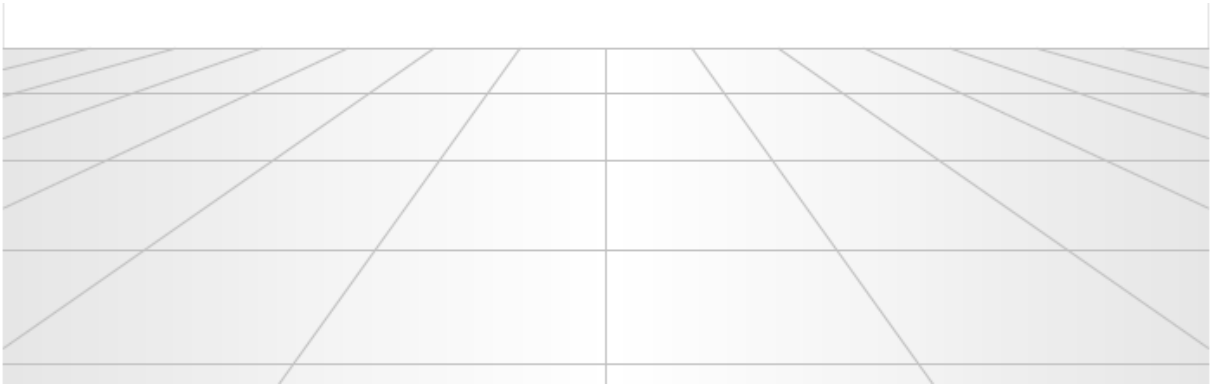
B13 B7S B7SLED FAILURE FLOW DIAGRAM

Revisions:

Rev. 00	13.10.2008
Rev. 01	07.05.2015



CONTENTS

Listen to the customer's complaint

Close the machine door if opened. Switch to service mode. To switch to service mode, move program selection switch to CANCEL position. Then, while pressing START/PAUSE button, bring the program selection switch to the first program in the clockwise direction. Front door will be locked in the service mode.

When you open the machine are 7_Seg display or LEDs energized?

No

Yes

Is there 220 VAC voltage between noise filter terminals 1 and 2 (brown-blue)?

No

Check power cable and fuses. Change power cable if defective

Yes

Check whether socket is energized or not by removing the program selection connector. PICTURE: ilk_1

No

Check cable between noise filter card and make sure that sockets are securely fitted.

Yes

Replace the control card

PICTURE ilk_1:program selection switch socket removed. Supply Voltage is being measured.

Is the front door locked? Check by trying to open the door. READY LED will also go off when the front door is locked.

Yes

No

Look at the error code. Is error code E9 displayed?

No

Safety switch cannot be locked. Check the cabling between the control cable and safety switch.

Replace the safety switch. Try again.

Yes

Open circuit in the door triac. Replace the control card

Is there any error code?

No

Yes

1) Carry on testing machine functions in service mode.

OR

2) Enter error codes page to find the error code matching customer complaints.

Go to the relevant error code page. Carry out the checks about the error code.

OR

3) Switch the machine back into the customer mode and operate. Wait until the error which the customer experienced to occur. Try to see the error code when the program is still running

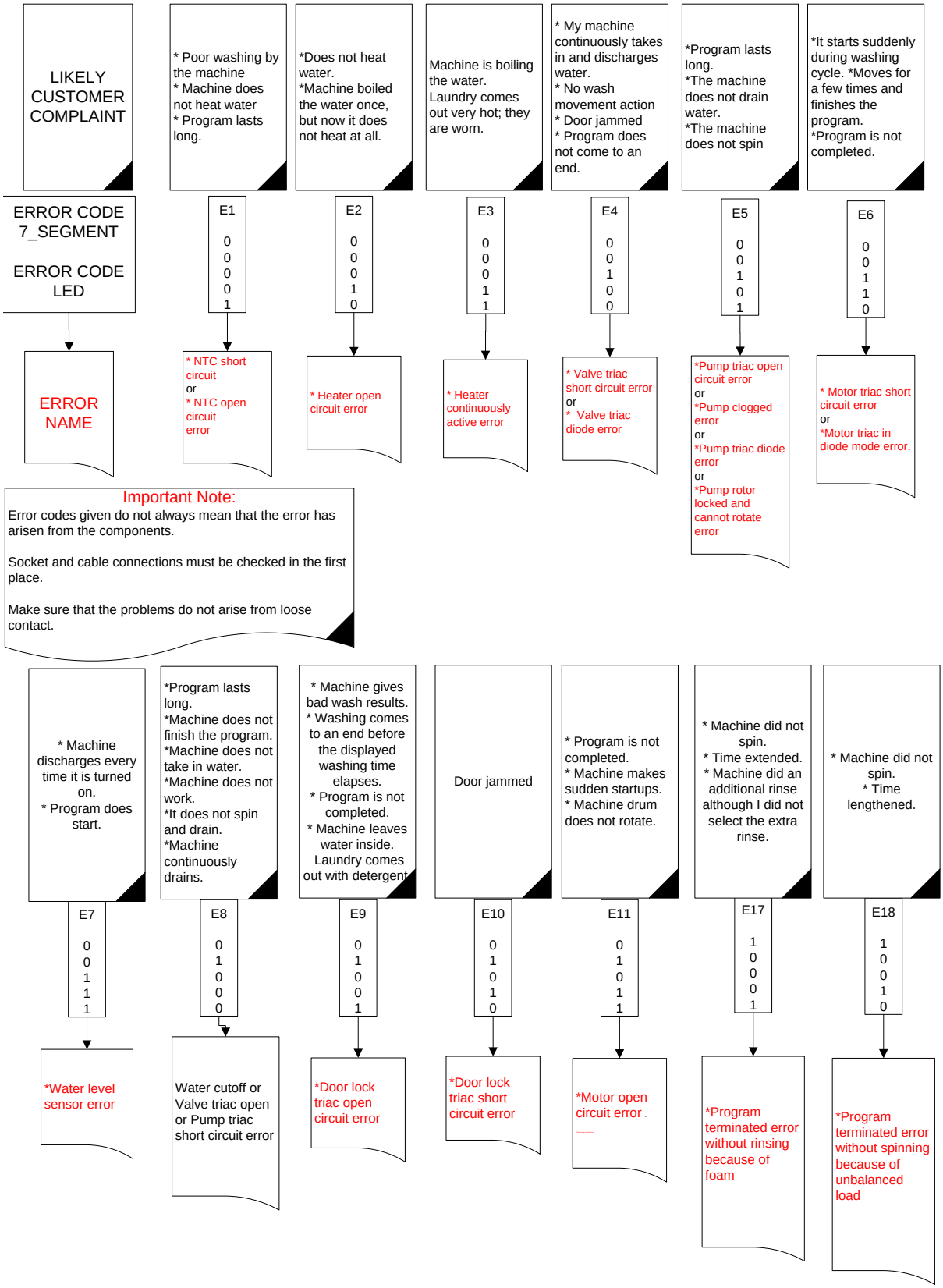
Error Code Reading Method:

Error Code on 7 segment display; if there is no display, it is shown as BCD in speed selection LEDs. Error Code can be accessed with 2 different methods.

1)At the very beginning of function test, error code is shown on display until 'Start/Standby' button is pressed on for second time. Even if a new program has been started, this error code in here will not be cleared; the last error code occurred will always be displayed here.

2)Error Code is read by pressing on Speed and YF1 buttons for 3-5 secs.

When a new program is started, the error on the machine is cleared and the error code is no more displayed when Speed and YF1 keys are pressed.


LIKELY CUSTOMER COMPLAINT
* Poor washing by the machine
* Machine does not heat water
* Program lasts long.
*Does not heat water.
*Machine boiled the water once, but now it does not heat at all.
Machine is boiling the water.
Laundry comes out very hot; they are worn.
* My machine continuously takes in and discharges water.
* No wash movement action
* Door jammed
* Program does not come to an end.
*Program lasts long.
*The machine does not drain water.
*The machine does not spin
*It starts suddenly during washing cycle. *Moves for a few times and finishes the program.
*Program is not completed.
ERROR CODE 7_SEGMENT
ERROR CODE LED
ERROR NAME
E1 0 0 0 0 1
E2 0 0 0 1 0
E3 0 0 0 1 1
E4 0 0 1 0 0
E5 0 0 1 0 1
E6 0 0 1 1 0
* NTC short circuit or * NTC open circuit error
* Heater open circuit error
* Heater continuously active error
* Valve triac short circuit error or * Valve triac diode error
*Pump triac open circuit error or *Pump clogged error or *Pump triac diode error or *Pump rotor locked and cannot rotate error
* Motor triac short circuit error or *Motor triac in diode mode error.
Important Note:
Error codes given do not always mean that the error has arisen from the components.
Socket and cable connections must be checked in the first place.
Make sure that the problems do not arise from loose contact.
* Machine discharges every time it is turned on.
* Program does start.
*Program lasts long.
*Machine does not finish the program.
*Machine does not take in water.
*Machine does not work.
*It does not spin and drain.
*Machine continuously drains.
* Machine gives bad wash results.
* Washing comes to an end before the displayed washing time elapses.
* Program is not completed.
* Machine leaves water inside.
Laundry comes out with detergent
Door jammed
* Program is not completed.
* Machine makes sudden startups.
* Machine drum does not rotate.
* Machine did not spin.
* Time extended.
* Machine did an additional rinse although I did not select the extra rinse.
* Machine did not spin.
* Time lengthened.
E7 0 0 1 1 1
E8 0 1 0 0 0
E9 0 1 0 0 1
E10 0 1 0 1 0
E11 0 1 0 1 1
E17 1 0 0 0 1
E18 1 0 0 1 0
*Water level sensor error
Water cutoff or Valve triac open or Pump triac short circuit error
*Door lock triac open circuit error
*Door lock triac short circuit error
*Motor open circuit error
*Program terminated error without rinsing because of foam
*Program terminated error without spinning because of unbalanced load

* Poor washing by the machine
* Machine does not heat water
* Program lasts long.

E1

0
0
0
0
1

* NTC short circuit
or
* NTC open circuit
error

Is there E1 error?

Yes

Is KN2 socket on the control card attached?

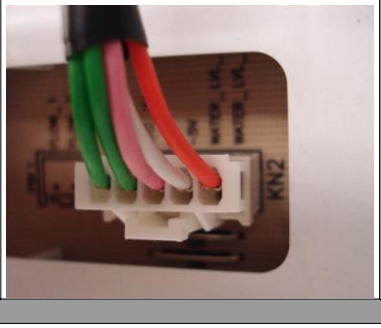
No

Attach KN2 socket. (Picture E1-1)

Yes

Take out the KN2 socket and measure the resistance on the socket between 1st (green) and 2nd (green) pins (Picture E1-2)

PICTURE E1-1: There are NTC and Level sensor cables on the KN2 socket.



PICTURE E1-2: The socket connected to KN2 connector is removed and NTC resistance is measured

PICTURE E1-3: The NTC socket on the heater is removed and NTC resistance is measured

The measured value is NTC resistance value.
Does it show approx. 4700 OHM under 25°C temperature? (Picture E1-3)
(There should not be open circuit / short circuit)

Yes

Replace control card.

No

Open the rear cover of the machine. After removing the NTC socket on the heater, measure the NTC value directly over the NTC. (Picture E1-4)

Important Note:
The washing machine makes cold washing and ends the program before the heater is activated in NTC open circuit / short circuit and Heater open circuit conditions, i.e. if there is E1, E2 or E3 error.

Does it show approx. 4700 OHM under 25°C temperature?
(There should not be open circuit / short circuit

Yes

As the value measured on the control card socket is wrong, cabling is erroneous; check it. There should not be loose or erroneous cable and socket.

No

Replace NTC. Re-attach the removed sockets into their places

PICTURE E1-4: NTC resistance to be measured is 5000 Ohm under 25 degrees

INFORMATION: NTC resistance decreases as its temperature rises. For example, it shows 9500 Ohm
under 10 C and 1700 Ohm under 50 C. These values are not erroneous.

*Does not heat water.
*Machine boiled the water once, but now it does not heat at all.

E2

0
0
0
1
0

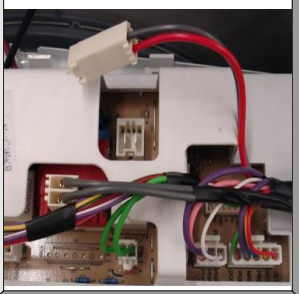
* Heater open circuit error

Is there E2 error?

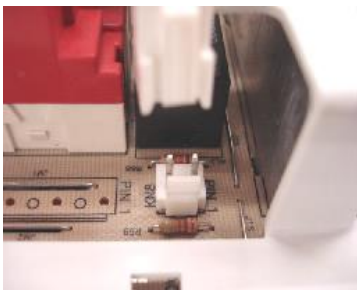
Yes

Remove the panel for a comfortable measuring. Remove KN5 (Picture E2-1) Heater socket and KN8 (Picture E2-2) Tacho socket.

PICTURE E2-1: Heater socket on the KN5 card is removed.



PICTURE E2-2: KN8 tacho socket is removed.



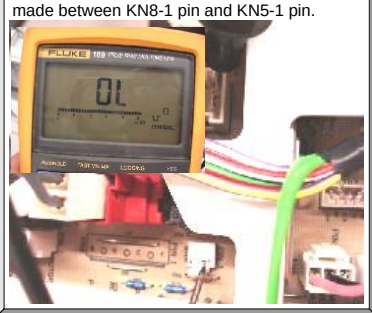
Check to see if there is any short circuit between the first pins of both connectors. (Picture E2-3)

No

Yes

Replace control card.

PICTURE E2-3: Short circuit check is being made between KN8-1 pin and KN5-1 pin.



Open the rear cover of the machine. Measure heater resistance by removing at least one of the heater terminals; is the resistance 25 Ohms? (Picture E2-4)

Yes

No

Replace the heater

Does the heater operate although there is no water?

No

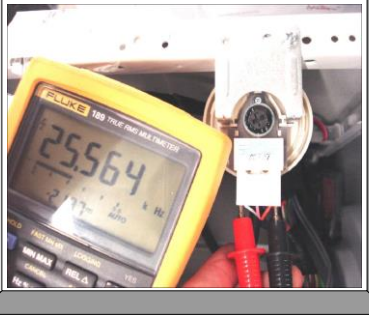
You may start the washing program.

Yes

Check water level sensor. Measure the frequency between pins 1 and 3 while the machine is empty and energized. It should be around 25560 Hertz. (Picture 2-5)

PICTURE E2-4: One of the cables on the heater is removed (left) and heater resistance is measured.

PICTURE E2-5: Water level sensor is being checked



Important Note:
The washing machine makes cold washing and ends the program before the heater is activated in NTC open circuit / short circuit and Heater open circuit conditions, i.e. if there is E1, E2 or E3 error.

Machine is boiling the water. Laundry comes out very hot; they are worn.

E3

0
0
0
1
1

* Heater continuously active error

Is there E3 error?

Yes

Remove the panel for a comfortable measuring. Remove KN5 (Picture E2-1) Heater socket and KN8 (Picture E2-2) Tacho socket

Check to see if there is any short circuit between the first pins of both connectors. (Picture E2-3)

No

Does the heater operate although there is no water?

Yes

Check water level sensor. Measure the frequency between pins 1 and 3 while the machine is empty and energized. It should be around 25560 Hertz. (Picture 2-5)

Yes

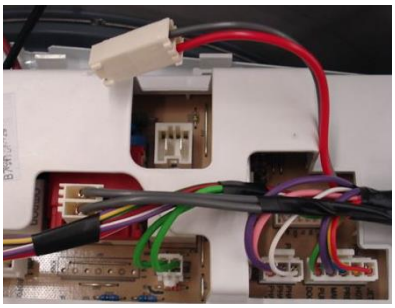
Replace control card.

Open the rear cover of the machine. Measure heater resistance by removing at least one of the heater terminals; is the resistance 25 Ohms? (Picture E2-4)

No

Replace the heater

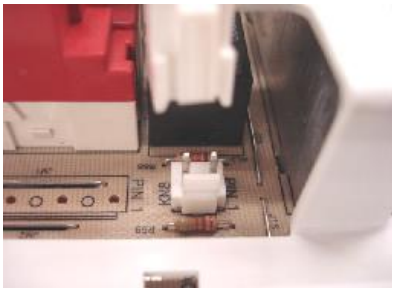
PICTURE E2-1: Heater socket on the KN5 card



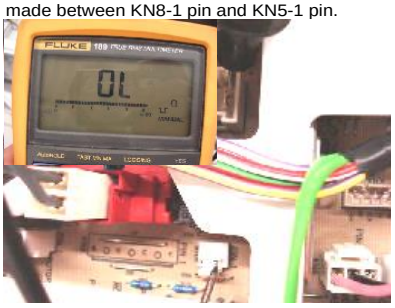
Important Note:

The washing machine makes cold washing and ends the program before the heater is activated in NTC open circuit / short circuit and Heater open circuit conditions, i.e. if there is E1, E2 or E3 error.

PICTURE E2-2: KN8 tacho socket is removed.

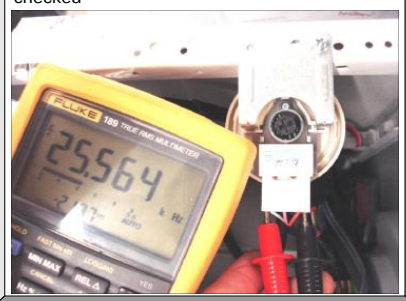


PICTURE E2-3: Short circuit check is being made between KN8-1 pin and KN5-1 pin.



PICTURE E2-4: One of the cables on the heater is removed (left) and heater resistance is measured.

PICTURE E2-5: Water level sensor is being checked



* Machine takes in water continuously.
* No washing movement
* Door cannot be opened
* Programme does not come to an end.

E 4

* Valve triac short circuit
or
* Valve triac diode error

Is there E4 error?

Yes

Is the machine taking water continuously?

Yes

Unplug the machine.

Yes

Does the machine continue taking in water although it is not energized?

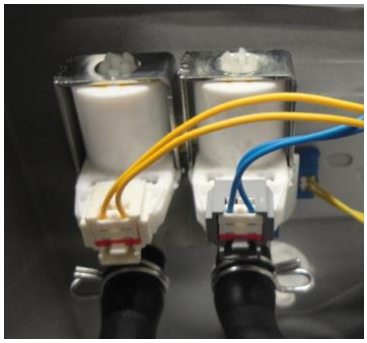
Yes

Replace the valve with a water inlet (Picture E4-1)

No

Replace the control card.

PICTURE E4-1: Water intake valves



*Program lasts long.
*The machine does not drain water.
*The machine does not spin

E5

0
0
1
0
1

Is there E5 error?

Yes

Check machine supply voltage. If there is low supply voltage, the pump will not work.

Yes

Start the machine after switching into pump program.

*Pump triac open circuit error
or
*Pump clogged error
or
*Pump triac diode error
or
*Pump rotor locked and cannot rotate error

PICTURE E5-1: Voltage value going to the pump via card is being measured

Is the pump motor running? (It can be understood by touching the filter cover.)

Yes

* Check and clean the pump filter
* Check if the height and length of the drain hose is appropriate, correct accordingly
* Make sure that the drain hose is not kinked or folded.
Make the machine take in water again and start the program again

No

Can the pump discharge water? (The pump might have become triac diode. The pump cannot pump even if it creates vibration.)

Check if there is 220 VAC between KN6.2 (purple) (pump phase) and KN3.2(morpurple) (pump 0V) pins without removing the control card or any socket while the program is running. Picture E5-1

PICTURE E5-2: pump resistance is being measured over the pump connector

Is there 220 VAC voltage?

No

Replace the control card.

Yes

Switch off machine and remove its front wall in order to check its pump coil resistance. There should be approx. 147 Ohms between the two pins of the pump connector. Picture E5-2 Check. There should not be open circuit or short circuit

Is the pump resistance correct?

Yes

Is there any loose connection or break between the control card and pump motor and at the socket terminals?

Yes

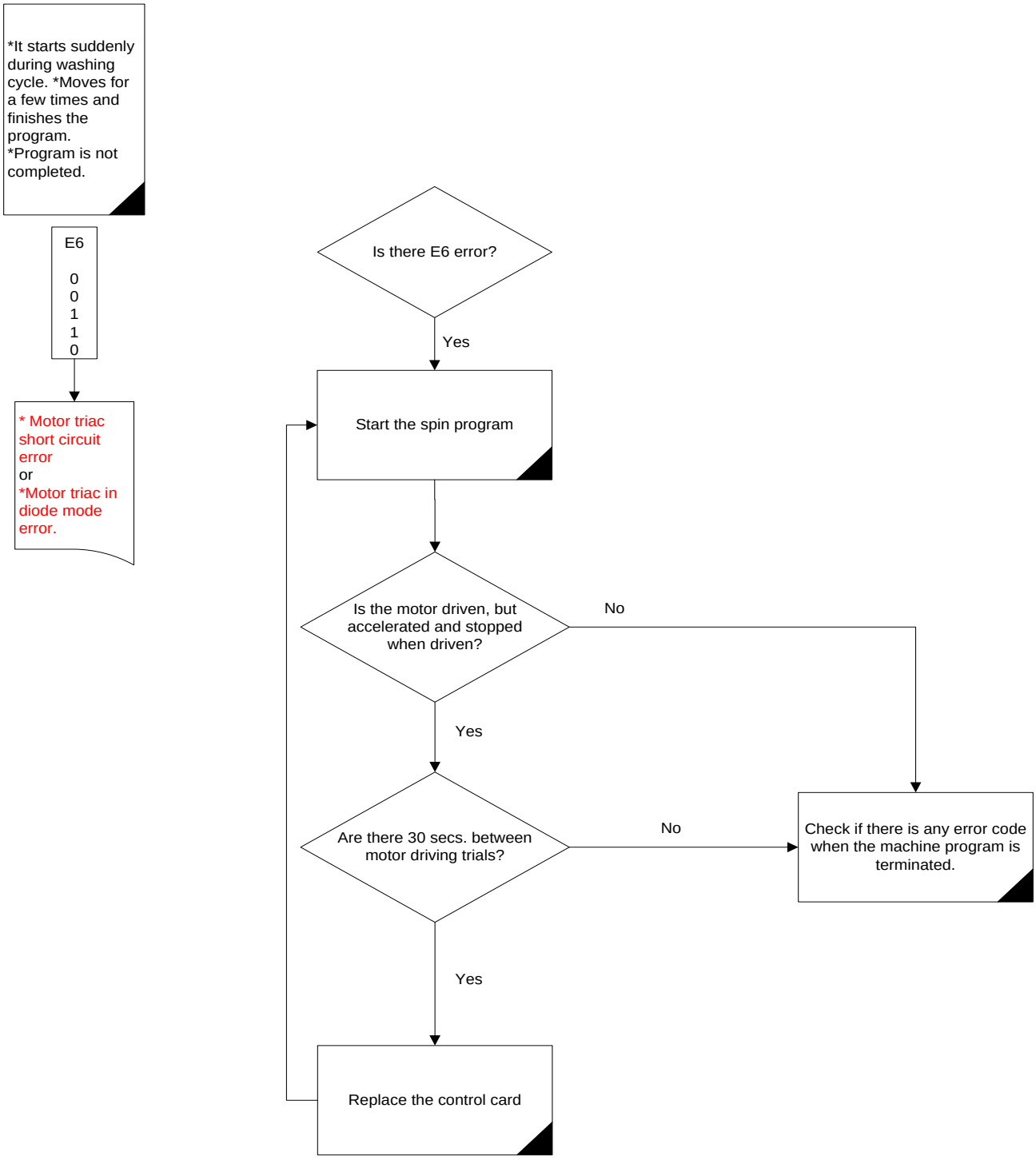
Repair the cables and/or cable terminals

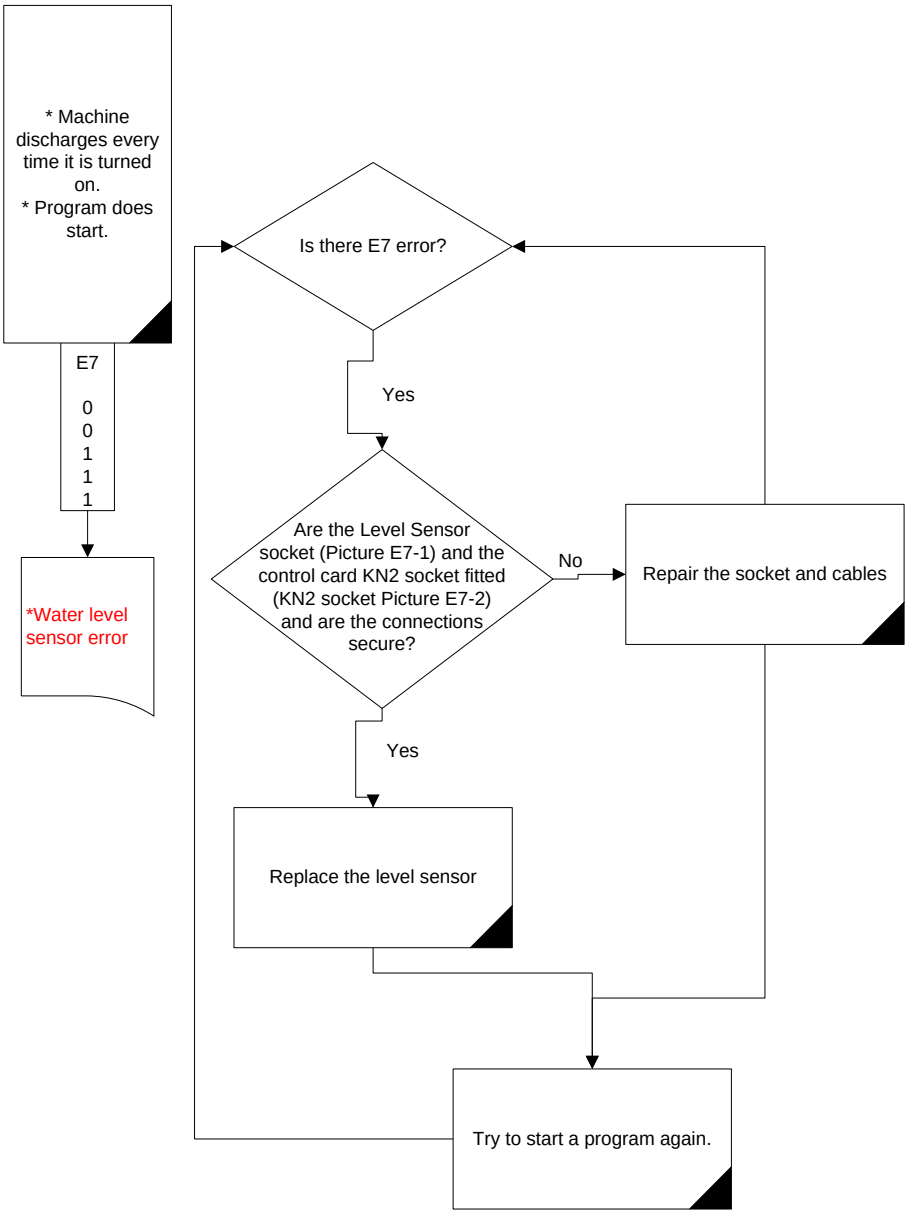
No

Group and restart the machine

No

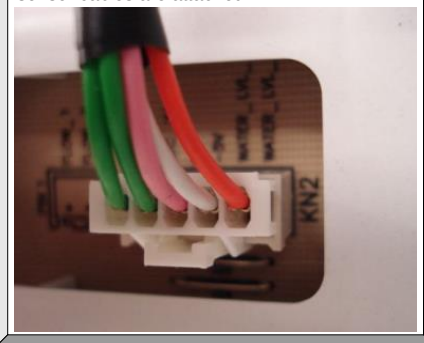
Replace the pump.


*It starts suddenly during washing cycle. *Moves for a few times and finishes the program.
*Program is not completed.
E6
0
0
1
1
0
* Motor triac short circuit error
or
*Motor triac in diode mode error.
Is there E6 error?
Yes
Start the spin program
Is the motor driven, but accelerated and stopped when driven?
No
Yes
Are there 30 secs. between motor driving trials?
No
Check if there is any error code when the machine program is terminated.
Yes
Replace the control card



PICTURE E7-1: The socket on the level sensor must be fitted.

PICTURE E7-2: Socket to which the KN2 level sensor cables are attached



*Program lasts long.
*Machine does not finish the program.
*Machine does not take in water.
*Machine does not work.
*It does not spin and drain.
*Machine continuously drain

E8

0
1
0
0
0

*Water cutoff

Is there E8 error?

Yes

Is the machine taking in water?

Yes

No

Yes Check taps and filters and see if they are open or not. Is the tap turned off or the filter clogged?

Turn the taps on and try again.

No

Is the machine continuously pumping and discharging water although it is taking in water?

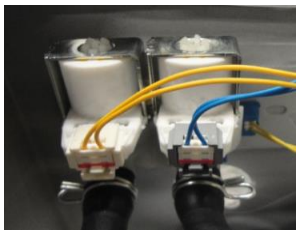
Yes

Replace the main card and try to run a program again except spinning or pump.

PICTURE E8-2: KN3 connector connector on the card

INFORMATION: Main wash pin 3 blue
Prewash pin 4 yellow
Hot wash pin 5 red

PICTURE E8-1: AC voltage is being measured over valve connectors



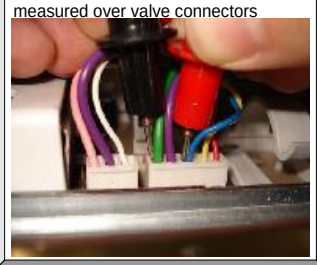
Make sure that the valve connectors (Picture E8-1) and control card KN3 (Picture E8-2) are fitted. Are the connectors fitted?

No

Attach the connectors and try again.

Yes

PICTURE E8-3: AC voltage is being measured over valve connectors



Replace the valve. Try again.

No

Is there 220 VAC between the connectors of the valve that has to operate? (Picture E8-1)

Yes

Is there 220 VAC between KN3 connector's 1st pin on the control card and the valve pin that has to operate? (Picture E8-3)

No

Replace the control card and try again.

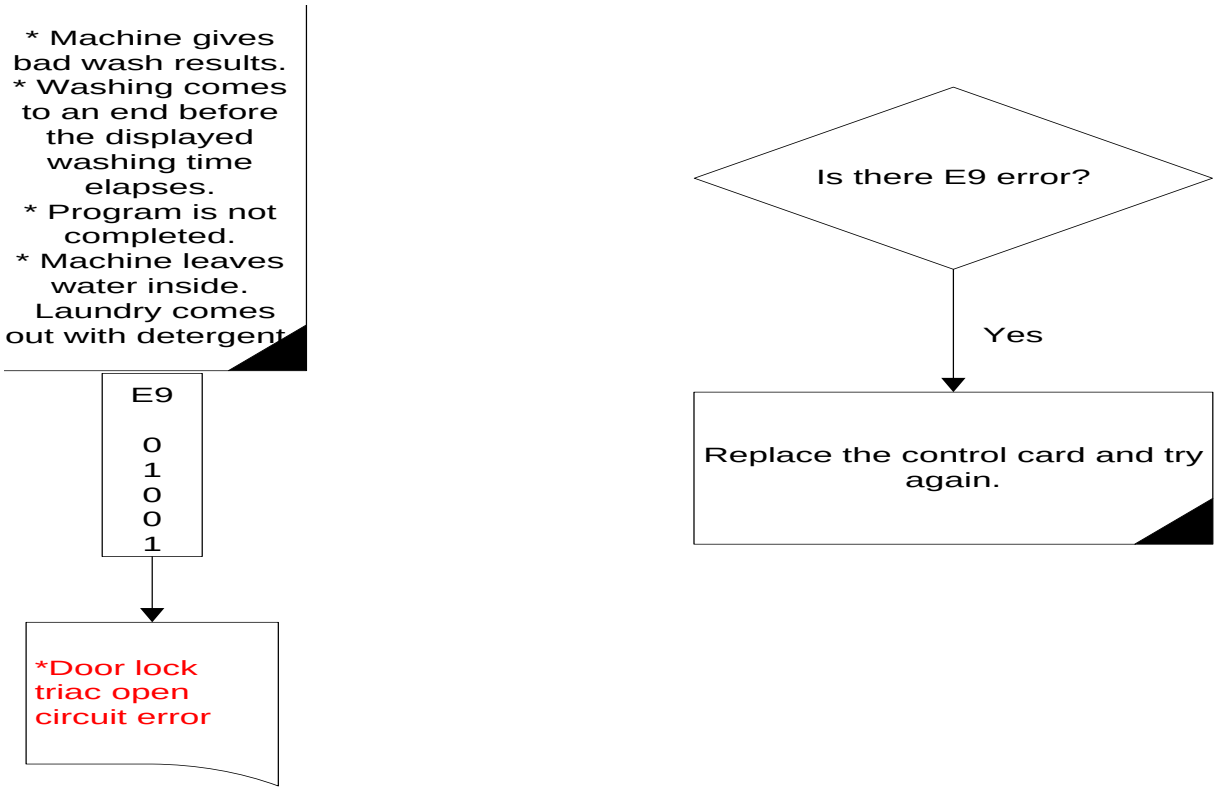
Yes

Is there any error on the cable connections between the control card and the water inlet valves?

Yes

Correct connections and check. Try again

Important Note:
Prewash and main wash valves are activated concurrently in the softener step. Thus, water is sent to softener compartment.


* Machine gives bad wash results.
* Washing comes to an end before the displayed washing time elapses.
* Program is not completed.
* Machine leaves water inside. Laundry comes out with detergent
E9
0
1
0
0
1
*Door lock triac open circuit error
Is there E9 error?
Yes
Replace the control card and try again.
Door jammed
E10
0
1
0
1
0
*Door lock triac short circuit error
Is there E10 error?
Yes
Replace the control card and try again.

*Programme is not completed.
*Machine makes sudden startups.
*Machine drum does not rotate at all.

E11

*Motor phase open circuit

Is there E11 error?

Yes

Are cables between the control card and motor secure?

Yes

Yes

Replace the motor (Picture E11-1)

Try to start a program again.

Resim E11-:Motor Socket

Resim E11-2: Motor Control Card

* Machine discharges every time it is turned on.
* Programme does start.

E12

*Aquastop level error

Picture E12-1: Aquastop connections at the lower section of machine

Is there E12 error?

Yes

Are Aqastop socket (Picture E12-1) and connections secure?

Yes

No

Change Aquastop

Repair the socket and cables

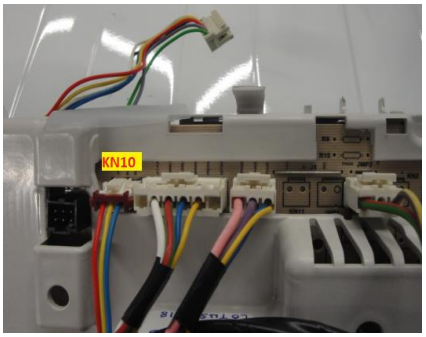
Try to start a program again.

* Machine washes poorly. ,* It ends the programme.

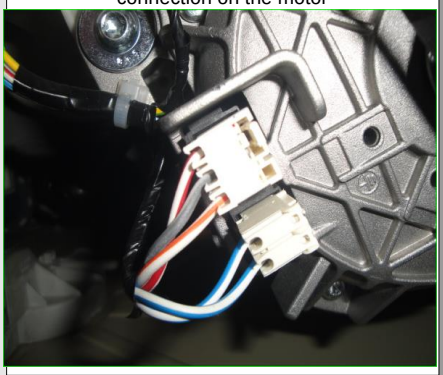
E13

*Communication cable open circuit.

Picture E13-1: KN10 connector connection on the card



Picture E13-2: Communication connector connection on the motor



Is there E13 error?

Yes

Are communication socket (Picture E13-1) and control card KN10 attached (Motor socket Picture E13-2) and connections secure?

Yes

No

Change the motor

Repair the socket and cables

Yes

Try to start a program again.

* Machine failed to spin.
* Time extended.
* Although I did not select extra rince, machine performed another rinse.

E17

*Programme finished without spinning due to foam.

Is there E17 error?

Yes

Check if the main wash and prewash valves are connected to the related compartment of the detergent dispenser? If prewash is selected, water fills in the prewash compartment when the machine takes in first water. If prewash is not selected, first water is taken from the main wash compartment. Is it so? (Picture E17-1)

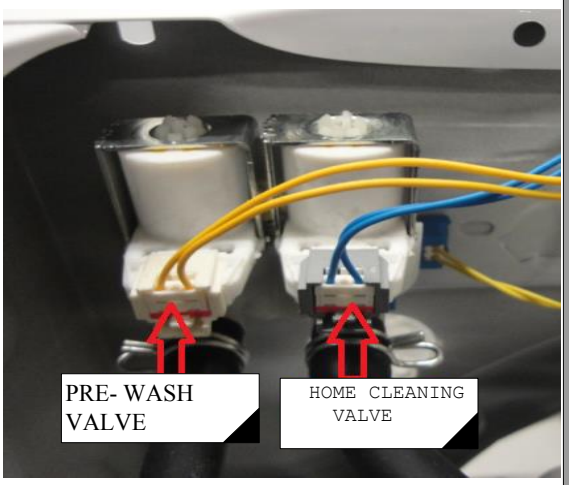
No

Correct the water intake hoses.

Yes

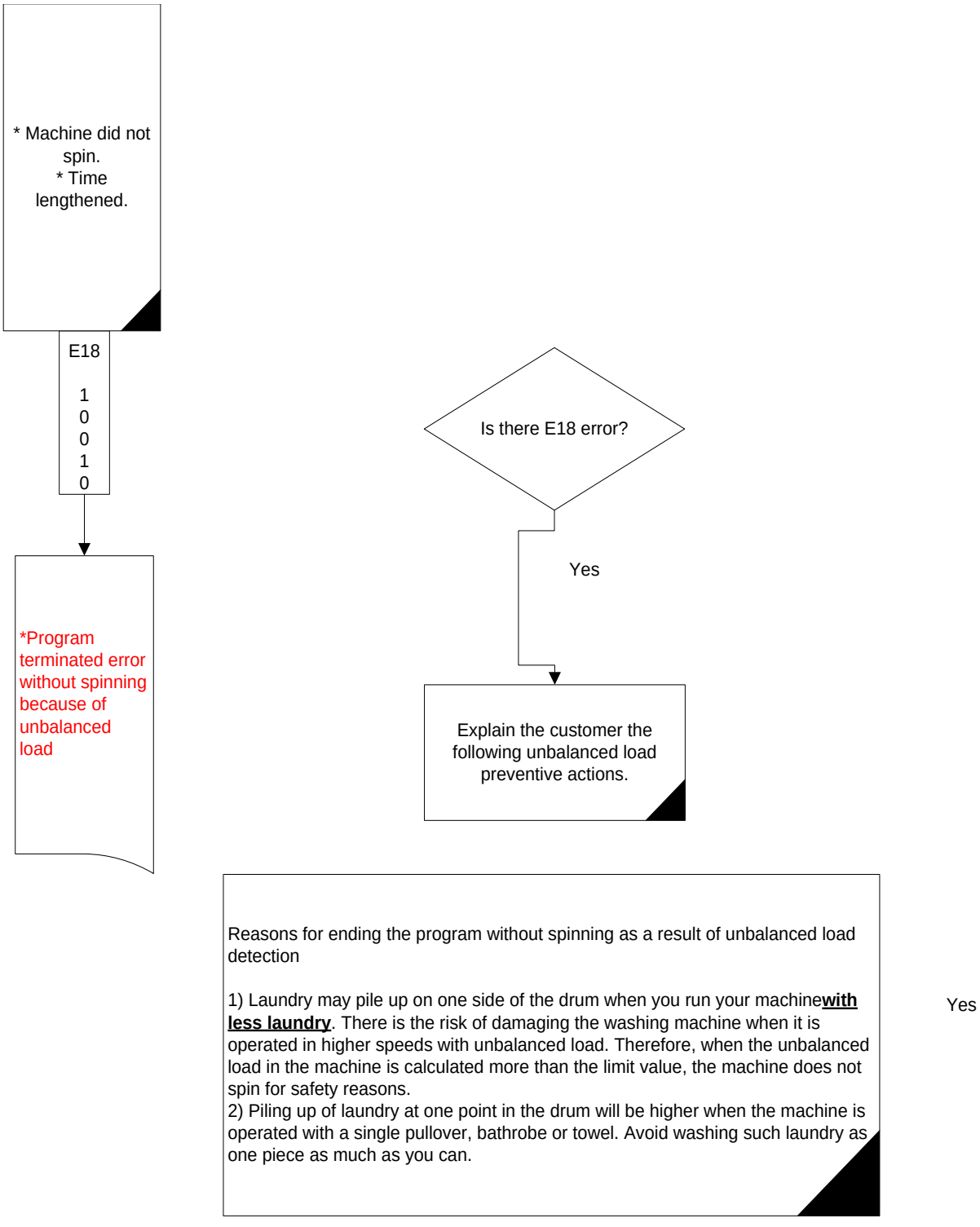
Explain the customer the following Antifoam measures.

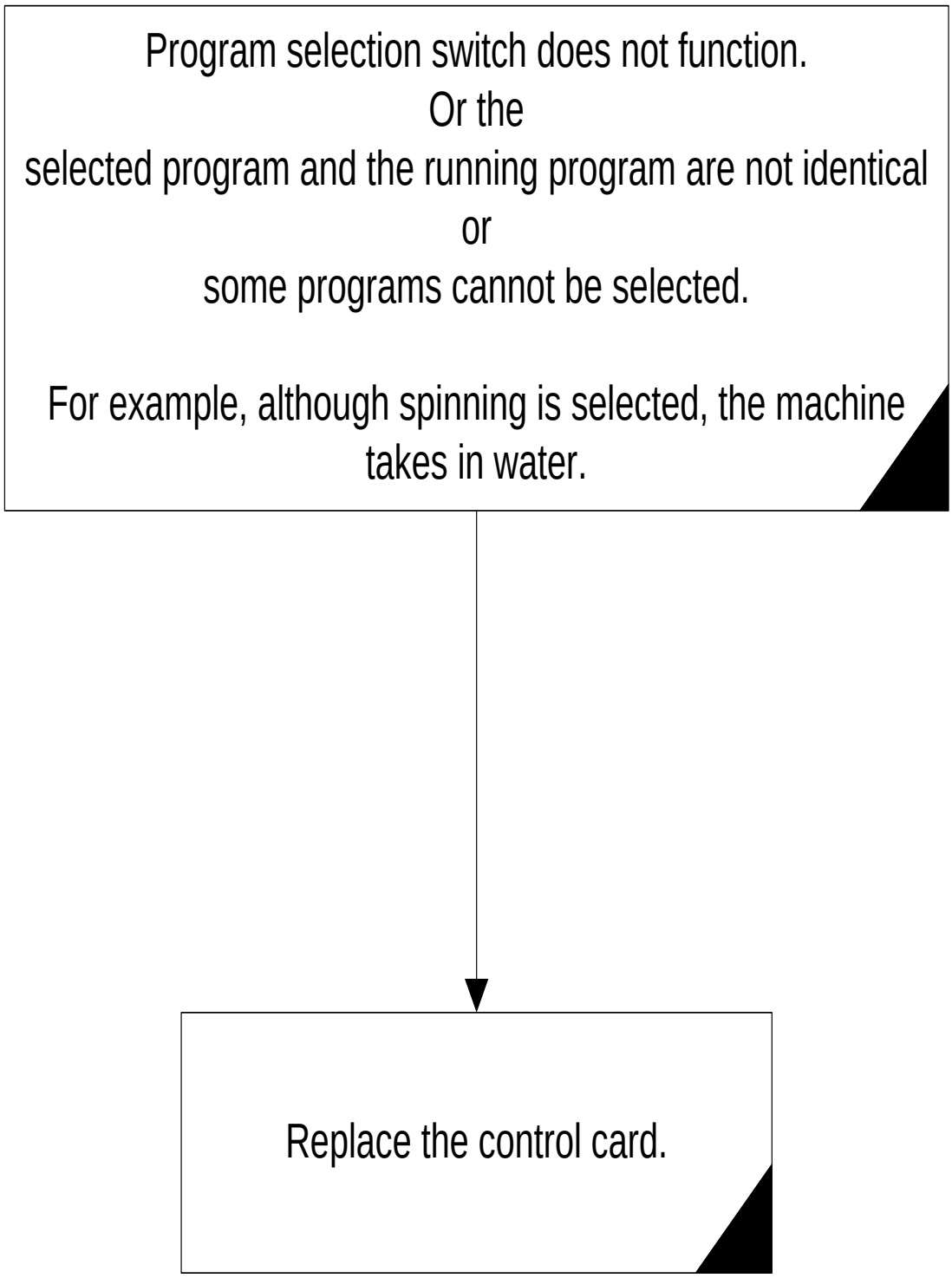
Picture E17-1: Valves and dispenser hose connection

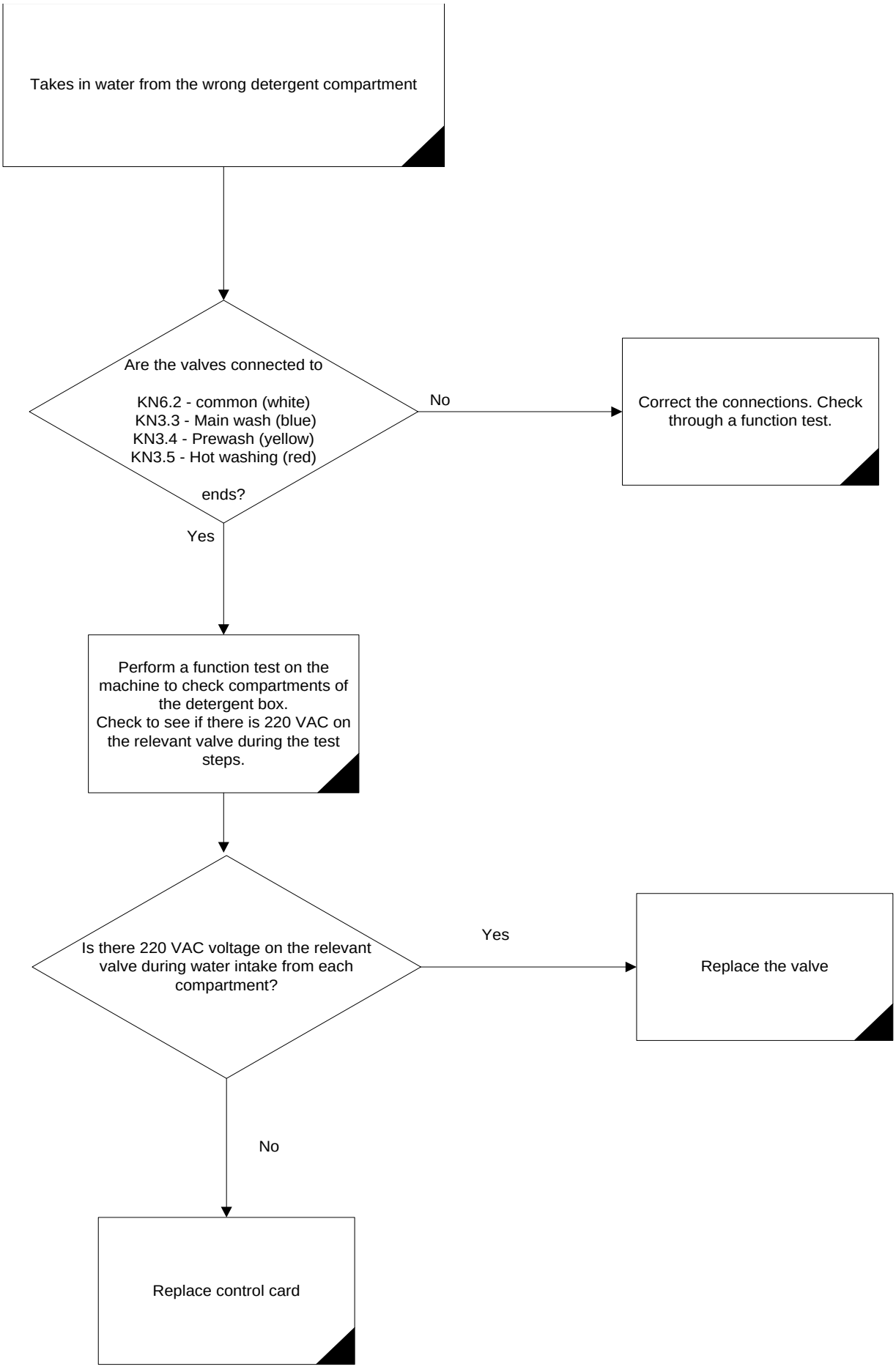


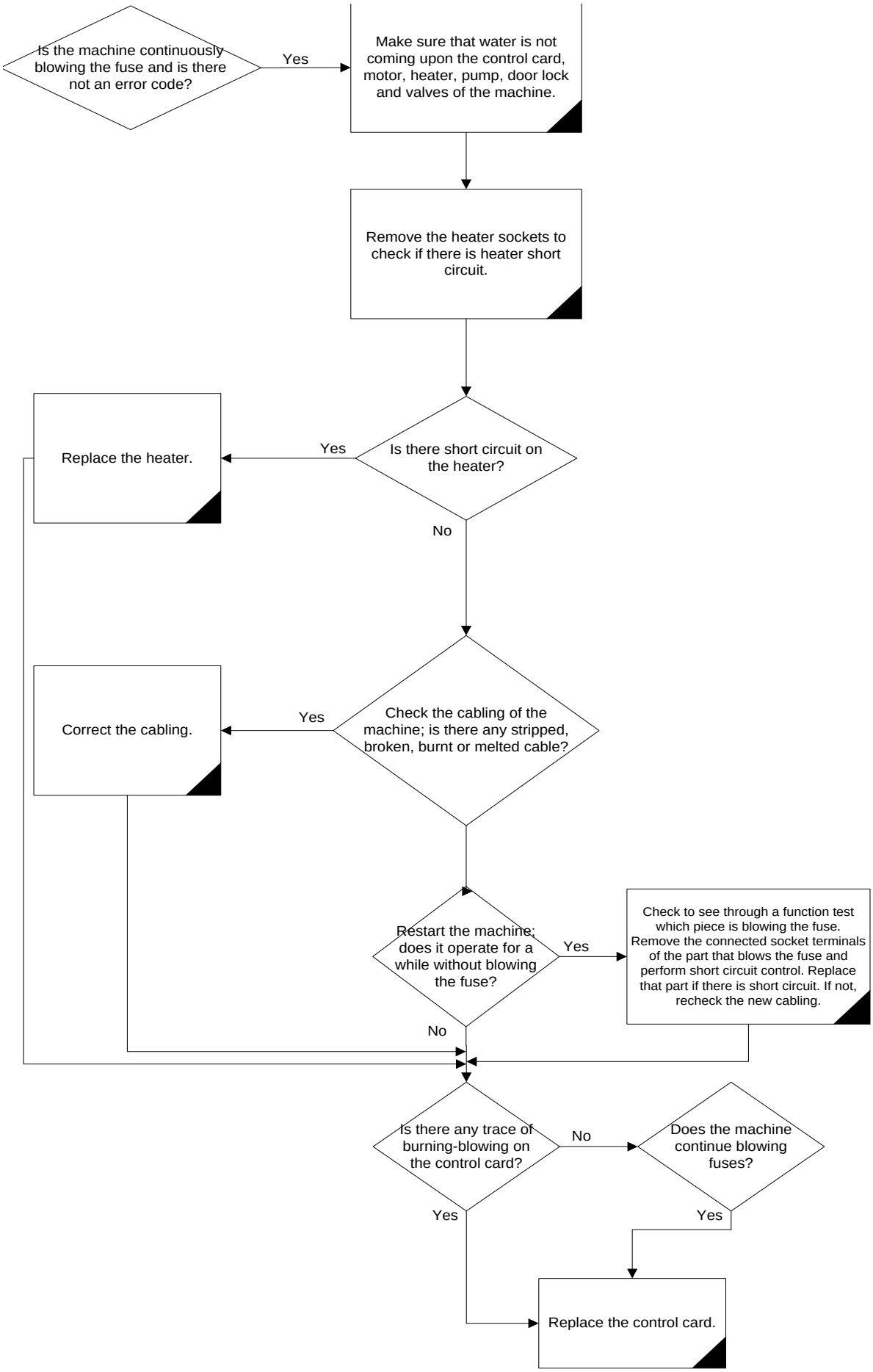
Foam formation reasons and prevention methods,

1) If you add detergent in the prewash compartment although you have not selected prewash, detergent is taken from this compartment while rinsing the laundry and cause foam formation.
2) You should use detergents for automatic machines.
3)Laundry can remain with detergent as a result of using excessive detergent. You should try to use only adequate amount of it.
4) Keep your detergent in a closed and dry place.
5) You should use less amount of detergent than ever for your lacy laundry.
6) You should not use too much softener.


* Machine did not spin.
* Time lengthened.
E18
1
0
0
1
0
*Program terminated error without spinning because of unbalanced load
Is there E18 error?
Yes
Explain the customer the following unbalanced load preventive actions.
Reasons for ending the program without spinning as a result of unbalanced load detection
1) Laundry may pile up on one side of the drum when you run your machine**with less laundry**. There is the risk of damaging the washing machine when it is operated in higher speeds with unbalanced load. Therefore, when the unbalanced load in the machine is calculated more than the limit value, the machine does not spin for safety reasons.
2) Piling up of laundry at one point in the drum will be higher when the machine is operated with a single pullover, bathrobe or towel. Avoid washing such laundry as one piece as much as you can.
Yes


Program selection switch does not function.
Or the
selected program and the running program are not identical
or
some programs cannot be selected.
For example, although spinning is selected, the machine takes in water.
Replace the control card.


Takes in water from the wrong detergent compartment
Are the valves connected to
KN6.2 - common (white)
KN3.3 - Main wash (blue)
KN3.4 - Prewash (yellow)
KN3.5 - Hot washing (red)
ends?
No
Correct the connections. Check through a function test.
Yes
Perform a function test on the machine to check compartments of the detergent box.
Check to see if there is 220 VAC on the relevant valve during the test steps.
Is there 220 VAC voltage on the relevant valve during water intake from each compartment?
Yes
Replace the valve
No
Replace control card


Is the machine continuously blowing the fuse and is there not an error code?
Yes
Make sure that water is not coming upon the control card, motor, heater, pump, door lock and valves of the machine.
Remove the heater sockets to check if there is heater short circuit.
Is there short circuit on the heater?
Yes
Replace the heater.
No
Check the cabling of the machine; is there any stripped, broken, burnt or melted cable?
Yes
Correct the cabling.
Restart the machine; does it operate for a while without blowing the fuse?
Yes
Check to see through a function test which piece is blowing the fuse. Remove the connected socket terminals of the part that blows the fuse and perform short circuit control. Replace that part if there is short circuit. If not, recheck the new cabling.
No
Is there any trace of burning-blowing on the control card?
No
Does the machine continue blowing fuses?
Yes
Yes
Replace the control card.

Error code is shown on the screen in case of 7_segment display. Nothing is shown on the speed indication LEDs.	Spin speed adjustment LEDs error display (speed LEDs are used to show error codes in models not equipped with 7_segment display)					ERROR
	Speed 5 MAX	Speed_4	Speed_3	Speed_2 (rinse hold)	Speed_1 (no spin)	
E01					√	***Heater ntc open circuit error or *Heater ntc short circuit error**
E02				√		***Heater open circuit error**
E03				√	√	**Heater continuously active error**
E04			√			*** Valve triac short circuit or 'Valve triac diode error**
E05			√		√	**'Pump triac open circuit or Pump blocked or Pump triac diode or 'Pump rotor locked and does not rotate error**
E06			√	√		***Motor triac short circuit or *Motor in triac diode mode error.**
E07			√	√	√	***Water level reading error**
E08		√				***Water cut off or *Valve triac open or *Pump triac short circuit error**
E09		√			√	**'Door lock triac open circuit error**
E10		√		√		**'Door lock triac short circuit error**
E11		√		√	√	***Motor open circuit or * Tacho open circuit**
E17	√				√	***Program terminated error without spinning because of foam**
E18	√			√		***Program terminated error without spinning because of unbalanced load**

POWER CIRCUIT DIAGRAM