

Detailed Fault Descriptions

1. (00000001) Motor Controller Module

The Motor Controller Module has found a memory error.

Primary Source – Motor Controller Module

Action – Replace Motor Controller Module.

2. (00000010) Motor Controller Module Fault

An error has been encountered when trying to read the pressure sensor.

Primary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

3. (00000011) Motor Controller Module Fault

The Motor Controller Module has found a memory error.

Primary Source – Motor Controller Module

Action – Replace Motor Controller Module.

6. (00000110) Motor Controller Module Fault

The Motor Controller Module has received an incorrect signal from the pressure sensor.

Primary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

7. (00000111) Display Module Fault

The Display Module has found a memory fault.

Primary Source – Display Module

Action – Replace Display Module

9. (0001001) Size Switch Sensor

The display size switch setting does not match that stored in the memory.

Primary Source – Display Module 2 & 3

Action – If the display module for phase 2 or 3 has just been inserted into a console housing than check that the two size switch plungers accurately locate onto the

console housing. If this fault has appeared during normal operation of the machine, check the size switch or replace the Display Module.

Action Phase 2 & 3

If the Motor Controller has been changed from one size machine to another, than the size switch setting in the memory will have to be reset. This can be done by entering and exiting the Option Adjustment Mode. Push and hold START/PAUSE then push POWER button.

Action Phase 4

Reselect the size of the machine by using the SIZE SETTING MODE. Push and hold the water temp up button then press the power button, to select the size of the machine push the temperature up button until the cold LED is on for 5kg machines, push the water level up button until the low water LED is on for the 6kg machine and push the spin speed up LED for the 7kg.

10. (00001010) Temperature Sensor Error

The temperature sensor may be open circuit or the ambient temperature is below minus 10deg.

Primary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

11. (00001011) Pressure Sensor Fault

While measuring the water level the Motor Controller micro has detected a negative pressure. This may have been caused by reconnecting the pressure tube to the pressure sensor while the bowl has been partly filled with water.

Primary Source – Motor Controller Module.

Action

- 1) Check bowl is fully pumped out. Remove pressure tube from pressure sensor, clear pressure tube of any water and reconnect tube.
- 2) Replace the Motor Controller Module.

12. (00001100) Flood Protection Error

The Motor Controller Module has found the water level to be above the flood level and tried to pump the excess water out (under extremely high flow rate conditions the machine may overflow during the top-up routine in agitate). After pumping for 30 seconds, it has been unable to lower the water level below the flood level. Either the water valves are stuck on and are letting water in at a flow rate higher than the pump can handle or the pump is blocked and can not remove the excess water.

Primary Source – Water Valves

Action – If the water valves are on continuously, check that the water valves turn off mechanically (remove power from machine).

Secondary Source – Motor Controller Module.

Action- If water valves are being driven on electrically, replace Motor Controller Module.

Tertiary Source – Pump system

Action – Check pump for blockage and hose for correct height and kinking.

36. (00100100) Water Leak Fault

The Motor Controller Module has needed to top up the water level more than 4 times during agitate. This is excessive as normally only one or two top ups are required to replace the air that has escaped from a full load during agitate. The most likely cause is that the machine is syphoning. The other alternative is that the machine has developed a leak.

Primary Source – Pump System

Action

- 1) Check the height of the drain hose outlet min 850mm/max 1200mm.
- 2) Check hose guide is fitted and check hose does not protrude more than 20mm beyond the guide.

Secondary Source – Mechanical

Action

- 1) Check pressure tube connection on outer bowl and Motor Controller Module.
- 2) Check that the drive shaft seal and the pump housing seal have not developed a leak, by looking through the front inspection cover.

Tertiary Source – Motor Controller Module.

Action - Replace Motor Controller Module.

37. (00100101) Pump Blocked Error

While draining, the water level reading from the pressure sensor has not changed for over 30 seconds. There are three likely reasons for this fault. One is that the drain hose has been squashed or kinked and the pump out rate has been dramatically reduced. The second, is that the pump is partially or fully blocked. The third, the pump is not operating due to motor controller module, wiring or pump failure. This fault could also appear if the machine is pumping to an unusually high head of drain hose or extended drain hose.

Primary Source – Pump System

Action

- 1) Check that the drain hose has not been kinked.
- 2) Check length of drain hose and try to reduce the length if excessively long. A 1 meter extension hose of the same diameter fitted to the existing drain hose is the maximum allowable length.

- 3) If bowl empty of water, remove pump from pump housing through the inspection hatch and check that it is not blocked. Also check the hose is not blocked.
- 4) If bowl contains water, attempt to flick start the pump fan while draining to clear water before servicing as in 3. If unsuccessful then service pump from the top of the machine by removing the top deck and inner bowl.
- 5) Check for open circuit windings in the pump. (Note: Pumps are fitted with a thermal cut-out which will reset on cooling).

Secondary Source – Wiring

Action

- 1) Check Pump harness is connected correctly to pump.
- 2) Check continuity of pump harness.

Tertiary Source – Motor Controller Module

Action

Activate Pump by operating the machine in spin mode. Check pump is rotating by viewing through the inspection hatch. If not operating and Primary and Secondary checks have been performed then replace the Motor Controller Module.

38. (00100110) Pressure Sensor Fault

The Motor Controller Module has recorded a water level of empty while it is agitating. The water level must have been greater than empty for the machine to enter the agitate mode initially. The most likely cause of this fault is that the pressure sensor hose has been severed or fallen off during agitate. Alternatively the pressure sensor may be faulty.

Primary Source – Mechanical

Action – Check that the pressure tube is intact and has not been cut.

Secondary Source – Motor Controller Module.

Action – Replace the Motor Controller Module if the pressure tube shows no sign of being faulty.

39. (00100111) Pressure Tube Fault

The probable cause of this fault is that the pressure tube has become blocked kinked or has fallen off completely. Alternatively the pressure sensor may be faulty.

Primary Source – Mechanical

Secondary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

40. (00101000) Bowl Dis-engage Fault

While carrying out a bowl check, the Motor Controller Module has found that the bowl is not engaged even though the pressure sensor indicates the bowl is empty. The Motor Controller Module continues to check for 2 minutes after which time it displays the fault. The first two areas to check are the clutch and the pressure tube. If these two appear correct, then the fault could be in the pressure sensor in the Motor Controller Module.

Primary Source – Mechanical

Action

- 1) Check that there are no clothes or other foreign objects preventing the clutch from re-engaging.
- 2) If the machine is empty of water carry out a clutch disassembly procedure and check the spline drive.
- 3) Next check that the pressure tube has not come off and that it is not kinked.

Secondary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

41. (00101001) Temperature Sensor Fault

The temperature sensor is measuring temperatures above 110deg C. The fault is probably due to a short circuit in the sensor line.

Primary Source – Motor Controller Module.

Action – Replace the Motor Controller Module.

43. (00101011) OOB Switch Fault

The Motor Controller Module has found that the signal returning from the out of balance switch indicates that the switch is permanently on or the harness to it is disconnected.

Primary Source – Mechanical

Action

- 1) Check that the out of balance switch is free to move.
- 2) Check that no harnesses are blocking switch movement.
- 3) Check switch operates correctly when activated. Replace switch if suspect.
- 4) If the out of balance micro switch shows signs of corrosion replace the switch and fit a condensation kit to the console area.

Secondary Source – Wiring

Action

Check the harness to the switch is connected correctly. The terminals should be connected to the normally closed position. If the harness terminals shows signs of corrosion then fit the new harness.

Tertiary Source – Motor Controller Module.

Action – Replace Motor Controller Module.

44. (00101100) Water In Bowl During Spin

The Motor Controller has sensed a water level in the bowl during spin. This may be caused by a slow pump out rate due to pump hose or partial pump blockage.

Primary Source – Pump System

Action

- 1) Check that the drain hose is not squashed or kinked.
- 2) Check length of drain hose and try to reduce length if excessively long. A 1 Metre extension hose of the same diameter fitted to the existing drain hose is the maximum allowable length.
- 3) If the bowl is empty of water, remove pump from pump housing through the inspection hatch and check that it is not blocked. Also check the hose is not blocked.
- 4) If bowl contains water, attempt to flick start the pump fan while draining to clear water before servicing as in 3. If unsuccessful then service pump from the top of the machine by removing the top deck and inner bowl.

Secondary Source – Motor Controller Module.

Action- Motor Controller Module.

45. (00101101) Display Memory Check Fault

On power up the Display has checked its memory against a known reference and found differences.

Primary Source – Display Module

Action – Replace Display Module

47. (00101111) Bowl Dis-Engaged Fault

While carrying out a bowl check, the Motor Controller Module has found that the bowl is not engaged even though the pressure sensor indicates that the bowl is empty. The Motor Controller Module continues to check for 2 minutes. During this time the module has not been able to determine a valid bowl status and so displays this fault. This fault differs from fault 40 in that a valid bowl status could not be determined. The first two areas to check are the clutch and the pressure tube. If these two appear correct, then the fault could be with the pressure sensor in the Motor Controller Module.

Primary Source – Mechanical

Action

- 1) Check that there are no clothes or other foreign objects preventing the clutch from re-engaging.

2) Next check that the pressure tube has not come off and that it is not kinked.

Secondary Source – Motor Controller Module.

Action – Replace Motor Controller Module, If the above checks out without fault.

48. (00110000) Hot and Cold Valve Faulty

The Motor Controller Module has measured voltages from the valve diagnostic circuit that indicate both the hot and cold valve are faulty. The most likely cause is that the valve harnesses have not been connected correctly or the valve is open circuit.

Primary Source – Wiring

Action – Check valve harnesses are correctly fastened to valves.

Secondary Source – Water Valves.

Action – Check valve coils are not open circuited.

Tertiary Source – Motor Controller Module

Action – Replace Motor Controller Module.

49. (00110001) Cold Valve Faulty

The Motor Controller Module has measured a voltage from the valve diagnostic circuit that indicates the cold valve is faulty. The most likely cause is that the valve harness has not been connected correctly or the valves are open circuit. See fault 48 for service procedure.

50. (00110010) Hot Valve Faulty

The Motor Controller Module has measured a voltage from the valve diagnostic circuit that indicates that the hot valve is faulty. The most likely cause is that the valve harness has not been connected correctly or the valves are open circuit. See fault 48 for service procedure.

53. (00110011) Rotor Position Sensor Step Fail

The Motor Controller Module has attempted a motor step test and has found that the motor has not stepped in the correct direction. It has detected that the motor is connected and that the motor drive is operational. The rotor position sensing system is at fault here.

Primary Source – Wiring

Action – Check the Rotor Position harness for continuity and that the connectors are correctly to the Position Sensor and the Motor Controller.

Secondary Source – Rotor Position Sensor

Action – Check the Rotor Position Sensor patterns with a RPS Tester, if faulty fit a new Rotor Position Sensor.

Tertiary Source – Motor Controller Module

Action – Replace the Motor Controller Module

54. (00110110) Motor/Motor Controller Module Step Fail

The Motor Controller Module has attempted a motor step test and has found that the motor has stepped in the correct position. The Motor Controller Module has detected that there is no current. This indicates that either the motor is not connected or the Motor Controller Module motor is faulty.

Primary Source – Wiring

Action – Check the continuity of the motor harness and that the connectors are correctly applied to the motor and Motor Controller Module.

Secondary Source – Motor

Action – Check continuity of motor phases. Check the bridge terminal on the stator is not open circuit. Replace the stator.

Tertiary Source – Motor Controller Module

Action – Replace Motor Controller Module

56. (00111000) Bowl Check No valid Fault

While carrying out a bowl check the machine has not been able to determine a valid bowl status and so the display flags this fault. This fault differs from fault 40 in that a valid bowl status could not be determined.

The first two areas to check are the clutch and pressure tube. If these two appear correct, then a fault could be with the pressure transducer in the Motor Controller.

Primary Source – Mechanical

Action

- 1) Check that there are no clothes or other foreign objects preventing the clutch from re-engaging.
- 2) Next check that the pressure tube has not come off and that it is not kinked.

Secondary Source – Motor Controller Module.

Action – Replace The Motor Controller Module.

57. (00111001) Brown Out During Display EEPROM Write Fault

The Display has requested the Motor Controller Module to perform an EEPROM write. Prior to writing the Motor Controller has tested the 15 volt supply and found

that it is below the safety level for writing EEPROM and has reported this to the display. This may be due to transients at the time of writing or due to a faulty Motor Controller Module.

Primary Source – Motor Controller Module

Action – Replace the Motor Controller

58. (00111010) Pressure Transducer at Maximum Adjustment Fault

When the pause or delay start is pressed to start the machine, the display has checked the memory and found the count greater than expected.

Primary Source – Display Module

Action – Replace Display Module

59. (00111011) I D Out of Range Fault

When the pause or delay start is pressed to start the machine, the display has checked the physical ID and found it was out of range.

Primary Source – Motor Controller Module

Action – Display Module

60. (00111100) Motor Controller Memory Check Fault

On power up the Motor Controller Module has checked its memory against a known reference and found differences.

Primary Source – Motor Controller Module

Action – Replace Motor Controller Module

61 (00111101) Brown Out During Motor Controller EEPROM Write Fault

The Motor Controller Module has been attempting to perform an internal EEPROM write. Prior to writing the Motor Controller has tested the 15 Volt supply and found that it is below the safety level for writing EEPROM and has reported this to the display.

81-95. (00101xxxx) See fault code 106

104. (001101000) See fault code 106

105. (01101001) See fault code 106

106. (01101010) Display to Motor Controller Module Communications Errors

These faults are reported when the Display Module detects an error in the communications between the Display Module and the Motor Controller Module.

Primary Source – Display Module

Action – Replace Display Module

Secondary Source – Motor Controller Module

Action – Replace Motor Controller Module. If new Motor Controller Module corrects the fault, refit the original module. Please note that the display module will not be refundable.

107. (01101011) Motor Controller Module Reset Error

The Display Module has detected that the Motor Controller Module has reset when it should not have. This can be due to a Motor Controller Module supply disturbance or micro processor failure.

Primary Source – Motor Controller Module

Action – Replace Motor Controller module

130. (10000010) Single Rotor Position Sensor Error

The Motor Controller has found an error in the pattern received from the Rotor Position Sensor. Likely causes of this fault are a bad connection on the harness between the Rotor Position Sensor and the Motor Controller, or a faulty Rotor Position Sensor.

Primary Source – Wiring

Action

- 1) Check for corrosion on the edge connector of the Rotor Position Sensor and the Motor Controller Module connector.
- 2) Check the contacts on the Rotor Positional sensor end of the hall harness to see if any have been damaged. Each set of contacts in the socket has two wipers. If the distance between these wipers varies between different contacts, replace the rotor positional sensor harness.

Secondary Source – Rotor Position Sensor

Action – Check the Rotor Sensor with an RPS tester. Replace if faulty.

Tertiary Source – Motor Controller Module

Action – Replace Motor Controller Module

131. (10000011) Repetitive Rotor Position Sensor Error

This fault is similar to fault number 130 above but differs slightly in that it is a continuous condition. See fault 130 for service procedure.

132. (10000100) Single Current Trip

The Motor Controller has detected excess current in the motor or electronic switches. This fault has occurred momentarily.

Primary Source – Wiring

Secondary Source – Motor

Action

- 1) Measure/check the motor harness, connectors and motor for shorts. This can be done by taking a resistance measurement between phases of the motor harness at the Motor Controller Module end. Nominal resistance should be around 12.2 ohm.
- 2) Check the Rotor Positional Sensor and associated harness for water, mechanical damage or corrosion.

Tertiary Source – Motor Controller Module

Action – If all the above show no signs of fault then replace the Motor Controller Module. Also check for water leaks from the cooling chamber or valves that could possibly come in contact with the Motor Controller and fix the leak before replacing with the new Motor Controller Module.

133. (1000101) Repetitive Current Trip

The Motor Controller has detected excess current in the motor or electronic switches. This fault is a more severe occurrence than Fault Number 132 but has identical fault sources and fault service procedures.

136. (10001000) Motor Stall

The Motor Controller has been unable to start the motor. Possible causes of this fault are: Faulty motor harness, faulty or jammed motor, seized bearings or seals, faulty Motor Controller Module, faulty Rotor Position Sensor or Harness.

Primary Source – Wiring

Action – Measure/check the motor harness, connectors and motor for discontinuity. This can be done by taking a resistance measurement between phases of the motor harness at the Motor Controller Module end. Nominal resistance should be around 12.2 ohm.

Secondary Source – Motor

Action

- 1) Check free rotation of the agitator and bowl by rotating by hand. Bearings and seals may be seized.
- 2) Check the Rotor Position Sensor and associated harness for water, mechanical damage or corrosion.

Tertiary Source – Motor Controller Module

Action – If the primary and secondary checks pass inspection then replace the Motor Controller Module.

160. (10100000) Bowl Engaged

The bowl has re-engaged itself during agitate. Possible causes for this are a leak in the air bell, bowl is over loaded with clothes, the clutch has jammed or is fouled with a foreign object.

Primary Source – Mechanical

Action

- 1) Check that the rotating bowl assembly is not jammed to the agitator with any foreign object that may be caught under the agitator skirt.
- 2) Check the clutch teeth are not locked together with dirt or lint etc
- 3) Make sure the bowl is not overloaded with too many clothes.
- 4) If none of the above appear to be at fault, then check the air bell at the bottom of the inner bowl for leaks.

Secondary Source – Motor Controller Module

Action – If the machine is empty of water at fault it is possible that the pump circuit is faulty and has caused a pump out during wash. This would cause the bowl to re engage during agitate and the Motor Controller Module to display this fault. Replace Motor Controller Module.

161. (10100001) Hardware/EEPROM Supply Mismatch

The Motor Controller checks the hardware configuration (ie. 110v or 230v) against its EEPROM table on power up. The hardware supply selection is determined by the Hot Valve feedback circuit divider voltage. Should there be a mismatch, this error is flagged.

Primary Source – Motor Controller Module

Action – Replace Motor Controller Module

162. (10100010) Brake Deceleration Time out Fault

During the brake mode the Motor controller has detected that the bowl has not come to a stop in the permitted time once dropping below 100rpm. This fault has been installed for software testing only.

163. (10100011) Valve Reset Pin Connect Fault

The Motor Controller has sensed the PCB connection is open circuit. The cold valve cannot operate with this condition.

Primary Source – Motor Controller Module

Action – Replace Motor Controller Module

164. (10100100) Brake Function Time-out Fault

This fault indicates that the Motor Controller has been attempting to brake for 20 seconds. As all spin loads should come to rest within 10 seconds something has gone wrong during the brake to prevent the bowl stopping in time.

Primary Fault – Wiring

Action - Measure/check the motor harness, connectors and motor for discontinuity. This can be done by taking a resistance measurement between phases of the motor harness at the Motor Controller Module end. Nominal resistance should be around 12.5 ohms.

Secondary Source – Motor Controller Module.

Action – Replace Motor Controller Module

192. (11000000) Motor PMW Reset Pin Connect Fault

The Motor Controller has sensed an open circuit between pins 30 and 31. The motor cannot operate with this condition.

Primary Source – Motor Controller Module

Action – Motor Controller Module

