



2020 January

TROUBLESHOOTING TP2

FRONT LOADING WASHERS

LAP-0820 / LAP-1025

FWH-25 / FWH -30 / FWH -40 / FWH -60 / FWH -80

FWH -100 / FWH -135 / FWH -275

FWR-25 / FWR -30 / FWR -40 / FWR -60 / WFR -80

FWS -25 / FWS -30 / FWS -40 / FWS -60 / FWS -80 / FWS -135

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1. PRESENTATION

1.1. INTRODUCTION

This document analyses the different alarms shown by the TP2 programmer and explains how to act to solve them.

The analysis is aimed at washing machine models after February 2019, but due to the constant changes in machines there could be small discrepancies with newer versions.

1.2. NOMENCLATURE

This section shows the different nomenclatures, references, and meanings that may appear in the document in alphabetical order.

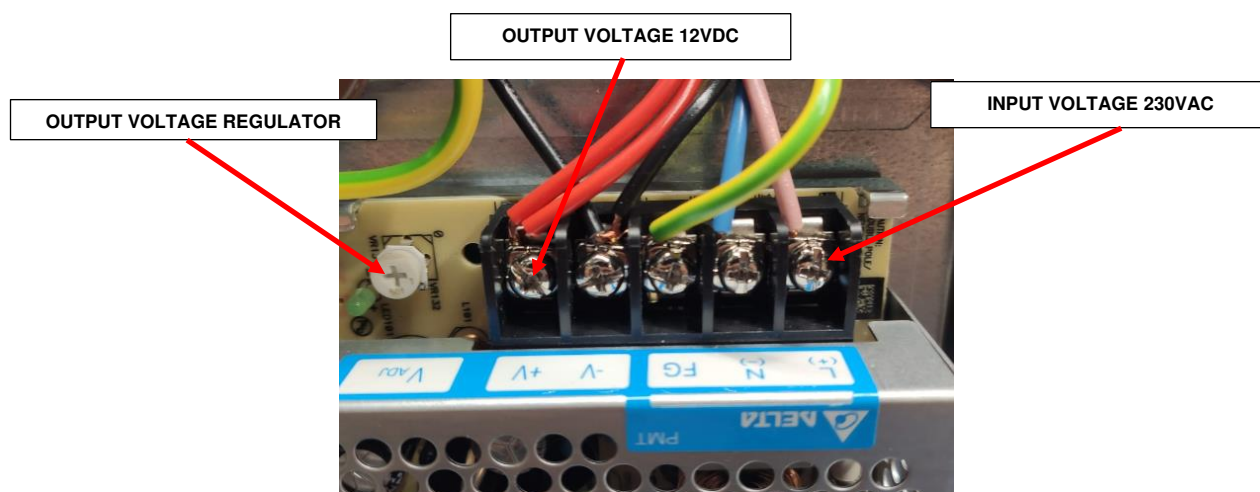
1...8 → Feeder connection points
9-10 → Busy washer
11-12 → Coin inputs
BD1, BD2 → Drain pump
c1, c2, c3, c4 → Capacitor
CT → Heating contactor
CRP → Door open delay circuit
e1 → Cold water electrically operated valve
e11 → Steam electrically operated valve
e12 → Neutralizer electrically operated valve
e2 → Hot water electrically operated valve
e3 → Pre-wash electrically operated valve
e4 → Cold water washing electrically operated valve
e41 → Hot water electrically operated valve
e5 → Bleach electrically operated valve
e6 → Softener electrically operated valve
e7 → Delimed water electrically operated valve
EP → Door electric magnet
F → Fuse
FA → Power supply
FUSE → Fuse
lcm → Service switch

Ides → Unbalance switch
IE → Emergency switch
IGS → Disconnect switch
Imo → Coin input switch
Ind → Inductive sensor
Ip → Closed door switch
lpb → Locked door switch
Iv → Steam switch
M → Motor
Mo → Coiner
NTC → Temperature probe
P → Pressure switch
PRG1 → Board
PTC → PTC
RG1 → Inverter general contactor
RG2 → Heating elements general contactor
RT → heating element
Tm → Motor thermal overload
Trf → Transformer
Tsc → Hi-limit thermostat
VAC1 → Drain valve
VAC2 → Second drain valve
VE1, VE2 → Fan

2. E1 POWER CUT DETECTED

Cause: When the power supply is restored after a power cut has been detected while a programme is running.

User action: The options "continue" or "end" are displayed. If continue is pressed, the cycle that was running when the power cut occurred will continue, starting from the beginning of the cycle again. If "end" is pressed, the programme will end, and the door is unlocked.



Diagnosis:

1- Determine if it is an external error or not, there are regular tension cuts in the installation? Which is the input voltage? Someone has pressed the emergency cut?

2- If there are not external reasons, check the input voltage in the switch and power supply.

3- Check the output of the power supply, it must be between 11,5V and 14V.

4- If all is correct, try to determine the moment of disconnection.

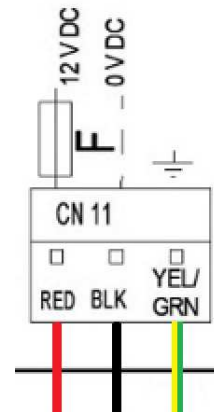
5- If the disconnection occurs just when the inverter turns on, probably the problem is with the EMC filter integrated in the inverter. A 300mA or super immunized differential is required to avoid this type of initial leakage currents. If we do not have these differentials, we can solve the problem cutting the filter as showed in the picture. This operation can cause electrical sounds in other appliances of the environment.



6- If the disconnection occurs just when the heating is activated, probably there is a derivated resistor.

7- If the disconnection occurs during the spinning phase, some wire may have been disconnected due to movement. Check all the wiring related to the alimentation.

INPUT VOLTAGE TO THE BOARD 12VDC



3. E2 LOCK ERROR

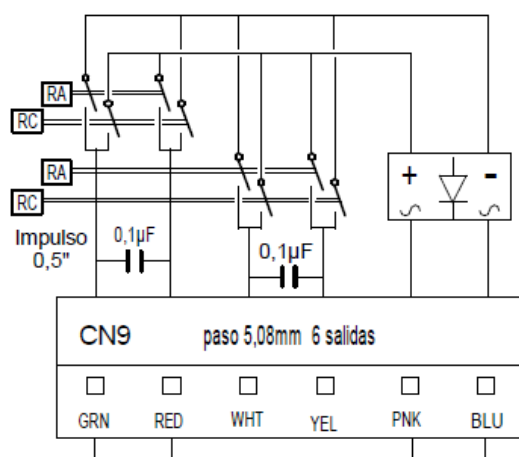
Cause: It is detected that the door cannot be locked when starting a program or unlocked during the program. It will give it after having made 3 block attempts every 20 sec.

User action: The program will end, and the user can try again.

Diagnosis:

1- The problem is focused on the blocking or its detection. First go to exits and run the output manually. If it locks but is not detected, go to step 6, if the lock does not act directly:

2- Check the input and output tension on the main board 230VAC.

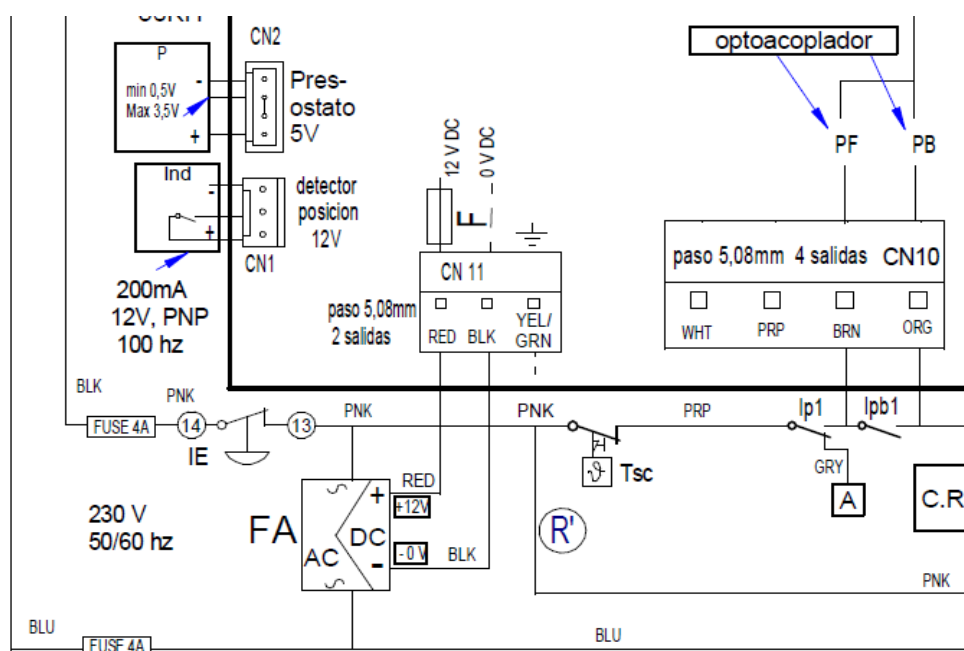


3- If there is no voltage at the input of the board, check if there is voltage in the output of the power supply and if the emergency switch is not pressed.

4- If there is voltage at the input and manually pressing the output does not detect the pulse of 0.5sec at the output, the problem is internal to the card. This case is very unlikely, make sure before changing the card that there is no pulse, it is not easy to see.

5- If there is a pulse after the connector, the problem is inevitably closing. Dismantle and check closure internally. There may be a loose wire, or the electromagnet is damaged, in the latter case it is recommended to change the complete closure.

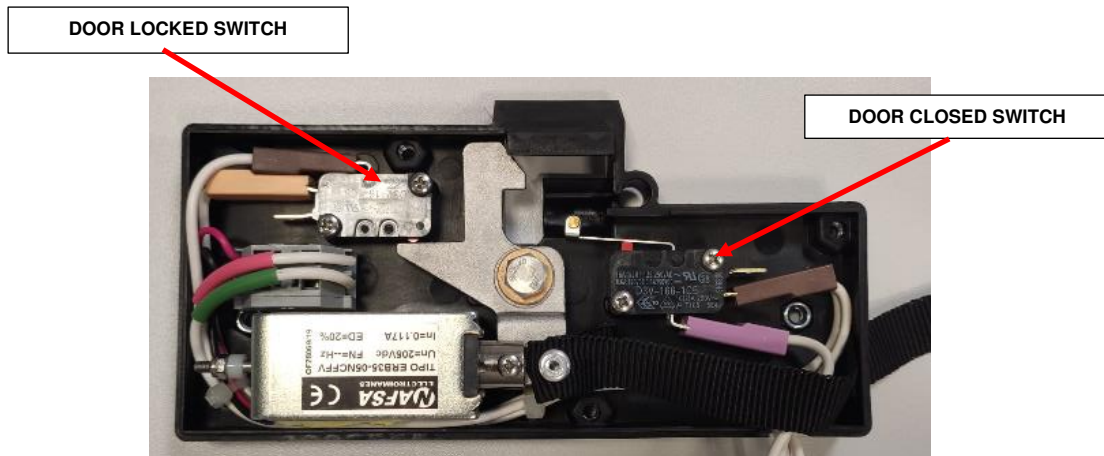
6 - If the problem is that if it locks but not detected, the problem is in the entries of the card or the micro of the closing. Before dismantling, check that there is 230V at the optocoupler port with the door closed and locked.



7- If there is voltage in the input but the software does not detect it (display inputs) the problem is in the optocoupler and the card must be replaced.

8- If there is no voltage at the input, the problem is probably in the micro locking (inside the full lock) but two things should be checked before disassembling anything. The connector of the closure that joins the general installation and on the other hand the temperature limiter (Tsc).

9- If there is continuity in these two points, the problem is inevitably inside the closure. Or the micro has been damaged, is badly connected or the lock does not get to mechanically press the micro.



4. E3 DRAINAGE FAILURE / WATER IN TUB

The machine detects that although the "EV drain" or "EV drain 2" output is activated, the water level in the washing machine tub does not reach "0" within 10 minutes (time can be configured).

The 2 options "continue" or "end" are displayed. If we press continue, the machine will continue trying to drain but at the end of the established time, the error message will be displayed again. If we press "end", the door unlocks but the following warning is given "WATER IN TUB".

5. E4 MAXIMUM WATER LEVEL REACHED

If, while a programme is running, a water level is detected which is 80 mm (fixed value for all models) higher than the maximum safety level. At this moment, drainage will start through drainage 1.

The option "OK" is given. If this is pressed, the programme will end after the machine has been completely drained, and the door is unlocked.

6. E5 FAULT WATER INLET

The machine detects that although the corresponding solenoid valve outputs are activated, the water level in the washing machine has not risen 1 mm in 5 minutes (time can be configured).

The 2 options "continue" or "end" are displayed. If we press continue, the machine will continue trying to fill but at the end of the established time, the error message will be displayed again. If we press "end", the programme will end and the door unlocks.

7. E6 HEATING FAULT

The machine detects that, in spite of activating the heating output, the water temperature has not increased by 1°C within 30 minutes.

It is possible to cancel this error. In this case, instead of triggering an error, the machine will continue running as if the temperature had been reached.

The 2 options "continue" or "end" are displayed. If we press continue, the machine does not continue trying to heat the water and the cycle continues as if the temperature had been reached. If there are more heating phases in the same programme, the error will be detected again. If we press "end", the programme will end and the door unlocks.

8. E7 "MAXIMUM TEMPERATURE REACHED"

The machine detects that the water temperature has exceeded 95 °C.

Only the option "end" is given. When it is pressed, the programme will end, and the door is unlocked if the temperature is less than 50°. If this is not the case, the E11 error is triggered: CLOTHES HOT.

9. E8 MOVEMENT ERROR

Cause: The error is displayed when running, the washing machine sends signal to move the drum but after 15sec it does not detect movement.

User action: It will only be given the option to finish and it will take approximately 2 minutes to unlock the door for safety against a spin error.

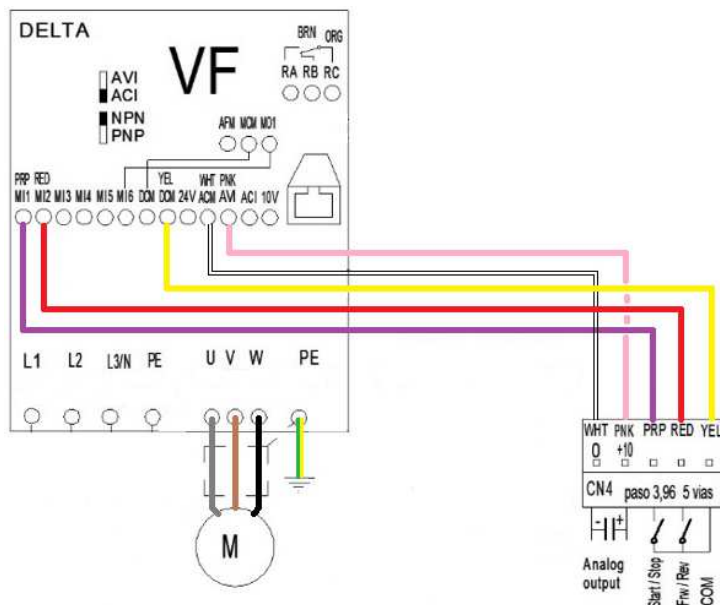
Diagnosis:

1- First determine if the drum actually moves or not. Start a cycle to check it and determine the moment of failure. If you move and there is E8 go to point number 10.

2- If the drum does not move, the error is logical, and the problem is probably in the motor-drive pair.

3- In this case, with the help of a Delta display, check that the drive goes into error and see what it is.

4- If there is no drive error but the drum does not rotate, the error is probably in the motion control signals. Check continuity between drive card-converter CN4 and analog output voltage.



5- Check that the inverter is in PLC1.

6- There are many ways of inverter error, here are the most likely:

7- OL> Over load, too much load and the drive cannot turn the drum. Check that all three phases are correct and that the drive parameters are correct for the machine model.

8- Ov> Over Voltage, the drive is not capable of braking. Check machine model and drive parameter. In the case of 120kg washing machines, check the braking resistor state.

9- OC> Over current, overcurrent or short-circuit between motor phases. Check motor-drive wiring.

10- If the drum moves but error E8 is displayed, it means the motion sensor is not reporting that movement. The fault can be at several points, first check if the sensor lights up every time the metal sheet passes by its side. The sensor has a led on its back.

11- If it does not turn on, approach any metal part (a screwdriver for example) and check whether or not the rear LED

12- If it now turns on, the problem lies in the distance between pulley plate and sensor. Move the sensor closer to the metal plate. Nominal 4mm

13- If it turns on but the electronics are not detecting it:

14- Check voltage output at the power supply, below 10.5V the sensor LED lights but the signal does not reach the electronics.

15- The pulse is missing in the wiring, two conflicting points: Card connector and rear connection strip (where the sensor is attached to the general installation)

16- If the sensor stays on continuously, the problem is in the sensor itself.

10. E9 UNBALANCED LOAD

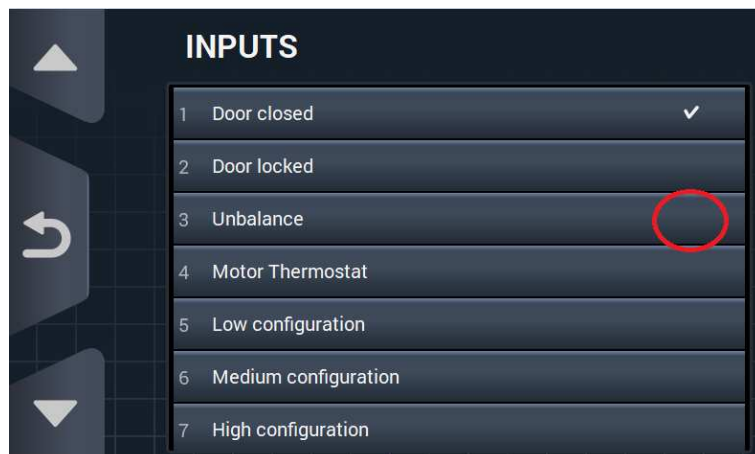
Cause: This message appears when the unbalanced load micro switch is activated once during the spin cycle.

User action: Only the option "end" is given. When this is pressed, the program will end, and the door is unlocked. In addition, the text "TRY TO REDISTRIBUTE LOAD" appears in the error message.

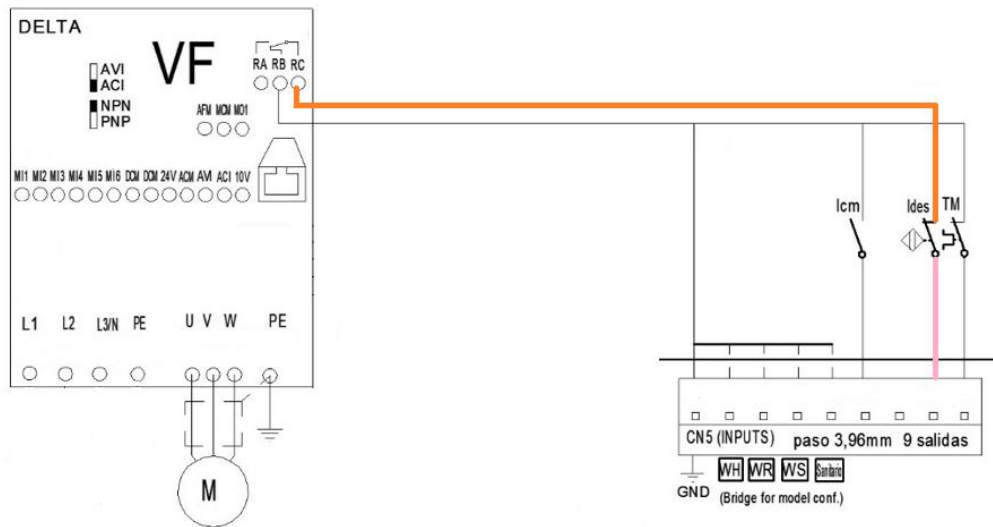
Diagnosis:

1- First, it should be considered that many errors are logical since the load may not be suitable for centrifugation, it is recommended to load the machine to 75-100% of the nominal load and not to mix very different absorption garments.

2- If the error occurs 100% of the time, the problem is probably in the wiring or imbalance sensor. With the machine paused, check that the imbalance is not active:



3- If it is active as in the image, the circuit is open. Check the wiring between the card-inverter-imbalance sensor. Both the inverter and the sensor in front of the magnet must be closed.



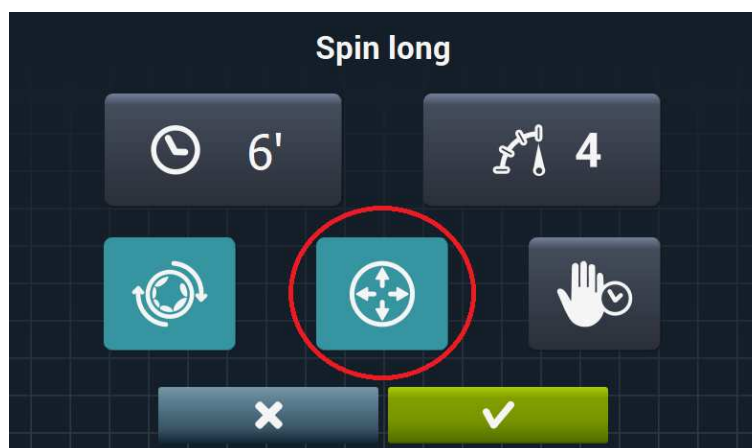
4- If the error occurs frequently, more than 10% of the attempts, there may be a reading error of imbalance by the inverter:

5- With the help of an inverter display, check that the parameters match with the model and try a spin with the drum empty. In parameter 8.23 the detected imbalance is shown, note that the value is less than the parameter 5.01 (in Models of high revolutions) and that the 5.02 in rigid models.

6- Place an admissible load by the machine model, a sack or bag with clothes and check that the value 8.23 remains within the limits.

7- If the value 8.23 is over the limits, replace the inverter.

8- If the values are correct but there are a lot of errors, check that the spin phases have the option "optimum distribution" activated:



11. E10 MAX UNBALANCED LOAD

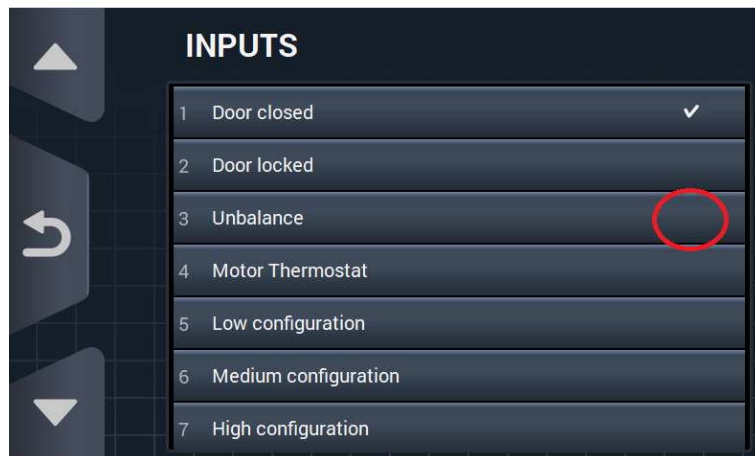
Cause: The unbalanced load micro switch is activated once during the spin cycle.

User action: Only the option "end" is given, the programme ends, and the door is unlocked when this button is pressed.

Diagnosis:

1- This error may reflect a serious safety problem so before you try to centrifuge anything, check that the installation of the machine does not show any deterioration, that the damping is correct and that there is no danger facing an eventual movement of the machine.

2- If there are no signs of an installation or damping problem, try a spin without clothes to verify that the behavior is correct and check the input unbalance input:



3- If with the empty drum, the spin does not advance, probably the unbalance circuit has been opened and the E9 will appear after several attempts. Check the status of the input and follow the steps of the E9.

4- Place an admissible load on the machine model and release a spin. Continuously visualize the inputs on the display input and see if the unbalance is activated at any time.

5- If the movement is excessive and the input is activated, the problem is in the damping (in case of floating washing machines) or in the installation to the ground in case of rigid.

6- Floating, check the status of the dampers and if it is necessary replace them and try again the test.

7- Rigid, check anchorage points and check that the floor meets the requirements.

8- If the movement is not excessive but the sensor detects unbalance, check the position of the sensor.

12. E11 CLOTHES HOT

A programme execution finishes but the water temperature inside the tub exceeds 50 °C.

The 2 options "continue" or "end" are displayed. If we press continue, the machine again checks the temperature, unlocking the door only if it has dropped below 50°C. The same message is displayed again if the temperature has not decreased. If we press "end", the programme will end and the door unlocks.

13. E12 UNLOCK ERROR

Cause: The machine detects that the door cannot be unlocked at the end of a programme. This error occurs after 3 attempts to unlock the door every 20 seconds.

User action: Only the option "end" is given. When this option is pressed, the machine repeats the 3 attempts to unlock and if it cannot unlock the door the error is given with the following text: "DO NOT FORCE THE DOOR. CALL THE TECHNICAL SERVICE".

Diagnosis:

1- The problem is focused on the blocking or its detection. First go to exits and run the output manually. If it locks but is not detected, go to step 6, if the lock does not act directly:

2- Check the input and output tension on the main board 230VAC.

3- If there is voltage in the input and when pressing manually in the output the pulse of 0,5seg is not detected, the problem is in the inner card. This case is very unlikely.

4- If the pulse is detected, but remains without unlocking, the contact is lost on the way to the electromagnet. The next point is the connector of the lock wiring. Check if there is voltage on the size of the lock before dismantling the door-panel-lock.

5- If there is pulse after the connector, the problem is from the lock. Check the components of the lock, maybe a wiring is free or the electromagnet is damaged, in this case, is recommended to change the complete lock.

6- If the problem is that, it makes the unlock, but is not detected, the problem is in the inputs of the plate or in the lock sensor. Before dismantling the lock, check that there is not 230V in the input of the optocoupler with the door closed but unlocked.

7- If there is voltage in the input, probably the problem is in the lock sensor inside the complete lock.

14. E13 MODEL ERROR

On trying to select the model, the machine does not detect an activated range input (low, medium, high, sanitary) or more than one range is activated.

The option "back" is given to exit the menu, returning to the screen where the model code is entered.

15. E14 WEIGHING ERROR

This error is detected in the following cases:

1- Both during selection and while running, if the two pressure switches ("Front Pressure Switch" and "Rear Pressure Switch") are open.

2- If, while running, either of the pressure switches is open.

3- If during selection or while in tilt mode, the two inputs of the external control command "Forward Tilting" and "Backward Tilting" are closed.

4- If while running a programme, communication is lost between the control and auxiliary cards, the option "OK" is displayed. If the machine is currently running a programme, this will be ended.

16. E15 FRONT INFLATION ERROR

While the weighing kit is active, when the output "front inflation" is activated and the input "Front pressure switch" is not opened for 5 minutes.

17. E16 REAR INFLATION ERROR

While the weighing kit is active, when the output "rear inflation" is activated and the input "Rear pressure switch" is not opened for 5 minutes.

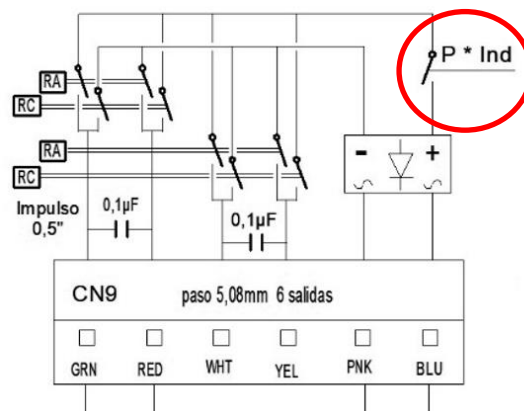
18. E23 WEIGHING ERROR

On pressing "Start" to run a programme, if the auxiliary card is connected and communicating correctly, and it is not possible to communicate with the weighing appliance, this error is displayed.

The two options "OK" or "Cancel" are displayed. Press "Cancel" to abort the programme and return to the selection menu. Press "OK" to continue running the programme with the nominal weight value of the machine.

19. E24 SAFETY CIRCUIT ERROR

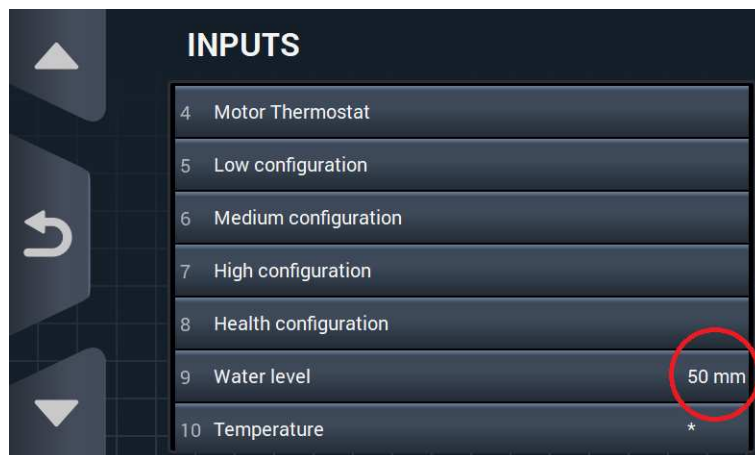
1- E2 can hide a problem with the pressure sensor or the motion sensor, so the first thing is to check that the safety relay is active when the machine is on.



2- If it is active go to step 6. If it is not active it means that the washing machine is detecting water level or movement and that is why there is no voltage to the lock.

3- Check that there is no water in the tub and that the drum is totally static.

4- If there is no water, go to the entrance and observe the water level that the sensor is detecting. If it is not 0, the problem is in the sensor or its connection. Check connector or otherwise change pressure sensor.



5- Check the inductive sensor, if it is giving signal to the plate without movement of the drum.

20. E25 CONTROL-CONTROL AUX COMMUNICATION ERROR

At the start of the running of a programme, if any of the kits (tilting, weighing, water tanks or extra dosing) is active and no communication is detected between the main control card and the auxiliary card.

- o If "Cancel" is pressed, the programme will be ended. If "OK" is pressed, the programme will run but without any of the kits in operation.
- o If communication between the cards is lost while the programme is running, the kits will not function but in this case no error message is displayed.

21. E26 MOTOR HOT WIRE / VARIATOR ERROR

This error occurs when at any time of the execution of a program, the entry "Thermal Motor" is opened.

Only the option "end" is given, the programme ends, and the door is unlocked when this button is pressed.

22. E27 ERROR NTC OUT OF RANGE

This error occurs when a temperature value is measured that is above the configured range (currently the maximum valid value is 110 °C). This means that the NTC is broken or disconnected. On detecting that the NTC is out of range, "- -" is displayed instead of the temperature value.

The 2 options "OK" or "Cancel" are displayed. Press "OK" to continue with the programme as if the temperature had been reached and consequently skip the heating phase. Press "Cancel" to end the programme and unlock the door.

23. E28 ERROR PRESSURE SENSOR OUT OF RANGE

This error occurs when a voltage value is measured of less than 0.4 V or more than 3.8 V. This means that the pressure sensor is broken or disconnected.

This error will not display any buttons and it is only possible to abort by switching off the machine.

