



# WASHING MACHINE SERVICE MANUAL

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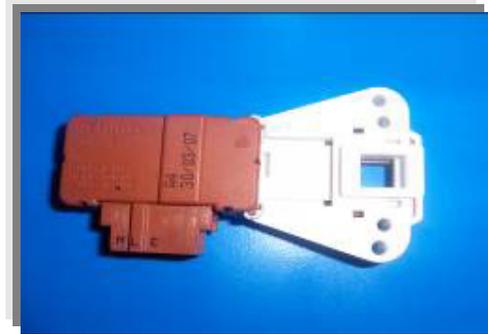
**CHILD LOCK MANUAL** \_\_\_\_\_

**AUTOTEST MANUAL** \_\_\_\_\_

# **Component specifications**

## **DOOR LOCK**

Door lock is activated at the beginning of the program in order to prevent the door from opening. It can be unlocked approximately after 2 minutes of the program end. This time delay is caused by the PTC which is assembled in the door lock.



**Figure 1.** Door lock

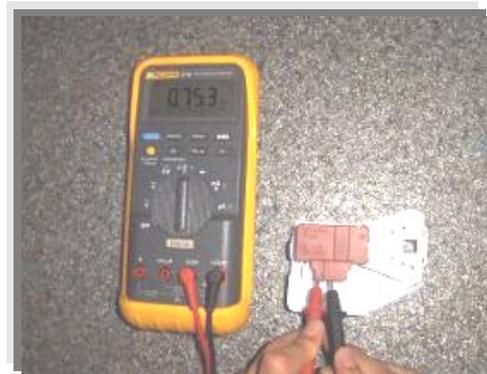
### **Technical features :**

Lock Time (20 °C)	2" – 6"
Unlock Time (20 °C)	35" – 75"
Nominal voltage	250 V
Nominal current	16 (4) A

### **Checking of component :**

Check the resistance value on the component with multimeter as shown in Figure2.

Resistance value on the PTC should be  $1000 \Omega \pm 50\%$ .



**Figure 2.** Checking the component

## **DRAIN PUMP**

Drain pump is both a mechanical and electrical component which is used to drain water inside the washing machine. It has a synchronous motor inside. For better performance maintenance, pump filter should be cleaned regularly.



**Figure 3.** Drain pump

### **Technical features :**

Nominal voltage	230 V
Nominal current	0.2 A
Nominal power	30 W
Frequency	50 Hz
Resistor (coil)	170 $\Omega$ ( $\pm 7\%$ )
Water flow:	18 l/min(to 1 m height)
Thermal protector	YES

### **Checking of component :**

Check the resistance value on the component with multimeter as shown in Figure 4.

Resistance value should be between 140- 200 Ohm



**Figure 4.** Checking the component

## NTC

Component which sends signals to PCB about the water temperature inside the tub. The Resistance (Ohm) value of the NTC decreases as the temperature increases.



Figure 5. NTC

### **Techinal Feature :**

<b>Tem (°C)</b>	<b>R nom (Ω)</b>	<b>R min (Ω)□</b>	<b>R max (Ω)□</b>	<b>Δ R (+/- %)</b>
-10,00	58.722,00	54.874,00	62.570,00	6,60
- 5,00	45.778,00	42.961,00	48.596,00	6,20
0,00	35.975,00	33.900,00	38.050,00	5,80
5,00	28.516,00	26.977,00	30.055,00	5,40
10,00	22.763,00	21.616,00	23.910,00	5,00
15,00	18.279,00	17.421,00	19.137,00	4,70
20,00	14.772,00	14.128,00	15.417,00	4,40
25,00	11.981,00	11.497,00	12.464,00	4,00
30,00	9.786,00	9.421,00	10.150,00	3,70
35,00	8.047,00	7.772,00	8.322,00	3,40
40,00	6.653,00	6.444,00	6.861,00	3,10
45,00	5.523,00	5.365,00	5.680,00	2,80
50,00	4.608,00	4.489,00	4.726,00	2,60
55,00	3.856,00	3.767,00	3.945,00	2,30
60,00	3.243,00	3.178,00	3.308,00	2,00
65,00	2.744,00	2.681,00	2.808,00	2,30
70,00	2.332,00	2.273,00	2.392,00	2,50
75,00	1.990,00	1.934,00	2.045,00	2,80
80,00	1.704,00	1.653,00	1.755,00	3,00
85,00	1.464,00	1.416,00	1.511,00	3,20
90,00	1.262,00	1.218,00	1.305,00	3,40
95,00	1.093,00	1.053,00	1.133,00	3,70
100,00	949,90	913,20	986,60	3,90

**Table 1 .NTC Tempure – Resistance Values**

**Checking of component :**

Check the resistance value on the component with multimeter as shown in Figure 6.



**Figure 6.** Checking the component

## **EMI FILTER**

EMI Filter Functions:

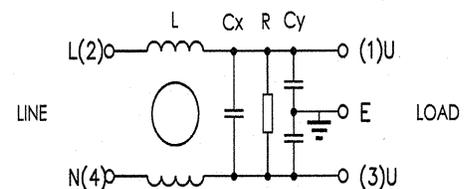
1. To adjust the frequency changes to the value of 50-60 Hz which is the nominal frequency for the components.
2. To prevent harmonic frequency feedback sent by motor , resistance to the the network.



**Figure 7.** EMI Filter

### **Technical features :**

Rated Voltage	250 V
Rated Current	16 A
Cx	0,47 $\mu$ F ( $\pm$ 20%)
Cy	2 x 25 nF ( $\pm$ 20%)
L	2 x 1 mH (+%50,-%30)
R	680 k $\Omega$ ( $\pm$ 10%)



### **Checking of component :**

Check the resistance value on the component with multimeter as shown in Figure 8.  
Resistance value on the EMI filter (between L-N polars) should be 680 kohm ( $\pm$ 10%).



**Figure 8.** Checking the component

**PRESSURE SWITCH**

Voltage : 250 V  
Amper : 16 A



**Figure 9.** Pressure switch

Pressure switch is the component which regulates the water intake according to the water levels set inside. The component is operated by PCB card. It has four connections : *Reset, set, common, overflow.*

**Technical features :**

The component has three levels. When the component is at reset level, the machine begins to take water inside. When the component is at set level, the machine stops to take water inside by communicating with PCB card. The third level, overflow level, is set to prevent taking excessive water(overflow) into the machine.

The pressure switches that have different water set levels have different water intake values accordingly.

**Checking of component :**

- 1 ) Blow into the pressure switch hose or pressure switch entry. Be sure that you hear the switch click.
- 2 ) Turn the program adjustment knob *rinse* mode and let the machine take water in. Be sure that you hear the switch click or the machine stops to take water inside after a while. (Figure 10.)



**Figure 10.** Program knob

## **RESISTANCE**

Heating element (Resistance) is a component which is designed to regulate temperature of water inside the drum. It has three connections: Phase, notral and ground connections.



**Figure 11.** Resistance

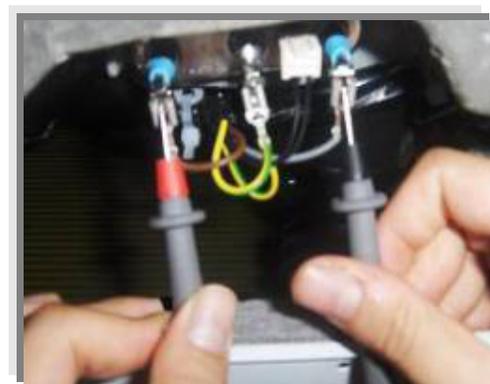
### **Technical features :**

Kind of heating	Tubular heating element with NTC – sensor
Nominal voltage	230 V
Nominal power	1850 W ( $\pm 5\%$ )
Resistance	26.96-29.80 $\Omega$
Thermal fuse	2 – sided

### **Checking of component :**

Check the resistance value on the component with multimeter as shown in Figure 12.

Resistance value should be between 25- 30 Ohm.



**Figure 12.** Checking the component

## VALVE

Valve is an electrical and mechanical component which is designed to take water from the network system into the washine machine. It is operated by PCB card.

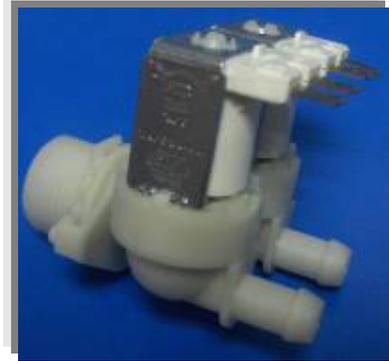


Figure 13. Valve

### Technical features :

Nominal voltage	220 – 240 V
Nominal power	8 VA
Frequency	50 Hz
Rated flow:	6 l/min (±15%) (for cold inlet) 5.5 l/min (±15%) (for hot inlet)
Operating water pressure	0.2 – 10 bar

### Checking of component :

Check the resistance value on the component with multimeter as shown in Figure 14.

Valve water flow rate should be between 6 - 8 lt/min.

Each valve bobbin resistance values should be between 3 - 4.5 k $\Omega$  .

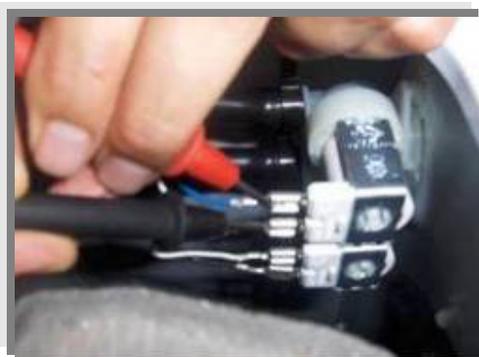


Figure 14. Checking the component

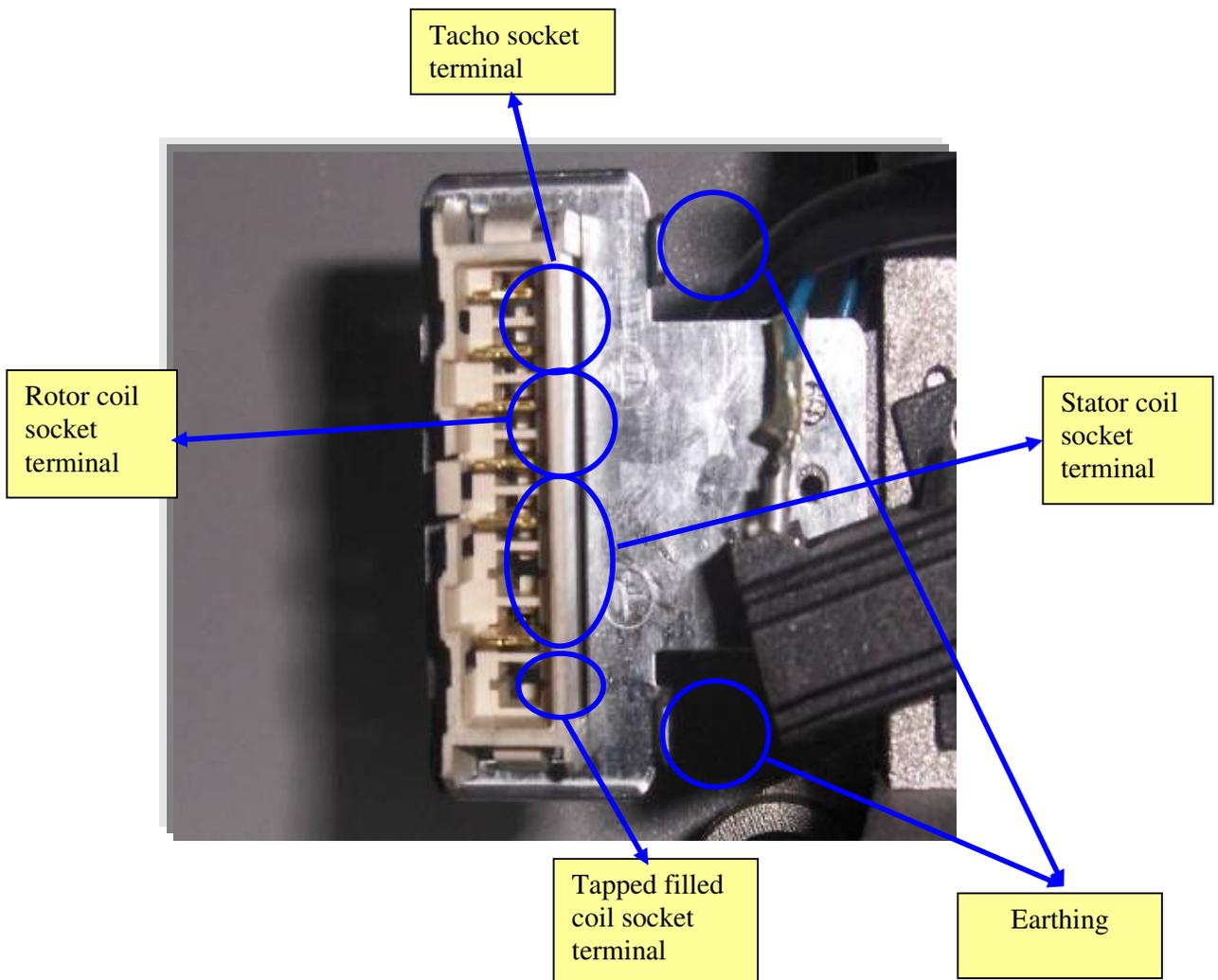
## MOTOR

The washing machine has an asynchronous motor. It is controlled by the PCB.

It is essential to check the motor for correct diagnosis and quick servicing. In the below picture, socket points on the motor is shown to measure with multimeter.



**Figure 15.** Motor



**Figure 16.** Motor socket terminals

Tacho and stator (full field-half field) ohm resistance values for the motor types are listed in the below table.

MOTOR CODE	SUPPLIER	STATOR (FULL FIELD) (ohm)	TACHO (ohm)	STATOR (HALF FIELD) (ohm)	TEMPERATURE
30027193	ANAIMEP	1.87-/+7%	180 -/+10%		20 °C
30023397	ANAIMEP	1.75-/+7%	180 -/+10%		20 °C
32002064	ANAIMEP	2.01-/+7%	180 -/+7%		20 °C
32003425	ANAIMEP	2.01-/+7%	180 -/+7%		20 °C
32000536	CESET	1.01 -/+7%	68.7-/+7%		20 °C
32000271	CESET	1.40 -/+7%	68.7-/+7%	0.56 -/+7%	20 °C
32000535	CESET	1.24 -/+7%	68.7-/+7%		20 °C
32000537	CESET	1.34 -/+7%	68.7-/+7%	0.56 -/+7%	20 °C
32002064	WELLING	2.08 -/+7%	66.6 -/+7%		20 °C
32003425	WELLING	1.59 -/+7%	66.6 -/+7%		20 °C
32004572	ACC	1.20 -/+7%	184 -/+10%	0.60 -/+7%	20 °C
32004968	ATB	1.63-/+7%	90 -/+12%		20 °C
32004969	ATB	1.57-/+7%	90 -/+12%	0.80 -/+7%	20 °C
32004970	ATB	1.57-/+7%	90 -/+12%		20 °C

**Table 2.** Resistance values for the motor types

### Tacho resistance control

Check the motor tacho terminals on the motor socket with multimeter as shown in the picture. For resistance values, refer to the table 1.



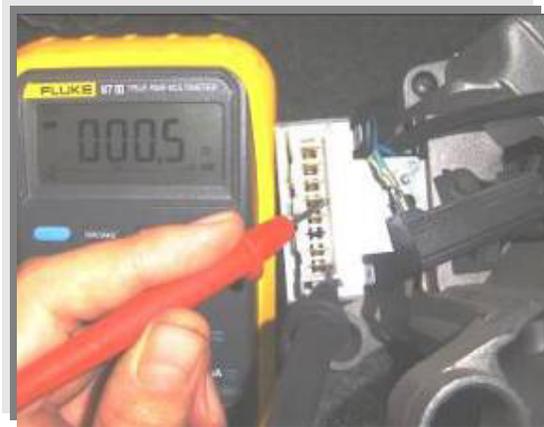
### Stator Full Field Resistance Control

Check the motor stator terminals on the motor socket with multimeter as shown in the picture. For resistance values, refer to the table 1.



### Stator Half Field Resistance Control

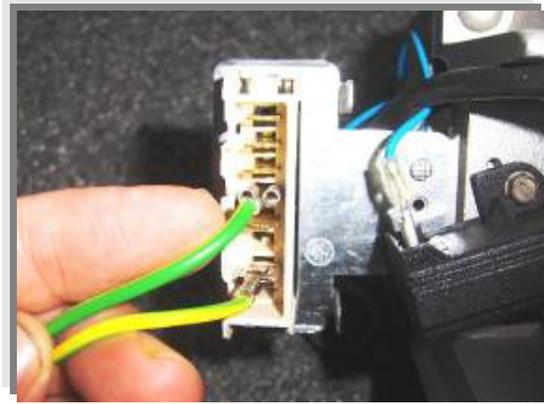
Check the motor stator terminals on the motor socket with multimeter as shown in the picture. For resistance values, refer to the table 1.



### Operating the motor manually

In order to check the motor operation, it is operated manually by supplying input electricity. The motor operation should be checked by supplying energy for a short time. In the below pictures, the checking operation is demonstrated.

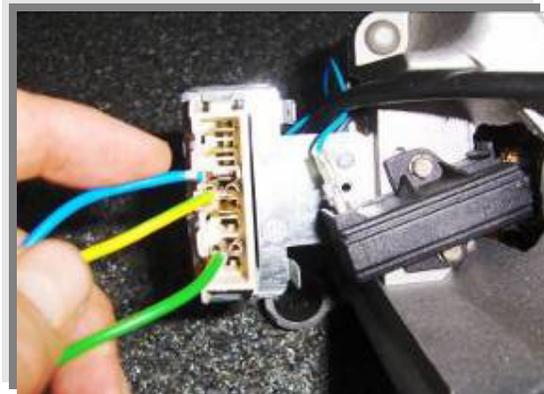
Connect the rotor coil terminal and stator coil terminal with a conductive wire.



-W Tf-

-W0 Tf-

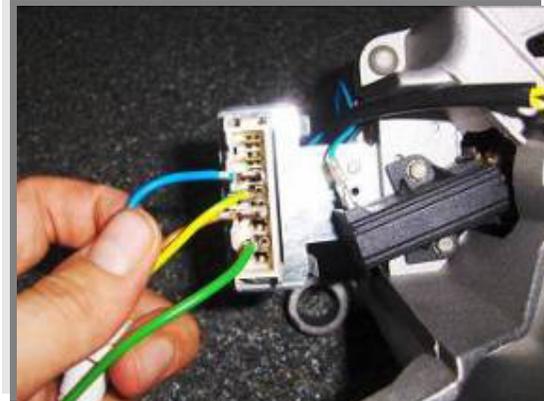
Connect one of the wires on the power cable with other rotor coil terminal.



-W Tf-

-W0 Tf-

Connect the other wire on the power cable with other stator coil terminal.



-W Tf-

-W0 Tf-

**Note: The motor must be earthed by the earth cable as shown in the picture.**



Plug the power cable. (220 V 50 Hz). After checking the motor operation, unplug the power cable soonest.

**(Please do not plug the power cable more than 15 seconds. )**



**ENERGY LABEL**

LOGO:XXXXXX  
MODEL:XXXXX

**ENERGY PERFORMANCE**

A

**ENERGY CONSUMPTION**

5 KG : 0,95 kWh/program  
6 KG : 1,14 kWh/program  
7 KG : 1,33 kWh/program  
7,5 KG : 1,42 kWh/program

**WASHING PERFORMANCE**

A

**SPINNING PERFORMANCE**

600 RPM : E  
800 RPM : D  
1000 RPM : C  
1200 RPM : B  
1400 RPM : B  
1600 RPM : A

**CAPACITY**

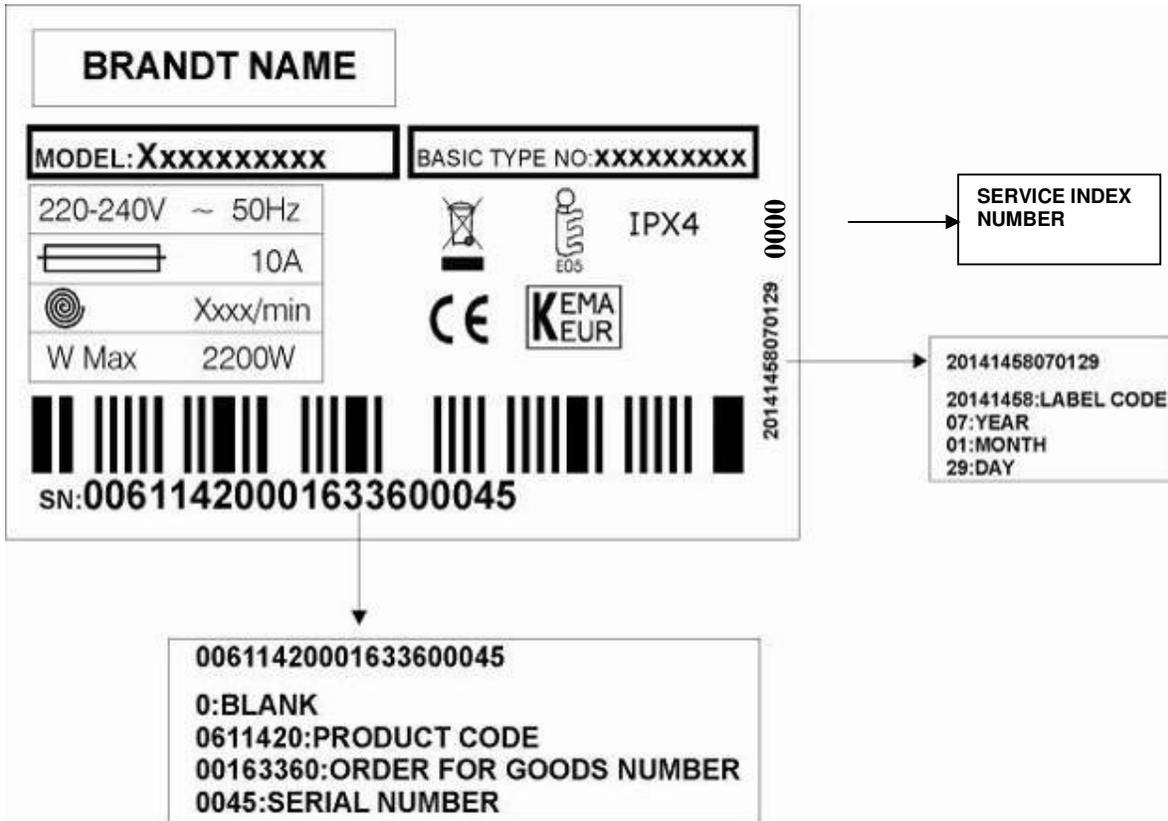
5 KG  
6 KG  
7 KG  
7,5 KG

**WATER CONSUMPTION**

5 KG : 43 lt  
6 KG : 49 lt  
7 KG : 62 lt  
7,5 KG : 63 lt

<b>Energy</b>		Washing Machine
Manufacturer	<b>LOGO</b>	
Model	XXXXX	
More efficient		
<b>A</b>		
<b>B</b>		
<b>C</b>		
<b>D</b>		
<b>E</b>		
<b>F</b>		
<b>G</b>	Less efficient	
Energy consumption kWh/program (Based on standart test made at 60 °C cotton wash program) Actual consumption will depend on how the appliance is used and where it is located.		X.XX
Washing performance A: High      B: Low		A B C D E F G
Spinning performance A: High      B: Low Spin speed (rpm)		A B C D E F G XXXX
Capacity (cotton) kg		XX
Water consumption lt		XX
Loud (Dbre 1 pW)	Washing Spin	
Further information is contained in product brochures.		
Norm EN 60456		

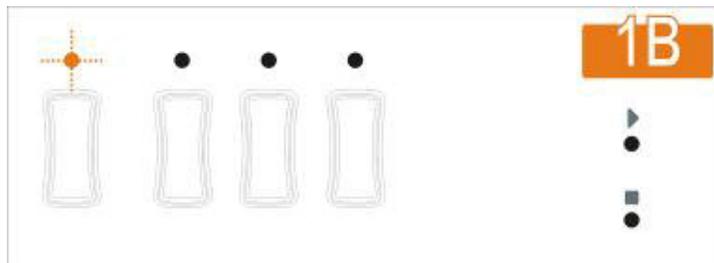
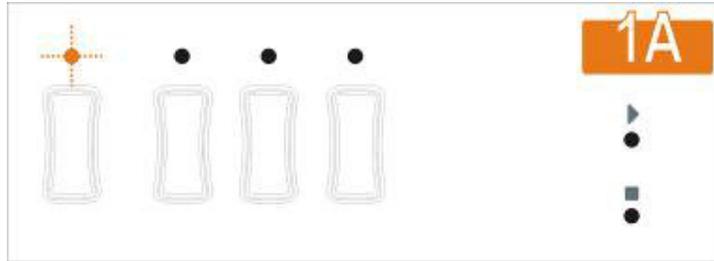
## NAME PLATE



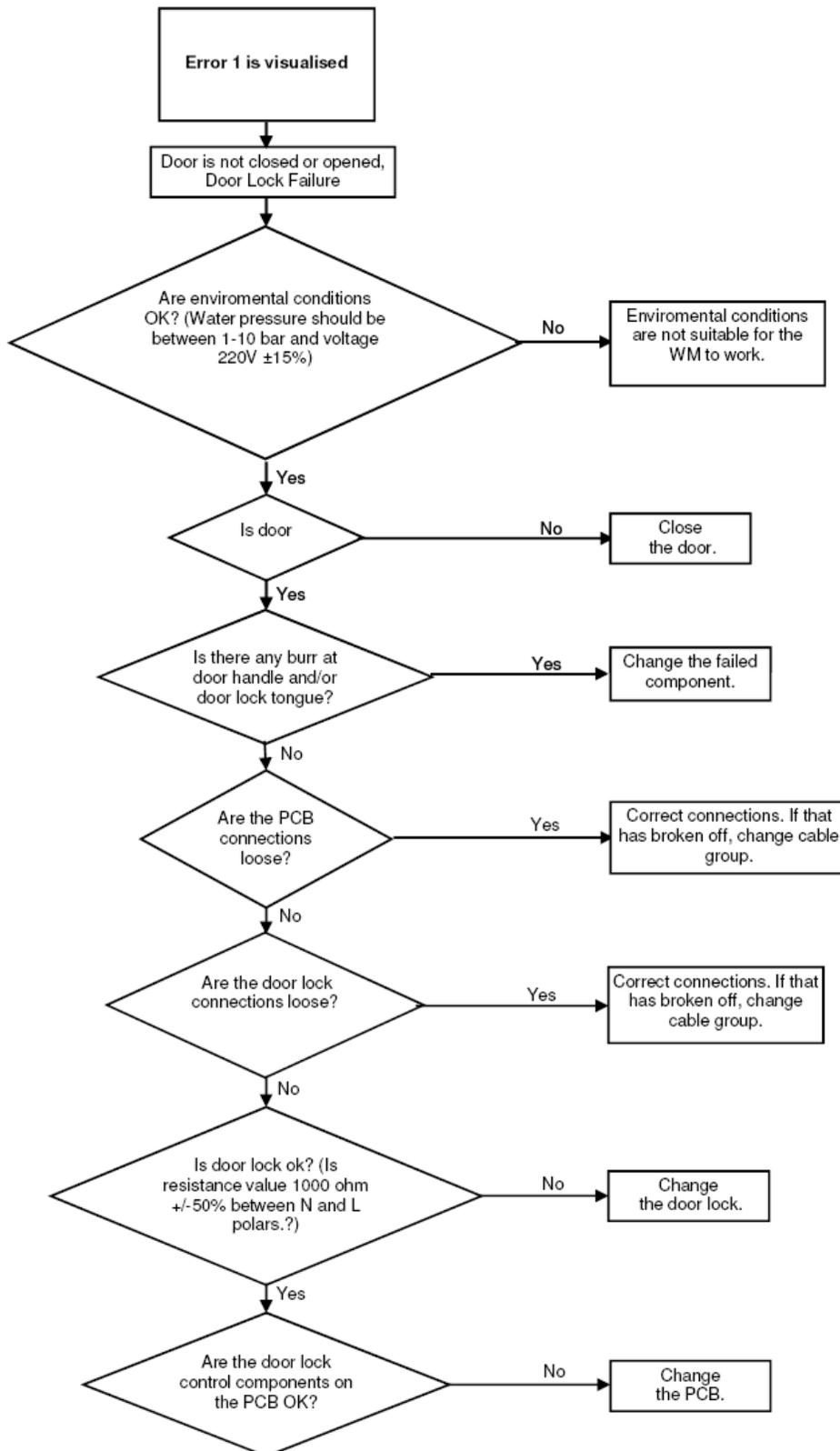
# Failure Codes

## FAILURE CODE 1

*A- Failure indicator situations*



**B- Error flowcharts**

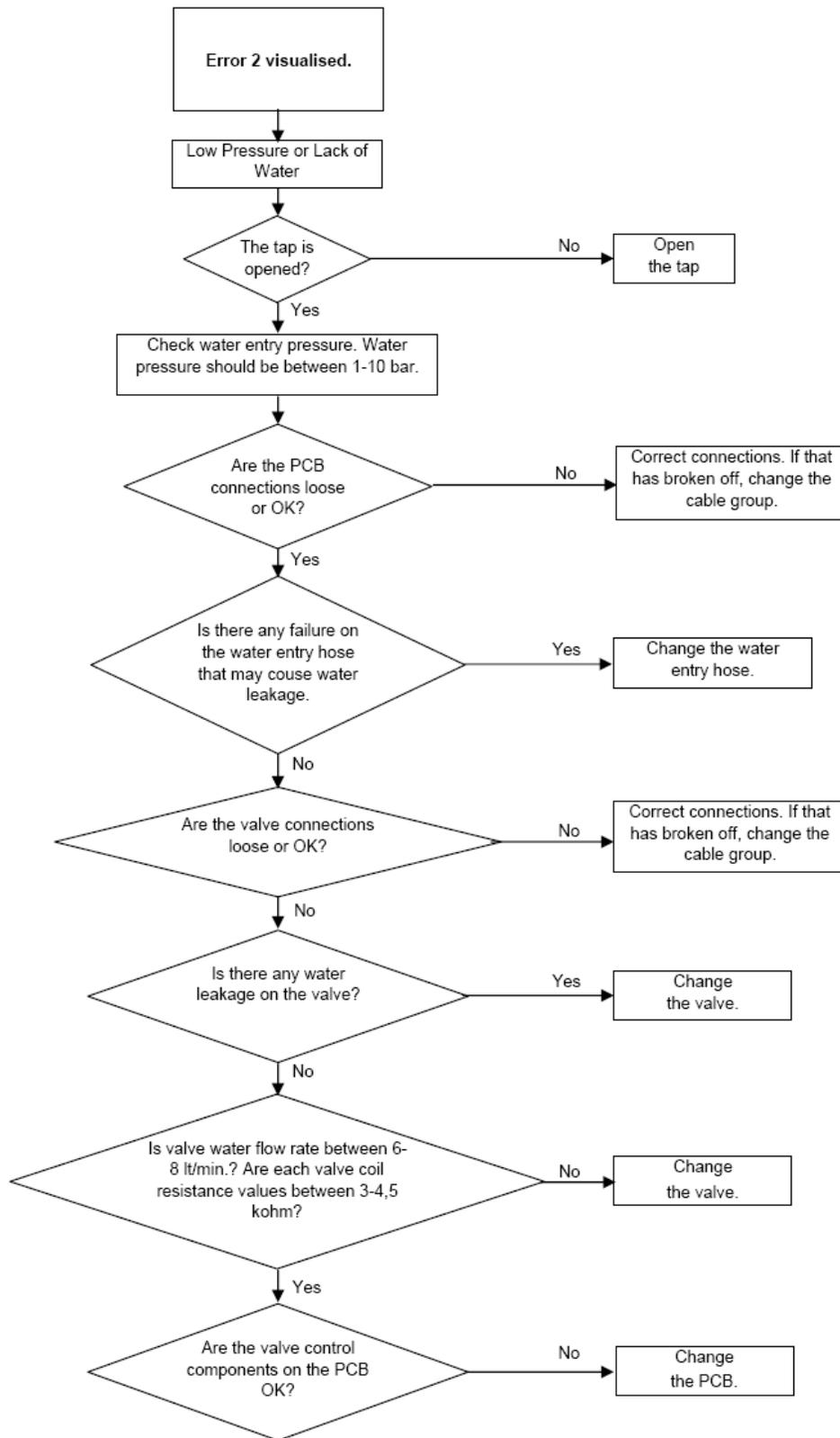


## FAILURE CODE 2

*B- Failure indicator situations*



## B- Error flowcharts

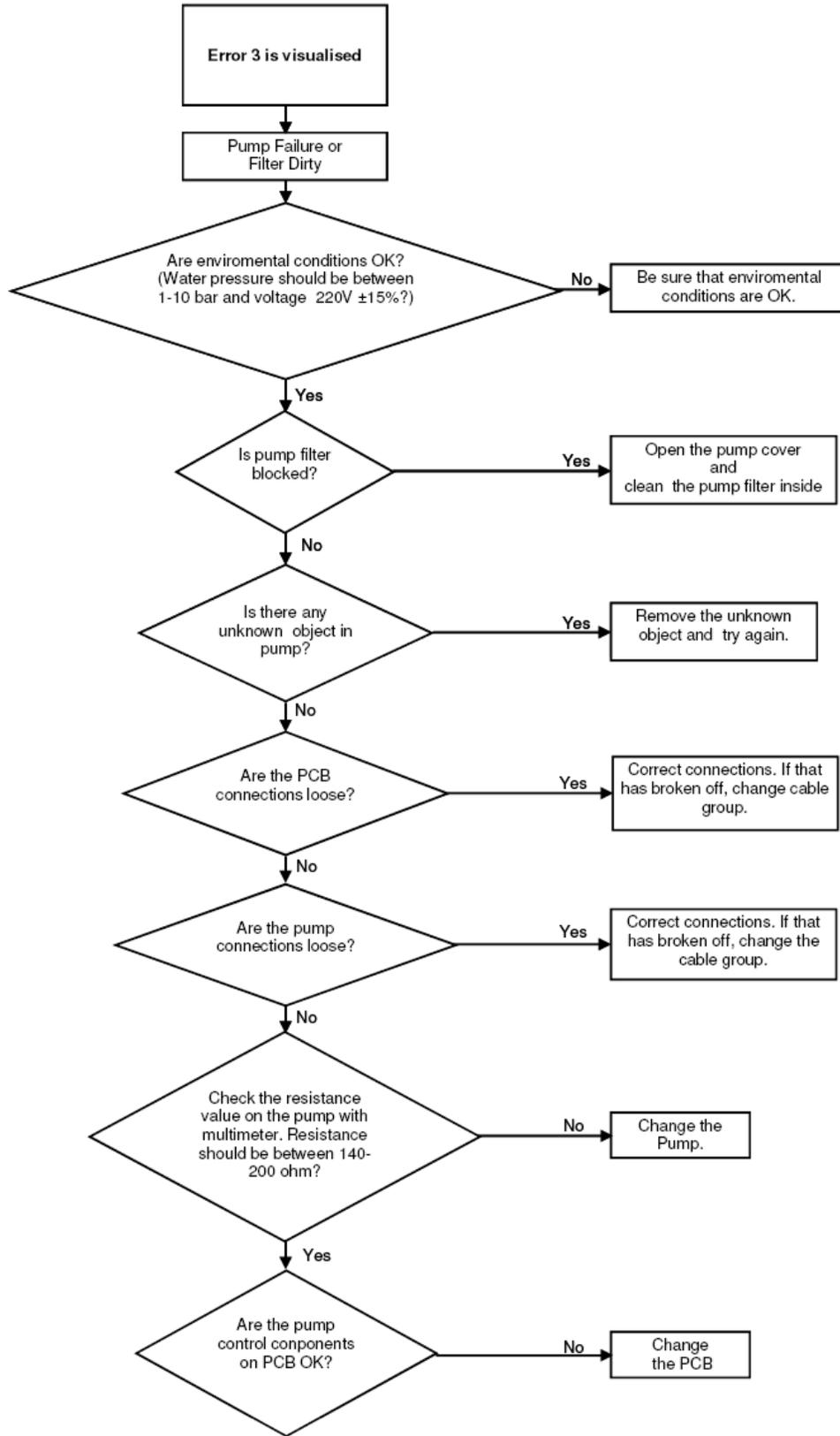


## FAILURE CODE 3

*C- Failure indicator situations*

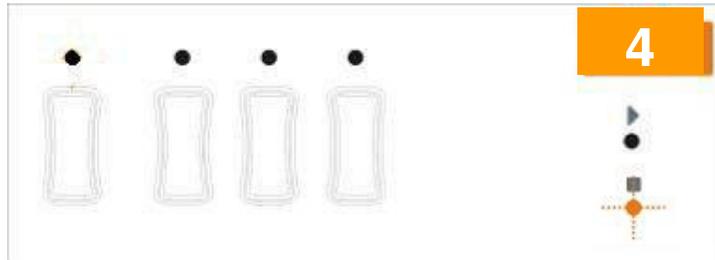


**B- Error flowcharts**

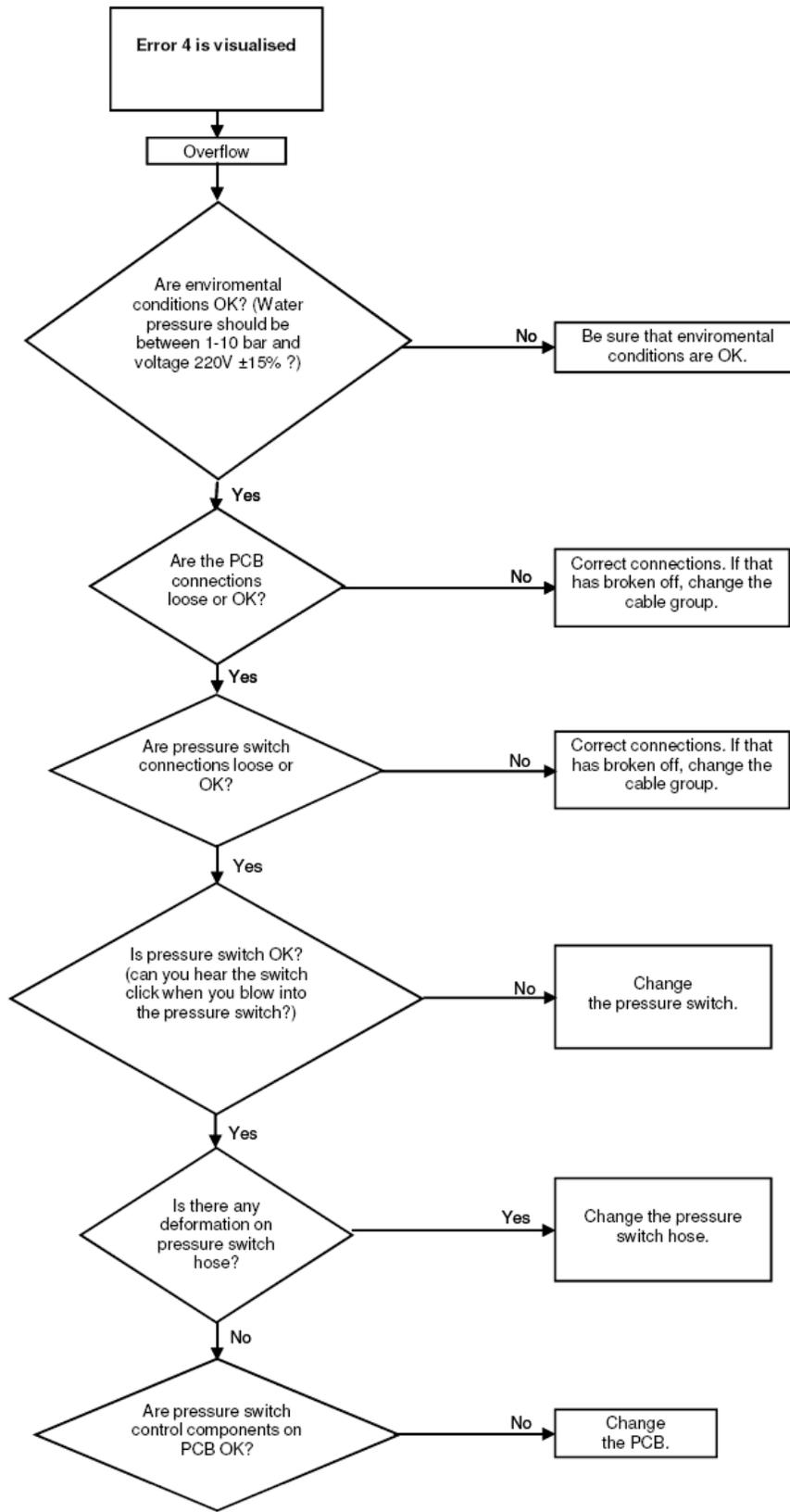


## FAILURE CODE 4

*D- Failure indicator situations*

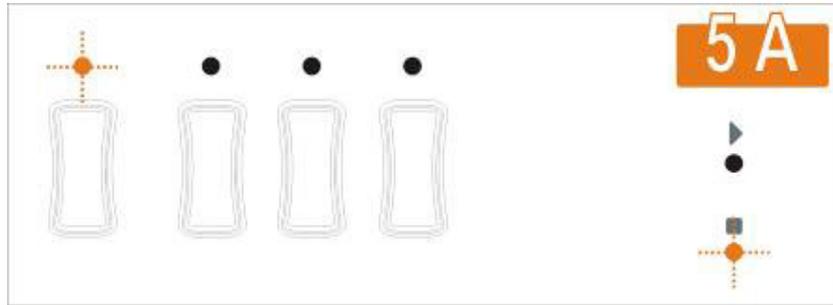


**B- Error flowcharts**

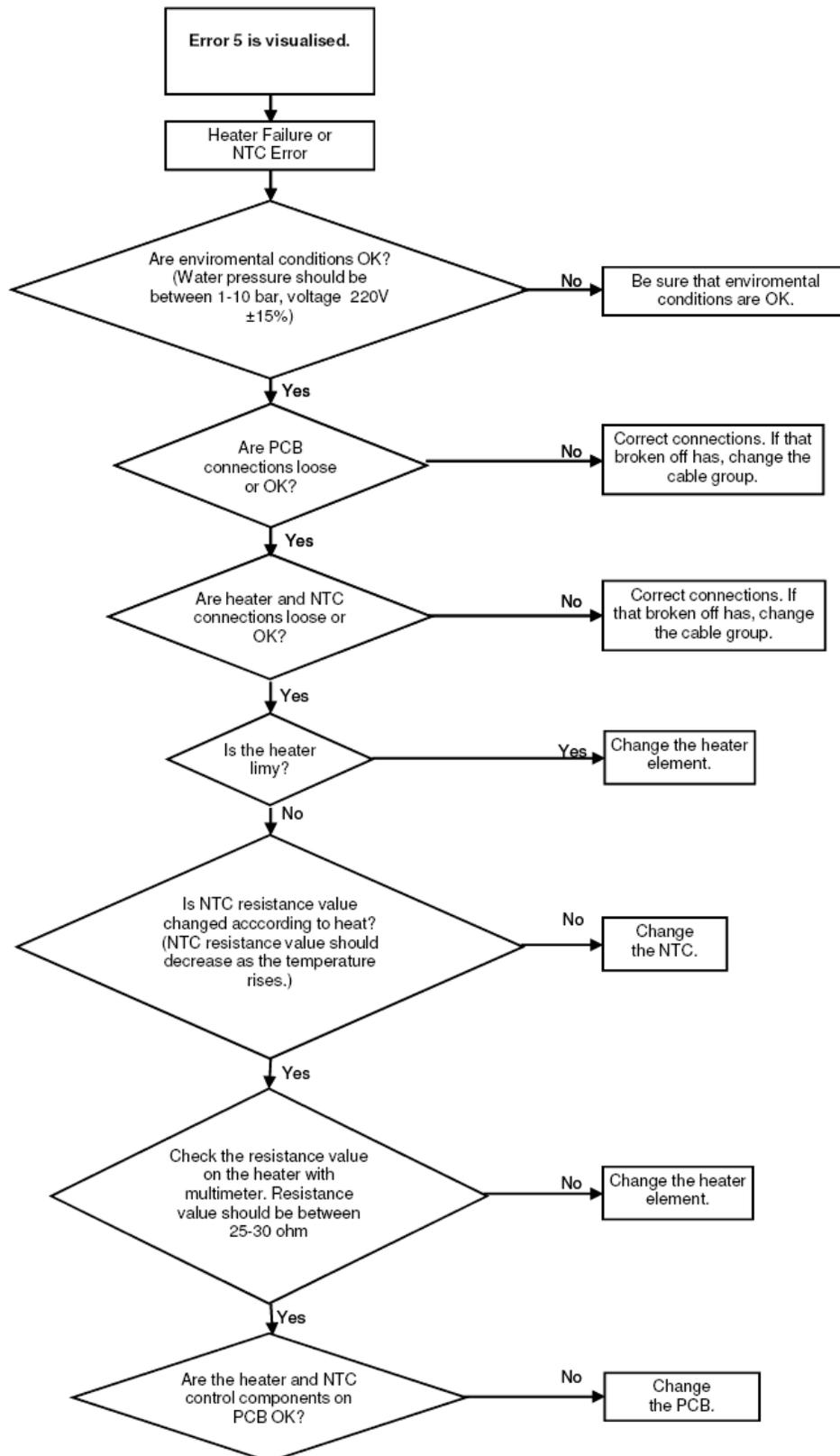


**FAILURE CODE 5**

*E- Failure indicator situations*



## B- Error flowcharts

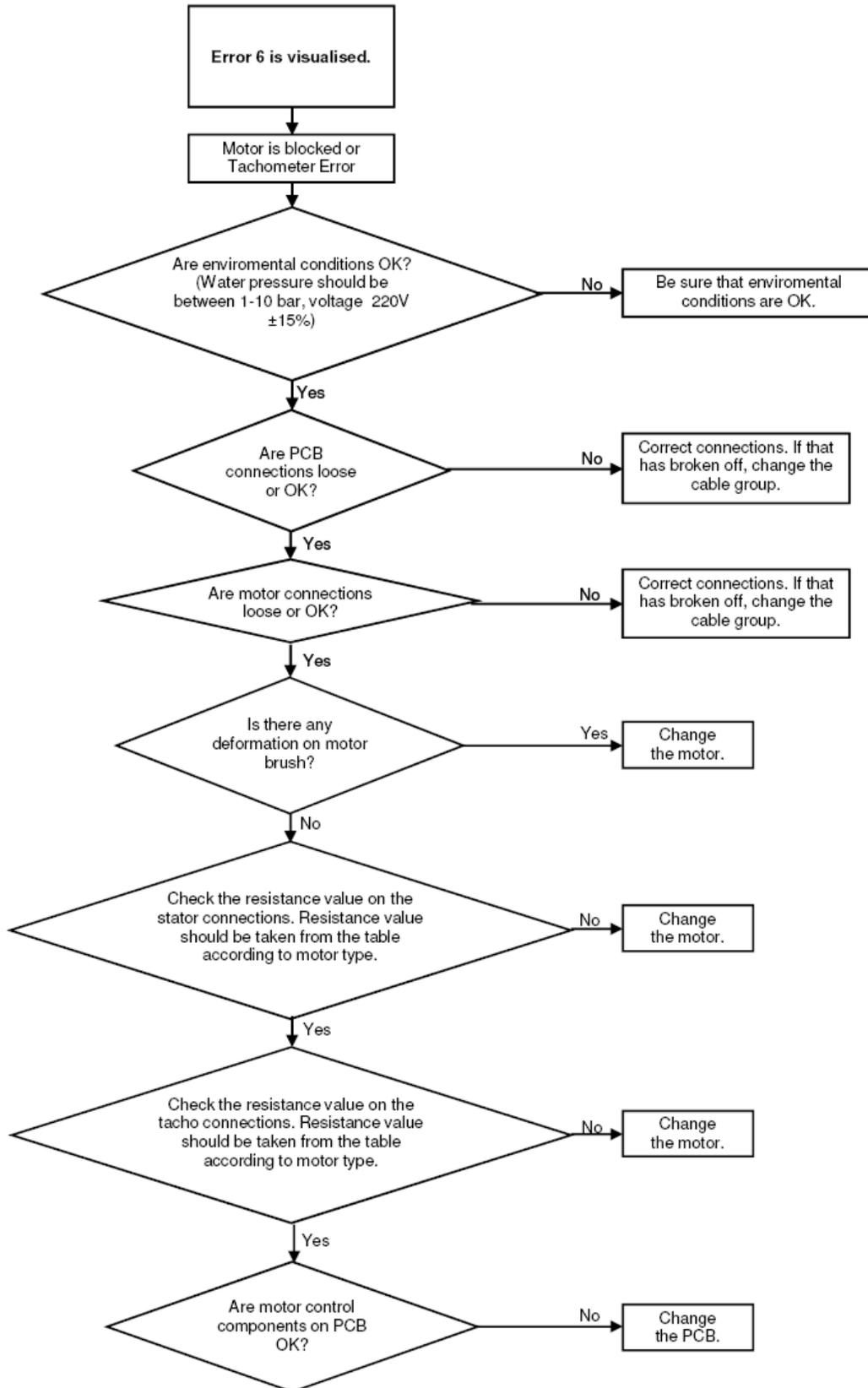


**FAILURE CODE 6**

*F- Failure indicator situations*



## B- Error flowcharts

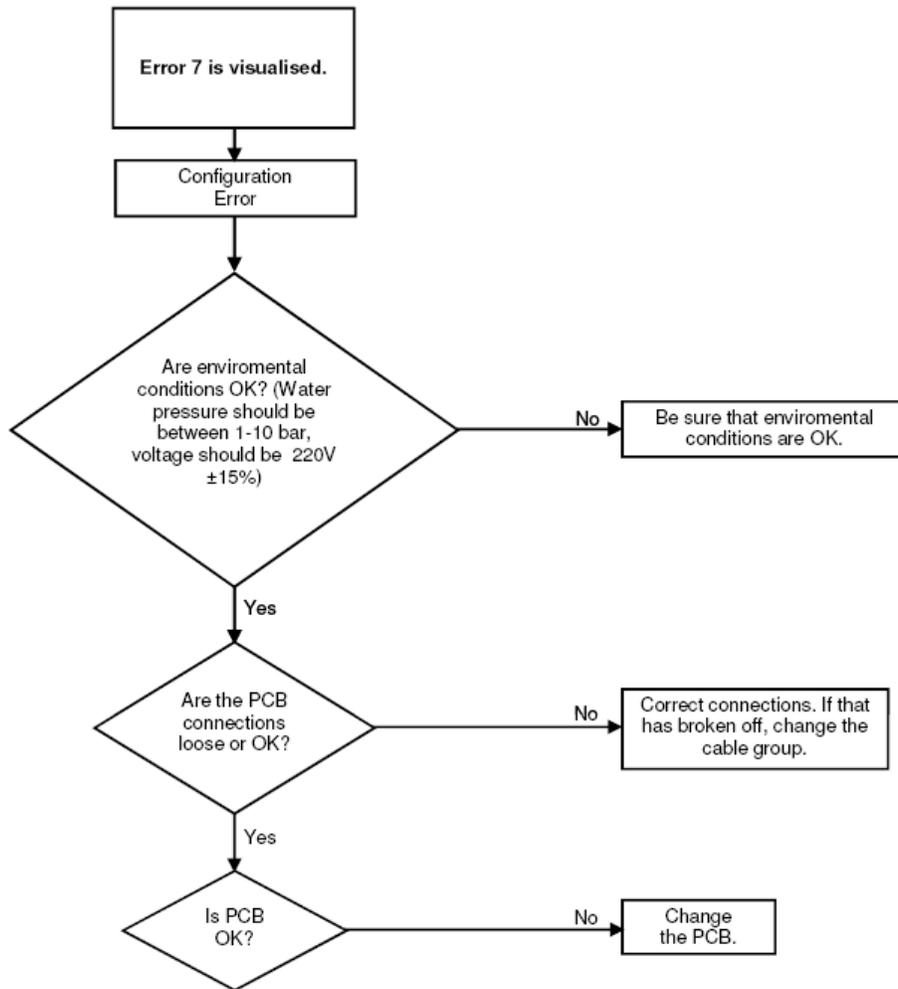


## FAILURE CODE 7

**G-** Failure indicator situations

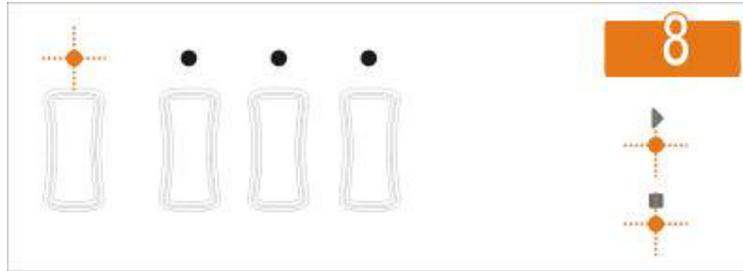


**B- Error flowcharts**

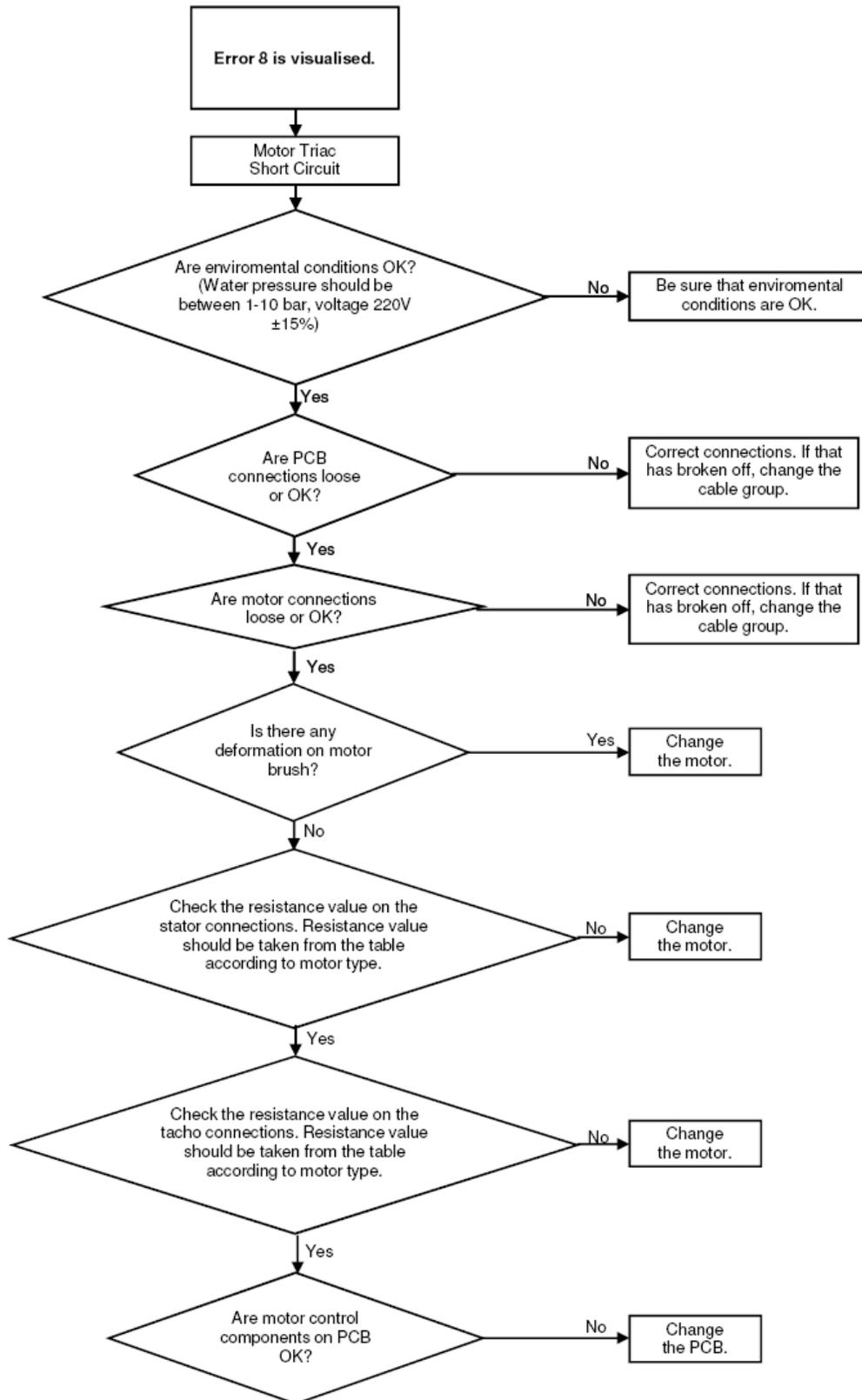


## FAILURE CODE 8

*H- Failure indicator situations*

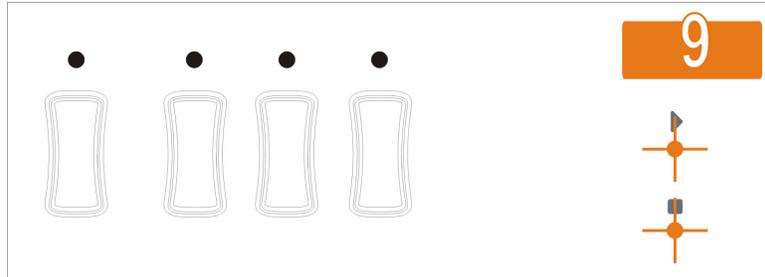


**B- Error flowcharts**

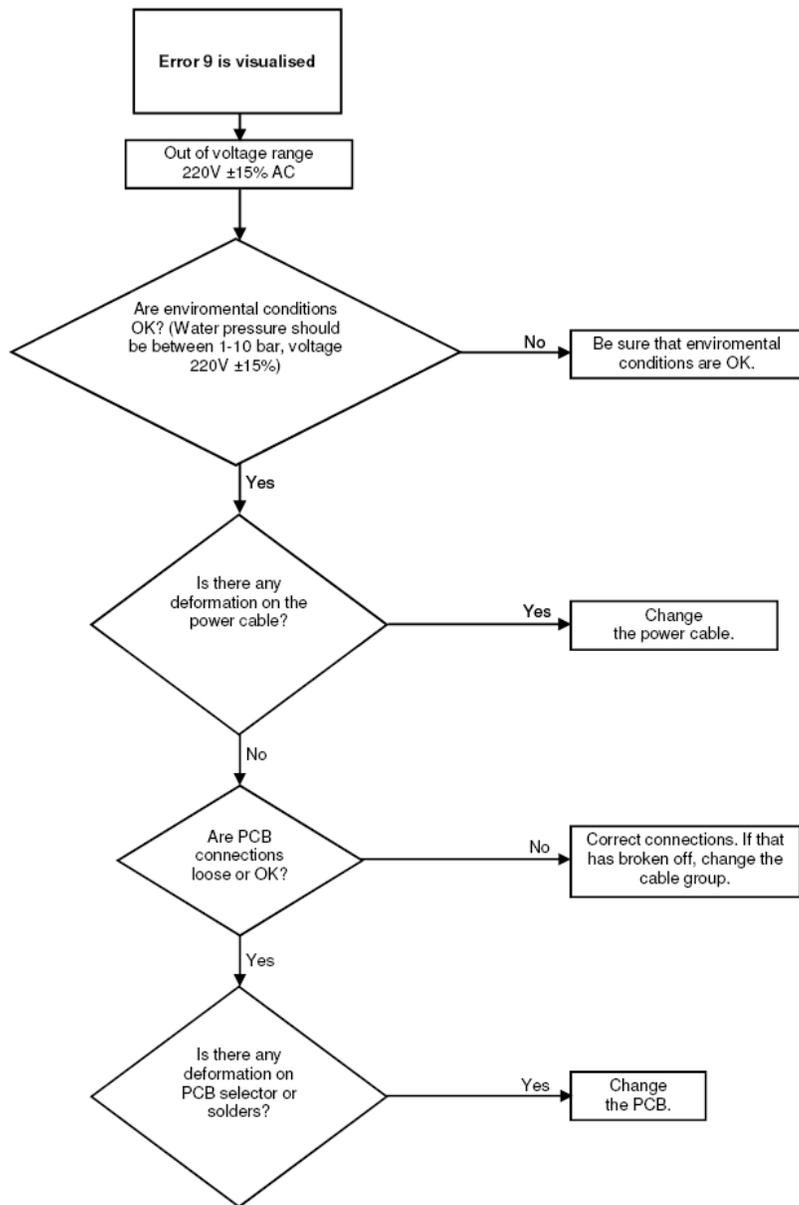


## FAILURE CODE 9

I- Failure indicator situations



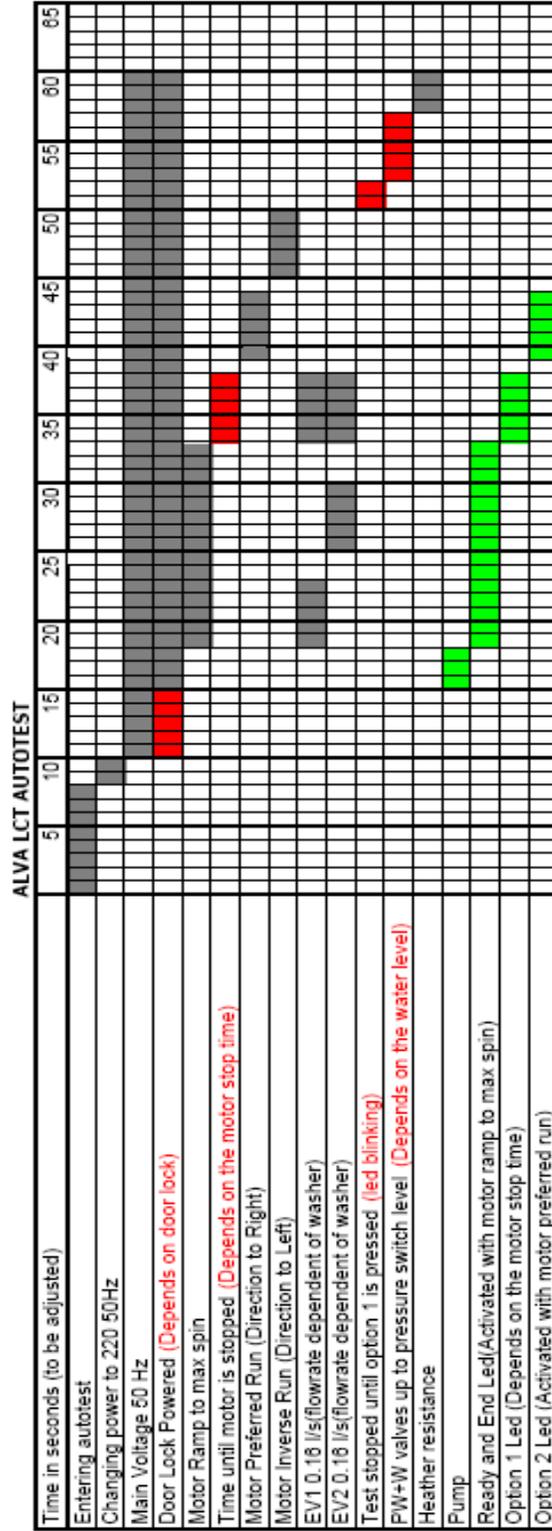
**B- Error flowcharts**



**NOTE :**

<i>FIX ON</i>	
<i>FLASH-BLINK</i>	

## Auto Test Chart



## DETERGENT BOX GROUP WORK PRINCIPLE

MAIN

VALVE 1



SOFTENER

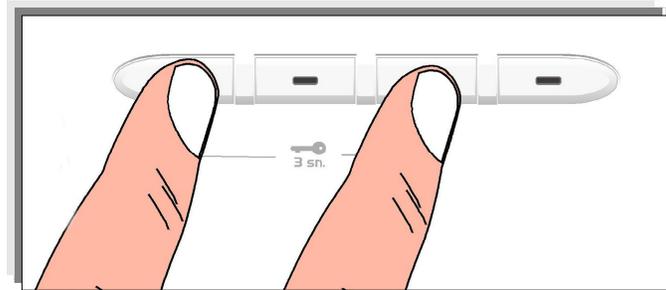
PREWASH

VALVE 2

PREWASH = WATER ENTRY VALVE 1  
MAIN = WATER ENTRY VALVE 2  
SOFTENER = WATER ENTRY VALVE 1 + VALVE 2

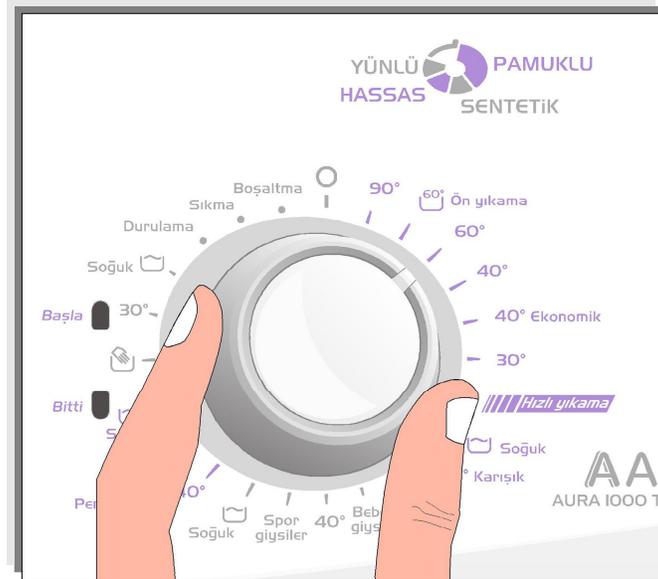
## CHILD LOCK MANUAL

Press the start-end and second function button for 3-4 seconds to activate child lock.

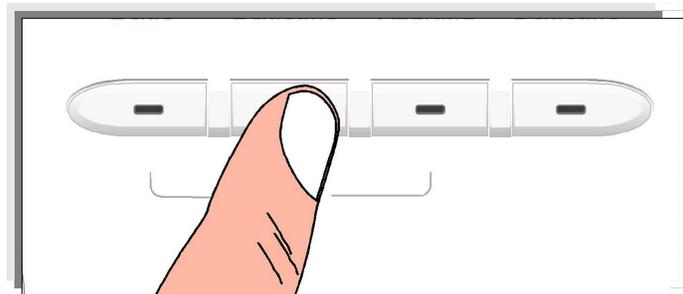


## AUTOTEST MANUAL

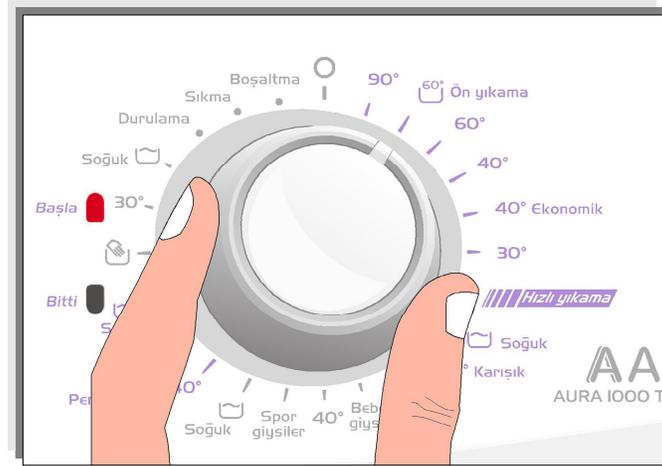
1. Turn the program knob to third program.



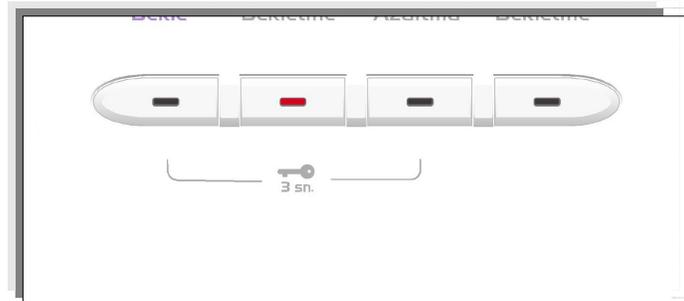
2. Press the first function button.



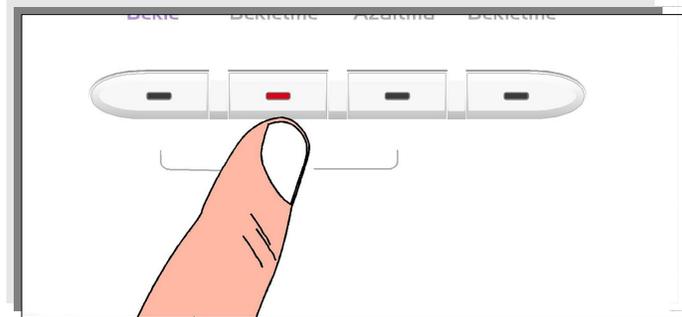
3. While pressing the first function button, turn the program knob to second program.



4. Release the function button. The button light will be on.



5. Press the first function button again.



6. While pressing the first function button, turn the program knob to first program. Release the function button and the autotest starts.



7. When the first function button light flashes, press the button again. Autotest will enter the second phase.

