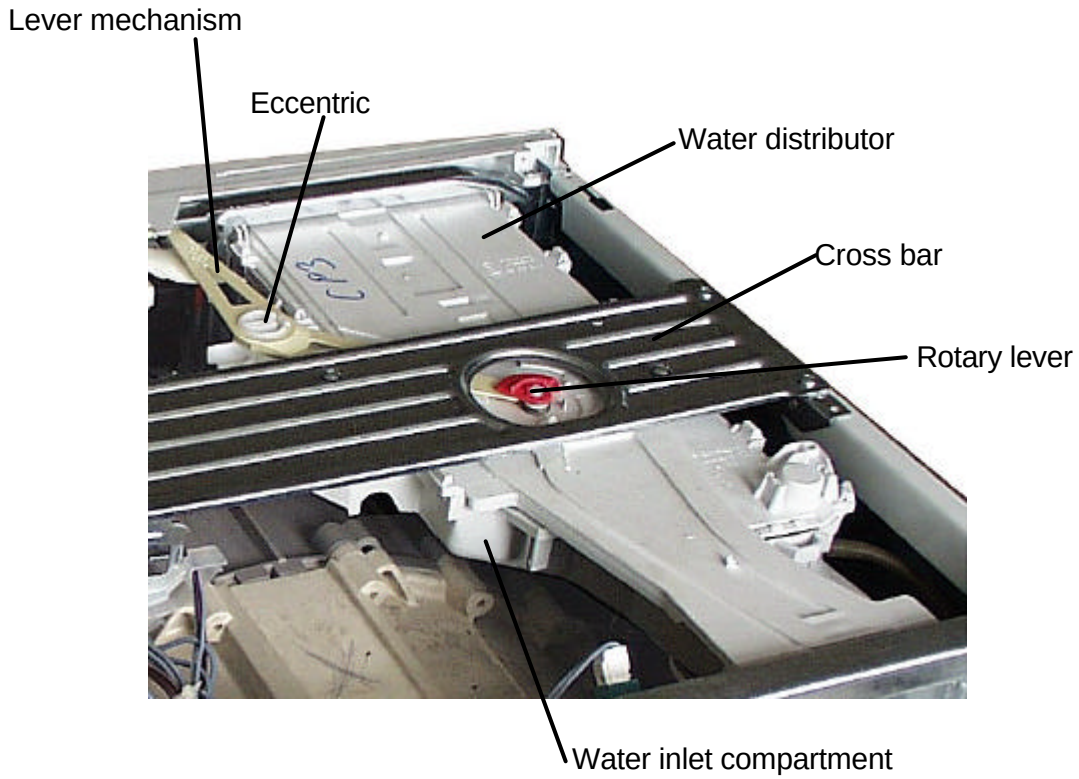


Fig. 25