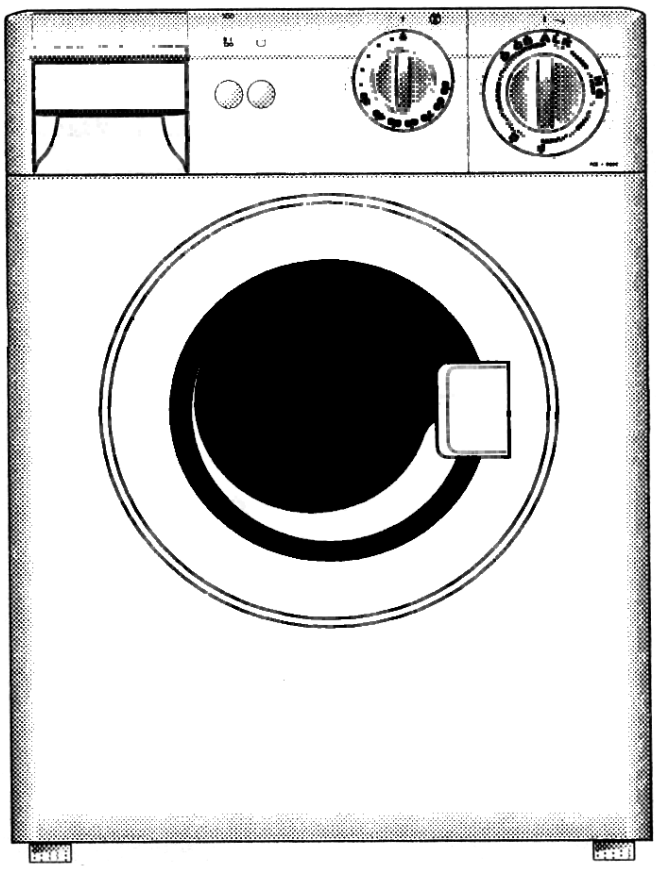
Electrolux
Service

SERVICE MANUAL

Compact front loaded Washing Machines (Timer controlled)



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Spares Operation

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Compact front loaded Washing Mashines from Torsvik

Timer controlled

Table of Contents

GENERAL FEATURES

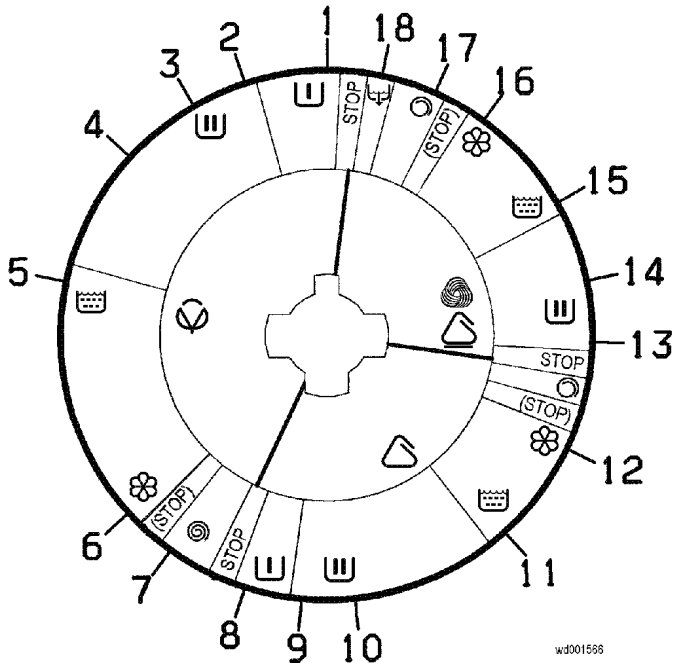
The VD55 timers produced by AKO, are used in certain washing machines models.

FUNCTIONS	VD55	
WASHING SYSTEM:	- traditional - with "Eco-ball" - (jetsystem)	
TYPE OF RINSE:	traditional: - 3 rinses in cotton cycles - 3 rinses in synthetics, delicates and wool	
WATER FILL:	cold	cold
POWER SUPPLY	220 -240V / 10A 50Hz	220 -240V / 10A 50Hz
Ignition system:	- versions with ON/OFF switch - versions with ignition by means of the timer knob (push-pull)	
Control of water level in tub:	- versions with 2 levels by means of pressure switch - versions with 1 level by means of pressure switch	
Washing temperature:	Fixed or adjustable	
Temperature control:	- versions with adjustable thermostat - versions with fixed thermostat	
Heating element	1950 W (max)	
Type of motor:	commutator	
Final spin speed (rpm):	600, 800, 900, 1000	
Controls		
Timer type	VD55	
Push button functions	On/off, Rinse hold	
Knob/Command func.	Program, Temperature	
Dimensions		
Height	670 mm	
Width	495 mm	
Depth	515 mm	
Tub material	Carboran	
Drum volume	27 l	
Washing capacity	3.00 kg	
Inlet hose length	130 cm	
Outlet hose length	160 cm	
Det. dispenser type of	Two chambers	
Cord length	170 cm	

Possible programmes of models with VD55 function

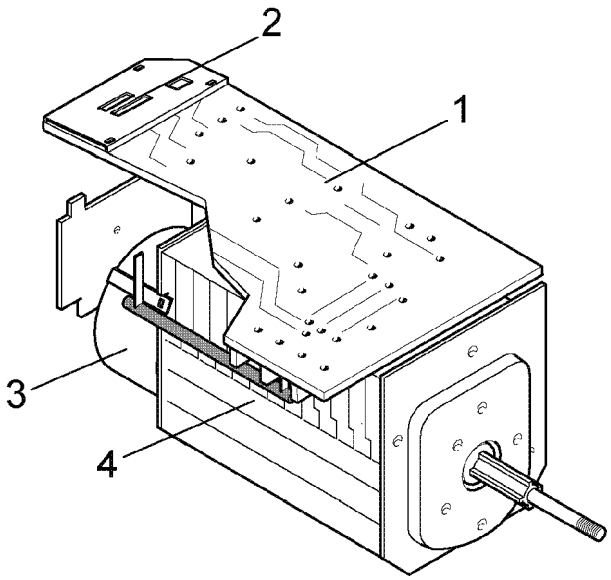
	Models with fixed temperatures			Models with adjustable temperatures		
	COTTON - LINEN	**Wash (°C)**	**Rinses**	**COTTON - LINEN**	**Wash (°C)**	**Rinses**
1	WHITES WITH PREWASH	60/95 *	3	WHITES and COLOUREDS WITH PREWASH	30-95	3
2	WHITES	60/95 *	3	WHITES and COLOUREDS	30-95	3
3	FAST-COLOUREDS	60	3	DELICATE COLOUREDS	30-60	3
4	DELICATE COLOUREDS	40	3	SHORT CYCLE	30-40	3
5	RINSES	....	4	RINSES	....	4
6	CONDITIONER	....	1	CONDITIONER	....	1
7	SPIN	....	....	SPIN	....	....
	SYNTETICS – MIXED Fabrics			**SYNTETICS – MIXED Fabrics**		
8	WHITES WITH PREWASH	60	3	WHITES and COLOUREDS WITH PREWASH	30-60	3
9	WHITES	60	3	WHITES and COLOUREDS	30-60	3
10	COLOUREDS	40	3	....	....	....
11	RINSES	....	3	RINSES	....	3
12	CONDITIONER	....	1	CONDITIONER	....	1
	DELICATES - WOOL Fabrics			**DELICATES - WOOL Fabrics**		
13	DELICATES	40	3	DELICATES	30-40	3
14	WOOL	40	3	WOOL	40	3
15	RINSES	....	3	RINSES	....	3
16	CONDITIONER	....	1	CONDITIONER	....	1
17	SHORT SPIN	....	....	SHORT SPIN	....	....
18	DRAIN	....	....	DRAIN	....	....

- Programme obtained with push-button 90°

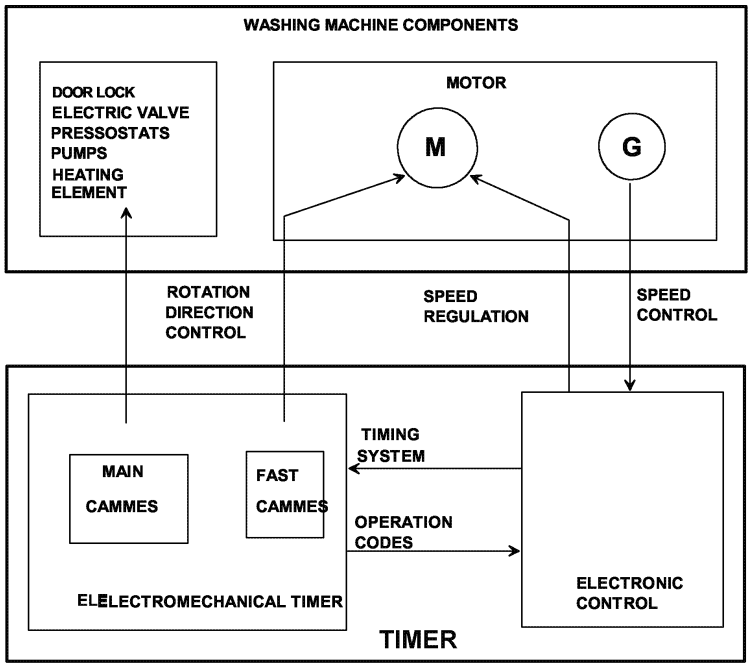


These timers consist of two main components: an electromechanical timer and an electronic control board. The electronic control board is connected directly by soldering to the timer connectors, and performs the following functions:

- control of the washing programmes and the
- power supply to timer motor
- power supply and control of the drum moto



1. *Electronic control board*
2. *Microprocessor*
3. *Timer motor*
4. *Electromechanical timer*



The electronic control board powers the timer motor via a TRIAC. The timer, by closing a series of contacts, transmits to the electronic control board the codes which identify the operations to be performed at each timer step.

Via a second TRIAC, the electronic control board directly powers the drum motor, and controls its speed according to a signal received from the tachymetric generator.
The direction of rotation and the operating sequence (pause - rotation) are controlled by the closure of four contacts on the fast camme of the timer.

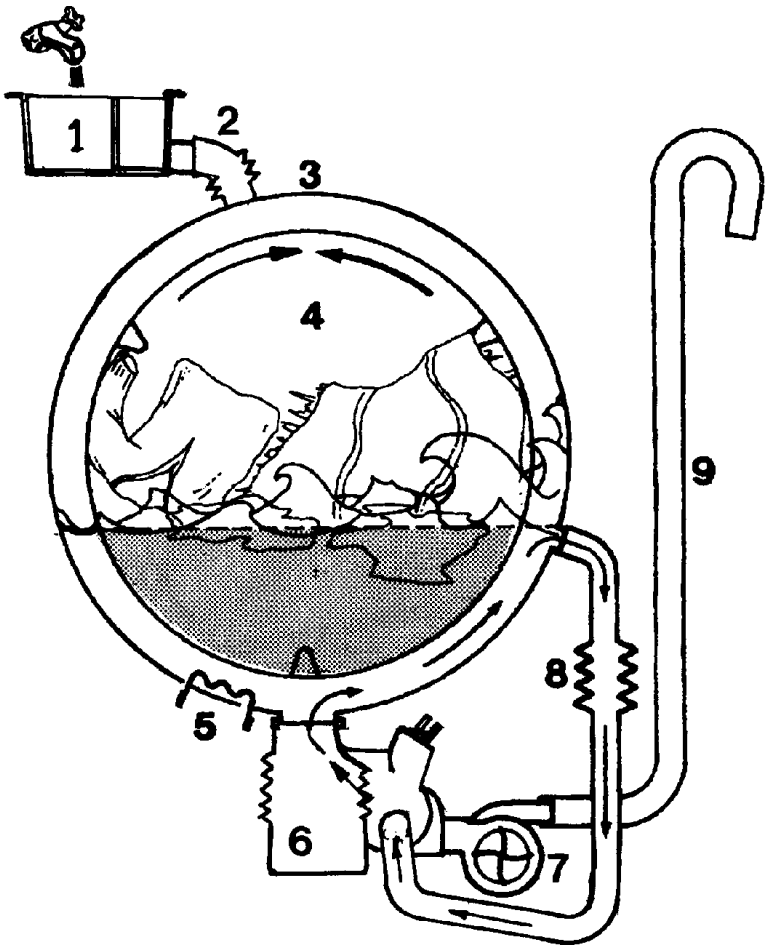
All the other electromechanical components of the washing machine are powered by the contacts of the timer's main cammes.

The duration of the heating phases is fixed; the thermostat (if fitted) serves only to reduce the temperature for the selected programme.

OPERATION PRINCIPLE

Traditional washing Operation

1 Detergent hatch
2 Hose between detergent dispenser and outer drum
3 Outer drum
4 Inner drum
5 Heating element
6 Rubber bottom, fixed to outer drum
7 Drainage pump
8 Circulation hose
9 Drainage hose



- The partides of soiling substances which are freed from the textile fibres by the chemical action of the detergent at the temperature of the washing water are re-moved by the flow of water through the fibres.

- The reversing rotation ofthe drum causes mechamcal interaction between the parts ofthe load and the detergent solution which separates the partides from the textlies.

- The water level is at such a height that the load is successively lifted from the solution by the ridges formed in the inner drum and then falls back into the solution.

- The Circulation ofthe solution during the rotation ofthe drum prevents the accumulation of detergent in the rubber bottom.

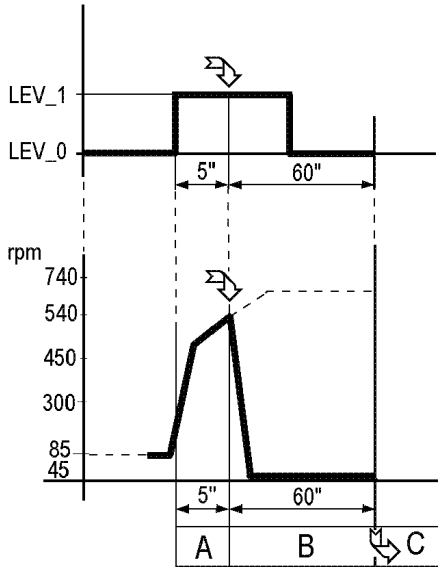
SPIN

Spin anti-unbalancing

The anti-unbalancing control of the load is performed during the 85 rpm movement before the spin phase. If the washing load is particularly unbalanced, the motor is stopped and then the ramp is repeated at 85 rpm.
If the load is still unbalanced, this procedure is repeated for several times and after a time of 4-5 minutes, the timer passes to the subsequent phase without performing any spin cycle.

Safety against foam

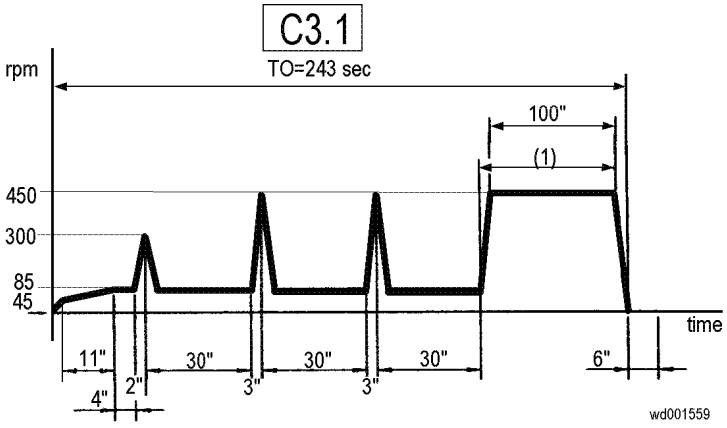
During spin phases, the electronic control checks the correct position of the pressure switch contact (1st level), which has to be on "empty".
If the contact should remain closed on "full" for at least 5 seconds, the electronic control cuts power to the motor, then a one-minute drain phase is performed and then the timer passes to the subsequent step.



LEV_0 pressure switch on "empty"
LEV_1 pressure switch on "full"
A closure time of pressure switch on full
B drain phase with motor stopped
C timer advance

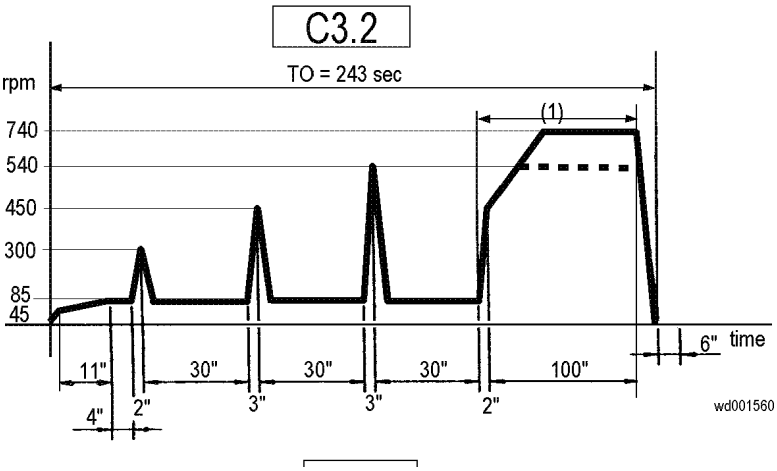
Spin C3.1

- COTTON rinses first intermediate spin in VD55 function



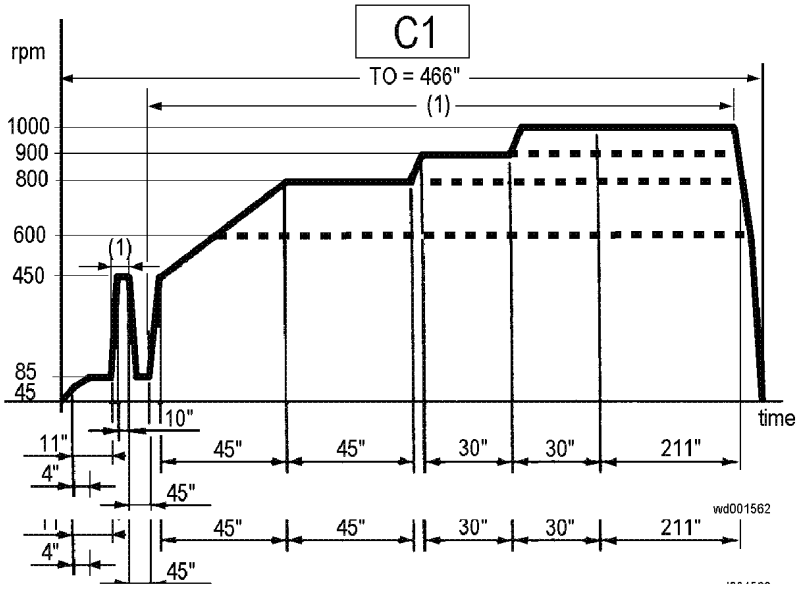
Spin C3.2

- COTTON rinses intermediate spins in VD55 function
- DELICATES and WOOL final spins in VD55 function



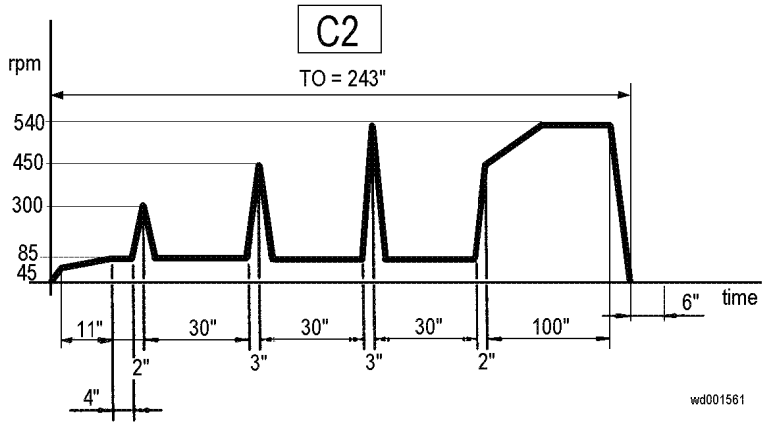
Spin C1

- COTTON final spin



Spin C2

- COTTON rinses intermediate spins in VD54function
- DELICATES and WOOL spins in VD54 function



Notes
(1) = phase during which the anti-foam control is active
TO = max. time (timeout)

CONSTRUCTION

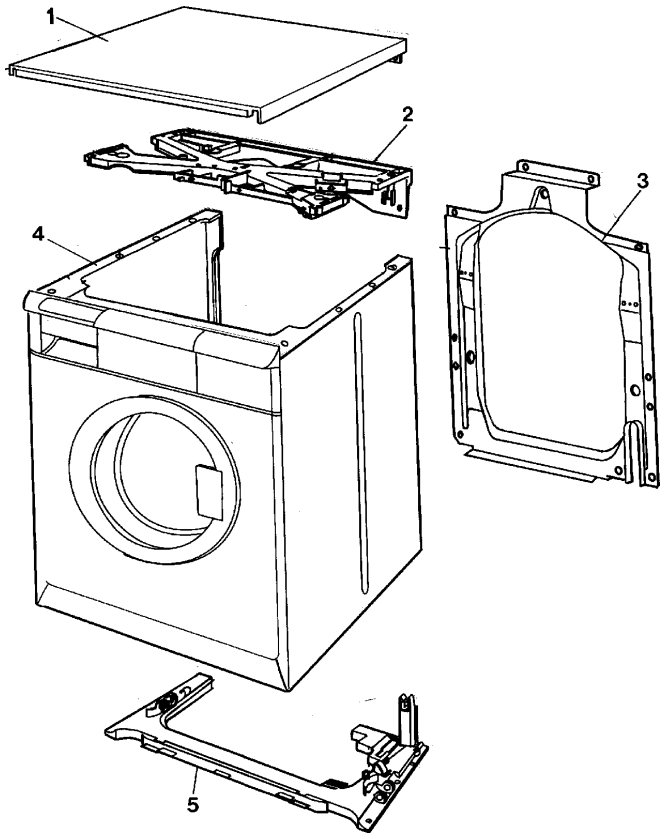
Enclosure

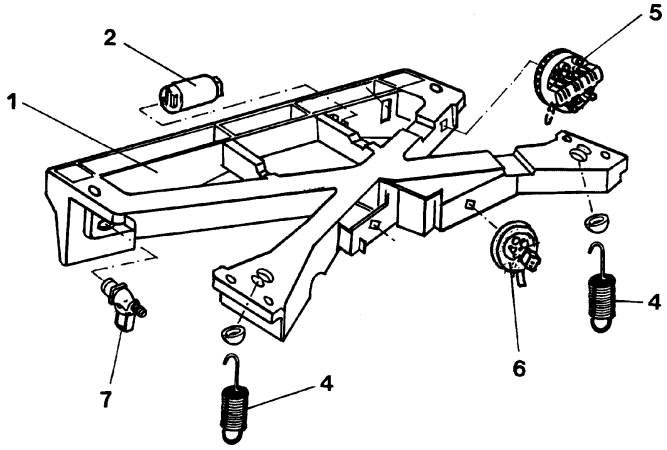
The enclosure consists of: - a lacquered steel sheet pressing forming the front and both sides, fixed between upper and lower CARBORAN frames

- a removabie galvanized sheet steel back plate

- a top of lacquered steel sheet, fixed to the rear of the upper GARBORAhOframe.

1 Top, lacquered steel sheet
2 Upper frame, CARBORAN
3 Back plate,
4 Front and sides, lacquered steel sheet
5 Lower frame, CARBORAN



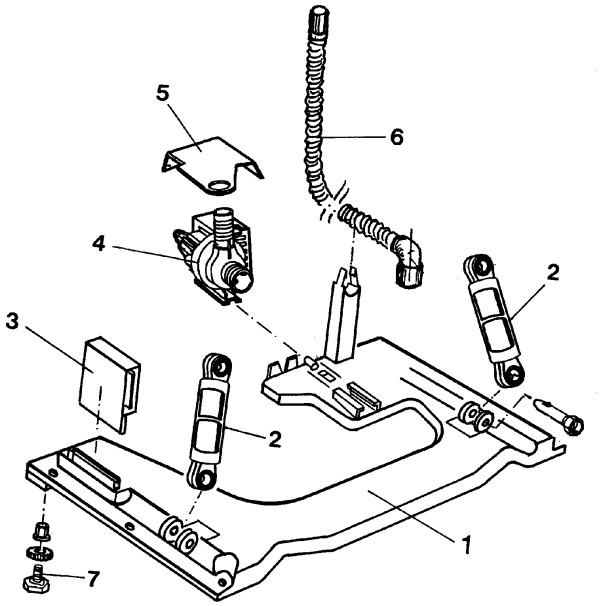


Upper frame

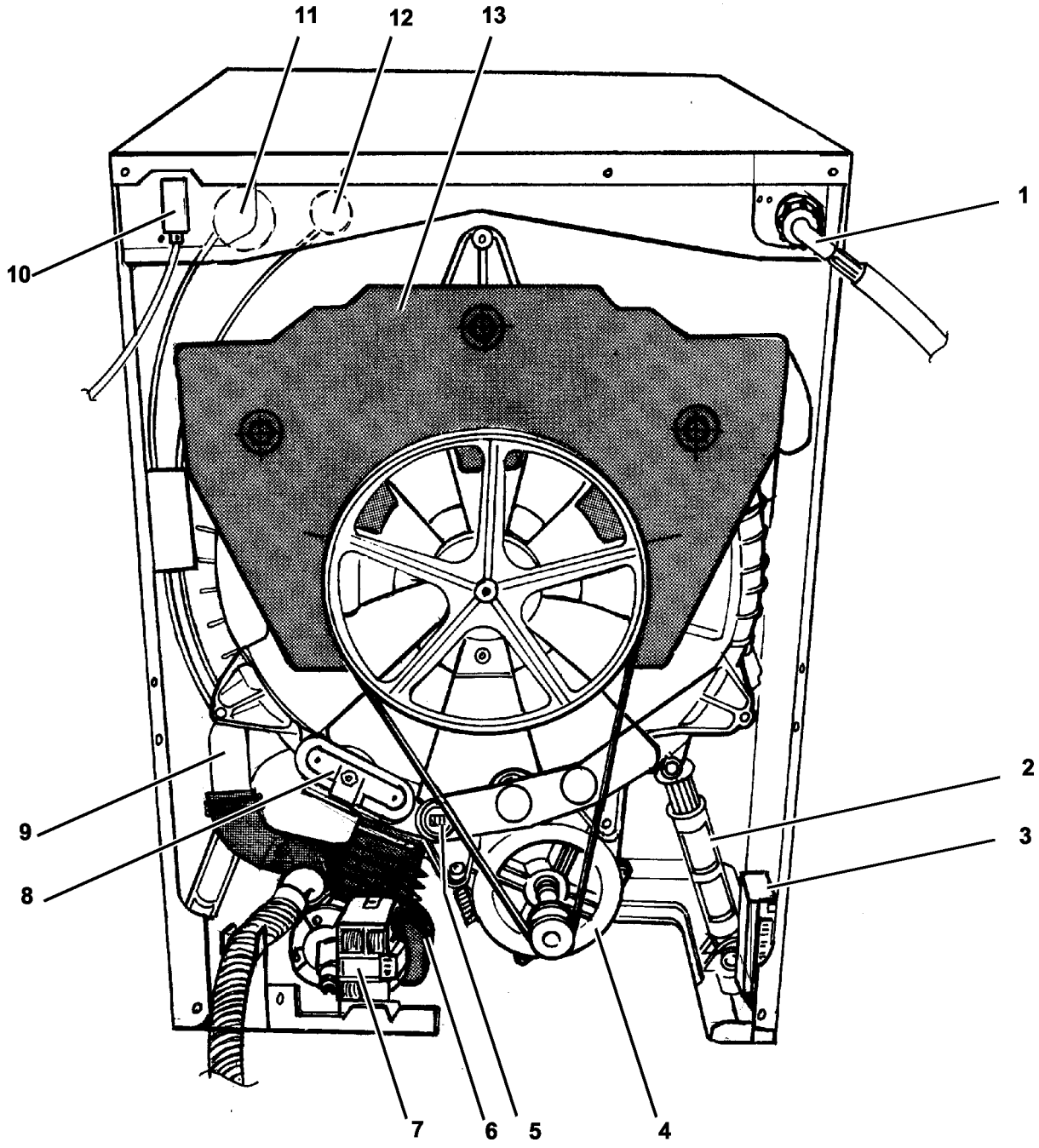
1. Upper frame of CARBORAN®
2. Interference suppressor
4. Spring, drum suspension
5. Level regulator, level 1
   level 2, and
   anti-foam function
6. Level regulator, overflow protection
7. Water supply valve

Lower Frame

1. Lower frame, of CARBORANO
2. Shock absorber, fixed to frame with plastic pin
3. Electronics unit
4. Drainage pump, inserted in track and locked to lower frame with plastic snap fixing
5. Plastic protection for drainage pump
6. Drainage hose, fixed with two plastic clamps
7. Adjustable rear foot with lock nut

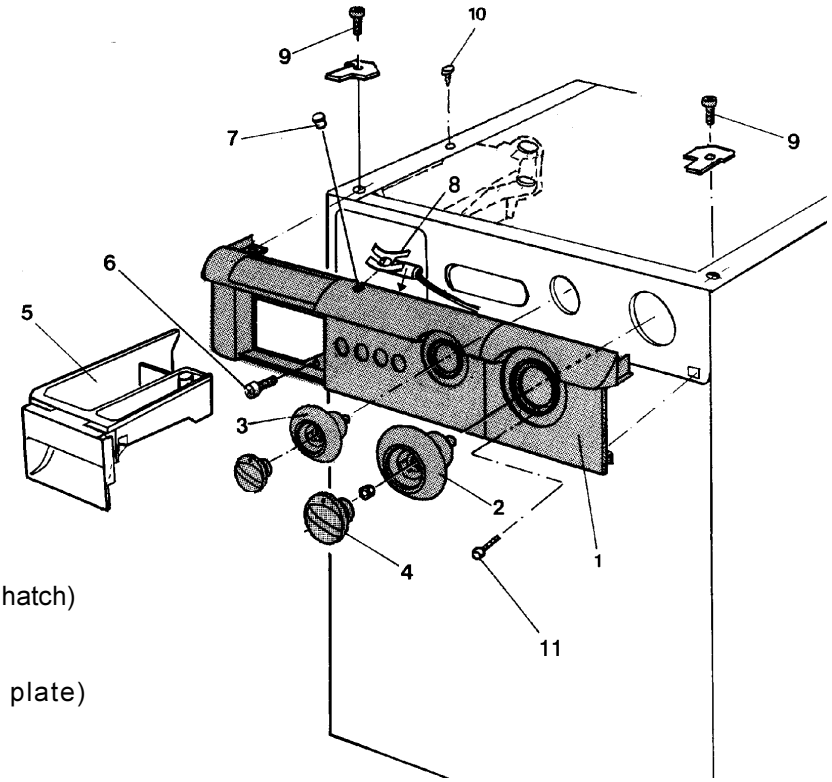


Rear of machine



1 Water supply hose
2 Shock absorber
3 Electronics unit 4 Motor
5 Temperature sensor, NTC thermistor
6 Rubber bottom with "pin trap" (filter not provided)
7 Drainage pump
8 Heating element, 1600 W.
9 Pressure chamber
10 Connection terminal block
11 Level regulator, level and anti-foam function
12 Level regulator, overflow protection
13 Rear counterweight

Front panel

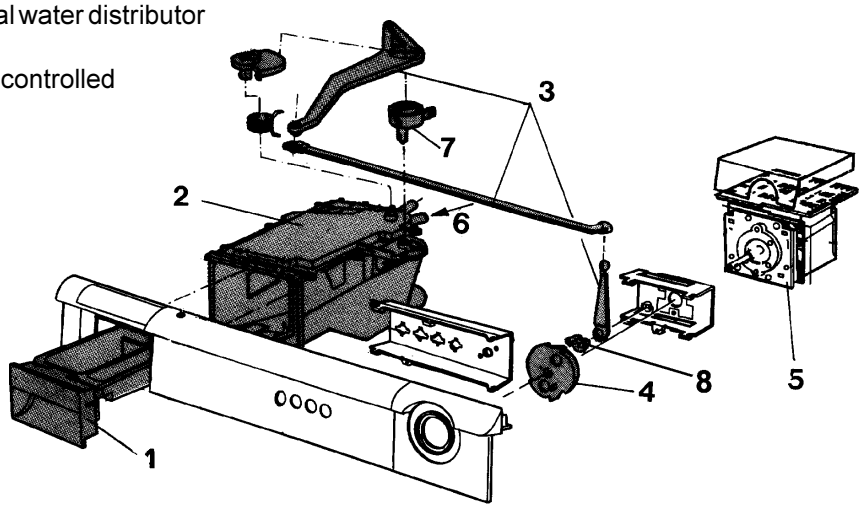


1 Front panel
2 Program scale
3 Temperature scale
4 Knob
5 Detergent hatch/dispenser
6 Fixing screw, (behind detergent hatch)
7 Lamp lens
8 Pilot lamp
9 Fixing screw, (Under top plate)
11 Fixing screw for panel

Detergent dispenser

Water enters through the rear nozzle (6) and then through the water distributor to the detergent dispenser. Water is directed to the detergent dispenser section in accord-ance with the position ofthe program-controlled cam-guided finger, washing the detergent/rinsing agent it contams down into the drum.

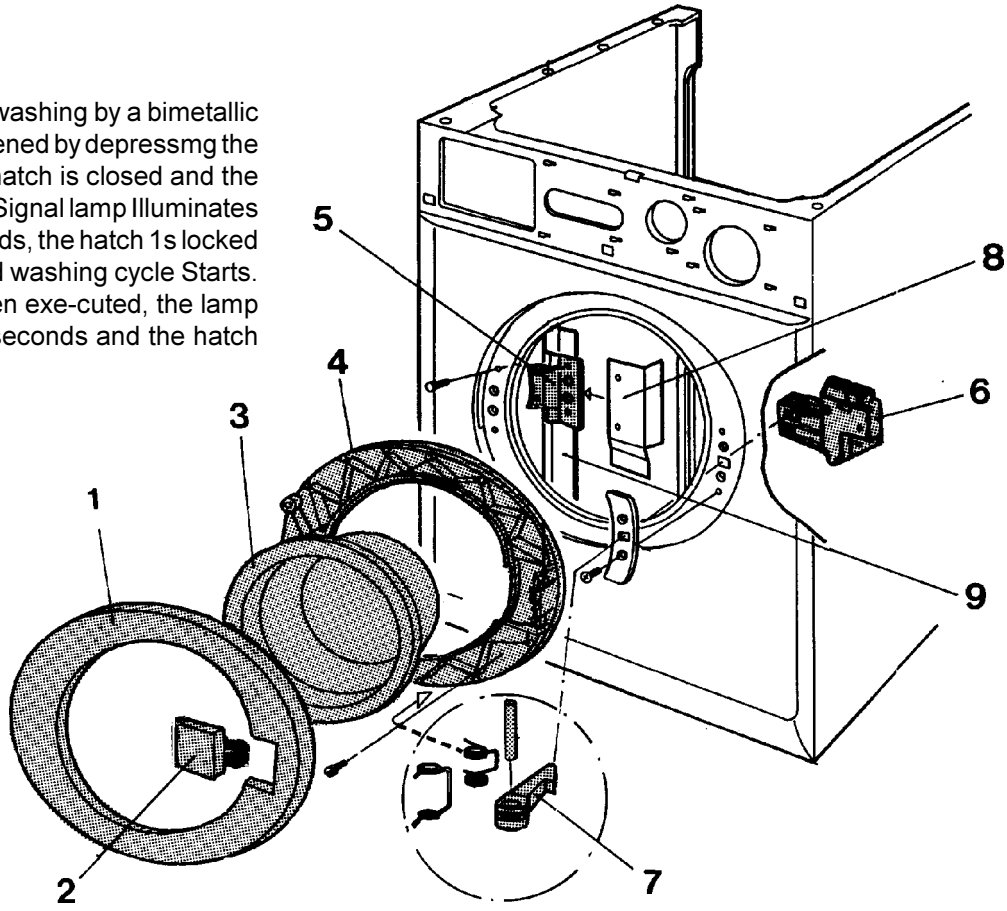
1 Detergent hatch
2 Detergent dispenser with internal water distributor
3 Linkage arm
4 Water distributor cam, program-controlled
5 Programmed Controller
6 Nozzle, water supply
7 Link System pivot
8 Cam-guided finger



Front hatch

The hatch is locked during washing by a bimetallic electric hatch lock and is opened by depressmg the hatch lock pad. When the hatch is closed and the On/Off button is pressed, a Signal lamp Illuminates after approximately 5 seconds, the hatch 1s locked electrically and the selected washing cycle Starts. When the program has been exe-cuted, the lamp extinguishes after 45-120 seconds and the hatch can be reopened.

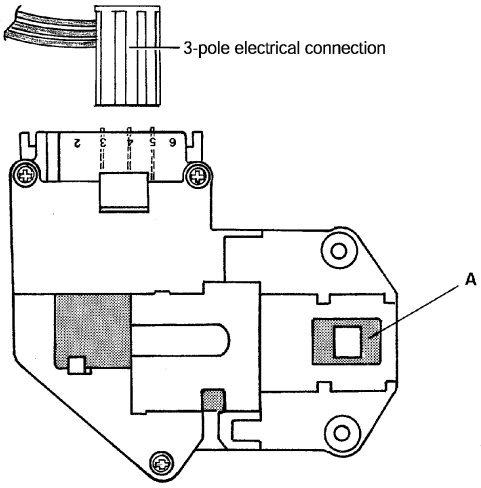
1 External hatch frame
2 Hatch lock pad
3 Hatch glass
4 Internal hatch frame
5 Hatch hinge
6 Electrical hatch lock
7 Locklever
8 Splash protection
9 Supporting beam



Hatch locking switch

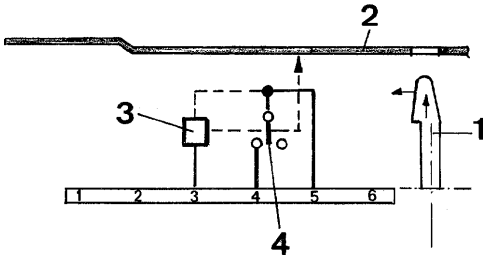
The security of the hatch is ensured by an electromagnetlc lock with function äs described below.

- when the lock is activated, the voltage-sensing unit closes the switch which con-nects voltage to the electrical components of the machine.
- During operations, the slide (A) remains mechanically locked and thereby prevents opening of the hatch by fixing the hatch lock lever
- When the hatch lock has been deactivated, It remains locked for approximately 45-120 seconds to ensure that the drum is statlonary before the hatch is opened.



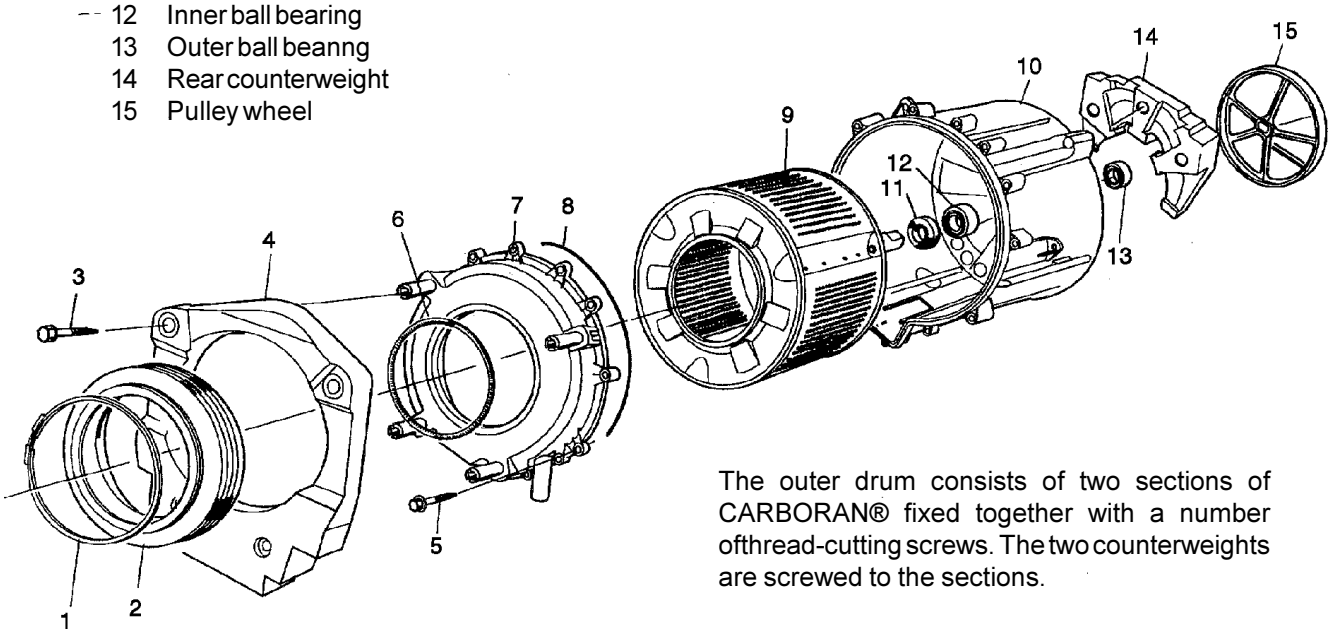
ELECTRICAL DIAGRAM

1 Lock lever (in hatch)
2 Slide
3 PTC resistor
4 Switch activated by the PTC resistor



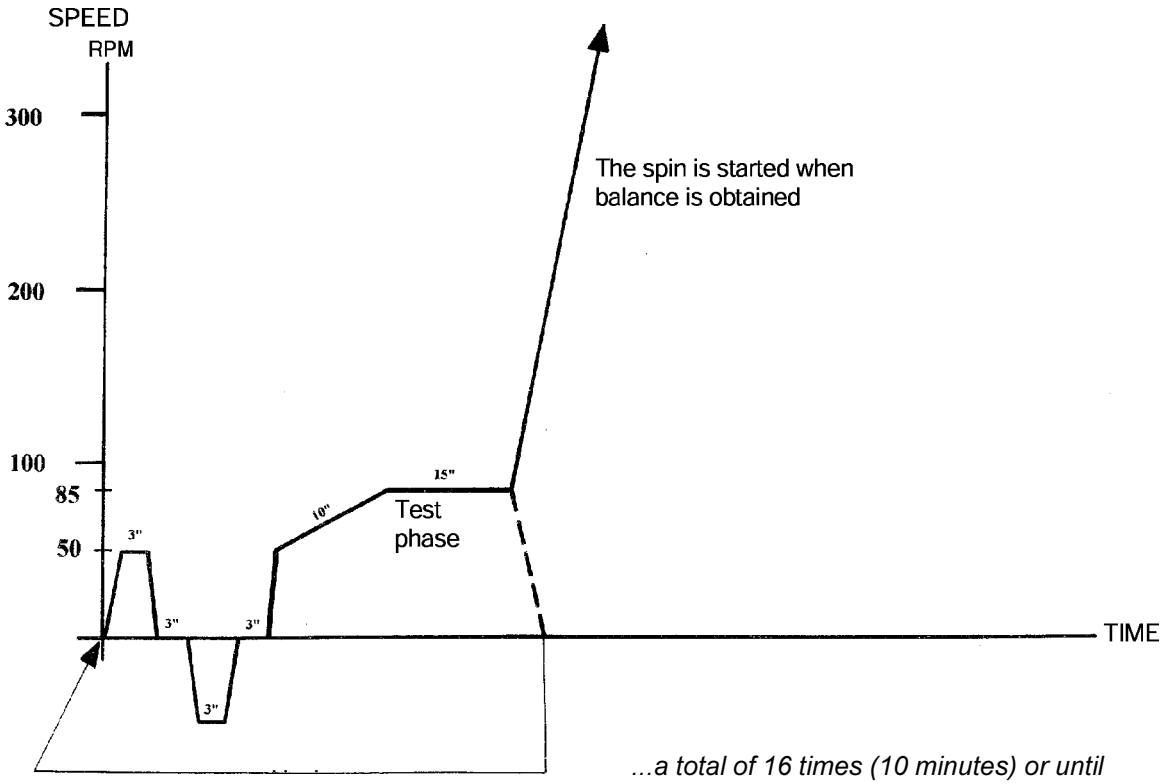
Washing unit with outer drum of CARBORAN®

1 Ring for fixing bellows to enclosure
2 Bellows
3 Screw, front counterweight
4 Front counterweight
5 Screw, front/rear outer drum
6 Ring for fixing bellows
7 Front section of outer drum, CARBORAN®
8 Packing
9 Inner drum, stamless steel
10 Rear section of outer drum, CARBORAN®
11 Drum shaft sealing ring
12 Inner ball bearing
13 Outer ball beanng
14 Rear counterweight
15 Pulley wheel



The outer drum consists of two sections of CARBORAN® fixed together with a number ofthread-cutting screws. The two counterweights are screwed to the sections.

Monrtoring of spin phase for imbalance



This sequence is repeated while the load remains unbalanced...

...a total of 16 times (10 minutes) or until balance is achieved. if balance is not obtained, the spin is omitted from the program.

Programmed control unit

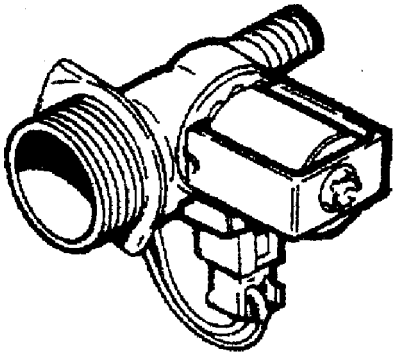
Imbalance control, function

A check for imbalance of the load 1s performed during 15 seconds at 85 rev/min. before the spin phase.

- If imbalance is detected, the tachometer generator and the motor current give an irregulär Signal to the micro-processor on the electronics board which then Interrupts the spin phase. The machine then returns to 55 rev/mm.. rotation and re-distributes the load to achieve balance before performing a new check at 85 rev/min..
- If imbalance persists, redlstribution of the load is repeated for a period of 10 minutes (16 attempts) or until balance is achleved.
- If no balance is obtained after 10 minutes, the program continues forward with-outspln.
- When balance is obtained, the program continues with spin atthe speed speci-fied.

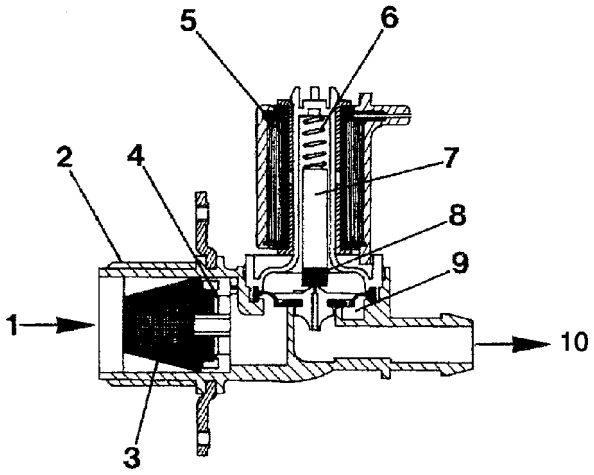
Water supply valve

General characteristics



This electro-magnetic controlled valve regulates the supply of water to the machine via the water distributor in the detergent distributor. It 1s actuated by a solenold which is controlled electrically bythe programmed Controller via the level regulator.

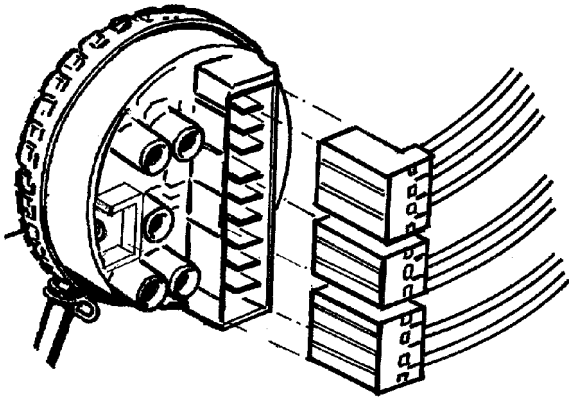
When the valve Is inactive, (without voltage) the spring holds the splndle down and the rubber cone seals a small hole at the centre of the membrane. A head of water bullds up which holds the membrane against Its seating and closes the valve.
When voltage 1s applled to the solenold, the splndle with the rubber cone is drawn up-ward against the spring and the hole in the membrane 1s exposed, permitting the passage of water. The pressure differential 1s lost and water can flow freely through the valve.



1 Water entry
2 Valve housing
3 Filter
4 Flow regulator
5 Coil
6 Spring
7 Spindle
8 Rubber cone
9 Membrane 10 Water delivery

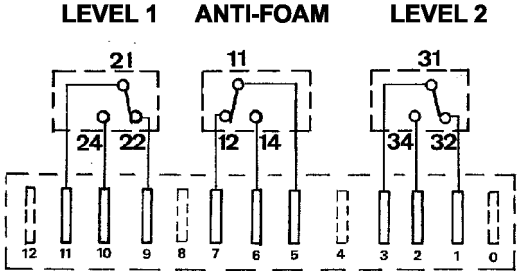
Level regulator

General characteristics



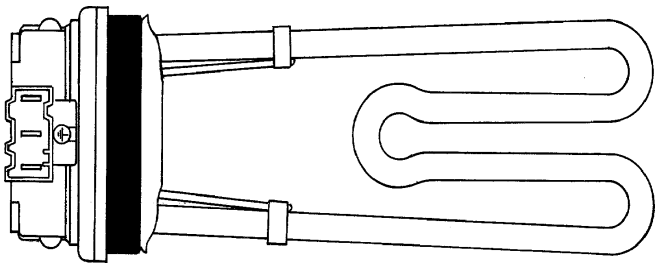
The level regulator momtors the level of the water in the machlne and

- adapts the water level to that required at different stages ofthe washing sequence selected.
- acts äs a low-water safety device äs It is connected in series with the heating ele-ment. It disconnects the voltage to the element when the water falls below a certaln level.
- acts äs an anti-foam protection by sending a Signal to the electromcs which Interrupts the spln phase and restarts this when the foam has subsided. (VE 60 and V 60 program med Controllers).



Heating Element

General characteristics

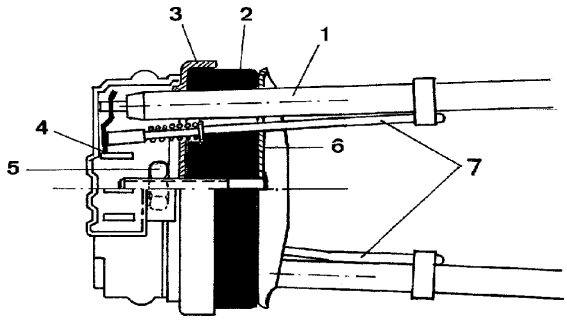


The element for heating the water is of the encapsulated type, i.e. the spiral resistor is hermetically sealed in a stainless steel enclosure.

Power 1600 W

Resistance 230 V 31.2 - 34.3 Ohm
240 V 33.9 - 37.4 Ohm

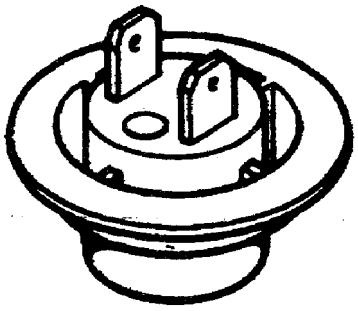
1 Element
2 Rubber packing
3 Fixed flange
4 Electrical connection pin
5 Locking nut
6 Adjustable flange
7 Fuse



The seal between the element and the outer drum is obtained with a rubber packing which expands when the locking nut is tightened.

NTC-Thermistor (Temperature control)

Temperature control by means of NTC thermistors is incorporated in models controlled by Programmed control units VA 60, VB 60 and VE 60.



NTC temperature sensors

1 Plastic housing
2 Metal capsule
3 NTC resistance
4 Electrical contacts

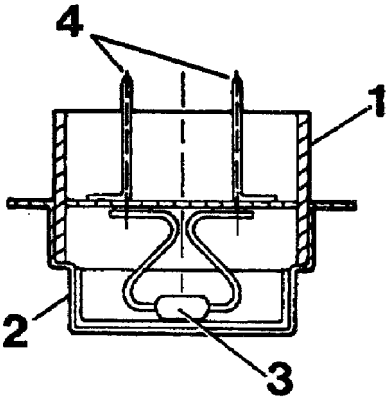


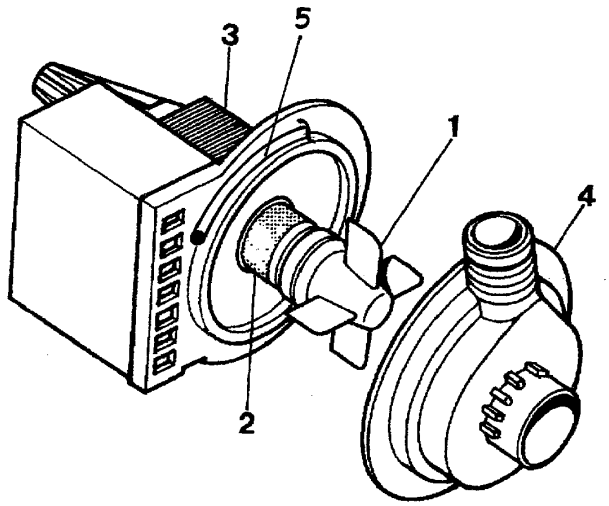
Table with resistance at different temperatures (3%)

Temperature °C	Resistance kOhm
30	17.3
40	11.5
50	7.84
60	5.46
70	3.90
78	2.97
85	2.32

The temperature of the washing water is controlled by the microprocessor via an NTC sensor.
The internal resistance ofthe sensor decreases äs the temperature increases. This decrease is registered by the microprocessor which disconnects the heating element when the required temperature has been reached.
With a short-circuit or other failure in the NTC thermistor, the control unit cancels the heating stage and completes the program without heating.

Drainage pump

1 Impeller
2 Rotor
3 Stator
4 Pump housing
5 0-ring



The rotor consists of a permanent magnet which can rotate clockwise or anti clock-wise. The rotor can rotate one quarter revolution without movement ofthe impeller.
Ifthe impeller seizes, the rotor can therefore make small movements in both directions until the impeller is freed. An unusual sound may be heard at Start which is quite normal.

Function check

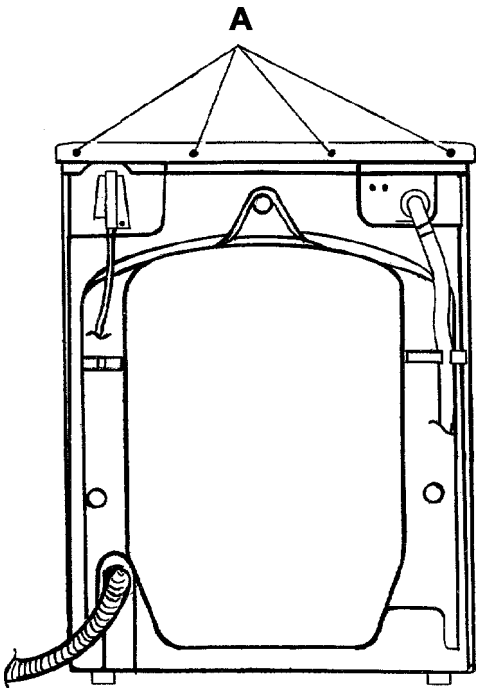
1 Check that the impeller can move freely.

2 Check the resistance of the Stator winding. This should be 170 Ohm.

Max. capacity	= 20 l/mm.
Power consumptlon	= 30 W

SERVICE/ACCESSIBILITY

Top plate



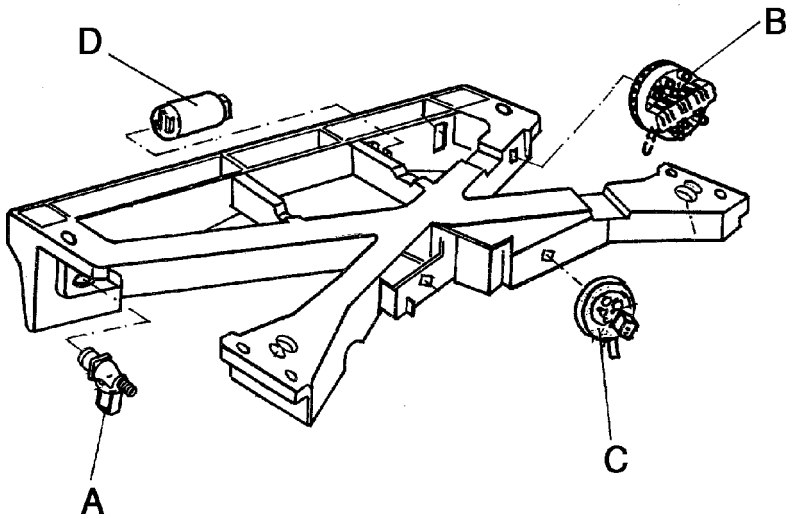
1 Remove the 4 screws (A) at the rear edge of the plate.

2 Draw the top plate backward

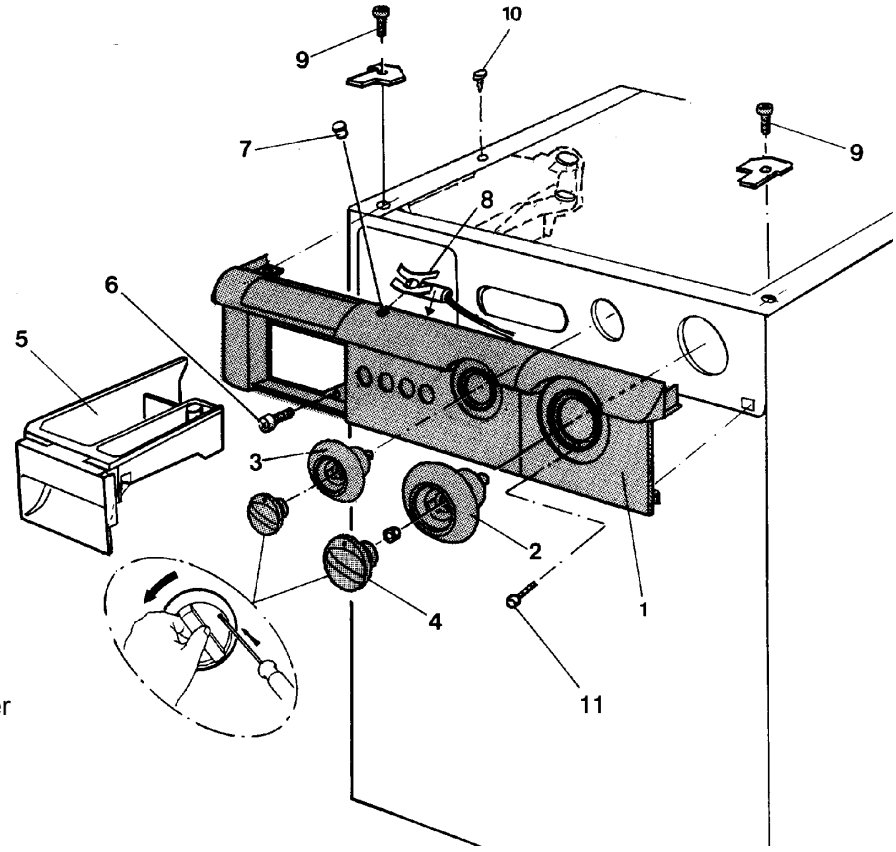
Accessibility:

A Supply valve

B Level regulator, level and anti-foam C Level regulator, overflow protection D Capacitor/ Interference suppressor



Panel



1 Remove the top plate

2 Remove the 2 screws (9).

3 Remove the knob (4).
Unlock the holding catch by msertmg a fine screwdriver (or equivalent) straight through the hole, rotating the knob anti clockwise at the same time until the knob can be removed.

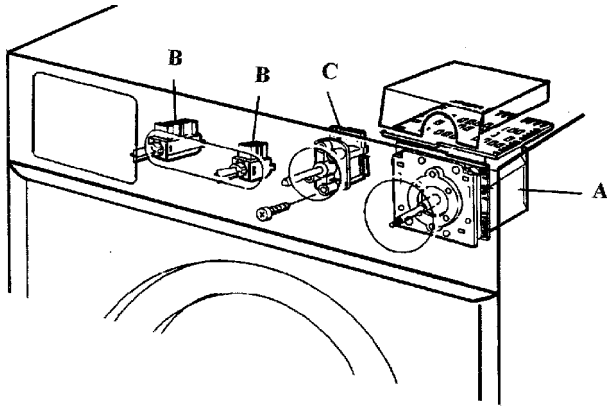
4 Remove the temperature scale (3) by llfting the lock on the plastlc shaft and with-drawing the scale.

5 Remove the program scale after removmg the nut.
Remove the screw behlnd the program scale.

6 Remove the detergent hatch (5) by „jerking“ ilt past a stop.
Remove the screw (6) inside the hatch.

7 Remove the screw (10) to free the detergent dispenser and llft the panel away from the front edge of the detergent hatch.

Accessibility:



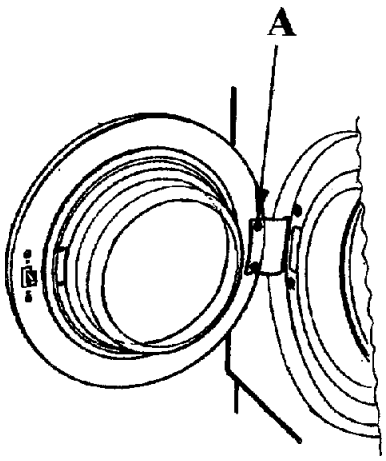
A Programmed control unit

B Press-operated switch

C Potentiometer, temperature setting
(Not provided on all modeis)

Hatch

Removal:



1 Remove the two screws (A) holding the hatch to Its hinge.

2 The outer hatch frame is snapped over the outer edge ofthe inner hatch frame. Carefully lever the frames apart and remove the outer frame.

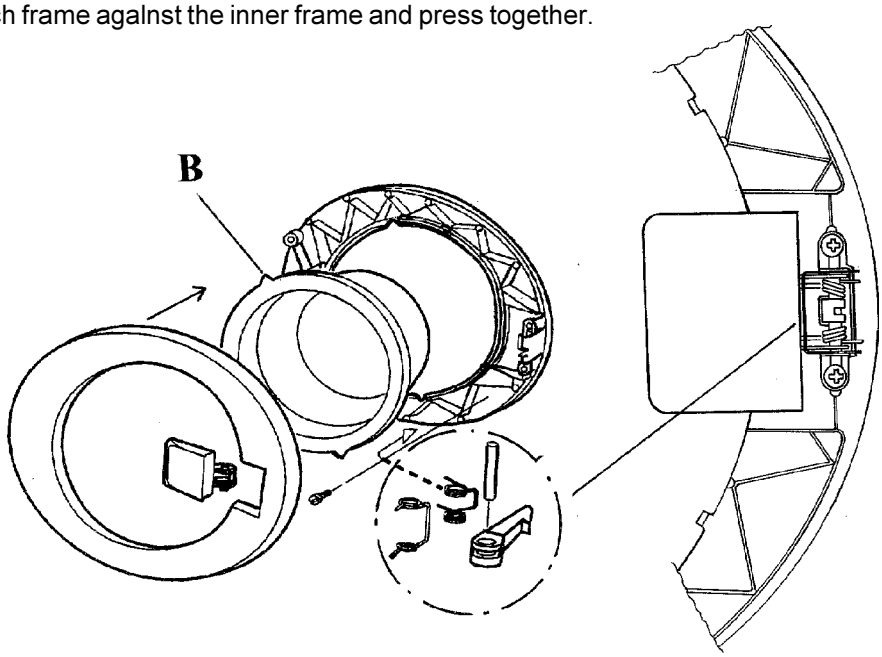
3 The opening pad with springs, fixed to the inner frame with 2 screws Is now accessible.

4 The hatch glass Is fixed in the inner frame with 4 plastic projections. Bend these open to permit removal ofthe glass.

Re-assembly:

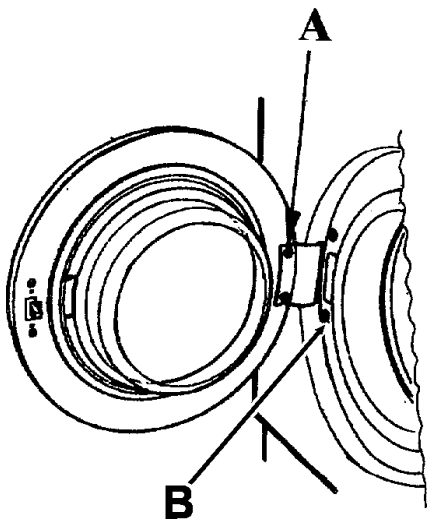
1 Place the glass agalnst the inner hatch frame. Check that the 2 projections (B) on the edge of the glass are in llne with the corresponding spaces In the Inner frame and press Into positlon past the plastic projections.

2 Place the outer hatch frame agalnst the inner frame and press together.



Hatch lock fixed to the Inner hatch

Hatch hinge



1 Remove the hatch from the hinge. (Screws A)

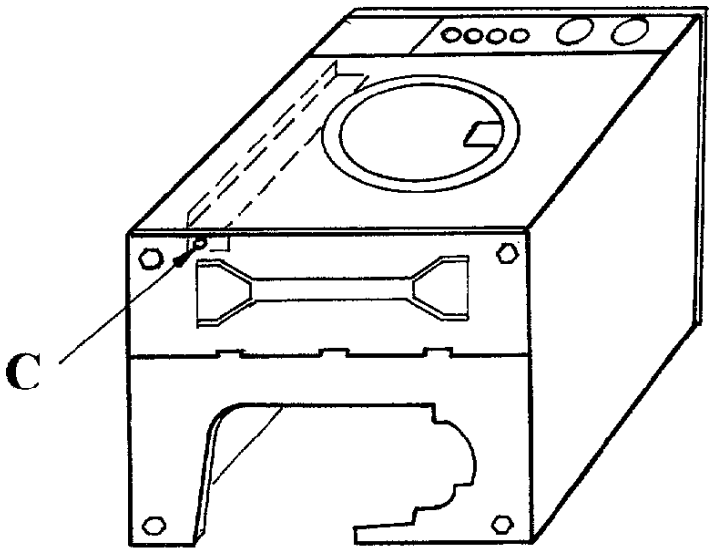
2 Remove the locking ring around the outer part of the bellows and remove the bellows.

3 Press the bellows Inward toward the drum to permit passage ofthe hinge.

4 Remove the two screws (B) fixing the hinge. Note the locking nuts on the inside.

5 To simplify Installation of a new hinge, the Internal beam supporting the hinge Is also to be be removed. Lean the machlne backward and remove the screw (C) fixing the beam to the bottom edge of the front (under the machlne).

6 Then remove both hinge and beam.

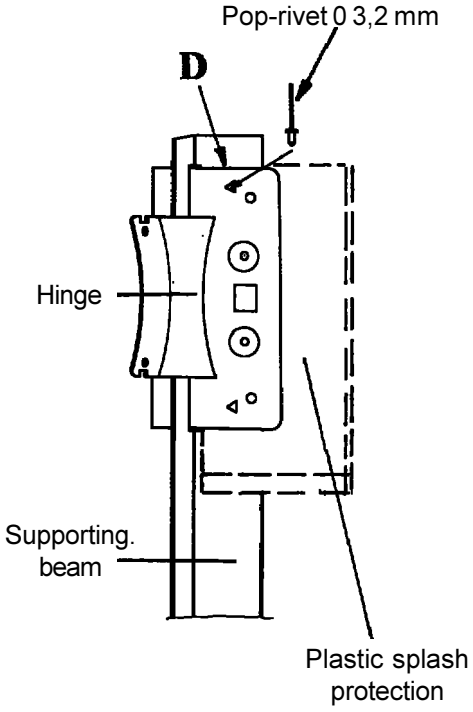


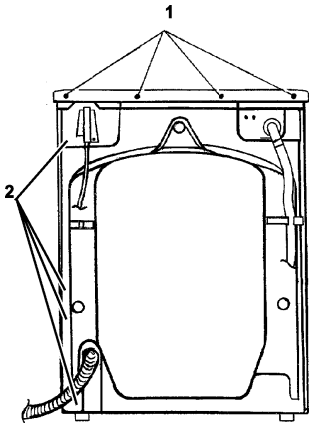
Re-assembly:

7 To Install a new hinge, It Is simplest to fix the hinge first agalnst the supporting beam by means of a pop-rivet through the upper triangulär hole In the hinge and the hole in the correspondmg place In the beam (D).
If no such hole Is avallable, mark the beam through the triangulär hole and drill a hole f3.5 mm. Mountthe pop-rivet with its head toward the hinge.

Note that the plastlc splash protection Is to be located between the hinge and the supporting beam when mounting the pop-rivet.

8 Then insert the hinge with supporting beam through the hatch opening.
Fix with screws and locking nuts.
Refitthe beam in position against the bottom edge of the front.





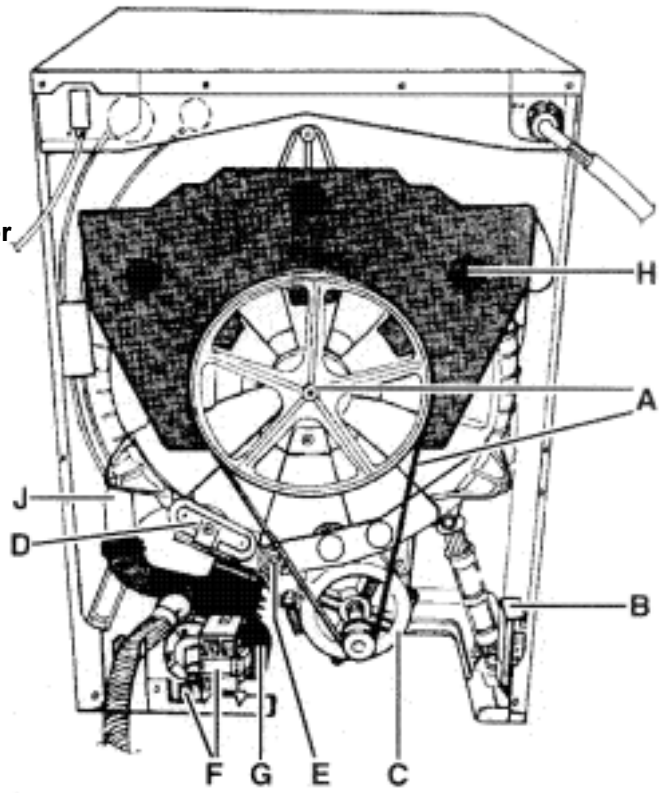
Rear of machine

1 Remove the 4 screws fixing the back plate to the top plate (1).

2 Remove the 11 screws around the edges of the back plate (2).

3 Remove the back plate.

Accessibility:



A Belt and pulley
- The pulley is fixed to the drum axie with a 5 mm hex.socket head screw.

B Electronic circuit board for speed control of motor
- Disconnect the electrical contacts and press the plastic snap fixing (under the machine) to the side and then lift out the electronics unit.

C Motor
- This is fixed with 4 hex. socket head screws to the outer drum. Use an 8 mm Allen key to remove these screws.

D Removal of heating element
- Disconnect the electrical contacts.
- Remove the nut at the middle of the element (that which expanded the pack-ing). Then press the threaded section inward.
- Withdraw the element from the outer drum.

E Temperature sensor, NTC thermistor
- Disconnect the electrical contacts.
- Carefully lever, using a screwdriver, the rubber bushing from the outer drum.
- Remove the NTC thermistor from the rubber bushing.

F Removal of drainage pump
- Slacken the hose clamps and remove the hoses from the pump.
- Disconnect the electrical contacts and remove the plastic protection over the pump.
- Push down the plastic projection (H) and withdraw the pump backward.

G Rubber bottom, (pin trap)
- Slacken the clamps holding the hoses fixed to the rubber bottom.

H Rear counterweight
- Remove the belt and pulley.
- Remove the 3 screws fixing the counterweight to the outer drum.
- Lift the counterweight away from the expander bolt fixmgs.

J Pressure chamber
- Remove the hose clamp at the rubber bottom.
- Remove the screw (8 mm socket) holding the pressure chamber to the outer drum.
- Draw the Container backward and remove the hoses to the pressure (water level) switch.

Drurn unit

(to be lifted out when replaeing inner drum, bearing or front counterweight).

1 Remove top plate and rear plate.

2 Remove the clamping ring around the hatch opening and then separate the bellows from the front.

3 Disconnect all of the electrical contacts from the drum unit (heating element, motor and temperature sensor).

4 Disconnect the drainage hose and the drainage pump from the rubber bottom (see page 33).

5 Disconnect the hoses between the detergent dispenser and the outer drum (at the drum).

6 Disconnect the air hoses at the level regulators.

7 The rear counterweight and the motor can be removed from the drum unit to simplify the lifting of the drum unit out of the enclosure.

8 Remove the pressure chamber and the electronics unit to obtain access to the shock absorbers.

9 Disconnect the shock absorbers from the drum unit by removing the pin at the upper fixing.

10 Lay the machine on the floor, front downwards, making suitable arrangements to protect knobs, buttons etc. against damage.

11 Disconnect the suspension springs from the upper part. This can be simplified by placing a wire loop under the end of the spring and pulling on the loop with a "handle" - a screwdriver or similar.

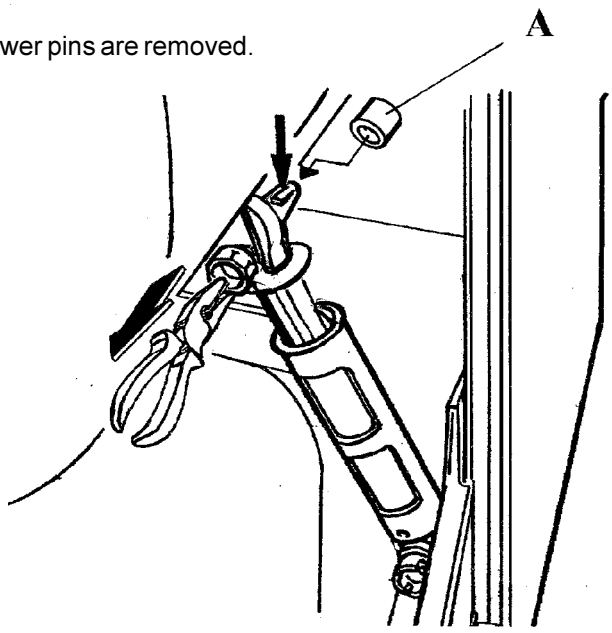
12 Grip the pulley and lift the drum unit, (with back so straight as possible), off the chassis. It is recommended that two persons perform this operation.

Shock absorbers

The shock absorbers are installed between the lower frame and the drum unit and are held in positlon in the fixmgs with pms.

Removal of shock absorbers:

- Depress the lockmg catch by pushmg a pipe socket (A) over the end ofthe pin and the catch, (internal diameter of socket (0 = 14 mm.).
- Withdraw the pin from its fixmg with pliers.
- The shock absorber can be removed when the upper and lower pins are removed.

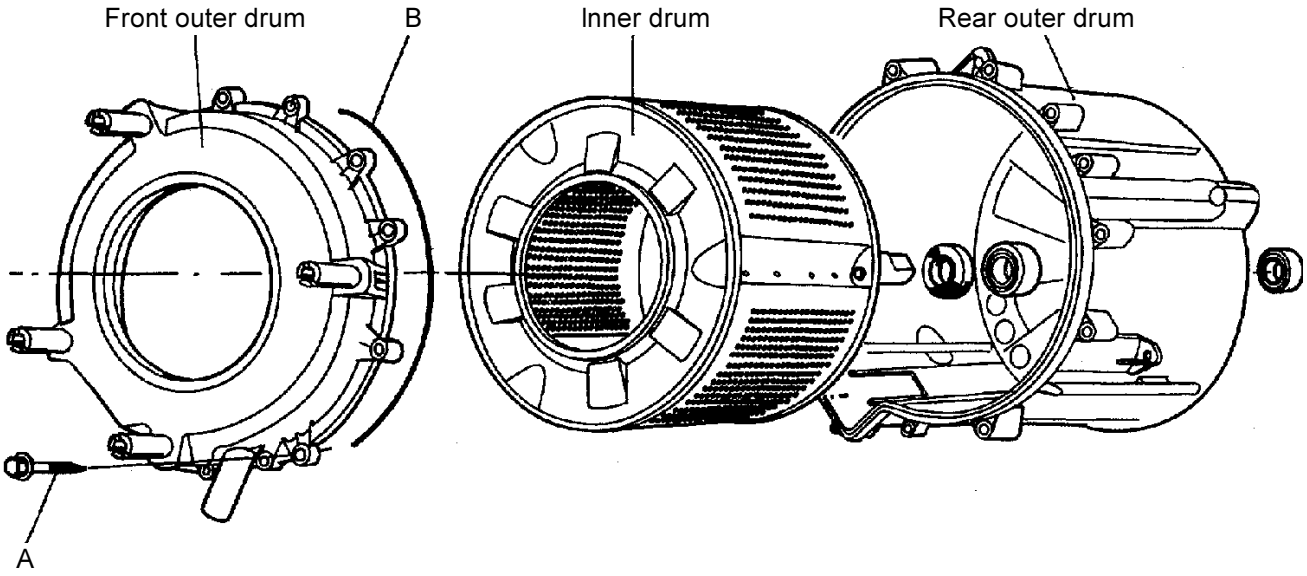


Replacement:

- As the original pms may be damaged during withdrawal, new pms should be used.
- „Lubricate“ the pm with some type of alcohol. The lubricant must evaporate after insertion of the pins and grease may not be used.
- Rotate and fully insert the pm from elther slde.
- Check that the locking catches project and lock the pins correctiy.

Outer drum with drum bearing

The outer drum consists of two sections of CARBORAN with a sealing ring between, fixed together with a number of thread-cutting screws (A).
When installing the sealing ring, the splice, marked with red, is to be located upward so that the red marking is visible at the recess on the upper sides of the drum sections.



The bearing which carries the drum axle is installed inside a cylindrical steel support embedded in the rear section

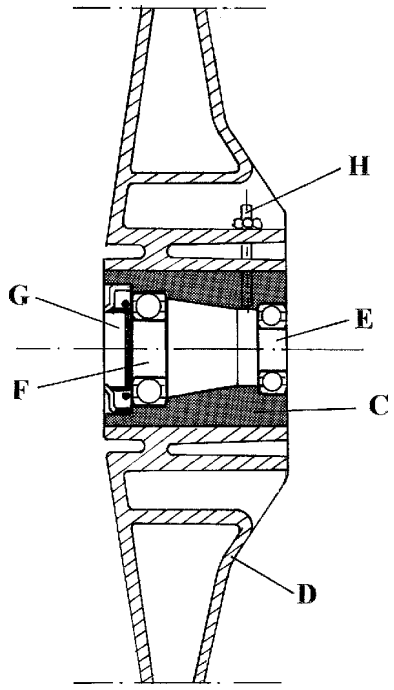
D Outer rear drum section

E Rear ball bearing (0 40 mm. type 6203-2Z).

F Front ball bearing (0 53 mm. type 6205-2Z).

G Drum axle seal

H Earth connection pin.



TEST CYCLE AND TROUBLESHOOTING

Test cycle of VD55 timer

Find below a short cycle to be used to check the different functions of the appliance.

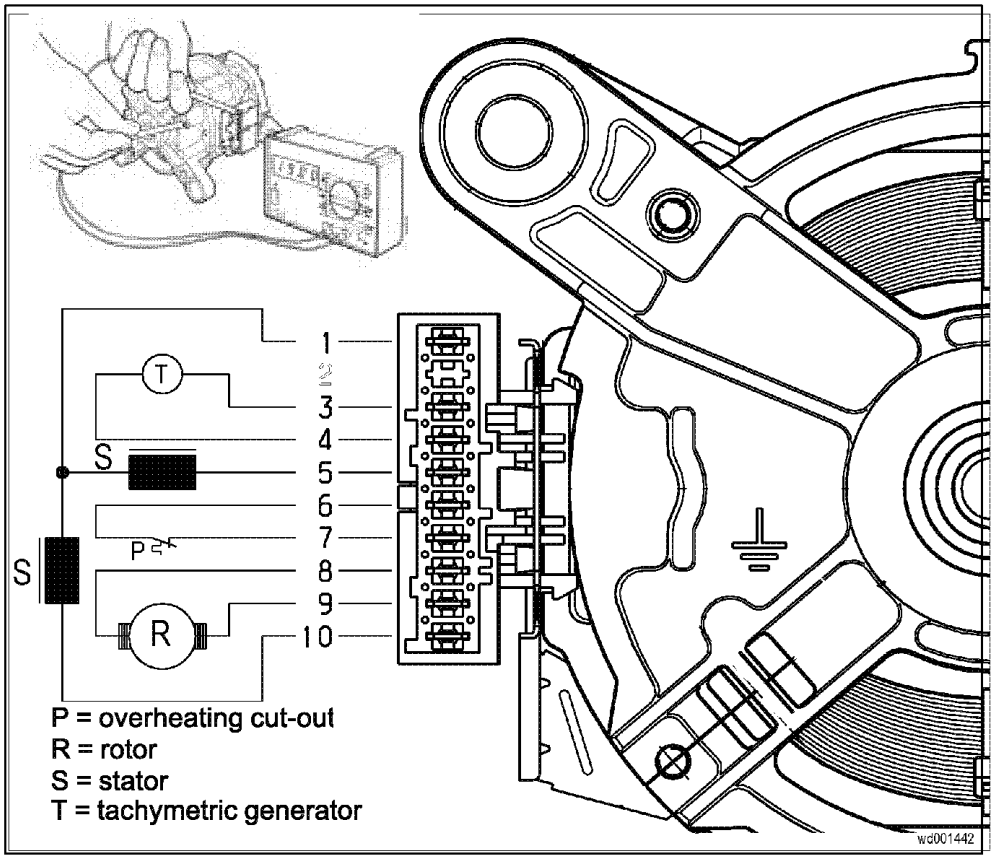
VD54/55 Timer test			
Phase	**Position the knob on the programme**	**Step**	**Functions to check**
1	Select: **1 - COTTON WITH PREWASH** and switch the appliance on	**1**	• Door closure • Water fill of prewash tub (without waiting for the level)
2	Move the knob on: **2 - 90°C COTTON** (adjustable thermostat on 30°)	**4**	• Water fill of wash tub • 1st level pressure switch closure • Motor rotation at low speed • Heating (By rotating the adjustable thermostat on cold wash, the heating resistance is excluded)
3	Move the knob on: **16 – DELICATES CONDITIONER**	**55**	• Water fill at 2nd level conditioner tub (in models with two levels)
4	Advance the knob of one position: **DELICATES CONDITIONER** **+ one position** (push rinse hold push-button, if present)	**56**	• Rinse hold (if rinse hold push-button is present, push the button again to check the timer advance)
5	Move the knob on: **7 – COTTON SPIN**	**25-26**	• Drain + motor inversions at low speed • Cotton spin – see profiles at page 9. At 26 step control: - No spin push-button - Spin reduction push-button - Spin speed selector

Notes:

- The possible water fill in bleacher tub is to be checked at 14 step.
- The water fill in conditioner tub can be controlled at steps 23-42-55.
- The half load push-button should be controlled at step 19: when it is pushed it interrupts the operation of the drain pump.
- The no spin push-button cancels all spin cycles (steps 16-19-22-26-44-58)
- The rinse hold push-button, if there is the jumper JH, stops the appliance with water in tub also in cottons (step 24)
- Particular defects must be checked in the specific timer position.

TYPE OF FAULT		POSSIBLE CAUSES/COMPONENTS TO CHECK	Phase of test cycle
WASHING MACHINE DOES NOT START	**Pilot lamp off**	Supply cable; interference suppressor; ON/OFF switch – if present; interference suppressor wiring-timer (B4.4 -B4.1); timer (contact closure B4.4 - A2.2)	1
	Pilot lamp on	Door safety device; door delayer wiring-timer (A2.2- N6.2 - N6.1); timer (internal circuits)	1
IT DOES NOT FILL WATER		Tap closed; insufficient water pressure; water fill solenoid valve; solenoid valve wiring-timer (N6.4 - N6.6); 1st level pressure switch does not close on empty; pressure switch hydraulic circuit (clogging); pressure switch-timer wiring (N6.5); drain pump-timer wiring or interrupted drain pump winding (P5.1-P5.3); timer (contact closure N6.5-N6.4)	1-2
IT FILLS WATER CONTINUOUSLY	**It fills water also with appliance off**	Solenoid valve mechanically blocked	2
	It fills beyond the level	Pressure switch, pressure switch hydraulic circuit (leakage of pressure switch tube, pressure chamber clogging)	2-3
	It does not reach the level	Drain tube too low positioned or problems with the house drainage system; leakage of hydraulic circuit of the appliance	2-3
INCORRECT WATER LEVEL		Non-calibrated pressure switch; pressure switch hydraulic circuit clogged	2-3
IT DOES NOT FILL WATER AT 2ND LEVEL		2nd level pressure switch does not close on “empty”; pressure switch-timer wiring (N6.3); timer (contact closure N6.3-N6.4)	3
IT DOES NOT WARM		Faulty heating resistance; safety heater pressure switch contact does not close on “full”; thermostat contact open; resistance-thermostats-pressure switch-timer wiring (A2.1-B4.2-B4.3-B4.1); timer (contact closure A2.1-B4.2/B4.3)	2
INCORREC TEMPERATURE		Non-calibrated thermostats; low voltage; timer (contact A2.1-B4.2/B4.3 does not close on all foreseen positions)	2
RECIRCULATION PUMP DOES NOT WORK (only in jetsystem models)		Faulty recirculation pump; recirculation pump-timer wiring (P5.4-P5.5); timer (contact closure A2.1-P5.5)	2
MOTOR NEVER STARTS		motor (stator, rotor, moto-protector, brushes) (see 62.1 page 22); motor - timer wiring (M7.4-M7.5-M7.6,M7.7); timer	2-5
MOTOR TURNS FOR A SECOND, THEN STOPS FOR 30 SECONDS (sequence repeated max. 3 times, then the timer stops)		Timer	2-5
MOTOR TURNS FOR A SECOND, THEN STOPS FOR 30 SECONDS (the cycle continues)		motor (tachymetric generator) (see 6.2.1 page 22); tachymetric generator - timer (M7.2- M7.3) wiring; timer	2-5
MOTOR TURNS ONLY IN ONE SENSE		timer	2
ONLY SPIN CYCLE OPERATES		timer; wiring (S4.1-S4.4, S4.1-S4.3); spin speed selector; spin reduction push-button; no spin push-button	2-5
MOTOR DOES NOT PERFORM THE CORRECT SPEED		timer J5.1-J5.4, J5.2-J5.3 wiring (see specific electric diagram of the model); wiring (S4.1-S4.4, S4.1-S4.3); spin reduction push-button; timer	2-5
IT DOES NOT DRAIN		Drain pump; drain pump - timer (P5.1-P5.3) wiring; timer (contacts closure N6.2-P5.1); antioverflow pressure switch, if present	5
TIMER DOES NOT ADVANCE		timer	1, 5
CYCLE IS NOT CORRECT		Options wirings; push-buttons and relative wiring; timer	1, 5
CYCLE OPTIONS INCORRECT		Check the various push-buttons and relative wiring; timer	1, 5

Checking the commutator motors



1) Check the connector blocks (wiring) and check for detached or bent terminals.
2) Check for the presence of traces / residue / build-up of water or detergent, and identify the source.
3) Use a tester with a minimum scale of 40 Mohm to check for windings or other components that are connected to mass or poorly earthed (read ∞) across each terminal and the casing.
4) Check that each of the windings is as shown in the table below

Motor terminals	Check:	SOLE Motor [W]	F.H.P. Motor [W]	CE.SE.T. Motor [W]
3 - 4	Tachymetric generator winding	171 ÷ 196 469 ÷ 540	126 ÷ 147	64 ÷ 73
5 - 10	Stator winding (full range)	1.0 ÷ 2.2	1.0 ÷ 3.0	1.0 ÷ 2.0
6 - 7	Overheating (cut - off)	0	0	0
8 - 9	Rotor winding	1.5 ÷ 3.0	1.5 ÷ 3.0	1.5 ÷ 3.0

Note:
When checking the rotor winding, the measurement should be taken around the entire perimeter, turning the shaft very slowly and checking for the presence of short-circuits between the visible plates. Check the brushes for wear.

BASIC CIRCUIT DIAGRAM

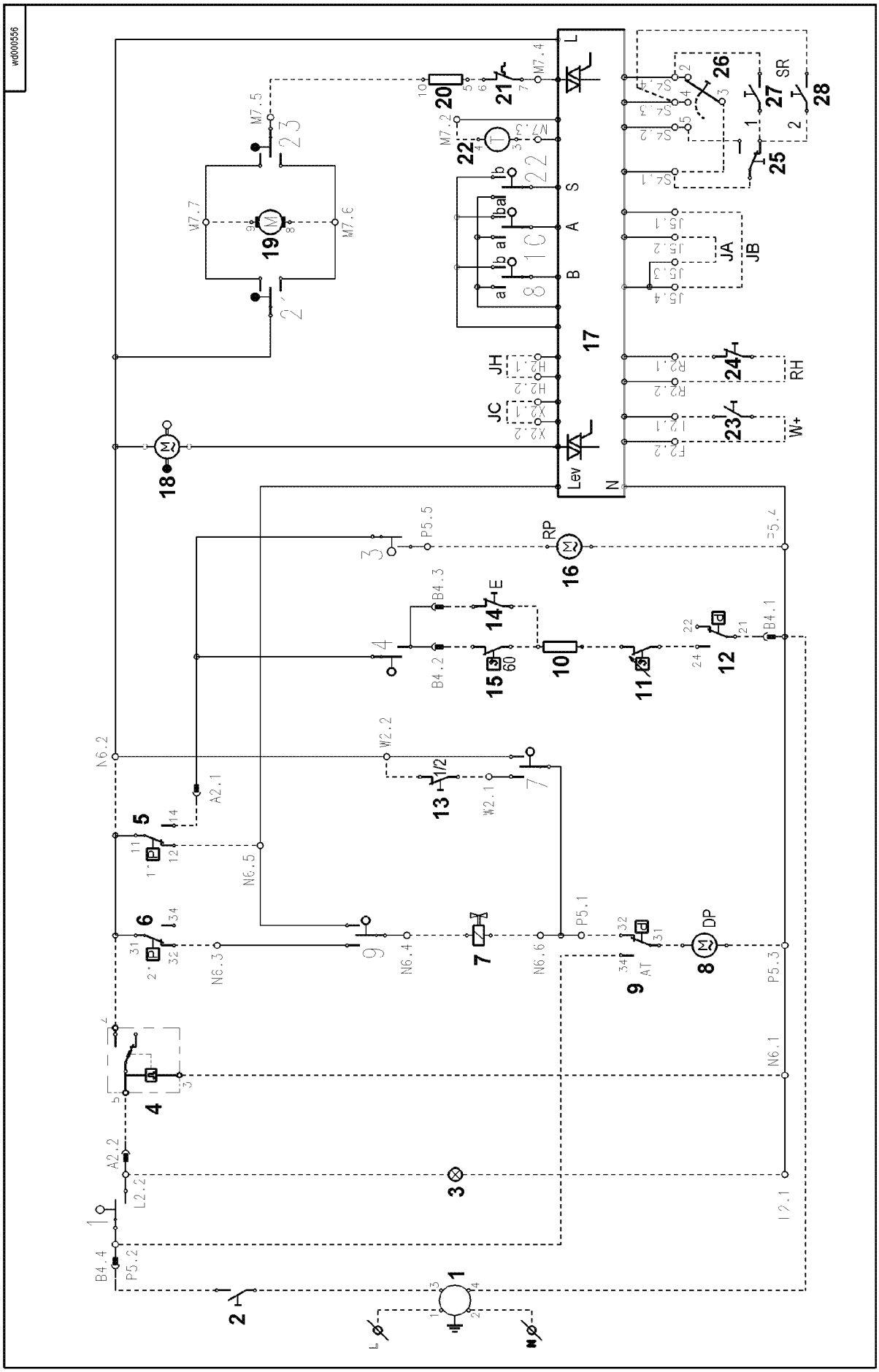
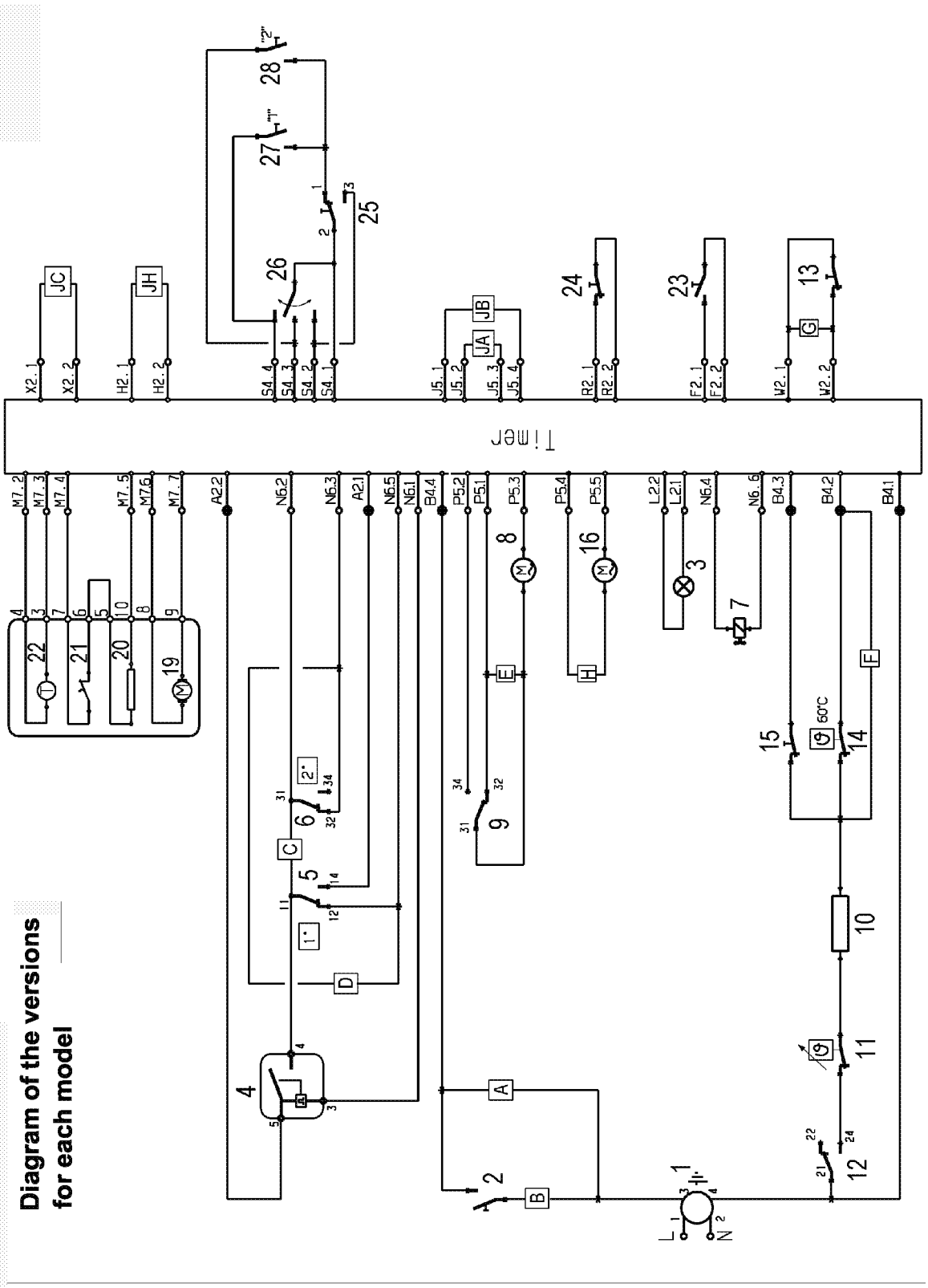


Diagram of the versions for each model



WASHING PROGRAMMES TABLE

Programme	Step	Basic functions	level (*)	Time	Motor movement	VD55 (bridge JC)	VD55	Options								
							Rinses (prog. No. 5)	Cotton 60°	Cotton 40°	Synthetics 40°	Super rinse	Half load push-button	Wool	Spin reduction	No spin	Rinse hold push-button and jumper J1
1	1	Load+heating+wash	2	P+9'	NA											
	2	Load+heating+wash	2	P+4.5'	NA											
	3	Drain		3'	DA											
2	4	Load+heating+wash	1	P+9'	NA											
	5	Load+heating+wash	1	P+9'	NA											
3	6	Load+heating+wash	1	P+4'	NA			P+9'								
	7	Load+heating+wash	1	P+9'	NA			P+9'								
	8	Load+heating+wash	1	P+6'	NA			P+4'								
4	9	Load+heating+wash	1	P+12'	NA			P+9'	P+9'							
	10	Load+heating+wash	1	P+12'	NA			P+6'	P+9'							
	11	Load+wash	1	P+12'	EA											
	12	Load+wash	2	P+3'	NA											
	13	Drain /RA		1.5'	DA Un	3"										
5	14	Load+wash/RA	2	P+14'	EA	3"	P+14"									
	15	Load+wash	2	P+4.5'	EA	2'NA	P+4.5'									
	16	Drain +spin		3'+TO	90"+90"DA+C2	C3.1	C3.2								X	
	17	Load+wash	2	P+3"	EA						P+1'					
	18	Load+wash	1	P+4.5'	EA						P+4'					
	19	Drain +spin		3'+TO	90"+90"DA+C2	C3.2	C3.2					90"off+ 90"DA			X	
	20	Load+wash	2	P+3"	EA						P+1'	3"				
	21	Load+wash	1	P+4.5'	EA						P+4'	90"DA				
	22	Drain +spin		3'+TO	90"+90"DA+C2	C3.2	C3.2								X	
6	23	Load+wash	2	P+4.5'	EA						P+5'					
	24	RA/ Rinse hold		3"	Off											∞
7	25	Drain		5"	Off											
	26	Drain+spin		3'+TO	3'DA+C1									X	X	
	27	STOP		∞	Off											
8	28	Load+heating+wash	2	P+9'	NA											
	29	Drain		4.5'	DA											
9	30	Load+heating+wash	1	P+4.5'	EA											
	31	Load+heating+wash	1	P+4.5'	NA											
10	32	Load+heating+wash	1	P+9'	NA					P+4.5'EA +4.5'NA						
	33	Load+heating+wash	1	P+12'	EA					P+9'NA						
	34	Load+wash	1	P+6'	NA					P+12'EA						
	35	Load+wash	1	P+12'	EA					P+6'NA						
	36	Load+wash	2	P+3'	NA											
	37	Drain		3'	DA											
11	38	Load+wash	2	P+4.5'	EA											
	39	Drain		3'	DA											
	40	Load+wash	2	P+4.5'	EA											
	41	Drain		3'	DA											
12	42	Load+wash	2	P+4.5'	EA											
	43	Rinse hold/RA		∞/3"	Off											∞
	44	Drain+spin		3'+TO	3'DA+C2	C3.2	C3.2							X	X	
	45	STOP		∞	Off											
13	46	Load+wash	2	P+3"	DA											
	47	Load+wash	2	3"	DA											
14	48	Load+heating+wash	2	P+18'	DA								6'D33+ 9'Off			
	49	Load+wash	2	p+6'	DA								6'D33			
	50	Drain		2'	Off											
15	51	Load+wash	2	P+6'	DA								6'D33			
	52	Drain		2'	Off											
	53	Load+wash	2	P+6'	DA								6'D33			
	54	Drain		2'	Off											
16	55	Load+wash	2	P+6'	DA								6'D33			
	56	Rinse hold/RA		∞/3"	Off											∞
17	57	Drain		5"	Off											
	58	Drain+spin		3'+TO	C2	C3.2	C3.2							X	X	
18	59	Drain		2'/4'	Off											
	60	STOP		∞	Off											

Programmes tables legend

* In models with one-level pressure switch, all water fills are performed at the same level

P 1st level water fill time

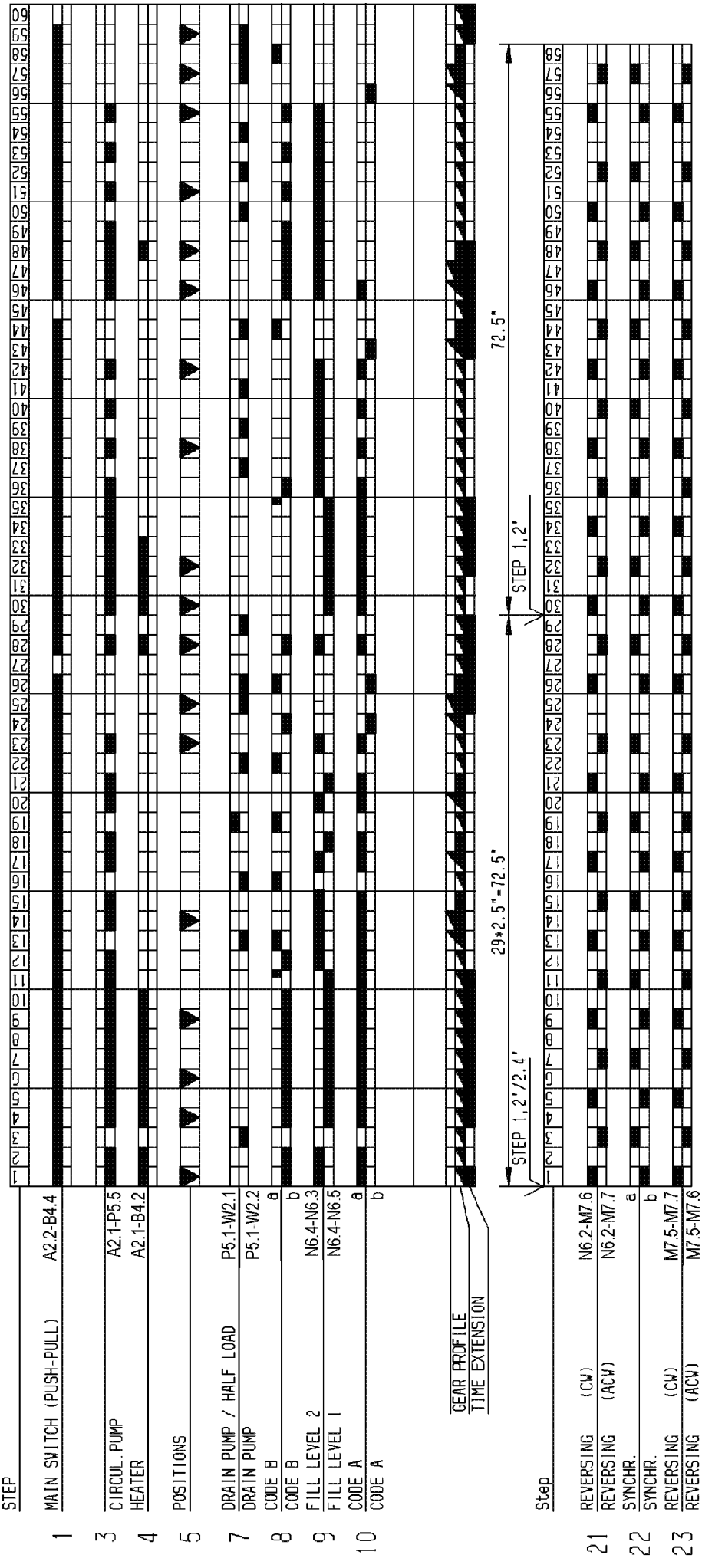
´ Minutes

´´ Seconds

RA Rapid advance

TO Spin max. time (timeout)

TIMER DIAGRAM



TIMER CONNECTORS