

SPECIAL FUNCTIONS

1. WARNING H₂O:

Algorithm target: Signalling to the user that the wm does not fill with water.

Functioning: The electronic board activates the solenoid valve(s) to start water filling until the pressure switch reaches full level. This process is controlled by the electronic board, which checks if pressure switch has reached full level after 255 seconds. If the pressure switch is still in empty level, the solenoid valve is still supplied for 255 seconds. If the pressure switch has not reached full level, the machine signals "warning H₂O" (only in machines equipped with a Display).

2. WATER FLOW ESTIMATE:

Algorithm target: estimating the time necessary to pressure switch to reach full level. The knowledge of this time and of the litres necessary to reach the first level allows estimating the times necessary to the other loads controlled by the electronic board.

Functioning: The time necessary to reach full pressure switch (during a static filling up to full pressure switch) is compared to the values memorized by the board. If this value is included within these thresholds, it will be considered a new delivery, otherwise the machine will consider only the value recorded by the electronic board in the previous cycle. If the delivery has never been estimated (usually on the first time the machine is used) the default value will be the minimum value recorded in the eeprom.

3. TORQUE-FILLING

Algorithm target: Water filling controlled by torque.

Water filling stops when the torque exceeds a fixed limit (only in three-phase motors)

Functioning: The electronic board switches on the solenoid valve to make water flow in the machine. When the motor torque reaches the limit set by the board (the more is the quantity of water, the higher will be the torque, it means, the greater will be drum resistance), the solenoid valve stops being supplied. The delivery default value (first use of the machine) will be the minimum value recorded in the eeprom.

4. REDUCING DUTY CYCLE ACCORDING TO THE PHASE ANGLE

Algorithm target: reducing the Duty Cycle (drum run time vs. drum stand-by time) if the phase angle sensed (it is equal to the torque on three-phase machines) exceeds the threshold recorded in the memory.

Functioning: the algorithm is activated only in washing machines / washer driers equipped with a commutator motor. The board estimates the interval of the semi-period in which the motor is supplied to move the drum. If the interval exceeds the value set in the memory, the Duty Cycle controlling the movement is reduced.

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5. REDUCING DUTY CYCLE ACCORDING TO THE TORQUE

Algorithm target: reducing the Duty Cycle which controls the drum movement if the torque value sensed exceeds the threshold memorized in the eeprom.

Functioning: the algorithm is activated only in washing machines / washer driers equipped with a three-phase motor. When the torque given by the motor reaches the limit threshold recorded in the eeprom, in the following drum movements, the Duty Cycle is reduced.

6. BALANCING

Algorithm target: This algorithm controls the spin when the machine is unbalanced. It tries to balance the load inside the machine to avoid the unbalancing of the machine and/or mechanical damages. When the number of balances is high, the machine may not perform spin cycle.

Functioning: the algorithm can select one of the two unbalancing values (I° and II° level) and another one concerning wool loads. These levels correspond to exact values expressed in grams, according with the values in the correspondence tables relative to the product concerned. These levels indicate the maximum acceptable unbalance to perform the spin. It is possible to set a maximum number of balances for each level to obtain a value of unbalance lower than or equal to the level fixed. In particular, an unbalance value exceeding the first level max value, obtained after x attempts to balance the machine, may permit the spin to start, but reduces the max speed or even makes the spin phase be cancelled at all.

The unbalance level relative to wool clothes concerns exclusively the wool cycle and allows a limited number of balance attempts (usually 3 attempts) to avoid felting.

7. ANTI-FOAM

Algorithm target: the electronic board intervenes to remove the excessive quantity of foam produced during the spin.

Functioning: the algorithm estimates the number of passages of the pressure switch from empty to full level during the spin phase. After the first and the second passage of the pressure switch from empty to full the spin phase is set to zero, at the third passage the board activates anti-foam algorithm which permits water filling without the movement of the drum, during one or more intervals, followed by a slow movement, then the machine tries again to start the spin. If the pressure switch switches on one or two times for more than 60 seconds, the machine will add another empty-full passage to the other already registered.

8. ANTI-FOAM ACCORDING TO THE TORQUE VALUE SENSED.

Algorithm target: it intervenes to remove foam produced during the spin phase in machines equipped with three-phase motor.

Functioning: the algorithm is activated only in washing machines / washer driers equipped with a three-phase motor. The torque is sensed at a fixed speed (600rpm) for 15 seconds. If the torque value sensed is higher than the value memorized in eeprom and set as default value, the anti-foam algorithm intervenes as explained in the previous section.

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9. ANTI-SHOCK

Algorithm target: it controls water temperature before starting the drain phase, if it is higher than the parameter registered in the eeprom (60°C), the drain phase is blocked.

Functioning: the NTC wash sensor, before each drain phase, compares the temperature of the water in the drum with the relative temperature value set in the eeprom by the anti-shock algorithm. The drain phase is normally fulfilled if the temperature is lower than such a parameter; otherwise, when temperature is equal to / higher than the fixed parameter the board activates ANTI-SHOCK algorithm, which consists in adding a great quantity of water in the drum and moving it during a little time to lower the temperature of water inside the tank.

10. TORQUE LIMITS

Algorithm target: it allows reducing spin speed in conditions of anomalous functioning of the machine.

Functioning: the algorithm is activated only in washing machines / washer driers equipped with a three-phase motor. During the spin phase (normal or in acceleration), the torque, necessary to make the drum run, is compared to the default values memorized in eeprom. According with these data, the electronic board increases or reduces the spin speed to avoid mechanical and electrical damages affecting the machine.